



**1750 16th Avenue East,
Owen Sound**

Transportation Impact Study

Paradigm Transportation Solutions Limited

November 2024
240408



Project Summary

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1750 16th Avenue East, Owen Sound Transportation Impact Study

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Executive Summary

Content

Paradigm Transportation Solutions Limited has been retained to conduct this Transportation Impact Study (TIS) for a proposed hotel development located at 1750 16th Avenue East in the City of Owen Sound.

This TIS includes an analysis of existing traffic conditions, a description of the proposed development, traffic forecasts for a five-year horizon from the date of TIS submission (2029), assessment of traffic impacts with recommendations to accommodate the proposed development as appropriate, and Transportation Plan.

Development Concept

The subject site is located on the west side of 16th Avenue East and north of 17th Street East. The proposed development includes a 120-room hotel with vehicle access via a single full-moves connection to 16th Avenue East.

Scope of Study

The scope of the TIS for the proposed development includes:

- ▶ **Study Area intersections:**
 - 16th Avenue East and 16th Street East (signalized);
 - 16th Avenue East and 17th Street East (unsignalized);
 - 16th Avenue East and Heritage Place Driveway (unsignalized); and
 - Future site access to 16th Avenue East.
- ▶ **Analysis Periods:** Weekday AM and PM peak hours.
- ▶ **Other Area Developments:**
 - 2275 16th Street East; and
 - 2125 16th Street East (Heritage Grove).
- ▶ **Traffic Conditions:** Existing (2024) and five-years from TIS submission (2029).
- ▶ **Transportation Plan:** City of Owen Sound Transportation Master Plan, Trails Master Plan, Official Plan and Accessibility for Ontarians with Disabilities Act (AODA).



Conclusions

Based on the investigations carried out, it is concluded that:

- ▶ **Existing Traffic Conditions:** The study area intersections are operating with acceptable levels of service.
- ▶ **Development Trip Generation:** The development is forecast to generate 55 and 71 trips during the AM and PM peak hours, respectively.
- ▶ **Background Traffic Conditions:** The study area intersections are forecast to operate with acceptable levels of service.
- ▶ **Total Traffic Conditions:** The study area intersections are forecast to operate with acceptable levels of service.
- ▶ **Auxiliary Left-Turn Lane:** A northbound left-turn lane is not warranted on 16th Avenue East at the proposed site access under forecast total traffic conditions.
- ▶ **Transportation Plan:** The development is consistent with the City's Transportation Master Plan, Trails Master Plan, Official Plan, and AODA, including provision of bicycle parking, sidewalks, barrier free parking spaces and barrier free access on-site, and the preparation of a TIS to identify impacts to the surrounding road network.

Recommendations

Based on the findings of this study, it is recommended that that the development be considered for approval as proposed.



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1 Introduction

1.1 Overview

Paradigm Transportation Solutions Limited has been retained to conduct this Transportation Impact Study (TIS) for a proposed hotel development located at 1750 16th Avenue East in the City of Owen Sound. **Figure 1.1** illustrates the subject development location.

The subject site is located on the west side of 16th Avenue East and north of 17th Street East. The proposed development includes a 120-room hotel with vehicle access via a single full-moves connection to 16th Avenue East.

1.2 Purpose and Scope

The purpose of this report is to identify and assess the potential traffic impact resulting from the proposed development. The scope of the study, developed in consultation with City of Owen Sound and Grey County staff via e-mail in August 2024, includes:

- ▶ Assessment of the current traffic and site conditions within the study area;
- ▶ Estimates of background traffic growth for five years from TIS submission (2029);
- ▶ Estimates of additional traffic generated by the subject site;
- ▶ Analyses of the impact of future traffic on the surrounding road network, including the following study area intersections:
 - 16th Avenue East and 16th Street East (signalized);
 - 16th Avenue East and 17th Street East (unsignalized);
 - 16th Avenue East and Heritage Place Driveway (unsignalized); and
 - Future site access to 16th Avenue East.
- ▶ Recommendations necessary to mitigate the site generated traffic in a satisfactory manner; and
- ▶ Transportation Plan.

Appendix A contains the pre-study consultation material and responses from the City and County.



This study has been prepared in accordance with the requirements detailed by the *Owen Sound Site Development Engineering Standards*¹.

¹ Owen Sound, *Site Development Engineering Standards*, 2015.





Location of Subject Site

1750 16th Avenue East, Owen Sound TIS
240408

Figure 1.1

2 Existing Conditions

2.1 Existing Roadways

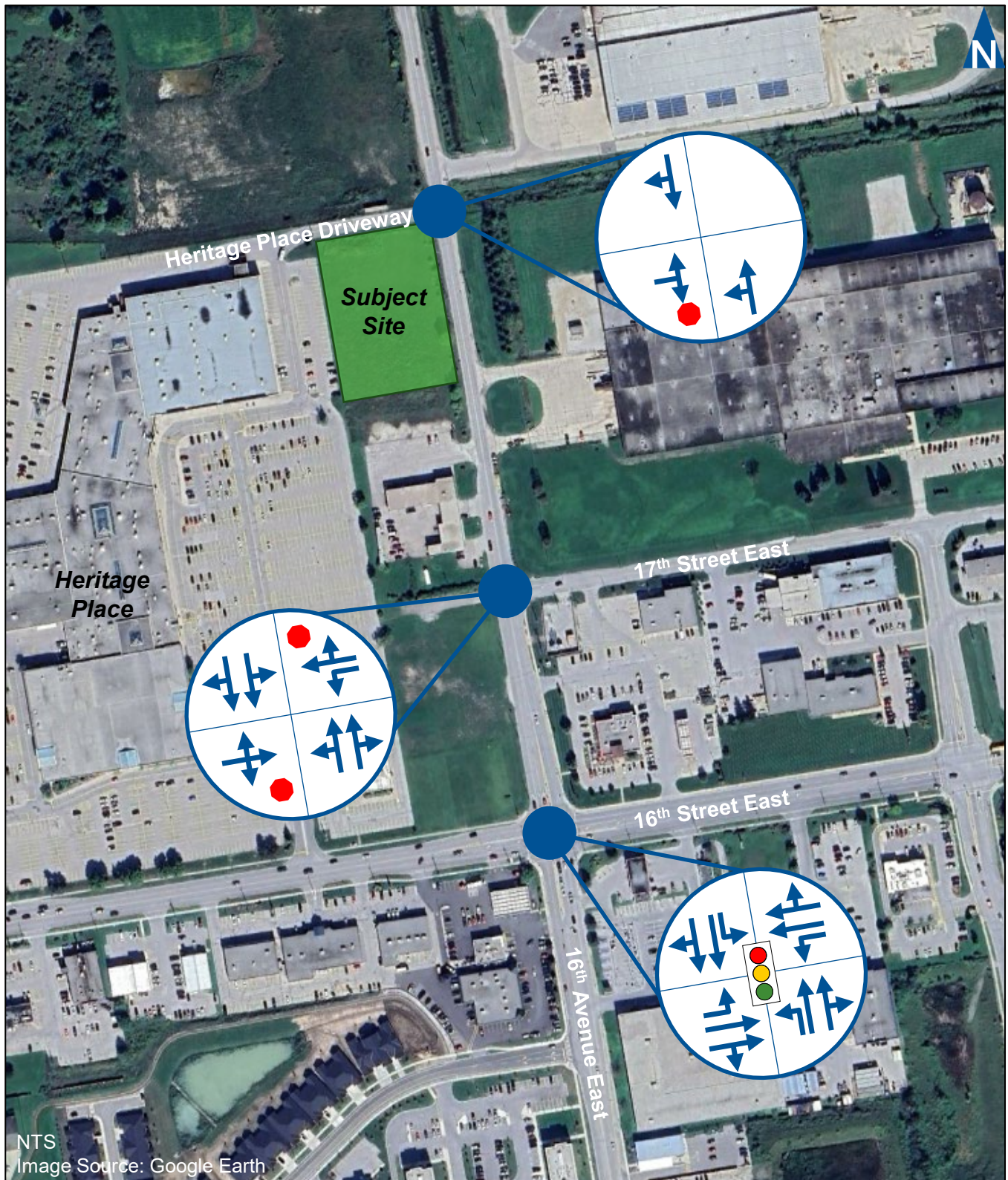
The main roadways near the subject site considered in assessing the traffic impacts of the development include:

- ▶ **16th Avenue East** is a north-south minor arterial road² with a two-lane cross section north of 17th Street East and four-lane cross section to the south. The roadway has a posted speed limit of 50 km/h. Sidewalks are provided on the east side of the roadway between 16th Street East and 17th Street East, and on both sides of the roadway south of 16th Street East.
- ▶ **16th Street East** is an east-west major arterial road with a four-lane cross section and a posted speed limit of 50 km/h. Sidewalks are provided on both sides of the roadway.
- ▶ **17th Street East** is an east-west local road with a two-lane cross section and an assumed speed limit of 50 km/h.

Figure 2.1 illustrates the existing lane configuration and traffic control at the study area intersections.

² City of Owen Sound, *Official Plan City of Owen Sound Schedule C Transportation Plan*, May 2021.





2.2 Transit Service

Owen Sound Transit operates the following two routes within the study area.

- ▶ The Core route operates on 16th Avenue East along the frontage of the subject site. The route has major stops at Heritage Mall and the transit terminal.
- ▶ The East Bayshore route operates along 16th Street East within the study area. The route has major stops at the transit terminal and hospital.

Generally, the routes operate Monday to Friday between 6:30 AM and 6:00 PM and Saturday between 9:00 AM and 4:00 PM. No service is provided on Sunday or statutory holidays.

Figure 2.2 illustrates the existing transit service.

2.3 Traffic Volumes

Paradigm collected turning movement counts on 12 September 2024. **Table 2.1** summarizes the traffic count date and peak hour start times for each intersection.

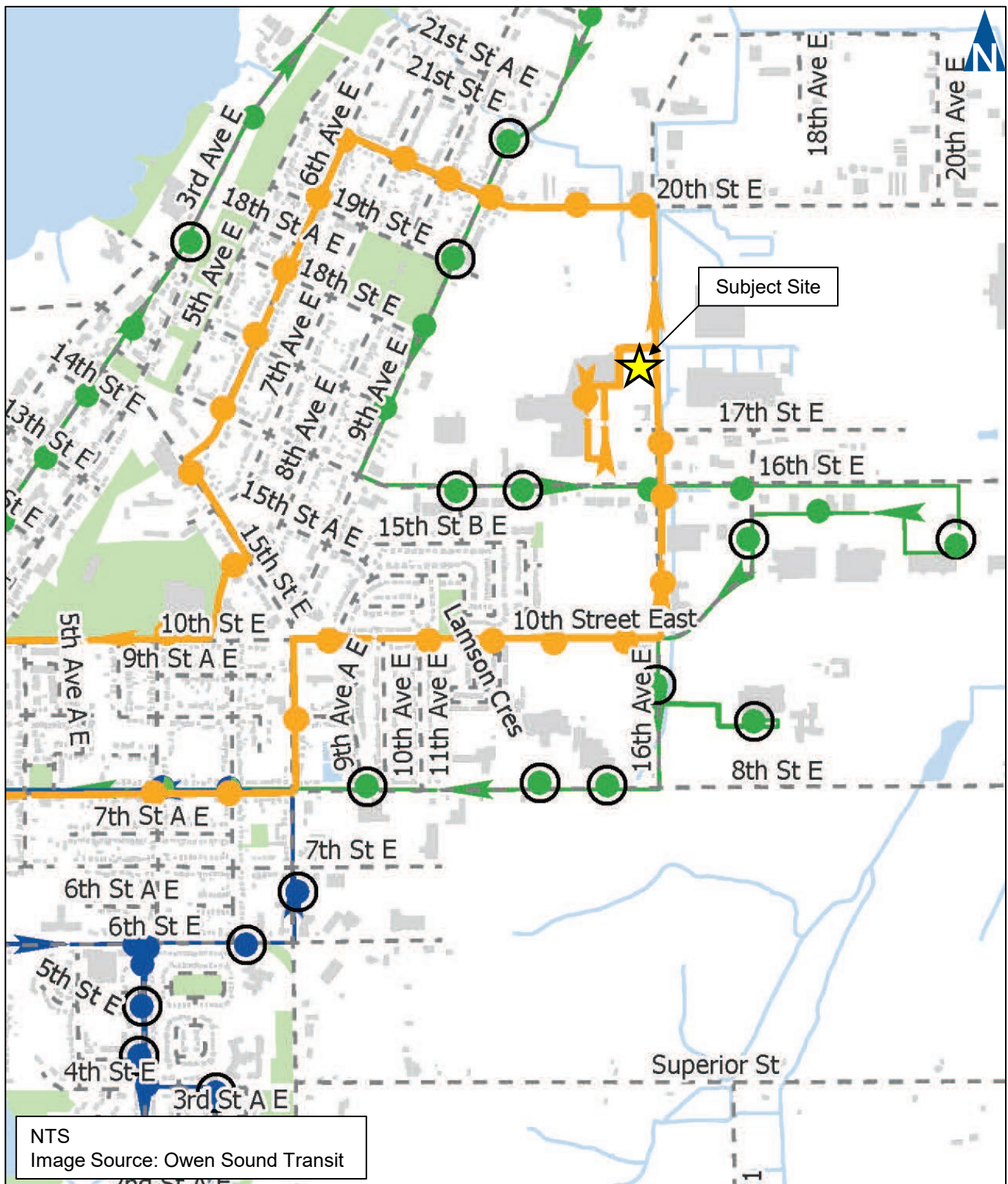
TABLE 2.1: EXISTING TRAFFIC COUNT SUMMARY

Intersection	Count Date	AM Peak Hour	PM Peak Hour
16th Avenue East and 16th Street East	September 12, 2024	8:45 AM	4:00 PM
16th Avenue East and 17th Street East		8:15 AM	3:45 PM
16th Avenue East and Heritage Place Driveway		8:15 AM	3:45 PM

Figure 2.3 illustrates the existing AM and PM weekday peak hour traffic volumes.

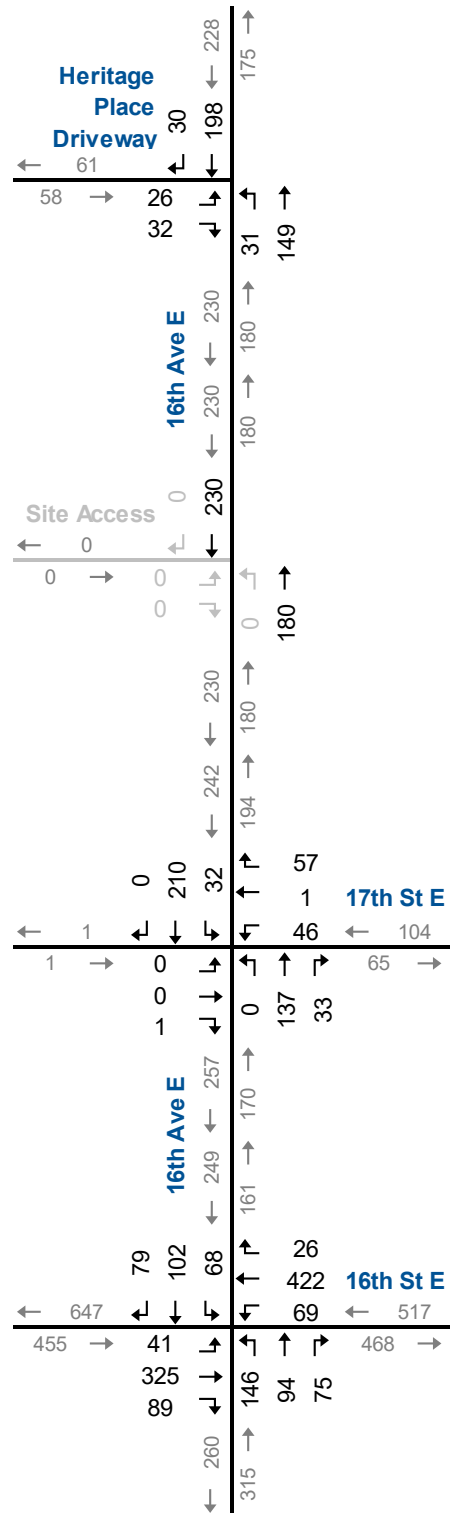
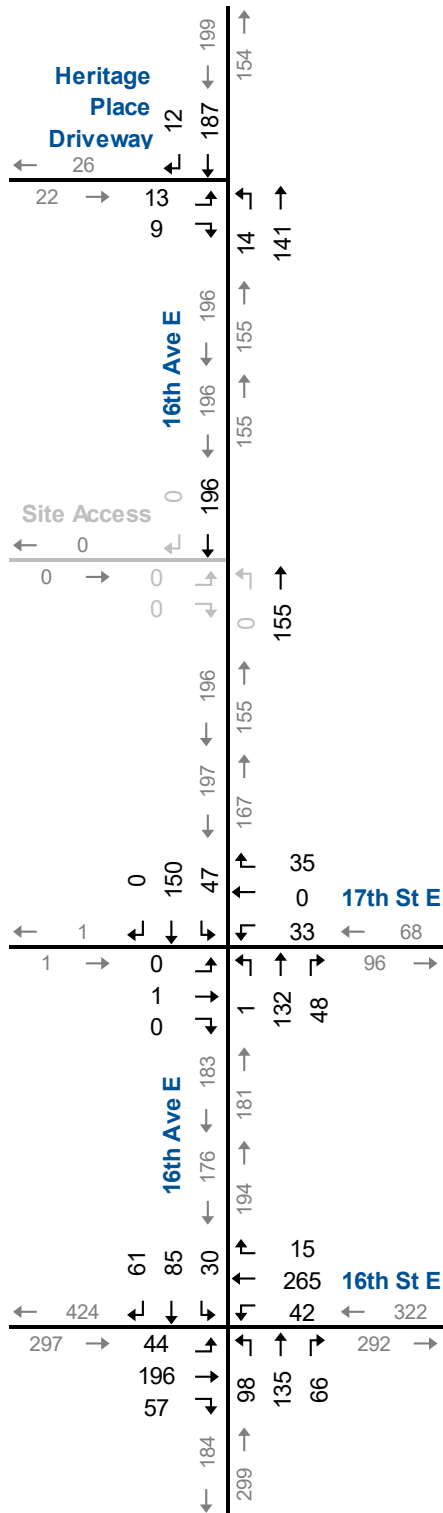
Appendix B contains the detailed traffic counts and signal timings for the study area intersections.





AM Peak Hour

PM Peak Hour



NTS



Existing Traffic Volumes

2.4 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the average delay experienced by drivers at intersections. It is based on the delay experienced by individual vehicles executing various movements. The delay is related to the number of vehicles intending to make a particular movement, compared to the estimated capacity for that movement. The capacity is based on a number of criteria related to the opposing traffic flows and intersection geometry.

The highest possible rating is LOS A, under which the average total delay is equal to or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds for signalized intersections, 50 seconds for unsignalized intersections or when the volume to capacity ratio is greater than 1.0, the movement is classed as LOS F and remedial measures are usually implemented, if they are feasible. LOS E is usually used as a guideline for the determination of road improvement needs on through lanes, while LOS F may be acceptable for left-turn movements at peak times, depending on delays.

The operations at the study area intersections have been assessed using Synchro 11. Movements are considered critical under the following conditions:

- ▶ Volume/capacity (v/c) ratios for overall intersection operations, through movements or shared through/turning movements increased to 0.90 or above;
- ▶ v/c ratios for exclusive movements that will exceed 1.00;
- ▶ queues for individual movements exceed available lane storage.

Table 2.2 summarizes the results of the intersection operational analysis under existing conditions, including the AM and PM peak hour LOS, v/c ratios, and 95th percentile queues.

The results indicate that the study area intersections are operating with acceptable levels of service, and with no problem movements.

Appendix C contains the detailed Synchro 11 reports.



TABLE 2.2: EXISTING TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	16th Avenue East & 16th Street East	TCS	LOS Delay V/C Q Stor. Avail.	A 9 0.08 9 30 21	B 13 0.19 23 - -	> > > > >	B 13	A 9 0.08 8 25 17	B 15 0.20 27 - -	> > > > >	B 14	C 21 0.30 23 35 12	B 18 0.29 21 - -	> > > > >	B 19	B 19 0.11 9 20 11	C 22 0.38 16 - -	> > > > >	C 22	B 16
	16th Avenue East & 17th Street East	TWSC	LOS Delay V/C Q Stor. Avail.	< < < < <	B 13 0.00 0 - -	> > > > >	B 13	B 12 0.06 2 35 33	A 9 0.04 1 - -	> > > > >	B 10	< < < < <	A 8 0.00 0 - -	> > > > >	A 0	< < < < <	A 8 0.04 1 - -	> > > > >	A 2	
	16th Avenue East & Heritage Place Driveway	TWSC	LOS Delay V/C Q	B 11 0.04 1	< < <	> > >	B 11						< < <	A 8 0.01 0	> > >	A 1		A 0 0.00 0	> > >	A 0
PM Peak Hour	16th Avenue East & 16th Street East	TCS	LOS Delay V/C Q Stor. Avail.	B 10 0.10 9 30 21	B 17 0.33 42 - -	> > > > >	B 17	B 10 0.15 13 25 12	B 17 0.32 47 - -	> > > > >	B 16	C 22 0.40 33 35 2	B 18 0.28 17 - -	> > > > >	C 20	C 21 0.23 17 20 3	C 23 0.46 20 - -	> > > > >	C 22	B 18
	16th Avenue East & 17th Street East	TWSC	LOS Delay V/C Q Stor. Avail.	< < < < <	A 9 0.00 0 - -	> > > > >	A 9	B 12 0.09 2 35 33	A 9 0.07 2 - -	> > > > >	B 10	< < < < <	A 0 0.00 0 - -	> > > > >	A 0	< < < < <	A 8 0.03 1 - -	> > > > >	A 1	
	16th Avenue East & Heritage Place Driveway	TWSC	LOS Delay V/C Q	B 11 0.10 2	< < <	> > >	B 11						< < <	A 8 0.03 1	> > >	A 1		A 0 0.00 0	> > >	A 0

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



3 Development Concept

3.1 Development Description

The subject site is located on the west side of 16th Avenue East and north of 17th Street East. The proposed development includes a 120-room hotel with vehicle access via a single full-moves connection to 16th Avenue East.

Figure 3.1 shows the development concept.

3.1.1 Site Access

The proposed site access is located approximately 77 metres south of the Heritage Place driveway (centreline to curb) which exceeds the City's requirement of 60 metres for a small volume commercial development on an arterial roadway.

Additionally, the proposed site access has a throat width of 8 metres and curb radius of 6 metres which meets the City's requirements.





3.2 Development Trip Generation

The *Institute of Transportation Engineers (ITE) Trip Generation Manual*³ rates for Land Use Code (LUC) 310 – Hotel have been used to estimate the peak hour traffic volumes generated by the subject development.

Table 3.1 summarizes the forecast number of net new trips generated by the proposed development.

TABLE 3.1: TRIP GENERATION

Land Use	Number of Rooms	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
LUC 310 - Hotel	120	0.46	31	24	55	0.59	36	35	71
Total Trip Generation			31	24	55		36	35	71

3.3 Development Trip Distribution and Assignment

The trip distribution was determined based on existing travel patterns within the study area. **Table 3.2** displays the breakdown of trip distributions used in this study.

TABLE 3.2: ESTIMATED TRIP DISTRIBUTION

Origin/Destination	Percentage
North via 16th Ave E	10%
South via 16th Ave E	20%
East via 17th St E	5%
East via 16th St E	25%
West via 16th St E	40%
Total	100%

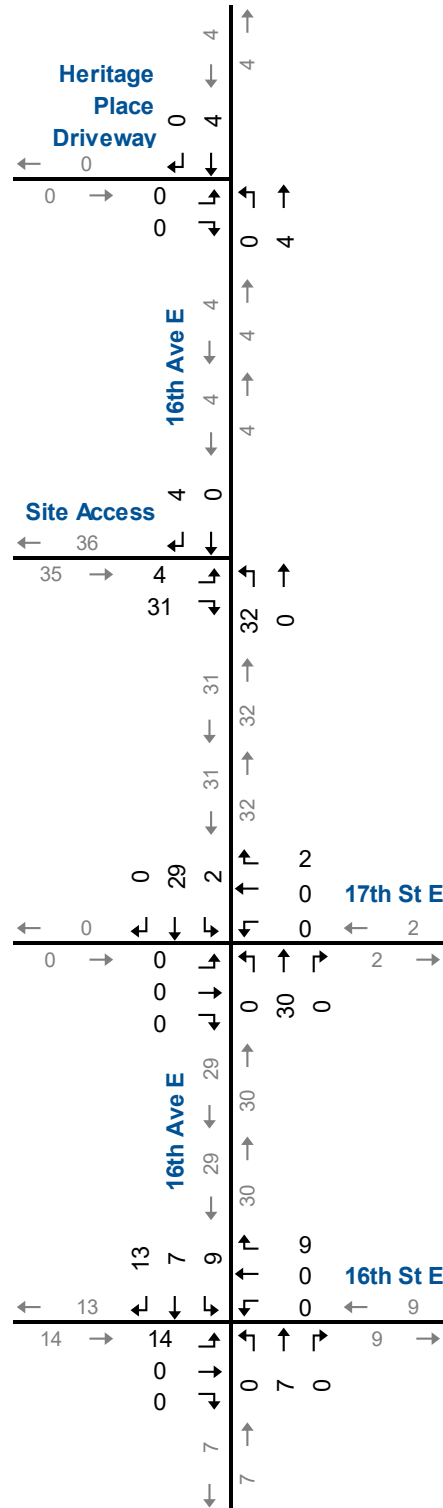
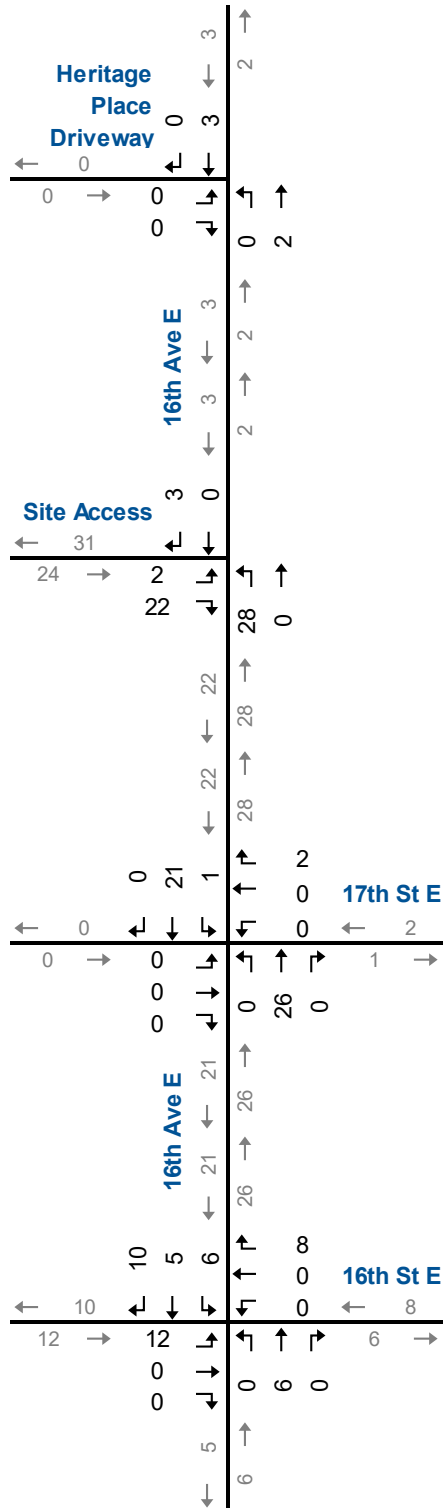
Figure 3.2 illustrates the site-generated traffic volumes for the AM and PM peak hours.

³ Institute of Transportation Engineers, *Trip Generation Manual*, 11th ed., (Washington, DC: ITE, 2021).



AM Peak Hour

PM Peak Hour



NTS



Site Generated Traffic Volumes

4 Evaluation of Future Traffic Conditions

The assessment of future traffic conditions in this section includes estimates of future background and total traffic volumes, and the analyses for the 2029 horizon.

4.1 Background Traffic Forecasts

4.1.1 General Growth

To derive the 2029 generalized background traffic volumes, a growth rate of 1% was applied to the existing roadway traffic volumes. This growth rate was confirmed with the County and City during the pre-study consultation.

4.1.2 Other Area Developments

In addition to the above general traffic growth, the following nearby developments have been included in the background traffic forecasts:

- ▶ **2275 16th Street East:** The mixed-use development is located in the southwest corner of 16th Street East and the Grey County CP Rail Trail. The TIS completed in November 2022⁴ indicated that the development is proposed to consist of 12,917 sq. ft. commercial, 5,382 sq. ft. commercial-office, 3,348 sq. ft. restaurant with drive-through, 3,229 sq. ft. restaurant and 120 residential units. The development is forecast to generate 166 AM peak hour trips and 106 PM peak hour trips.
- ▶ **2125 16th Street East (Heritage Grove):** The commercial plaza is located in the southeast corner of 16th Street East and 20th Avenue East. The remaining plaza is proposed to accommodate a 4,500 sq. ft. restaurant, 35,000 sq. ft. grocery store, and 57,110 sq. ft. of commercial. Using the methodology contained in the December 2022 Traffic Opinion Letter⁵, the remaining uses are forecast to generate 216 AM peak hour trips and 423 PM peak hour trips.

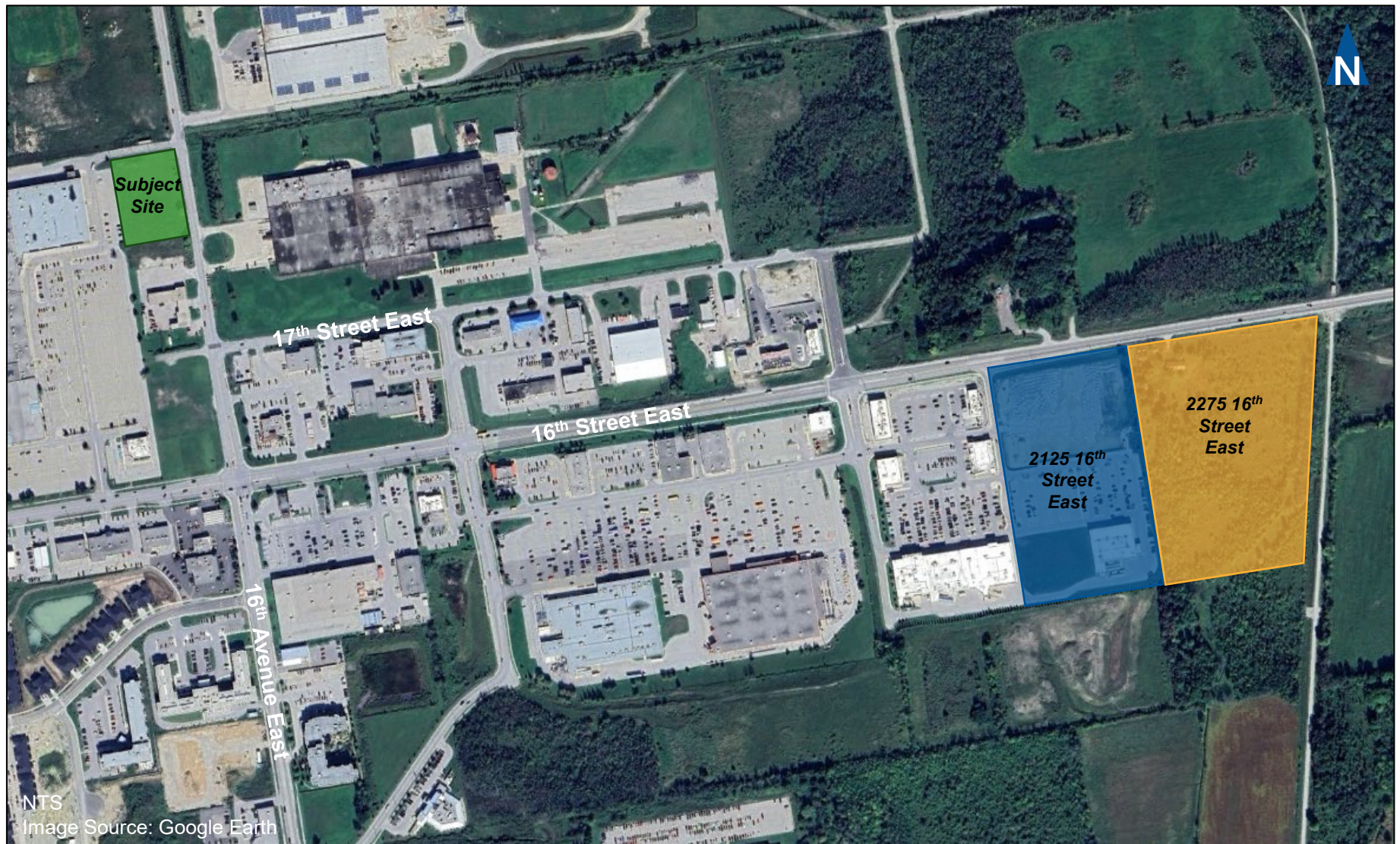
Figure 4.1 illustrates the location of the other area developments.

Appendix D contains the other area development traffic volumes.

⁴ Paradigm Transportation Solutions Limited, *2275 16th Street East Owen Sound Transportation Impact Study*, November 2022.

⁵ Crozier Consulting Engineers, *Traffic Opinion Letter 2125 16th Street East (Heritage Grove) Commercial Development City of Owen Sound*, December 2022.





Other Area Development Locations

1750 16th Avenue East, Owen Sound TIS
240408

Figure 4.1

4.2 Background Traffic Operations

Figure 4.2 illustrates the 2029 background traffic volumes, including road traffic growth and other area development traffic.

The 2029 background traffic volumes have been analyzed using the same methodology as under existing traffic conditions. Signal timings have not been optimized.

Table 4.1 summarizes the results of the 2029 background traffic operations. The results indicate that the study area intersections are forecast to operate with acceptable levels of service during the AM and PM peak hours.

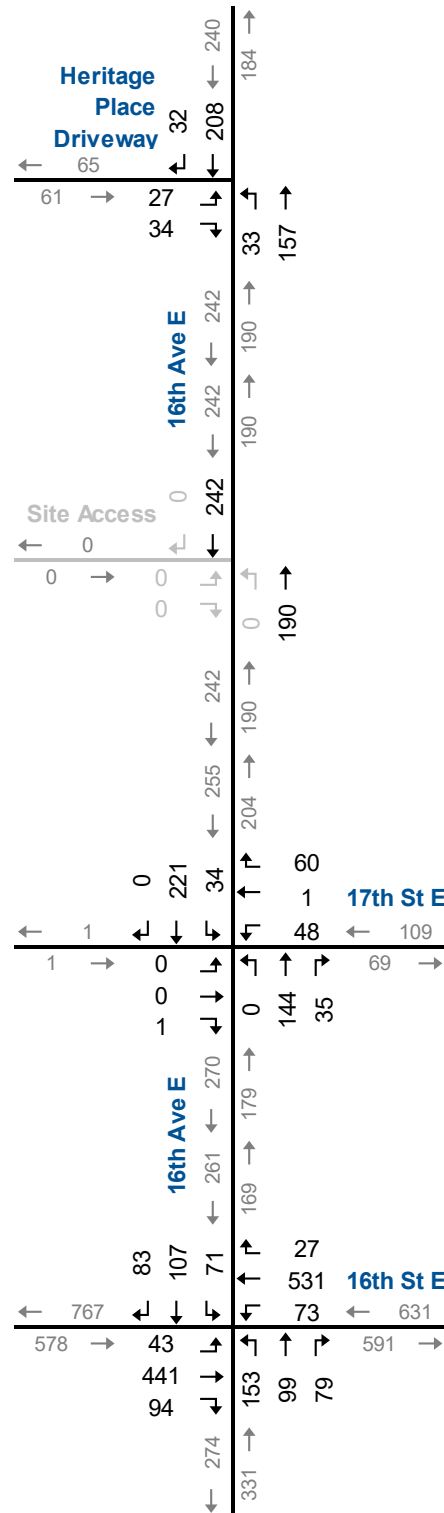
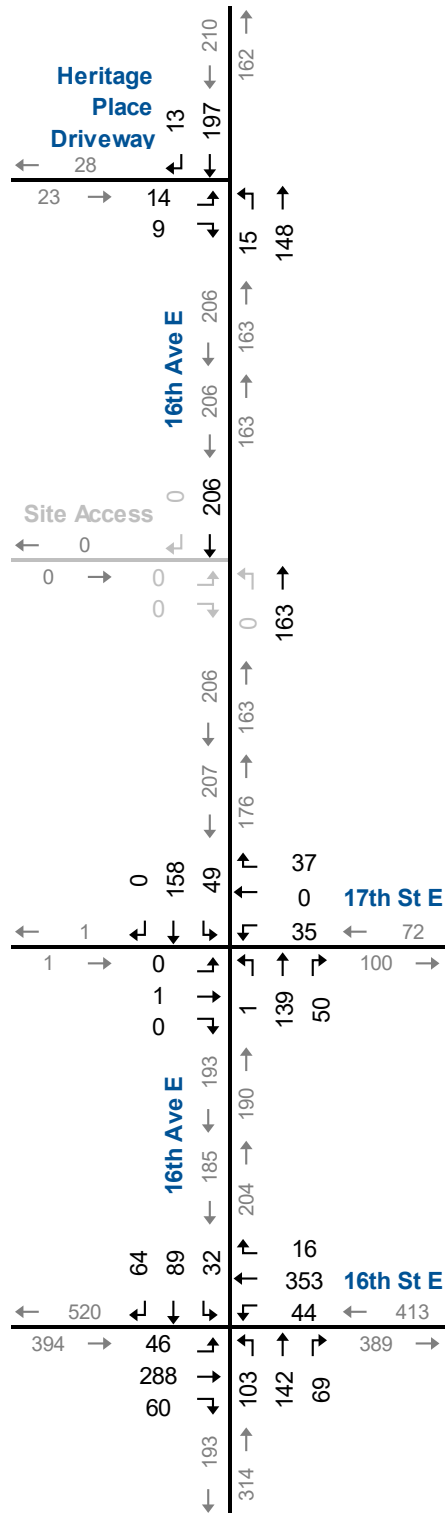
Appendix E contains the supporting detailed Synchro 11 reports.





AM Peak Hour

PM Peak Hour



NTS



Background Traffic Volumes

TABLE 4.1: BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	16th Avenue East & 16th Street East	TCS	LOS Delay V/C Q Stor. Avail.	A 9 0.09 9 30 21	B 15 0.26 33 - -	> > > > >	B 14	A 9 0.09 9 25 16	B 16 0.26 36 - -	> > > > >	B 15	C 21 0.31 24 35 11	B 18 0.30 22 - -	> > > > >	B 19	B 19 0.12 10 20 10	C 22 0.39 17 - -	> > > > >	C 22	B 17
	16th Avenue East & 17th Street East	TWSC	LOS Delay V/C Q Stor. Avail.	< < < < <	B 13 0.00 0 - -	> > > > >	B 13	B 12 0.07 2 35 33	A 9 0.04 1 - -	> > > > >	B 11	< < < < <	A 8 0.00 0 - -	> > > > >	A 0	< < < < <	A 8 0.04 1 - -	> > > > >	A 2	
	16th Avenue East & Heritage Place Driveway	TWSC	LOS Delay V/C Q	B 11 0.04 1	< < <	> > >	B 11					< < <	A 8 0.01 0		A 1		A 0 0.00 0	> > >	A 0	
PM Peak Hour	16th Avenue East & 16th Street East	TCS	LOS Delay V/C Q Stor. Avail.	B 11 0.12 10 30 20	B 19 0.43 57 - -	> > > > >	B 19	B 11 0.18 14 25 11	B 18 0.41 60 - -	> > > > >	B 17	C 22 0.41 34 35 1	B 18 0.28 18 - -	> > > > >	C 20	C 21 0.24 18 20 2	C 23 0.47 20 - -	> > > > >	C 23	B 19
	16th Avenue East & 17th Street East	TWSC	LOS Delay V/C Q Stor. Avail.	< < < < <	A 9 0.00 0 - -	> > > > >	A 9	B 12 0.10 2 35 33	A 9 0.07 2 - -	> > > > >	B 11	< < < < <	A 0 0.00 0 - -	> > > > >	A 0	< < < < <	A 8 0.03 1 - -	> > > > >	A 1	
	16th Avenue East & Heritage Place Driveway	TWSC	LOS Delay V/C Q	B 11 0.10 2	< < <	> > >	B 11					< < <	A 8 0.03 1		A 1		A 0 0.00 0	> > >	A 0	

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LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

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Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



4.3 Total Traffic Operations

Figure 4.3 illustrates the 2029 total traffic volumes, including trips generated by the proposed development.

The 2029 total traffic volumes have been analyzed using the same methodology as under existing and background traffic conditions. Signal timings have not been optimized.

Table 4.2 summarizes the results of the 2029 total traffic operations. The results indicate that the study area intersections are forecast to operate with acceptable levels of service during the AM and PM peak hours.

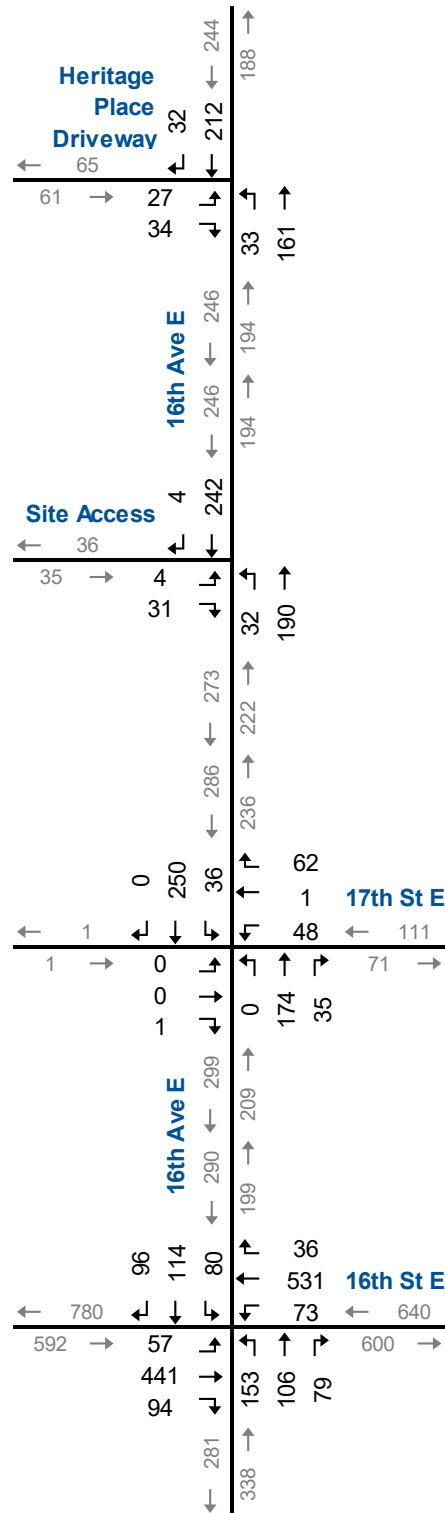
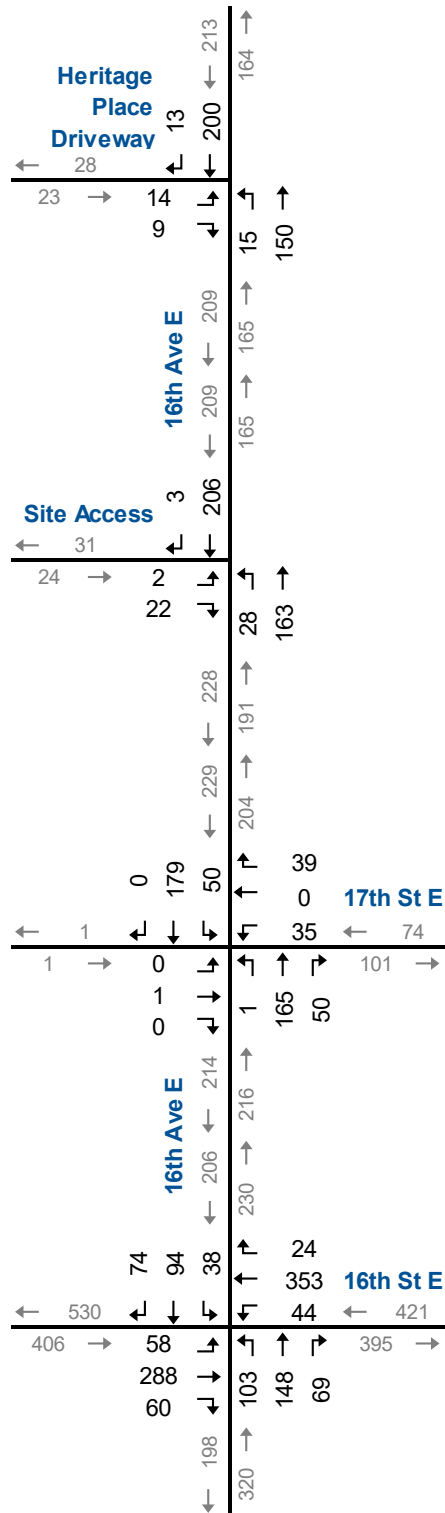
Appendix F contains the supporting detailed Synchro 11 reports.





AM Peak Hour

PM Peak Hour



NTS



Total Traffic Volumes

TABLE 4.2: TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall	
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
AM Peak Hour	16th Avenue East & 16th Street East	TCS	LOS Delay V/C Q Stor. Avail.	A 9 0.11 11 30 19	B 15 0.25 33 - -	> > > > >	B 14	A 9 0.09 9 25 16	B 17 0.28 37 - -	> > > > >	B 16	C 22 0.32 24 35 11	C 22 0.38 23 - -	> > > > >	C 22	B 20 0.14 11 20 9	C 22 0.43 18 - -	> > > > >	C 22	B 18	
	16th Avenue East & 17th Street East	TWSC	LOS Delay V/C Q Stor. Avail.	< < < < <	B 13 0.00 0 - -	> > > > >	B 13	B 13 0.07 2 35 33	A 9 0.05 1 - -	> > > > >	B 11	< < < < <	A 8 0.00 0 - -	> > > > >	A 0	< < < < <	A 8 0.04 1 - -	> > > > >	A 2		
	16th Avenue East & Heritage Place Driveway	TWSC	LOS Delay V/C Q	B 11 0.04 1	< < <	> > >	B 11					< < < <	A 8 0.01 0			A 1		A 0 0.00 0	> > >	A 0	
	16th Avenue East & Site Access	TWSC	LOS Delay V/C Q	A 10 0.03 1	< < <	> > >	A 10					< < < <	A 8 0.02 1			A 1		A 0 0.00 0	> > >	A 0	
PM Peak Hour	16th Avenue East & 16th Street East	TCS	LOS Delay V/C Q Stor. Avail.	B 11 0.16 12 30 18	B 20 0.43 58 - -	> > > > >	B 19	B 11 0.18 14 25 11	C 20 0.45 62 - -	> > > > >	B 19	C 22 0.42 34 35 1	B 19 0.30 19 - -	> > > > >	C 20	C 21 0.26 20 20 0	C 23 0.50 22 - -	> > > > >	C 22	B 20	
	16th Avenue East & 17th Street East	TWSC	LOS Delay V/C Q Stor. Avail.	< < < < <	A 9 0.00 0 - -	> > > > >	A 9	B 13 0.10 2 35 33	A 9 0.08 2 - -	> > > > >	B 11	< < < < <	A 0 0.00 0 - -	> > > > >	A 0	< < < < <	A 8 0.03 1 - -	> > > > >	A 1		
	16th Avenue East & Heritage Place Driveway	TWSC	LOS Delay V/C Q	B 11 0.10 3	< < <	> > >	B 11					< < < <	A 8 0.03 1			A 1		A 0 0.00 0	> > >	A 0	
	16th Avenue East & Site Access	TWSC	LOS Delay V/C Q	B 10 0.05 2	< < <	> > >	B 10					< < < <	A 8 0.03 1			A 1		A 0 0.00 0	> > >	A 0	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



4.4 Left-Turn Lanes

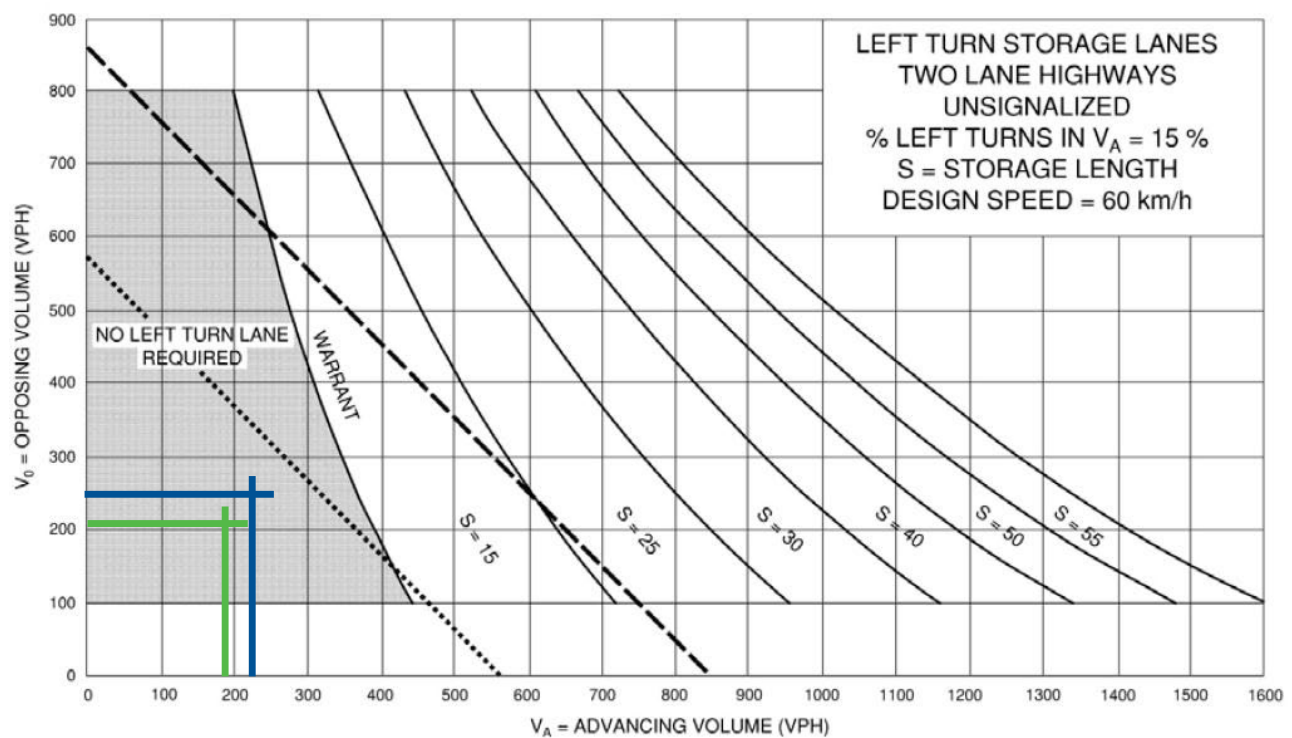
The Ministry of Transportation Design Supplement for the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads⁶ provides guidance on the assessment and/or need for auxiliary left-turn lanes.

Warrants have been calculated for northbound left-turns at the proposed site access on 16th Avenue East. The warrant was calculated using the nomographs for left-turn lanes on a two-lane undivided highway at an unsignalized intersection with a design speed of 60 km/h (10 km/h over the posted speed limit). Based on this criterion, a northbound left-turn lane is not warranted under total traffic conditions.

Figure 4.4 illustrates the warrant nomographs.

⁶ Ontario Ministry of Transportation, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads*, (Toronto: Queen's Printer for Ontario, 2020).





— AM Peak Hour — PM Peak Hour



Northbound Left-Turn Lane Warrants 16th Avenue East & Site Access

5 Transportation Plan

5.1 Transportation Master Plan

The *City of Owen Sound Transportation Master Plan (TMP)*⁷ intends to guide the transportation system throughout the city and facilitate the use of public transportation and active transportation modes.

The *TMP* recommends development applications consider pedestrian and bicycle needs. The requirement of bicycle parking on-site is informed through the *City's Zoning by Law*.

The subject development is proposing a bike rack with six spaces close to the main building. The *City of Owen Sound Zoning By-Law*⁸ requires one bicycle parking space per 20 guest rooms for hotel uses. For the 120 rooms proposed for the subject development, a total of 6 spaces is required. Therefore, the subject development meets the *Zoning By-Law* requirement and is consistent with the *TMP*.

The *TMP* indicates that bicycle routes are planned along 16th Avenue East south of the subject site and along 16th Street East. Bicycle parking on-site will further encourage the use of these proposed facilities.

To encourage active transportation modes, sidewalks are proposed on-site surrounding the building and a multi-use trail is proposed on the west side of 16th Street East within the existing right-of-way.

5.2 Trails Master Plan

The *City of Owen Sound Recreation Trails Master Plan*⁹ outlines policy and guiding principals related to trails within the City.

There are two trails located within two kilometres from the subject site. The Grey County CP Rail Trail is a former rail line which operates north-south between Owen Sound and Dundalk. The trail travels under 16th Avenue East between 20th Avenue East and 28th Avenue East, approximately 1.3 kilometres from the subject site.

A short segment of City trail travels between 19th Street East and Heritage Place Mall, approximately 250 metres from the subject site.

⁷ HDR & iTRANS, *City of Owen Sound Transportation Master Plan*, September 2010.

⁸ City of Owen Sound Zoning By-law 2010-078, § Section 5.

⁹ Owen Sound, *Recreation Trails Master Plan*, 2012.



To encourage and facilitate trail use within the City, which is the primary purpose of the *Trails Master Plan*, the subject development is proposing a bike rack with six spaces close to the main building entrance to meet the *Zoning By-Law* requirement as noted above in **Section 5.2**.

5.3 Official Plan

The policies contained in the *City of Owen Sound Official Plan* builds on the policies contained in the *TMP* and *Trails Master Plan* above. For new developments within the City, a comprehensive traffic analysis may be required which may identify improvements to the surrounding road and active transportation network. As identified in the *TMP*, developments should provide pedestrian and cycling facilities on-site. The purpose of this TIS is to identify and assess the potential traffic impact resulting from the proposed development, consistent with the *Official Plan* policy. In addition, bike parking spaces and sidewalks are proposed on-site, as identified above.

5.4 AODA

The *City's Site Plan Standards* outlines a requirement for barrier free parking and building accessibility, indicating that new and existing developments should follow to *The Accessibility for Ontarians with Disabilities Act*¹⁰. For a parking requirement between 101 and 200 parking spaces, the *Zoning By-Law* outlines a barrier free parking requirement of one space plus 3% of the total required parking on-site. This results in a requirement of six barrier free spaces.

A total of six barrier free parking spaces (three Type A and three Type B) are proposed near the main entrance on-site which meets the minimum *Zoning By-Law* requirement and is consistent with AODA standards. The barrier free parking spaces proposed on-site are flush to adjacent sidewalks which connects to the main building entrance. The Site Plan also proposes a barrier free drop-off area immediately in front of the main building entrance.

The Site Plan indicates that sidewalks with a width of 1.5 metres are proposed on-site surrounding the building, which is in compliance with AODA standards.

¹⁰ *Accessibility for Ontarians with Disabilities Act*, 2005.



6 Conclusions and Recommendations

6.1 Conclusions

Based on the investigations carried out, it is concluded that:

- ▶ **Existing Traffic Conditions:** The study area intersections are operating with acceptable levels of service.
- ▶ **Development Trip Generation:** The development is forecast to generate 55 and 71 trips during the AM and PM peak hours, respectively.
- ▶ **Background Traffic Conditions:** The study area intersections are forecast to operate with acceptable levels of service.
- ▶ **Total Traffic Conditions:** The study area intersections are forecast to operate with acceptable levels of service.
- ▶ **Auxiliary Left-Turn Lane:** A northbound left-turn lane is not warranted on 16th Avenue East at the proposed site access under forecast total traffic conditions.
- ▶ **Transportation Plan:** The development is consistent with the City's Transportation Master Plan, Trails Master Plan, Official Plan, and AODA, including provision of bicycle parking, sidewalks, barrier free parking spaces and barrier free access on-site, and the preparation of a TIS to identify impacts to the surrounding road network.

6.2 Recommendations

Based on the findings of this study, it is recommended that that the development be considered for approval as proposed.



Appendix A

Pre-Study Consultation



RE: (240408) 1750 16th Ave E, Owen Sound TIS Pre-Study Consultation

From Matt Pierog <mpierog@owensound.ca>

Date Thu 2024-08-29 11:35 AM

To Maddison Murch <mmurch@ptsl.com>

Cc Chris Webb <cwebb@owensound.ca>

Hi Maddison,

This location circled below is correct. As for the study intersections, there doesn't appear to be any road improvements planned (outlined below) that will impact the intersections geometry.

Thanks,

Matthew Pierog, P.Eng.
Engineering Services
City of Owen Sound
Bus: 519-376-4440 Ext. 3308

From: Maddison Murch <mmurch@ptsl.com>

Sent: Thursday, August 29, 2024 8:57 AM

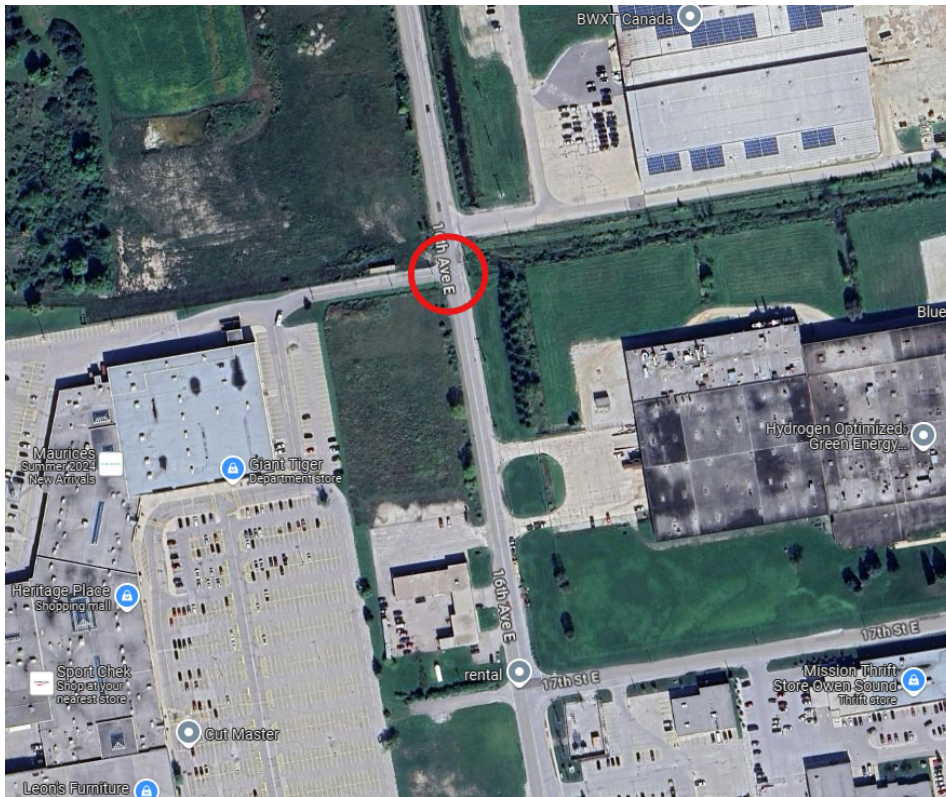
To: Matt Pierog <mpierog@owensound.ca>

Subject: RE: (240408) 1750 16th Ave E, Owen Sound TIS Pre-Study Consultation

Thanks Matt.

It doesn't appear that any of the noted road improvements will impact the intersection geometry at the study intersections. Can you confirm?

I also just want to confirm that the "Heritage Place Site Driveway onto 16th Ave E" is the following location circled in red?



Regards,

Maddison Murch, P.Eng.

Transportation Engineer



5A-150 Pinebush Road, Cambridge ON N1R 8J8

p: 519.896.3163 x205

m: 226.268.3697

Paradigm is operating on a 4-day workweek. Our offices are closed Fridays.

From: Matt Pierog <mpierog@owensound.ca>

Sent: Thursday, August 29, 2024 8:39 AM

To: Maddison Murch <mmurch@pts1.com>

Cc: Rajan Philips <rphilips@pts1.com>; Chris Webb <cwebb@owensound.ca>; ambika@realstreetadvisors.ca;
Trevor Ireton <Trevor.Ireton@grey.ca>; Sabine Robart <srobart@owensound.ca>; Jacklyn Iezzi
<jiezzi@owensound.ca>

Subject: RE: (240408) 1750 16th Ave E, Owen Sound TIS Pre-Study Consultation

Hi Maddison,

Please see Engineering Services comments in red below on the original August 9th, 2024 email:

Let me know if you have any further questions/concerns.

Thanks,

Matthew Pierog, P.Eng.
Engineering Services
City of Owen Sound
Bus: 519-376-4440 Ext. 3308

From: Maddison Murch <mmurch@ptsl.com>
Sent: Tuesday, August 27, 2024 12:38 PM
To: Matt Pierog <mpierog@owensound.ca>
Cc: Rajan Philips <rphilips@ptsl.com>; Chris Webb <cwebb@owensound.ca>; ambika@realstreetadvisors.ca;
Trevor Ireton <Trevor.Ireton@grey.ca>; Sabine Robart <srobart@owensound.ca>; Jacklyn Iezzi
<jiezzi@owensound.ca>
Subject: RE: (240408) 1750 16th Ave E, Owen Sound TIS Pre-Study Consultation

Hi Matt,

I'm just following up on the below TIS scope of work.

Please let us know if you have any comments or questions.

Regards,

Maddison Murch, P.Eng.
Transportation Engineer



5A-150 Pinebush Road, Cambridge ON N1R 8J8
p: 519.896.3163 x205
m: 226.268.3697

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From: Jacklyn Iezzi <jiezzi@owensound.ca>
Sent: Friday, August 9, 2024 10:13 AM
To: Maddison Murch <mmurch@ptsl.com>
Cc: Rajan Philips <rphilips@ptsl.com>; Chris Webb <cwebb@owensound.ca>; ambika@realstreetadvisors.ca;
Trevor Ireton <Trevor.Ireton@grey.ca>; Matt Pierog <mpierog@owensound.ca>; Sabine Robart
<srobart@owensound.ca>
Subject: RE: (240408) 1750 16th Ave E, Owen Sound TIS Pre-Study Consultation

Hi Maddison,

Dana Goetz has retired from the City. I've cc'd our new Engineering Technologist, Matthew Pierog, on this email to provide review and comment on the proposed TIS terms of reference. Matthew is away on vacation until Monday, August 12, 2024, however, will respond upon his return.

Kind regards,

Jacklyn Iezzi, ^{BES.}
Senior Planner

City of Owen Sound
808 2nd Ave. E., Owen Sound, ON N4K 2H4
519-376-4440 ext. 1261
jiezzi@owensound.ca
www.owensound.ca



From: Maddison Murch <mmurch@ptsl.com>
Sent: Friday, August 9, 2024 9:45 AM
To: Dana Goetz <dgoetz@owensound.ca>; Trevor Ireton <Trevor.Ireton@grey.ca>
Cc: Rajan Philips <rphilips@ptsl.com>; Chris Webb <cwebb@owensound.ca>; Jacklyn Iezzi <jiezzi@owensound.ca>; ambika@realstreetadvisors.ca
Subject: (240408) 1750 16th Ave E, Owen Sound TIS Pre-Study Consultation

Hi Dana and Trevor,

We have been retained to prepare the Transportation Impact Study (TIS) for the proposed development at 1750 16th Ave East in Owen Sound. The proposed development includes a 120-room hotel with vehicle access proposed via a single connection to 16th Ave E. A preliminary concept is attached.

Based on the above information, we have prepared the following scope of work for your review/approval:

- Weekday AM and PM peak hour of adjacent street for analysis.
- Study area intersections:
 - 16th Ave E and 17th Street E (unsignalized);
 - 16th Ave E and 16th Street E (CR 26) (signalized) **please provide signal timing plan; (see attached excel file)**
 - **Heritage Place Site Driveway onto 16th Ave E**
 - Site Driveway onto 16th Ave E.

Please confirm if summer counts (August) are acceptable. Yes.

- Horizon years: existing conditions and five years from TIS submission (2029).
- Background growth: 1% per annum as per the Grey County Official Plan.
- Planned road improvements: **please confirm.**
- **Here are the potential planned road improvements in the area that are associated with development within the 5-year horizon and related to the intersections analysis for the subject TIS:**
-

	2027	2028	2029	2030				
16th St E Widening - south side - Heritage	NEW ASSET			\$ 600,000				

Grove Centre RI/RO Driveway to 22nd Ave E								
16th St E Widening - north side - 18th Ave E to 150 m east of 22nd Ave E - 16th St E north side developer - Servicing Agreement	NEW ASSET					\$ 1,200,000		
17th St E New Road Construction - 20th Ave E south leg to 20th Ave E north leg - 17th St E North and South side Developers - Servicing Agreement	NEW ASSET					\$ 600,000		
20th Ave E New Road Construction - 17th St E to 20th St E - East and West side developers - Servicing Agreement	NEW ASSET							\$ 3,200,000

- Other area developments / build-outs anticipated in the 5-year planning horizon of the subject TIS:
 - 2275 16th Street E mixed-use development
 - Remaining Heritage Grove (2125 16th Street E) commercial units.

Please confirm any others. None.
- Trip generation: ITE Trip Generation 11th Edition – LUC 310 (Hotel)
- Trip distribution: existing travel patterns.
- Transportation Plan: We will review the development concept for general compliance with the following documents:
 - City's Official Plan
 - Transportation Master Plan
 - Trails Master Plan
 - AODA

Please let us know if you have any comments or questions.

Regards,

Maddison Murch, P.Eng.

Transportation Engineer



5A-150 Pinebush Road, Cambridge ON N1R 8J8

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e: mmurch@ptsl.com

w: www.ptsl.com

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RE: (240408) 1750 16th Ave E, Owen Sound TIS Pre-Study Consultation

From Trevor Ireton <Trevor.Ireton@grey.ca>

Date Mon 2024-08-12 7:16 AM

To Maddison Murch <mmurch@ptsl.com>; Matt Pierog <mpierog@owensound.ca>

Cc Rajan Philips <rphilips@ptsl.com>; Webb, Chris <cwebb@owensound.ca>; Jacklyn Iezzi <jiezzi@owensound.ca>; ambika@realstreetadvisors.ca <ambika@realstreetadvisors.ca>

Hello Maddison,

The County is good with the scope provided however, the proposed development is neither adjacent to a County road or impacting one in any significant manner. I will leave it to the City of Owen Sound Staff to provide the approval of the final scope for this development.

Regards,

Trevor Ireton, P.Eng.
Engineering Manager
Phone: +1 548-877-0896

 Grey County

From: Maddison Murch <mmurch@ptsl.com>

Sent: Friday, August 9, 2024 9:45 AM

To: Dana Goetz <dgoetz@owensound.ca>; Trevor Ireton <Trevor.Ireton@grey.ca>

Cc: Rajan Philips <rphilips@ptsl.com>; Webb, Chris <cwebb@owensound.ca>; Jacklyn Iezzi <jiezzi@owensound.ca>; ambika@realstreetadvisors.ca

Subject: (240408) 1750 16th Ave E, Owen Sound TIS Pre-Study Consultation

You don't often get email from mmurch@ptsl.com. [Learn why this is important](#)

[EXTERNAL EMAIL]

Hi Dana and Trevor,

We have been retained to prepare the Transportation Impact Study (TIS) for the proposed development at 1750 16th Ave East in Owen Sound. The proposed development includes a 120-room hotel with vehicle access proposed via a single connection to 16th Ave E. A preliminary concept is attached.

Based on the above information, we have prepared the following scope of work for your review/approval:

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 - 16th Ave E and 17th Street E (unsignalized);
 - 16th Ave E and 16th Street E (CR 26) (signalized) **please provide signal timing plan;**
 - Site Driveway onto 16th Ave E.

Please confirm if summer counts (August) are acceptable.

- Horizon years: existing conditions and five years from TIS submission (2029).
- Background growth: 1% per annum as per the Grey County Official Plan.
- Planned road improvements: **please confirm**.
- Other area developments:
 - 2275 16th Street E mixed-use development
 - Remaining Heritage Grove (2125 16th Street E) commercial units.**Please confirm any others.**
- Trip generation: ITE Trip Generation 11th Edition – LUC 310 (Hotel)
- Trip distribution: existing travel patterns.
- Transportation Plan: We will review the development concept for general compliance with the following documents:
 - City's Official Plan
 - Transportation Master Plan
 - Trails Master Plan
 - AODA

Please let us know if you have any comments or questions.

Regards,

Maddison Murch, P.Eng.

Transportation Engineer



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Appendix B

Existing Traffic Data





Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: 16th Avenue E & 16th Street E
Site Code: 240408
Start Date: 09/12/2024
Page No: 1

Turning Movement Data

Start Time	16th Street E Eastbound						16th Street E Westbound						16th Avenue E Northbound						16th Avenue E Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	4	21	5	0	0	30	3	18	3	0	0	24	7	23	14	0	2	44	4	10	13	0	1	27	125
7:15 AM	9	26	5	0	0	40	1	34	0	0	0	35	12	30	13	0	1	55	2	16	8	0	0	26	156
7:30 AM	9	28	12	0	0	49	7	38	1	0	0	46	6	30	13	0	1	49	0	16	13	0	2	29	173
7:45 AM	15	28	16	0	1	59	8	52	0	0	0	60	8	40	19	0	1	67	5	21	9	0	1	35	221
Hourly Total	37	103	38	0	1	178	19	142	4	0	0	165	33	123	59	0	5	215	11	63	43	0	4	117	675
8:00 AM	8	29	14	0	0	51	7	48	1	0	0	56	19	23	13	0	0	55	5	15	12	0	3	32	194
8:15 AM	11	39	13	0	0	63	10	58	7	0	0	75	27	27	16	0	0	70	3	29	15	0	0	47	255
8:30 AM	13	35	11	0	0	59	14	68	0	0	0	82	15	18	17	0	1	50	4	25	13	0	1	42	233
8:45 AM	18	50	18	0	1	86	7	64	3	0	0	74	27	43	18	0	1	88	12	26	17	0	1	55	303
Hourly Total	50	153	56	0	1	259	38	238	11	0	0	287	88	111	64	0	2	263	24	95	57	0	5	176	985
9:00 AM	14	48	19	0	2	81	12	54	3	0	0	69	25	34	15	0	0	74	4	19	18	0	0	41	265
9:15 AM	7	50	10	0	1	67	15	85	6	0	0	106	14	26	20	0	2	60	8	19	12	0	2	39	272
9:30 AM	5	48	10	0	1	63	8	62	3	0	0	73	32	32	13	0	2	77	6	21	14	0	1	41	254
9:45 AM	12	52	15	0	1	79	9	79	2	0	0	90	23	22	21	0	3	66	11	16	13	0	1	40	275
Hourly Total	38	198	54	0	5	290	44	280	14	0	0	338	94	114	69	0	7	277	29	75	57	0	4	161	1066
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	11	89	25	0	2	125	17	107	9	0	0	133	39	20	21	0	0	80	11	16	17	0	1	44	382
11:45 AM	19	86	28	0	2	133	12	103	10	0	0	125	48	29	23	0	3	100	10	22	19	0	0	51	409
Hourly Total	30	175	53	0	4	258	29	210	19	0	0	258	87	49	44	0	3	180	21	38	36	0	1	95	791
12:00 PM	15	95	24	0	2	134	17	109	7	0	0	133	44	39	27	0	4	110	13	31	20	0	1	64	441
12:15 PM	21	99	32	0	2	152	20	122	9	0	1	151	32	27	26	0	4	85	8	24	30	0	0	62	450
12:30 PM	14	85	19	0	0	118	16	109	3	0	0	128	40	23	30	0	1	93	5	17	15	0	0	37	376
12:45 PM	18	85	28	0	4	131	18	110	10	0	0	138	33	24	19	0	6	76	13	30	29	0	0	72	417
Hourly Total	68	364	103	0	8	535	71	450	29	0	1	550	149	113	102	0	15	364	39	102	94	0	1	235	1684
1:00 PM	17	78	18	0	2	113	18	104	5	0	1	127	32	19	19	0	3	70	8	25	23	0	1	56	366
1:15 PM	16	93	23	0	1	132	24	94	12	0	1	130	26	30	22	0	2	78	12	16	21	0	1	49	389
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	33	171	41	0	3	245	42	198	17	0	2	257	58	49	41	0	5	148	20	41	44	0	2	105	755
3:00 PM	7	75	26	0	3	108	18	91	4	0	1	113	43	24	26	0	9	93	8	20	16	0	1	44	358
3:15 PM	6	84	28	0	1	118	14	96	5	0	0	115	35	21	20	0	1	76	8	25	11	0	1	44	353
3:30 PM	8	78	20	0	2	106	12	91	2	0	0	105	35	24	23	0	5	82	6	20	11	0	3	37	330
3:45 PM	12	71	18	0	1	101	11	88	4	0	1	103	36	34	18	0	2	88	11	42	14	0	0	67	359
Hourly Total	33	308	92	0	7	433	55	366	15	0	2	436	149	103	87	0	17	339	33	107	52	0	5	192	1400
4:00 PM	11	68	21	0	2	100	22	102	8	0	0	132	50	24	17	0	6	91	26	26	18	0	2	70	393
4:15 PM	11	79	22	0	0	112	19	109	6	0	0	134	29	19	21	0	2	69	14	23	19	0	1	56	371

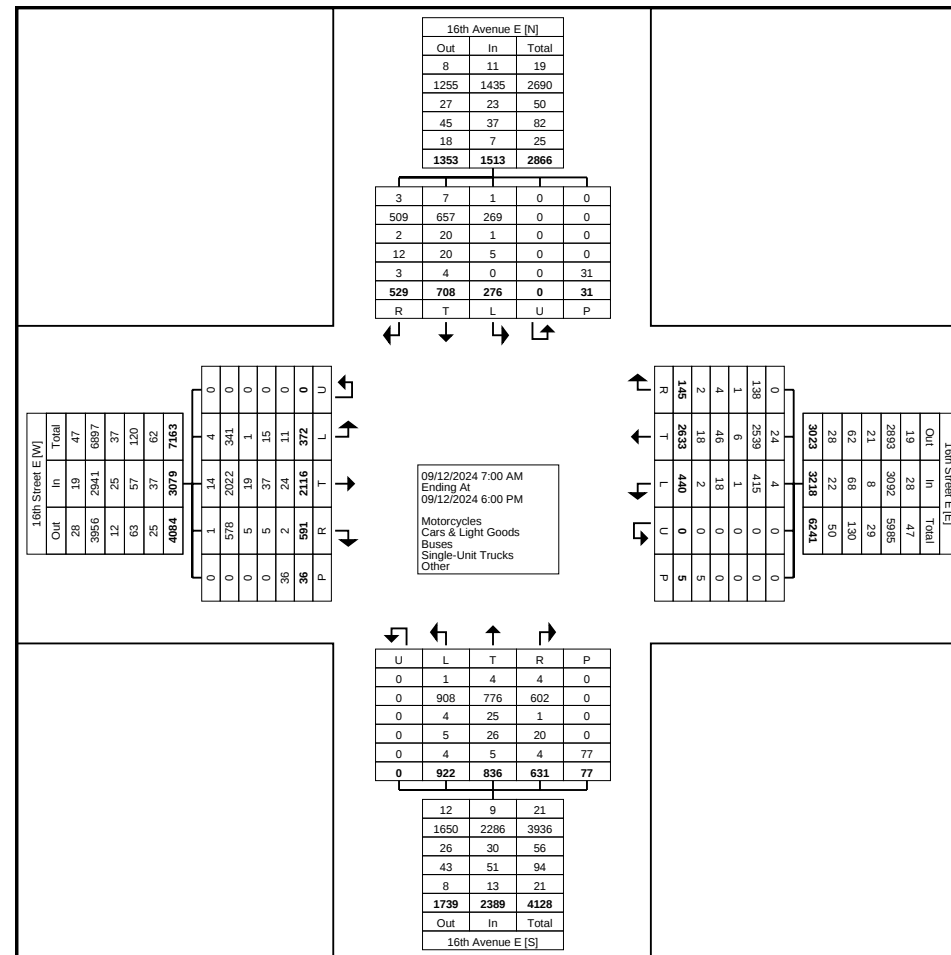
4:30 PM	12	82	23	0	1	117	15	107	6	0	0	128	28	30	19	0	3	77	14	35	21	0	2	70	392
4:45 PM	7	96	23	0	0	126	13	104	6	0	0	123	39	21	18	0	2	78	14	18	21	0	1	53	380
Hourly Total	41	325	89	0	3	455	69	422	26	0	0	517	146	94	75	0	13	315	68	102	79	0	6	249	1536
5:00 PM	12	81	14	0	0	107	13	91	0	0	0	104	36	30	19	0	2	85	14	29	27	0	3	70	366
5:15 PM	12	70	18	0	1	100	21	65	4	0	0	90	26	22	19	0	2	67	3	22	14	0	0	39	296
5:30 PM	10	95	19	0	1	124	20	84	3	0	0	107	25	13	29	0	3	67	4	24	9	0	0	37	335
5:45 PM	8	73	14	0	2	95	19	87	3	0	0	109	31	15	23	0	3	69	10	10	17	0	0	37	310
Hourly Total	42	319	65	0	4	426	73	327	10	0	0	410	118	80	90	0	10	288	31	85	67	0	3	183	1307
Grand Total	372	2116	591	0	36	3079	440	2633	145	0	5	3218	922	836	631	0	77	2389	276	708	529	0	31	1513	10199
Approach %	12.1	68.7	19.2	0.0	-	-	13.7	81.8	4.5	0.0	-	-	38.6	35.0	26.4	0.0	-	-	18.2	46.8	35.0	0.0	-	-	-
Total %	3.6	20.7	5.8	0.0	-	30.2	4.3	25.8	1.4	0.0	-	31.6	9.0	8.2	6.2	0.0	-	23.4	2.7	6.9	5.2	0.0	-	14.8	-
Motorcycles	4	14	1	0	-	19	4	24	0	0	-	28	1	4	4	0	-	9	1	7	3	0	-	11	67
% Motorcycles	1.1	0.7	0.2	-	-	0.6	0.9	0.9	0.0	-	-	0.9	0.1	0.5	0.6	-	-	0.4	0.4	1.0	0.6	-	-	0.7	0.7
Cars & Light Goods	341	2022	578	0	-	2941	415	2539	138	0	-	3092	908	776	602	0	-	2286	269	657	509	0	-	1435	9754
% Cars & Light Goods	91.7	95.6	97.8	-	-	95.5	94.3	96.4	95.2	-	-	96.1	98.5	92.8	95.4	-	-	95.7	97.5	92.8	96.2	-	-	94.8	95.6
Buses	1	19	5	0	-	25	1	6	1	0	-	8	4	25	1	0	-	30	1	20	2	0	-	23	86
% Buses	0.3	0.9	0.8	-	-	0.8	0.2	0.2	0.7	-	-	0.2	0.4	3.0	0.2	-	-	1.3	0.4	2.8	0.4	-	-	1.5	0.8
Single-Unit Trucks	15	37	5	0	-	57	18	46	4	0	-	68	5	26	20	0	-	51	5	20	12	0	-	37	213
% Single-Unit Trucks	4.0	1.7	0.8	-	-	1.9	4.1	1.7	2.8	-	-	2.1	0.5	3.1	3.2	-	-	2.1	1.8	2.8	2.3	-	-	2.4	2.1
Articulated Trucks	11	20	2	0	-	33	2	14	2	0	-	18	4	5	2	0	-	11	0	4	3	0	-	7	69
% Articulated Trucks	3.0	0.9	0.3	-	-	1.1	0.5	0.5	1.4	-	-	0.6	0.4	0.6	0.3	-	-	0.5	0.0	0.6	0.6	-	-	0.5	0.7
Bicycles on Road	0	4	0	0	-	4	0	4	0	0	-	4	0	0	2	0	-	2	0	0	0	0	-	0	10
% Bicycles on Road	0.0	0.2	0.0	-	-	0.1	0.0	0.2	0.0	-	-	0.1	0.0	0.0	0.3	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	5	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	11.1	-	-	-	-	-	20.0	-	-	-	-	-	6.5	-	-	-	-	-	9.7	-	-
Pedestrians	-	-	-	-	32	-	-	-	-	-	4	-	-	-	-	-	72	-	-	-	-	-	28	-	-
% Pedestrians	-	-	-	-	88.9	-	-	-	-	-	80.0	-	-	-	-	-	93.5	-	-	-	-	-	90.3	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: 16th Avenue E & 16th Street E
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Turning Movement Data Plot



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: 16th Avenue E & 16th Street E
Site Code: 240408
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Turning Movement Peak Hour Data (8:45 AM)

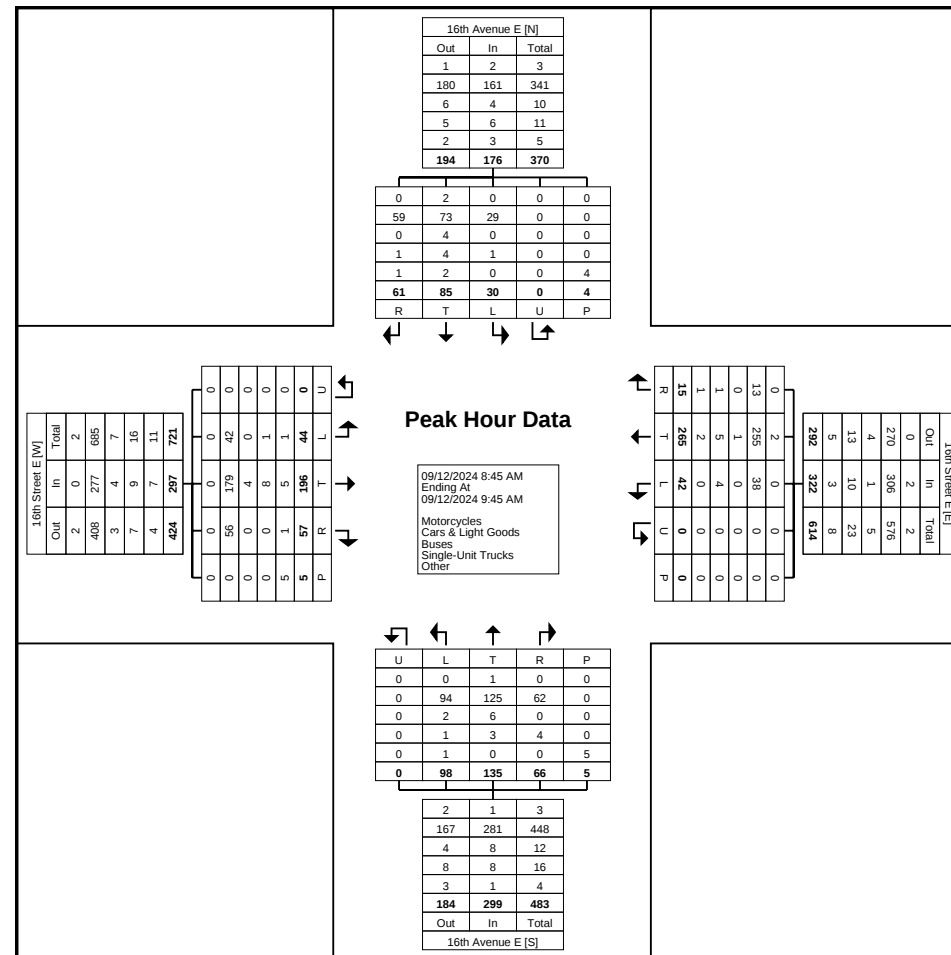
Start Time	16th Street E Eastbound						16th Street E Westbound						16th Avenue E Northbound						16th Avenue E Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:45 AM	18	50	18	0	1	86	7	64	3	0	0	74	27	43	18	0	1	88	12	26	17	0	1	55	303
9:00 AM	14	48	19	0	2	81	12	54	3	0	0	69	25	34	15	0	0	74	4	19	18	0	0	41	265
9:15 AM	7	50	10	0	1	67	15	85	6	0	0	106	14	26	20	0	2	60	8	19	12	0	2	39	272
9:30 AM	5	48	10	0	1	63	8	62	3	0	0	73	32	32	13	0	2	77	6	21	14	0	1	41	254
Total	44	196	57	0	5	297	42	265	15	0	0	322	98	135	66	0	5	299	30	85	61	0	4	176	1094
Approach %	14.8	66.0	19.2	0.0	-	-	13.0	82.3	4.7	0.0	-	-	32.8	45.2	22.1	0.0	-	-	17.0	48.3	34.7	0.0	-	-	-
Total %	4.0	17.9	5.2	0.0	-	27.1	3.8	24.2	1.4	0.0	-	29.4	9.0	12.3	6.0	0.0	-	27.3	2.7	7.8	5.6	0.0	-	16.1	-
PHF	0.611	0.980	0.750	0.000	-	0.863	0.700	0.779	0.625	0.000	-	0.759	0.766	0.785	0.825	0.000	-	0.849	0.625	0.817	0.847	0.000	-	0.800	0.903
Motorcycles	0	0	0	0	-	0	0	2	0	0	-	2	0	1	0	0	-	1	0	2	0	0	-	2	5
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.8	0.0	-	-	0.6	0.0	0.7	0.0	-	-	0.3	0.0	2.4	0.0	-	-	1.1	0.5
Cars & Light Goods	42	179	56	0	-	277	38	255	13	0	-	306	94	125	62	0	-	281	29	73	59	0	-	161	1025
% Cars & Light Goods	95.5	91.3	98.2	-	-	93.3	90.5	96.2	86.7	-	-	95.0	95.9	92.6	93.9	-	-	94.0	96.7	85.9	96.7	-	-	91.5	93.7
Buses	0	4	0	0	-	4	0	1	0	0	-	1	2	6	0	0	-	8	0	4	0	0	-	4	17
% Buses	0.0	2.0	0.0	-	-	1.3	0.0	0.4	0.0	-	-	0.3	2.0	4.4	0.0	-	-	2.7	0.0	4.7	0.0	-	-	2.3	1.6
Single-Unit Trucks	1	8	0	0	-	9	4	5	1	0	-	10	1	3	4	0	-	8	1	4	1	0	-	6	33
% Single-Unit Trucks	2.3	4.1	0.0	-	-	3.0	9.5	1.9	6.7	-	-	3.1	1.0	2.2	6.1	-	-	2.7	3.3	4.7	1.6	-	-	3.4	3.0
Articulated Trucks	1	4	1	0	-	6	0	2	1	0	-	3	1	0	0	0	-	1	0	2	1	0	-	3	13
% Articulated Trucks	2.3	2.0	1.8	-	-	2.0	0.0	0.8	6.7	-	-	0.9	1.0	0.0	0.0	-	-	0.3	0.0	2.4	1.6	-	-	1.7	1.2
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.5	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	20.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	25.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	80.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	75.0	-	-



Paradigm Transportation Solutions Limited
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Count Name: 16th Avenue E & 16th Street E
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Turning Movement Peak Hour Data (12:00 PM)

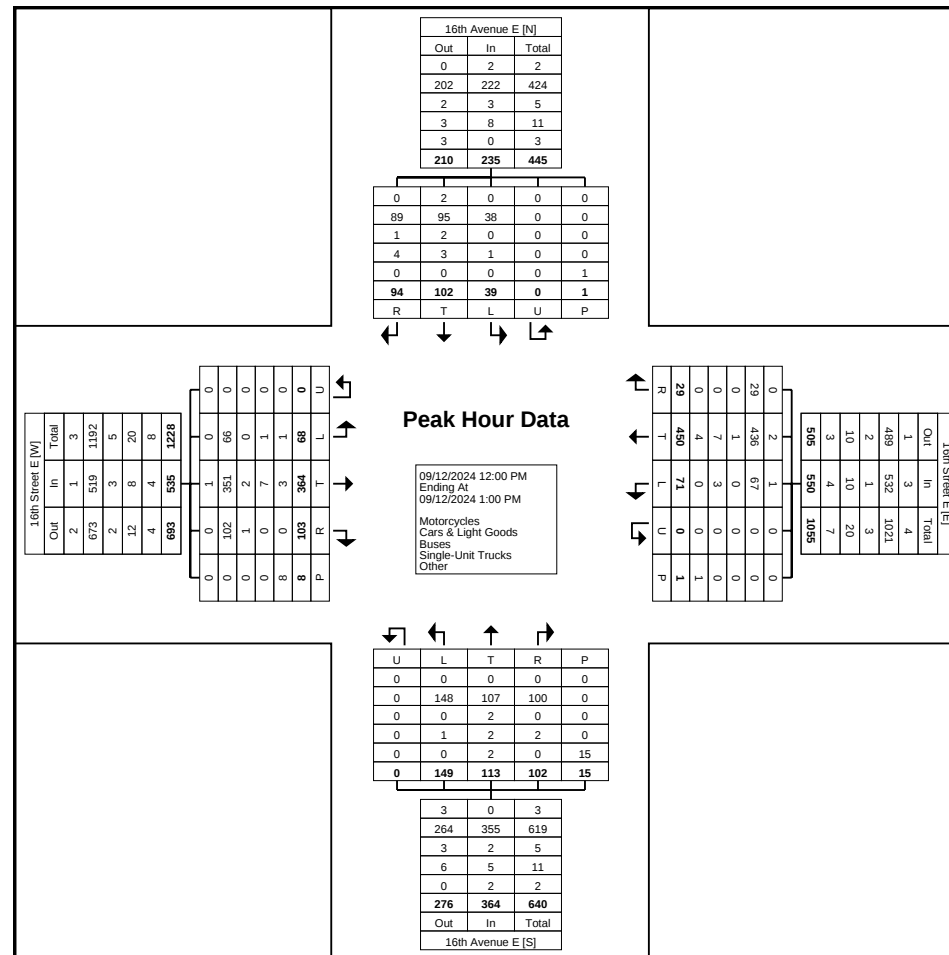
Start Time	16th Street E Eastbound						16th Street E Westbound						16th Avenue E Northbound						16th Avenue E Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:00 PM	15	95	24	0	2	134	17	109	7	0	0	133	44	39	27	0	4	110	13	31	20	0	1	64	441
12:15 PM	21	99	32	0	2	152	20	122	9	0	1	151	32	27	26	0	4	85	8	24	30	0	0	62	450
12:30 PM	14	85	19	0	0	118	16	109	3	0	0	128	40	23	30	0	1	93	5	17	15	0	0	37	376
12:45 PM	18	85	28	0	4	131	18	110	10	0	0	138	33	24	19	0	6	76	13	30	29	0	0	72	417
Total	68	364	103	0	8	535	71	450	29	0	1	550	149	113	102	0	15	364	39	102	94	0	1	235	1684
Approach %	12.7	68.0	19.3	0.0	-	-	12.9	81.8	5.3	0.0	-	-	40.9	31.0	28.0	0.0	-	-	16.6	43.4	40.0	0.0	-	-	-
Total %	4.0	21.6	6.1	0.0	-	31.8	4.2	26.7	1.7	0.0	-	32.7	8.8	6.7	6.1	0.0	-	21.6	2.3	6.1	5.6	0.0	-	14.0	-
PHF	0.810	0.919	0.805	0.000	-	0.880	0.888	0.922	0.725	0.000	-	0.911	0.847	0.724	0.850	0.000	-	0.827	0.750	0.823	0.783	0.000	-	0.816	0.936
Motorcycles	0	1	0	0	-	1	1	2	0	0	-	3	0	0	0	0	-	0	0	2	0	0	-	2	6
% Motorcycles	0.0	0.3	0.0	-	-	0.2	1.4	0.4	0.0	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.0	2.0	0.0	-	-	0.9	0.4
Cars & Light Goods	66	351	102	0	-	519	67	436	29	0	-	532	148	107	100	0	-	355	38	95	89	0	-	222	1628
% Cars & Light Goods	97.1	96.4	99.0	-	-	97.0	94.4	96.9	100.0	-	-	96.7	99.3	94.7	98.0	-	-	97.5	97.4	93.1	94.7	-	-	94.5	96.7
Buses	0	2	1	0	-	3	0	1	0	0	-	1	0	2	0	0	-	2	0	2	1	0	-	3	9
% Buses	0.0	0.5	1.0	-	-	0.6	0.0	0.2	0.0	-	-	0.2	0.0	1.8	0.0	-	-	0.5	0.0	2.0	1.1	-	-	1.3	0.5
Single-Unit Trucks	1	7	0	0	-	8	3	7	0	0	-	10	1	2	2	0	-	5	1	3	4	0	-	8	31
% Single-Unit Trucks	1.5	1.9	0.0	-	-	1.5	4.2	1.6	0.0	-	-	1.8	0.7	1.8	2.0	-	-	1.4	2.6	2.9	4.3	-	-	3.4	1.8
Articulated Trucks	1	3	0	0	-	4	0	4	0	0	-	4	0	2	0	0	-	2	0	0	0	0	-	0	10
% Articulated Trucks	1.5	0.8	0.0	-	-	0.7	0.0	0.9	0.0	-	-	0.7	0.0	1.8	0.0	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	25.0	-	-	-	-	-	0.0	-	-	-	-	-	6.7	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	1	-	-	-	-	-	14	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	75.0	-	-	-	-	-	100.0	-	-	-	-	-	93.3	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Turning Movement Peak Hour Data Plot (12:00 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: 16th Avenue E & 16th Street E
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Turning Movement Peak Hour Data (4:00 PM)

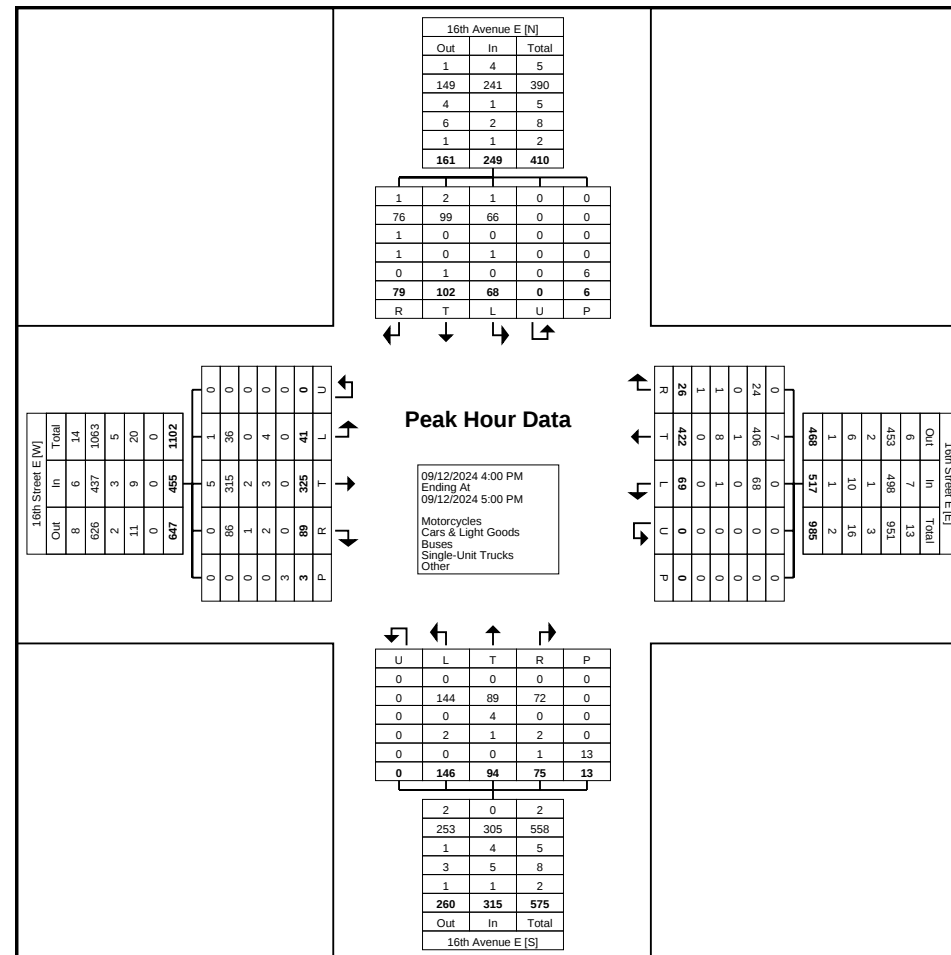
Start Time	16th Street E Eastbound						16th Street E Westbound						16th Avenue E Northbound						16th Avenue E Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:00 PM	11	68	21	0	2	100	22	102	8	0	0	132	50	24	17	0	6	91	26	26	18	0	2	70	393
4:15 PM	11	79	22	0	0	112	19	109	6	0	0	134	29	19	21	0	2	69	14	23	19	0	1	56	371
4:30 PM	12	82	23	0	1	117	15	107	6	0	0	128	28	30	19	0	3	77	14	35	21	0	2	70	392
4:45 PM	7	96	23	0	0	126	13	104	6	0	0	123	39	21	18	0	2	78	14	18	21	0	1	53	380
Total	41	325	89	0	3	455	69	422	26	0	0	517	146	94	75	0	13	315	68	102	79	0	6	249	1536
Approach %	9.0	71.4	19.6	0.0	-	-	13.3	81.6	5.0	0.0	-	-	46.3	29.8	23.8	0.0	-	-	27.3	41.0	31.7	0.0	-	-	-
Total %	2.7	21.2	5.8	0.0	-	29.6	4.5	27.5	1.7	0.0	-	33.7	9.5	6.1	4.9	0.0	-	20.5	4.4	6.6	5.1	0.0	-	16.2	-
PHF	0.854	0.846	0.967	0.000	-	0.903	0.784	0.968	0.813	0.000	-	0.965	0.730	0.783	0.893	0.000	-	0.865	0.654	0.729	0.940	0.000	-	0.889	0.977
Motorcycles	1	5	0	0	-	6	0	7	0	0	-	7	0	0	0	0	-	0	1	2	1	0	-	4	17
% Motorcycles	2.4	1.5	0.0	-	-	1.3	0.0	1.7	0.0	-	-	1.4	0.0	0.0	0.0	-	-	0.0	1.5	2.0	1.3	-	-	1.6	1.1
Cars & Light Goods	36	315	86	0	-	437	68	406	24	0	-	498	144	89	72	0	-	305	66	99	76	0	-	241	1481
% Cars & Light Goods	87.8	96.9	96.6	-	-	96.0	98.6	96.2	92.3	-	-	96.3	98.6	94.7	96.0	-	-	96.8	97.1	97.1	96.2	-	-	96.8	96.4
Buses	0	2	1	0	-	3	0	1	0	0	-	1	0	4	0	0	-	4	0	0	1	0	-	1	9
% Buses	0.0	0.6	1.1	-	-	0.7	0.0	0.2	0.0	-	-	0.2	0.0	4.3	0.0	-	-	1.3	0.0	0.0	1.3	-	-	0.4	0.6
Single-Unit Trucks	4	3	2	0	-	9	1	8	1	0	-	10	2	1	2	0	-	5	1	0	1	0	-	2	26
% Single-Unit Trucks	9.8	0.9	2.2	-	-	2.0	1.4	1.9	3.8	-	-	1.9	1.4	1.1	2.7	-	-	1.6	1.5	0.0	1.3	-	-	0.8	1.7
Articulated Trucks	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	2
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	3.8	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	1.0	0.0	-	-	0.4	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.3	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	7.7	-	-	-	-	-	33.3	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	12	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	92.3	-	-	-	-	-	66.7	-	-



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Turning Movement Data

Start Time	17th Street E Eastbound						17th Street E Westbound						16th Avenue E Northbound						16th Avenue E Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	0	0	0	0	0	0	0	3	0	0	3	0	26	5	0	0	31	3	26	0	0	0	29	63
7:15 AM	0	1	0	0	0	1	4	1	2	0	0	7	0	35	5	0	0	40	4	23	0	0	0	27	75
7:30 AM	0	0	0	0	0	0	6	0	4	0	0	10	0	31	9	0	0	40	4	25	0	0	0	29	79
7:45 AM	0	0	0	0	0	0	6	0	7	0	0	13	0	38	17	0	1	55	5	29	0	0	0	34	102
Hourly Total	0	1	0	0	0	1	16	1	16	0	0	33	0	130	36	0	1	166	16	103	0	0	0	119	319
8:00 AM	0	0	0	0	0	0	6	0	3	0	0	9	0	18	14	1	0	33	9	26	0	0	0	35	77
8:15 AM	0	0	0	0	0	0	7	0	5	0	0	12	0	27	13	0	0	40	16	38	0	0	0	54	106
8:30 AM	0	1	0	0	0	1	5	0	11	0	0	16	0	27	6	0	0	33	10	41	0	0	0	51	101
8:45 AM	0	0	0	0	0	0	11	0	8	0	0	19	0	42	15	0	0	57	7	43	0	0	0	50	126
Hourly Total	0	1	0	0	0	1	29	0	27	0	0	56	0	114	48	1	0	163	42	148	0	0	0	190	410
9:00 AM	0	0	0	0	2	0	10	0	11	0	0	21	1	36	14	1	0	52	14	28	0	0	0	42	115
9:15 AM	0	0	0	0	0	0	8	0	13	0	0	21	0	30	5	0	1	35	6	31	0	0	0	37	93
9:30 AM	0	0	0	0	0	0	5	0	14	0	0	19	0	35	6	0	0	41	9	36	0	0	0	45	105
9:45 AM	0	0	0	0	0	0	5	0	9	0	0	14	0	29	8	0	0	37	13	34	0	0	0	47	98
Hourly Total	0	0	0	0	2	0	28	0	47	0	0	75	1	130	33	1	1	165	42	129	0	0	0	171	411
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	0	0	0	0	0	0	8	0	20	0	0	28	0	32	9	0	0	41	15	33	0	0	0	48	117
11:45 AM	0	0	0	0	0	0	10	0	16	0	0	26	0	46	12	0	1	58	16	41	0	0	0	57	141
Hourly Total	0	0	0	0	0	0	18	0	36	0	0	54	0	78	21	0	1	99	31	74	0	0	0	105	258
12:00 PM	0	0	0	0	0	0	18	0	16	0	0	34	0	43	16	0	0	59	19	44	0	0	0	63	156
12:15 PM	0	1	0	0	0	1	23	0	18	0	0	41	0	41	14	0	0	55	10	37	0	0	0	47	144
12:30 PM	0	0	1	0	0	1	6	1	19	0	0	26	1	33	6	0	0	40	14	34	0	0	0	48	115
12:45 PM	0	0	1	0	0	1	17	0	17	0	0	34	0	41	9	0	0	50	10	49	0	0	0	59	144
Hourly Total	0	1	2	0	0	3	64	1	70	0	0	135	1	158	45	0	0	204	53	164	0	0	0	217	559
1:00 PM	0	0	0	0	0	0	10	1	18	0	1	29	0	29	11	0	0	40	14	38	0	0	0	52	121
1:15 PM	0	0	1	0	3	1	14	0	16	0	0	30	0	46	9	0	2	55	8	36	0	0	2	44	130
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	1	0	3	1	24	1	34	0	1	59	0	75	20	0	2	95	22	74	0	0	2	96	251
3:00 PM	0	0	0	0	0	0	9	1	23	0	0	33	0	31	6	0	0	37	13	34	0	0	1	47	117
3:15 PM	0	1	0	0	0	1	10	0	16	0	0	26	0	26	6	0	0	32	17	34	0	0	0	51	110
3:30 PM	0	0	0	0	0	0	8	0	13	0	0	21	0	29	3	0	0	32	8	28	0	0	0	36	89
3:45 PM	0	0	0	0	0	0	12	1	19	0	0	32	0	35	12	0	0	47	10	55	0	0	0	65	144
Hourly Total	0	1	0	0	0	1	39	2	71	0	0	112	0	121	27	0	0	148	48	151	0	0	1	199	460
4:00 PM	0	0	0	0	0	0	13	0	19	0	1	32	0	37	3	0	0	40	6	56	0	0	0	62	134
4:15 PM	0	0	1	0	0	1	13	0	7	0	0	20	0	28	8	0	0	36	8	41	0	0	0	49	106

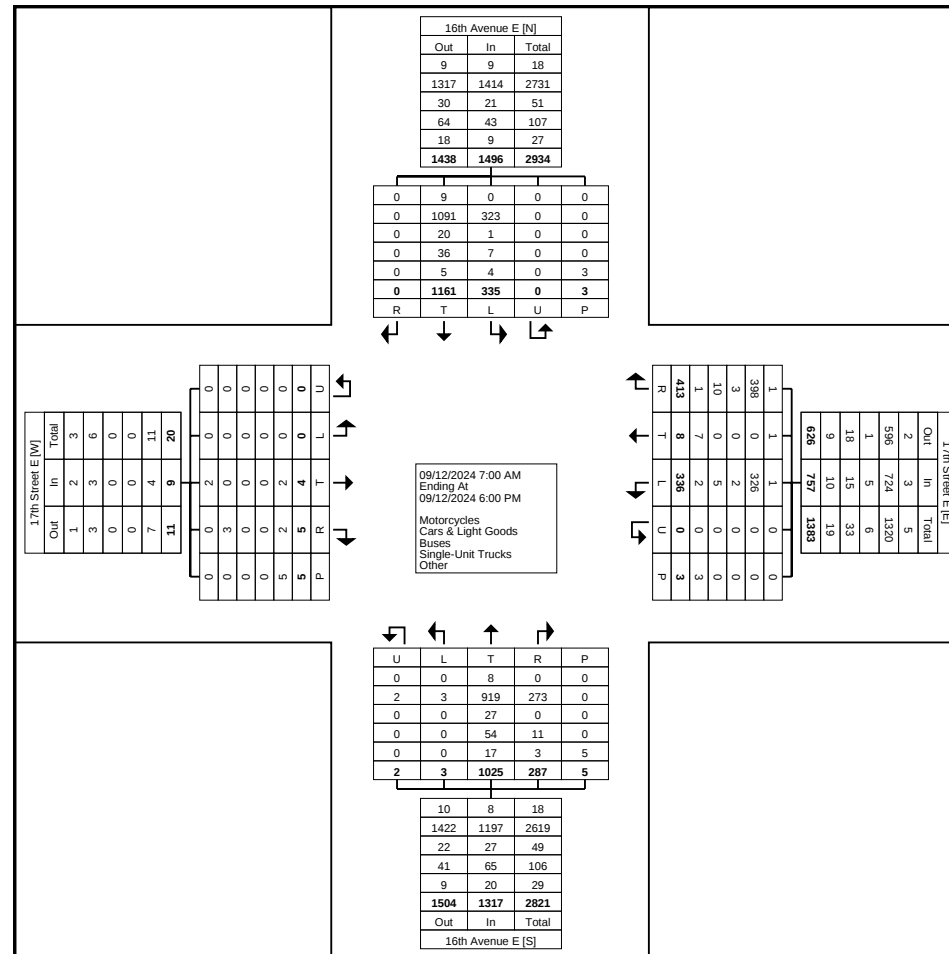
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4:45 PM	0	0	0	0	0	0	12	1	15	0	0	28	0	25	4	0	0	29	13	45	0	0	0	58	115
Hourly Total	0	0	1	0	0	1	46	1	53	0	2	100	0	127	25	0	0	152	35	200	0	0	0	235	488
5:00 PM	0	0	0	0	0	0	26	1	17	0	0	44	0	32	16	0	0	48	14	45	0	0	0	59	151
5:15 PM	0	0	0	0	0	0	18	0	19	0	0	37	0	25	7	0	0	32	13	24	0	0	0	37	106
5:30 PM	0	0	0	0	0	0	13	0	11	0	0	24	0	22	5	0	0	27	8	25	0	0	0	33	84
5:45 PM	0	0	1	0	0	1	15	1	12	0	0	28	1	13	4	0	0	18	11	24	0	0	0	35	82
Hourly Total	0	0	1	0	0	1	72	2	59	0	0	133	1	92	32	0	0	125	46	118	0	0	0	164	423
Grand Total	0	4	5	0	5	9	336	8	413	0	3	757	3	1025	287	2	5	1317	335	1161	0	0	3	1496	3579
Approach %	0.0	44.4	55.6	0.0	-	-	44.4	1.1	54.6	0.0	-	-	0.2	77.8	21.8	0.2	-	-	22.4	77.6	0.0	0.0	-	-	-
Total %	0.0	0.1	0.1	0.0	-	0.3	9.4	0.2	11.5	0.0	-	21.2	0.1	28.6	8.0	0.1	-	36.8	9.4	32.4	0.0	0.0	-	41.8	-
Motorcycles	0	2	0	0	-	2	1	1	1	0	-	3	0	8	0	0	-	8	0	9	0	0	-	9	22
% Motorcycles	-	50.0	0.0	-	-	22.2	0.3	12.5	0.2	-	-	0.4	0.0	0.8	0.0	0.0	-	0.6	0.0	0.8	-	-	-	0.6	0.6
Cars & Light Goods	0	0	3	0	-	3	326	0	398	0	-	724	3	919	273	2	-	1197	323	1091	0	0	-	1414	3338
% Cars & Light Goods	-	0.0	60.0	-	-	33.3	97.0	0.0	96.4	-	-	95.6	100.0	89.7	95.1	100.0	-	90.9	96.4	94.0	-	-	-	94.5	93.3
Buses	0	0	0	0	-	0	2	0	3	0	-	5	0	27	0	0	-	27	1	20	0	0	-	21	53
% Buses	-	0.0	0.0	-	-	0.0	0.6	0.0	0.7	-	-	0.7	0.0	2.6	0.0	0.0	-	2.1	0.3	1.7	-	-	-	1.4	1.5
Single-Unit Trucks	0	0	0	0	-	0	5	0	10	0	-	15	0	54	11	0	-	65	7	36	0	0	-	43	123
% Single-Unit Trucks	-	0.0	0.0	-	-	0.0	1.5	0.0	2.4	-	-	2.0	0.0	5.3	3.8	0.0	-	4.9	2.1	3.1	-	-	-	2.9	3.4
Articulated Trucks	0	0	0	0	-	0	1	0	1	0	-	2	0	16	2	0	-	18	1	5	0	0	-	6	26
% Articulated Trucks	-	0.0	0.0	-	-	0.0	0.3	0.0	0.2	-	-	0.3	0.0	1.6	0.7	0.0	-	1.4	0.3	0.4	-	-	-	0.4	0.7
Bicycles on Road	0	2	2	0	-	4	1	7	0	0	-	8	0	1	1	0	-	2	3	0	0	0	-	3	17
% Bicycles on Road	-	50.0	40.0	-	-	44.4	0.3	87.5	0.0	-	-	1.1	0.0	0.1	0.3	0.0	-	0.2	0.9	0.0	-	-	-	0.2	0.5
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	20.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	3	-	-	-	-	-	5	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	80.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cdowness@pts1.com

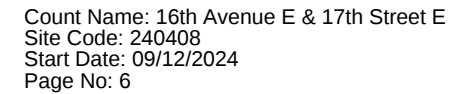
Count Name: 16th Avenue E & 17th Street E
Site Code: 240408
Start Date: 09/12/2024
Page No: 3



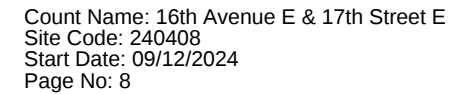
Turning Movement Data Plot

Start Time	17th Street E Eastbound						17th Street E Westbound						16th Avenue E Northbound						16th Avenue E Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:15 AM	0	0	0	0	0	0	7	0	5	0	0	12	0	27	13	0	0	40	16	38	0	0	0	54	106
8:30 AM	0	1	0	0	0	1	5	0	11	0	0	16	0	27	6	0	0	33	10	41	0	0	0	51	101
8:45 AM	0	0	0	0	0	0	11	0	8	0	0	19	0	42	15	0	0	57	7	43	0	0	0	50	126
9:00 AM	0	0	0	0	2	0	10	0	11	0	0	21	1	36	14	1	0	52	14	28	0	0	0	42	115
Total	0	1	0	0	2	1	33	0	35	0	0	68	1	132	48	1	0	182	47	150	0	0	0	197	448
Approach %	0.0	100.0	0.0	0.0	-	-	48.5	0.0	51.5	0.0	-	-	0.5	72.5	26.4	0.5	-	-	23.9	76.1	0.0	0.0	-	-	-
Total %	0.0	0.2	0.0	0.0	-	0.2	7.4	0.0	7.8	0.0	-	15.2	0.2	29.5	10.7	0.2	-	40.6	10.5	33.5	0.0	0.0	-	44.0	-
PHF	0.000	0.250	0.000	0.000	-	0.250	0.750	0.000	0.795	0.000	-	0.810	0.250	0.786	0.800	0.250	-	0.798	0.734	0.872	0.000	0.000	-	0.912	0.889
Motorcycles	0	1	0	0	-	1	1	0	1	0	-	2	0	1	0	0	-	1	0	1	0	0	-	1	5
% Motorcycles	-	100.0	-	-	-	100.0	3.0	-	2.9	-	-	2.9	0.0	0.8	0.0	0.0	-	0.5	0.0	0.7	-	-	-	0.5	1.1
Cars & Light Goods	0	0	0	0	-	0	32	0	32	0	-	64	1	121	45	1	-	168	46	136	0	0	-	182	414
% Cars & Light Goods	-	0.0	-	-	-	0.0	97.0	-	91.4	-	-	94.1	100.0	91.7	93.8	100.0	-	92.3	97.9	90.7	-	-	-	92.4	92.4
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	7	0	0	-	7	0	9	0	0	-	9	16
% Buses	-	0.0	-	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	5.3	0.0	0.0	-	3.8	0.0	6.0	-	-	-	4.6	3.6
Single-Unit Trucks	0	0	0	0	-	0	0	0	2	0	-	2	0	3	2	0	-	5	1	4	0	0	-	5	12
% Single-Unit Trucks	-	0.0	-	-	-	0.0	0.0	-	5.7	-	-	2.9	0.0	2.3	4.2	0.0	-	2.7	2.1	2.7	-	-	-	2.5	2.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1
% Articulated Trucks	-	0.0	-	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	2.1	0.0	-	0.5	0.0	0.0	-	-	-	0.0	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	-	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Turning Movement Peak Hour Data Plot (8:15 AM)

[illegible]

Turning Movement Peak Hour Data Plot (12:00 PM)

[illegible]

Turning Movement Peak Hour Data Plot (3:45 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Heritage Place Site Driveway
Site Code: 240408
Start Date: 09/12/2024
Page No: 1

Turning Movement Data

Start Time	Driveway Eastbound						Driveway Westbound						16th Avenue E Northbound						16th Avenue E Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	1	0	0	0	0	1	1	0	0	0	0	1	1	29	0	0	0	30	0	27	0	0	0	27	59
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	33	1	0	0	34	0	26	3	0	0	29	64
7:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	4	28	0	0	0	32	0	28	0	0	0	28	61
7:45 AM	2	0	2	0	0	4	0	0	0	0	0	0	8	38	0	0	0	46	0	31	5	0	0	36	86
Hourly Total	3	0	3	0	0	6	2	0	0	0	0	2	13	128	1	0	0	142	0	112	8	0	0	120	270
8:00 AM	0	1	1	0	0	2	1	0	0	0	0	1	4	18	0	0	0	22	0	32	1	0	0	33	58
8:15 AM	3	0	2	0	0	5	0	0	0	0	0	0	2	25	2	0	0	29	0	53	4	0	0	57	91
8:30 AM	5	0	0	0	0	5	1	0	0	0	0	1	3	34	0	0	0	37	0	46	3	0	0	49	92
8:45 AM	4	0	3	0	0	7	4	0	1	0	0	5	4	37	2	0	0	43	0	47	2	0	0	49	104
Hourly Total	12	1	6	0	0	19	6	0	1	0	0	7	13	114	4	0	0	131	0	178	10	0	0	188	345
9:00 AM	1	0	4	0	0	5	4	0	0	0	0	4	5	38	3	0	0	46	1	32	3	0	0	36	91
9:15 AM	1	1	3	0	0	5	1	0	0	0	0	1	7	30	3	0	0	40	0	31	1	0	0	32	78
9:30 AM	1	0	6	0	0	7	0	0	0	0	1	0	9	37	1	0	0	47	0	37	4	0	0	41	95
9:45 AM	2	0	3	0	0	5	0	0	0	0	0	0	6	32	0	0	0	38	0	45	8	0	0	53	96
Hourly Total	5	1	16	0	0	22	5	0	0	0	1	5	27	137	7	0	0	171	1	145	16	0	0	162	360
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	4	0	13	0	0	17	0	0	0	0	0	0	15	38	1	0	0	54	0	34	11	0	0	45	116
11:45 AM	8	0	12	0	0	20	1	0	0	0	0	1	15	46	0	0	0	61	0	45	6	0	0	51	133
Hourly Total	12	0	25	0	0	37	1	0	0	0	0	1	30	84	1	0	0	115	0	79	17	0	0	96	249
12:00 PM	7	0	7	0	0	14	2	0	0	0	0	2	12	44	0	0	0	56	0	53	6	0	0	59	131
12:15 PM	10	0	12	0	0	22	5	0	0	0	0	5	9	45	1	0	0	55	0	30	6	0	0	36	118
12:30 PM	6	0	12	0	0	18	4	0	0	0	0	4	10	32	7	0	0	49	0	33	7	0	0	40	111
12:45 PM	11	0	14	0	0	25	0	0	0	0	0	0	14	43	3	0	0	60	2	45	7	0	1	54	139
Hourly Total	34	0	45	0	0	79	11	0	0	0	0	11	45	164	11	0	0	220	2	161	26	0	1	189	499
1:00 PM	4	1	7	0	0	12	5	0	0	0	1	5	10	33	2	0	0	45	0	35	5	0	0	40	102
1:15 PM	11	0	12	0	0	23	2	0	0	0	0	2	16	40	5	0	0	61	0	32	9	0	0	41	127
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	15	1	19	0	0	35	7	0	0	0	1	7	26	73	7	0	0	106	0	67	14	0	0	81	229
3:00 PM	7	0	12	0	0	19	0	0	0	0	0	0	5	50	0	0	0	55	0	37	5	0	0	42	116
3:15 PM	5	0	11	0	0	16	4	0	0	0	0	4	9	34	0	0	0	43	0	37	7	0	0	44	107
3:30 PM	3	0	3	0	1	6	4	0	0	0	0	4	4	38	0	0	0	42	0	28	7	0	0	35	87
3:45 PM	7	0	5	0	0	12	14	2	1	0	0	17	5	44	0	0	0	49	0	42	2	0	0	44	122
Hourly Total	22	0	31	0	1	53	22	2	1	0	0	25	23	166	0	0	0	189	0	144	21	0	0	165	432
4:00 PM	6	0	5	0	0	11	3	1	0	0	0	4	11	43	1	0	0	55	0	52	4	0	0	56	126
4:15 PM	4	0	10	0	0	14	0	0	0	0	1	0	7	26	0	0	0	33	0	37	9	0	0	46	93

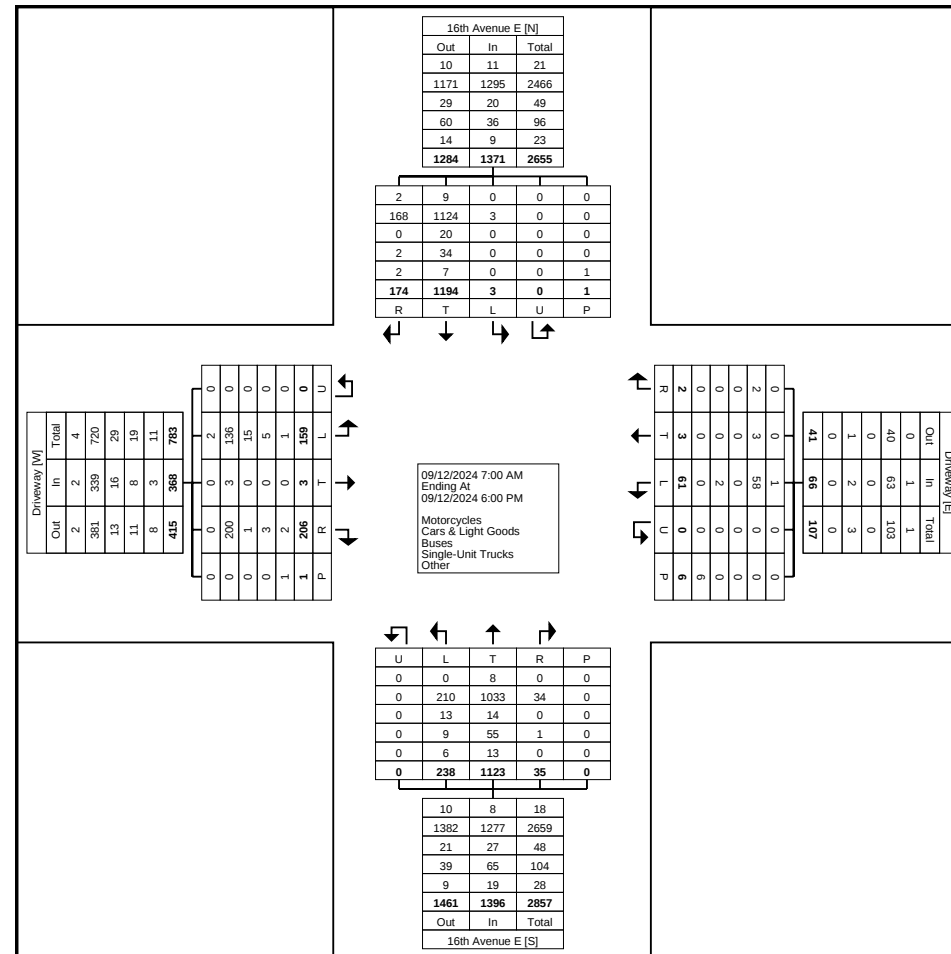
4:30 PM	9	0	12	0	0	21	2	0	0	0	2	2	8	34	1	0	0	43	0	48	12	0	0	60	126
4:45 PM	10	0	8	0	0	18	0	0	0	0	0	0	9	36	0	0	0	45	0	47	6	0	0	53	116
Hourly Total	29	0	35	0	0	64	5	1	0	0	3	6	35	139	2	0	0	176	0	184	31	0	0	215	461
5:00 PM	4	0	6	0	0	10	0	0	0	0	0	0	6	36	1	0	0	43	0	47	14	0	0	61	114
5:15 PM	6	0	10	0	0	16	1	0	0	0	1	1	10	33	0	0	0	43	0	22	6	0	0	28	88
5:30 PM	10	0	4	0	0	14	0	0	0	0	0	0	8	26	0	0	0	34	0	28	6	0	0	34	82
5:45 PM	7	0	6	0	0	13	1	0	0	0	0	1	2	23	1	0	0	26	0	27	5	0	0	32	72
Hourly Total	27	0	26	0	0	53	2	0	0	0	1	2	26	118	2	0	0	146	0	124	31	0	0	155	356
Grand Total	159	3	206	0	1	368	61	3	2	0	6	66	238	1123	35	0	0	1396	3	1194	174	0	1	1371	3201
Approach %	43.2	0.8	56.0	0.0	-	-	92.4	4.5	3.0	0.0	-	-	17.0	80.4	2.5	0.0	-	-	0.2	87.1	12.7	0.0	-	-	-
Total %	5.0	0.1	6.4	0.0	-	11.5	1.9	0.1	0.1	0.0	-	2.1	7.4	35.1	1.1	0.0	-	43.6	0.1	37.3	5.4	0.0	-	42.8	-
Motorcycles	2	0	0	0	-	2	1	0	0	0	-	1	0	8	0	0	-	8	0	9	2	0	-	11	22
% Motorcycles	1.3	0.0	0.0	-	-	0.5	1.6	0.0	0.0	-	-	1.5	0.0	0.7	0.0	-	-	0.6	0.0	0.8	1.1	-	-	0.8	0.7
Cars & Light Goods	136	3	200	0	-	339	58	3	2	0	-	63	210	1033	34	0	-	1277	3	1124	168	0	-	1295	2974
% Cars & Light Goods	85.5	100.0	97.1	-	-	92.1	95.1	100.0	100.0	-	-	95.5	88.2	92.0	97.1	-	-	91.5	100.0	94.1	96.6	-	-	94.5	92.9
Buses	15	0	1	0	-	16	0	0	0	0	-	0	13	14	0	0	-	27	0	20	0	0	-	20	63
% Buses	9.4	0.0	0.5	-	-	4.3	0.0	0.0	0.0	-	-	0.0	5.5	1.2	0.0	-	-	1.9	0.0	1.7	0.0	-	-	1.5	2.0
Single-Unit Trucks	5	0	3	0	-	8	2	0	0	0	-	2	9	55	1	0	-	65	0	34	2	0	-	36	111
% Single-Unit Trucks	3.1	0.0	1.5	-	-	2.2	3.3	0.0	0.0	-	-	3.0	3.8	4.9	2.9	-	-	4.7	0.0	2.8	1.1	-	-	2.6	3.5
Articulated Trucks	0	0	2	0	-	2	0	0	0	0	-	0	5	11	0	0	-	16	0	4	1	0	-	5	23
% Articulated Trucks	0.0	0.0	1.0	-	-	0.5	0.0	0.0	0.0	-	-	0.0	2.1	1.0	0.0	-	-	1.1	0.0	0.3	0.6	-	-	0.4	0.7
Bicycles on Road	1	0	0	0	-	1	0	0	0	0	-	0	1	2	0	0	-	3	0	3	1	0	-	4	8
% Bicycles on Road	0.6	0.0	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.4	0.2	0.0	-	-	0.2	0.0	0.3	0.6	-	-	0.3	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



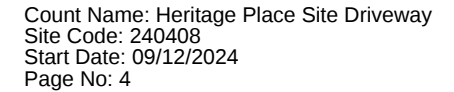
Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cdowness@pts1.com

Count Name: Heritage Place Site Driveway
Site Code: 240408
Start Date: 09/12/2024
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Turning Movement Data Plot



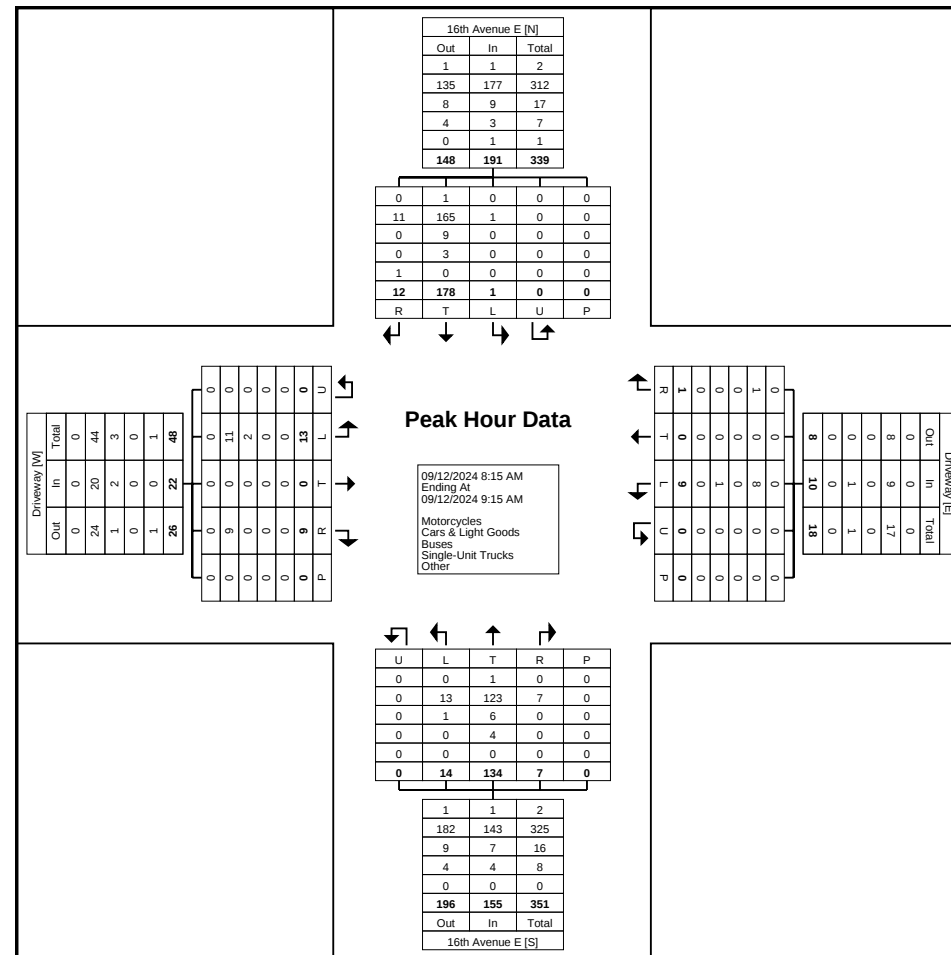
Start Time	Driveway Eastbound						Driveway Westbound						16th Avenue E Northbound						16th Avenue E Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:15 AM	3	0	2	0	0	5	0	0	0	0	0	0	2	25	2	0	0	29	0	53	4	0	0	57	91
8:30 AM	5	0	0	0	0	5	1	0	0	0	0	1	3	34	0	0	0	37	0	46	3	0	0	49	92
8:45 AM	4	0	3	0	0	7	4	0	1	0	0	5	4	37	2	0	0	43	0	47	2	0	0	49	104
9:00 AM	1	0	4	0	0	5	4	0	0	0	0	4	5	38	3	0	0	46	1	32	3	0	0	36	91
Total	13	0	9	0	0	22	9	0	1	0	0	10	14	134	7	0	0	155	1	178	12	0	0	191	378
Approach %	59.1	0.0	40.9	0.0	-	-	90.0	0.0	10.0	0.0	-	-	9.0	86.5	4.5	0.0	-	-	0.5	93.2	6.3	0.0	-	-	-
Total %	3.4	0.0	2.4	0.0	-	5.8	2.4	0.0	0.3	0.0	-	2.6	3.7	35.4	1.9	0.0	-	41.0	0.3	47.1	3.2	0.0	-	50.5	-
PHF	0.650	0.000	0.563	0.000	-	0.786	0.563	0.000	0.250	0.000	-	0.500	0.700	0.882	0.583	0.000	-	0.842	0.250	0.840	0.750	0.000	-	0.838	0.909
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	1	0	0	-	1	2
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.7	0.0	-	-	0.6	0.0	0.6	0.0	-	-	0.5	0.5
Cars & Light Goods	11	0	9	0	-	20	8	0	1	0	-	9	13	123	7	0	-	143	1	165	11	0	-	177	349
% Cars & Light Goods	84.6	-	100.0	-	-	90.9	88.9	-	100.0	-	-	90.0	92.9	91.8	100.0	-	-	92.3	100.0	92.7	91.7	-	-	92.7	92.3
Buses	2	0	0	0	-	2	0	0	0	0	-	0	1	6	0	0	-	7	0	9	0	0	-	9	18
% Buses	15.4	-	0.0	-	-	9.1	0.0	-	0.0	-	-	0.0	7.1	4.5	0.0	-	-	4.5	0.0	5.1	0.0	-	-	4.7	4.8
Single-Unit Trucks	0	0	0	0	-	0	1	0	0	0	-	1	0	4	0	0	-	4	0	3	0	0	-	3	8
% Single-Unit Trucks	0.0	-	0.0	-	-	0.0	11.1	-	0.0	-	-	10.0	0.0	3.0	0.0	-	-	2.6	0.0	1.7	0.0	-	-	1.6	2.1
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	1
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	8.3	-	-	0.5	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Paradigm Transportation Solutions Limited
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Count Name: Heritage Place Site Driveway
Site Code: 240408
Start Date: 09/12/2024
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Turning Movement Peak Hour Data Plot (8:15 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Heritage Place Site Driveway
Site Code: 240408
Start Date: 09/12/2024
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Turning Movement Peak Hour Data (12:00 PM)

Start Time	Driveway Eastbound						Driveway Westbound						16th Avenue E Northbound						16th Avenue E Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:00 PM	7	0	7	0	0	14	2	0	0	0	0	2	12	44	0	0	0	56	0	53	6	0	0	59	131
12:15 PM	10	0	12	0	0	22	5	0	0	0	0	5	9	45	1	0	0	55	0	30	6	0	0	36	118
12:30 PM	6	0	12	0	0	18	4	0	0	0	0	4	10	32	7	0	0	49	0	33	7	0	0	40	111
12:45 PM	11	0	14	0	0	25	0	0	0	0	0	0	14	43	3	0	0	60	2	45	7	0	1	54	139
Total	34	0	45	0	0	79	11	0	0	0	0	11	45	164	11	0	0	220	2	161	26	0	1	189	499
Approach %	43.0	0.0	57.0	0.0	-	-	100.0	0.0	0.0	0.0	-	-	20.5	74.5	5.0	0.0	-	-	1.1	85.2	13.8	0.0	-	-	-
Total %	6.8	0.0	9.0	0.0	-	15.8	2.2	0.0	0.0	0.0	-	2.2	9.0	32.9	2.2	0.0	-	44.1	0.4	32.3	5.2	0.0	-	37.9	-
PHF	0.773	0.000	0.804	0.000	-	0.790	0.550	0.000	0.000	0.000	-	0.550	0.804	0.911	0.393	0.000	-	0.917	0.250	0.759	0.929	0.000	-	0.801	0.897
Motorcycles	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	3
% Motorcycles	2.9	-	0.0	-	-	1.3	0.0	-	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.2	0.0	-	-	1.1	0.6
Cars & Light Goods	30	0	44	0	-	74	11	0	0	0	-	11	41	160	11	0	-	212	2	150	26	0	-	178	475
% Cars & Light Goods	88.2	-	97.8	-	-	93.7	100.0	-	-	-	-	100.0	91.1	97.6	100.0	-	-	96.4	100.0	93.2	100.0	-	-	94.2	95.2
Buses	2	0	1	0	-	3	0	0	0	0	-	0	2	0	0	0	-	2	0	0	0	0	-	0	5
% Buses	5.9	-	2.2	-	-	3.8	0.0	-	-	-	-	0.0	4.4	0.0	0.0	-	-	0.9	0.0	0.0	0.0	-	-	0.0	1.0
Single-Unit Trucks	1	0	0	0	-	1	0	0	0	0	-	0	2	1	0	0	-	3	0	8	0	0	-	8	12
% Single-Unit Trucks	2.9	-	0.0	-	-	1.3	0.0	-	-	-	-	0.0	4.4	0.6	0.0	-	-	1.4	0.0	5.0	0.0	-	-	4.2	2.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	0	1	0	0	-	1	4
% Articulated Trucks	0.0	-	0.0	-	-	0.0	0.0	-	-	-	-	0.0	0.0	1.8	0.0	-	-	1.4	0.0	0.6	0.0	-	-	0.5	0.8
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Turning Movement Peak Hour Data Plot (12:00 PM)

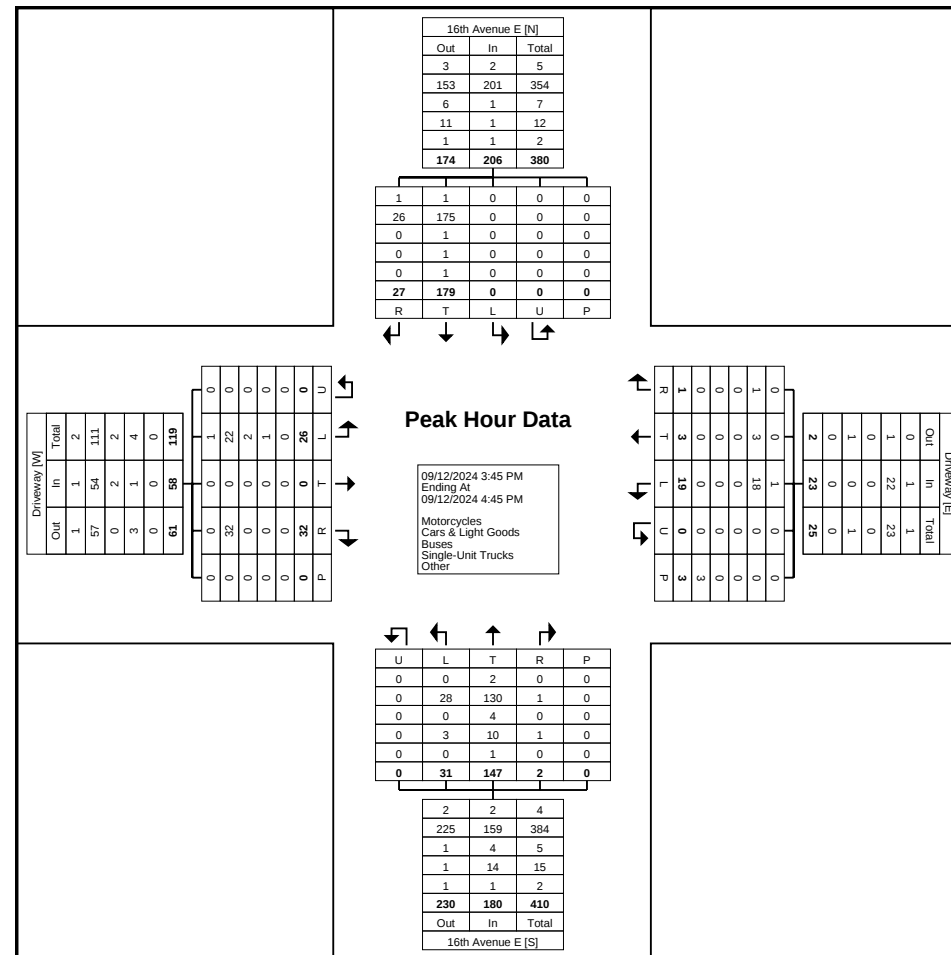
[illegible]



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Count Name: Heritage Place Site Driveway
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Turning Movement Peak Hour Data Plot (3:45 PM)

controller

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PHASE OVERLAP ASSIGNMENTS
OVERLAP CONSISTS OF PHASES

[click here for sub-menu](#)

3. PED CARRYOVER

PED TIMING CARRYOVER		controller
PHASE	CARRYOVER PHASE	
1	0	
2	0	
3	0	
4	0	
5	0	
6	0	
7	0	
8	0	
9	0	
10	0	
11	0	
12	0	

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4. RECALL DATA

CONTROLLER RECALL DATA												
PHASE	1...	2...	3...	4...	5...	6...	7...	controller				
	8...	9...	10...	11...	12...							
LOCKING MEMORY												
VEHICLE RECALL												
PED RECALL				X				X				
RECALL TO MAX				X				X				
SOFT RECALL												
DON'T REST HERE												
PED DARK N/CALL												

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7. NO SERVE PHASES

CAN NOT SERVE WITH

	controller											
PHASE	12	11	10	9	8	7	6	5	4	3	2	
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												

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8. DIMMING

controller															
		1	2	3	4	5	6	7	8						
LOAD SWITCH															
DIM GRM / WLK															
DIM YEL / PC															
DIM RED / DW															
		9	10	11	12	13	14	15	16						
LOAD SWITCH															
DIM GRM / WLK															
DIM YEL / PC															
DIM RED / DW															

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9.OPTION DATA

controller												
CONTROLLER OPTION DATA												
PHASE	1	2	3	4	5	6	7	8	9	10	11	12
GUAR PASSAGE												
NONACTUATED 1		X				X						
NONACTUATED 2				X				X				
DUAL ENTRY		X		X		X		X		X		X
COND SERVICE	X		X		X		X		X		X	
COND RESERVICE												
REST IN WALK												
FLASHING WALK												
FIVE SECTION LEFT TURN HEADS												
	5&2	7&4	1&6									
	3&8	11&10	9&12									

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coordinator

COORD PATTERN	1	OFFSET	
CYCLE LENGTH	100	C/O/S	111

COORD PATTERN		OFFSET	
CYCLE LENGTH		PLAN	

COORD PATTERN		TIMING PLAN						
CYCLE LENGTH		OFFSETS	1		2		3	

SPLITS												
PHASE 1	25	2	25	3	15	4	35					
PHASE 5	25	6	25	7	15	8	35					
PHASE 9		10		11		12						
VEH PERMISSIVE												
VEH PERM 2 DISP												
PHASE RESERVICE												
SPLIT EXTENSION RING				1	2							
SPL DMD PATTERN				1	2							
XARTERY PATTERN												
PHASE	1	2	3	4	5	6	7	8	9	10	11	12
COORD PHASE				X				X				
VEHICLE RECALL												
VEH MAX RECALL				X				X				
PED RECALL				X				X				
PHASE OMIT												
SPARE												
	A	B	C	D	E	F						
ALT SEQUENCE												
click here for main menu click here for sub-menu												

3. PRIORITY PREEMPT 3

	1	2	3	4	5	6	7	8	9	10	11	12
TERM PHASE OVLP												
TRK CLR PHASE												
HOLD PHASES				X				X				
EXIT PHASES		X				X						
EXIT CALLS												
SPARE												
TERM OVERLAP	A			B		C		D				
ACTIVE				YES		PED DARK					NO	
PRIORITY				YES		PED ACTIVE						
DET LOCK						ZERO PC TIME						
HOLD FLASH						PC THRU YELLOW						
TERM OVLP ASAP						TERM PHASES						
DON'T OVERRIDE FLASH						ACTIVE ONLY DURING HOLD						
FLASH ALL OUTPUTS						NO CVM IN FLASH						
YELLOW-RED GOES GREEN						FAST FLASH GREEN ON HOLD						
ENABLE MAX PREEMPT TIME						OUT OF FLASH					GREEN	
MAX TIME				0		DURATION TIME						
MIN HOLD TIME				10		DELAY TIME						
MIN PED CLEAR				7		INHIBIT TIME						
EXIT MAX				0		HLD DELAY TIME						
				GRN		YEL		RED				
MINIMUM				10		4		2				
TRACK CLEAR				0		0		0				
HOLD				0		0		0				
LINKED PREEMPTOR												
click here for main menu click here for sub-menu <preemptor< pre=""> </preemptor<>												

4. PRIORITY PREEMPT 4

	1	2	3	4	5	6	7	8	9	10	11	12
TERM PHASE OVLP												
TRK CLR PHASE												
HOLD PHASES		X				X						
EXIT PHASES				X				X				
EXIT CALLS												
SPARE												
TERM OVERLAP	A			B		C		D				
ACTIVE				YES	PED DARK							
PRIORITY				YES	PED ACTIVE							
DET LOCK					ZERO PC TIME							
HOLD FLASH					PC THRU YELLOW							
TERM OVLP ASAP					TERM PHASES							
DON'T OVERRIDE FLASH					ACTIVE ONLY DURING HOLD							
FLASH ALL OUTPUTS					NO CVM IN FLASH							
YELLOW-RED GOES GREEN					FAST FLASH GREEN ON HOLD							
ENABLE MAX PREEMPT TIME					OUT OF FLASH						GREEN	
MAX TIME				0	DURATION TIME							
MIN HOLD TIME				10	DELAY TIME							
MIN PED CLEAR				7	INHIBIT TIME							
EXIT MAX				0	HLD DELAY TIME							
				GRN		YEL		RED				
MINIMUM				10		4		2				
TRACK CLEAR												
HOLD												
LINKED PREEMPTOR												
click here for main menu click here for sub-menu <preemptor< pre=""> </preemptor<>												

5. PRIORITY PREEMPT 5

[illegible]

6. PRIORITY PREEMPT 6

	1	2	3	4	5	6	7	8	9	10	11	12
TERM PHASE OVLP												
TRK CLR PHASE												
HOLD PHASES		X				X						
EXIT PHASES				X				X				
EXIT CALLS												
SPARE												
TERM OVERLAP	A			B		C		D				
ACTIVE				YES		PED DARK						
PRIORITY				YES		PED ACTIVE						
DET LOCK						ZERO PC TIME						
HOLD FLASH						PC THRU YELLOW						
TERM OVLP ASAP						TERM PHASES						
DON'T OVERRIDE FLASH						ACTIVE ONLY DURING HOLD						
FLASH ALL OUTPUTS						NO CVM IN FLASH						
YELLOW-RED GOES GREEN						FAST FLASH GREEN ON HOLI						
ENABLE MAX PREEMPT TIME						OUT OF FLASH					GREEN	
MAX TIME						DURATION TIME						
MIN HOLD TIME						DELAY TIME						
MIN PED CLEAR						INHIBIT TIME						
EXIT MAX						HLD DELAY TIME						
				GRN		YEL		RED				
MINIMUM				10		5.0		3.0				
TRACK CLEAR												
HOLD												
LINKED PREEMPTOR												
click here for main menu click here for sub-menu preemptor												

Appendix C

Existing Traffic Operations Reports



Queues

1: 16th Avenue East & 16th Street East

Existing AM

1750 16th Ave E, Owen Sound TIS

	↖	→	↗	←	↖	↑	↗	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	275	46	304	107	219	33	158
v/c Ratio	0.08	0.19	0.08	0.20	0.30	0.29	0.11	0.38
Control Delay	9.1	13.3	9.2	15.0	20.6	18.3	19.1	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	13.3	9.2	15.0	20.6	18.3	19.1	22.4
Queue Length 50th (m)	3.0	11.8	2.9	15.1	11.5	8.3	3.4	6.7
Queue Length 95th (m)	8.7	22.8	8.4	27.4	23.3	21.0	9.4	16.3
Internal Link Dist (m)		129.3		123.3		83.6		126.1
Turn Bay Length (m)	30.0		25.0		35.0		20.0	
Base Capacity (vph)	655	1468	636	1538	566	1017	585	949
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.19	0.07	0.20	0.19	0.22	0.06	0.17
Intersection Summary								

Lanes, Volumes, Timings

2: 16th Avenue East & 17th Street East

Existing AM

1750 16th Ave E, Owen Sound TIS

	↖	→	↗	↖	←	↖	↖	↑	↗	↗	↓	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↖			↔			↔	
Traffic Volume (vph)	0	1	0	33	0	35	1	132	48	47	150	0
Future Volume (vph)	0	1	0	33	0	35	1	132	48	47	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	35.0		0.0			0.0		0.0
Storage Lanes	0			0	1		0			0		0
Taper Length (m)	7.5			45.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt					0.850			0.960				
Flt Protected				0.950							0.988	
Satd. Flow (prot)	0	1900	0	1805	1524	0	0	3226	0	0	3323	0
Flt Permitted				0.950							0.988	
Satd. Flow (perm)	0	1900	0	1805	1524	0	0	3226	0	0	3323	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		66.9			145.7			150.1			68.7	
Travel Time (s)		4.8			10.5			10.8			4.9	
Confl. Peds. (#/hr)							2					2
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	8%	6%	2%	9%	0%
Adj. Flow (vph)	0	1	0	36	0	38	1	143	52	51	163	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	0	36	38	0	0	196	0	0	214	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 29.7%	ICU Level of Service A											
Analysis Period (min) 15												

HCM 6th TWSC
2: 16th Avenue East & 17th Street East

Existing AM
1750 16th Ave E, Owen Sound TIS

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	0	33	0	35	1	132	48	47	150	0
Future Vol, veh/h	0	1	0	33	0	35	1	132	48	47	150	0
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	35	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	6	0	8	6	2	9	0
Mvmt Flow	0	1	0	36	0	38	1	143	52	51	163	0

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	341	464	84	355
Stage 1	267	267	-	171
Stage 2	74	197	-	184
Critical Hdwy	7.5	6.5	6.9	7.5
Critical Hdwy Stg 1	6.5	5.5	-	6.5
Critical Hdwy Stg 2	6.5	5.5	-	6.5
Follow-up Hdwy	3.5	4	3.3	3.5
Pot Cap-1 Maneuver	594	498	965	581
Stage 1	721	692	-	820
Stage 2	933	742	-	806
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	551	476	963	561
Mov Cap-2 Maneuver	551	476	-	561
Stage 1	719	662	-	819
Stage 2	894	741	-	772

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	10.5	0	1.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1424	-	-	476	561	926	1375	-	-
HCM Lane V/C Ratio	0.001	-	-	0.002	0.064	0.041	0.037	-	-
HCM Control Delay (s)	7.5	0	-	12.6	11.9	9.1	7.7	0.1	-
HCM Lane LOS	A	A	-	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.1	0.1	-	-

PTSL

Synchro 11 Report

Lanes, Volumes, Timings
3: 16th Avenue East & Heritage Place Driveway

Existing AM
1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	13	9	14	141	187	12
Future Volume (vph)	13	9	14	141	187	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.944				0.992	
Flt Protected	0.972			0.996		
Satd. Flow (prot)	1603	0	0	1769	1768	0
Flt Permitted	0.972			0.996		
Satd. Flow (perm)	1603	0	0	1769	1768	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	103.8			169.0	106.3	
Travel Time (s)	7.5			12.2	7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	15%	0%	7%	7%	7%	0%
Adj. Flow (vph)	14	10	15	153	203	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	0	0	168	216	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 29.1%	ICU Level of Service A					
Analysis Period (min) 15						

PTSL

Synchro 11 Report

HCM 6th TWSC
3: 16th Avenue East & Heritage Place Driveway

Existing AM
1750 16th Ave E, Owen Sound TIS

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	13	9	14	141	187	12
Future Vol, veh/h	13	9	14	141	187	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	15	0	7	7	7	0
Mvmt Flow	14	10	15	153	203	13

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	393	210	216
Stage 1	210	-	-
Stage 2	183	-	-
Critical Hdwy	6.55	6.2	4.17
Critical Hdwy Stg 1	5.55	-	-
Critical Hdwy Stg 2	5.55	-	-
Follow-up Hdwy	3.635	3.3	2.263
Pot Cap-1 Maneuver	587	835	1325
Stage 1	795	-	-
Stage 2	818	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	580	835	1325
Mov Cap-2 Maneuver	580	-	-
Stage 1	785	-	-
Stage 2	818	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1325	-	663	-	-
HCM Lane V/C Ratio	0.011	-	0.036	-	-
HCM Control Delay (s)	7.7	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

PTSL

Synchro 11 Report

Lanes, Volumes, Timings
1: 16th Avenue East & 16th Street East

Existing PM
1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	
Traffic Volume (vph)	41	325	89	69	422	26	146	94	75	68	102	79
Future Volume (vph)	41	325	89	69	422	26	146	94	75	68	102	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0			25.0			35.0			20.0		
Storage Lanes	1			1			1			1		
Taper Length (m)	35.0			25.0			7.5			65.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		0.99	1.00		1.00				0.99	
Frt	0.968			0.991			0.933			0.935		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	3398	0	1787	3492	0	1787	3235	0	1770	3291	0
Flt Permitted	0.475			0.447			0.422			0.636		
Satd. Flow (perm)	818	3398	0	834	3492	0	792	3235	0	1185	3291	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			6			82			86	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		153.3			147.3			107.6			150.1	
Travel Time (s)		11.0			10.6			7.7			10.8	
Confl. Peds. (#/hr)	6		13	13		6	3					3
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
Heavy Vehicles (%)	10%	2%	3%	1%	2%	8%	1%	5%	3%	2%	1%	3%
Adj. Flow (vph)	45	353	97	75	459	28	159	102	82	74	111	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	450	0	75	487	0	159	184	0	74	197	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane							Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

PTSL

Synchro 11 Report

Lanes, Volumes, Timings

1: 16th Avenue East & 16th Street East

Existing PM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	30.0		10.0	30.0		10.0	32.0		10.0	32.0	
Total Split (s)	15.0	35.0		15.0	35.0		25.0	25.0		25.0	25.0	
Total Split (%)	15.0%	35.0%		15.0%	35.0%		25.0%	25.0%		25.0%	25.0%	
Maximum Green (s)	10.0	29.0		10.0	29.0		20.0	19.0		20.0	19.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)	13.0			13.0			15.0			15.0		
Flash Dont Walk (s)	10.0			10.0			10.0			10.0		
Pedestrian Calls (#/hr)	0			0			0			0		
Act Effct Green (s)	35.7	29.5		37.7	32.3		24.0	14.0		16.8	8.0	
Actuated g/C Ratio	0.47	0.39		0.50	0.43		0.32	0.19		0.22	0.11	
v/c Ratio	0.10	0.33		0.15	0.32		0.40	0.28		0.23	0.46	
Control Delay	10.3	17.3		10.4	17.0		22.2	18.2		20.6	23.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.3	17.3		10.4	17.0		22.2	18.2		20.6	23.1	
LOS	B	B		B	B		C	B		C	C	
Approach Delay	16.7			16.2			20.1			22.4		
Approach LOS	B			B			C			C		

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 75.3

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.46

Intersection Signal Delay: 18.1

Intersection LOS: B

Intersection Capacity Utilization 56.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: 16th Avenue East & 16th Street East

Ø1	Ø2	Ø3	Ø4
25 s	25 s	15 s	35 s
Ø5	Ø6	Ø7	Ø8
25 s	25 s	15 s	35 s

PTSL

Synchro 11 Report

Queues

1: 16th Avenue East & 16th Street East

Existing PM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	450	75	487	159	184	74	197
v/c Ratio	0.10	0.33	0.15	0.32	0.40	0.28	0.23	0.46
Control Delay	10.3	17.3	10.4	17.0	22.2	18.2	20.6	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	17.3	10.4	17.0	22.2	18.2	20.6	23.1
Queue Length 50th (m)	3.0	23.2	5.0	26.9	17.8	7.3	7.9	8.4
Queue Length 95th (m)	9.0	41.8	13.3	46.6	33.1	17.1	17.4	19.6
Internal Link Dist (m)		129.3		123.3		83.6		126.1
Turn Bay Length (m)	30.0		25.0		35.0		20.0	
Base Capacity (vph)	525	1353	559	1499	536	891	556	909
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.33	0.13	0.32	0.30	0.21	0.13	0.22

Intersection Summary

PTSL

Synchro 11 Report

Lanes, Volumes, Timings

2: 16th Avenue East & 17th Street East

Existing PM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔		↔	↔	
Traffic Volume (vph)	0	0	1	46	1	57	0	137	33	32	210	0
Future Volume (vph)	0	0	1	46	1	57	0	137	33	32	210	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	7.5			45.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.865			0.852			0.971				
Flt Protected				0.950							0.993	
Satd. Flow (prot)	0	1644	0	1770	1588	0	0	3095	0	0	3540	0
Flt Permitted				0.950							0.993	
Satd. Flow (perm)	0	1644	0	1770	1588	0	0	3095	0	0	3540	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		66.9			145.7			150.1			68.7	
Travel Time (s)		4.8			10.5			10.8			4.9	
Confl. Peds. (#/hr)									2	2		
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
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	15%	6%	3%	1%	0%
Adj. Flow (vph)	0	0	1	50	1	62	0	149	36	35	228	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	0	50	63	0	0	185	0	0	263	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 31.4%

ICU Level of Service A

Analysis Period (min) 15

PTSL

Synchro 11 Report

HCM 6th TWSC

2: 16th Avenue East & 17th Street East

Existing PM

1750 16th Ave E, Owen Sound TIS

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔		↔	↔	
Traffic Vol, veh/h	0	0	1	46	1	57	0	137	33	32	210	0
Future Vol, veh/h	0	0	1	46	1	57	0	137	33	32	210	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	35	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	2	0	2	0	15	6	3	1	0
Mvmt Flow	0	0	1	50	1	62	0	149	36	35	228	0

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	373	485	114	353	467	95	228	0	0	187	0	0
Stage 1	298	298	-	169	169	-	-	-	-	-	-	-
Stage 2	75	187	-	184	298	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.54	6.5	6.94	4.1	-	-	4.16	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.54	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.54	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.52	4	3.32	2.2	-	-	2.23	-	-
Pot Cap-1 Maneuver	564	485	923	577	496	943	1352	-	-	1377	-	-
Stage 1	692	671	-	816	763	-	-	-	-	-	-	-
Stage 2	931	749	-	800	671	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	514	470	923	563	481	941	1352	-	-	1375	-	-
Mov Cap-2 Maneuver	514	470	-	563	481	-	-	-	-	-	-	-
Stage 1	692	652	-	814	761	-	-	-	-	-	-	-
Stage 2	868	748	-	776	652	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.9	10.4	0	1.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1352	-	-	923 563 926 1375	-	-	-
HCM Lane V/C Ratio	-	-	-	0.001 0.089 0.068 0.025	-	-	-
HCM Control Delay (s)	0	-	-	8.9 12 9.2 7.7	0.1	-	-
HCM Lane LOS	A	-	-	A B A A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0 0.3 0.2 0.1	-	-	-

PTSL

Synchro 11 Report

Lanes, Volumes, Timings

3: 16th Avenue East & Heritage Place Driveway

Existing PM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	26	32	31	149	198	30
Future Volume (vph)	26	32	31	149	198	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.925				0.982	
Flt Protected	0.978			0.991		
Satd. Flow (prot)	1632	0	0	1699	1834	0
Flt Permitted	0.978			0.991		
Satd. Flow (perm)	1632	0	0	1699	1834	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	103.8			169.0	106.3	
Travel Time (s)	7.5			12.2	7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	12%	0%	10%	11%	2%	0%
Adj. Flow (vph)	28	35	34	162	215	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	0	0	196	248	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	35.2%			ICU Level of Service A		
Analysis Period (min)	15					

PTSL

Synchro 11 Report

HCM 6th TWSC

3: 16th Avenue East & Heritage Place Driveway

Existing PM

1750 16th Ave E, Owen Sound TIS

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	26	32	31	149	198	30
Future Vol, veh/h	26	32	31	149	198	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	12	0	10	11	2	0
Mvmt Flow	28	35	34	162	215	33
Major/Minor						
Minor2	Major1		Major2			
Conflicting Flow All	462	232	248	0	-	0
Stage 1	232	-	-	-	-	-
Stage 2	230	-	-	-	-	-
Critical Hdwy	6.52	6.2	4.2	-	-	-
Critical Hdwy Stg 1	5.52	-	-	-	-	-
Critical Hdwy Stg 2	5.52	-	-	-	-	-
Follow-up Hdwy	3.608	3.3	2.29	-	-	-
Pot Cap-1 Maneuver	540	812	1272	-	-	-
Stage 1	784	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	524	812	1272	-	-	-
Mov Cap-2 Maneuver	524	-	-	-	-	-
Stage 1	761	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Approach						
EB	NB		SB			
HCM Control Delay, s	11.1	1.4	0			
HCM LOS	B					
Minor Lane/Major Mvmt						
NBL	NBT EBLn1	SBT	SBR			
Capacity (veh/h)	1272	-	651	-	-	-
HCM Lane V/C Ratio	0.026	-	0.097	-	-	-
HCM Control Delay (s)	7.9	0	11.1	-	-	-
HCM Lane LOS	A	A	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	-

PTSL

Synchro 11 Report

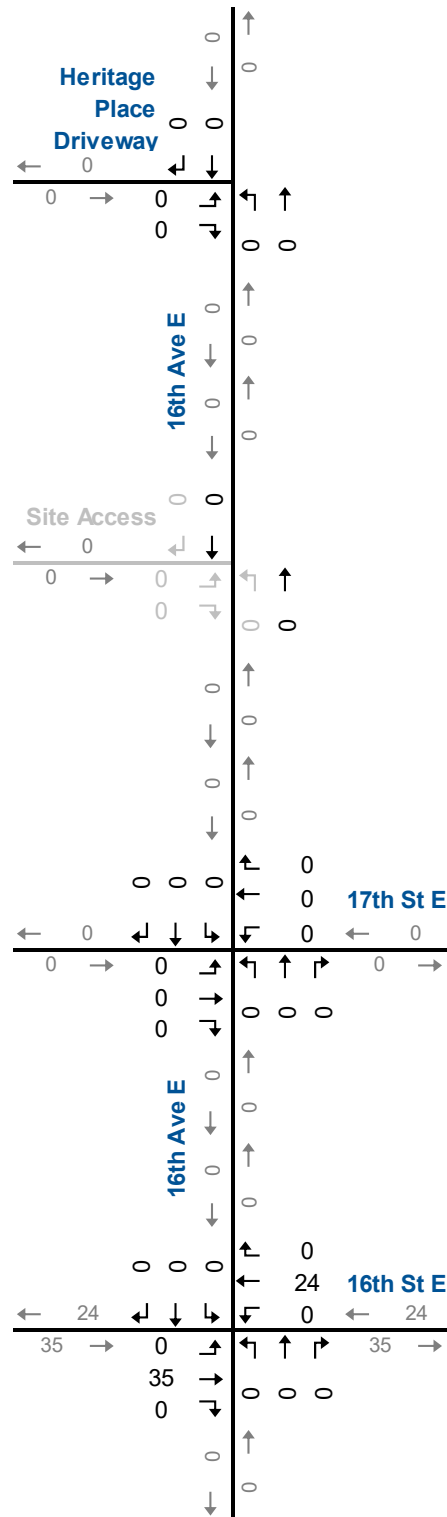
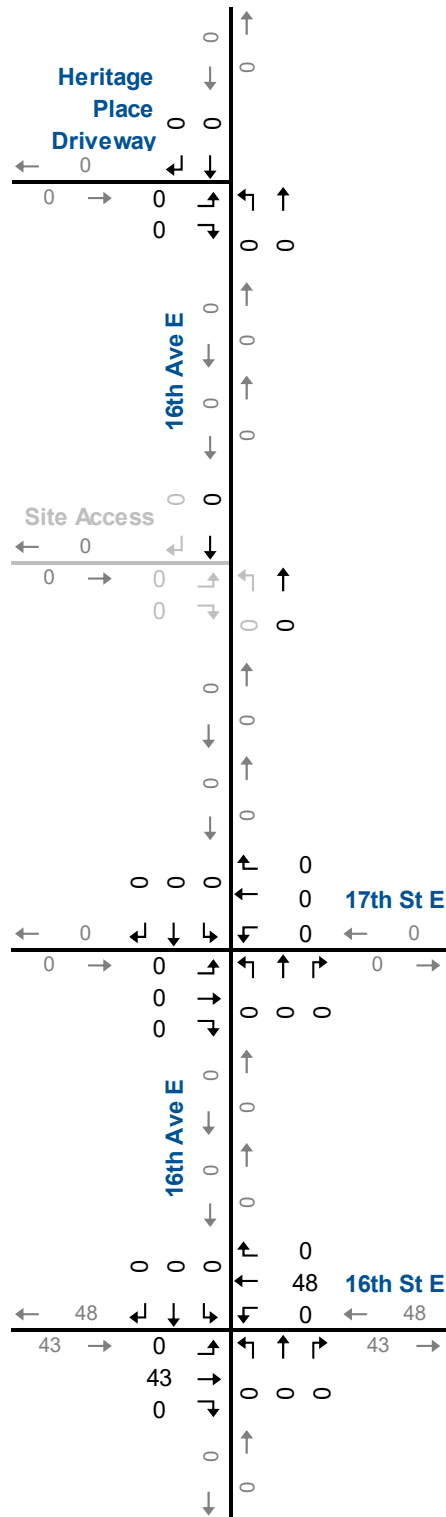
Appendix D

Other Area Development Traffic Volumes



AM Peak Hour

PM Peak Hour



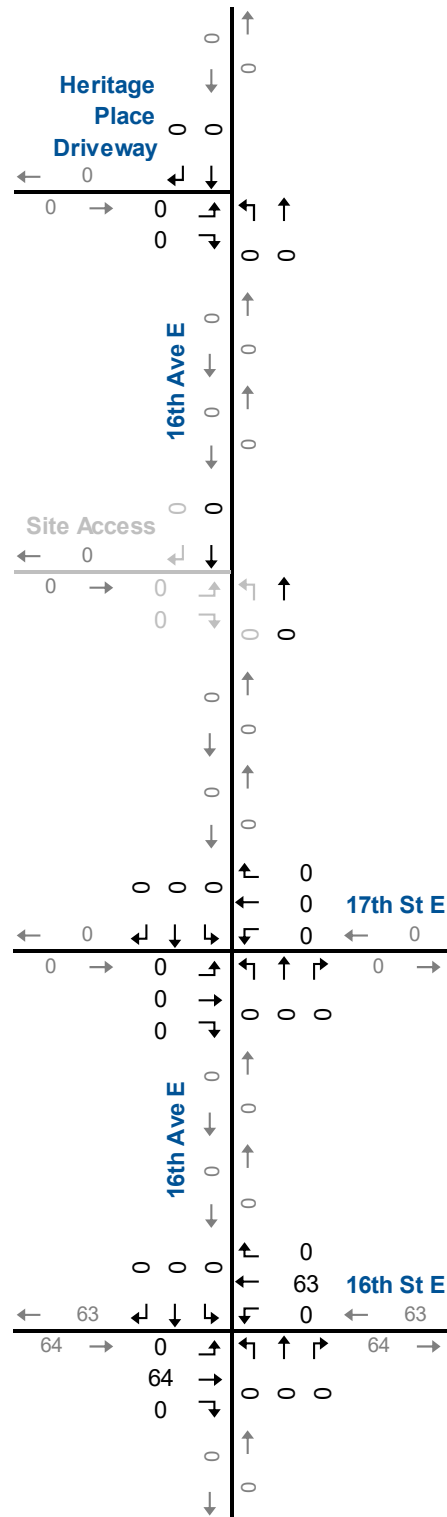
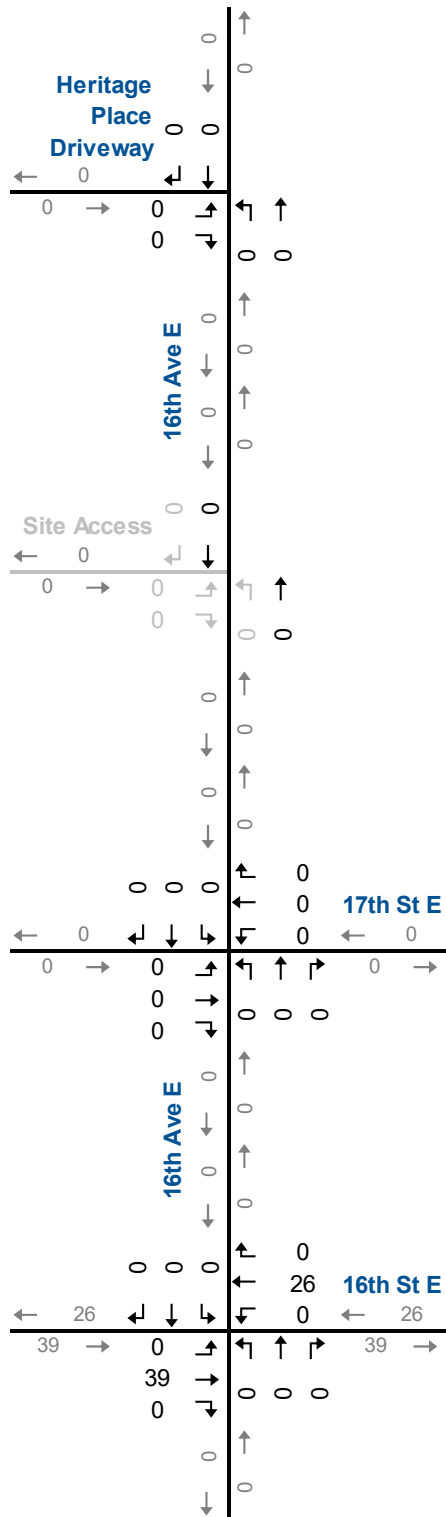
NTS



Other Area Development Traffic Volumes 2275 16th Street East

AM Peak Hour

PM Peak Hour



NTS



Other Area Development Traffic Volumes 2125 16th Street East

Land Use	Number of Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
821 - Shopping Plaza (40-150k)	57.11	1.73	61	38	99	5.19	145	151	296
850 - Supermarket	35	2.86	59	41	100	Eq	165	165	330
932 - High-Turnover Restaurant	4.5	9.57	24	19	43	9.05	25	16	41
Total Trip Generation			144	98	242		335	332	667
<i>Internal Capture</i>			13	13	26		14	14	28
Total External Trip Generation			131	85	216		321	318	639
<i>Pass-by</i>			0	0	0		108	108	216
Net Trip Generation			131	85	216		213	210	423

NCHRP 8-51 Internal Trip Capture Estimation Tool					
Project Name:		1750 16th Ave E		Organization: PTSL	
Project Location:		Owen Sound		Performed By: MM	
Scenario Description:		BG	Heritage Grove	Date:	
Analysis Year:				Checked By:	
Analysis Period:		AM Street Peak Hour		Date:	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	821, 850	92,110		199	120	79
Restaurant	932	4,500		43	24	19
Cinema/Entertainment				0		
Residential				0		
Hotel				0		
All Other Land Uses ²				0		
Total				242	144	98

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses ²						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		10	0	0	0
Restaurant	0	3		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	242	144	98
Internal Capture Percentage	11%	9%	13%
External Vehicle-Trips ³	216	131	85
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	3%	13%
Restaurant	42%	16%
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

¹Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

⁴Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	1750 16th Ave E
Analysis Period:	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	120	120	1.00	79	79
Restaurant	1.00	24	24	1.00	19	19
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	0	0	1.00	0	0
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	23		10	0	11	0
Restaurant	6	3		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		38	6	0	0	0
Retail	0		12	0	0	0
Restaurant	0	10		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	20	5	0		0
Hotel	0	5	1	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	3	117	120	117	0	0
Restaurant	10	14	24	14	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	10	69	79	69	0	0
Restaurant	3	16	19	16	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

²Person-Trips

³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool					
Project Name:		1750 16th Ave E		Organization: PTSL	
Project Location:		Owen Sound		Performed By: MM	
Scenario Description:		BG	Heritage Grove	Date:	
Analysis Year:				Checked By:	
Analysis Period:		PM Street Peak Hour		Date:	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	821, 850	92,110		626	310	316
Restaurant	932	4,500		41	25	16
Cinema/Entertainment				0		
Residential				0		
Hotel				0		
All Other Land Uses ²				0		
Total				667	335	332

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses ²						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		7	0	0	0
Restaurant	0	7		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	667	335	332
Internal Capture Percentage	4%	4%	4%
External Vehicle-Trips ³	639	321	318
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	2%	2%
Restaurant	28%	44%
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

¹Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

⁴Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Project Name:	1750 16th Ave E
Analysis Period:	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	310	310	1.00	316	316
Restaurant	1.00	25	25	1.00	16	16
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	0	0	1.00	0	0
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	6		92	13	82	16
Restaurant	0	7		1	3	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		25	1	0	0	0
Retail	0		7	0	0	0
Restaurant	0	155		0	0	0
Cinema/Entertainment	0	12	1		0	0
Residential	0	31	4	0		0
Hotel	0	6	1	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	7	303	310	303	0	0
Restaurant	7	18	25	18	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	7	309	316	309	0	0
Restaurant	7	9	16	9	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

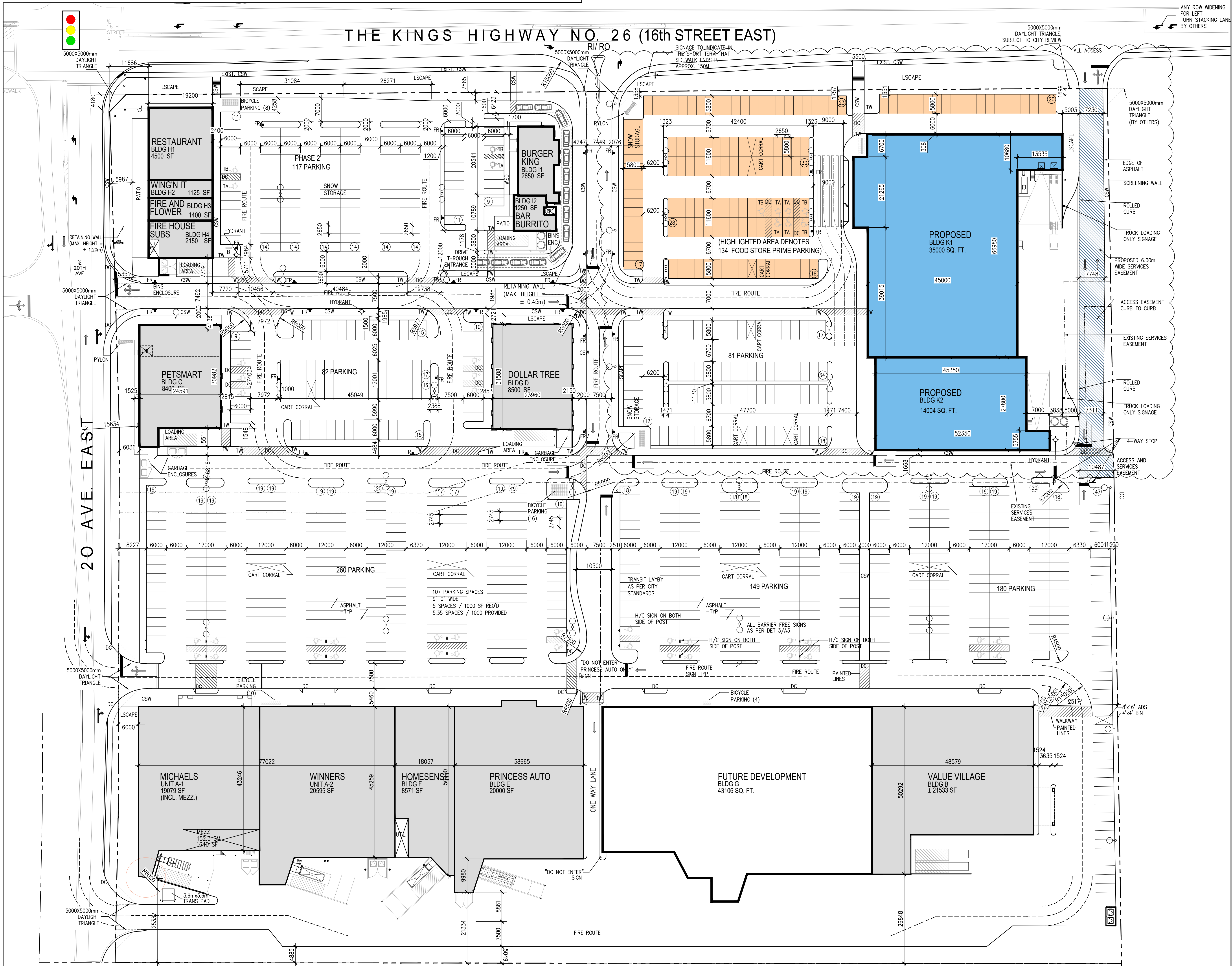
²Person-Trips

³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

SITE PLAN INFORMATION TAKEN FROM SITE PLAN PREPARED BY SCOLER & LEE ASSOCIATES ARCHITECTS INC. DRAWINGS A1, DATED FEB. 2011, REV 12, DATED OCT. 2, 2013 AND FROM PLAN OF SURVEY OF PART OF PARK LOTS 8 AND 9 RANGE 5, EAST OF THE GARAFRAXA ROAD GEOGRAPHIC TOWNSHIP OF SYDENHAM CITY OF OWEN SOUND COUNTY OF GREY BY HEWETT & MILNE LIMITED

PLAN LEGEND			FIRE ROUTE
CSW	CONCRETE SIDEWALK		SINGLE LIGHTPOLE
TW	TACTILE WALKING SURFACE INDICATOR		DOUBLE LIGHTPOLE
DC	DESIGNATED CROSSWALK		PYLON
	FIRE HYDRANT AND VALVE		LANDSCAPE AREA
	DIRECTION OF TRAFFIC FLOW		
	BENCH		TYPE. ACCESSIBLE PARKING STALL TYPE "A"
	FIRE ROUTE SIGNS		TYP. ACCESSIBLE PARKING STALL TYPE "B"



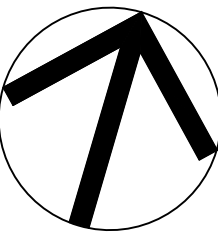
1 SITE PLAN
SCALE 1:500

AS OF JULY 01, 2021, DESIGN AND DOCUMENTS BY GREYSTONE ARCHITECTURAL PARTNERS INC.



ORIGINAL DESIGN AND DOCUMENTS BY POINT ARCHITECTS, TO JUNE 30TH, 2021

Point.
Architects



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22	ISSUED FOR REVIEW	JUN 30, 2023
21	ISSUED FOR REVIEW	OCT 31, 2022
20	ISSUED FOR REVIEW	MAR 14, 2022
19	ISSUED FOR REVIEW	MAR 09, 2022
18	ISSUED FOR REVIEW	FEB 11, 2022
17	ISSUED FOR REVIEW	FEB 10, 2022
16	ISSUED FOR REVIEW	FEB 07, 2022
15	ISSUED FOR REVIEW	FEB 04, 2022
14	ISSUED FOR REVIEW	JAN 31, 2022
13	ISSUED FOR REVIEW	OCT 26, 2021
12	ISSUED FOR REVIEW	OCT 25, 2021
11	ISSUED FOR REVIEW	OCT 22, 2021
10	ISSUED FOR EASEMENT COORDINATION	JUL 19, 2021
09	ISSUED FOR REVIEW	MAY 05, 2021
08	ISSUED FOR REVIEW	APR 29, 2021
07	ISSUED FOR REVIEW	APR 26, 2021
06	ISSUED FOR REVIEW	APR 20, 2021
05	ISSUED FOR REVIEW	APR 16, 2021
04	ISSUED FOR COORDINATION	OCT 14, 2020
03	ISSUED FOR COORDINATION	OCT 01, 2020
02	ISSUED FOR COORDINATION	SEP 28, 2020
NO.	REVISIONS:	ISSUED:

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CLIENT:
HERITAGE GROVE CENTRE INC.
2125 16TH ST. E.
OWEN SOUND, ON

PROJECT:
HERITAGE GROVE CENTRE

SHEET TITLE:
SITE PLAN UPDATE,

PROJECT NO.
21496 (3027)

SCALE:
1:500

DRAWN:
PP

CHECKED:
GP

FILE NO.
21496 (3027)

DATE:
SEE REV.

SHEET NO:

SP1.1

Appendix E

Background Traffic Operations Reports



Lanes, Volumes, Timings

1: 16th Avenue East & 16th Street East

Background AM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰↱		↰	↰↱	
Traffic Volume (vph)	46	288	60	44	353	16	103	142	69	32	89	64
Future Volume (vph)	46	288	60	44	353	16	103	142	69	32	89	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	25.0		0.0	35.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			25.0			7.5			65.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	1.00		1.00			1.00				0.99	
Frt		0.974			0.994			0.951			0.937	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3277	0	1641	3467	0	1736	3218	0	1752	3102	0
Flt Permitted	0.516			0.528			0.432			0.609		
Satd. Flow (perm)	931	3277	0	909	3467	0	785	3218	0	1123	3102	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			4			72			70	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		153.3			147.3			107.6			150.1	
Travel Time (s)		11.0			10.6			7.7			10.8	
Confl. Peds. (#/hr)	4		5	5		4	5					5
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
Heavy Vehicles (%)	5%	8%	2%	10%	3%	13%	4%	7%	6%	3%	12%	3%
Adj. Flow (vph)	50	313	65	48	384	17	112	154	75	35	97	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	50	378	0	48	401	0	112	229	0	35	167	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane							Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

PTSL

Synchro 11 Report

Lanes, Volumes, Timings

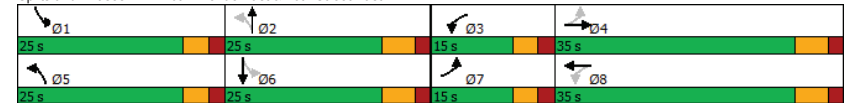
1: 16th Avenue East & 16th Street East

Background AM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	30.0		10.0	30.0		10.0	32.0		10.0	32.0	
Total Split (s)	15.0	35.0		15.0	35.0		25.0	25.0		25.0	25.0	
Total Split (%)	15.0%	35.0%		15.0%	35.0%		25.0%	25.0%		25.0%	25.0%	
Maximum Green (s)	10.0	29.0		10.0	29.0		20.0	19.0		20.0	19.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		13.0			13.0			15.0			15.0	
Flash Dont Walk (s)		10.0			10.0			10.0			10.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	35.0	30.2		35.0	30.2		20.0	15.1		14.1	8.0	
Actuated g/C Ratio	0.51	0.44		0.51	0.44		0.29	0.22		0.21	0.12	
v/c Ratio	0.09	0.26		0.09	0.26		0.31	0.30		0.12	0.39	
Control Delay	9.4	14.9		9.4	15.7		20.7	18.5		19.1	22.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.4	14.9		9.4	15.7		20.7	18.5		19.1	22.4	
LOS	A	B		A	B		C	B		B	C	
Approach Delay		14.3			15.0			19.2			21.8	
Approach LOS		B			B			B			C	
Intersection Summary												
Area Type: Other												
Cycle Length: 100												
Actuated Cycle Length: 68.5												
Natural Cycle: 85												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.39												
Intersection Signal Delay: 16.8												
Intersection LOS: B												
Intersection Capacity Utilization 54.6%												
ICU Level of Service A												
Analysis Period (min) 15												

Splits and Phases: 1: 16th Avenue East & 16th Street East



PTSL

Synchro 11 Report

Queues

1: 16th Avenue East & 16th Street East

Background AM

1750 16th Ave E, Owen Sound TIS

	↖	→	↗	←	↖	↑	↗	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	378	48	401	112	229	35	167
v/c Ratio	0.09	0.26	0.09	0.26	0.31	0.30	0.12	0.39
Control Delay	9.4	14.9	9.4	15.7	20.7	18.5	19.1	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	14.9	9.4	15.7	20.7	18.5	19.1	22.4
Queue Length 50th (m)	3.2	18.5	3.0	21.0	12.1	8.9	3.6	7.2
Queue Length 95th (m)	9.0	33.0	8.8	36.2	24.2	22.1	9.8	17.0
Internal Link Dist (m)		129.3		123.3		83.6		126.1
Turn Bay Length (m)	30.0		25.0		35.0		20.0	
Base Capacity (vph)	616	1459	596	1531	566	1023	588	946
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.26	0.08	0.26	0.20	0.22	0.06	0.18
Intersection Summary								

Lanes, Volumes, Timings

2: 16th Avenue East & 17th Street East

Background AM

1750 16th Ave E, Owen Sound TIS

	↖	→	↗	↖	←	↖	↖	↑	↗	↖	↓	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↖			↔			↔	
Traffic Volume (vph)	0	1	0	35	0	37	1	139	50	49	158	0
Future Volume (vph)	0	1	0	35	0	37	1	139	50	49	158	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	35.0		0.0	0.0		0.0	0.0	0.0
Storage Lanes	0			0	1		0	0		0	0	0
Taper Length (m)	7.5			45.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt					0.850			0.961				
Flt Protected				0.950							0.988	
Satd. Flow (prot)	0	1900	0	1805	1524	0	0	3229	0	0	3322	0
Flt Permitted				0.950							0.988	
Satd. Flow (perm)	0	1900	0	1805	1524	0	0	3229	0	0	3322	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		66.9			145.7			150.1			68.7	
Travel Time (s)		4.8			10.5			10.8			4.9	
Confl. Peds. (#/hr)							2					2
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	8%	6%	2%	9%	0%
Adj. Flow (vph)	0	1	0	38	0	40	1	151	54	53	172	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	0	38	40	0	0	206	0	0	225	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 30.4%	ICU Level of Service A											
Analysis Period (min) 15												

HCM 6th TWSC
2: 16th Avenue East & 17th Street East

Background AM
1750 16th Ave E, Owen Sound TIS

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	0	35	0	37	1	139	50	49	158	0
Future Vol, veh/h	0	1	0	35	0	37	1	139	50	49	158	0
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	35	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	6	0	8	6	2	9	0
Mvmt Flow	0	1	0	38	0	40	1	151	54	53	172	0

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	358	487	88	373	460	103	174	0	0	205	0	0
Stage 1	280	280	-	180	180	-	-	-	-	-	-	-
Stage 2	78	207	-	193	280	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	7.02	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.36	2.2	-	-	2.22	-	-
Pot Cap-1 Maneuver	578	484	959	564	501	919	1415	-	-	1364	-	-
Stage 1	709	683	-	810	754	-	-	-	-	-	-	-
Stage 2	928	734	-	796	683	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	533	462	957	544	478	919	1413	-	-	1364	-	-
Mov Cap-2 Maneuver	533	462	-	544	478	-	-	-	-	-	-	-
Stage 1	707	652	-	809	753	-	-	-	-	-	-	-
Stage 2	887	733	-	761	652	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.8	10.6	0	1.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1413	-	-	462	544	919	1364	-	-
HCM Lane V/C Ratio	0.001	-	-	0.002	0.07	0.044	0.039	-	-
HCM Control Delay (s)	7.5	0	-	12.8	12.1	9.1	7.7	0.1	-
HCM Lane LOS	A	A	-	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.1	0.1	-	-

Lanes, Volumes, Timings
3: 16th Avenue East & Heritage Place Driveway

Background AM
1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	9	15	148	197	13
Future Volume (vph)	14	9	15	148	197	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.946				0.992	
Flt Protected	0.971			0.996		
Satd. Flow (prot)	1601	0	0	1769	1769	0
Flt Permitted	0.971			0.996		
Satd. Flow (perm)	1601	0	0	1769	1769	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	103.8			169.0	106.3	
Travel Time (s)	7.5			12.2	7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	15%	0%	7%	7%	7%	0%
Adj. Flow (vph)	15	10	16	161	214	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	0	0	177	228	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 30.3%	ICU Level of Service A					
Analysis Period (min) 15						

HCM 6th TWSC
3: 16th Avenue East & Heritage Place Driveway

Background AM
1750 16th Ave E, Owen Sound TIS

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	14	9	15	148	197	13
Future Vol, veh/h	14	9	15	148	197	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	15	0	7	7	7	0
Mvmt Flow	15	10	16	161	214	14

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	414	221	228
Stage 1	221	-	-
Stage 2	193	-	-
Critical Hdwy	6.55	6.2	4.17
Critical Hdwy Stg 1	5.55	-	-
Critical Hdwy Stg 2	5.55	-	-
Follow-up Hdwy	3.635	3.3	2.263
Pot Cap-1 Maneuver	571	824	1311
Stage 1	786	-	-
Stage 2	809	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	564	824	1311
Mov Cap-2 Maneuver	564	-	-
Stage 1	776	-	-
Stage 2	809	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1311	-	643	-	-
HCM Lane V/C Ratio	0.012	-	0.039	-	-
HCM Control Delay (s)	7.8	0	10.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

PTSL

Synchro 11 Report

Lanes, Volumes, Timings
1: 16th Avenue East & 16th Street East

Background PM
1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	
Traffic Volume (vph)	43	441	94	73	531	27	153	99	79	71	107	83
Future Volume (vph)	43	441	94	73	531	27	153	99	79	71	107	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	25.0		0.0	35.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			25.0			7.5			65.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		0.99	1.00		1.00				0.99	
Frt		0.974			0.993			0.934			0.934	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	3424	0	1787	3501	0	1787	3239	0	1770	3287	0
Flt Permitted	0.391			0.356			0.411			0.630		
Satd. Flow (perm)	674	3424	0	666	3501	0	771	3239	0	1174	3287	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			5			86			90	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		153.3			147.3			107.6			150.1	
Travel Time (s)		11.0			10.6			7.7			10.8	
Confl. Peds. (#/hr)	6		13	13		6	3					3
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
Heavy Vehicles (%)	10%	2%	3%	1%	2%	8%	1%	5%	3%	2%	1%	3%
Adj. Flow (vph)	47	479	102	79	577	29	166	108	86	77	116	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	581	0	79	606	0	166	194	0	77	206	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

PTSL

Synchro 11 Report

Lanes, Volumes, Timings

1: 16th Avenue East & 16th Street East

Background PM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	30.0		10.0	30.0		10.0	32.0		10.0	32.0	
Total Split (s)	15.0	35.0		15.0	35.0		25.0	25.0		25.0	25.0	
Total Split (%)	15.0%	35.0%		15.0%	35.0%		25.0%	25.0%		25.0%	25.0%	
Maximum Green (s)	10.0	29.0		10.0	29.0		20.0	19.0		20.0	19.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		13.0			13.0			15.0			15.0	
Flash Dont Walk (s)		10.0			10.0			10.0			10.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	35.8	29.5		37.8	32.3		24.6	14.4		17.0	8.2	
Actuated g/C Ratio	0.47	0.39		0.50	0.43		0.32	0.19		0.22	0.11	
v/c Ratio	0.12	0.43		0.18	0.41		0.41	0.28		0.24	0.47	
Control Delay	10.7	19.3		10.9	18.2		22.4	18.2		20.6	23.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.7	19.3		10.9	18.2		22.4	18.2		20.6	23.3	
LOS	B	B		B	B		C	B		C	C	
Approach Delay		18.7			17.4			20.1			22.6	
Approach LOS		B			B			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 75.9

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 19.1

Intersection LOS: B

Intersection Capacity Utilization 57.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: 16th Avenue East & 16th Street East

Ø1	Ø2	Ø3	Ø4
25 s	25 s	15 s	35 s
Ø5	Ø6	Ø7	Ø8
25 s	25 s	15 s	35 s

PTSL

Synchro 11 Report

Queues

1: 16th Avenue East & 16th Street East

Background PM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	47	581	79	606	166	194	77	206
v/c Ratio	0.12	0.43	0.18	0.41	0.41	0.28	0.24	0.47
Control Delay	10.7	19.3	10.9	18.2	22.4	18.2	20.6	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	19.3	10.9	18.2	22.4	18.2	20.6	23.3
Queue Length 50th (m)	3.2	33.0	5.4	35.5	18.8	7.8	8.2	8.8
Queue Length 95th (m)	9.5	57.1	14.2	59.9	34.4	17.9	18.0	20.4
Internal Link Dist (m)		129.3		123.3		83.6		126.1
Turn Bay Length (m)	30.0		25.0		35.0		20.0	
Base Capacity (vph)	468	1347	491	1493	534	889	556	904
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.43	0.16	0.41	0.31	0.22	0.14	0.23

Intersection Summary

PTSL

Synchro 11 Report

Lanes, Volumes, Timings

2: 16th Avenue East & 17th Street East

Background PM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔		↔	↔	
Traffic Volume (vph)	0	0	1	48	1	60	0	144	35	34	221	0
Future Volume (vph)	0	0	1	48	1	60	0	144	35	34	221	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	7.5			45.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.865			0.852			0.971				
Flt Protected				0.950							0.993	
Satd. Flow (prot)	0	1644	0	1770	1588	0	0	3095	0	0	3540	0
Flt Permitted				0.950							0.993	
Satd. Flow (perm)	0	1644	0	1770	1588	0	0	3095	0	0	3540	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		66.9			145.7			150.1			68.7	
Travel Time (s)		4.8			10.5			10.8			4.9	
Confl. Peds. (#/hr)								2	2			
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
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	15%	6%	3%	1%	0%
Adj. Flow (vph)	0	0	1	52	1	65	0	157	38	37	240	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	0	52	66	0	0	195	0	0	277	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 32.1%

ICU Level of Service A

Analysis Period (min) 15

PTSL

Synchro 11 Report

HCM 6th TWSC

2: 16th Avenue East & 17th Street East

Background PM

1750 16th Ave E, Owen Sound TIS

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔		↔	↔	
Traffic Vol, veh/h	0	0	1	48	1	60	0	144	35	34	221	0
Future Vol, veh/h	0	0	1	48	1	60	0	144	35	34	221	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	35	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	2	0	2	0	15	6	3	1	0
Mvmt Flow	0	0	1	52	1	65	0	157	38	37	240	0

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	393	511	120	372	492	100	240	0	0	197	0	0
Stage 1	314	314	-	178	178	-	-	-	-	-	-	-
Stage 2	79	197	-	194	314	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.54	6.5	6.94	4.1	-	-	4.16	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.54	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.54	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.52	4	3.32	2.2	-	-	2.23	-	-
Pot Cap-1 Maneuver	546	469	915	560	481	936	1339	-	-	1366	-	-
Stage 1	677	660	-	806	756	-	-	-	-	-	-	-
Stage 2	927	742	-	789	660	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	495	454	915	545	465	934	1339	-	-	1364	-	-
Mov Cap-2 Maneuver	495	454	-	545	465	-	-	-	-	-	-	-
Stage 1	677	640	-	804	754	-	-	-	-	-	-	-
Stage 2	861	741	-	764	640	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.9	10.6	0	1.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1339	-	-	915 545 919 1364	-	-	-
HCM Lane V/C Ratio	-	-	-	0.001 0.096 0.072 0.027	-	-	-
HCM Control Delay (s)	0	-	-	8.9 12.3 9.2 7.7	0.1	-	-
HCM Lane LOS	A	-	-	A B A A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0 0.3 0.2 0.1	-	-	-

PTSL

Synchro 11 Report

Lanes, Volumes, Timings

3: 16th Avenue East & Heritage Place Driveway

Background PM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	34	33	157	208	32
Future Volume (vph)	27	34	33	157	208	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.924				0.982	
Flt Protected	0.979			0.991		
Satd. Flow (prot)	1633	0	0	1699	1834	0
Flt Permitted	0.979			0.991		
Satd. Flow (perm)	1633	0	0	1699	1834	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	103.8			169.0	106.3	
Travel Time (s)	7.5			12.2	7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	12%	0%	10%	11%	2%	0%
Adj. Flow (vph)	29	37	36	171	226	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	0	0	207	261	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	36.6%			ICU Level of Service A		
Analysis Period (min)	15					

PTSL

Synchro 11 Report

HCM 6th TWSC

3: 16th Avenue East & Heritage Place Driveway

Background PM

1750 16th Ave E, Owen Sound TIS

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	27	34	33	157	208	32
Future Vol, veh/h	27	34	33	157	208	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	12	0	10	11	2	0
Mvmt Flow	29	37	36	171	226	35
Major/Minor						
Minor2	Major1		Major2			
Conflicting Flow All	487	244	261	0	-	0
Stage 1	244	-	-	-	-	-
Stage 2	243	-	-	-	-	-
Critical Hdwy	6.52	6.2	4.2	-	-	-
Critical Hdwy Stg 1	5.52	-	-	-	-	-
Critical Hdwy Stg 2	5.52	-	-	-	-	-
Follow-up Hdwy	3.608	3.3	2.29	-	-	-
Pot Cap-1 Maneuver	522	800	1258	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	775	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	505	800	1258	-	-	-
Mov Cap-2 Maneuver	505	-	-	-	-	-
Stage 1	749	-	-	-	-	-
Stage 2	775	-	-	-	-	-
Approach						
EB	NB		SB			
HCM Control Delay, s	11.3	1.4	0			
HCM LOS	B					
Minor Lane/Major Mvmt						
NBL	NBT EBLn1	SBT	SBR			
Capacity (veh/h)	1258	-	636	-	-	
HCM Lane V/C Ratio	0.029	-	0.104	-	-	
HCM Control Delay (s)	7.9	0	11.3	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

PTSL

Synchro 11 Report

Appendix F

Total Traffic Operations Reports



Queues

1: 16th Avenue East & 16th Street East

Total AM

1750 16th Ave E, Owen Sound TIS

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	63	378	48	410	112	236	41	182
v/c Ratio	0.11	0.25	0.09	0.28	0.32	0.38	0.14	0.43
Control Delay	9.3	14.6	9.3	16.7	21.8	21.9	19.8	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.3	14.6	9.3	16.7	21.8	21.9	19.8	22.4
Queue Length 50th (m)	3.9	18.2	3.0	21.2	12.2	12.1	4.3	7.4
Queue Length 95th (m)	10.8	33.2	8.9	37.4	24.5	23.4	11.1	17.8
Internal Link Dist (m)		129.3		123.3		83.6		126.1
Turn Bay Length (m)	30.0		25.0		35.0		20.0	
Base Capacity (vph)	607	1518	601	1467	549	956	566	919
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.25	0.08	0.28	0.20	0.25	0.07	0.20
Intersection Summary								

Lanes, Volumes, Timings

2: 16th Avenue East & 17th Street East

Total AM

1750 16th Ave E, Owen Sound TIS

														
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	0	1	0	35	0	39	1	165	50	50	179	0		
Future Volume (vph)	0	1	0	35	0	39	1	165	50	50	179	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Storage Length (m)	0.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0		
Storage Lanes	0			1		0	0		0	0		0		
Taper Length (m)	7.5			45.0			7.5			7.5				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95		
Ped Bike Factor														
Frt					0.850			0.965						
Flt Protected				0.950							0.989			
Satd. Flow (prot)	0	1900	0	1805	1524	0	0	3240	0	0	3322	0		
Flt Permitted				0.950							0.989			
Satd. Flow (perm)	0	1900	0	1805	1524	0	0	3240	0	0	3322	0		
Link Speed (k/h)		50			50			50			50			
Link Distance (m)		66.9			145.7			150.1			68.7			
Travel Time (s)		4.8			10.5			10.8			4.9			
Confl. Peds. (#/hr)							2					2		
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		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	8%	6%	2%	9%	0%		
Adj. Flow (vph)	0	1	0	38	0	42	1	179	54	54	195	0		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	1	0	38	42	0	0	234	0	0	249	0		
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No		
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right		
Median Width(m)		3.6			3.6			3.6			3.6			
Link Offset(m)		0.0			0.0			0.0			0.0			
Crosswalk Width(m)		4.8			4.8			4.8			4.8			
Two way Left Turn Lane														
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Turning Speed (k/h)	25		15	25		15	25		15	25		15		
Sign Control		Stop			Stop			Free			Free			
Intersection Summary														
Area Type:	Other													
Control Type:	Unsignalized													
Intersection Capacity Utilization 31.6%	ICU Level of Service A													
Analysis Period (min) 15														

HCM 6th TWSC
2: 16th Avenue East & 17th Street East

Total AM
1750 16th Ave E, Owen Sound TIS

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	0	35	0	39	1	165	50	50	179	0
Future Vol, veh/h	0	1	0	35	0	39	1	165	50	50	179	0
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	35	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	6	0	8	6	2	9	0
Mvmt Flow	0	1	0	38	0	42	1	179	54	54	195	0

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	397	540	100	414
Stage 1	305	305	-	208
Stage 2	92	235	-	206
Critical Hdwy	7.5	6.5	6.9	7.5
Critical Hdwy Stg 1	6.5	5.5	-	6.5
Critical Hdwy Stg 2	6.5	5.5	-	6.5
Follow-up Hdwy	3.5	4	3.3	3.5
Pot Cap-1 Maneuver	542	451	943	527
Stage 1	685	666	-	780
Stage 2	911	714	-	782
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	498	429	941	508
Mov Cap-2 Maneuver	498	429	-	508
Stage 1	683	635	-	779
Stage 2	867	713	-	746

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.4	10.9	0	1.8
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1386	-	-	429	508	900	1332	-	-
HCM Lane V/C Ratio	0.001	-	-	0.003	0.075	0.047	0.041	-	-
HCM Control Delay (s)	7.6	0	-	13.4	12.7	9.2	7.8	0.1	-
HCM Lane LOS	A	A	-	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.1	0.1	-	-

PTSL

Synchro 11 Report

Lanes, Volumes, Timings
3: 16th Avenue East & Heritage Place Driveway

Total AM
1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	9	15	150	200	13
Future Volume (vph)	14	9	15	150	200	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.946				0.992	
Flt Protected	0.971			0.996		
Satd. Flow (prot)	1601	0	0	1769	1769	0
Flt Permitted	0.971			0.996		
Satd. Flow (perm)	1601	0	0	1769	1769	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	103.8			76.5	106.3	
Travel Time (s)	7.5			5.5	7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	15%	0%	7%	7%	7%	0%
Adj. Flow (vph)	15	10	16	163	217	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	0	0	179	231	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization 30.4%	ICU Level of Service A
Analysis Period (min) 15	

PTSL

Synchro 11 Report

HCM 6th TWSC
3: 16th Avenue East & Heritage Place Driveway

Total AM
1750 16th Ave E, Owen Sound TIS

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑	↑	
Traffic Vol, veh/h	14	9	15	150	200	13
Future Vol, veh/h	14	9	15	150	200	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	15	0	7	7	7	0
Mvmt Flow	15	10	16	163	217	14

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	419	224	231	0	-	0
Stage 1	224	-	-	-	-	-
Stage 2	195	-	-	-	-	-
Critical Hdwy	6.55	6.2	4.17	-	-	-
Critical Hdwy Stg 1	5.55	-	-	-	-	-
Critical Hdwy Stg 2	5.55	-	-	-	-	-
Follow-up Hdwy	3.635	3.3	2.263	-	-	-
Pot Cap-1 Maneuver	567	820	1308	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	560	820	1308	-	-	-
Mov Cap-2 Maneuver	560	-	-	-	-	-
Stage 1	773	-	-	-	-	-
Stage 2	808	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1308	- 639	-	-
HCM Lane V/C Ratio	0.012	- 0.039	-	-
HCM Control Delay (s)	7.8	0 10.9	-	-
HCM Lane LOS	A	A B	-	-
HCM 95th %tile Q(veh)	0	- 0.1	-	-

PTSL

Synchro 11 Report

Lanes, Volumes, Timings
4: 16th Avenue East & Site Access

Total AM
1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑	↑	
Traffic Volume (vph)	2	22	28	163	206	3
Future Volume (vph)	2	22	28	163	206	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.875				0.998	
Flt Protected	0.996			0.993		
Satd. Flow (prot)	1656	0	0	1780	1774	0
Flt Permitted	0.996			0.993		
Satd. Flow (perm)	1656	0	0	1780	1774	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	66.9			92.5	76.5	
Travel Time (s)	4.8			6.7	5.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	7%	7%	0%
Adj. Flow (vph)	2	24	30	177	224	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	0	207	227	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 34.5%	ICU Level of Service A					
Analysis Period (min) 15						

PTSL

Synchro 11 Report

HCM 6th TWSC
4: 16th Avenue East & Site Access

Total AM
1750 16th Ave E, Owen Sound TIS

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	2	22	28	163	206	3
Future Vol, veh/h	2	22	28	163	206	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	7	7	0
Mvmt Flow	2	24	30	177	224	3

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	463	226	227
Stage 1	226	-	-
Stage 2	237	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	561	818	1353
Stage 1	816	-	-
Stage 2	807	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	547	818	1353
Mov Cap-2 Maneuver	547	-	-
Stage 1	796	-	-
Stage 2	807	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1353	-	786	-	-
HCM Lane V/C Ratio	0.022	-	0.033	-	-
HCM Control Delay (s)	7.7	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

PTSL

Synchro 11 Report

Lanes, Volumes, Timings
1: 16th Avenue East & 16th Street East

Total PM
1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	W	W		W	W		W	W		W	W	
Traffic Volume (vph)	57	441	94	73	531	36	153	106	79	80	114	96
Future Volume (vph)	57	441	94	73	531	36	153	106	79	80	114	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0			25.0			35.0			20.0		
Storage Lanes	1			1			1			1		
Taper Length (m)	35.0			25.0			7.5			65.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		0.99	1.00		1.00				0.99	
Frt	0.974			0.991			0.936			0.932		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	3424	0	1787	3490	0	1787	3244	0	1770	3278	0
Flt Permitted	0.355			0.372			0.413			0.626		
Satd. Flow (perm)	612	3424	0	695	3490	0	775	3244	0	1166	3278	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			7			86			104	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		153.3			147.3			107.6			150.1	
Travel Time (s)		11.0			10.6			7.7			10.8	
Confl. Peds. (#/hr)	6		13	13		6	3					3
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
Heavy Vehicles (%)	10%	2%	3%	1%	2%	8%	1%	5%	3%	2%	1%	3%
Adj. Flow (vph)	62	479	102	79	577	39	166	115	86	87	124	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	581	0	79	616	0	166	201	0	87	228	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane							Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

PTSL

Synchro 11 Report

Lanes, Volumes, Timings

1: 16th Avenue East & 16th Street East

Total PM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	30.0		10.0	30.0		10.0	32.0		10.0	32.0	
Total Split (s)	15.0	35.0		15.0	35.0		25.0	25.0		25.0	25.0	
Total Split (%)	15.0%	35.0%		15.0%	35.0%		25.0%	25.0%		25.0%	25.0%	
Maximum Green (s)	10.0	29.0		10.0	29.0		20.0	19.0		20.0	19.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)	13.0			13.0			15.0			15.0		
Flash Dont Walk (s)	10.0			10.0			10.0			10.0		
Pedestrian Calls (#/hr)	0			0			0			0		
Act Effct Green (s)	36.1	29.5		36.6	29.7		24.6	14.3		17.6	8.4	
Actuated g/C Ratio	0.47	0.39		0.48	0.39		0.32	0.19		0.23	0.11	
v/c Ratio	0.16	0.43		0.18	0.45		0.42	0.30		0.26	0.50	
Control Delay	11.1	19.5		11.1	20.1		22.4	18.8		20.9	22.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.1	19.5		11.1	20.1		22.4	18.8		20.9	22.7	
LOS	B	B		B	C		C	B		C	C	
Approach Delay	18.7			19.1			20.4			22.2		
Approach LOS	B			B			C			C		

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 76.1

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 19.7

Intersection LOS: B

Intersection Capacity Utilization 57.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: 16th Avenue East & 16th Street East

Ø1	Ø2	Ø3	Ø4
25 s	25 s	15 s	35 s
Ø5	Ø6	Ø7	Ø8
25 s	25 s	15 s	35 s

PTSL

Synchro 11 Report

Queues

1: 16th Avenue East & 16th Street East

Total PM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	62	581	79	616	166	201	87	228
v/c Ratio	0.16	0.43	0.18	0.45	0.42	0.30	0.26	0.50
Control Delay	11.1	19.5	11.1	20.1	22.4	18.8	20.9	22.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	19.5	11.1	20.1	22.4	18.8	20.9	22.7
Queue Length 50th (m)	4.2	33.2	5.4	36.6	18.8	8.4	9.4	9.5
Queue Length 95th (m)	11.9	57.5	14.3	62.1	34.5	18.7	19.8	21.6
Internal Link Dist (m)		129.3		123.3		83.6		126.1
Turn Bay Length (m)	30.0		25.0		35.0		20.0	
Base Capacity (vph)	444	1343	496	1367	535	888	557	911
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.43	0.16	0.45	0.31	0.23	0.16	0.25

Intersection Summary

PTSL

Synchro 11 Report

Lanes, Volumes, Timings

2: 16th Avenue East & 17th Street East

Total PM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	1	48	1	62	0	174	35	36	250	0
Future Volume (vph)	0	0	1	48	1	62	0	174	35	36	250	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	7.5			45.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.865			0.852			0.975				
Flt Protected				0.950							0.994	
Satd. Flow (prot)	0	1644	0	1770	1588	0	0	3101	0	0	3544	0
Flt Permitted				0.950							0.994	
Satd. Flow (perm)	0	1644	0	1770	1588	0	0	3101	0	0	3544	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		66.9			145.7			150.1			68.7	
Travel Time (s)		4.8			10.5			10.8			4.9	
Confl. Peds. (#/hr)								2	2			
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
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	15%	6%	3%	1%	0%
Adj. Flow (vph)	0	0	1	52	1	67	0	189	38	39	272	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	0	52	68	0	0	227	0	0	311	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 33.7% ICU Level of Service A

Analysis Period (min) 15

PTSL

Synchro 11 Report

HCM 6th TWSC

2: 16th Avenue East & 17th Street East

Total PM

1750 16th Ave E, Owen Sound TIS

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	1	48	1	62	0	174	35	36	250	0
Future Vol, veh/h	0	0	1	48	1	62	0	174	35	36	250	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	35	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	2	0	2	0	15	6	3	1	0
Mvmt Flow	0	0	1	52	1	67	0	189	38	39	272	0

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	445	579	136	424	560	116	272	0	0	229	0	0
Stage 1	350	350	-	210	210	-	-	-	-	-	-	-
Stage 2	95	229	-	214	350	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.54	6.5	6.94	4.1	-	-	4.16	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.54	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.54	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.52	4	3.32	2.2	-	-	2.23	-	-
Pot Cap-1 Maneuver	501	429	894	514	440	914	1303	-	-	1329	-	-
Stage 1	645	636	-	773	732	-	-	-	-	-	-	-
Stage 2	907	718	-	768	636	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	451	413	894	499	424	912	1303	-	-	1327	-	-
Mov Cap-2 Maneuver	451	413	-	499	424	-	-	-	-	-	-	-
Stage 1	645	614	-	771	731	-	-	-	-	-	-	-
Stage 2	839	717	-	740	614	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	11	0	1.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1303	-	-	894 499 896	1327	-	-
HCM Lane V/C Ratio	-	-	-	0.001 0.105 0.076	0.029	-	-
HCM Control Delay (s)	0	-	-	9 13.1 9.4	7.8	0.1	-
HCM Lane LOS	A	-	-	A B A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0 0.3 0.2	0.1	-	-

PTSL

Synchro 11 Report

Lanes, Volumes, Timings

3: 16th Avenue East & Heritage Place Driveway

Total PM

1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	34	33	161	212	32
Future Volume (vph)	27	34	33	161	212	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.924				0.982	
Flt Protected	0.979			0.992		
Satd. Flow (prot)	1633	0	0	1701	1834	0
Flt Permitted	0.979			0.992		
Satd. Flow (perm)	1633	0	0	1701	1834	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	103.8			76.5	106.3	
Travel Time (s)	7.5			5.5	7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	12%	0%	10%	11%	2%	0%
Adj. Flow (vph)	29	37	36	175	230	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	0	0	211	265	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.0%			ICU Level of Service A		
Analysis Period (min)	15					

PTSL

Synchro 11 Report

HCM 6th TWSC

3: 16th Avenue East & Heritage Place Driveway

Total PM

1750 16th Ave E, Owen Sound TIS

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	27	34	33	161	212	32
Future Vol, veh/h	27	34	33	161	212	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	12	0	10	11	2	0
Mvmt Flow	29	37	36	175	230	35
Major/Minor						
Minor2	Major1		Major2			
Conflicting Flow All	495	248	265	0	-	0
Stage 1	248	-	-	-	-	-
Stage 2	247	-	-	-	-	-
Critical Hdwy	6.52	6.2	4.2	-	-	-
Critical Hdwy Stg 1	5.52	-	-	-	-	-
Critical Hdwy Stg 2	5.52	-	-	-	-	-
Follow-up Hdwy	3.608	3.3	2.29	-	-	-
Pot Cap-1 Maneuver	516	796	1254	-	-	-
Stage 1	770	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	499	796	1254	-	-	-
Mov Cap-2 Maneuver	499	-	-	-	-	-
Stage 1	745	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Approach						
EB	NB		SB			
HCM Control Delay, s	11.4	1.4	0			
HCM LOS	B					
Minor Lane/Major Mvmt						
NBL	NBT EBLn1	SBT	SBR			
Capacity (veh/h)	1254	-	630	-	-	
HCM Lane V/C Ratio	0.029	-	0.105	-	-	
HCM Control Delay (s)	8	0	11.4	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

PTSL

Synchro 11 Report

Lanes, Volumes, Timings
4: 16th Avenue East & Site Access

Total PM
1750 16th Ave E, Owen Sound TIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	31	32	190	242	4
Future Volume (vph)	4	31	32	190	242	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.879				0.998	
Flt Protected	0.995			0.993		
Satd. Flow (prot)	1662	0	0	1724	1860	0
Flt Permitted	0.995			0.993		
Satd. Flow (perm)	1662	0	0	1724	1860	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	66.9			92.5	76.5	
Travel Time (s)	4.8			6.7	5.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	11%	2%	0%
Adj. Flow (vph)	4	34	35	207	263	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	38	0	0	242	267	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100	100			100
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	38.1%			ICU Level of Service A		
Analysis Period (min)	15					

PTSL

Synchro 11 Report

HCM 6th TWSC
4: 16th Avenue East & Site Access

Total PM
1750 16th Ave E, Owen Sound TIS

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	4	31	32	190	242	4
Future Vol, veh/h	4	31	32	190	242	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	11	2	0
Mvmt Flow	4	34	35	207	263	4
Major/Minor						
Minor2	Major1		Major2			
Conflicting Flow All	542	265	267	0	-	0
Stage 1	265	-	-	-	-	-
Stage 2	277	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	505	779	1308	-	-	-
Stage 1	784	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	490	779	1308	-	-	-
Mov Cap-2 Maneuver	490	-	-	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Approach						
EB	NB		SB			
HCM Control Delay, s	10.2	1.1	0			
HCM LOS	B					
Minor Lane/Major Mvmt						
NBL	NBT EBLn1	SBT	SBR			
Capacity (veh/h)	1308	-	730	-	-	-
HCM Lane V/C Ratio	0.027	-	0.052	-	-	-
HCM Control Delay (s)	7.8	0	10.2	-	-	-
HCM Lane LOS	A	A	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-	-

PTSL

Synchro 11 Report