

Gravel Pit
Part Lot 31
Southgate Road 04
Southgate, ON
Transportation Impact Study

Paradigm Transportation Solutions Limited



March 2022 220034

## **Project Summary**



## **Project Number** 220034

#### March 2022

#### Client

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Version 0.0.1

## Gravel Pit, Southgate Part Lot 31, Southgate Road 04, ON Transportation Impact Study



Erica Bayley, P.Eng.

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## **Executive Summary**

#### Content

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study for a gravel pit located on the north side of Southgate Road 04, between Southgate Township 19 Sideroad and Grey Road 8.

This Transportation Impact Study (TIS) includes an analysis of existing traffic conditions, a description of the proposed development, traffic forecasts for the assumed full build-out (2022) and five-year horizon (2027) from the assumed build-out, and any recommendations required to improve future traffic conditions.

### **Development Concept**

The property owner is proposing to operate the site with an annual tonnage of 100,000 tonnes. Vehicle access is proposed via the existing access onto Southgate Road 04. The proposed haulage route is east on Southgate Road 04 to Grey Road 8, then primarily south on Grey Road 8 to Highway 89.

#### **Conclusions**

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

- ▶ Existing Traffic Conditions: The study area intersections are currently operating within acceptable levels of service and no critical movements during the AM and PM peak hours.
- ➤ **Trip Generation:** the gravel pit is forecast to generate approximately 12 inbound and 12 outbound truck trips during the AM and PM peak hours.
- ▶ 2027 Background Traffic Conditions: the study area intersections are forecast to operate within acceptable levels of service with no specific problem movements during the AM and PM peak hours.
- 2027 Total Traffic Conditions: the study area intersections are forecast to operate within acceptable levels of service with no specific problem movements during the AM and PM peak hours:
- ► The addition of the site generated traffic increases the overall delay at the study area intersections by one second or less during the AM and PM peak hours.



▶ Remedial Measures: Left-turn lanes are not warranted at the intersections of Highway 89 at Grey Road 8 and Grey Road 8 at Southgate Road 04.

### Recommendations

Based on the findings of this study, it is recommended that the development be approved with no requirement for off-site transportation improvements.

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**Pre-Study Consultation** 

## 1 Introduction

#### 1.1 Overview

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study for a gravel pit located on the north side of Southgate Road 04, between Southgate Township 19 Sideroad and Grey Road 8. **Figure 1.1** illustrates the location of the subject site.

This study determines the impacts of the additional traffic on the surrounding road network, and the remedial measures necessary (if any) to accommodate future traffic in a satisfactory manner. The scope of the study includes:

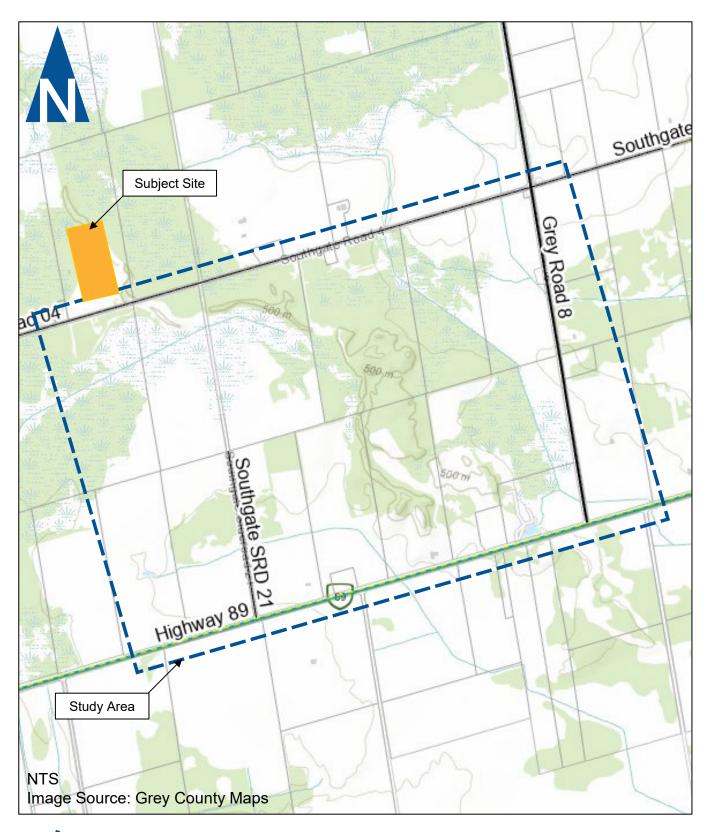
- Assessment of the current traffic and site conditions within the study area;
- Estimates of background traffic growth;
- Estimates of additional traffic generated by the subject site;
- Analysis of the impact of the future traffic on the surrounding road network for full build-out (year 2022) and five-years after full build-out (year 2027) horizon years; and
- Recommendations necessary to mitigate this future traffic in a satisfactory manner.

The study scope was developed in consultation with the Township of Southgate in February 2022. **Appendix A** contains the pre-study consultation material and response from the Township.

### 1.2 Study Area

The intersections assessed in this study include:

- Existing access connection to Southgate Road 04 (unsignalized);
- ▶ Southgate Road 04 & Grey Road 08 (unsignalized); and
- ▶ Grey Road 08 and Highway 89 (unsignalized).





# **Location of Subject Site**

## 2 Existing Conditions

#### 2.1 Road Characteristics

The roadways of interest within the study area include Highway 89, Grey Road 8, and Southgate Road 04. These roadways are under the jurisdiction of the Ministry of Transportation Ontario (MTO), Grey County, and the Township of Southgate Respectively<sup>1</sup> and are generally described as follows:

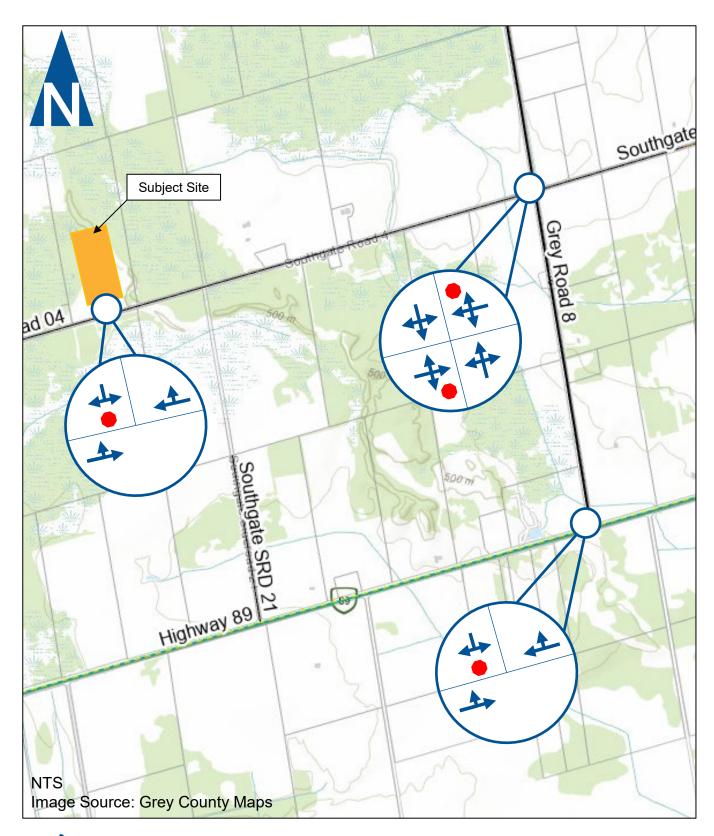
- ► **Highway 89** is designated as an arterial road within the study area. It has a two-lane cross-section with a speed limit of 80 km/h.
- ▶ Grey Road 8 is designated as an arterial road within the study area. It has a two-lane cross-section with a speed limit of 80 km/h.
- Southgate Road 04 is designated as a local road within the study area. It has a two-lane cross-section with a speed limit of 80 km/h.

**Figure 2.1** details the existing traffic control and lane configurations at the study area intersections.



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<sup>&</sup>lt;sup>1</sup> Township of Southgate Official Plan, Schedule 'B' – Transportation





**Existing Lane Configuration & Traffic Control** 

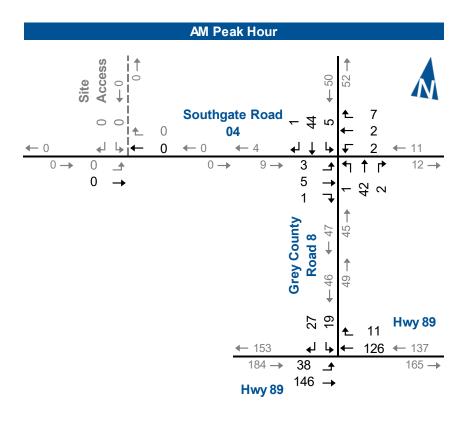
### 2.2 Traffic Volumes

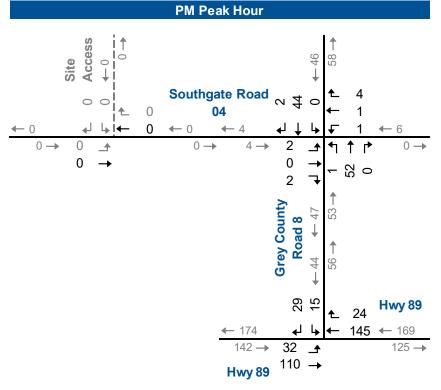
Paradigm undertook turning movement counts at the study area intersections in March 2022.

The heavy vehicles documented in the existing count data have been converted to passenger car units (PCE) using a factor of 3.0 PCE per vehicle.

**Appendix B** contains the observed traffic counts for the study area intersections.

**Figure 2.2** illustrate the factored base year weekday AM and PM peak hour traffic volumes.







## **Base Year Traffic Volumes**

### 2.3 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 the 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 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 of the study intersections were evaluated using the existing lane configurations, traffic controls, and the base year traffic peak hour volumes.

The level of service conditions on the existing road network have been assessed using Synchro 10. As noted in MTO TIS guidelines<sup>2</sup>, movements are considered critical under the following conditions:

Volume/capacity ratio (v/c ratio) for overall intersection operations, through movements, or shared through/turning movements increased to 0.85 or above;

**Table 2.1** summarizes the existing intersection operations. The entries in the table indicating the AM and PM peak hour level of service (LOS), volume to capacity ratios (V/C), and 95th percentile queues experienced.

The study are intersections are currently operating with acceptable levels of service with no specific problem movements. **Appendix C** contains the detailed Synchro reports.

<sup>&</sup>lt;sup>2</sup> Ministry of Transportation Ontario General Guidelines for the Preparation of Traffic Impact Studies, February 2021



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### **TABLE 2.1: BASE YEAR OPERATIONS**

po									Di	irectio	n/Mo	veme	nt/Ap	proac	ch					
Period					Eastb	ound	I	'	West	oound	1	1	orth	bound	k	S	outh	boun	b	
Analysis P	Intersection	Control Type	MOE	Left	Through	Right	Approach	<b>н</b> әл	Through	Right	Approach	μеη	Through	Right	Approach	µеТ	Through	Right	Approach	Overall
			LOS	Α	Α		Α		Α	Α	Α					В		>	В	
=	Highway 89 &	TWSC	Delay	8	0		2		0	0	0					11		>	11	
훈	Grey Road 8	1000	V/C	0.03	0.00				0.00	0.00						0.08		>		
<del> </del>			Q	1	0				0	0						2		>		
AM Peak Hour	Grey Road 8 &		LOS	<	Α	>	Α	<	Α	>	Α	Α	Α	Α	Α	Α	Α	Α	Α	
3	Southgate	TWSC	Delay	<	10	>	10	<	9	>	9	7	0	0	0	7	0	0	1	
4	Road 04	1000	V/C	<	0.01	>		<	0.02	>		0.00	0.00	0.00		0.00	0.00	0.00		
	11000 01		Q	<	0	>		<	0	>		0	0	0		0	0	0		
			LOS	Α	Α		Α		Α	Α	Α					Α		>	Α	
ξ.	Highway 89 &	TWSC	Delay	8	0		2		0	0	0					10		>	10	
후	Grey Road 8	1000	V/C	0.02	0.00				0.00	0.00						0.06		>		
높			Q	1	0				0	0						2		>		
PM Peak Hour	Grey Road 8 &		LOS	<	Α	>	Α	<	Α	>	Α	Α	Α	Α	Α	Α	Α	Α	Α	
Σ	Southgate	TWSC	Delay	<	9	>	9	<	9	>	9	7	0	0	0	0	0	0	0	
<u> </u>	Road 04	10000	V/C	<	0.01	>		<	0.01	>		0.00	0.00	0.00		0.00	0.00	0.00		
	1 toda o⊣r		Q	<	0	>		<	0	>		0	0	0		0	0	0		

MOE - Measure of Effectiveness

Q - 95th Percentile Queue Length (m)

LOS - Level of Service

TWSC - Two-Way Stop Control

Delay - Average Delay per Vehicle in Secon(</> - Shared with through movement

V/C - Volume to Capacity Ratio



## 3 Development Concept

### 3.1 Development Description

The subject site is located on the north side of Southgate Road 04, between Southgate Township 19 Sideroad and Grey Road 8

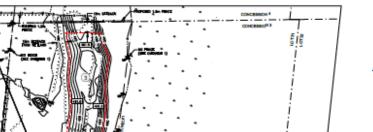
The property owner is proposing to operate the site with an annual tonnage of 100,000 tonnes.

Vehicle access is proposed via the existing access onto Southgate Road 04.

The proposed haulage route is east on Southgate Road 04 to Grey Road 8, then primarily south on Grey Road 8 to Highway 89.

Figure 3.1 shows the proposed development concepts.

Figure 3.2 illustrates the haul route.

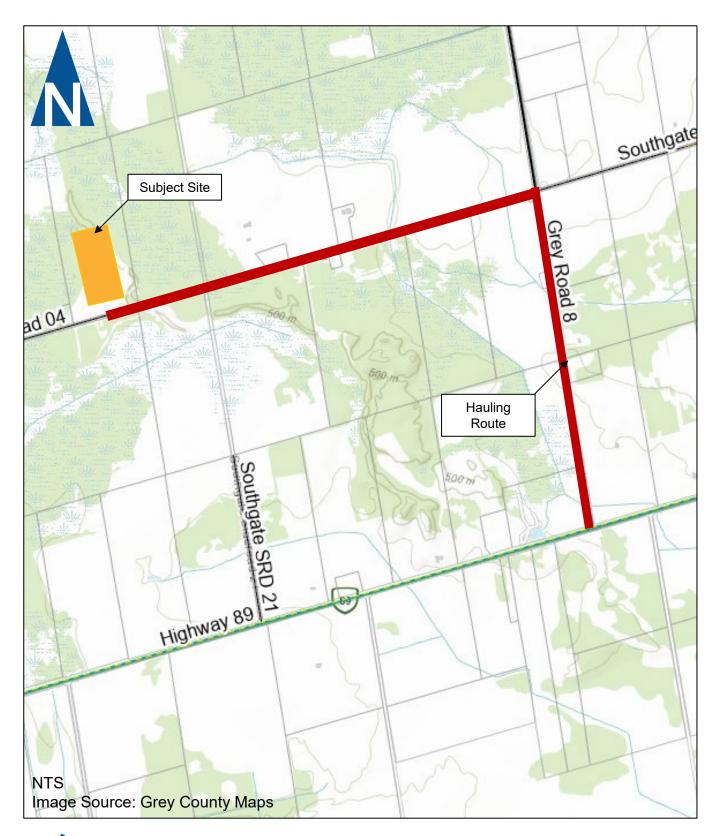




NTS



# **Concept Plan**





# **Hauling Route**

### 3.2 Site Trip Generation

The estimated trip generation is based on the number of trips made by trucks utilizing the proposed hauling route during the operation. It is expected that the trucks used for operations would be standard sized single unit trucks or tri-axle trucks, but will have the potential to use WB-19 tractor-trailer trucks. The number of forecast trips was calculated using the following information regarding expected pit operations:

- ▶ Licenced Extraction Rate: The maximum amount of tonnage applied for the aggregate licence is 100,000 tonnes per year. This rate represents the maximum amount of material that can be extracted from the site on yearly basis.
- ▶ **Pit Operations**: The operational plan for the pit notes that the trucks will be loaded between 7:00 AM and 6:00 PM daily on weekdays for a duration of 12 months. Realities of market forces and weather have shown that this activity can be sustained for 240 operating days per year.
- ▶ **Vehicle Size**: An average payload of 40 tonnes per truck was assumed for the purposes of the analysis.

**Table 3.1** summarizes the estimated daily average and peak hour traffic generation at the gravel pit. From the calculations, it was found that an average of 12 trips per hour can be expected.

**TABLE 3.1: TRIP GENERATION ESTIMATES** 

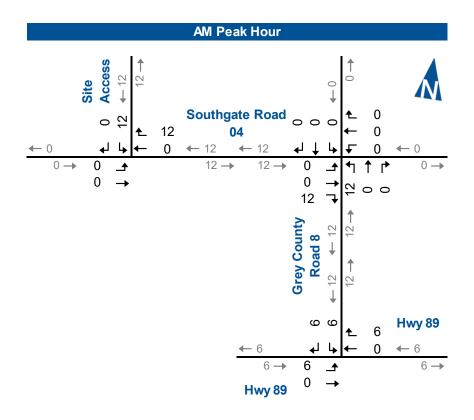
Measure	Units	Input	Calculation
Annual Rate of Extraction	tonnes/year	100,000	
Operating Days per year	day/year	240	
Average Extraction per day	tonnes/day		417
Average Payload per truck	tonnes/truck	40	
Average Number of Trucks per day	trucks/day		10
Operating Hours per day	hours/day	11	
Average number of trucks per hour	trucks/hour		1
Peak Hour factor	dimensionless	0.25	
Peak Hour Truck Volume	trucks/hour		4
Passsenger Car Equivalents	PCE's/truck	3	
Peak Hour Entering Volume	PCE's/hour		12
Peak Hour Exiting Volume	PCE's/hour		12

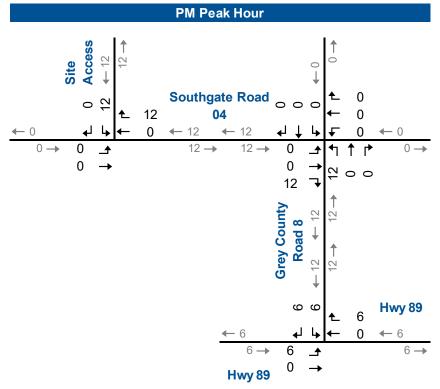
The distribution of the site traffic consists only of truck load transportation. The truck hauling involves two steps:

- A trip of the loaded truck from the proposed pit destined to Highway 89; and
- ▶ A return trip of the unloaded trucks to the proposed pit

Hence, the trips were evenly split between inbound and outbound trips.

**Figure 3.3** illustrates the site traffic volumes during the AM and PM peak hours.







## **Site Generated Traffic Volumes**

## 4 Evaluation of Future Traffic Conditions

The assessment of the future traffic conditions contained in this section includes the future traffic forecasts as well as the level of service analysis. A five-year horizon (2027) following the anticipated build-out of the subject site has been assessed to determine the impact of the subject site.

### 4.1 2027 Background Horizon

#### 4.1.1 2027 Background Traffic Growth

The 2027 background traffic volumes reflect an annual growth rate of 2.0% per annum applied to the existing volumes.

No other background developments were identified by the Township for inclusion in the background traffic volumes. It is assumed that the generalized growth rate would capture the traffic generated by any other development.

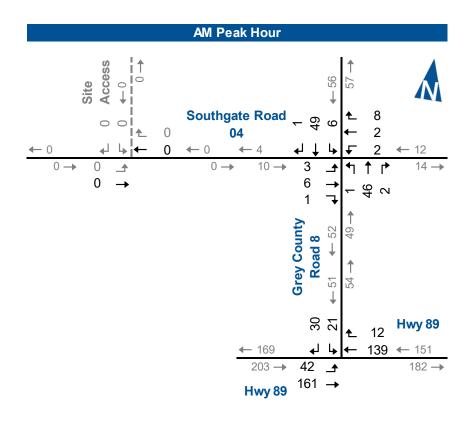
**Figure 4.1** illustrates the 2027 forecast background traffic volumes for the weekday AM and PM peak hours.

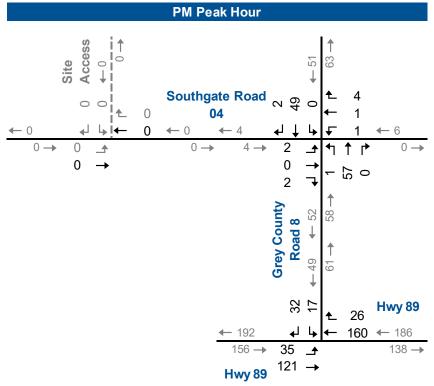
#### 4.1.2 2027 Background Traffic Operations

The operations at the study area intersections for the forecast background traffic scenario followed the same methodology used for the existing traffic conditions. **Table 4.1** details the level of service conditions.

The study area intersections are forecast to operate with acceptable levels of service with no critical movements during the weekday AM and PM peak hours.

**Appendix D** contains the supporting detailed Synchro 10 reports.







**2027 Background Traffic Volumes** 

#### **TABLE 4.1: 2027 BACKGROUND OPERATIONS**

þc									D	irectio	on/Mc	veme	nt/Ap	proac	ch					
Period					Eastb	ound	I		Westl	oound	t	1	North	bound	t	S	outh	boun	d	
Analysis P	Intersection	Control Type	MOE	Left	Through	Right	Approach	ijeŢ	Through	Right	Approach	IJeТ	Through	Right	Approach	µеТ	Through	Right	Approach	Overall
			LOS	Α	Α		Α		Α	Α	Α					В		^	В	
Ε.	Highway 89 &	TWSC	Delay	8	0		2		0	0	0					11		>	11	
Hour	Grey Road 8	10030	V/C	0.04	0.00				0.00	0.00						0.10		>		
높			Q	1	0				0	0						2		>		
AM Peak	Cray Dood 0 9		LOS	<	Α	^	Α	<	Α	>	Α	Α	Α	Α	Α	Α	Α	Α	Α	
Σ	Grey Road 8 & Southgate	TWSC	Delay	<	10	>	10	<	9	>	9	7	0	0	0	7	0	0	1	
٩	Road 04	10000	V/C	<	0.02	>		<	0.02	>		0.00	0.00	0.00		0.01	0.00	0.00		
	Noad 04		Q	<	1	>		<	1	>		0	0	0		0	0	0		
			LOS	Α	Α		Α		Α	Α	Α					В		>	В	
Ξ.	Highway 89 &	TWSC	Delay	8	0		2		0	0	0					10		>	10	
Hour	Grey Road 8	10000	V/C	0.03	0.00				0.00	0.00						0.07		>		
품			Q	1	0				0	0						2		>		
PM Peak	Cray Dood 0 9		LOS	<	Α	>	Α	<	Α	>	Α	Α	Α	Α	Α	Α	Α	Α	Α	
Ξ	Grey Road 8 & Southgate	TWSC	Delay	<	9	>	9	<	9	>	9	7	0	0	0	0	0	0	0	
	Road 04	10030	V/C	<	0.01	>		<	0.01	>		0.00	0.00	0.00		0.00	0.00	0.00		
	Noau 04		Q	<	0	>		<	0	>		0	0	0		0	0	0		

MOE - Measure of Effectiveness

Q - 95th Percentile Queue Length (m)

LOS - Level of Service

TWSC - Two-Way Stop Control

Delay - Average Delay per Vehicle in Secon(</> - Shared with through movement

V/C - Volume to Capacity Ratio

#### 4.2 2027 Total Traffic Horizon

#### 4.2.1 2027 Total Traffic Volumes

**Figure 4.2** illustrates the forecast 2027 total (background + site traffic) traffic volumes.

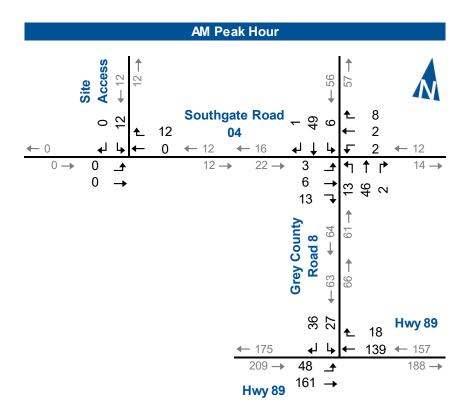
#### 4.2.2 2027 Total Traffic Operations

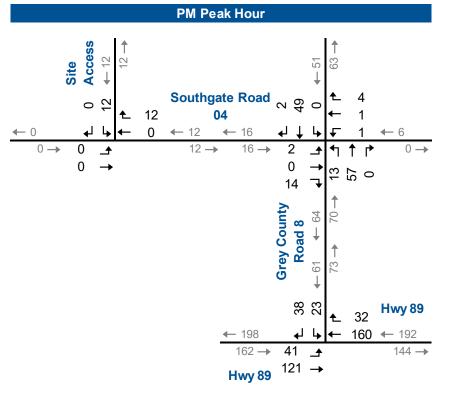
The study area intersection operations analysis for the future total traffic scenario followed the same methodology used for the existing and background traffic conditions. **Table 4.2** details the level of service conditions.

The study area intersections are forecast to operate with acceptable levels of service with no critical movements during the weekday AM and PM peak hours.

With the addition of the site generated traffic volumes, the overall intersection delays at the study area intersections increase by one second or less during the AM and PM peak hours.

**Appendix E** contains the supporting detailed Synchro 10 reports.







## **2027 Total Traffic Volumes**

### **TABLE 4.2: 2027 TOTAL OPERATIONS**

þc									Di	rectio	n/Mo	veme	nt/Ap	proac	ch					
eric					Eastb	ound	i	,	Westl	ounc	t	١	Vorth	oound	k	S	outh	boun	d	
Analysis Period	Intersection	Control Type	MOE	Left	Through	Right	Approach	IJЭT	Through	Right	Approach	μеη	Through	Right	Approach	µеТ	Through	Right	Approach	Overall
	Highway 89 & Grey Road 8	TWSC	LOS Delay V/C	A 8 0.04	A 0 0.00		A 2		A 0 0.00	A 0 0.00	<b>A</b> 0					B 12 0.12		v v v	B 12	
nc			Q LOS	1 <	0 A	>	Α	<	0 A	0 >	Α	Α	Α	Α	Α	3 A	Α	> A	Α	
AM Peak Hour	Grey Road 8 & Southgate Road 04	TWSC	Delay V/C	< <	9 0.03	>	9	\ \ \	9 0.02	^ ^	9	7 0.01	0.00	0 0.00	2	7 0.01	0 0.00	0 0.00	1	
AM			Q LOS	< A	1 A	>	Α	<	1 A	> A	Α	0	0	0		0 A	0	0 >	Α	
	Southgate Road 04 & Site Driveway	TWSC	Delay V/C	0 0.00			0		0 0.00	0 0.00	0					9 0.01		>	9	
			Q	0	0				0	0						0		>	1	
	Highway 89 & Grey Road 8	TWSC	LOS Delay V/C	A 8 0.03	A 0 0.00		A 2		A 0 0.00	A 0 0.00	A 0					B 10 0.09		^ ^	10	
≒			Q	1	0				0	0						2		>		
H <sub>F</sub>	Grey Road 8 &		LOS	<	Α	>	Α	<	Α	>	Α	A	Α	Α	A	Α	Α	Α	Α	
Peak Hour	Southgate Road 04	TWSC	Delay V/C	<	9 0.02	>	9	<	9 0.01	^	9	7 0.01	0.00	0 0.00	1	0 0.00	0 0.00	0 0.00	0	
M	11044 04		Q	<	1	>		<	0	>		0	0	0		0	0	0		
	Southgate		LOS	A 0	A 0		A 0		A 0	A 0	A 0					A 9		>	A 9	
	Road 04 &	TWSC	Delay V/C	0.00	_		U		0.00	0.00	U					9 0.01		>	9	
1405	Site Driveway	ee	Q	0.00	0				0.00	0.00						0.01		>		

MOE - Measure of Effectiveness

Q - 95th Percentile Queue Length (m)

LOS - Level of Service

TWSC - Two-Way Stop Control

Delay - Average Delay per Vehicle in Secon(</> - Shared with through movement

V/C - Volume to Capacity Ratio

## 5 Remedial Measures

#### 5.1 Left-Turn Lanes

The intersections of Highway 89 at Grey Road 8 and Grey Road 8 at Southgate Road 04 were assessed to determine if the projected traffic volumes warrant installation of left-turn lanes. The intersection of Southgate Road 04 at the site driveway was not evaluated because a potential left turn lane at that intersection would not be serving any trucks traveling along the haul route. The gravel pit traffic is also very low therefore, it is not anticipated that any capacity issue would arise without a left-turn lane. The warrants for left-turn lanes follow the requirements in the Ministry of Transportation's (MTO) Geometric Design Standards 3. A design speed of 100 km/h (20 km/h over the posted limit) was used for Highway 89 and Grey Road 8.

The percentages of left-turning vehicles in the approaching volume were rounded to the nearest 5%, as nomographs are only provided for 5% increments. This apparent requirement is due to the nature of the warrant procedure that assumes a minimum of 5% of left turning vehicles in the advancing volume. Therefore, left-turn lanes are automatically not warranted for any left turning volume less than 5%.

**Table 5.1** summarizes the left-turn lane warrant for the intersections of Highway 89 at Grey Road 8 and Grey Road 8 at Southgate Road 04. The warrant analysis suggests that an eastbound left-turn lane at Highway 89 and Grey Road 8 and a northbound left-turn lane at Grey Road 8 and Southgate Road 04 are not warranted.

<sup>&</sup>lt;sup>3</sup> Design Supplement for TAC Geometric Design Guide for Canadian Roads, Ministry of Transportation Ontario, June 2017



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TABLE 5.1: LEFT-TURN LANE WARRANT SUMMARY – HIGHWAY 89 AND GREY ROAD 8

Roadway	Highv	vay 89	Grey Road 8						
Intersection	Grey F	Road 8	Southgate Road 04						
Approach Direction	Eastl	oound	Northbound						
Design Speed	100	km/h	100 km/h						
Horizon	Total	2027	Total	2027					
Peak Hour	AM	PM	AM	PM					
Advancing Volume	209	162	61	70					
Opposing Volume	157	192	56	51					
Left Turning Traffic	48	41	13	13					
% of Left Turning Traffic	23%	25%	21%	19%					
Figure Used*	9A-24	9A-24	9A-23	9A-23					
Warranted	No	No	No	No					
Storage Length Required	-	-	-	-					

<sup>\*</sup>Based on MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads - June 2017

**Appendix F** contains the left-turn lane warrant nomographs.

No changes to the existing lane geometrics are recommended at this time.

## 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 currently operating within acceptable levels of service and no critical movements during the AM and PM peak hours.
- ► **Trip Generation:** the gravel pit is forecast to generate approximately 12 inbound and 12 outbound truck trips during the AM and PM peak hours.
- ▶ 2027 Background Traffic Conditions: the study area intersections are forecast to operate within acceptable levels of service with no specific problem movements during the AM and PM peak hours.
- ▶ 2027 Total Traffic Conditions: the study area intersections are forecast to operate within acceptable levels of service with no specific problem movements during the AM and PM peak hours:
- ► The addition of the site generated traffic increases the overall delay at the study area intersections by one second or less during the AM and PM peak hours.
- ▶ Remedial Measures: Left-turn lanes are not warranted at the intersections of Highway 89 at Grey Road 8 and Grey Road 8 at Southgate Road 04.

#### 6.2 Recommendations

Based on the findings of this study, it is recommended that the development be approved with no requirement for off-site transportation improvements.

# **Appendix A**

## **Pre-Study Consultation**

From: Jim Ellis < jellis@southgate.ca> Sent: February 11, 2022 2:28 PM

To: Andrew Evans <aevans@ptsl.com>; Lisa Wilson <lwilson@southgate.ca>

Cc: Erica Bayley <ebayley@ptsl.com>

Subject: RE: (220034) Gravel Pit, Southgate Part Lot 31, Southgate Road 04 - Transportation Study Scope of Work

#### Good afternoon

The Southgate Road 04 road sections ID # 136 is surface treatment. The 2019 Roads Management Study had a Field Condition Rating of 6, Comfort rating of 7 and PCI of 64.26.

There are no > 3m bridge structures on this section, however the No 10 Municipal drainage works road cross culverts will need accessed with increased heavy truck traffic.

Staff will be monitoring this road section during spring thaw for break up and further investigation into conditions.

Please see response below in red

Please contact me for any inquiries

Regards jim

## Jim Ellis, CRS S

Public Works Manager jellis@southgate.ca



**Township of Southgate** 185667 Grey Road 9

RR #1 Dundalk, ON NOC 1B0 1-888-560-6607 x 250 Fax 519-923-9262







From: Andrew Evans <a href="mailto:sevans@ptsl.com">aevans@ptsl.com</a>>

Sent: February 10, 2022 9:08 AM

To: Jim Ellis <jellis@southgate.ca>; Lisa Wilson <lwilson@southgate.ca>

Cc: Erica Bayley < ebayley@ptsl.com>

Subject: (220034) Gravel Pit, Southgate Part Lot 31, Southgate Road 04 - Transportation Study Scope of Work

#### Greetings,

Paradigm Transportation Solutions Limited is preparing the Transportation Impact Assessment for a proposed gravel pit in the Township of Southgate, ON. Below is a brief description of the concept and our proposed terms of reference for the TIS.

Please review and provide comment at your earliest convenience.

#### **SITE DESCRIPTION**

The subject site is located on the north side of Southgate Road 04, between Southgate Township 19 Sideroad and Grey Road 8. The property owner is proposing to operate the site with an annual tonnage of 100,000 tonnes. **The concept plan is attached**.

Vehicle access is proposed via the existing access onto Southgate Road 04. The proposed haulage route is east on Southgate Road 04 to Grey Road 8, then primarily south on Grey Road 8 to Highway 89.

#### PROPOSED TERMS OF REFERENCE

Study Area Intersections:

- Existing access connection to Southgate Road 04 (unsignalized);
- Southgate Road 04 & Grey Road 8 (unsignalized); and
- Grey Road 8 and Highway 89 (unsignalized).

#### Horizon Year

Five-years from the date the study is commissioned (Year 2027).

#### Analysis Periods:

- Weekday AM peak hour
- Weekday PM peak hour

#### **Existing Data:**

- Existing 8-hour TMC data for the above noted intersections.
- \*\*\*Please advise if we can undertake the turning movement counts now as restrictions are starting to lift.\*\*\*

#### **Analysis**

• Synchro 10, HCM 2000 analysis

#### **Background Traffic**

- Generalized growth rate. To be identified by Township Southgate Planner
- Active Development Applications. To be identified by Township Southgate Planner

#### **Future Road Improvements**

To be identified by Township No immediate improvements forecasted

#### **Trip Generation**

 Vehicle trips generated by the proposed development will be forecast based on the annual tonnage for pit and anticipated daily tonnage.

#### Site Traffic Distribution

Proposed haulage route

#### Report

 We will document the study methodologies, findings, and conclusions in a report with appendices containing the detailed analysis results and any data collected.

Please let us know your comments on the study.

Thank you and regards.

#### Andrew Evans, M.Sc.

Transportation Planner



#### Paradigm Transportation Solutions Limited

5A-150 Pinebush Road Cambridge ON N1R 8J8 p: 905.381.2229 x **305** m: 519.497.3239

e: aevans@ptsl.com w: www.ptsl.com

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# **Appendix B**

**Traffic Data** 





## Paradigm Transportation Solutions Limited 5A-150 Pinebush Rd

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

Count Name: Grey CountyRoad 8 & Soutgate Township Road 04 Site Code: 220034 Start Date: 03/09/2022 Page No: 1

## Turning Movement Data

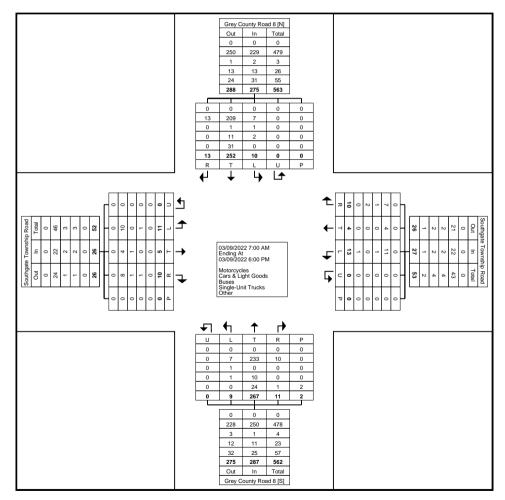
		Sou	-	wnship Roa bound	d 04			Sou	•	wnship Roa tbound	d 04		Grey County Road 8  Northbound  Southbound												
Start Time	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	1	0	. 0	0	0	1	0	0	0	. 0	0	0	0	. 5	. 0	. 0	0	. 5	0	6	0	0	0	6	12
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	9	0	2	0	0	0	2	11
7:30 AM	1	0	0	0	0	1	0	0	0	0	0	0	2	9	0	0	0	11	0	6	0	0	0	6	18
7:45 AM	1	1	1	0	0	3	0	0	1	0	0	1	0	5	0	0	0	5	0	7	0	0	0	7	16
Hourly Total	3	1	1	0	0	5	0	0	1	0	0	1	2	28	0	0	0	30	0	21	0	0	0	21	57
8:00 AM	0	1	0	0	0	1	0	0	1	0	0	1	0	12	1	0	0	13	1	8	1	0	0	10	25
8:15 AM	1	0	0	0	0	1	1	0	0	. 0	0	1	1	. 7	0	0	0	. 8	1	10	0	0	0	11	21
8:30 AM	1	1	0	0	0	2	1	2	1	0	0	4	0	12	1	0	0	13	1	11	0	0	0	12	31
8:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	5	1	0	0	6	0	7	0	0	0	7	14
Hourly Total	2	3	0	0	0	5	2	2	2	0	0	6	1	36	3	0	0	40	3	36	1	0	0	40	91
9:00 AM	0	0	1	0	0	1	1	0	0	0	0	1	0	5	2	0	0	7	0	7	1	0	0	8	17
9:15 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	11	1	0	0	12	0	6	0	0	0	6	19
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	1	6	2	5	2	0	0	9	15
9:45 AM	0	0	0	0	0	0	2	0	0	0	0	2	0	7	0	0	1	7	0	8	0	0	0	8	17
Hourly Total	0	0	2	0	0	2	3	0	0	0	0	3	0	29	3	0	2	32	2	26	3	0	0	31	68
*** BREAK ***	-	-		-	-	-	-		-	-	-		-		-	-	-		-	_		-	-		-
11:30 AM	1	0	1	0	0	2	0	0	0	0	0	0	0	4	0	0	0	4	0	5	0	0	0	5	11
11:45 AM	1	0	1	0	0	2	1	0	0	0	0	1	0	6	0	0	0	6	0	11	1	0	0	12	21
Hourly Total	2	0	2	0	0	4	1	0	0	0	0	1	0	10	0	0	0	10	0	16	1	0	0	17	32
12:00 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	6	1	0	0	7	0	5	0	0	0	5	13
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	1	2	0	0	0	3	6
12:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	4	1	0	0	5	0	8	0	0	0	8	14
12:45 PM	1	0	1	0	0	2	0	0	1	0	0	1	0	9	0	0	0	9	0	6	1	0	0	7	19
Hourly Total	1	0	1	0	0	2	0	1	2	0	0	3	0	22	2	0	0	24	1	21	1	0	0	23	52
1:00 PM	1	0	0	0	0	1	0	0	0	0	0	0	1	4	0	0	0	5	0	5	0	0	0	5	11
1:15 PM	0	. 1	0	0	0	1	1	0	0	0	0	1	0	. 8	2	0	0	10	0	8	1	0	0	9	21
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-		-				-		-
Hourly Total	1	1	0	0	0	2	1	0	0	0	0	1	1	12	2	0	0	15	0	13	1	0	0	14	32
3:00 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	9	0	0	0	9	1	15	1	0	0	17	27
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	13	0	0	0	14	0	6	0	0	0	6	20
3:30 PM	0	0	0	0	0	0	2	0	1	0	0	3	0	5	0	0	0	5	2	9	0	0	0	11	19
3:45 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	14	1	0	0	15	1	9	0	0	0	10	26
Hourly Total	0	0	0	0	0	0	4	0	1	0	0	5	1	41	1	0	0	43	4	39	1	0	0	44	92
4:00 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	8	0	0	0	8	0	14	1	0	0	15	24
4:15 PM	0	0	1	0	0	1	0	0	0	0	0	0	1	8	0	0	0	9	0	8	1	0	0	9	19

4:30 PM	0			0	0		0				0		0			0	0	9	_	4.4			0	45	25
		0						0		0		0	-	9	0				0	14		0		15	25
4:45 PM	0	0		0	0	0	0	. 0		0	0	0	2	14	0	0	0	16	0	6	. 0	0	0	6	22
Hourly Total	0	0	2	0	0	2	1	0	0	0	0	1	3	39	0	0	0	42	0	42	3	0	0	45	90
5:00 PM	1	0	1	0	0	2	1	0	3	0	0	4	0	9	0	0	0	9	0	5	1	0	0	6	21
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	14	0	15	. 1	0	0	16	30
5:30 PM	0	0	0	0	0	0	0	1	1	0	0	2	1	13	0	0	0	14	0	10	0	0	0	10	26
5:45 PM	1	0	1	0	0	2	0	0	0	0	0	0	0	14	0	0	0	14	0	8	0	0	0	8	24
Hourly Total	2	0	2	0	0	. 4	1	1	4	0	0	6	1	50	0	0	. 0	51	0	38	2	0	0	40	101
Grand Total	11	5	10	0	0	26	13	4	10	0	0	27	9	267	11	0	2	287	10	252	13	0	0	275	615
Approach %	42.3	19.2	38.5	0.0	-	-	48.1	14.8	37.0	0.0	-	-	3.1	93.0	3.8	0.0		-	3.6	91.6	4.7	0.0	-	-	-
Total %	1.8	0.8	1.6	0.0	-	4.2	2.1	0.7	1.6	0.0	-	4.4	1.5	43.4	1.8	0.0		46.7	1.6	41.0	2.1	0.0	-	44.7	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	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
Cars & Light Goods	10	4	8	0	-	22	11	4	7	0	-	22	7	233	10	0	-	250	7	209	13	0	-	229	523
% Cars & Light Goods	90.9	80.0	80.0	-	-	84.6	84.6	100.0	70.0	-	-	81.5	77.8	87.3	90.9	-	-	87.1	70.0	82.9	100.0	-	-	83.3	85.0
Buses	0	1	1	0	-	2	1	0	1	0	-	2	1	0	0	0	-	1	1	1	0	0	-	2	7
% Buses	0.0	20.0	10.0	-	-	7.7	7.7	0.0	10.0	-	-	7.4	11.1	0.0	0.0	-	-	0.3	10.0	0.4	0.0	-	-	0.7	1.1
Single-Unit Trucks	1	0	1	0	-	2	0	0	2	0	-	2	1	10	0	0	-	11	2	11	0	0	-	13	28
% Single-Unit Trucks	9.1	0.0	10.0	-	-	7.7	0.0	0.0	20.0	-	-	7.4	11.1	3.7	0.0	-	-	3.8	20.0	4.4	0.0	-	-	4.7	4.6
Articulated Trucks	0	0	0	0	-	0	1	0	0	0	-	1	0	24	1	0	-	25	0	31	0	0	-	31	57
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	7.7	0.0	0.0	-	-	3.7	0.0	9.0	9.1	-	-	8.7	0.0	12.3	0.0	-	-	11.3	9.3
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	-	-	-	-	0	-	-		-	-	0	-	-	-	-		0	-	-			-	0		-
% Bicycles on Crosswalk		-	-	-	-	-	-	-		-	-	-	-	-	-		0.0	-	-	-	-	-	-		-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	_	_	_	_	_	_	-	_	-	-	_	-	-	_	_		100.0	-	-	-	-	-	-	-	-



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

Count Name: Grey CountyRoad 8 & Soutgate Township Road 04 Site Code: 220034 Start Date: 03/09/2022 Page No: 3



**Turning Movement Data Plot** 



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

Count Name: Grey CountyRoad 8 & Soutgate Township Road 04 Site Code: 220034 Start Date: 03/09/2022 Page No: 4

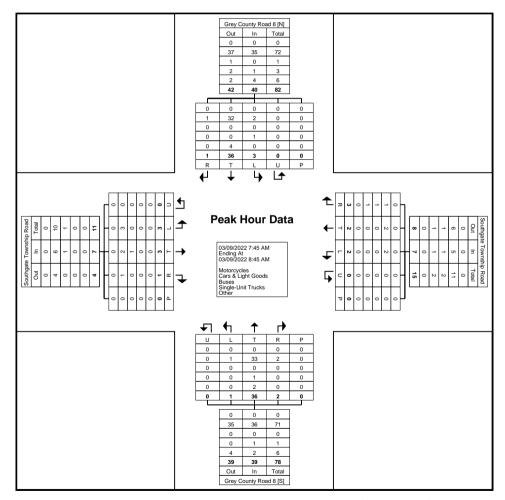
#### Turning Movement Peak Hour Data (7:45 AM)

		Sou	•	wnship Roa	d 04				ıthgate Tov	wnship Roa		our.		Duta	Grey Cou	nty Road 8					•	nty Road 8			
Start Time			East	bound					West	bound					North	bound					South	bound			
Start Time	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	Int. Total
7:45 AM	1	1	1	0	0	3	0	0	1	0	0	1	0	5	0	0	0	5	0	7	0	0	0	7	16
8:00 AM	0	1	0	0	0	1	0	0	1	0	0	1	0	12	1	0	0	13	1	8	1	0	0	10	25
8:15 AM	1	0	0	0	0	1	1	0	0	0	0	1	1	7	0	0	0	8	1	10	0	0	0	11	21
8:30 AM	1	. 1	0	0	0	2	1	2	1	0	0	4	0	12	1	0	0	13	1	11	0	0	0	12	31
Total	3	3	1	0	0	7	2	2	3	0	0	7	1	36	2	0	0	39	3	36	1	0	0	40	93
Approach %	42.9	42.9	14.3	0.0	-	_	28.6	28.6	42.9	0.0	-	-	2.6	92.3	5.1	0.0	-	-	7.5	90.0	2.5	0.0	-	-	-
Total %	3.2	3.2	1.1	0.0	-	7.5	2.2	2.2	3.2	0.0	-	7.5	1.1	38.7	2.2	0.0	-	41.9	3.2	38.7	1.1	0.0	-	43.0	-
PHF	0.750	0.750	0.250	0.000	-	0.583	0.500	0.250	0.750	0.000	-	0.438	0.250	0.750	0.500	0.000	-	0.750	0.750	0.818	0.250	0.000	-	0.833	0.750
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	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
Cars & Light Goods	3	2	1	0	-	6	2	2	1	0	-	5	1	33	2	0	-	36	2	32	1	0	-	35	82
% Cars & Light Goods	100.0	66.7	100.0	-	-	85.7	100.0	100.0	33.3	-	-	71.4	100.0	91.7	100.0	-	-	92.3	66.7	88.9	100.0	-	-	87.5	88.2
Buses	0	. 1	0	0	-	1	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	2
% Buses	0.0	33.3	0.0	-	-	14.3	0.0	0.0	33.3	_	-	14.3	0.0	0.0	0.0	_	-	0.0	0.0	0.0	0.0	<u> </u>	-	0.0	2.2
Single-Unit Trucks	0	0	0	0	-	0	0	0	1	0	-	1	0	1	0	0	-	1	1	0	0	0	-	1	3
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	33.3	_	-	14.3	0.0	2.8	0.0	-	-	2.6	33.3	0.0	0.0	_	-	2.5	3.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	4	0	0	-	4	6
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	5.6	0.0	-	-	5.1	0.0	11.1	0.0	-	-	10.0	6.5
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	-	-	-	-	0	-	ı	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	_
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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

Count Name: Grey CountyRoad 8 & Soutgate Township Road 04 Site Code: 220034 Start Date: 03/09/2022 Page No: 5



Turning Movement Peak Hour Data Plot (7:45 AM)



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

Count Name: Grey CountyRoad 8 & Soutgate Township Road 04 Site Code: 220034 Start Date: 03/09/2022 Page No: 6

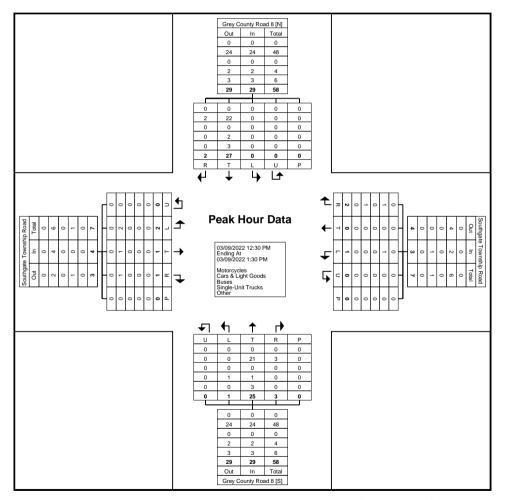
#### Turning Movement Peak Hour Data (12:30 PM)

		0	.d T	bis. D	-1.04		1		_			<b>.</b>	<u>-</u>	,		, i ivij			l		0	- t - D 1 0			1
		500	Ü	wnship Roa	0 04			500		vnship Road	1 04				,	nty Road 8					,	nty Road 8			
Start Time			East	bound					west	bound					North	bound					South	bound			
	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	Int. Total
12:30 PM	0	0	0	0	0	0	0	0	1	. 0	0	1	0	4	1	. 0	0	5	0	8	0	0	0	8	14
12:45 PM	1	0	1	0	0	2	0	0	1	0	0	1	0	9	0	0	0	9	0	6	1	0	0	7	19
1:00 PM	1	0	0	0	0	1	0	0	0	0	0	0	1	4	0	0	0	5	0	5	0	0	0	5	11
1:15 PM	0	1	0	0	0	1	1	0	0	0	0	1	0	8	2	0	0	10	0	. 8	1	0	0	9	21
Total	2	1	1	0	0	4	1	0	2	0	0	3	1	25	3	0	0	29	0	27	2	0	0	29	65
Approach %	50.0	25.0	25.0	0.0	-	-	33.3	0.0	66.7	0.0	-	-	3.4	86.2	10.3	0.0	-	-	0.0	93.1	6.9	0.0	-	-	-
Total %	3.1	1.5	1.5	0.0	-	6.2	1.5	0.0	3.1	0.0	-	4.6	1.5	38.5	4.6	0.0	-	44.6	0.0	41.5	3.1	0.0	-	44.6	-
PHF	0.500	0.250	0.250	0.000	-	0.500	0.250	0.000	0.500	0.000	-	0.750	0.250	0.694	0.375	0.000	-	0.725	0.000	0.844	0.500	0.000	-	0.806	0.774
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	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
Cars & Light Goods	2	1	1	0	-	4	1	0	1	0	-	2	0	21	3	0	-	24	0	22	2	0	-	24	54
% Cars & Light Goods	100.0	100.0	100.0	-	-	100.0	100.0	-	50.0	-	-	66.7	0.0	84.0	100.0	-	-	82.8	-	81.5	100.0	-	-	82.8	83.1
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	_	0.0	_	-	0.0	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	0	-	0	0	0	1	0	-	1	1	1	0	0	-	2	0	2	0	0	-	2	5
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	-	50.0	-	-	33.3	100.0	4.0	0.0	<u>-</u>	-	6.9	-	7.4	0.0	-	-	6.9	7.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	0	3	0	0	-	3	6
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	12.0	0.0	-	-	10.3	-	11.1	0.0	-	-	10.3	9.2
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	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	_	0	_	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Count Name: Grey CountyRoad 8 & Soutgate Township Road 04 Site Code: 220034 Start Date: 03/09/2022 Page No: 7



Turning Movement Peak Hour Data Plot (12:30 PM)



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

Count Name: Grey CountyRoad 8 & Soutgate Township Road 04 Site Code: 220034 Start Date: 03/09/2022 Page No: 8

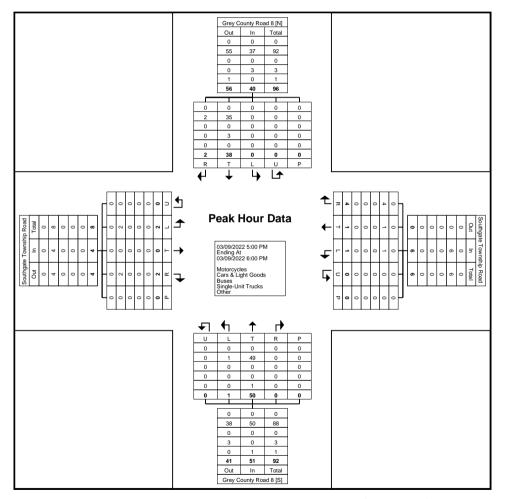
#### Turning Movement Peak Hour Data (5:00 PM)

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		Sou	•	wnship Roa	d 04			Sou		wnship Roa	d 04				•	nty Road 8			ļ		,	nty Road 8			
			East	bound					West	bound					North	bound					South	bound			
Start Time	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	Int. Total
5:00 PM	1	0	1	0	0	2	1	0	3	0	0	4	0	9	0	0	0	9	0	5	1	0	0	6	21
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	14	0	15	1	0	0	16	30
5:30 PM	0	0	0	0	0	0	0	1	1	0	0	2	1	13	0	0	0	14	0	10	0	0	0	10	26
5:45 PM	1	0	1	0	0	2	0	0	0	0	0	0	0	14	0	0	0	14	0	8	0	0	0	8	24
Total	2	0	2	0	0	4	1	1	4	0	0	6	1	50	0	0	0	51	0	38	2	0	0	40	101
Approach %	50.0	0.0	50.0	0.0	-	-	16.7	16.7	66.7	0.0	-	-	2.0	98.0	0.0	0.0	-	-	0.0	95.0	5.0	0.0	-	-	-
Total %	2.0	0.0	2.0	0.0	-	4.0	1.0	1.0	4.0	0.0	-	5.9	1.0	49.5	0.0	0.0	-	50.5	0.0	37.6	2.0	0.0	-	39.6	-
PHF	0.500	0.000	0.500	0.000	-	0.500	0.250	0.250	0.333	0.000	-	0.375	0.250	0.893	0.000	0.000	-	0.911	0.000	0.633	0.500	0.000	-	0.625	0.842
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	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
Cars & Light Goods	2	0	2	0	-	4	1	1	4	0	-	6	1	49	0	0	-	50	0	35	2	0	-	37	97
% Cars & Light Goods	100.0	-	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	98.0	-	-	-	98.0	-	92.1	100.0	-	-	92.5	96.0
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	_	0.0	-	-	0.0	0.0	0.0	0.0	_	-	0.0	0.0	0.0	_	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	3
% Single-Unit Trucks	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	-	7.9	0.0	-	-	7.5	3.0
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Articulated Trucks	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	2.0	-	-	-	2.0	-	0.0	0.0	-	-	0.0	1.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% 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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		•	•	•	•		•	•	•	•		•			•			•		•					



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

Count Name: Grey CountyRoad 8 & Soutgate Township Road 04 Site Code: 220034 Start Date: 03/09/2022 Page No: 9



Turning Movement Peak Hour Data Plot (5:00 PM)



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

Count Name: Highway 89 & Grey County Road

8 Site Code: 220034 Start Date: 03/09/2022

Page No: 1

#### **Turning Movement Data**

	1						mig ivio		- 4.4	i						ı
			Highway 89					Highway 89				G	rey County Road	8 1		
Otant Time			Eastbound					Westbound					Southbound			
Start Time	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	4	19	0	0	23	11	1	0	0	12	2	5	0	0	7	42
7:15 AM	7	32	0	0	39	14	2	0	0	16	0	2	0	0	2	57
7:30 AM	8	23	0	0	31	12	3	0	0	15	2	5	0	0	7	53
7:45 AM	4	30	0	0	34	22	2	0	0	24	5	2	0	0	7	65
Hourly Total	23	104	0	0	127	59	8	0	0	67	9	14	0	0	23	217
8:00 AM	9	23	0	0	32	23	3	0	0	26	4	4	0	0	8	66
8:15 AM	6	22	0	0	28	18	1	0	0	19	4	6	0	0	10	57
8:30 AM	11	23	0	0	34	29	5	0	0	34	8	5	0	0	13	81
8:45 AM	3	23	0	0	26	10	2	0	0	12	3	5	0	0	8	46
Hourly Total	29	91	0	0	120	80	11	0	0	91	19	20	0	0	39	250
9:00 AM	7	14	0	0	21	21	0	0	0	21	5	3	0	0	8	50
9:15 AM	10	24	0	0	34	17	3	0	0	20	1	5	0	0	6	60
9:30 AM	7	17	0	0	24	23	0	0	0	23	2	6	0	0	8	55
9:45 AM	6	23	0	0	29	17	1	0	0	18	2	7	0	0	9	56
Hourly Total	30	78	0	0	108	78	4	0	0	82	10	21	0	0	31	221
*** BREAK ***	-	_	-	-	-	-		-	-	-	-	-		-		-
11:30 AM	2	23	0	0	25	16	2	0	0	18	2	4	0	0	6	49
11:45 AM	5	21	0	0	26	18	3	0	0	21	4	8	0	0	12	59
Hourly Total	7	44	0	0	51	34	5	0	0	39	6	12	0	0	18	108
12:00 PM	3	17	0	0	20	16	. 1	0	0	17	4	1	0	0	5	42
12:15 PM	3	16	0	0	19	19	0	0	0	19	0	2	0	0	2	40
12:30 PM	4	23	0	0	27	16	4	0	0	20	3	6	0	0	9	56
12:45 PM	8	12	0	0	20	21	2	0	0	23	5	3	0	0	8	51
Hourly Total	18	68	0	0	86	72	7	0	0	79	12	12	0	0	24	189
1:00 PM	0	10	0	0	10	16	. 5	0	0	21	4	. 1	0	0	5	36
1:15 PM	7	24	0	0	31	22	2	0	0	24	4	5	0	0	9	64
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	7	34	0	0	41	38	. 7	0	0	45	8	6	0	0	14	100
3:00 PM	6	31	0	0	37	24	. 1	0	0	25	6	13	0	0	19	81
3:15 PM	9	18	0	0	27	28	7	0	0	35	2	4	0	0	6	68
3:30 PM	2	24	0	0	26	32	2	0	. 0	34	4	. 7	0	0	11	71
3:45 PM	6	21	0	0	27	32	. 8	0	0	40	3	6	0	0	9	76
Hourly Total	23	94	0	0	117	116	18	0	0	134	15	30	0	0	45	296
4:00 PM	4	22	0	0	26	25	6	0	0	31	4	10	0	0	14	71
4:15 PM	6	29	0	0	35	28	3	0	0	31	2	. 8	0	0	10	76
4:30 PM	6	23	0	0	29	25	4	0	0	29	6	10	. 0	0	16	74

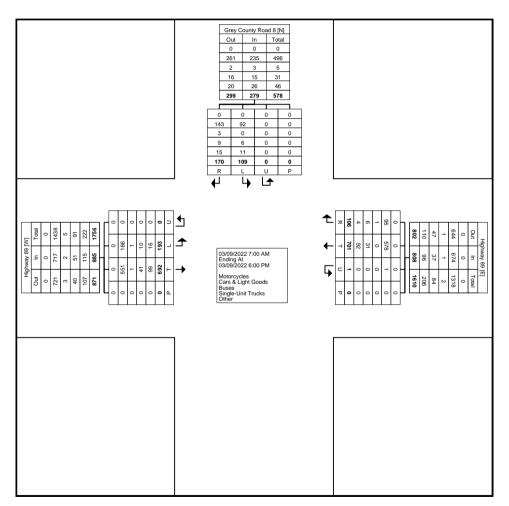
										-	•					
4:45 PM	6	22	0	0	28	29	9	0	0	38	1	6	0	0	7	73
Hourly Total	22	96	0	0	118	107	22	0	0	129	13	34	0	0	47	294
5:00 PM	8	24	0	0	32	30	4	0	0	34	3	3	0	0	6	72
5:15 PM	10	17	0	0	27	32	6	0	0	38	6	9	0	0	15	80
5:30 PM	6	21	0	0	27	34	5	1	0	40	3	7	0	0	10	77
5:45 PM	10	21	0	0	31	21	9	0	0	30	5	2	0	0	7	68
Hourly Total	34	83	0	0	117	117	24	1	0	142	17	21	0	0	38	297
Grand Total	193	692	0	0	885	701	106	1	0	808	109	170	0	0	279	1972
Approach %	21.8	78.2	0.0	-	-	86.8	13.1	0.1	-	-	39.1	60.9	0.0	-	-	-
Total %	9.8	35.1	0.0	-	44.9	35.5	5.4	0.1	-	41.0	5.5	8.6	0.0	-	14.1	-
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	166	551	0	-	717	578	95	1	-	674	92	143	0	-	235	1626
% Cars & Light Goods	86.0	79.6	-	-	81.0	82.5	89.6	100.0	-	83.4	84.4	84.1	-	-	84.2	82.5
Buses	1	1	0	-	2	0	1	0	-	1	0	3	0	-	3	6
% Buses	0.5	0.1	-	-	0.2	0.0	0.9	0.0	-	0.1	0.0	1.8	-	-	1.1	0.3
Single-Unit Trucks	10	41	0	-	51	31	6	0	-	37	6	9	0	-	15	103
% Single-Unit Trucks	5.2	5.9	-	-	5.8	4.4	5.7	0.0	-	4.6	5.5	5.3	-	-	5.4	5.2
Articulated Trucks	16	99	0	-	115	92	4	0	-	96	11	15	0	-	26	237
% Articulated Trucks	8.3	14.3	-	-	13.0	13.1	3.8	0.0	-	11.9	10.1	8.8	-	-	9.3	12.0
Bicycles on Road	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
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					-					-				-		



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Count Name: Highway 89 & Grey County Road

Site Code: 220034 Start Date: 03/09/2022 Page No: 3



Turning Movement Data Plot



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

Count Name: Highway 89 & Grey County Road 8
Site Code: 220034
Start Date: 03/09/2022
Page No: 4

Turning Movement Peak Hour Data (7:45 AM)

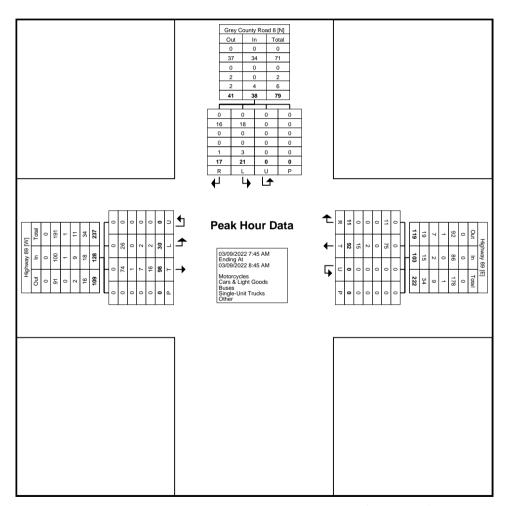
Int. Total 65 66
65
65
66
57
81
269
-
-
0.830
0
0.0
220
81.8
1
0.4
11
4.1
37
13.8
0
0.0
-
-
-



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Count Name: Highway 89 & Grey County Road

Site Code: 220034 Start Date: 03/09/2022 Page No: 5



Turning Movement Peak Hour Data Plot (7:45 AM)



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

Count Name: Highway 89 & Grey County Road 8
Site Code: 220034
Start Date: 03/09/2022
Page No: 6

Turning Movement Peak Hour Data (12:30 PM)

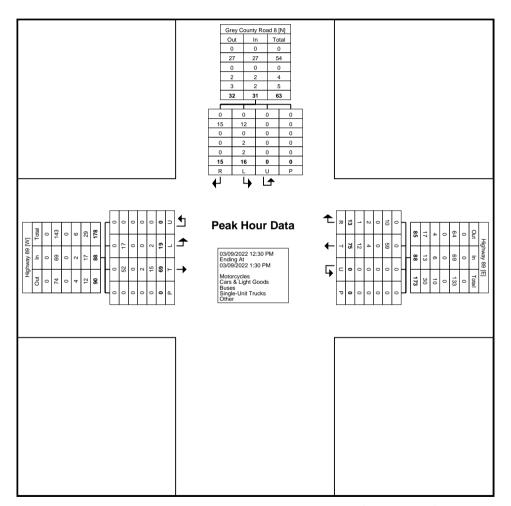
				<u>.</u>											
		Highway 89					Highway 89		-		G		8		
		Eastbound					Westbound					Southbound			
Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
4	23	. 0	0	27	16	4	. 0	0	20	3	6	0	0	9	56
8	12	0	0	20	21	2	0	0	23	5	3	0	0	8	51
0	10	0	0	10	16	5	0	0	21	4	1	0	0	5	36
7	24	0	0	31	22	2	0	0	24	4	5	0	0	9	64
19	69	0	0	88	75	13	0	0	88	16	15	0	0	31	207
21.6	78.4	0.0	-	-	85.2	14.8	0.0	-	-	51.6	48.4	0.0	-	-	-
9.2	33.3	0.0	-	42.5	36.2	6.3	0.0	-	42.5	7.7	7.2	0.0	-	15.0	-
0.594	0.719	0.000	-	0.710	0.852	0.650	0.000	-	0.917	0.800	0.625	0.000	-	0.861	0.809
0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
0.0	0.0	<u>-</u>	-	0.0	0.0	0.0	<u>-</u>	-	0.0	0.0	0.0	-	-	0.0	0.0
17	52	0	-	69	59	10	0	-	69	12	15	0	-	27	165
89.5	75.4	-	-	78.4	78.7	76.9	-	-	78.4	75.0	100.0	-	-	87.1	79.7
0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
0.0	0.0	-	-	0.0	0.0	0.0	<u>-</u>	-	0.0	0.0	0.0	-	-	0.0	0.0
0	2	0	-	2	4	2	0	-	6	2	0	0	-	2	10
0.0	2.9	-	-	2.3	5.3	15.4	-	-	6.8	12.5	0.0	-	-	6.5	4.8
2	15	0	-	17	12	1	0	-	13	2	0	0	-	2	32
10.5	21.7	-	-	19.3	16.0	7.7	-	-	14.8	12.5	0.0	-	-	6.5	15.5
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	-	-	-	-	0	-	-	-	-	0	-	-
-	-	-	-	-	-	-	<u>-</u>	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	<u>-</u>	0	-	-	-	-	0	-	-
-	-		-	-	-	-		-	-	-	-		-	-	-
	4 8 0 7 19 21.6 9.2 0.594 0 0.0 17 89.5 0 0.0 0 2 10.5 0 0 0 0	4 23 8 12 0 10 7 24 19 69 21.6 78.4 9.2 33.3 0.594 0.719 0 0 0.0 0.0 17 52 89.5 75.4 0 0 0.0 0.0 0 2 0.0 2.9 2 15 10.5 21.7 0 0 0.0 0.0	Left         Thru         U-Turn           4         23         0           8         12         0           0         10         0           7         24         0           19         69         0           21.6         78.4         0.0           9.2         33.3         0.0           0.594         0.719         0.000           0         0         0           0.0         0         -           17         52         0           89.5         75.4         -           0         0         0           0.0         0.0         -           0         2         0           0.0         2.9         -           2         15         0           10.5         21.7         -           0         0         0           0.0         0         0	Left         Thru         U-Turn         Peds           4         23         0         0           8         12         0         0           0         10         0         0           7         24         0         0           19         69         0         0           21.6         78.4         0.0         -           9.2         33.3         0.0         -           0         0         0         -           0.594         0.719         0.000         -           0         0         0         -           17         52         0         -           89.5         75.4         -         -           0         0         0         -           0.0         0.0         -         -           0         0         0         -           0         0         0         -           0         2         0         -           0         2.9         -         -           2         15         0         -           10.5         21.7         - <t< td=""><td>Left         Thru         U-Turn         Peds         App. Total           4         23         0         0         27           8         12         0         0         20           0         10         0         0         10           7         24         0         0         31           19         69         0         0         88           21.6         78.4         0.0         -         -           9.2         33.3         0.0         -         42.5           0.594         0.719         0.000         -         0.710           0         0         0         -         0.710           0         0         0         -         0.00           17         52         0         -         69           89.5         75.4         -         -         78.4           0         0         0         -         0           0.0         0         -         0         0           0.0         0         -         0         0           0.0         2         0         -         2</td><td>Left         Thru         U-Turn         Peds         App. Total         Thru           4         23         0         0         27         16           8         12         0         0         20         21           0         10         0         0         10         16           7         24         0         0         31         22           19         69         0         0         88         75           21.6         78.4         0.0         -         -         85.2           9.2         33.3         0.0         -         42.5         36.2           0.594         0.719         0.000         -         0.710         0.852           0         0         0         -         0.0         0           0.0         0         0         -         0.0         0.0           17         52         0         -         69         59           89.5         75.4         -         -         78.4         78.7           0         0         0         -         0         0           0.0         0         -</td><td>Left         Thru         U-Turn         Peds         App. Total         Thru         Right           4         23         0         0         27         16         4           8         12         0         0         20         21         2           0         10         0         0         10         16         5           7         24         0         0         31         22         2           19         69         0         0         88         75         13           21.6         78.4         0.0         -         -         85.2         14.8           9.2         33.3         0.0         -         42.5         36.2         6.3           0.594         0.719         0.000         -         0.710         0.852         0.650           0         0         0         -         0.0         0         0         0           0.0         0         0         -         0.0         0.0         0         0           17         52         0         -         69         59         10           89.5         75.4         -</td></t<> <td>Left         Thru         U-Turn         Peds         App. Total         Thru         Right         U-Turn           4         23         0         0         27         16         4         0           8         12         0         0         20         21         2         0           0         10         0         0         10         16         5         0           7         24         0         0         31         22         2         0           19         69         0         0         88         75         13         0           21.6         78.4         0.0         -         -         85.2         14.8         0.0           9.2         33.3         0.0         -         42.5         36.2         6.3         0.0           9.2         33.3         0.0         -         42.5         36.2         6.3         0.0           0.594         0.719         0.000         -         0.710         0.852         0.650         0.000           0         0         0         -         0.0         0         0         0         0</td> <td>Left         Thru         U-Turn         Peds         App. Total         Thru         Right         U-Turn         Peds           4         23         0         0         27         16         4         0         0           8         12         0         0         20         21         2         0         0           0         10         0         0         10         16         5         0         0           19         69         0         0         31         22         2         0         0           19         69         0         0         88         75         13         0         0           21.6         78.4         0.0         -         -         85.2         14.8         0.0         -           9.2         33.3         0.0         -         42.5         36.2         6.3         0.0         -           0.594         0.719         0.000         -         0.710         0.852         0.650         0.000         -           0.0         0         0         -         0.0         0         0         0         -           0.</td> <td>Left         Thru         U-Turn         Peds         App. Total         Thru         Right         U-Turn         Peds         App. Total           4         23         0         0         27         16         4         0         0         20           8         12         0         0         20         21         2         0         0         23           0         10         0         0         10         16         5         0         0         23           0         10         0         0         10         16         5         0         0         24           19         69         0         0         88         75         13         0         0         88           21.6         78.4         0.0         -         -         85.2         14.8         0.0         -         -         -           9.2         33.3         0.0         -         42.5         36.2         6.3         0.0         -         42.5           0.594         0.719         0.000         -         0.710         0.852         0.650         0.000         -         0.917      <tr< td=""><td>Left         Thru         U-Turn         Peds         App. Total         Thru         Right         U-Turn         Peds         App. Total         Left           4         23         0         0         27         16         4         0         0         20         3           8         12         0         0         20         21         2         0         0         23         5           0         10         0         0         10         16         5         0         0         21         4           7         24         0         0         31         22         2         0         0         24         4           19         69         0         0         88         75         13         0         0         88         16           21.6         78.4         0.0         -         -         85.2         14.8         0.0         -         -         51.6           9.2         33.3         0.0         -         42.5         7.7         0.594         0.719         0.000         -         0.917         0.800           0         0         0         <td< td=""><td>Left         Thru         Eastbound U-Turn         Peds         App. Total         Thru         Right V-Turn Right         Vestbound U-Turn         Peds         App. Total Left         Right           4         23         0         0         27         16         4         0         0         20         3         6           8         12         0         0         20         21         2         0         0         23         5         3           0         10         0         0         10         16         5         0         0         21         4         1           7         24         0         0         31         22         2         0         0         24         4         5           19         69         0         0         88         75         13         0         0         88         16         15           21.6         78.4         0.0         -         -         85.2         14.8         0.0         -         -         51.6         48.4           9.2         33.3         0.0         -         42.5         36.2         6.3         0.0         -</td><td>  Left   Thru</td><td>  Left   Thru</td><td>  Left   Thru</td></td<></td></tr<></td>	Left         Thru         U-Turn         Peds         App. Total           4         23         0         0         27           8         12         0         0         20           0         10         0         0         10           7         24         0         0         31           19         69         0         0         88           21.6         78.4         0.0         -         -           9.2         33.3         0.0         -         42.5           0.594         0.719         0.000         -         0.710           0         0         0         -         0.710           0         0         0         -         0.00           17         52         0         -         69           89.5         75.4         -         -         78.4           0         0         0         -         0           0.0         0         -         0         0           0.0         0         -         0         0           0.0         2         0         -         2	Left         Thru         U-Turn         Peds         App. Total         Thru           4         23         0         0         27         16           8         12         0         0         20         21           0         10         0         0         10         16           7         24         0         0         31         22           19         69         0         0         88         75           21.6         78.4         0.0         -         -         85.2           9.2         33.3         0.0         -         42.5         36.2           0.594         0.719         0.000         -         0.710         0.852           0         0         0         -         0.0         0           0.0         0         0         -         0.0         0.0           17         52         0         -         69         59           89.5         75.4         -         -         78.4         78.7           0         0         0         -         0         0           0.0         0         -	Left         Thru         U-Turn         Peds         App. Total         Thru         Right           4         23         0         0         27         16         4           8         12         0         0         20         21         2           0         10         0         0         10         16         5           7         24         0         0         31         22         2           19         69         0         0         88         75         13           21.6         78.4         0.0         -         -         85.2         14.8           9.2         33.3         0.0         -         42.5         36.2         6.3           0.594         0.719         0.000         -         0.710         0.852         0.650           0         0         0         -         0.0         0         0         0           0.0         0         0         -         0.0         0.0         0         0           17         52         0         -         69         59         10           89.5         75.4         -	Left         Thru         U-Turn         Peds         App. Total         Thru         Right         U-Turn           4         23         0         0         27         16         4         0           8         12         0         0         20         21         2         0           0         10         0         0         10         16         5         0           7         24         0         0         31         22         2         0           19         69         0         0         88         75         13         0           21.6         78.4         0.0         -         -         85.2         14.8         0.0           9.2         33.3         0.0         -         42.5         36.2         6.3         0.0           9.2         33.3         0.0         -         42.5         36.2         6.3         0.0           0.594         0.719         0.000         -         0.710         0.852         0.650         0.000           0         0         0         -         0.0         0         0         0         0	Left         Thru         U-Turn         Peds         App. Total         Thru         Right         U-Turn         Peds           4         23         0         0         27         16         4         0         0           8         12         0         0         20         21         2         0         0           0         10         0         0         10         16         5         0         0           19         69         0         0         31         22         2         0         0           19         69         0         0         88         75         13         0         0           21.6         78.4         0.0         -         -         85.2         14.8         0.0         -           9.2         33.3         0.0         -         42.5         36.2         6.3         0.0         -           0.594         0.719         0.000         -         0.710         0.852         0.650         0.000         -           0.0         0         0         -         0.0         0         0         0         -           0.	Left         Thru         U-Turn         Peds         App. Total         Thru         Right         U-Turn         Peds         App. Total           4         23         0         0         27         16         4         0         0         20           8         12         0         0         20         21         2         0         0         23           0         10         0         0         10         16         5         0         0         23           0         10         0         0         10         16         5         0         0         24           19         69         0         0         88         75         13         0         0         88           21.6         78.4         0.0         -         -         85.2         14.8         0.0         -         -         -           9.2         33.3         0.0         -         42.5         36.2         6.3         0.0         -         42.5           0.594         0.719         0.000         -         0.710         0.852         0.650         0.000         -         0.917 <tr< td=""><td>Left         Thru         U-Turn         Peds         App. Total         Thru         Right         U-Turn         Peds         App. Total         Left           4         23         0         0         27         16         4         0         0         20         3           8         12         0         0         20         21         2         0         0         23         5           0         10         0         0         10         16         5         0         0         21         4           7         24         0         0         31         22         2         0         0         24         4           19         69         0         0         88         75         13         0         0         88         16           21.6         78.4         0.0         -         -         85.2         14.8         0.0         -         -         51.6           9.2         33.3         0.0         -         42.5         7.7         0.594         0.719         0.000         -         0.917         0.800           0         0         0         <td< td=""><td>Left         Thru         Eastbound U-Turn         Peds         App. Total         Thru         Right V-Turn Right         Vestbound U-Turn         Peds         App. Total Left         Right           4         23         0         0         27         16         4         0         0         20         3         6           8         12         0         0         20         21         2         0         0         23         5         3           0         10         0         0         10         16         5         0         0         21         4         1           7         24         0         0         31         22         2         0         0         24         4         5           19         69         0         0         88         75         13         0         0         88         16         15           21.6         78.4         0.0         -         -         85.2         14.8         0.0         -         -         51.6         48.4           9.2         33.3         0.0         -         42.5         36.2         6.3         0.0         -</td><td>  Left   Thru</td><td>  Left   Thru</td><td>  Left   Thru</td></td<></td></tr<>	Left         Thru         U-Turn         Peds         App. Total         Thru         Right         U-Turn         Peds         App. Total         Left           4         23         0         0         27         16         4         0         0         20         3           8         12         0         0         20         21         2         0         0         23         5           0         10         0         0         10         16         5         0         0         21         4           7         24         0         0         31         22         2         0         0         24         4           19         69         0         0         88         75         13         0         0         88         16           21.6         78.4         0.0         -         -         85.2         14.8         0.0         -         -         51.6           9.2         33.3         0.0         -         42.5         7.7         0.594         0.719         0.000         -         0.917         0.800           0         0         0 <td< td=""><td>Left         Thru         Eastbound U-Turn         Peds         App. Total         Thru         Right V-Turn Right         Vestbound U-Turn         Peds         App. Total Left         Right           4         23         0         0         27         16         4         0         0         20         3         6           8         12         0         0         20         21         2         0         0         23         5         3           0         10         0         0         10         16         5         0         0         21         4         1           7         24         0         0         31         22         2         0         0         24         4         5           19         69         0         0         88         75         13         0         0         88         16         15           21.6         78.4         0.0         -         -         85.2         14.8         0.0         -         -         51.6         48.4           9.2         33.3         0.0         -         42.5         36.2         6.3         0.0         -</td><td>  Left   Thru</td><td>  Left   Thru</td><td>  Left   Thru</td></td<>	Left         Thru         Eastbound U-Turn         Peds         App. Total         Thru         Right V-Turn Right         Vestbound U-Turn         Peds         App. Total Left         Right           4         23         0         0         27         16         4         0         0         20         3         6           8         12         0         0         20         21         2         0         0         23         5         3           0         10         0         0         10         16         5         0         0         21         4         1           7         24         0         0         31         22         2         0         0         24         4         5           19         69         0         0         88         75         13         0         0         88         16         15           21.6         78.4         0.0         -         -         85.2         14.8         0.0         -         -         51.6         48.4           9.2         33.3         0.0         -         42.5         36.2         6.3         0.0         -	Left   Thru	Left   Thru	Left   Thru



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Count Name: Highway 89 & Grey County Road

Site Code: 220034 Start Date: 03/09/2022 Page No: 7



Turning Movement Peak Hour Data Plot (12:30 PM)



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Count Name: Highway 89 & Grey County Road

Site Code: 220034 Start Date: 03/09/2022 Page No: 8

Turning Movement Peak Hour Data (4:45 PM)

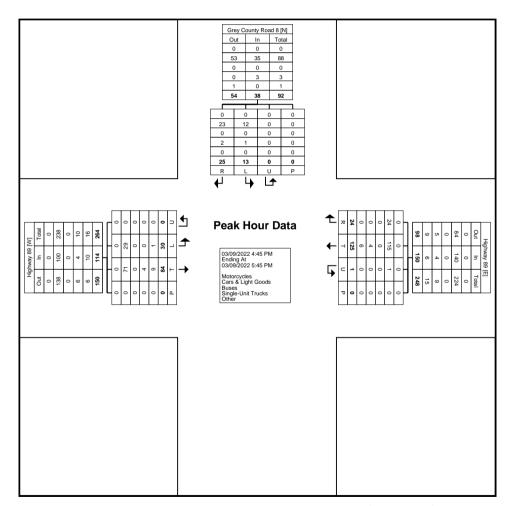
					runni	J MOVEL	HELLE E	ak i loui i	Jaia (4	. <del>4</del> 5 1 101 <i>)</i>	•					
			Highway 89					Highway 89	•	-		G	rey County Road	18		
Start Time			Eastbound					Westbound					Southbound			
Start Time	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
4:45 PM	6	22	0	0	28	29	9	0	0	38	1	6	0	0	7	73
5:00 PM	8	24	0	0	32	30	4	0	0	34	3	3	0	0	6	72
5:15 PM	10	17	0	0	27	32	6	0	0	38	6	9	0	0	15	80
5:30 PM	6	21	0	0	27	34	. 5	1	0	40	3	7	0	0	10	77
Total	30	84	0	0	114	125	24	1	0	150	13	25	0	0	38	302
Approach %	26.3	73.7	0.0	-	-	83.3	16.0	0.7	-	-	34.2	65.8	0.0	-	-	-
Total %	9.9	27.8	0.0	-	37.7	41.4	7.9	0.3	-	49.7	4.3	8.3	0.0	-	12.6	-
PHF	0.750	0.875	0.000	-	0.891	0.919	0.667	0.250	-	0.938	0.542	0.694	0.000	-	0.633	0.944
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0		-	0.0	0.0
Cars & Light Goods	29	71	0	-	100	115	24	1	-	140	12	23	0	-	35	275
% Cars & Light Goods	96.7	84.5	-	-	87.7	92.0	100.0	100.0	-	93.3	92.3	92.0	-	-	92.1	91.1
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	4	0	-	4	4	0	0	-	4	1	2	0	-	3	11
% Single-Unit Trucks	0.0	4.8	_	-	3.5	3.2	0.0	0.0	-	2.7	7.7	8.0		-	7.9	3.6
Articulated Trucks	1	9	0	-	10	6	0	0	-	6	0	0	0	-	0	16
% Articulated Trucks	3.3	10.7	-	-	8.8	4.8	0.0	0.0	-	4.0	0.0	0.0	-	-	0.0	5.3
Bicycles on Road	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
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	<u>-</u>	0	-	-	-	-	0	-	-
% Pedestrians	-	-		-	_	-	-		-		-	-	<u>-</u>	-	_	-
		-								-						



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Count Name: Highway 89 & Grey County Road

Site Code: 220034 Start Date: 03/09/2022 Page No: 9



Turning Movement Peak Hour Data Plot (4:45 PM)

# **Appendix C**

#### **Base Year Operation Reports**

Lanes, Volumes, Timings 101: Highway 89 & Grey Road 8

PTSL (220034)

Southgate Part Lot 31 TIS 2022 Base Year AM HCM 6th TWSC 101: Highway 89 & Grey Road 8 Southgate Part Lot 31 TIS 2022 Base Year AM

	•	-	<b>←</b>	•	-	4	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		ની	1}		14		Т
Traffic Volume (vph)	38	146	126	11	27	19	
Future Volume (vph)	38	146	126	11	27	19	
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			0.989		0.945		
Flt Protected		0.990			0.971		
Satd. Flow (prot)	0	1881	1879	0	1743	0	
Flt Permitted		0.990			0.971		
Satd. Flow (perm)	0	1881	1879	0	1743	0	
Link Speed (k/h)		80	80		80		
Link Distance (m)		427.8	363.5		2036.0		
Travel Time (s)		19.3	16.4		91.6		
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	46	176	152	13	33	23	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	222	165	0	56	0	
Sign Control		Free	Free		Stop		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalized							
Intersection Capacity Utiliz	ation 30.4%			IC	CU Level	of Service A	A
Analysis Period (min) 15							

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	LDL	4	13	WDIX	W/	ODIN
	38	146	126	11	27	19
Traffic Vol, veh/h				11		
Future Vol, veh/h	38	146	126	11	27	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage	,# -	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0
Mymt Flow	46	176	152	13	33	23
	/lajor1		//ajor2		Minor2	
Conflicting Flow All	165	0	-	0	427	159
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	268	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-		-	5.4	-
Follow-up Hdwy	2.2		-		3.5	3.3
Pot Cap-1 Maneuver	1426	-	-	-	588	892
Stage 1	1420				875	-
Stage 2					782	
Platoon blocked, %					102	
	1400				EG7	000
Mov Cap-1 Maneuver	1426	-	-	-	567	892
Mov Cap-2 Maneuver	-	-	-	-	567	-
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	782	-
Approach	EB		WB		SB	
HCM Control Delay, s	1.6		0		10.9	
HCM LOS					В	
Minor Lane/Major Mvm	t	EBL	EBT	WBT	WBR S	SBLn1
Capacity (veh/h)		1426	-	WD1	TOIL	667
HCM Lane V/C Ratio		0.032		-		0.083
		7.6	0	-	-	10.9
HCM Control Delay (s)						
HCM Lane LOS		A	Α	-	-	В
HCM 95th %tile Q(veh)		0.1	-	-	-	0.3

Lanes, Volumes, Timings 102: Grey Road 8 & Southgate Road 04 Southgate Part Lot 31 TIS 2022 Base Year AM

	*	-	*	1	←	*	4	<b>†</b>	1	-	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	3	5	1	2	2	7	1	42	2	5	44	1
Future Volume (vph)	3	5	1	2	2	7	1	42	2	5	44	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.919			0.993			0.998	
Flt Protected		0.984			0.990			0.999			0.995	
Satd. Flow (prot)	0	1849	0	0	1729	0	0	1885	0	0	1887	0
Flt Permitted		0.984			0.990			0.999			0.995	
Satd. Flow (perm)	0	1849	0	0	1729	0	0	1885	0	0	1887	0
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		2545.2			405.3			2036.0			221.1	
Travel Time (s)		114.5			18.2			91.6			9.9	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	7	1	3	3	9	1	56	3	7	59	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	15	0	0	60	0	0	67	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 15.0%
Analysis Period (min) 15

ICU Level of Service A

HCM 6th TWSC Southgate Part Lot 31 TIS 102: Grey Road 8 & Southgate Road 04 2022 Base Year AM

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			44			4	
Traffic Vol, veh/h	3	5	1	2	2	7	1	42	2	5	44	1
Future Vol, veh/h	3	5	1	2	2	7	1	42	2	5	44	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage,	# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	7	1	3	3	9	1	56	3	7	59	1
Major/Minor M	linor2		1	/linor1			Major1		1	Major2		
Conflicting Flow All	140	135	60	138	134	58	60	0	0	59	0	0
Stage 1	74	74	-	60	60	-	-	-	-	-	-	-
Stage 2	66	61	-	78	74		-	-	-		-	
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	835	760	1011	837	760	1014	1556	-	-	1558	-	-
Stage 1	940	837	-	957	849	-	-	-	-	-	-	-
Stage 2	950	848	-	936	837	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	822	755	1011	826	755	1014	1556	-	-	1558	-	-
Mov Cap-2 Maneuver	822	755	-	826	755	-	-	-	-	-	-	-
Stage 1	939	833	-	956	848	-	-	-	-	-	-	-
Stage 2	937	847	-	923	833	-	-	-	-	-	-	-
·												
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.6			9			0.2			0.7		
HCM LOS	A			A			0.2			0.7		
	,,			,,								
Minor Lane/Major Mvmt		NBL	NBT	NIRD	EBLn1V	VRI n1	SBL	SBT	SBR			
Capacity (veh/h)		1556	INDI	INDIX	799	919	1558	301	ODIN			
HCM Lane V/C Ratio		0.001			0.015		0.004					
HCM Control Delay (s)		7.3	0		9.6	0.016	7.3	0	-			
HCM Lane LOS		7.5 A	A		9.6 A	9 A	7.5 A	A				
HCM 95th %tile Q(veh)		A 0	Α -	-	A 0	A 0	0	А	-			
HOW SOUT MUTE Q(VEIT)		U		_	U	U	U	-	-			

Lanes, Volumes, Timings 101: Highway 89 & Grey Road 8 Southgate Part Lot 31 TIS 2022 Base Year PM

HCM 6th TWSC	
101: Highway 89 & Grey Road 8	

Southgate Part Lot 31 TIS 2022 Base Year PM

	*	-	←	*	-	4
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		ની	13		W	
Traffic Volume (vph)	32	110	145	24	15	29
Future Volume (vph)	32	110	145	24	15	29
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			0.980		0.911	
Flt Protected		0.989			0.983	
Satd. Flow (prot)	0	1879	1862	0	1701	0
Flt Permitted		0.989			0.983	
Satd. Flow (perm)	0	1879	1862	0	1701	0
Link Speed (k/h)		80	80		80	
Link Distance (m)		427.8	363.5		2036.0	
Travel Time (s)		19.3	16.4		91.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	34	117	154	26	16	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	151	180	0	47	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized	d					
Intersection Capacity Utiliz	ation 30.0%			IC	CU Level	of Service
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4î	ħ		14	
Traffic Vol, veh/h	32	110	145	24	15	29
Future Vol, veh/h	32	110	145	24	15	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage	,# -	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	34	117	154	26	16	31
Major/Minor N	/lajor1	1	Major2	1	Minor2	
Conflicting Flow All	180	0	-	0	352	167
Stage 1	-	-	-	-	167	-
Stage 2	-				185	
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1408	-	-	-	650	882
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	852	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1408	-	-	-	633	882
Mov Cap-2 Maneuver	-	-	-	-	633	-
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	852	-
· ·						
Approach	EB		WB		SB	
HCM Control Delay, s	1.7		0		9.9	
HCM LOS	1.7		U		3.5 A	
I IOW LOG						
N4: 1 (N4: N4		EDI	EDT	MOT	MDD	201 4
Minor Lane/Major Mvm	t	EBL	EBT	WBT	WBR S	
Capacity (veh/h)		1408	-	-	-	778
HCM Lane V/C Ratio		0.024	-	-	-	0.06
HCM Control Delay (s)		7.6	0	-	-	9.9
HCM Lane LOS		Α	Α	-	-	Α
HCM 95th %tile Q(veh)		0.1	-	-	-	0.2

Lanes, Volumes, Timings 102: Grey Road 8 & Southgate Road 04 Southgate Part Lot 31 TIS 2022 Base Year PM

	•	$\rightarrow$	*	•	<b>—</b>	*	1	1	1	-	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	2	0	2	1	1	4	1	52	0	0	44	2
Future Volume (vph)	2	0	2	1	1	4	1	52	0	0	44	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932			0.904						0.995	
Flt Protected		0.976			0.993			0.999				
Satd. Flow (prot)	0	1728	0	0	1706	0	0	1898	0	0	1890	0
Flt Permitted		0.976			0.993			0.999				
Satd. Flow (perm)	0	1728	0	0	1706	0	0	1898	0	0	1890	0
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		2545.2			405.3			2036.0			221.1	
Travel Time (s)		114.5			18.2			91.6			9.9	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	0	2	1	1	5	1	62	0	0	52	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	0	7	0	0	63	0	0	54	0
Sign Control		Stop			Stop			Free			Free	

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 13.5%
Analysis Period (min) 15

ICU Level of Service A

HCM 6th TWSC 102: Grey Road 8 & Southgate Road 04 Southgate Part Lot 31 TIS 2022 Base Year PM

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			44			45	
Traffic Vol, veh/h	2	0	2	1	1	4	1	52	0	0	44	2
Future Vol. veh/h	2	0	2	1	1	4	1	52	0	0	44	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-		None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage,	# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	0	2	1	1	5	1	62	0	0	52	2
Major/Minor N	linor2		1	Minor1		1	/lajor1		1	Major2		
Conflicting Flow All	120	117	53	118	118	62	54	0	0	62	0	0
Stage 1	53	53	-	64	64	-	-	-	-	-	-	-
Stage 2	67	64	-	54	54	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	860	777	1020	863	776	1009	1564	-	-	1554	-	-
Stage 1	965	855	-	952	846	-	-	-	-	-	-	-
Stage 2	948	846	-	963	854	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	854	776	1020	860	775	1009	1564	-	-	1554	-	-
Mov Cap-2 Maneuver	854	776	-	860	775	-	-	-	-	-	-	-
Stage 1	964	855	-	951	845	-	-	-	-	-	-	-
Stage 2	941	845	-	961	854	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	8.9			8.9			0.1			0		
HCM LOS	A			A								
Minor Lane/Major Mvmt		NBL	NBT	NBR I	EBLn1\	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1564	-	-	930	935	1554	-	-			
HCM Lane V/C Ratio		0.001				0.008	-					
HCM Control Delay (s)		7.3	0	-	8.9	8.9	0	-	_			
HCM Lane LOS		Α.	A		Α.	Α.	A					
HCM 95th %tile Q(veh)		0	-	_	0	0	0	_				
0001 70010 3(4011)		0			0	0	J					

# **Appendix D**

#### **2027 Background Operation Reports**

Lanes, Volumes, Timings 101: Highway 89 & Grey Road 8 Southgate Part Lot 31 TIS 2027 Background AM

							<u> </u>
	•	<b>→</b>	<b>←</b>	4	-	4	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		ની	f)		14		
Traffic Volume (vph)	42	161	139	12	30	21	
Future Volume (vph)	42	161	139	12	30	21	
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			0.990		0.945		
Flt Protected		0.990			0.971		
Satd. Flow (prot)	0	1881	1881	0	1743	0	
Flt Permitted		0.990			0.971		
Satd. Flow (perm)	0	1881	1881	0	1743	0	
Link Speed (k/h)		80	80		80		
Link Distance (m)		427.8	363.5		2036.0		
Travel Time (s)		19.3	16.4		91.6		
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	51	194	167	14	36	25	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	245	181	0	61	0	
Sign Control		Free	Free		Stop		
Intersection Cummens							

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 32.2%
Analysis Period (min) 15

PTSL (220034)

ICU Level of Service A

HCM 6th TWSC Southgate Part Lot 31 TIS 101: Highway 89 & Grey Road 8 2027 Background AM

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	LUL	4	13	WOIL	W	ODIT
Traffic Vol., veh/h	42	161	139	12	30	21
Future Vol. veh/h	42	161	139	12	30	21
Conflicting Peds, #/hr	42	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	Free -	None	Free -	None		
					- 0	None
Storage Length	- ш	-		-		
Veh in Median Storage,		0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	51	194	167	14	36	25
Major/Minor N	lajor1	1	Major2	1	Minor2	
Conflicting Flow All	181	0	-	0	470	174
Stage 1	-	-	_	-	174	- 17-
Stage 2			-		296	
Critical Hdwy	4.1	-	-		6.4	6.2
Critical Hdwy Stg 1	4.1		-		5.4	0.2
Critical Hdwy Stg 2		-			5.4	
Follow-up Hdwy	2.2		- 1		3.5	3.3
Pot Cap-1 Maneuver	1407	-		-	556	875
					861	
Stage 1	-	-	-	-	759	-
Stage 2		-		-	759	-
Platoon blocked, %	4.40=	-	-	-	=00	
Mov Cap-1 Maneuver		-	-	-	533	875
Mov Cap-2 Maneuver	-	-	-	-	533	-
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	759	-
Approach	EB		WB		SB	
HCM Control Delay, s	1.6		0		11.3	
HCM LOS	1.0		U		В	
I IOW LOG					D	
Minor Lane/Major Mvmt		EBL	EBT	WBT	WBR :	SBLn1
Capacity (veh/h)		1407	-	-	-	635
HCM Lane V/C Ratio		0.036	-	-	-	0.097
HCM Control Delay (s)		7.7	0	-	-	11.3
HCM Lane LOS		Α	Α	-	-	В
HCM 95th %tile Q(veh)		0.1	-	-	-	0.3
, , , , , , , , , , , , , ,		0.1				0.0

Lanes, Volumes, Timings 102: Grey Road 8 & Southgate Road 04 Southgate Part Lot 31 TIS 2027 Background AM

	۶	<b>→</b>	•	•	<b>—</b>	4	1	†	~	<b>/</b>	<b>↓</b>	✓
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			44			4			4	
Traffic Volume (vph)	3	6	1	2	2	8	1	46	2	6	49	1
Future Volume (vph)	3	6	1	2	2	8	1	46	2	6	49	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.913			0.994			0.998	
Flt Protected		0.985			0.991			0.999			0.995	
Satd. Flow (prot)	0	1853	0	0	1719	0	0	1887	0	0	1887	0
Flt Permitted		0.985			0.991			0.999			0.995	
Satd. Flow (perm)	0	1853	0	0	1719	0	0	1887	0	0	1887	0
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		2545.2			405.3			2036.0			221.1	
Travel Time (s)		114.5			18.2			91.6			9.9	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	8	1	3	3	11	1	61	3	8	65	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	0	17	0	0	65	0	0	74	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary Area Type: Of Control Type: Unsignalized Other Intersection Capacity Utilization 15.9% Analysis Period (min) 15

ICU Level of Service A

HCM 6th TWSC 102: Grey Road 8 & Southgate Road 04 Southgate Part Lot 31 TIS 2027 Background AM

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	LDL	4	LDIN	TTDL	4	WDIX	NDL	4	NUIN	ODL	4	ODIN
Traffic Vol, veh/h	3	6	1	2	2	8	1	46	2	6	49	1
Future Vol. veh/h	3	6	1	2	2	8	1	46	2	6	49	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	Stop -	Stop -	None	Stop -	Stop -	None	riee	riee -	None	riee	riee -	None
Storage Length	- 1	-	NOHE	-	-	NOTIE	-		None		-	NOHE
Veh in Median Storage,		0			0	-		0		-	0	
Grade. %	# -	0			0	-		0			0	
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mymt Flow	4	8	1	3	3	11	1	61	3	8	65	1
IVIVIIIL I IOW	*	U	- 1	J	J	- 11	- 1	01	J	0	00	- 1
	1inor2			Minor1			Major1			Major2		
Conflicting Flow All	154	148	66	151	147	63	66	0	0	64	0	0
Stage 1	82	82	-	65	65	-	-	-	-	-	-	-
Stage 2	72	66	-	86	82	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	817	747	1003	821	748	1007	1549	-	-	1551	-	-
Stage 1	931	831	-	951	845	-	-	-	-	-	-	-
Stage 2	943	844	-	927	831	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	802	743	1003	810	744	1007	1549	-	-	1551	-	-
Mov Cap-2 Maneuver	802	743	-	810	744	-	-	-	-	-	-	-
Stage 1	930	827	-	950	844	-	-	-	-	-	-	-
Stage 2	929	843	-	912	827	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.7			9			0.1			0.8		
HCM LOS	A			A			0.1			0.0		
	,,			,,								
Miner Lene/Major M.		NDI	NDT	NDD	EDI w41	MDI ss4	CDI	CDT	CDD			
Minor Lane/Major Mvmt		NBL	NBT		EBLn1\		SBL	SBT	SBR			
Capacity (veh/h)		1549	-	-	780	916	1551	-	-			
HCM Lane V/C Ratio		0.001	-	-	0.017	0.017	0.005	-	-			
HCM Control Delay (s)		7.3	0	-	9.7	9	7.3	0	-			
HCM Lane LOS		A	Α	-	A	A	A	Α	-			
HCM 95th %tile Q(veh)		0	-	-	0.1	0.1	0	-	-			

Lanes, Volumes, Timings 101: Highway 89 & Grey Road 8

Southgate Part Lot 31 TIS
2027 Background PM

	*	-	<b>←</b>	4	-	1
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		ની	f)		N/F	
Traffic Volume (vph)	35	121	160	26	17	32
Future Volume (vph)	35	121	160	26	17	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			0.981		0.912	
Flt Protected		0.989			0.983	
Satd. Flow (prot)	0	1879	1864	0	1703	0
Flt Permitted		0.989			0.983	
Satd. Flow (perm)	0	1879	1864	0	1703	0
Link Speed (k/h)		80	80		80	
Link Distance (m)		427.8	363.5		2036.0	
Travel Time (s)		19.3	16.4		91.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	37	129	170	28	18	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	166	198	0	52	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 31.6%

Analysis Period (min) 15

ICU Level of Service A

HCM 6th TWSC 101: Highway 89 & Grey Road 8 Southgate Part Lot 31 TIS 2027 Background PM

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	LDL	4	1,	.TDI	W/	ODIT
Traffic Vol. veh/h	35	121	160	26	17	32
Future Vol. veh/h	35	121	160	26	17	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
				None		
RT Channelized	-		-		-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage		0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	37	129	170	28	18	34
Mata-Mina-	M-14		M-:0		M:0	
	Major1		Major2		Minor2	404
Conflicting Flow All	198	0	-	0	387	184
Stage 1	-	-	-	-	184	-
Stage 2	-	-	-	-	203	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1387	-	-	-	620	864
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	836	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	1387	_	_	_	602	864
Mov Cap-1 Maneuver	1007	-	-	-	602	- 004
Stage 1	-				827	
		-		-		
Stage 2	-	-	-	-	836	-
Approach	EB		WB		SB	
HCM Control Delay, s	1.7		0		10.2	
HCM LOS					В	
TIOM EOO						
Minor Lane/Major Mvm	nt	EBL	EBT	WBT	WBR	
Capacity (veh/h)		1387	-	-	-	751
HCM Lane V/C Ratio		0.027	-	-	-	0.069
HCM Control Delay (s)		7.7	0	-	-	10.2
HCM Lane LOS		Α	Α	-	-	В
HCM 95th %tile Q(veh)	)	0.1	-	-	-	0.2
7000 2(1011)	,	0.1				0.2

Lanes, Volumes, Timings 102: Grey Road 8 & Southgate Road 04

Southgate Part Lot 31 TIS 2027 Background PM

	•	-	•	1	-	*	1	<b>†</b>	-	-	<b>↓</b>	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations		4			43-			4			4	
Traffic Volume (vph)	2	0	2	1	1	4	1	57	0	0	49	2
Future Volume (vph)	2	0	2	1	1	4	1	57	0	0	49	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932			0.904						0.995	
Flt Protected		0.976			0.993			0.999				
Satd. Flow (prot)	0	1728	0	0	1706	0	0	1898	0	0	1890	0
Flt Permitted		0.976			0.993			0.999				
Satd. Flow (perm)	0	1728	0	0	1706	0	0	1898	0	0	1890	0
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		2545.2			405.3			2036.0			221.1	
Travel Time (s)		114.5			18.2			91.6			9.9	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	0	2	1	1	5	1	68	0	0	58	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	0	7	0	0	69	0	0	60	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalize	d											
Intersection Capacity Utiliz	zation 13.8%			IC	CU Level o	of Service	A A					
Analysis Period (min) 15												

HCM 6th TWSC 102: Grey Road 8 & Southgate Road 04 Southgate Part Lot 31 TIS 2027 Background PM

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	2	0	2	1	1	4	1	57	0	0	49	2
Future Vol. veh/h	2	0	2	1	1	4	1	57	0	0	49	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-		None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage,	,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	0	2	1	1	5	1	68	0	0	58	2
Major/Minor N	/linor2		1	Minor1			Major1		1	Maior2		
Conflicting Flow All	132	129	59	130	130	68	60	0	0	68	0	0
Stage 1	59	59	-	70	70	-	-	-	-	-	-	-
Stage 2	73	70	-	60	60	-	-		-		-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-		-		-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	845	765	1012	847	764	1001	1556	-	-	1546	-	-
Stage 1	958	850	-	945	841	-	-	-	-	-	-	-
Stage 2	942	841	-	957	849	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	839	764	1012	844	763	1001	1556	-	-	1546	-	-
Mov Cap-2 Maneuver	839	764	-	844	763	-	-	-	-	-	-	-
Stage 1	957	850	-	944	840	-	-	-	-	-	-	-
Stage 2	935	840	-	955	849	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	8.9			8.9			0.1			0		
HCM LOS	А			А								
Minor Lane/Major Mvm	t	NBL	NBT	NBR I	EBLn1\	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1556	-	-	917	924	1546	-	-			
HCM Lane V/C Ratio		0.001	-	-		0.008	-	-	-			
HCM Control Delay (s)		7.3	0	-	8.9	8.9	0	-	-			
HCM Lane LOS		Α	Α	-	Α	Α	Α	-	-			

0 - - 0 0 0 - -

HCM 95th %tile Q(veh)

# **Appendix E**

#### **2027 Total Operation Reports**

Lanes, Volumes, Timings 101: Highway 89 & Grey Road 8 Southgate Part Lot 31 TIS 2027 Total AM HCM 6th TWSC 101: Highway 89 & Grey Road 8 Southgate Part Lot 31 TIS 2027 Total AM

Lane Configurations Traffic Volume (vph) 48 161 139 18 36 27 Future Volume (vph) 48 161 139 18 36 27 Ideal Flow (vphpl) 1900 1900 1900 1900 1900 1900 1900 Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 1.00 Fit Protected 0.989 0.972 Satd. Flow (prot) 0 1879 1870 0 1738 0 Fit Permitted 0.989 0.972 Satd. Flow (prot) 1 1879 1870 0 1738 0 Fit Permitted 0.989 0.972 Satd. Flow (prot) 1 1879 1870 0 1738 0 Fit Permitted 0.989 0.972 Satd. Flow (prot) 1 1879 1870 0 1738 0 Fit Permitted 0.989 0.972 Fit Permitted 0.989 0.972 Satd. Flow (perm) 1 1879 1870 0 1738 0 Link Speed (k/h) 80 80 80 Link Distance (m) 427.8 363.5 2036.0 Travel Time (s) 19.3 16.4 91.6 Peak Hour Factor 0.83 0.83 0.83 0.83 0.83 Heavy Vehicles (%) 0% 0% 0% 0% 0% 0% 0% Adj. Flow (vph) 58 194 167 22 43 33 Shared Lane Traffic (%) Lane Group Flow (vph) 0 252 189 0 76 0 Sign Control Free Free Stop		•	-	•	*	-	4	
Traffic Volume (vph)         48         161         139         18         36         27           Future Volume (vph)         48         161         139         18         36         27           Future Volume (vph)         48         161         139         18         36         27           Ideal Flow (pph)         1900         1000         1000         1900         1600         1900         19	Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Future Volume (vph)	Lane Configurations		ની	ĵ.		N/F		
Ideal Flow (vphpl)         1900 <td>Traffic Volume (vph)</td> <td>48</td> <td>161</td> <td>139</td> <td>18</td> <td>36</td> <td>27</td> <td></td>	Traffic Volume (vph)	48	161	139	18	36	27	
Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 1.00 Frt 0.984 0.941 Fit Protected 0.989 0.972 Satd. Flow (prot) 0 1879 1870 0 1738 0 Fit Permitted 0.989 0.972 Satd. Flow (perm) 0 1879 1870 0 1738 0 Link Speed (k/h) 80 80 80 Link Distance (m) 427.8 363.5 2036.0 Travel Time (s) 19.3 16.4 91.6 Peak Hour Factor 0.83 0.83 0.83 0.83 0.83 Heavy Vehicles (%) 0% 0% 0% 0% 0% 0% Adj. Flow (vph) 58 194 167 22 43 33 Shared Lane Traffic (%) Lane Group Flow (vph) 0 252 189 0 76 0 Sign Control Free Free Stop	Future Volume (vph)	48	161	139	18	36	27	
Frt         0.984         0.941           FIt Protected         0.989         0.972           Satd. Flow (prot)         0         1879         1870         0         1738         0           FIt Permitted         0.989         0.972         0.976         0.976         0.972         0.972	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
FIt Protected 0.989 0.972 Satol. Flow (prot) 0 1879 1870 0 1738 0 Fit Permitted 0.989 0.972 Satol. Flow (perm) 0 1879 1870 0 1738 0 Link Speed (k/h) 80 80 80 80 Link Speed (k/h) 80 80 80 80 Link Distance (m) 427.8 363.5 2036.0 Travel Time (s) 19.3 16.4 91.6 Peak Hour Factor 0.83 0.83 0.83 0.83 0.83 0.83 Heavy Vehicles (%) 0% 0% 0% 0% 0% 0% Adj. Flow (vph) 58 194 167 22 43 33 Shared Lane Traffic (%) Lane Group Flow (vph) 0 252 189 0 76 0 Sign Control Free Free Stop	Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Satd. Flow (prot)         0         1879         1870         0         1738         0           FIL Permitted         0.989         0.972         Satd. Flow (perm)         0         1879         1870         0         1738         0           Link Speed (k/h)         80         80         80         80         80         80         Link Distance (m)         427.8         363.5         2036.0         2036.0         Travel Time (s)         19.3         16.4         91.6         91.6         98.2         80         83         0.83	Frt			0.984		0.941		
Fit Permitted 0.989 0.972 Satd. Flow (perm) 0 1879 1870 0 1738 0 Link Speed (k/h) 80 80 80 Link Distance (m) 427.8 363.5 2036.0 Travel Time (s) 19.3 16.4 91.6 Peak Hour Factor 0.83 0.83 0.83 0.83 0.83 0.83 Peak Hour Factor 0.64 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Flt Protected							
Satd. Flow (perm)         0         1879         1870         0         1738         0           Link Speed (k/h)         80         80         80         80           Link Distance (m)         427.8         363.5         2036.0           Travel Time (s)         19.3         16.4         91.6           Peak Hour Factor         0.83         0.83         0.83         0.83         0.83           Heavy Vehicles (%)         0%         0%         0%         0%         0%         0%           Adj. Flow (vph)         58         194         167         22         43         33           Shared Lane Traffic (%)         Lane Group Flow (vph)         0         252         189         0         76         0           Sign Control         Free         Free         Stop   Intersection Summary Area Type: Other	Satd. Flow (prot)	0	1879	1870	0	1738	0	
Link Speed (k/h)         80         80         80           Link Distance (m)         427.8         363.5         2036.0           Travel Time (s)         19.3         16.4         91.6           Peak Hour Factor         0.83 </td <td>Flt Permitted</td> <td></td> <td>0.989</td> <td></td> <td></td> <td>0.972</td> <td></td> <td></td>	Flt Permitted		0.989			0.972		
Link Distance (m)     427.8     363.5     2036.0       Travel Time (s)     19.3     16.4     91.6       Peak Hour Factor     0.83     0.83     0.83     0.83     0.83       Heavy Vehicles (%)     0%     0%     0%     0%     0%       Adj. Flow (vph)     58     194     167     22     43     33       Shared Lane Traffic (%)     Lane Group Flow (vph)     0     252     189     0     76     0       Sign Control     Free     Free     Stop       Intersection Summary       Area Type:     Other	Satd. Flow (perm)	0	1879	1870	0	1738	0	
Travel Time (s)         19.3         16.4         91.6           Peak Hour Factor         0.83         0.83         0.83         0.83         0.83           Heavy Vehicles (%)         0%         0%         0%         0%         0%         0%           Adj. Flow (vph)         58         194         167         22         43         33           Shared Lane Traffic (%)         Lane Group Flow (vph)         0         252         189         0         76         0           Sign Control         Free         Free         Stop           Intersection Summary           Area Type:         Other	Link Speed (k/h)		80	80		80		
Peak Hour Factor         0.83         0.08         0.06         0.06         0.83         0.08         3.24         0.96         0.83         0.83         0.83         0.98         3.24         0.96         0.96         0.83         0.83         0.83         0.83         0.83         0.96         0.96         0.96         0.96         0.96	Link Distance (m)			363.5		2036.0		
Heavy Vehicles (%)	Travel Time (s)		19.3	16.4		91.6		
Adj. Flow (vph)     58     194     167     22     43     33       Shared Lane Traffic (%)     Lane Group Flow (vph)     0     252     189     0     76     0       Sign Control     Free     Free     Stop       Intersection Summary       Area Type:     Other	Peak Hour Factor	0.83		0.83	0.83		0.83	
Shared Lane Traffic (%)         Lane Group Flow (vph)         0         252         189         0         76         0           Sign Control         Free         Free         Stop           Intersection Summary           Area Type:         Other	Heavy Vehicles (%)	0%	0%	0%	0%	- , -	0%	
Lane Group Flow (vph)         0         252         189         0         76         0           Sign Control         Free         Free         Stop           Intersection Summary           Area Type:         Other	Adj. Flow (vph)	58	194	167	22	43	33	
Sign Control         Free         Free         Stop           Intersection Summary         Area Type:         Other	Shared Lane Traffic (%)							
Intersection Summary Area Type: Other	Lane Group Flow (vph)	0	252	189	0	76	0	
Area Type: Other	Sign Control		Free	Free		Stop		
	Intersection Summary							
Control Type: Unsignalized	Area Type:	Other						
	Control Type: Unsignalized							
Intersection Capacity Utilization 33.2% ICU Level of Service A	Intersection Capacity Utiliz	ation 33.2%			IC	CU Level	of Service A	4
Analysis Period (min) 15	Analysis Period (min) 15							

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		W	
Traffic Vol, veh/h	48	161	139	18	36	27
Future Vol, veh/h	48	161	139	18	36	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	
Storage Length	-	-	-	-	0	-
Veh in Median Storage	e,# -	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0
Mymt Flow	58	194	167	22	43	33
Maria a/Maisa au	Maland		M-:0		M:0	
	Major1		Major2		Minor2	470
Conflicting Flow All	189	0	-	0	488	178
Stage 1	-	-	-	-	178	-
Stage 2	4.1	-	-	-	310 6.4	6.2
Critical Hdwy		-	-	-	5.4	
Critical Hdwy Stg 1	-	-	-	-		-
Critical Hdwy Stg 2	2.2	-	-	-	5.4	-
Follow-up Hdwy		-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1397	-	-	-	543	870
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	748	-
Platoon blocked, %	4007	-	-	-	F47	070
Mov Cap-1 Maneuver		-	-	-	517	870
Mov Cap-2 Maneuver	-	-	-	-	517	-
Stage 1	-	-	-	-	818	-
Stage 2	-	-	-	-	748	-
Approach	EB		WB		SB	
HCM Control Delay, s	1.8		0		11.5	
HCM LOS					В	
NA: 1 (NA : NA		EDI	EDT	MOT	MDD	ODI 4
Minor Lane/Major Mvr	nt	EBL	EBT	WBT		SBLn1
Capacity (veh/h)		1397	-	-	-	626
HCM Lane V/C Ratio		0.041	-	-		0.121
HCM Control Delay (s	)	7.7	0	-	-	11.5
HCM Lane LOS	`	A	Α	-	-	В
HCM 95th %tile Q(veh	1)	0.1	-	-	-	0.4

Lanes, Volumes, Timings 102: Grey Road 8 & Southgate Road 04 Southgate Part Lot 31 TIS 2027 Total AM HCM 6th TWSC 102: Grey Road 8 & Southgate Road 04 Southgate Part Lot 31 TIS 2027 Total AM

102: 0:0) 1 1044 0		9										
	<b>*</b>	-	*	1	<b>←</b>	4	4	1	1	-	Į.	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	3	6	13	2	2	8	13	46	2	6	49	1
Future Volume (vph)	3	6	13	2	2	8	13	46	2	6	49	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.921			0.913			0.995			0.998	
Flt Protected		0.993			0.991			0.990			0.995	
Satd. Flow (prot)	0	1738	0	0	1719	0	0	1872	0	0	1887	0
Flt Permitted		0.993			0.991			0.990			0.995	
Satd. Flow (perm)	0	1738	0	0	1719	0	0	1872	0	0	1887	0
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		2545.2			405.3			2036.0			221.1	
Travel Time (s)		114.5			18.2			91.6			9.9	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	8	17	3	3	11	17	61	3	8	65	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	0	0	17	0	0	81	0	0	74	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalize	d											
Intersection Capacity Utili: Analysis Period (min) 15				IC	CU Level o	of Service	Α					

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EDL	4	EDI	WDL	WB1	MOK	NDL	IND I	NDM	ODL	3B1	ODR
Traffic Vol, veh/h	3	6	13	2	2	8	13	46	2	6	49	1
Future Vol, veh/h	3	6	13	2	2	8	13	46	2	6	49	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	40	0	0	49	0
	Stop	-	-	_	-	-	_	-	-	-	Free	Free
Sign Control		Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free		None
RT Channelized	-	-	None	-	-	None	-	-	None		-	None
Storage Length					0		-	0			0	
Veh in Median Storage		0	-	-	_	-	-	_	-	-	_	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	8	17	3	3	11	17	61	3	8	65	1
Major/Minor N	Minor2		- 1	Minor1			Major1		1	Major2		
Conflicting Flow All	186	180	66	191	179	63	66	0	0	64	0	0
Stage 1	82	82	-	97	97	-	-	-	-	-	-	-
Stage 2	104	98	-	94	82	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	779	717	1003	773	718	1007	1549	-	-	1551	-	-
Stage 1	931	831	-	914	819	-	-		-	-		-
Stage 2	907	818	_	918	831	-	_	-	_	-	-	_
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	760	706	1003	744	707	1007	1549	-	-	1551	-	_
Mov Cap-2 Maneuver	760	706	-	744	707	-	-	-	-	-	-	-
Stage 1	921	827	-	904	810	-	-	-	-		-	-
Stage 2	885	809		889	827	-	-	-	-	-	-	-
3												
A	ED			MD			ND			OD		
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.3			9.1			1.6			0.8		
HCM LOS	Α			Α								
Minor Lane/Major Mvm	t	NBL	NBT	NBR I	EBLn1V	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1549	-	-	866	891	1551	-	-			
HCM Lane V/C Ratio		0.011	-	-	0.034	0.018	0.005	-	-			
HCM Control Delay (s)		7.3	0	-	9.3	9.1	7.3	0	-			
HCM Lane LOS		Α	A	-	А	Α	Α	A	-			
HCM 95th %tile Q(veh)		0	-	-	0.1	0.1	0	-	-			
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Lanes, Volumes, Timings 103: Southgate Road 04 & Site Driveway Southgate Part Lot 31 TIS 2027 Total AM

HCM 6th TWSC 103: Southgate Road 04 & Site Driveway Southgate Part Lot 31 TIS 2027 Total AM

	•	<b>→</b>	-	*	-	4	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		4	1>		W		
Traffic Volume (vph)	0	0	0	12	12	0	
Future Volume (vph)	0	0	0	12	12	0	
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			0.865				
Flt Protected					0.950		
Satd. Flow (prot)	0	1900	1644	0	1805	0	
Flt Permitted					0.950		
Satd. Flow (perm)	0	1900	1644	0	1805	0	
Link Speed (k/h)		80	80		50		
Link Distance (m)		310.8	2545.2		98.0		
Travel Time (s)		14.0	114.5		7.1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	0	0	0	13	13	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	13	0	13	0	
Sign Control		Free	Free		Stop		
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizati	on 13.3%			IC	CU Level	of Service A	
Analysis Period (min) 15							
Analysis Peliod (Min) 15							

Intersection						
Int Delay, s/veh	4.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		W	
Traffic Vol, veh/h	0	0	0	12	12	0
Future Vol. veh/h	0	0	0	12	12	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized		None	-		-	
Storage Length	-	-		-	0	-
Veh in Median Storage	e.# -	0	0		0	
Grade, %		0	0		0	
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mymt Flow	0	0	0	13	13	0
IVIVMT FIOW	U	U	U	13	13	U
Major/Minor	Major1	- 1	Major2	- 1	Minor2	
Conflicting Flow All	13	0	-	0	7	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	_	_	_	5.4	-
Follow-up Hdwy	2.2			-	3.5	3.3
Pot Cap-1 Maneuver	1619	_	_	_	1019	1081
Stage 1	-			-	1021	-
Stage 2	_		-		1021	_
Platoon blocked, %			-			
Mov Cap-1 Maneuver	1619				1019	1081
Mov Cap-1 Maneuver			-		1019	1001
	-		-	-		
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		SB	
HCM Control Delay, s			0		8.6	
HCM LOS	U		U		Α	
TIOWI LOO					А	
Minor Lane/Major Mvr	nt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)		1619	-	-	-	
HCM Lane V/C Ratio		-	-	-	-	0.013
HCM Control Delay (s	)	0	-	-	-	8.6
HCM Lane LOS		Α	-	-	-	Α
HCM 95th %tile Q(veh	1)	0	-	-	-	0

Lanes, Volumes, Timings 101: Highway 89 & Grey Road 8

Southgate Part Lot 31 TIS 2027 Total PM

HCM 6th TWSC 101: Highway 89 & Grey Road 8 Southgate Part Lot 31 TIS 2027 Total PM

	•	-	<b>—</b>	*	1	4
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		ર્ન	1>		W	
Traffic Volume (vph)	41	121	160	32	23	38
Future Volume (vph)	41	121	160	32	23	38
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			0.977		0.916	
Flt Protected		0.987			0.982	
Satd. Flow (prot)	0	1875	1856	0	1709	0
Flt Permitted		0.987			0.982	
Satd. Flow (perm)	0	1875	1856	0	1709	0
Link Speed (k/h)		80	80		80	
Link Distance (m)		427.8	363.5		2036.0	
Travel Time (s)		19.3	16.4		91.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	44	129	170	34	24	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	173	204	0	64	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized	d					
Intersection Capacity Utiliz	ation 32.6%			10	CU Level	of Service
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		લી	ĵ,		W	
Traffic Vol, veh/h	41	121	160	32	23	38
Future Vol, veh/h	41	121	160	32	23	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage	,# -	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	44	129	170	34	24	40
Major/Minor 1	Major1	1	Major2	1	Minor2	
Conflicting Flow All	204	0	-	0	404	187
Stage 1		-	-	-	187	-
Stage 2		-		-	217	
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1380	-	_	-	606	860
Stage 1	-	-		-	850	-
Stage 2	-	-	_	-	824	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	1380	-	-	-	585	860
Mov Cap-2 Maneuver	-	-		-	585	-
Stage 1	-	-	-	-	821	-
Stage 2		-		-	824	
Olugo 2					02-1	
			WD		0.0	
Approach	EB		WB		SB	
HCM Control Delay, s	1.9		0		10.4	
HCM LOS					В	
Minor Lane/Major Mvm	ıt	EBL	EBT	WBT	WBR :	
Capacity (veh/h)		1380	-	-	-	731
HCM Lane V/C Ratio		0.032	-	-	-	0.089
HCM Control Delay (s)		7.7	0	-	-	10.4
HCM Lane LOS		Α	Α	-	-	В
HCM 95th %tile Q(veh)	)	0.1	-	-	-	0.3

Lanes, Volumes, Timings 102: Grey Road 8 & Southgate Road 04 Southgate Part Lot 31 TIS 2027 Total PM

	۶	-	*	1	←	*	1	<b>†</b>	1	<b>\</b>	<b>↓</b>	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		44			4			4			4	
Traffic Volume (vph)	2	0	14	1	1	4	13	57	0	0	49	2
Future Volume (vph)	2	0	14	1	1	4	13	57	0	0	49	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.879			0.904						0.995	
Flt Protected		0.995			0.993			0.991				
Satd. Flow (prot)	0	1662	0	0	1706	0	0	1883	0	0	1890	0
Flt Permitted		0.995			0.993			0.991				
Satd. Flow (perm)	0	1662	0	0	1706	0	0	1883	0	0	1890	0
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		2545.2			405.3			2036.0			221.1	
Travel Time (s)		114.5			18.2			91.6			9.9	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	0	17	1	1	5	15	68	0	0	58	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	19	0	0	7	0	0	83	0	0	60	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 20.4%
Analysis Period (min) 15

ICU Level of Service A

HCM 6th TWSC 102: Grey Road 8 & Southgate Road 04 Southgate Part Lot 31 TIS 2027 Total PM

Intersection												
Int Delay, s/veh	2											
				11151	14/57	14/00	N.D.	NET		001		000
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	2	0	14	1	1	4	13	57	0	0	49	2
Future Vol, veh/h	2	0	14	1	1	4	13	57	0	0	49	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage,	,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	0	17	1	1	5	15	68	0	0	58	2
Majar/Minar	Ain and			Ainant			Majard			Aniaro		
	/linor2	457		Minor1	450		Major1			Major2		
Conflicting Flow All	160	157	59	166	158	68	60	0	0	68	0	0
Stage 1	59	59	-	98	98	-	-	-	-		-	-
Stage 2	101	98	-	68	60	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	810	739	1012	803	738	1001	1556	-	-	1546	-	-
Stage 1	958	850	-	913	818	-	-	-	-	-	-	-
Stage 2	910	818	-	947	849	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	799	732	1012	784	731	1001	1556	-	-	1546	-	-
Mov Cap-2 Maneuver	799	732	-	784	731	-	-	-	-	-	-	-
Stage 1	948	850	-	904	810	-	-	-	-	-	-	-
Stage 2	895	810	-	931	849	-	-	-	-	-	-	-
Annroach	EB			WB			NB			SB		
Approach	8.8			9			1.4			0		
HCM Control Delay, s							1.4			U		
HCM LOS	Α			Α								
Minor Lane/Major Mvmt	t	NBL	NBT	NBR I	EBLn1\	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1556	-	-	979	904	1546	-	-			
HCM Lane V/C Ratio		0.01			0.019		-					
HCM Control Delay (s)		7.3	0	-	8.8	9	0		-			
HCM Lane LOS		A	A		Α.	A	A					
HCM 95th %tile Q(veh)		0	- 11	_	0.1	0	0					
HOW SOUT TOUTE Q(VEIT)		0			0.1	U	U					

Lanes, Volumes, Timings 103: Southgate Road 04 & Site Driveway Southgate Part Lot 31 TIS 2027 Total PM HCM 6th TWSC 103: Southgate Road 04 & Site Driveway Southgate Part Lot 31 TIS 2027 Total PM

	<b>*</b>	<b>→</b>	+	*	-	1	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		ની	ĵ.		N/F		
Traffic Volume (vph)	0	0	0	12	12	0	
Future Volume (vph)	0	0	0	12	12	0	
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			0.865				
Flt Protected					0.950		
Satd. Flow (prot)	0	1900	1644	0	1805	0	
Flt Permitted					0.950		
Satd. Flow (perm)	0	1900	1644	0	1805	0	
Link Speed (k/h)		80	80		50		
Link Distance (m)		310.8	2545.2		98.0		
Travel Time (s)		14.0	114.5		7.1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	
Adj. Flow (vph)	0	0	0	13	13	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	13	0	13	0	
Sign Control		Free	Free		Stop		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalized							
Intersection Capacity Utiliza	ation 13.3%			IC	CU Level	of Service	e A
Analysis Period (min) 15							

Intersection						
Int Delay, s/veh	4.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	LDL	4	1	***	W	ODIN
Traffic Vol, veh/h	0	0	0	12	12	0
Future Vol. veh/h	0	0	0	12	12	0
Conflicting Peds, #/hr	0	0	0	0	0	0
	-	-	-		_	
Sign Control	Free	Free	Free	Free	Stop	Stop
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	0	0	0
Mvmt Flow	0	0	0	13	13	0
Major/Minor I	Major1	N.	Major2		Minor2	
	13			0	7	7
Conflicting Flow All		0	-			
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1619	-	-	-	1019	1081
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1619	-	-	_	1019	1081
Mov Cap-2 Maneuver	-	-		-	1019	-
Stage 1	-	-	-	-	1021	-
Stage 2		-			-	
Olugo 2						
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		8.6	
HCM LOS					Α	
NA: 1 (NA : NA		EDI	EDT	MOT	MDD	ODI 4
Minor Lane/Major Mvm	t	EBL	EBT	WBT	WBR:	
Capacity (veh/h)		1619	-	-	-	1019
HCM Lane V/C Ratio		-	-	-	-	0.013
HCM Control Delay (s)		0	-	-	-	8.6
HCM Lane LOS		Α	-	-	-	Α
HCM 95th %tile Q(veh)		0	-	-	-	0
•						

# **Appendix F**

#### **Left-Turn Lane Warrant Nomographs**

