



**28 South Street West,
Elmira, ON**

**Transportation Impact
Assessment & Parking
Study**

Paradigm Transportation Solutions Limited

2026-09
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Project Summary

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28 South Street West, Elmira, ON Transportation Impact Assessment & Parking Study



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Executive Summary

Content

Beyond Housing retained Paradigm Transportation Solutions Limited to prepare this Transportation Impact Assessment (TIA) and Parking Study (PS) for a proposed affordable housing development at 28 South Street West in the community of Elmira, Township of Woolwich, Ontario.

This TIS includes an analysis of existing traffic conditions, a description of the proposed development, traffic forecasts for a horizon year five years from the date of study (2031), assessment of traffic impacts with any necessary recommendations to accommodate the proposed development as appropriate and estimates the feasibility of the proposed parking supply.

Development Concept

The property owner is proposing to development the site to include 30 affordable residential units in a four-storey building. Concrete sidewalks will connect the building to existing municipal sidewalk along South Street West. Vehicle access is proposed via an all moves driveway connection to South Street West.

Parking is proposed with 23 parking spaces (0.77 spaces per unit).

Conclusions

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

Transportation Impact Assessment

- ▶ **Existing Traffic Conditions:** The study area intersection is currently operating with acceptable levels of service and within capacity.
- ▶ **Development Trip Generation:** The development is forecast to generate 24 new trips in the AM peak hour, and 22 new trips in the PM peak hour.
- ▶ **Background Traffic Conditions:** The study area intersection is forecast to operate with acceptable levels of service during the AM and PM peak hours with no critical movements.
- ▶ **Total Traffic Conditions:** The study area intersections are forecast to operate with acceptable levels of service during the AM and PM peak hours with no critical movements.



- ▶ The site driveway connection South Street West is forecast to operate at LOS A and v/c ratio of 0.02 or lower during the AM and PM peak hours.

Parking Study

- ▶ **Zoning By-Law Requirements:** The proposed development requires a total of 23 (Site-specific ZBL 16.169(a)) parking spaces to comply with the Township's Zoning By-law. With a proposed supply of 23 parking spaces, the development satisfies the ZBL requirement.
- ▶ **Forecast Parking Demand**
 - Transportation Tomorrow Survey (TTS) 2022 auto-ownership within the community of Elmira indicates a rate of approximately 0.77 vehicles per household for apartment units (24 spaces).
 - The *ITE Parking Generation Manual* indicates a forecast parking demand rate between 0.36 and 1.00 spaces per unit (11 to 30 spaces), including visitor parking.
 - Proxy site data at an existing affordable housing site in Elmira (7 Memorial Drive) indicate a maximum occupancy rate of 0.72 spaces per unit (22 spaces for the proposed development), including visitor parking.
- ▶ **Estimated Parking Demand:** Based on the combination of auto ownership, ITE rates, and proxy site data, the estimated maximum residential parking demand is between 0.36 and 1.00 spaces per unit (11 to 30 spaces), including visitor parking.
- ▶ The parking supply can be further supported based on the following:
 - Convenient access pedestrian/cycling facilities and short distance to commercial and employment land uses
 - Comprehensive TDM measures including unbundle parking, bike parking, and welcome package/centrally located information should be provided.

Recommendations

Based on the findings of this study, it is recommended that the proposed development be approved considered for approval with no off-site transportation improvements and with the proposed parking supply and comprehensive TDM measures.



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1 Introduction

Beyond Housing retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Assessment and Parking Justification for a proposed affordable housing development located at the 28 South Street West in Elmira, Township of Woolwich, Ontario. **Figure 1.1** illustrates the subject development location.

1.1 Purpose and Scope

The purpose of this report is to identify and assess the potential traffic impact resulting from the proposed development. The scope of the study, developed in consultation with Township of Woolwich in August 2026, includes:

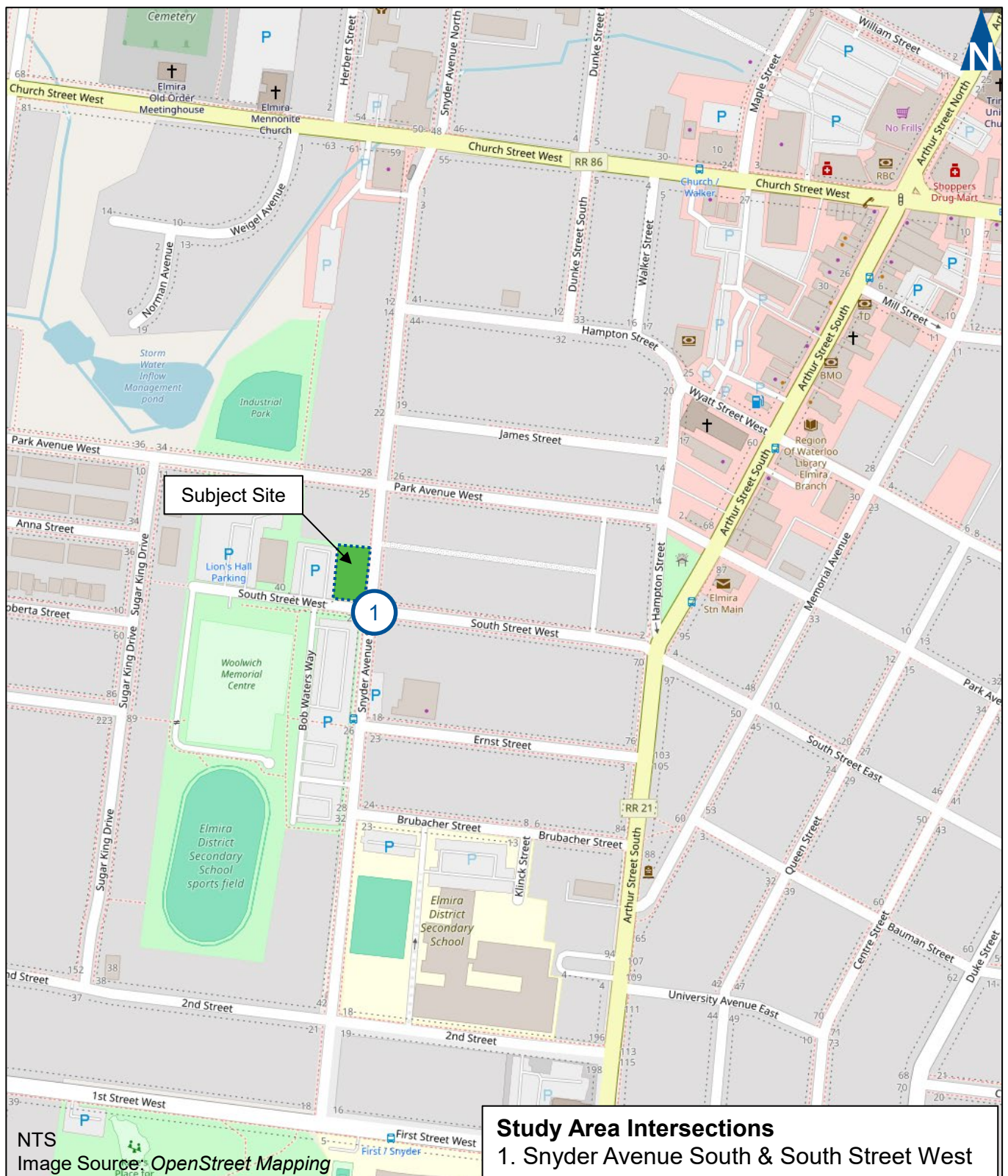
- ▶ Assessment of the current traffic and site conditions within the study area;
- ▶ Estimates of background traffic growth for five years from date of study (Year 2031);
- ▶ Estimates of additional traffic generated by the subject site;
- ▶ Analyses of the impact of the future traffic on the surrounding road network; and
- ▶ Recommendations necessary to mitigate the site generated traffic in a satisfactory manner.

The pre-study consultation identified the following study area intersections:

- ▶ Snyders Avenue South and South Street West (unsignalized); and
- ▶ New driveway connection to South Street West.

Appendix A contains the original pre-study consultation material and responses from the township.





2 Existing Conditions

This section documents current traffic conditions, operational deficiencies, and constraints experienced by the public travelling at the intersections within the study area. The operational deficiencies and constraints identified at this stage will be fundamental to the process of defining the required remedial measures.

2.1 Road Network

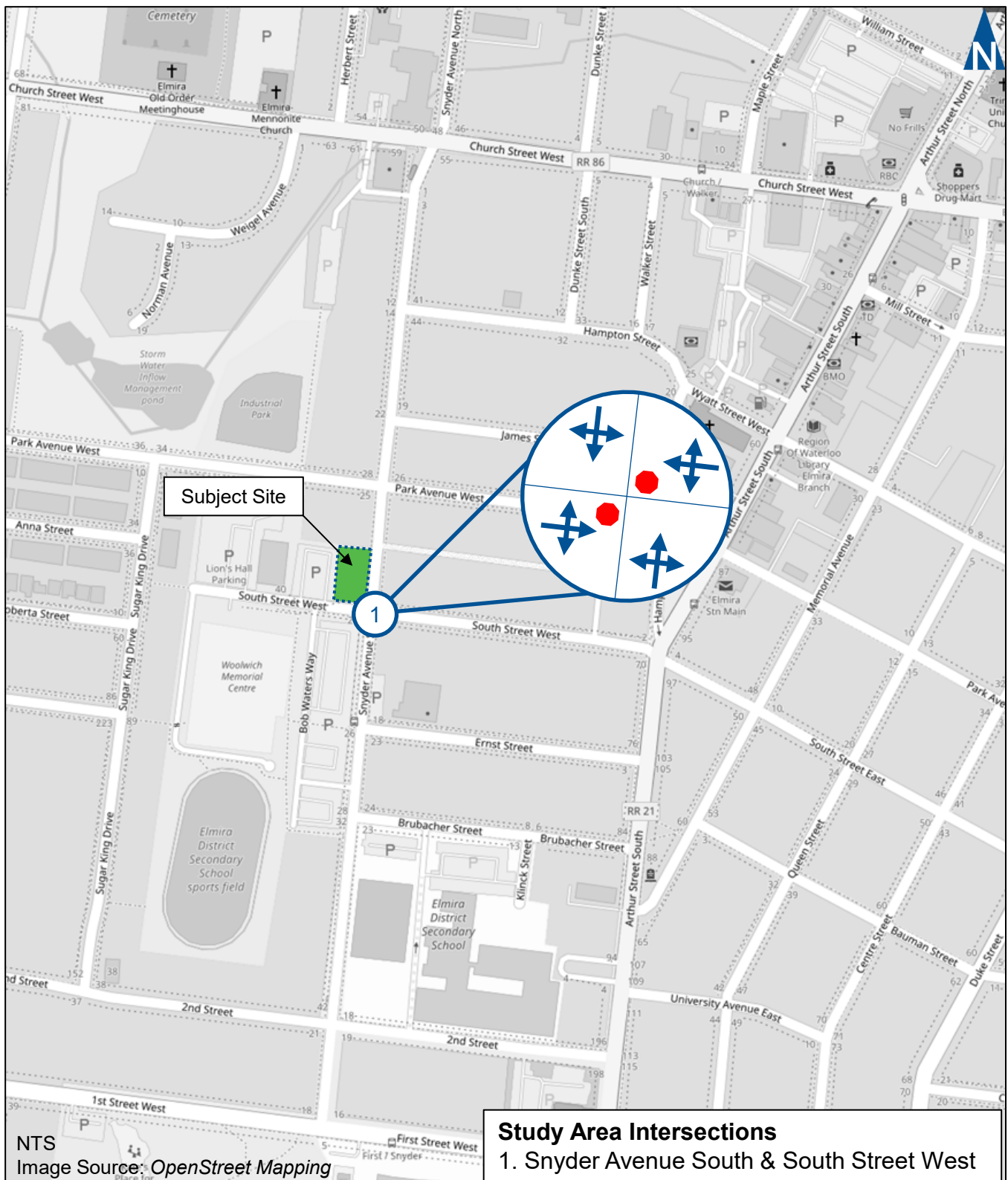
The main roadways under the jurisdiction¹ of the Township of Woolwich near the subject site include:

- ▶ **Snyders Avenue** is a north-south Township Road with a two-lane cross-section and posted speed limit of 50 km/h north of South Street West and 40 km/h south of South Street West. On-street parking is prohibited on both sides of the roadway.
- ▶ **South Street** is an east-west two-lane Township Road with a two-lane cross-section and posted speed limit of 40 km/h. On-street parking is permitted on both sides of the roadway.

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

¹ Township of Woolwich, *Official Plan, Planning Horizon 2016 to 2031*, (August 2022).





2.2 Transit Network

Grand River Transit (GRT) currently operates one route into the community of Elmira along Snyders Avenue South. **Route 21 (Elmira)** operates between Conestoga Station and the Arthur Street/Church Street intersection. It operates² Monday to Fridays (5:50 AM to 10:10 PM) with headways approximately every 30 minutes, Saturdays (6:39 AM to 7:41 PM) with headways approximately every 30 minutes, and Sundays (6:55 AM to 7:14 PM) with headways approximately every 30 minutes. There is no Holidays service for this route.

The closest transit stop to the subject site is located on Snyders Avenue South just north of the South Street West intersection (fronting the subject property).

There is also Kiwanis Transit³, which is a specialized transit service for eligible residents of the Townships of Woolwich, Wellesley, and Wilmot. Kiwanis Transit is an on-demand service for seniors and disabled residents to access employment, appointments, and social activities.

2.3 Active Transportation

Both Snyders Avenue South and South Street West have sidewalks on both sides of the roadway. There are painted pedestrian crosswalks on the east and west legs of the Snyders Avenue and South Street intersection.

Travel by bicycle to/from the subject site is not restricted by any access-controlled roadways. Cyclists are permitted to ride on all roadways in the study area.

2.4 Traffic Volumes

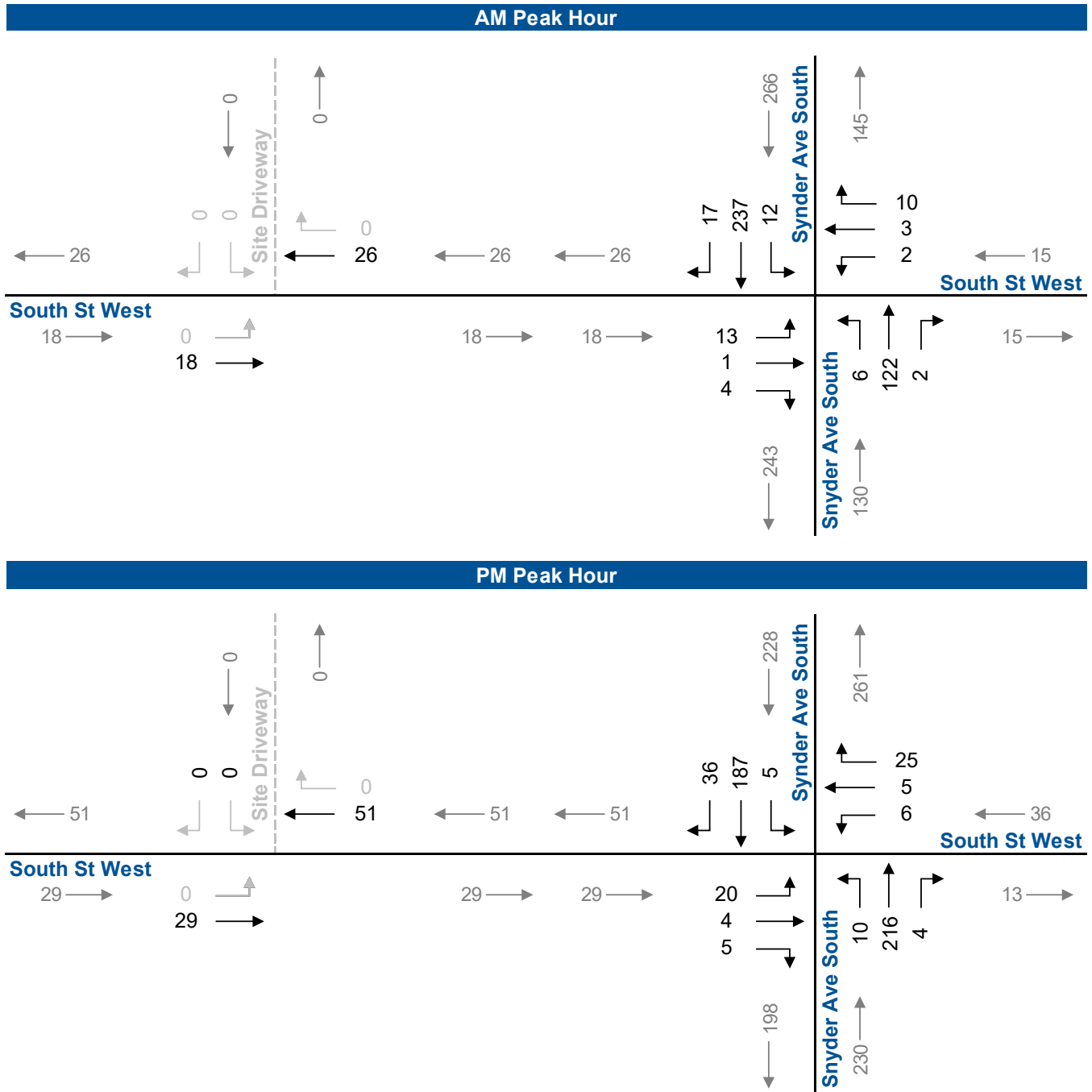
Turning movement counts quantify the movement of vehicles through the area. Existing traffic data at an intersection or on a road section forms the foundation for the analysis. The counts are usually taken during peak periods at an intersection to complete level of service analyses under its worst-case operating conditions.

Eight-hour turning movement counts were conducted at the study area intersection on Tuesday 15 September 2026. **Appendix B** contains the existing count information. **Figure 2.2** illustrates the base year weekday AM and PM peak hour traffic volumes.

² Current GRT schedule as of June 2026.

³ www.k-transit.com





2.5 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 several criteria related to opposing traffic flows, intersection geometry, and at signalized intersections, signal timing.

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 1.00, the movement is classed as LOS F, and remedial measures are usually implemented if they are feasible.

The operations of the study intersections have been analyzed using Synchro 12, with the existing lane configurations, traffic control, and estimated base year traffic volumes. The analysis considers three separate measures of performance:

- ▶ The Level of Service (LOS) for each turning movement
- ▶ The volume-to-capacity (v/c) ratio for each movement; and
- ▶ The 95th percentile queue lengths estimated using Synchro.

The Region of Waterloo's *Traffic Impact Study Guidelines*⁴ identify critical intersections as those operating at overall LOS E or F, regardless of control type (for example, signalized, unsignalized, or roundabout). The criteria for critical movements are where:

- ▶ The average control delay for individual movements is greater than 55 seconds
- ▶ The estimated 95th percentile queue length for an exclusive movement exceeds the available lane storages, or will block an existing access
- ▶ Exclusive turning lanes are inaccessible because of queue lengths in adjacent through lanes; and/or
- ▶ Poor quality of service for non-auto modes.

⁴ Region of Waterloo, *Transportation Impact Study Guidelines*, (Kitchener, Region of Waterloo, 2014).



The Region of Waterloo's *Transportation Impact Studies (TIS) Requirements for Capacity Analysis, Roundabouts, Signal Warrants* identifies saturation flow rates, peak hour factors, lost time adjustments, and other factors required for the Synchro analysis.

Table 2.1 summarizes the base year level of service conditions. The results indicate that all study intersections are operating with acceptable levels of service and within capacity.

Appendix C contains the detailed Synchro reports.



TABLE 2.1: BASE YEAR OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Snyders Avenue & South Street	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	>	A	<	A	>	A	A
			Delay	<	13	>	13	<	10	>	10	<	0	>	0	<	0	>	0	1
			V/C	<	0.04	>		<	0.02	>		<	0.00	>		<	0.00	>		
			Q	<	1	>		<	1	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
PM Peak Hour	Snyders Avenue & South Street	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	>	A	<	A	>	A	A
			Delay	<	13	>	13	<	11	>	11	<	0	>	0	<	0	>	0	2
			V/C	<	0.07	>		<	0.06	>		<	0.00	>		<	0.00	>		
			Q	<	2	>		<	2	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m)

Ex - Existing Available Storage (m)

Avail. - Available Storage (m)

TWSC - Two-Way Stop Control

< / > - Shared Turn Lane



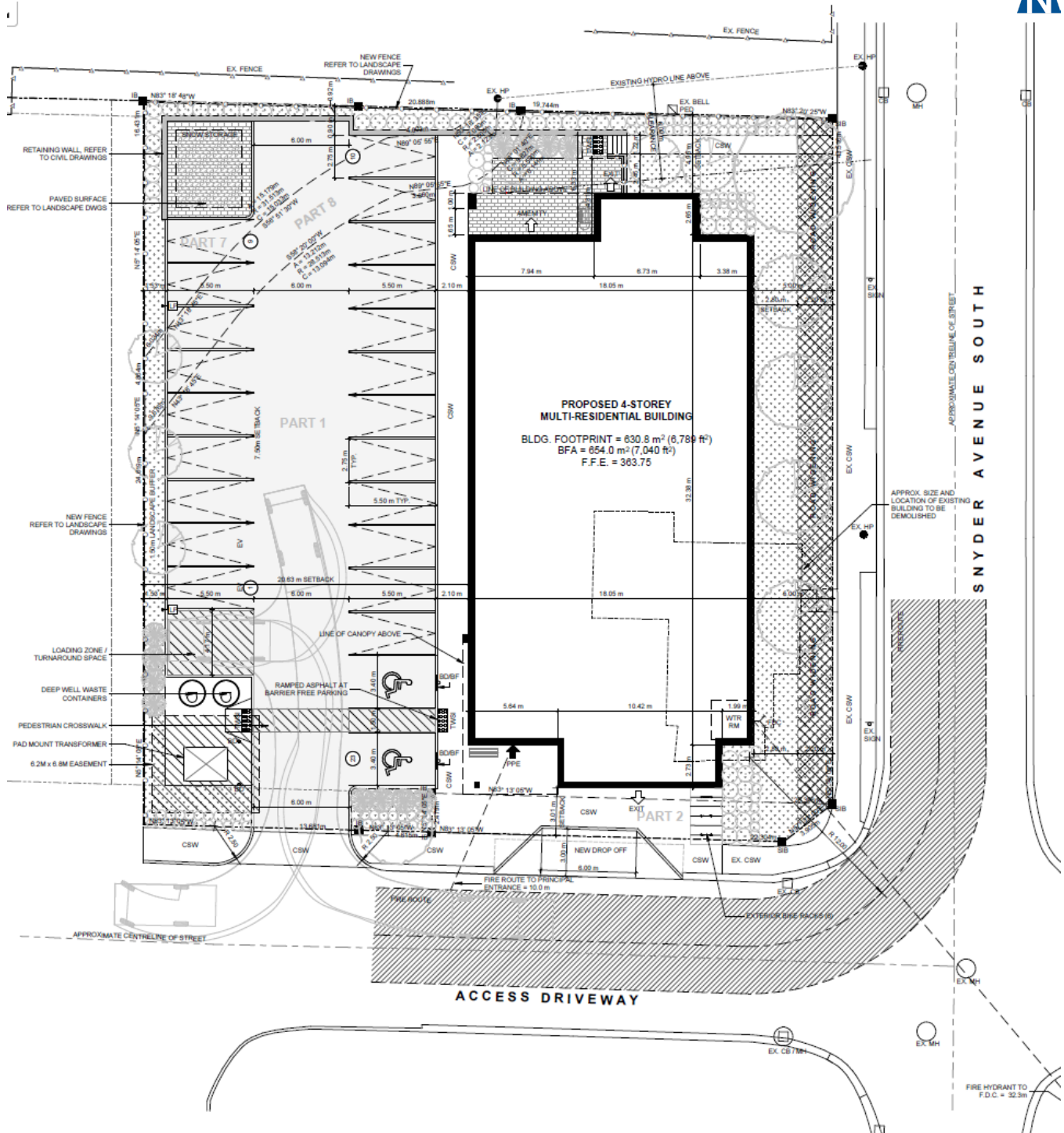
3 Development Concept

The subject site is located at 28 South Street West in the community of Elmira, Township of Woolwich. The property owner is proposing to develop the site to include 30 affordable residential units in a four-storey building. Concrete sidewalks will connect the building to existing municipal sidewalk along South Street West.

Vehicle access is proposed via an all moves driveway connection to South Street West.

Figure 3.1 shows the full development concept plan.





NTS



Concept Plan

28 South Street West, Elmira
260493

Figure 3.1

3.1 Site Trip Generation & Distribution

3.1.1 Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation⁵ provides methods to estimate site trip generation. The Land Use Code (LUC) Affordable Housing (223) was used to estimate the site trip generation. There are three sub variables for the Affordable Housing LUC: Income Levels; Senior; and Special Needs. All three are presented in this study with the highest trip generation used in the analysis.

The “General Urban/Suburban” land use setting was selected along with “Not Close to Rail Transit” variable. The average rates were used to calculate the trips generated by the residential use as the regression results are considered low. No modal split reduction was assumed in the site trip generation.

Table 3.2 summarizes the estimated trip generation. The sites trip generation is estimated to be approximately 24 AM peak hour trips and 22 PM peak hour trips. **Appendix D** contains the ITE Trip Generation work sheets.

TABLE 3.2: ESTIMATED TRIP GENERATION

223 - Affordable Housing	Units	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Income Levels	30	7	17	24	13	9	22
Senior	30	6	4	10	3	2	5
Special Needs	30	2	-	2	1	1	2

3.1.2 Trip Distribution

The site generated trips were assigned to the road network based on the existing traffic patterns at the intersection of Snyders Avenue and South Street. **Table 3.3** summarizes the estimated trip distribution.

⁵ Institute of Transportation Engineers, *Trip Generation Manual*, 12th ed., (Washington, DC: ITE, 2025).

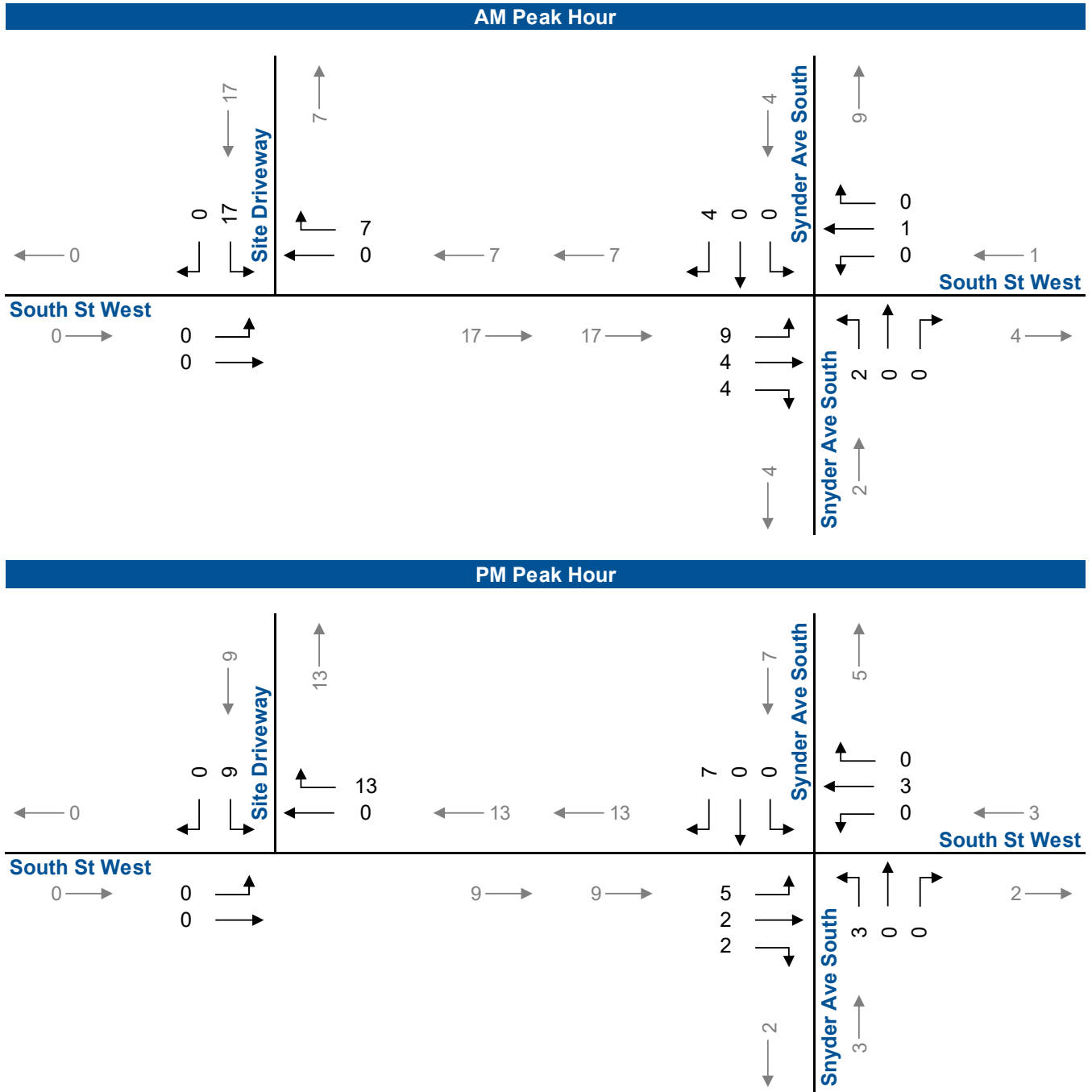


TABLE 3.1: ESTIMATED TRIP DISTRIBUTION

Route	Percentage
North via Snyder Avenue	50%
East via South Street	5%
South via Snyder Avenue	45%
Total	100%

Figure 3.2 contains the AM and PM peak hour trip assignment to the adjacent road network.





3.2 Site Circulation

The site has been assessed using AutoTURN swept path analysis software. The design vehicles used in the analysis include:

- ▶ Garbage Truck, garbage truck representative of the Molock trucks used to lift the garbage;
- ▶ TAC Light Single Unit (LSU), straight-frame truck representing a typical delivery vehicle; and
- ▶ Fire Pumper Truck, standard fire truck.

Appendix E contains the detailed site circulation drawings, which indicate the following, specific to each design vehicle:

- ▶ Garbage Truck – will have to reverse into the site to access the molok locations, no conflicts;
- ▶ TAC Light Single Unit – drives forward into the site and turns around in the provided loading zone to exit, no conflicts; and
- ▶ Fire Truck – stays on the municipal streets which makes a right-turn round the corner, no conflicts.



4 Evaluation of Future Traffic Conditions

The assessment of future conditions in this section includes the following components necessary to assess the traffic implications on the adjacent road network:

- ▶ Future background traffic estimates;
- ▶ Level of service analysis for background traffic (pre-development);
- ▶ Future total traffic estimates; and
- ▶ Level of service analysis for total traffic (post-development).

4.1 Forecast Traffic Volumes

The likely future traffic volumes five years the date of the study (Year 2031) are estimated to consist of:

- ▶ Increased non-site traffic (generalized background traffic growth) estimated to be 0.0 percent per annum (as identified by the township);
- ▶ Traffic generated by the following nearby developments:
 - 18 Ernst Street⁶; and
- ▶ Traffic generated by the subject site.

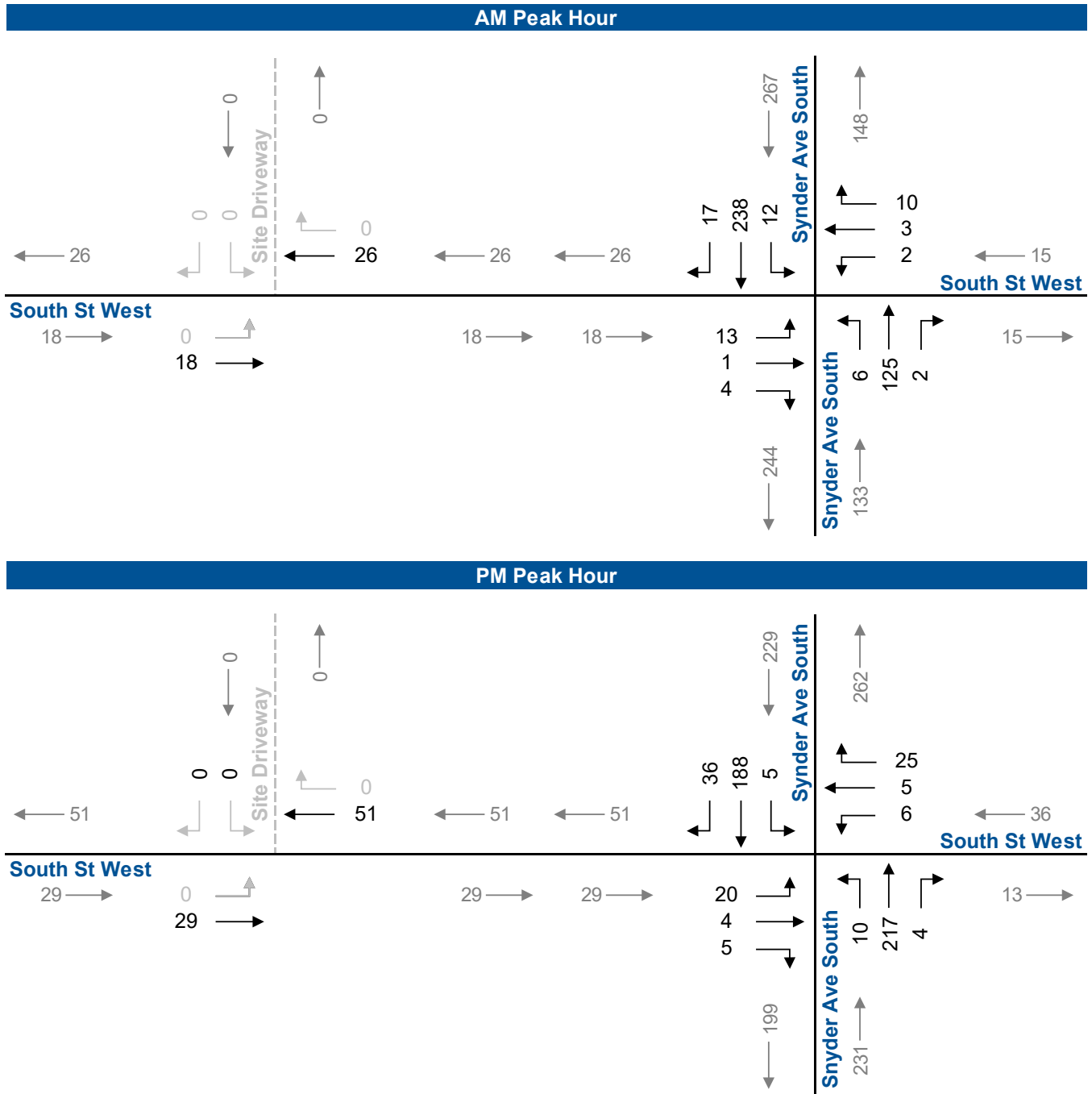
Appendix F illustrates the background development traffic volumes.

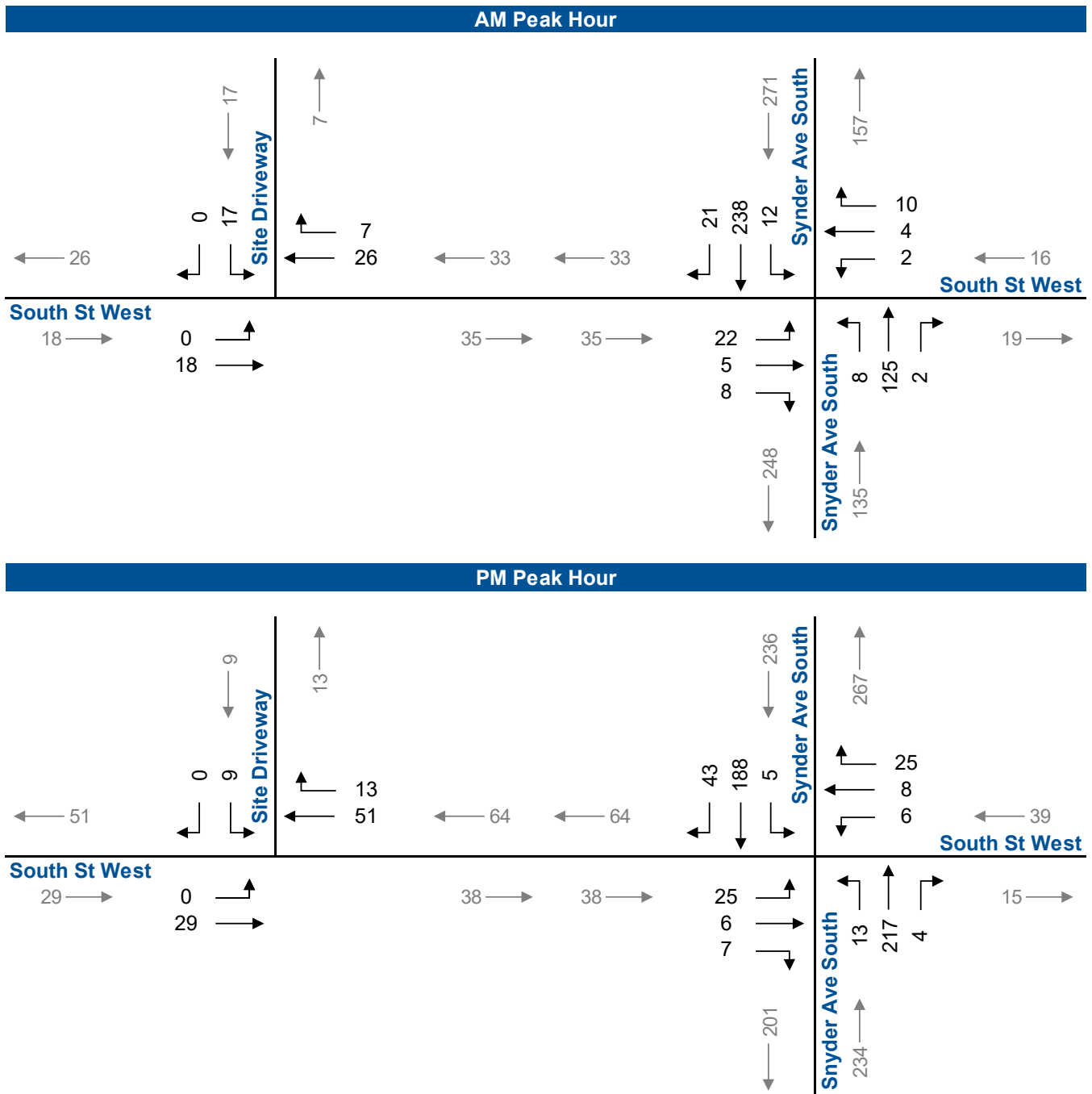
Figure 4.1 details the forecast 2031 background traffic volumes.

Figure 4.2 details the forecast 2031 total (background plus site generated) traffic volumes.

⁶ 18 Ernst Street consists of 8 townhouse units. ITE trip generation methodology was used to estimate the site trips that were assigned to the study area intersection based on the trip distribution in Section 3.2.







4.2 Forecast Traffic Operations

4.2.1 Background Traffic Operations

The study area intersection operations analysis for the background traffic scenario followed the same methodology used for the existing traffic conditions. **Table 4.1** details the level of service conditions for the weekday AM and PM peak hours.

The study area intersection is forecast to operate with acceptable levels of service during the AM and PM peak hours.

Appendix G contains the detailed Synchro reports.



TABLE 4.1: FUTURE BACKGROUND OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Snyders Avenue & South Street	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	>	A	<	A	>	A	A
			Delay	<	13	>	13	<	10	>	10	<	0	>	0	<	0	>	0	1
			V/C	<	0.04	>		<	0.02	>		<	0.00	>		<	0.00	>		
			Q	<	1	>		<	1	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
PM Peak Hour	Snyders Avenue & South Street	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	>	A	<	A	>	A	A
			Delay	<	13	>	13	<	11	>	11	<	0	>	0	<	0	>	0	2
			V/C	<	0.07	>		<	0.06	>		<	0.00	>		<	0.00	>		
			Q	<	2	>		<	2	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		

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LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m)

Ex - Existing Available Storage (m)

Avail. - Available Storage (m)

TWSC - Two-Way Stop Control

< / > - Shared Turn Lane



4.2.2 Total Traffic Operations

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

The study area intersections are forecast to operate with acceptable levels of service during the AM and PM peak hours.

The site driveway connection to South Street West is forecast to operate at LOS A and v/c ratio of 0.02 or lower during the AM and PM peak hours.

Appendix H contains the detailed Synchro reports.



TABLE 4.2: FUTURE TOTAL OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Snyders Avenue & South Street	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	>	A	<	A	>	A	A
			Delay	<	13	>	13	<	11	>	11	<	1	>	1	<	0	>	0	2
			V/C	<	0.08	>		<	0.03	>		<	0.00	>		<	0.00	>		
			Q	<	2	>		<	1	>		<	0	>		<	0	>		
			Ex Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	South Street & Site Driveway	TWSC	LOS	<	A		A		A	>	A					A		>	A	A
			Delay	<	0		0		0	>	0					9		>	9	2
			V/C	<	0.00				0.02	>						0.02		>		
			Q	<	0				0	>						0		>		
				<																
PM Peak Hour	Snyders Avenue & South Street	TWSC	LOS	<	B	>	B	<	B	>	A	<	A	>	A	<	A	>	A	A
			Delay	<	14	>	14	<	11	>	1	<	1	>	1	<	0	>	0	2
			V/C	<	0.09	>		<	0.07	>		<	0.01	>		<	0.00	>		
			Q	<	2	>		<	2	>		<	0	>		<	0	>		
			Ex Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	South Street & Site Driveway	TWSC	LOS	<	A		A		A	>	A					A		>	A	A
			Delay	<	0		0		0	>	0					9		>	9	1
			V/C	<	0.00				0.04	>						0.01		>		
			Q	<	0				0	>						0		>		
				<																

MOE - Measure of Effectiveness

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5 Parking Justification

As with any equilibrium system there are a minimum of two components that are required to be in balance to reach equilibrium. With parking systems, this requires the balance of parking supply and demand. Reaching an appropriate supply level is equally as important as demand. The ubiquitous oversupply of cheap and accessible free parking has long been identified as major contributing factor in the growth and reliance on single-occupant vehicle travel.

5.1 Proposed Parking Supply

A total of 23 parking spaces are proposed for the 30 residential units. This results in a parking rate of 0.77 spaces per unit.

5.2 Zoning By-law Requirements

Under the Township's site-specific Zoning By-Law (ZBL) 26-2024⁷, the parking requirements for an apartment building state 1.0 space per dwelling unit (30 spaces). For affordable housing, the ZBL states the required parking rate for the Affordable Housing Development shall be 75% of what would otherwise be required. This results in a required parking supply of 23 spaces. The proposed supply of 23 spaces satisfies the ZBL requirement.

5.3 Parking Demand Forecasts

A review of actual parking demands that are likely to be generated by the proposed development has been considered to assess the proposed parking supply, independent and separate from a review of the Zoning By-law parking requirements.

5.3.1 ITE Rates

The Institute of Transportation Engineers (ITE) Parking Generation manual⁸ provides data on surveys across the USA and Canada of peak parking demand of different land uses.

The ITE Parking Generation manual estimates the average parking demand which includes visitor parking. In addition, the ITE Parking Generation manual provides rates for different locations including general urban/suburban, dense multi-use urban (nearby rail transit or no nearby rail transit), and city centre core. The subject site is in an

⁷ Township of Woolwich, *Zoning By-Law 26-2024*, Section 16.169(a) 28 South Street West, Elmira.

⁸ Institute of Transportation Engineers, *Parking Generation*, 6th ed., (Washington, DC: ITE, 2023).



area with access frequent bus transit, good pedestrian connectivity, therefore the dense multi-use urban was used when available.

ITE data does not aggregate the parking generation data by occupant or visitor. The data is inclusive for both occupant and visitor parking demands. **Table 5.1** shows the ITE parking demand for the three subcategories (special needs, senior and income limits) for the Affordable Housing land use (LUC 223).

The ITE parking generation results in an average rate of 0.36 to 1.00 spaces per unit. Based on the ITE rates, the parking demand on-site is forecast to be 11 to 30 spaces, 3 to 22 spaces less than the Zoning By-law requirement.

TABLE 6.1: ITE PARKING GENERATION

ITE Parking Generation			
Land Use:	Affordable Housing - Special Needs (223)	Affordable Housing - Senior (223)	Affordable Housing - Income Limits (223)
Independent Variable:	Dwelling Units	Dwelling Units	Dwelling Units
Time Period:	Weekday (Monday - Friday)	Weekday (Monday - Friday)	Weekday (Monday - Friday)
Setting/Location:	General Urban/Suburban	General Urban/Suburban	General Urban/Suburban
Number of Studies:	2	7	30
Avg. Num. of Dwelling Units:	22	86	156
Average Rate:	0.36	0.44	1.00
Range of Rates:	0.35 - 0.38	0.34 - 0.88	0.32 - 1.66
33rd / 85th Percentile:	*** / ***	0.37 / 0.80	0.85 / 1.40
95% Confidence Interval:	***	***	0.9 - 1.1
Standard Deviation:	***	0.17	0.28
Coefficient of Variation:	***	39%	28%
Fitted Curve Equation:	***	***	$P = 1.12(X) - 19.50$
R2:	***	***	0.91
Calculated Parking Demand:			
Weighted Average:	11	13	30
Fitted Curve:	Not Available	Not Available	14



5.3.2 Area Specific Auto Ownership

Auto ownership rates and use of non-auto modes of transportation are important consideration in determining parking needs. The most recent Transportation Tomorrow Survey (TTS)⁹ (a household travel survey conducted within the Greater Golden Horseshoe by the Data Management Group at the University of Toronto) provides data with respect to the number of vehicles owned by private households within Waterloo Region in 2022.

A review of auto ownership statistics in the community of Elmira area suggests that the rate of auto ownership is approximately 0.77 vehicles per household in apartment units, and that 28% of households do not own a vehicle, while 67% of households own one vehicle. Applied to the 30 residential units proposed, this results in a potential parking demand of 24 spaces for residential units.

Similarly, a review of travel characteristics indicates that approximately 16% of travel is undertaken using non-auto modes (0.2% via transit, 1.9% cycling and 14.5% walking).

Appendix I contains the 2022 TTS data.

5.3.3 Proxy Sites

To better understand the actual parking demand that can be expected for the development, Paradigm received parking utilization data¹⁰ for existing affordable housing site in Elmira at 7 Memorial Drive. It has 25 units with 33 total parking spaces provided. The parking utilization data indicated that 18 of the 25 parking spaces were used by the tenants (0.72 spaces per unit). This results in a proposed parking demand of 22 spaces. With 23 spaces proposed, this results in a surplus of one space.

Appendix J contains the proxy site parking demand data.

5.4 Transportation Demand Management

Transportation Demand Management (TDM) refers to ways of making the capacity of roads more efficient by reducing vehicle demand. TDM approaches consider how people's choices of travel mode are affected by land use patterns, development design, parking availability, parking cost, and the relative cost, convenience, and availability of alternative modes of travel. Various TDM strategies are used to influence those

⁹ Transportation Tomorrow Survey (TTS), University of Toronto, 2016.

¹⁰ Paradigm Transportation Solutions Limited, *Region of Waterloo Affordable Housing Parking Report*, (PTSL: Region of Waterloo, May 2023).



factors so that the alternatives are more competitive with driving alone and potentially reduce reliance on motor vehicles.

TDM strategies at a development can be divided into two basic categories:

- ▶ **Pre-occupancy:** measures that need to be implemented while a development is being designed and built; and
- ▶ **Post-occupancy:** measures that can be implemented once the development is occupied.

The pre-occupancy actions are critical as they are most likely to determine how attractive, convenient, and safe alternative travel will be once the site is occupied. Before a site is occupied, it can be designed to be convenient and safe for pedestrians and cyclists, and vehicle parking can be provided to meet but not exceed demand.

After the development is built, incentives can be offered, but those incentives will not work as well if the site and its surroundings are oriented to cars. The incentives generally include access to carshare programs, TDM coordinator and information about where and how to use alternatives.

Walking

The pedestrian accessibility of a development is essential in helping to ensure that those can walk, have access to pedestrian connections.

Sidewalks are provided on both sides of Snyders Avenue and South Street.

The concept plan indicates sidewalks on both sides of the internal roadways leading to all on-site building, and pedestrian connections to the existing municipal sidewalks on Snyders Avenue and South Street.

The landscaping plan should consider additional amenities such as lighting and soft landscaping to enhance the pedestrian realm and to prioritize pedestrians.

All on-site sidewalks should be well-lit and should conform to the Township of Woolwich's design standards as well as the Accessibility for Ontarians with Disabilities Act (AODA) design standards.

Cycling

The Zoning By-law requires 2 spaces up to 20 units plus 0.2 spaces per unit beyond 20 units developed. This results in a required bicycle parking of 4 spaces.



The Zoning By-Law states that each bicycle parking space shall be 0.6 metres x 1.8 metres in size.

Bicycle parking spaces should be provided near the main entrance(s) to the buildings in a safe, well-lit area.

Transit

As noted in **Section 2.3**, an existing bus stop is located fronting the subject site on Snyders Avenue South.

It is expected that through regular internal reviews, Grand River Transit will monitor the future demand and will address the need for additional amenities and route adjustments.

5.4.1 Alternative Strategies

Travel Planning / Education / Promotion

Increasing awareness of sustainable transportation opportunities for residents, visitors and employees of the development should be considered.

Providing a welcome package that outlines the available transit routes and active transportation options can be helpful to encourage new residents and employees of the commercial use to educate themselves on the support for alternative modes near the subject site. Posting real-time transit and active transportation information in common areas can further support this education.

General education of all modes of transportation, including their benefits and how to make the best use of them, are a key component to TDM success. The strategies require cooperation and coordination with several partners, including transit providers, building owners, area municipalities as well as residents.

By educating about sustainable modes of travel as well as providing travel demand management tools and incentives, TDM can be further integrated within the development to promote all modes of transportation.

5.5 Summary

The proposed development at 28 South Street West requires 23 parking spaces to comply with the Township's Zoning By-Law. The proposed development meets the requirement.



The parking demand for the subject site has been estimated using the following methodologies as discussed above:

- ▶ TTS auto-ownership within the community of Elmira indicates a rate of approximately 0.77 vehicles per household for apartment units (24 spaces), and that 28% of households do not own a vehicle;
- ▶ The ITE Parking Generation Manual estimates an average residential parking demand between 0.36 to 1.00 spaces per unit depending on the type of affordable units (11 to 30 spaces); and
- ▶ A review of existing affordable housing site in Elmira indicates a maximum parking rate of 0.72 spaces per unit (22 spaces).

Given the results of auto-ownership and ITE rates, the forecast parking demand is between 0.36 and 1.00 spaces per unit (11 and 30 spaces).



6 Conclusions & Recommendations

6.1 Conclusions

Based on the investigations conducted, it is concluded that:

Transportation Impact Assessment

- ▶ **Existing Traffic Conditions:** The study area intersection is currently operating with acceptable levels of service and within capacity.
- ▶ **Development Trip Generation:** The development is forecast to generate 24 new trips in the AM peak hour, and 22 new trips in the PM peak hour.
- ▶ **Background Traffic Conditions:** The study area intersection is forecast to operate with acceptable levels of service during the AM and PM peak hours with no critical movements.
- ▶ **Total Traffic Conditions:** The study area intersections are forecast to operate with acceptable levels of service during the AM and PM peak hours with no critical movements.
- ▶ The site driveway connection South Street West is forecast to operate at LOS A and v/c ratio of 0.02 or lower during the AM and PM peak hours.

Parking Study

- ▶ **Zoning By-Law Requirements:** The proposed development requires a total of 23 (Site-specific ZBL 16.169(a)) parking spaces to comply with the Township's Zoning By-law. With a proposed supply of 23 parking spaces, the development satisfies the ZBL requirement.
- ▶ **Forecast Parking Demand**
 - Transportation Tomorrow Survey (TTS) 2022 auto-ownership within the community of Elmira indicates a rate of approximately 0.77 vehicles per household for apartment units (24 spaces).
 - The *ITE Parking Generation Manual* indicates a forecast parking demand rate between 0.36 and 1.00 spaces per unit (11 to 30 spaces), including visitor parking.
 - Proxy site data at an existing affordable housing site in Elmira (7 Memorial Drive) indicate a maximum occupancy rate of 0.72 spaces per unit (22 spaces for the proposed development), including visitor parking.



- ▶ **Estimated Parking Demand:** Based on the combination of auto ownership, ITE rates, and proxy site data, the estimated maximum residential parking demand is between 0.36 and 1.00 spaces per unit (11 to 30 spaces), including visitor parking.
- ▶ A reduction in parking can be further supported based on the following:
 - Convenient access pedestrian/cycling facilities and short distance to commercial and employment land uses
 - Comprehensive TDM measures including unbundle parking, bike parking, and welcome package/centrally located information should be provided.

6.2 Recommendations

Based on the findings of this study, it is recommended that the proposed development be approved considered for approval with no off-site transportation improvements and with the proposed parking supply and comprehensive TDM measures.



Appendix A

Pre-Study Consultation



Andrew Evans

From: Erica Bayley
Sent: August 24, 2026 4:43 PM
To: Andrew Evans
Subject: FW: [EXT] RE: (260493) 28 South Street West, Elmira (Kiwanis House) - TIS - Township Response

For discussion tomorrow.

Erica Bayley, P.Eng.

Executive Principal, Business Development (She/Her)

Vacation Notice: Aug 31-Sep 7

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road Cambridge ON N1R 8J8
ebayley@ptsl.com | 519-635-5349

From: Jonathan Delli Colli <jdellicolli@woolwich.ca>
Sent: August 24, 2026 2:31 PM
To: Erica Bayley <ebayley@ptsl.com>; Julie Tot <jtot@woolwich.ca>
Cc: DAN DRIEDGER <ddriedger@beyondhousing.ca>; David Galbraith <david@upconsulting.ca>; Victor Labreche <vlabreche@woolwich.ca>; Christian Tsimenidis <christian@upconsulting.ca>
Subject: RE: [EXT] RE: (260493) 28 South Street West, Elmira (Kiwanis House) - TIS - Township Response

Hi Erica,

The Township will accept submission of the Traffic Impact Study by the end of the day on September 23, 2026. While this extension is not ideal from the Township's perspective, we will accept the revised timeline. As noted, we would appreciate receiving the report as soon as possible. Thank you.

Kind regards,

Jonathan

Jonathan Delli Colli
Planner
Development Services
Office Phone – 519-514-6068
Toll Free – 1-877-969-0094 ext 6068

Pronouns: he/him



Township of Woolwich
24 Church Street West, P.O. Box 158
Elmira, Ontario N3B 2Z6

From: Erica Bayley <ebayley@ptsl.com>

Sent: August 24, 2026 1:53 PM

To: Julie Tot <jtott@woolwich.ca>

Cc: DAN DRIEDGER <ddriedger@beyondhousing.ca>; David Galbraith <david@upconsulting.ca>; Jonathan Delli Colli <jdellicolli@woolwich.ca>; Victor Labreche <vlabreche@woolwich.ca>; Christian Tsimenidis <christian@upconsulting.ca>

Subject: [EXT] RE: (260493) 28 South Street West, Elmira (Kiwanis House) - TIS - Township Response

Hi Julie – thanks for your comments.

Regarding the date of data collection: the Township has advised they'd like our report by September 18th. If we collect on September 15th, we'll need a few more days to appropriately wrap up our work.

Jonathan – can you confirm we can submit by September 23? Understanding you'd like it ASAP.

Thx all,

Erica Bayley, P.Eng.

Executive Principal, Business Development (She/Her)

Vacation Notice: Aug 31-Sep 7

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road Cambridge ON N1R 8J8
ebayley@ptsl.com | 519-635-5349

From: Julie Tot <jtott@woolwich.ca>

Sent: August 24, 2026 9:02 AM

To: Erica Bayley <ebayley@ptsl.com>

Cc: DAN DRIEDGER <ddriedger@beyondhousing.ca>; David Galbraith <david@upconsulting.ca>; Jonathan Delli Colli <jdellicolli@woolwich.ca>; Victor Labreche <vlabreche@woolwich.ca>

Subject: RE: (260493) 28 South Street West, Elmira (Kiwanis House) - TIS - Township Response

Hi Erica,

Thank you for submitting the Terms of Reference for the proposed redevelopment of the existing site into a 4-storey, 30-unit residential development (affordable rental) with 23 parking spaces. Vehicle access is proposed via a full-moves driveway connection to South Street West.

The Township has reviewed the proposed assumptions and methodology outlined in the submission and finds them generally acceptable. Please see the Township's comments below.

PROPOSED TERMS OF REFERENCE

Study Area Intersections – Agree

- Snyder's Avenue & South Street West
- New driveway connection to South Street West

Analysis Periods – Agree

- Weekday AM peak hour

- Weekday PM peak hour

Horizon Year – **Agree**

- Base Year (2026)
- Five years from the date of the study (2031)

Existing Data

- Eight-hour TMC at the study area intersection, proposed to be collected September 10, 2026.

The Township requests that the traffic count be moved to **Tuesday, September 15, 2026**. This will place the count outside the first week following the return to school and should provide a more representative traffic pattern at the intersection under normalized conditions.

Background Traffic

- Generalized growth rate: **No background traffic growth rate shall be applied.**
- Active Development Applications: **To be confirmed by Township staff.** At this time, the **18 Ernst Street** proposal for 8 townhouse units is the only active development application identified in the immediate area and should be included in the analysis. No other developments are required to be incorporated at this time.

Future Road Improvements

- Future road improvements: **None identified by the Township at this time.**

Trip Generation

- ITE Trip Generation Manual, 12th Edition, with no modal split reductions. **Agree.** Please use the applicable ITE equation, where available, for the proposed land use when calculating trip generation.

Site Traffic Distribution

- Existing traffic patterns – **Agree.**

Report

The report shall document the study methodologies, assumptions, findings, and conclusions, with appendices containing the detailed analysis results and traffic count data.

Please also provide the following as part of the Traffic Impact Study:

- **Truck turning movement plans** demonstrating the manoeuvring of fire and garbage trucks. The turning movement plans shall be prepared, stamped, and signed by a Professional Engineer.
- **Active Transportation:** Provide information regarding existing and proposed connections to nearby trails, transit facilities, cycling infrastructure, and pedestrian facilities.
- **On-site parking:** The proposed development provides 23 parking spaces for 30 residential units. As this represents a reduction in the applicable parking requirement, please provide a parking justification addressing the proposed reduction and demonstrating that the parking supply is appropriate for the development.

Should you have any questions, do not hesitate to contact me.

Regards,

Julie Tot

Development Engineering Technologist

Development Services

Office: 519-514-6081

Cell: 226-753-6801

Pronouns: she/her



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From: Erica Bayley <ebayley@pts1.com>

Sent: August 21, 2026 8:54 AM

To: Julie Tot <jt0t@woolwich.ca>

Cc: DAN DRIEDGER <ddriedger@beyondhousing.ca>; David Galbraith <david@upconsulting.ca>

Subject: [EXT] (260493) 28 South Street West, Elmira (Kiwanis House) - TIS

Hi Julie – further to my note below – here is the proposed TOR for the TIS.

Please provide a response re: date of data collection so we can get that scheduled.

Proposed concept is linked here:  [25081_28 South St Elmira_A_V26_\(2026.08.05\) - SPA set draft.pdf](#)

SITE DESCRIPTION

The property owner is proposing to redevelop the existing site into a 4-storey, 30-unit residential development (affordable, rental) with 23 parking spaces.

Vehicle access is proposed via a full-moves driveway connection to South Street West.

PROPOSED TERMS OF REFERENCE

Study Area Intersections:

- Snyder's Avenue & South Street West
- New driveway connection to South Street West

Analysis Periods:

- Weekday AM peak hour
- Weekday PM peak hour

Horizon Year

- Base Year (Year 2026)
- Five-years from date of study (Year 2031)

Existing Data:

- Eight Hour TMC at the study area intersection, **to be collected September 10th, 2026**

Analysis

- Synchro 12, HCM 7th Edition analysis

Background Traffic

- Generalized growth rate: **to be confirmed by Township staff**
- Active Development Applications: **to be confirmed by Township staff**

Future Road Improvements: **to be provided by Township Staff**

Trip Generation

- ITE Trip Generation Data 12th Edition with no modal split reductions.

Site Traffic Distribution

- Existing Traffic Patterns.

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 me know if you have any comments,

Erica Bayley, P.Eng.

Executive Principal, Business Development (She/Her)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road Cambridge ON N1R 8J8
ebayley@ptsl.com | 519-635-5349

From: Erica Bayley

Sent: August 20, 2026 3:07 PM

To: 'Julie Tot' <jtot@woolwich.ca>

Cc: DAN DRIEDGER <ddriedger@beyondhousing.ca>; David Galbraith <david@upconsulting.ca>

Subject: RE: [EXT] RE: FW: Purchase and Sale Agreement Signing - 28 South Street West, Elmira (Kiwanis House)

Hi Julie – we are now working towards submitting our work by September 18th.

In order to meet this deadline we'll need to collect data the week prior (Sept 10th). Confirming this is appropriate.

Study area to include one intersection: Snyders Ave & South Street.

I'm typing up the TOR for the rest of the study and I'll get it over ASAP.

Erica Bayley, P.Eng.

Executive Principal, Business Development (She/Her)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road Cambridge ON N1R 8J8
ebayley@ptsl.com | 519-635-5349

From: Julie Tot <jtot@woolwich.ca>

Sent: August 10, 2026 4:37 PM

To: Erica Bayley <ebayley@ptsl.com>

Cc: DAN DRIEDGER <ddriedger@beyondhousing.ca>; David Galbraith <david@upconsulting.ca>

Subject: RE: [EXT] RE: FW: Purchase and Sale Agreement Signing - 28 South Street West, Elmira (Kiwanis House)

Hi Erica,

The Township has ADT Count data from the last two years in the area of the Subject Lands.

It would be best to conduct TMC's once the school year has started as this site is near a school. This will represent the true pattern and volume of traffic in the neighbourhood.

Should you have any questions, do not hesitate to contact me.

Regards,

Julie Tot
Development Engineering Technologist
Development Services
Office: 519-514-6081
Cell: 226-753-6801

Pronouns: she/her



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From: Erica Bayley <ebayley@ptsl.com>
Sent: August 10, 2026 4:20 PM
To: Julie Tot <jtot@woolwich.ca>
Cc: DAN DRIEDGER <ddriedger@beyondhousing.ca>; David Galbraith <david@upconsulting.ca>
Subject: [EXT] RE: FW: Purchase and Sale Agreement Signing - 28 South Street West, Elmira (Kiwanis House)

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Julie – following up on my request below as we are working within a very tight deadline.

Thx,

Erica Bayley, P.Eng.
Executive Principal, Business Development (She/Her)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road Cambridge ON N1R 8J8
ebayley@ptsl.com | 519-635-5349

From: Erica Bayley
Sent: August 6, 2026 4:05 PM
To: jtot@woolwich.ca
Subject: FW: FW: Purchase and Sale Agreement Signing - 28 South Street West, Elmira (Kiwanis House)

Hi Julie – following up on what Victor has noted below, we are preparing a TIS for this development and I will send over a full TOR for your review.

Short term Q for you – as we are trying to get this completed by August 28th, will you accept data collected in August before school starts? I propose a small study area to include only Snyders Ave & South St.

Alternatively, do you have any TMC data available that you can share? Or is there data available through the recent development on Ernst Street?

Looking forward to hearing from you,

Erica Bayley, P.Eng.

Executive Principal, Business Development (She/Her)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road Cambridge ON N1R 8J8
ebayley@ptsl.com | 519-635-5349

From: Victor Labreche <vlabreche@woolwich.ca>

Sent: Tuesday, August 4, 2026 1:54 PM

To: Dan Driedger <ddriedger@beyondhousing.ca>

Cc: Deanne Friess <dfriess@woolwich.ca>; Maryam Rehman <MRehman@woolwich.ca>; Lori Fox <lfox@woolwich.ca>;

Julie Tot <jtott@woolwich.ca>; Nancy Thompson <nthompson@woolwich.ca>; Jonathan Delli Colli

<jdellicolli@woolwich.ca>

Subject: RE: Purchase and Sale Agreement Signing - 28 South Street West, Elmira (Kiwanis House)

Hi Dan,

As mentioned in the below email from Jonathan, for the planning applications, we will be looking for the following supporting information. We will still accept the application in the event that one or more of these documents is missing, but will require them by August 28 to meet our public notice and circulation timelines for the intended public meeting on September 29th.

OPA/ZBA:

- Planning Justification report
- Site Plan
- Functional Servicing Report (FSR)
- SWM – Low Impact Development (LID) encouraged – Pre to Post 100 year storm

- TIS – TOR needs to be approved by Development Engineering first
- Draft reference plan demonstrating road widening, easement

SPA:

- Site Plan + Elevations
- Landscape Plan
- Lighting Plan
- FSR
- SWM – Low Impact Development (LID) encouraged – Pre to Post 100 year storm
- TIS – TOR needs to be approved by Development Engineering first – Shall include truck turning movements.
- Cost estimates.
- Reference plan demonstrating road widening, easement

Please note we are also completing a review of your latest drawings and will provide you will comments shortly.

If you have any questions, please let us know. Thanks,

Kind regards,

Victor Labreche, MCIP, RPP

Manager of Planning

From: Jonathan Delli Colli <jdellicolli@woolwich.ca>

Sent: August 4, 2026 12:45 PM

To: Dan Driedger <ddriedger@beyondhousing.ca>

Cc: Deanne Friess <dfriess@woolwich.ca>; Victor Labreche <vlabreche@woolwich.ca>; Maryam Rehman <MRehman@woolwich.ca>

Subject: RE: Purchase and Sale Agreement Signing - 28 South Street West, Elmira (Kiwanis House)

Hi Dan,

Now that the Agreement of Purchase and Sale has been executed, we are eager to begin work on the Official Plan Amendment, Zoning By-law Amendment, and Site Plan applications and to keep the project moving forward. As you know, the APS contemplates that transfer of the property will occur following satisfaction of the site plan approval and building permit availability conditions, so we are hoping to work through the planning applications as efficiently as possible over the coming months.

With the municipal election period approaching, it will be important for us to carefully coordinate the timing of reports to Council, as there will be times where we are unable to present to Council. Based on the timelines contemplated in the APS, Township staff would need to adhere to the following approximate schedule in order to bring the necessary planning approvals forward to Council before the end of the year. Please advise if Beyond Housing anticipates any changes to the timing of its application submissions.

OPA/ZBA application submission: August 7-10, 2026 (No later than August 14, 2026, but Township staff would prefer August 10, 2026)

Application Payment (Completed by the Township)

Public Meeting: September 29, 2026 (Preferred Option) (October 6, 2026, if application is submitted August 14, 2026)

Recommendation Report to Council: December 1, 2026

Council adoption of By-law: December 15, 2026 (appeal period begins)

Site Plan Application submission: September 15, 2026

Site Plan Approval: January 5, 2027

Application for Building/Demolition permit: November 15 - December 15, 2026

Building/Demolition permit issued: January 2027

Property transferred per P&S Agreement: January 2027

In addition, Township legal counsel has asked that we confirm who Beyond Housing will be using as legal counsel for the property transaction. Could you please provide the name and contact information for your lawyer when available?

I will also follow up shortly with an email going over what we will need to see as part of the planning application submissions.

Please let us know if you have any questions or concerns. Thanks,

Kind regards,

Jonathan

Jonathan Delli Colli

Planner

Development Services

Office Phone – 519-514-6068

Toll Free – 1-877-969-0094 ext 6068

Pronouns: he/him



Township of Woolwich

24 Church Street West, P.O. Box 158

Elmira, Ontario N3B 2Z6

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This e-mail and any files transmitted with it are confidential and intended solely for the use of the individual or entity to whom they are addressed. If you have received this e-mail in error please notify the sender immediately. Please note that any views or opinions presented in this e-mail are solely those of the author and do not necessarily represent those of Paradigm Transportation Solutions Limited. Finally, the recipient should check this e-mail and any attachments for the presence of viruses. Paradigm Transportation Solutions Limited accepts no liability for any damage caused by any virus transmitted by this e-mail.

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: Snyders Ave S & South Street W
Site Code: 260493
Start Date: 09/15/2026
Page No: 1

Turning Movement Data

Start Time	South Street W Eastbound						South Street W Westbound						Snyders Avenue S Northbound						Snyders Avenue S Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	0	0	0	3	0	0	0	0	0	0	0	0	14	1	0	1	15	0	31	0	0	1	31	46
7:15 AM	5	0	0	0	0	5	1	2	2	0	1	5	1	12	0	0	0	13	0	29	1	0	0	30	53
7:30 AM	3	1	1	0	2	5	0	0	2	0	1	2	1	23	0	0	0	24	3	44	1	0	0	48	79
7:45 AM	5	0	2	0	18	7	0	1	3	0	9	4	0	32	1	0	2	33	6	72	3	0	0	81	125
Hourly Total	13	1	3	0	23	17	1	3	7	0	11	11	2	81	2	0	3	85	9	176	5	0	1	190	303
8:00 AM	4	0	1	0	5	5	1	0	2	0	4	3	2	38	0	0	0	40	3	88	8	0	0	99	147
8:15 AM	1	0	0	0	1	1	1	2	3	0	0	6	3	29	1	0	0	33	0	33	5	0	0	38	78
8:30 AM	0	2	0	0	2	2	1	1	3	0	3	5	1	10	1	0	0	12	3	37	2	0	1	42	61
8:45 AM	2	0	1	0	4	3	1	0	10	0	1	11	1	24	1	0	3	26	4	36	1	0	1	41	81
Hourly Total	7	2	2	0	12	11	4	3	18	0	8	25	7	101	3	0	3	111	10	194	16	0	2	220	367
9:00 AM	2	0	0	0	4	2	0	0	6	0	2	6	2	17	1	0	0	20	1	34	2	0	0	37	65
9:15 AM	2	1	0	0	2	3	0	3	1	0	3	4	0	26	1	0	0	27	2	35	2	0	0	39	73
9:30 AM	2	0	2	0	1	4	1	2	4	0	2	7	0	19	0	0	3	19	2	28	0	0	1	30	60
9:45 AM	1	2	2	0	3	5	1	1	3	0	0	5	1	21	1	0	0	23	2	28	1	0	1	31	64
Hourly Total	7	3	4	0	10	14	2	6	14	0	7	22	3	83	3	0	3	89	7	125	5	0	2	137	262
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	4	1	0	0	1	5	1	0	7	0	1	8	1	21	1	0	0	23	1	28	0	0	0	29	65
11:15 AM	1	1	1	0	3	3	1	0	10	0	6	11	2	20	1	0	0	23	1	27	1	0	4	29	66
11:30 AM	3	0	2	0	13	5	2	0	4	0	5	6	0	26	0	0	2	26	1	52	3	0	0	56	93
11:45 AM	1	0	1	0	5	2	1	1	3	0	1	5	1	32	0	0	0	33	1	34	3	0	0	38	78
Hourly Total	9	2	4	0	22	15	5	1	24	0	13	30	4	99	2	0	2	105	4	141	7	0	4	152	302
12:00 PM	2	0	1	0	1	3	1	1	2	0	3	4	1	38	0	0	0	39	3	37	4	0	0	44	90
12:15 PM	4	0	0	0	0	4	0	0	1	0	0	1	2	29	0	0	0	31	1	33	2	0	0	36	72
12:30 PM	1	0	1	0	0	2	1	1	6	0	1	8	1	23	0	0	0	24	2	28	1	0	0	31	65
12:45 PM	0	2	1	0	1	3	0	1	3	0	0	4	1	35	0	0	0	36	1	35	7	0	0	43	86
Hourly Total	7	2	3	0	2	12	2	3	12	0	4	17	5	125	0	0	0	130	7	133	14	0	0	154	313
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 PM	2	0	2	0	1	4	1	0	2	0	2	3	3	28	0	0	0	31	0	34	3	0	0	37	75
2:15 PM	11	3	2	0	11	16	0	1	7	0	13	8	1	55	0	0	0	56	2	49	6	0	0	57	137
2:30 PM	2	1	1	0	4	4	0	0	3	0	4	3	3	32	0	0	0	35	2	34	0	0	3	36	78
2:45 PM	3	0	0	0	5	3	2	1	2	0	27	5	2	35	1	0	2	38	1	38	1	0	0	40	86
Hourly Total	18	4	5	0	21	27	3	2	14	0	46	19	9	150	1	0	2	160	5	155	10	0	3	170	376
3:00 PM	2	4	2	0	8	8	1	3	6	0	9	10	1	32	1	0	0	34	2	28	0	0	0	30	82
3:15 PM	3	0	1	0	4	4	2	2	8	0	1	12	0	41	0	0	2	41	1	23	1	0	2	25	82
3:30 PM	1	2	0	0	3	3	0	0	0	0	2	0	0	43	1	0	0	44	2	34	5	0	1	41	88

3:45 PM	5	5	1	0	1	11	3	1	2	0	2	6	0	32	0	0	3	32	2	39	9	0	0	50	99
Hourly Total	11	11	4	0	16	26	6	6	16	0	14	28	1	148	2	0	5	151	7	124	15	0	3	146	351
4:00 PM	2	0	1	0	2	3	1	1	3	0	1	5	2	44	0	0	0	46	1	41	6	0	0	48	102
4:15 PM	3	1	0	0	5	4	2	1	1	0	2	4	3	40	3	0	0	46	0	36	0	0	2	36	90
4:30 PM	5	1	2	0	2	8	2	1	6	0	0	9	4	62	2	0	3	68	1	60	7	0	0	68	153
4:45 PM	2	2	0	0	1	4	1	1	4	0	0	6	1	49	2	0	0	52	1	48	7	0	0	56	118
Hourly Total	12	4	3	0	10	19	6	4	14	0	3	24	10	195	7	0	3	212	3	185	20	0	2	208	463
5:00 PM	7	1	1	0	0	9	2	0	8	0	1	10	3	45	0	0	0	48	1	40	12	0	0	53	120
5:15 PM	6	0	2	0	0	8	1	3	7	1	0	12	2	60	0	0	0	62	2	39	10	0	2	51	133
5:30 PM	2	0	1	0	0	3	0	0	8	0	0	8	0	45	0	0	0	45	0	45	6	0	0	51	107
5:45 PM	4	0	1	0	0	5	0	4	5	0	0	9	6	48	2	0	0	56	0	27	10	0	0	37	107
Hourly Total	19	1	5	0	0	25	3	7	28	1	1	39	11	198	2	0	0	211	3	151	38	0	2	192	467
Grand Total	103	30	33	0	116	166	32	35	147	1	107	215	52	1180	22	0	21	1254	55	1384	130	0	19	1569	3204
Approach %	62.0	18.1	19.9	0.0	-	-	14.9	16.3	68.4	0.5	-	-	4.1	94.1	1.8	0.0	-	-	3.5	88.2	8.3	0.0	-	-	-
Total %	3.2	0.9	1.0	0.0	-	5.2	1.0	1.1	4.6	0.0	-	6.7	1.6	36.8	0.7	0.0	-	39.1	1.7	43.2	4.1	0.0	-	49.0	-
Motorcycles	0	1	1	0	-	2	0	1	0	0	-	1	1	1	0	0	-	2	0	2	0	0	-	2	7
% Motorcycles	0.0	3.3	3.0	-	-	1.2	0.0	2.9	0.0	0.0	-	0.5	1.9	0.1	0.0	-	-	0.2	0.0	0.1	0.0	-	-	0.1	0.2
Cars & Light Goods	99	26	27	0	-	152	32	30	144	1	-	207	44	1135	22	0	-	1201	54	1330	128	0	-	1512	3072
% Cars & Light Goods	96.1	86.7	81.8	-	-	91.6	100.0	85.7	98.0	100.0	-	96.3	84.6	96.2	100.0	-	-	95.8	98.2	96.1	98.5	-	-	96.4	95.9
Buses	1	0	0	0	-	1	0	0	0	0	-	0	1	20	0	0	-	21	0	28	0	0	-	28	50
% Buses	1.0	0.0	0.0	-	-	0.6	0.0	0.0	0.0	0.0	-	0.0	1.9	1.7	0.0	-	-	1.7	0.0	2.0	0.0	-	-	1.8	1.6
Single-Unit Trucks	2	0	4	0	-	6	0	2	1	0	-	3	6	16	0	0	-	22	0	14	0	0	-	14	45
% Single-Unit Trucks	1.9	0.0	12.1	-	-	3.6	0.0	5.7	0.7	0.0	-	1.4	11.5	1.4	0.0	-	-	1.8	0.0	1.0	0.0	-	-	0.9	1.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	3
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.1
Bicycles on Road	1	3	1	0	-	5	0	2	2	0	-	4	0	8	0	0	-	8	1	7	2	0	-	10	27
% Bicycles on Road	1.0	10.0	3.0	-	-	3.0	0.0	5.7	1.4	0.0	-	1.9	0.0	0.7	0.0	-	-	0.6	1.8	0.5	1.5	-	-	0.6	0.8
Bicycles on Crosswalk	-	-	-	-	23	-	-	-	-	-	6	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	19.8	-	-	-	-	-	5.6	-	-	-	-	-	9.5	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	93	-	-	-	-	-	101	-	-	-	-	-	19	-	-	-	-	-	19	-	-
% Pedestrians	-	-	-	-	80.2	-	-	-	-	-	94.4	-	-	-	-	-	90.5	-	-	-	-	-	100.0	-	-

Turning Movement Data Plot



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Snyders Ave S & South Street W
Site Code: 260493
Start Date: 09/15/2026
Page No: 4

Turning Movement Peak Hour Data (7:30 AM)

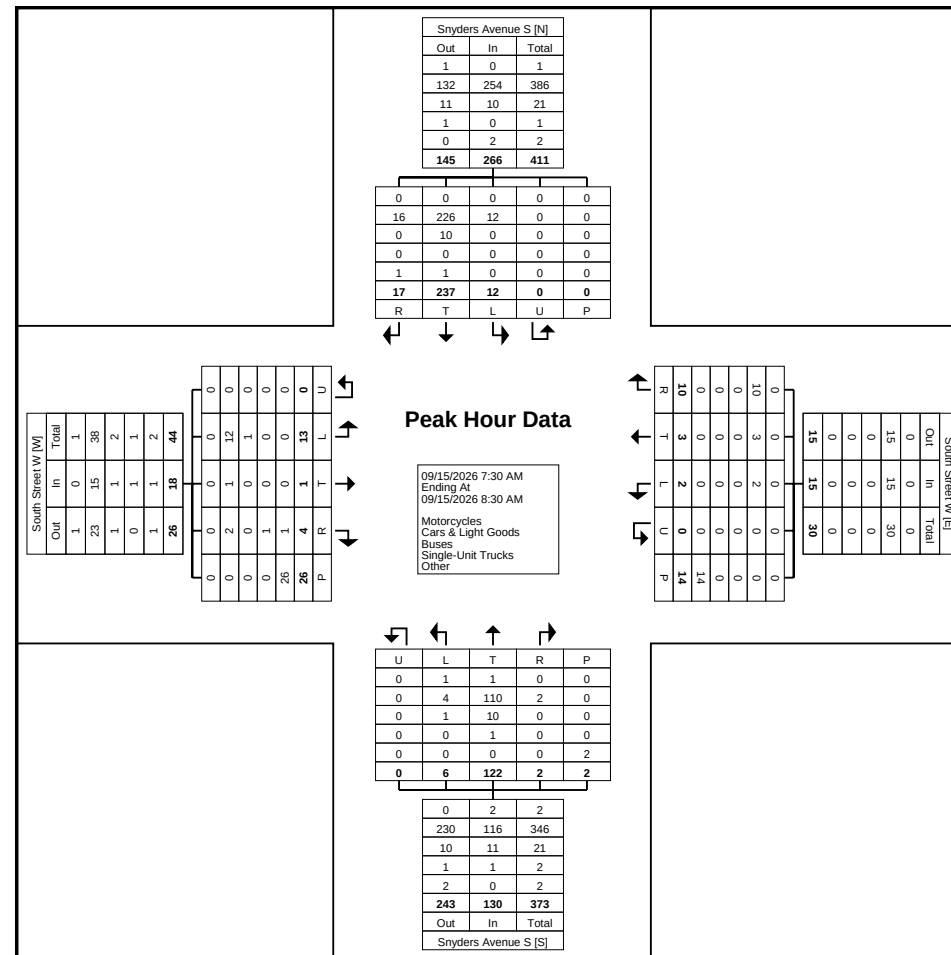
Start Time	South Street W Eastbound						South Street W Westbound						Snyders Avenue S Northbound						Snyders Avenue S Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	3	1	1	0	2	5	0	0	2	0	1	2	1	23	0	0	0	24	3	44	1	0	0	48	79
7:45 AM	5	0	2	0	18	7	0	1	3	0	9	4	0	32	1	0	2	33	6	72	3	0	0	81	125
8:00 AM	4	0	1	0	5	5	1	0	2	0	4	3	2	38	0	0	0	40	3	88	8	0	0	99	147
8:15 AM	1	0	0	0	1	1	1	2	3	0	0	6	3	29	1	0	0	33	0	33	5	0	0	38	78
Total	13	1	4	0	26	18	2	3	10	0	14	15	6	122	2	0	2	130	12	237	17	0	0	266	429
Approach %	72.2	5.6	22.2	0.0	-	-	13.3	20.0	66.7	0.0	-	-	4.6	93.8	1.5	0.0	-	-	4.5	89.1	6.4	0.0	-	-	-
Total %	3.0	0.2	0.9	0.0	-	4.2	0.5	0.7	2.3	0.0	-	3.5	1.4	28.4	0.5	0.0	-	30.3	2.8	55.2	4.0	0.0	-	62.0	-
PHF	0.650	0.250	0.500	0.000	-	0.643	0.500	0.375	0.833	0.000	-	0.625	0.500	0.803	0.500	0.000	-	0.813	0.500	0.673	0.531	0.000	-	0.672	0.730
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	1	0	0	-	2	0	0	0	0	-	0	2
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	16.7	0.8	0.0	-	-	1.5	0.0	0.0	0.0	-	-	0.0	0.5
Cars & Light Goods	12	1	2	0	-	15	2	3	10	0	-	15	4	110	2	0	-	116	12	226	16	0	-	254	400
% Cars & Light Goods	92.3	100.0	50.0	-	-	83.3	100.0	100.0	100.0	-	-	100.0	66.7	90.2	100.0	-	-	89.2	100.0	95.4	94.1	-	-	95.5	93.2
Buses	1	0	0	0	-	1	0	0	0	0	-	0	1	10	0	0	-	11	0	10	0	0	-	10	22
% Buses	7.7	0.0	0.0	-	-	5.6	0.0	0.0	0.0	-	-	0.0	16.7	8.2	0.0	-	-	8.5	0.0	4.2	0.0	-	-	3.8	5.1
Single-Unit Trucks	0	0	1	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	2
% Single-Unit Trucks	0.0	0.0	25.0	-	-	5.6	0.0	0.0	0.0	-	-	0.0	0.0	0.8	0.0	-	-	0.8	0.0	0.0	0.0	-	-	0.0	0.5
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	1	1	0	-	2	3
% Bicycles on Road	0.0	0.0	25.0	-	-	5.6	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.4	5.9	-	-	0.8	0.7
Bicycles on Crosswalk	-	-	-	-	7	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	26.9	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	19	-	-	-	-	-	14	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	73.1	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Snyders Ave S & South Street W
Site Code: 260493
Start Date: 09/15/2026
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Turning Movement Peak Hour Data Plot (7:30 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Snyders Ave S & South Street W
Site Code: 260493
Start Date: 09/15/2026
Page No: 6

Turning Movement Peak Hour Data (11:30 AM)

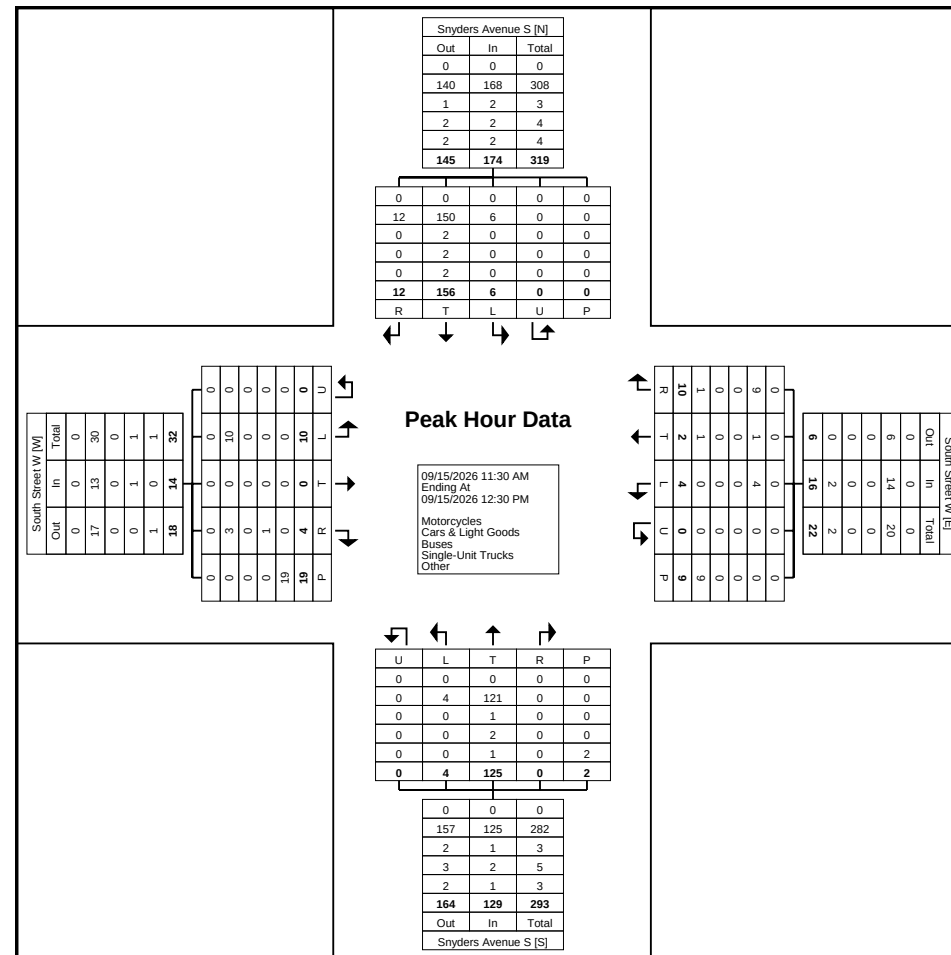
Start Time	South Street W Eastbound						South Street W Westbound						Snyders Avenue S Northbound						Snyders Avenue S Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:30 AM	3	0	2	0	13	5	2	0	4	0	5	6	0	26	0	0	2	26	1	52	3	0	0	56	93
11:45 AM	1	0	1	0	5	2	1	1	3	0	1	5	1	32	0	0	0	33	1	34	3	0	0	38	78
12:00 PM	2	0	1	0	1	3	1	1	2	0	3	4	1	38	0	0	0	39	3	37	4	0	0	44	90
12:15 PM	4	0	0	0	0	4	0	0	1	0	0	1	2	29	0	0	0	31	1	33	2	0	0	36	72
Total	10	0	4	0	19	14	4	2	10	0	9	16	4	125	0	0	2	129	6	156	12	0	0	174	333
Approach %	71.4	0.0	28.6	0.0	-	-	25.0	12.5	62.5	0.0	-	-	3.1	96.9	0.0	0.0	-	-	3.4	89.7	6.9	0.0	-	-	-
Total %	3.0	0.0	1.2	0.0	-	4.2	1.2	0.6	3.0	0.0	-	4.8	1.2	37.5	0.0	0.0	-	38.7	1.8	46.8	3.6	0.0	-	52.3	-
PHF	0.625	0.000	0.500	0.000	-	0.700	0.500	0.500	0.625	0.000	-	0.667	0.500	0.822	0.000	0.000	-	0.827	0.500	0.750	0.750	0.000	-	0.777	0.895
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	10	0	3	0	-	13	4	1	9	0	-	14	4	121	0	0	-	125	6	150	12	0	-	168	320
% Cars & Light Goods	100.0	-	75.0	-	-	92.9	100.0	50.0	90.0	-	-	87.5	100.0	96.8	-	-	-	96.9	100.0	96.2	100.0	-	-	96.6	96.1
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	2	0	0	-	2	3
% Buses	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.8	-	-	-	0.8	0.0	1.3	0.0	-	-	1.1	0.9
Single-Unit Trucks	0	0	1	0	-	1	0	0	0	0	-	0	0	2	0	0	-	2	0	2	0	0	-	2	5
% Single-Unit Trucks	0.0	-	25.0	-	-	7.1	0.0	0.0	0.0	-	-	0.0	0.0	1.6	-	-	-	1.6	0.0	1.3	0.0	-	-	1.1	1.5
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	2
% Articulated Trucks	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	1.3	0.0	-	-	1.1	0.6
Bicycles on Road	0	0	0	0	-	0	0	1	1	0	-	2	0	1	0	0	-	1	0	0	0	0	-	0	3
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	50.0	10.0	-	-	12.5	0.0	0.8	-	-	-	0.8	0.0	0.0	0.0	-	-	0.0	0.9
Bicycles on Crosswalk	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	31.6	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	13	-	-	-	-	-	9	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	68.4	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Snyders Ave S & South Street W
Site Code: 260493
Start Date: 09/15/2026
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Turning Movement Peak Hour Data Plot (11:30 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Snyders Ave S & South Street W
Site Code: 260493
Start Date: 09/15/2026
Page No: 8

Turning Movement Peak Hour Data (4:30 PM)

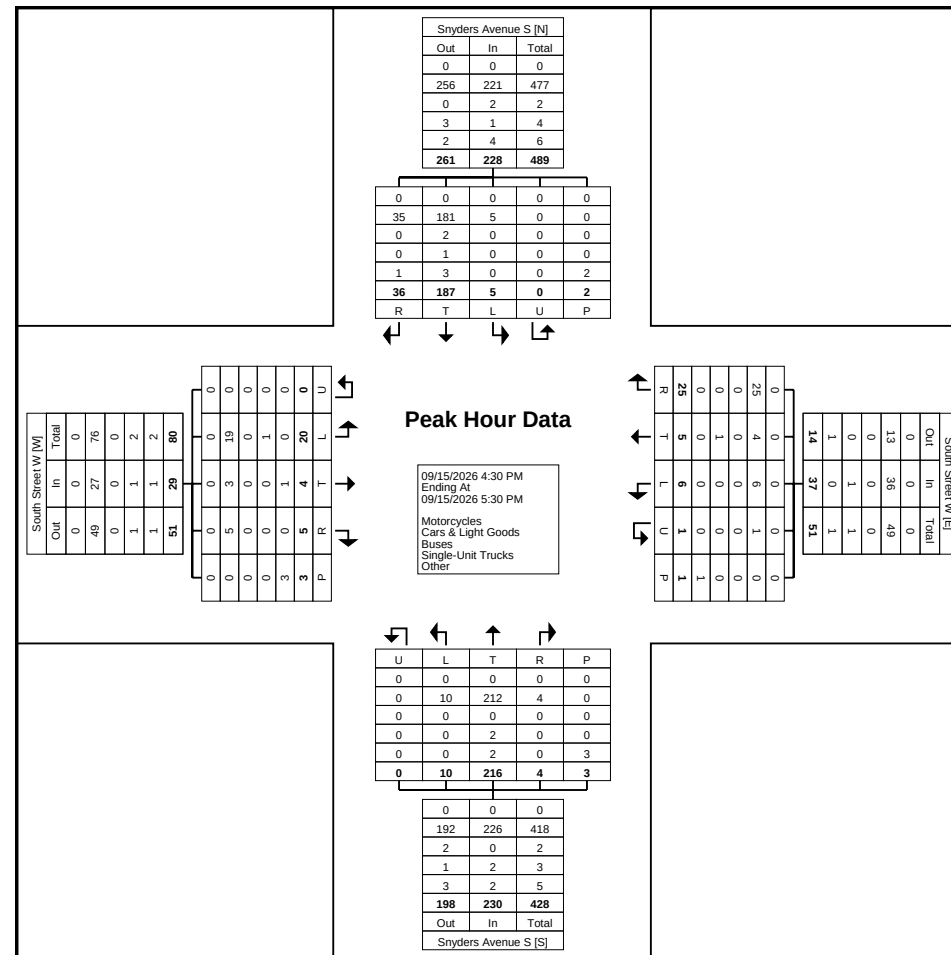
Start Time	South Street W Eastbound						South Street W Westbound						Snyders Avenue S Northbound						Snyders Avenue S Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:30 PM	5	1	2	0	2	8	2	1	6	0	0	9	4	62	2	0	3	68	1	60	7	0	0	68	153
4:45 PM	2	2	0	0	1	4	1	1	4	0	0	6	1	49	2	0	0	52	1	48	7	0	0	56	118
5:00 PM	7	1	1	0	0	9	2	0	8	0	1	10	3	45	0	0	0	48	1	40	12	0	0	53	120
5:15 PM	6	0	2	0	0	8	1	3	7	1	0	12	2	60	0	0	0	62	2	39	10	0	2	51	133
Total	20	4	5	0	3	29	6	5	25	1	1	37	10	216	4	0	3	230	5	187	36	0	2	228	524
Approach %	69.0	13.8	17.2	0.0	-	-	16.2	13.5	67.6	2.7	-	-	4.3	93.9	1.7	0.0	-	-	2.2	82.0	15.8	0.0	-	-	-
Total %	3.8	0.8	1.0	0.0	-	5.5	1.1	1.0	4.8	0.2	-	7.1	1.9	41.2	0.8	0.0	-	43.9	1.0	35.7	6.9	0.0	-	43.5	-
PHF	0.714	0.500	0.625	0.000	-	0.806	0.750	0.417	0.781	0.250	-	0.771	0.625	0.871	0.500	0.000	-	0.846	0.625	0.779	0.750	0.000	-	0.838	0.856
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	0.0
Cars & Light Goods	19	3	5	0	-	27	6	4	25	1	-	36	10	212	4	0	-	226	5	181	35	0	-	221	510
% Cars & Light Goods	95.0	75.0	100.0	-	-	93.1	100.0	80.0	100.0	100.0	-	97.3	100.0	98.1	100.0	-	-	98.3	100.0	96.8	97.2	-	-	96.9	97.3
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	2
% 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	1.1	0.0	-	-	0.9	0.4
Single-Unit Trucks	1	0	0	0	-	1	0	1	0	0	-	1	0	2	0	0	-	2	0	1	0	0	-	1	5
% Single-Unit Trucks	5.0	0.0	0.0	-	-	3.4	0.0	20.0	0.0	0.0	-	2.7	0.0	0.9	0.0	-	-	0.9	0.0	0.5	0.0	-	-	0.4	1.0
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	0	2	0	0	-	2	0	3	1	0	-	4	7
% Bicycles on Road	0.0	25.0	0.0	-	-	3.4	0.0	0.0	0.0	0.0	-	0.0	0.0	0.9	0.0	-	-	0.9	0.0	1.6	2.8	-	-	1.8	1.3
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	33.3	-	-	-	-	-	100.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	66.7	-	-	-	-	-	0.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Snyders Ave S & South Street W
Site Code: 260493
Start Date: 09/15/2026
Page No: 9



Turning Movement Peak Hour Data Plot (4:30 PM)

Appendix C

Base Year Operations Synchro Reports



Lanes, Volumes, Timings
101: Synder Ave South & South St West

Base Year - 2026
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1	4	2	3	10	6	122	2	12	237	17
Future Volume (vph)	13	1	4	2	3	10	6	122	2	12	237	17
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.972			0.907			0.998			0.992	
Flt Protected		0.964			0.994			0.998			0.998	
Satd. Flow (prot)	0	1234	0	0	1382	0	0	1397	0	0	1447	0
Flt Permitted		0.964			0.994			0.998			0.998	
Satd. Flow (perm)	0	1234	0	0	1382	0	0	1397	0	0	1447	0
Link Speed (k/h)		40			40			40			50	
Link Distance (m)		163.3			267.3			185.7			111.9	
Travel Time (s)		14.7			24.1			16.7			8.1	
Confl. Peds. (#/hr)			2	2			26		14	14		26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	50%	0%	0%	0%	17%	9%	0%	0%	5%	6%
Adj. Flow (vph)	14	1	4	2	3	11	7	133	2	13	258	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	19	0	0	16	0	0	142	0	0	289	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	33.9%											
Analysis Period (min)	15											
	ICU Level of Service A											

HCM Unsignalized Intersection Capacity Analysis
101: Synder Ave South & South St West

Base Year - 2026
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	1	4	2	3	10	6	122	2	12	237	17
Future Volume (Veh/h)	13	1	4	2	3	10	6	122	2	12	237	17
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	1	4	2	3	11	7	133	2	13	258	18
Pedestrians	26			14			2					
Lane Width (m)	3.5			3.5			3.5					
Walking Speed (m/s)	1.1			1.1			1.1					
Percent Blockage	2			1			0					
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	480	482	295	462	490	148	302				149	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	480	482	295	462	490	148	302				149	
tC, single (s)	7.2	6.5	6.7	7.1	6.5	6.2	4.3				4.1	
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.8	3.5	4.0	3.3	2.4				2.2	
p0 queue free %	97	100	99	100	99	99	99				99	
cM capacity (veh/h)	450	463	628	483	458	893	1151				1427	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	19	16	142	289								
Volume Left	14	2	7	13								
Volume Right	4	11	2	18								
cSH	479	695	1151	1427								
Volume to Capacity	0.04	0.02	0.00*	0.00*								
Queue Length 95th (m)	0.9	0.5	0.1	0.2								
Control Delay (s/veh)	12.8	10.3	0.5	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s/veh)	12.8	10.3	0.5	0.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay				1.3								
Intersection Capacity Utilization				33.9%	ICU Level of Service				A			
Analysis Period (min)				15								

* Value less than 0.01.

Lanes, Volumes, Timings
101: Synder Ave South & South St West

Base Year - 2026
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	4	5	6	5	25	10	216	4	5	187	36
Future Volume (vph)	20	4	5	6	5	25	10	216	4	5	187	36
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.978			0.907			0.998			0.979	
Flt Protected		0.966			0.991			0.998			0.999	
Satd. Flow (prot)	0	1356	0	0	1343	0	0	1498	0	0	1456	0
Flt Permitted		0.966			0.991			0.998			0.999	
Satd. Flow (perm)	0	1356	0	0	1343	0	0	1498	0	0	1456	0
Link Speed (k/h)		40			40			40			50	
Link Distance (m)		163.3			267.3			185.7			111.9	
Travel Time (s)		14.7			24.1			16.7			8.1	
Confl. Peds. (#/hr)	2		3	3		2	3		1	1		3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	25%	0%	0%	20%	0%	0%	2%	0%	0%	3%	3%
Adj. Flow (vph)	22	4	5	7	5	27	11	235	4	5	203	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	39	0	0	250	0	0	247	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	34.0%				ICU Level of Service A							
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
101: Synder Ave South & South St West

Base Year - 2026
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	4	5	6	5	25	10	216	4	5	187	36
Future Volume (Veh/h)	20	4	5	6	5	25	10	216	4	5	187	36
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	4	5	7	5	27	11	235	4	5	203	39
Pedestrians	3			1			3			2		
Lane Width (m)	3.5			3.5			3.5			3.5		
Walking Speed (m/s)	1.1			1.1			1.1			1.1		
Percent Blockage	0			0			0			0		
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	526	498	229	503	515	240	245				240	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	526	498	229	503	515	240	245				240	
tC, single (s)	7.2	6.8	6.2	7.1	6.7	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.2	3.3	3.5	4.2	3.3	2.2				2.2	
p0 queue free %	95	99	99	99	99	97	99				100	
cM capacity (veh/h)	431	436	811	469	432	802	1329				1337	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	31	39	250	247								
Volume Left	22	7	11	5								
Volume Right	5	27	4	39								
cSH	467	648	1329	1337								
Volume to Capacity	0.07	0.06	0.00*	0.00*								
Queue Length 95th (m)	1.6	1.5	0.2	0.1								
Control Delay (s/veh)	13.3	10.9	0.4	0.2								
Lane LOS	B	B	A	A								
Approach Delay (s/veh)	13.3	10.9	0.4	0.2								
Approach LOS	B	B										
Intersection Summary												
Average Delay				1.7								
Intersection Capacity Utilization				34.0%	ICU Level of Service				A			
Analysis Period (min)				15								

* Value less than 0.01.

Appendix D

ITE Trip Generation



Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 6

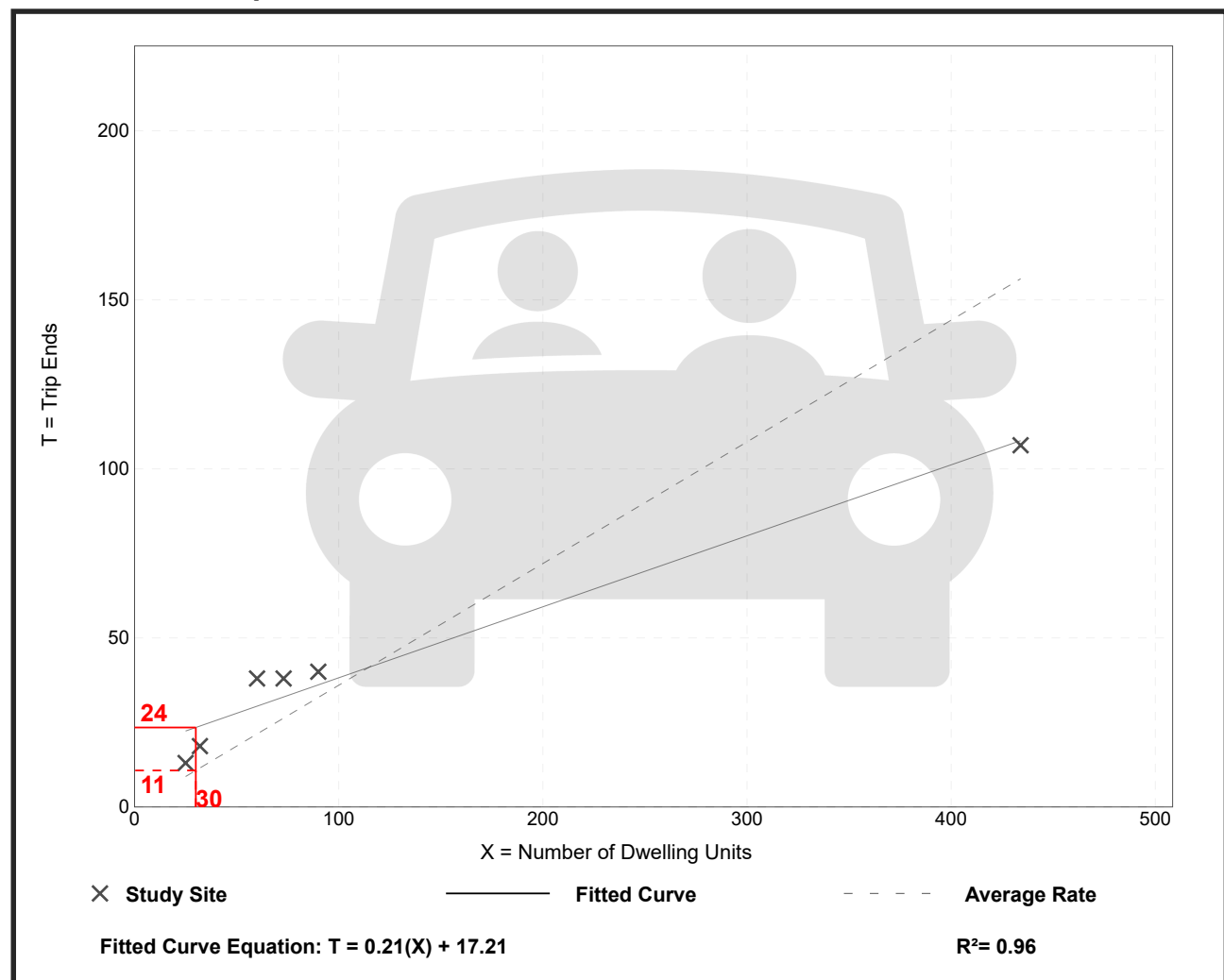
Avg. Num. of Dwelling Units: 119

Directional Distribution: 29% entering, 71% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.25 - 0.63	0.16

Data Plot and Equation



Affordable Housing - Income Limits

(223)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 8

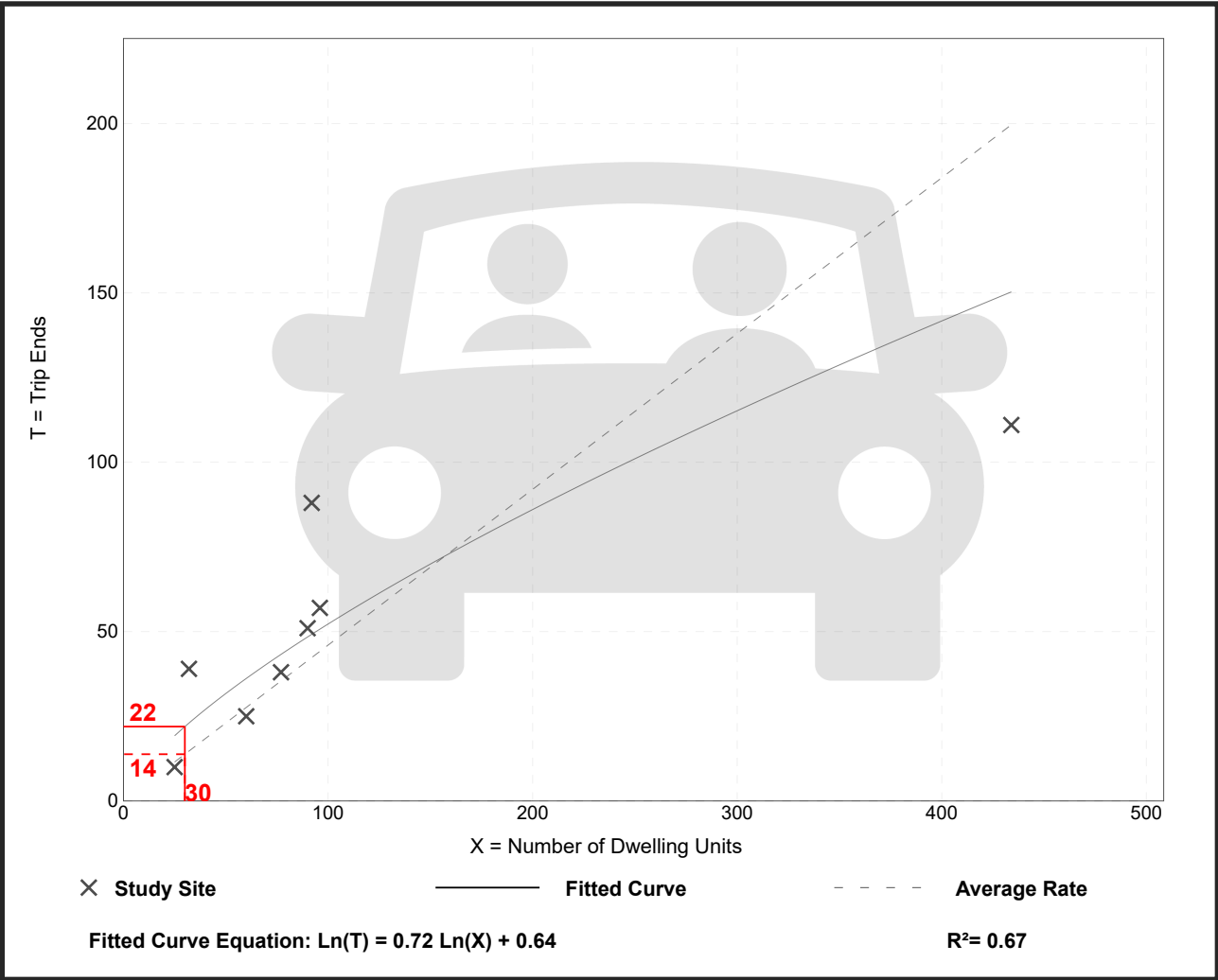
Avg. Num. of Dwelling Units: 113

Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.26 - 1.22	0.28

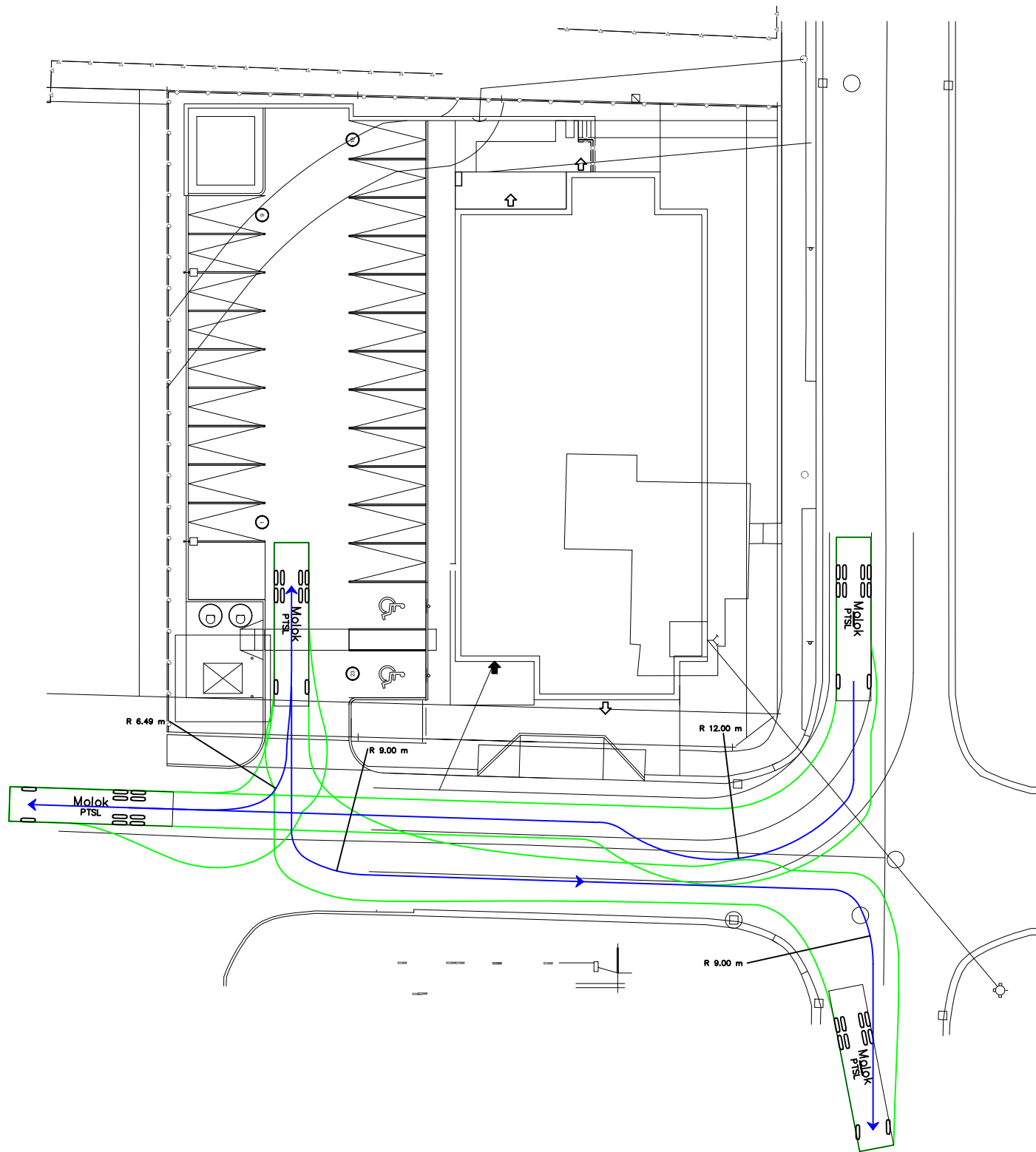
Data Plot and Equation



Appendix E

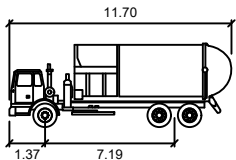
Swept Path Analyses





NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



Molok

	meters
Width	: 2.47
Track	: 2.47
Lock to Lock Time	: 6.0
Steering Angle	: 53.0

AUTOTURN ASSESSMENT
ADDRESS
CITY



PROJECT NO.: 260493

DATE: SEPT 2026

SCALE: 1:400

DRAWING NO.:

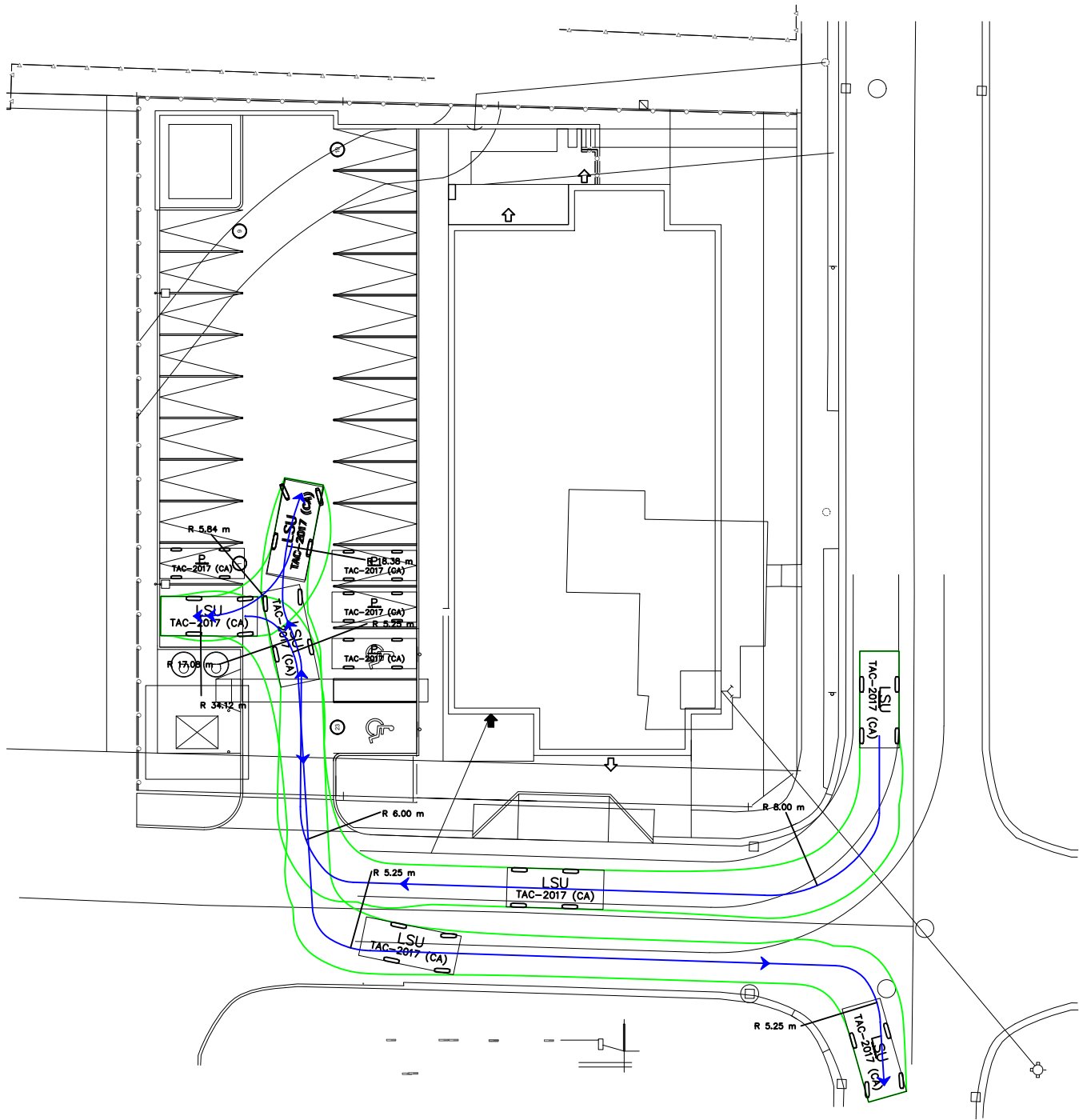
DESIGN: SC

DRAWN: SC

CHECK: EB

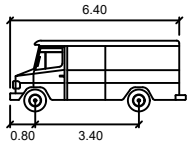
01

THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.



NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



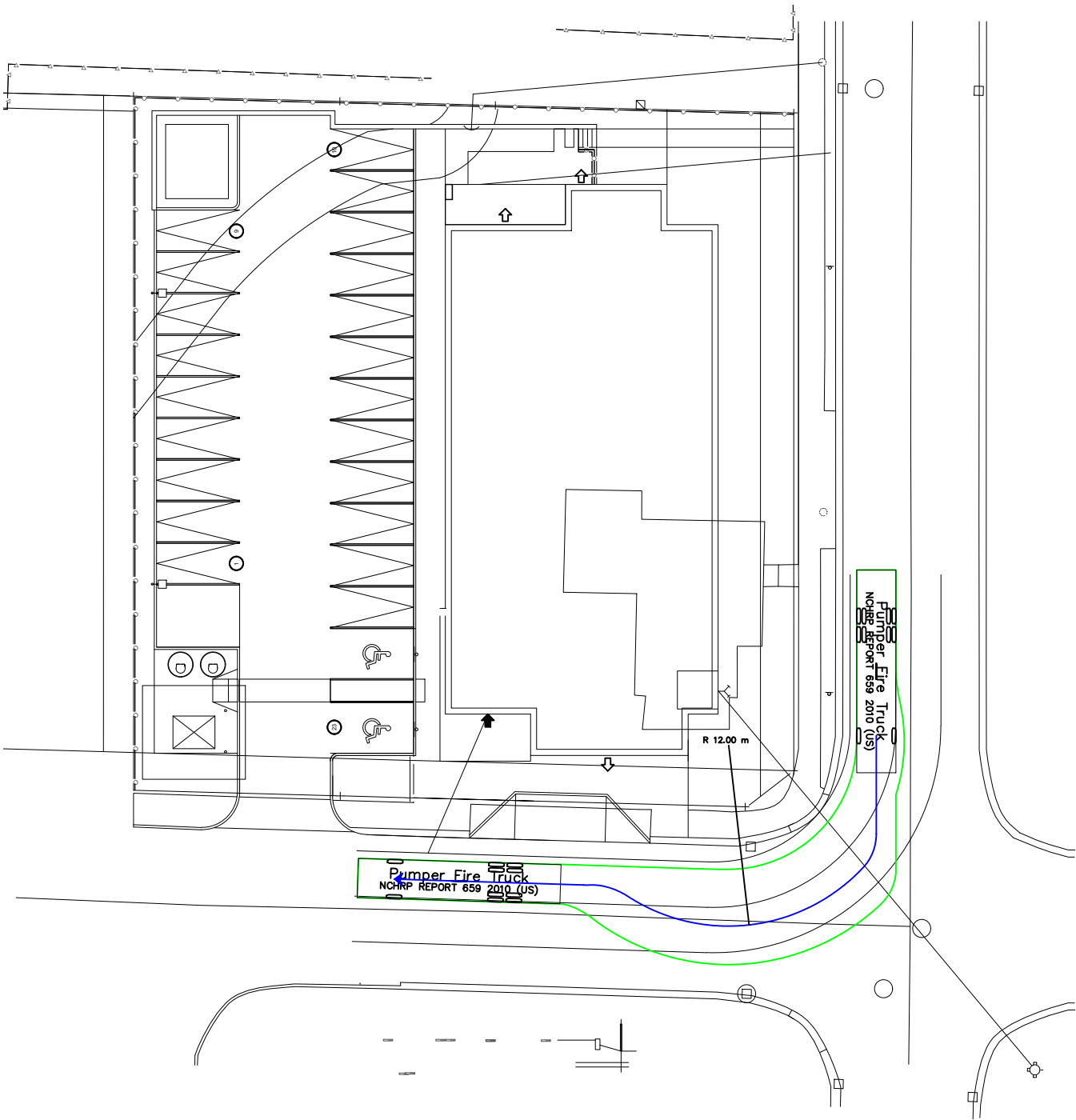
LSU
Width : 2.60 meters
Track : 2.60
Lock to Lock Time : 6.0
Steering Angle : 40.3



AUTOTURN ASSESSMENT
ADDRESS
CITY

PROJECT NO.: 260493	DATE: SEPT 2026	SCALE: 1:400	DRAWING NO.: 02
DESIGN: SC	DRAWN: SC	CHECK: EB	

THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.



NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:

Pumper Fire Truck

Width	: 2.59
Track	: 2.59
Lock to Lock Time	: 6.0
Steering Angle	: 37.8

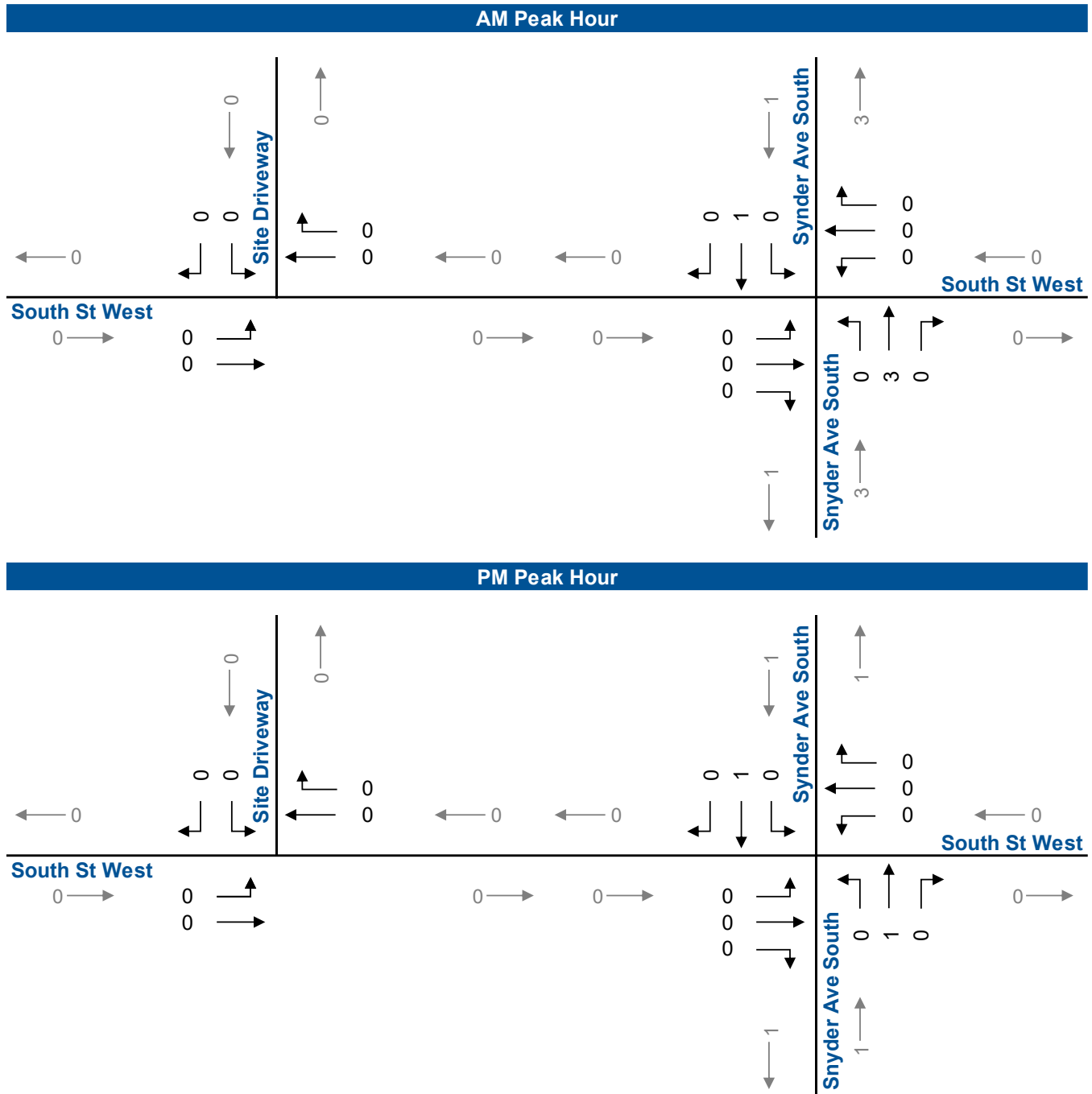
AUTOTURN ASSESSMENT
ADDRESS
CITY

PROJECT NO.: 260493	DATE: SEPT 2026	SCALE: 1:400	DRAWING NO.: 03
DESIGN: SC	DRAWN: SC	CHECK: EB	

Appendix F

Background Development Traffic Volumes





Appendix G

Background Operations Synchro Reports



Lanes, Volumes, Timings
101: Synder Ave South & South St West

Background - 2031
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1	4	2	3	10	6	125	2	12	238	17
Future Volume (vph)	13	1	4	2	3	10	6	125	2	12	238	17
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.972			0.907			0.998			0.992	
Flt Protected		0.964			0.994			0.998			0.998	
Satd. Flow (prot)	0	1234	0	0	1382	0	0	1397	0	0	1447	0
Flt Permitted		0.964			0.994			0.998			0.998	
Satd. Flow (perm)	0	1234	0	0	1382	0	0	1397	0	0	1447	0
Link Speed (k/h)		40			40			40			50	
Link Distance (m)		163.3			267.3			185.7			111.9	
Travel Time (s)		14.7			24.1			16.7			8.1	
Confl. Peds. (#/hr)			2	2			26		14	14		26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	50%	0%	0%	0%	17%	9%	0%	0%	5%	6%
Adj. Flow (vph)	14	1	4	2	3	11	7	136	2	13	259	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	19	0	0	16	0	0	145	0	0	290	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	34.0%											
Analysis Period (min)	15											
ICU Level of Service A												

HCM Unsignalized Intersection Capacity Analysis
101: Synder Ave South & South St West

Background - 2031
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	1	4	2	3	10	6	125	2	12	238	17
Future Volume (Veh/h)	13	1	4	2	3	10	6	125	2	12	238	17
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	1	4	2	3	11	7	136	2	13	259	18
Pedestrians	26			14			2					
Lane Width (m)	3.5			3.5			3.5					
Walking Speed (m/s)	1.1			1.1			1.1					
Percent Blockage	2			1			0					
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	484	486	296	466	494	151	303				152	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	484	486	296	466	494	151	303				152	
tC, single (s)	7.2	6.5	6.7	7.1	6.5	6.2	4.3				4.1	
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.8	3.5	4.0	3.3	2.4				2.2	
p0 queue free %	97	100	99	100	99	99	99				99	
cM capacity (veh/h)	447	460	627	480	455	890	1150				1423	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	19	16	145	290								
Volume Left	14	2	7	13								
Volume Right	4	11	2	18								
cSH	476	692	1150	1423								
Volume to Capacity	0.04	0.02	0.00*	0.00*								
Queue Length 95th (m)	0.9	0.5	0.1	0.2								
Control Delay (s/veh)	12.9	10.3	0.4	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s/veh)	12.9	10.3	0.4	0.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay				1.3								
Intersection Capacity Utilization				34.0%	ICU Level of Service				A			
Analysis Period (min)				15								

* Value less than 0.01.

Lanes, Volumes, Timings
101: Synder Ave South & South St West

Background - 2031
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	4	5	6	5	25	10	217	4	5	188	36
Future Volume (vph)	20	4	5	6	5	25	10	217	4	5	188	36
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.978			0.907			0.998			0.979	
Flt Protected		0.966			0.991			0.998			0.999	
Satd. Flow (prot)	0	1356	0	0	1343	0	0	1498	0	0	1456	0
Flt Permitted		0.966			0.991			0.998			0.999	
Satd. Flow (perm)	0	1356	0	0	1343	0	0	1498	0	0	1456	0
Link Speed (k/h)		40			40			40			50	
Link Distance (m)		163.3			267.3			185.7			111.9	
Travel Time (s)		14.7			24.1			16.7			8.1	
Confl. Peds. (#/hr)	2		3	3		2	3		1	1		3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	25%	0%	0%	20%	0%	0%	2%	0%	0%	3%	3%
Adj. Flow (vph)	22	4	5	7	5	27	11	236	4	5	204	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	39	0	0	251	0	0	248	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	34.0%											
Analysis Period (min)	15											
ICU Level of Service A												

HCM Unsignalized Intersection Capacity Analysis
101: Synder Ave South & South St West

Background - 2031
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	4	5	6	5	25	10	217	4	5	188	36
Future Volume (Veh/h)	20	4	5	6	5	25	10	217	4	5	188	36
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	4	5	7	5	27	11	236	4	5	204	39
Pedestrians	3			1			3			2		
Lane Width (m)	3.5			3.5			3.5			3.5		
Walking Speed (m/s)	1.1			1.1			1.1			1.1		
Percent Blockage	0			0			0			0		
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	528	500	230	505	517	241	246				241	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528	500	230	505	517	241	246				241	
tC, single (s)	7.2	6.8	6.2	7.1	6.7	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.2	3.3	3.5	4.2	3.3	2.2				2.2	
p0 queue free %	95	99	99	99	99	97	99				100	
cM capacity (veh/h)	430	435	810	468	431	801	1328				1336	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	31	39	251	248								
Volume Left	22	7	11	5								
Volume Right	5	27	4	39								
cSH	466	647	1328	1336								
Volume to Capacity	0.07	0.06	0.00*	0.00*								
Queue Length 95th (m)	1.6	1.5	0.2	0.1								
Control Delay (s/veh)	13.3	10.9	0.4	0.2								
Lane LOS	B	B	A	A								
Approach Delay (s/veh)	13.3	10.9	0.4	0.2								
Approach LOS	B	B										
Intersection Summary												
Average Delay				1.7								
Intersection Capacity Utilization				34.0%	ICU Level of Service				A			
Analysis Period (min)				15								

* Value less than 0.01.

Appendix H

Total Operations Synchro Reports



Lanes, Volumes, Timings
101: Synder Ave South & South St West

Total- 2031
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	5	8	2	4	10	8	125	2	12	238	21
Future Volume (vph)	22	5	8	2	4	10	8	125	2	12	238	21
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.968			0.913			0.998			0.989	
Flt Protected		0.969			0.994			0.997			0.998	
Satd. Flow (prot)	0	1230	0	0	1391	0	0	1394	0	0	1443	0
Flt Permitted		0.969			0.994			0.997			0.998	
Satd. Flow (perm)	0	1230	0	0	1391	0	0	1394	0	0	1443	0
Link Speed (k/h)		40			40			40			50	
Link Distance (m)		48.2			267.3			185.7			111.9	
Travel Time (s)		4.3			24.1			16.7			8.1	
Confl. Peds. (#/hr)			2	2			26		14	14		26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	50%	0%	0%	0%	17%	9%	0%	0%	5%	6%
Adj. Flow (vph)	24	5	9	2	4	11	9	136	2	13	259	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	0	17	0	0	147	0	0	295	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	37.0%											
Analysis Period (min)	15											
ICU Level of Service A												

HCM Unsignalized Intersection Capacity Analysis
101: Synder Ave South & South St West

Total- 2031
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	5	8	2	4	10	8	125	2	12	238	21
Future Volume (Veh/h)	22	5	8	2	4	10	8	125	2	12	238	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	5	9	2	4	11	9	136	2	13	259	23
Pedestrians		26			14			2				
Lane Width (m)		3.5			3.5			3.5				
Walking Speed (m/s)		1.1			1.1			1.1				
Percent Blockage		2			1			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	491	493	299	479	503	151	308			152		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	491	493	299	479	503	151	308			152		
tC, single (s)	7.2	6.5	6.7	7.1	6.5	6.2	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.8	3.5	4.0	3.3	2.4			2.2		
p0 queue free %	95	99	99	100	99	99	99			99		
cM capacity (veh/h)	441	456	625	463	449	890	1145			1423		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	38	17	147	295								
Volume Left	24	2	9	13								
Volume Right	9	11	2	23								
cSH	476	664	1145	1423								
Volume to Capacity	0.08	0.03	0.00*	0.00*								
Queue Length 95th (m)	2.0	0.6	0.2	0.2								
Control Delay (s/veh)	13.2	10.6	0.6	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s/veh)	13.2	10.6	0.6	0.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization			37.0%		ICU Level of Service					A		
Analysis Period (min)			15									

* Value less than 0.01.

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	18	26	7	17	0
Future Volume (vph)	0	18	26	7	17	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
Ped Bike Factor						
Frt	0.970					
Flt Protected					0.950	
Satd. Flow (prot)	0	1842	1795	0	1785	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1842	1795	0	1785	0
Link Speed (k/h)	40		40	40		
Link Distance (m)	115.1		48.2	41.5		
Travel Time (s)	10.4		4.3	3.7		
Confl. Peds. (#/hr)	5					5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%
Adj. Flow (vph)	0	20	28	8	18	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	20	36	0	18	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	0.0		0.0	3.5		
Link Offset(m)	0.0		0.0	0.0		
Crosswalk Width(m)	1.6		1.6	1.6		
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Sign Control	Free		Free	Stop		
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	14.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
201: South St West & Site Access

Total- 2031
AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	18	26	7	17	0
Future Volume (Veh/h)	0	18	26	7	17	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	20	28	8	18	0
Pedestrians					5	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	41				57	37
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	41				57	37
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	100
cM capacity (veh/h)	1574				951	1036
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	20	36	18			
Volume Left	0	0	18			
Volume Right	0	8	0			
cSH	1574	1700	951			
Volume to Capacity	0.00	0.02	0.02			
Queue Length 95th (m)	0.0	0.0	0.4			
Control Delay (s/veh)	0.0	0.0	8.9			
Lane LOS			A			
Approach Delay (s/veh)	0.0	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			14.9%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
101: Synder Ave South & South St West

Total - 2031
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	6	7	6	8	25	13	217	4	5	188	43
Future Volume (vph)	25	6	7	6	8	25	13	217	4	5	188	43
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.974			0.915			0.998			0.975	
Flt Protected		0.969			0.992			0.997			0.999	
Satd. Flow (prot)	0	1347	0	0	1335	0	0	1497	0	0	1450	0
Flt Permitted		0.969			0.992			0.997			0.999	
Satd. Flow (perm)	0	1347	0	0	1335	0	0	1497	0	0	1450	0
Link Speed (k/h)		40			40			40			50	
Link Distance (m)		45.2			267.3			185.7			111.9	
Travel Time (s)		4.1			24.1			16.7			8.1	
Confl. Peds. (#/hr)	2		3	3		2	3		1	1		3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	25%	0%	0%	20%	0%	0%	2%	0%	0%	3%	3%
Adj. Flow (vph)	27	7	8	7	9	27	14	236	4	5	204	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	42	0	0	43	0	0	254	0	0	256	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	37.9%											
Analysis Period (min)	15											
ICU Level of Service A												

HCM Unsignalized Intersection Capacity Analysis
101: Synder Ave South & South St West

Total - 2031
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	6	7	6	8	25	13	217	4	5	188	43
Future Volume (Veh/h)	25	6	7	6	8	25	13	217	4	5	188	43
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	7	8	7	9	27	14	236	4	5	204	47
Pedestrians	3			1			3			2		
Lane Width (m)	3.5			3.5			3.5			3.5		
Walking Speed (m/s)	1.1			1.1			1.1			1.1		
Percent Blockage	0			0			0			0		
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	540	510	234	519	531	241	254				241	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	540	510	234	519	531	241	254				241	
tC, single (s)	7.2	6.8	6.2	7.1	6.7	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.2	3.3	3.5	4.2	3.3	2.2				2.2	
p0 queue free %	94	98	99	98	98	97	99				100	
cM capacity (veh/h)	418	428	806	452	422	801	1319				1336	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	42	43	254	256								
Volume Left	27	7	14	5								
Volume Right	8	27	4	47								
cSH	462	610	1319	1336								
Volume to Capacity	0.09	0.07	0.01	0.00*								
Queue Length 95th (m)	2.3	1.7	0.2	0.1								
Control Delay (s/veh)	13.6	11.4	0.5	0.2								
Lane LOS	B	B	A	A								
Approach Delay (s/veh)	13.6	11.4	0.5	0.2								
Approach LOS	B	B										
Intersection Summary												
Average Delay				2.1								
Intersection Capacity Utilization				37.9%	ICU Level of Service				A			
Analysis Period (min)				15								

* Value less than 0.01.

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	29	51	13	9	0
Future Volume (vph)	0	29	51	13	9	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
Ped Bike Factor						
Frt	0.973					
Flt Protected	0.950					
Satd. Flow (prot)	0	1842	1799	0	1785	0
Flt Permitted	0.950					
Satd. Flow (perm)	0	1842	1799	0	1785	0
Link Speed (k/h)	40					
Link Distance (m)	118.1 45.2 37.2					
Travel Time (s)	10.6 4.1 3.3					
Confl. Peds. (#/hr)	5	5				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%
Adj. Flow (vph)	0	32	55	14	10	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	32	69	0	10	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	0.0 0.0 3.5					
Link Offset(m)	0.0 0.0 0.0					
Crosswalk Width(m)	1.6 1.6 1.6					
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14 24 14				
Sign Control	Free Free Stop					
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	15.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
201: South St West & Site Access

Total - 2031
PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	29	51	13	9	0
Future Volume (Veh/h)	0	29	51	13	9	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	32	55	14	10	0
Pedestrians					5	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	74				99	67
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	74				99	67
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1532				901	998
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	32	69	10			
Volume Left	0	0	10			
Volume Right	0	14	0			
cSH	1532	1700	901			
Volume to Capacity	0.00	0.04	0.01			
Queue Length 95th (m)	0.0	0.0	0.3			
Control Delay (s/veh)	0.0	0.0	9.0			
Lane LOS			A			
Approach Delay (s/veh)	0.0	0.0	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization		15.1%		ICU Level of Service		A
Analysis Period (min)		15				

Appendix I

2022 Transportation Tomorrow Survey



Tue Aug 25 2026 16:20:57 GMT-0400 (Eastern Daylight Time) - Run Time: 2722ms

Cross Tabulation Query Form - Trip - 2022

Row: 2022 TTS zone of household - tts22_hhld

Column: Primary travel mode of trip - mode_prime

RowG:(12556,12557,12558)

ColG:

TblG:

Filters:

No Filters

Trip 2022

ROW : tts22_hhld

COLUMN : mode_prime

tts22_hhld	mode_prime	total
1	B	63
1	C	543
1	D	19012
1	M	36
1	P	4973
1	S	230
1	W	4230

Code

Description

B	Transit excluding GO rail	63	0.2%
C	Cycle	543	1.9%
D	Auto driver	19012	65%
E	E-scooter (2022)		
G	GO rail only		
J	Joint GO rail and local transit		
M	Motorcycle	36	0%
O	Other		
P	Auto passenger	4973	17%
S	School bus	230	1%
T	Taxi passenger		
U	Paid rideshare (2016)		
W	Walk	4230	14.5%
9	Unknown	29087	

Tue Aug 25 2026 16:23:11 GMT-0400 (Eastern Daylight Time) - Run Time: 1051ms

Cross Tabulation Query Form - Household - 2022

Row: 2022 TTS zone of household - tts22_hhld

Column: Type of dwelling unit - dwell_type

Table: No. of vehicles in household - n_vehicle

RowG:(12556,12557,12558)

ColG:

TblG:

Filters:

No Filters

Household 2022

ROW : tts22_hhld

COLUMN : dwell_type

Code	Description
1	House
2	Apartment
3	Townhouse (Starting From 1996)
9	Unknown

TABLE : n_vehicle (0)

tts22_hhld	dwell_type	total	0	1	2		
			157	378	28	563	Number of Units
			28%	67%	5%		
1	2	157	0	378	56	434	Number of Vehicles
						0.77	Vehicles per Apartment

TABLE : n_vehicle (1)

tts22_hhld	dwell_type	total
1	1	945
1	2	378
1	3	149

TABLE : n_vehicle (2)

tts22_hhld	dwell_type	total
1	1	2045
1	2	28
1	3	42

TABLE : n_vehicle (3)

tts22_hhld	dwell_type	total
1	1	463
1	3	42

TABLE : n_vehicle (4)

tts22_hhld	dwell_type	total
1	1	181

TABLE : n_vehicle (5)

tts22_hhld	dwell_type	total
1	1	51

Appendix J

Proxy Parking Data



Survey Completed: Tuesday 11 October, 2022

ID	Location	Survey 1 (Morning)			Survey 2 (Afternoon)			Survey 3 (Evening)			Supply	
		Tenant	Visitor	Time	Tenant	Visitor	Time	Tenant	Visitor	Time	Resident	Visitor
1	75A-D McGuire Lane, Elmira	14	-	7:40 AM	7	-	1:50 PM	15	-	8:00 PM	36	-
2	7 Memorial Avenue, Elmira	12	1	7:45 AM	12	1	1:45 PM	11	0	8:05 PM	25	6
3	8 Wyatt Street E, Elmira	11	-	7:50 AM	10	-	1:40 PM	9	-	8:10 PM	16	0