



Southwood Subdivision Elmira

Transportation Impact Study

Paradigm Transportation Solutions Limited

June 2025
240588



Project Summary

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Southwood Subdivision, Elmira Transportation Impact Study



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Executive Summary

Content

Schlegel Urban Developments retained Paradigm Transportation Solutions Limited to conduct this Transportation Impact Study (TIS) for the proposed Southwood residential subdivision located at 1065 Listowel Road in Elmira, Township of Woolwich, Region of Waterloo.

This TIS includes an analysis of existing traffic conditions, a description of the proposed development, traffic forecasts for a five-year horizon from the date of TIS submission (2030), assessment of traffic impacts with recommendations to accommodate the proposed development as appropriate, and Active Transportation and Transportation Demand Management (TDM) measures appropriate to the subject development.

Development Concept

The subject site is located on the north side of Listowel Road between Timber Trail Road and Arthur Street South. The proposed subdivision consists of 111 single family units, 229 street townhouse units and 250 multi-residential units.

Vehicular access is proposed via the southerly extension of Burlwood Drive from South Parkwood Boulevard to Listowel Road, the southerly extension of Pintail Drive, and the easterly extension of both Woodberry Crescent and Weymouth Street.

Conclusions

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

- ▶ **Existing Traffic Conditions:** The study area intersections are operating with acceptable levels of service, except for the westbound left-turn movement at the intersection of Arthur Street South and Listowel Road/Union Street which is operating with 95th percentile queues exceeding the available storage of 70 metres during the AM and PM peak hours.
- ▶ **Development Trip Generation:** The development is forecast to generate 295 and 371 trips during the AM and PM peak hours, respectively.
- ▶ **Background Traffic Conditions:** The study area intersections are forecast to operate with the same critical movements identified under existing traffic conditions, with the addition of the following critical movements:



- Arthur Street South and Listowel Road/Union Street:
 The westbound left-turn movement is forecast to operate with delays greater than 55 seconds during the PM peak hour; and
 The northbound left-turn movement is forecast to operate with delays greater than 55 seconds and 95th percentile queues exceeding the available storage of 100 metres during the PM peak hour.
- Arthur Street South and South Parkwood Boulevard/Earl Martin Drive:
 The eastbound left-turn movement is forecast to operate with delays greater than 55 seconds during the AM and PM peak hours; and
 The westbound left-turn movement is forecast to operate with delays greater than 55 seconds during the PM peak hour.
- ▶ **Total Traffic Conditions:** The study area intersections are forecast to operate with the same critical movements identified under background traffic conditions, with the addition of the following critical movements:
 - Arthur Street South and Listowel Road/Union Street: The eastbound right-turn movement is forecast to operate with 95th percentile queues exceeding the available storage of 65 metres during the AM peak hour; and
 The southbound through movement is forecast to operate with delays of 55 seconds during the PM peak hour.
 - Arthur Street South and South Parkwood Boulevard/Earl Martin Drive: The westbound left-turn movement is forecast to operate with delays greater than 55 seconds during the AM peak hour.
- ▶ **Site Access:** An eastbound left-turn lane with 30 metres of storage is warranted on Listowel Road at Burlwood Drive under 2030 total traffic conditions.
 The separation distance on Listowel Road between the existing Timber Trail Road and proposed Burlwood Drive connections can accommodate the warranted eastbound left-turn lane storage and taper length.
- ▶ **Arthur Street South and South Parkwood Boulevard/Earl Martin Drive:** Traffic control signals are not warranted under the forecast total traffic conditions.



It is noted that the eastbound and westbound left-turn movements are forecast to operate with delays exceeding the critical movement threshold; however, the movements are forecast to operate with low v/c ratios which indicates the delay is likely due to the high volumes of through traffic on Arthur Street South, limiting the number of available gaps for side street traffic.

The intersection could be monitored to ensure an appropriate form of traffic control is provided in the future.

- ▶ **Arthur Street South and Listowel Road/Union Street:** During pre-study consultation, the Region identified that the intersection of Arthur Street South and Listowel Road/Union Street is part of an ongoing Environmental Assessment (EA). It is anticipated that the critical movements identified at the intersection will be addressed as part of the ongoing EA.
- ▶ **Sensitivity Analysis:** The removal of the proposed Burlwood Drive connection to Listowel Road is forecast to result in poor levels of service for the Timber Trail Road intersection on Listowel Road, and traffic control signals are not forecast to be warranted. Therefore, it would be appropriate to consider the Burlwood Drive connection as a secondary access point to Listowel Road.
- ▶ **Active Transportation and Transportation Demand Management:** The following measures are either provided nearby or proposed on-site:
 - Sidewalks are provided on at least one side of all surrounding roadways, except for Arthur Street South south of Listowel Road and Listowel Road along the subject site frontage and to the west;
 - Sidewalks are proposed on both sides of all internal roadways, except for Burlwood Drive where a multi-use trail is proposed along the east side of the roadway;
 - The Lions Ring Trail currently travels along the north side of Listowel Road and bisects the subject site;
 - Paved shoulders are provided on both sides of Arthur Street South and Listowel Road;
 - A bus route between Elmira, St. Jacobs and Conestoga Station in Waterloo which provides connections to the ION Light Rail Transit (LRT) service and additional bus routes.

In addition to the above, the following measures could be considered:



- The multi-use trail proposed along the east side of Burlwood Drive be extended along the Listowel Road frontage to continue the Lions Ring Trail connectivity;
- A multi-use trail be considered through the stormwater management block at the southeast corner of the site, similar to what is provided surrounding the stormwater management facility in the northwest corner of Timber Trail Road and Listowel Road; and
- Multi-residential blocks provide bicycle parking to meet zoning requirements.

Recommendations

Based on the findings of this study, it is recommended that:

- ▶ An eastbound left-turn lane with 30 metres of storage be provided on Listowel Road at Burlwood Drive; and
- ▶ The above TDM measures be considered on-site.



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1 Introduction

1.1 Overview

Schlegel Urban Developments retained Paradigm Transportation Solutions Limited to conduct this Transportation Impact Study (TIS) for the proposed Southwood residential subdivision located at 1065 Listowel Road in Elmira, Township of Woolwich, Region of Waterloo. **Figure 1.1** illustrates the subject development location.

1.2 Purpose and Scope

The purpose of this report is to identify and assess the potential traffic impact resulting from the proposed development. The scope of the study, provided to Region of Waterloo and Township of Woolwich staff via e-mail in October 2024, includes:

- ▶ Assessment of the current traffic and site conditions within the study area;
- ▶ Estimates of background traffic growth for a five-year horizon from the date of TIS submission (2030);
- ▶ Estimates of additional traffic generated by the subject site;
- ▶ Analyses of the impact of future traffic on the study area road network;
- ▶ Recommendations necessary to mitigate the site generated traffic in a satisfactory manner; and
- ▶ Active transportation plan and Transportation Demand Management (TDM) measures appropriate to the subject development.

Appendix A contains the pre-study consultation material and responses from the Region of Waterloo.

The intersections assessed in this study include:

- ▶ Arthur Street South and Listowel Road/Union Street (signalized);
- ▶ Arthur Street South and South Parkwood Boulevard/Earl Martin Drive (unsignalized);
- ▶ South Parkwood Boulevard and Burlwood Drive (unsignalized);
- ▶ South Parkwood Boulevard and Pintail Drive (unsignalized);
- ▶ Timber Trail Road and Listowel Road (unsignalized);



- ▶ Timber Trail Road and Woodberry Crescent (unsignalized);
- ▶ Timber Trail Road and Weymouth Street (unsignalized); and
- ▶ Listowel Road and Burlwood Drive (Extension).





Image Source: Region of Waterloo GIS Locator



Location of Subject Site

Southwood 5 Subdivision, Elmira TIS
240588

Figure 1.1

2 Existing Conditions

2.1 Road Network

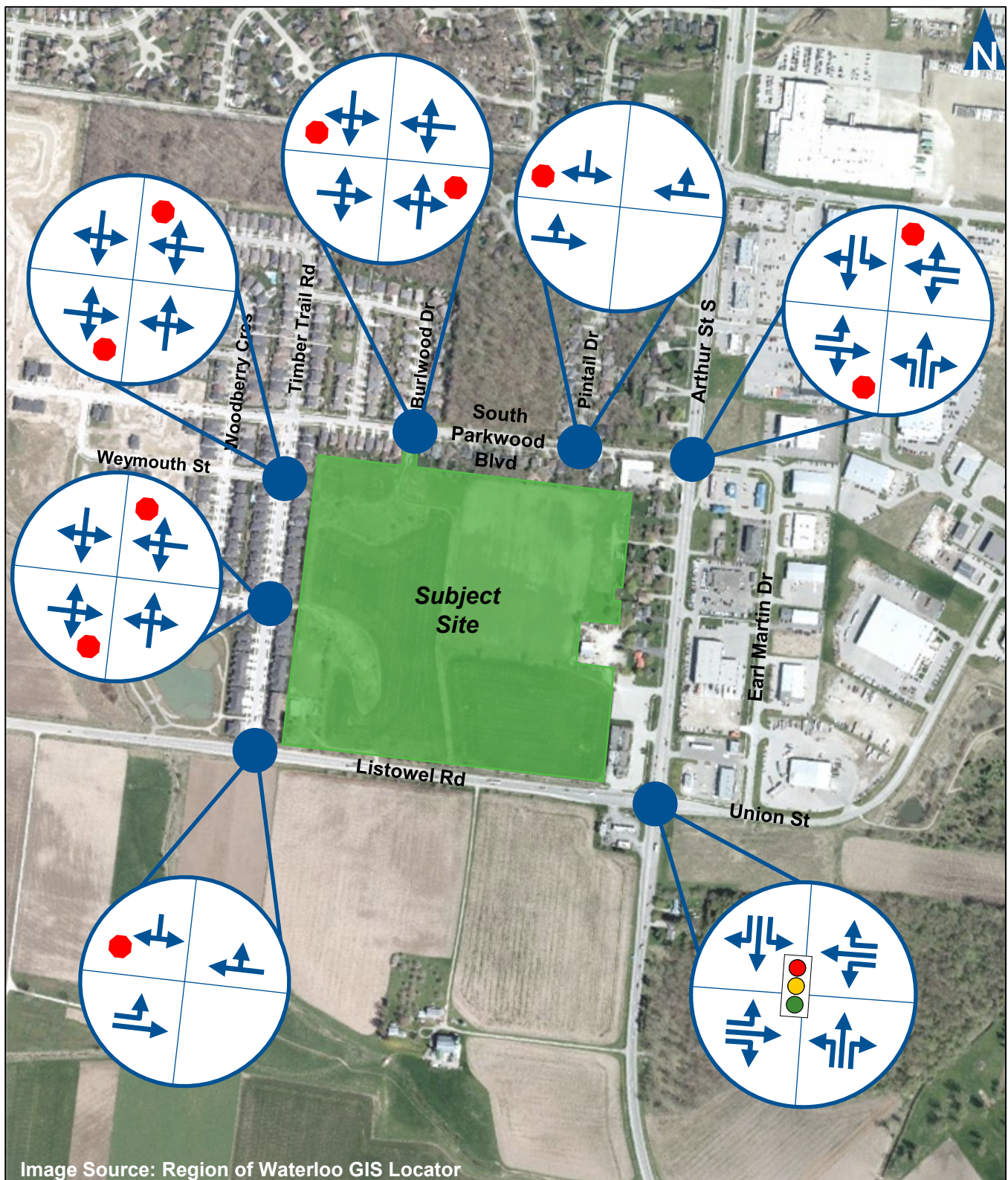
The main roadways near the subject site considered in assessing the traffic impacts of the development include:

- ▶ **Arthur Street South** is a north-south regional road¹ with a two-lane cross section and a posted speed limit of 60 km/h.
- ▶ **Listowel Road** is an east-west regional road with a two-lane cross section and a posted speed limit of 80 km/h.
- ▶ **Union Street** is a collector road with a two-lane cross section and a posted speed limit of 50 km/h.
- ▶ **South Parkwood Drive** is an east-west collector road with a two-lane cross section and an assumed speed limit of 50 km/h.
- ▶ **Earl Martin Drive** is a township road with a two-lane cross section and an assumed speed limit of 50 km/h.
- ▶ **Timber Trail Road, Pintail Drive, Burlwood Drive, Weymouth Street and Woodberry Crescent** are township roads with a two-lane cross section. A speed limit of 50 km/h is assumed.

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

¹ Township of Woolwich, *Official Plan Map 15.1 Road Hierarchy*, 2022.





2.2 Active Transportation

2.2.1 Walking

The following sidewalks are currently provided along study area roads:

- ▶ The west side of Arthur Street South between Listowel Road and South Parkwood Boulevard and on both sides of the roadway to the north;
- ▶ The north side of Listowel Road for approximately 65 metres west of Arthur Street South;
- ▶ The north side of Union Street between Arthur Street South and Earl Martin Drive; and
- ▶ Both sides of South Parkwood Drive, Timber Trail Road, Pintail Drive, Burlwood Drive, Weymouth Street and Woodberry Crescent.

2.2.2 Cycling

Paved shoulders are provided on both sides of Arthur Street South and Listowel Road. Arthur Street South is designated as a bike route.

In addition, the Lions Ring Trail is a 11 km loop intended for cycling and walking/hiking. Within the study area, the trail travels along the north side of Listowel Road and bisects the subject site.

2.3 Transit Service

Grand River Transit (GRT) bus route 21 operates along Arthur Street South within the study area with major stops at Conestoga Station, St Jacobs Farmers Market and Downtown Elmira. The route operates Monday to Sunday with 30-minute headways.

The closest stop is located on Arthur Street South north of Listowel Road (approximately 250 metres from the subject site).

Figure 2.2 illustrates the existing transit service.





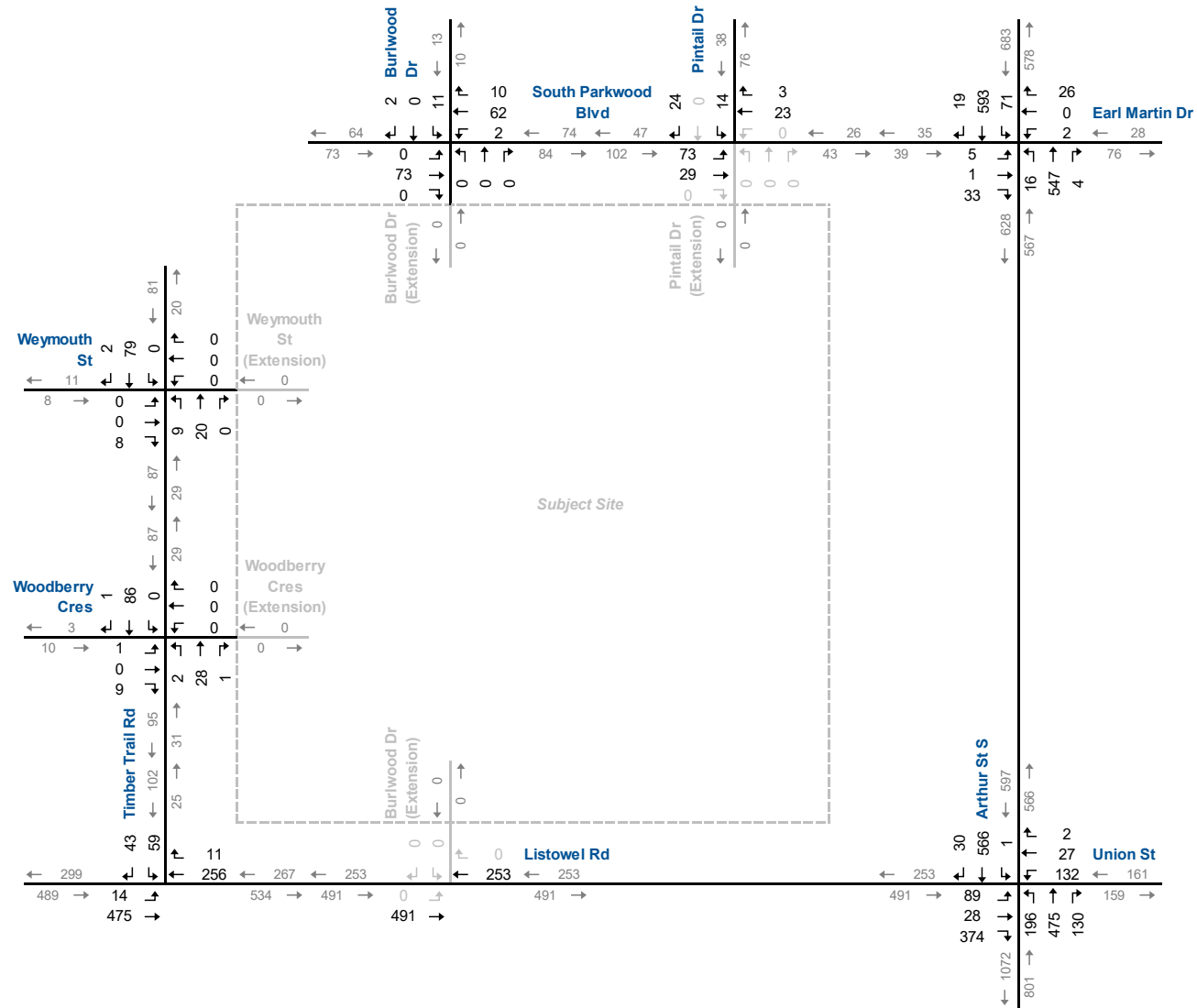
2.4 Traffic Volumes

Paradigm collected turning movement counts at the study area intersections on 6 November 2024 and 27 March 2025.

Figure 2.3a and **Figure 2.3b** illustrate the existing AM and PM weekday peak hour traffic volumes, respectively.

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

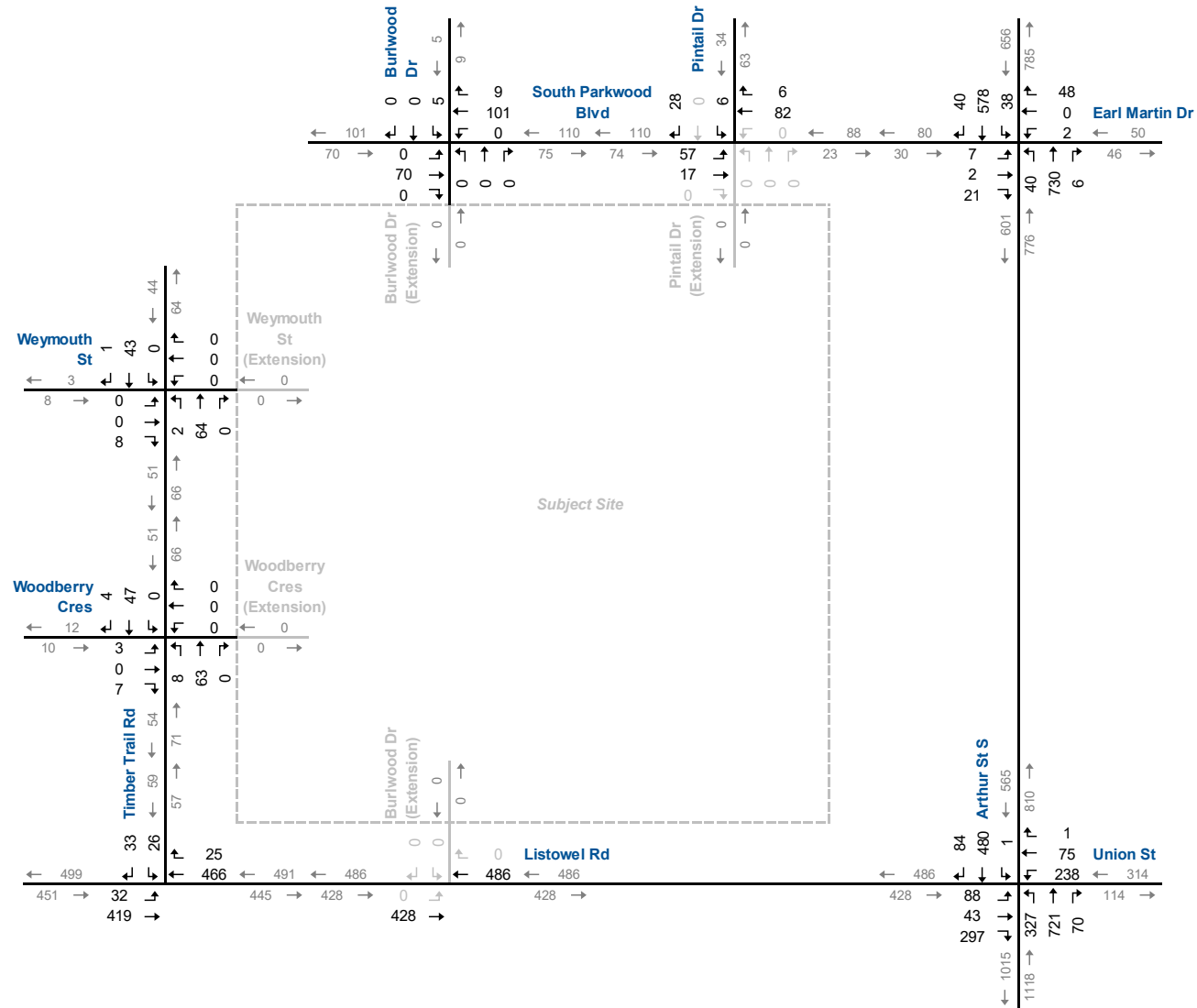




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Existing Traffic Volumes AM Peak Hour



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Existing Traffic Volumes PM Peak Hour

Southwood Subdivision, Elmira TIS
240588

Figure 2.3b

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 various movements. The delay is related to the number of vehicles intending to make a particular movement, compared to the estimated capacity for that movement. The capacity is based on a number of criteria related to the opposing traffic flows and intersection geometry.

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

The operations at the study area intersections have been assessed using Synchro 12. As per the *Region of Waterloo Transportation Impact Study Guidelines*², intersections are considered critical under the following conditions:

- ▶ Overall intersection LOS E or F (i.e. average control delay per vehicle greater than 55 seconds) for signalized intersections; or
- ▶ Overall intersection LOS E or F (i.e. average control delay per vehicle greater than 35 seconds) for unsignalized intersections.

As well, the criteria for identifying individual critical movements are:

- ▶ Average control delay for individual movements is greater than 55 seconds;
- ▶ 95th percentile queue lengths for individual movements exceeds available lane storage. Queue lengths estimated using Synchro 11;
- ▶ 95th percentile queue lengths for individual movements will block an existing access; or
- ▶ Exclusive turning lanes are inaccessible due to 95th percentile queue lengths in adjacent through lanes.

² Region of Waterloo, *Transportation Impact Study Guidelines*, 2014.



Table 2.1a and **Table 2.1b** summarize the results of the intersection operational analysis under existing conditions, including the AM and PM peak hour LOS, v/c ratios, and 95th percentile queues.

The results indicate that the study area intersections are operating with acceptable levels of service, except for the westbound left-turn movement at the intersection of Arthur Street South and Listowel Road/Union Street which is operating with 95th percentile queues exceeding the available storage of 70 metres during the AM and PM peak hours.

Appendix C contains the detailed Synchro 12 reports.



TABLE 2.1A: EXISTING TRAFFIC OPERATIONS – AM PEAK HOUR

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	Arthur St S & Listowel Rd/Union St	TCS	LOS Delay V/C Q Stor. Avail.	C 33 0.34 28 60 32	C 28 0.08 11 - -	A 9 0.64 24 65 41	B 14	D 40 0.54 11 30 -10	C 28 0.09 11 0 30	A 0 0.01 0 30	D 37	B 12 0.53 26 100 74	A 8 0.40 66 -	A 2 0.13 6 100 94	A 8	B 13 0.00 1 50 49	B 19 0.59 125 -	A 0 0.04 0 50 50	B 18	B 15	
	Arthur St S & South Parkwood Blvd/Earl Martin Dr	TWSC	LOS Delay V/C Q Stor. Avail.	E 41 0.05 1 15 14	B 14 0.07 2 - -	> > > > >	C 17	E 37 0.02 1 25 24	B 13 0.05 2 - -	> > > > >	B 14	A 9 0.02 1 70 69	A 0 0.00 0 -	A 0 0.00 0 55 55	A 0	A 9 0.07 2 75 73	A 0 0.00 0 -	> > > > >	A 1		
	Listowel Rd & Timber Trail Rd	TWSC	LOS Delay V/C Q Stor. Avail.	A 8 0.01 0 35 35	A 0 0.00 0 - -		A 0		A 0 0.00 0 - -	> > > > >	A 0					B 15 0.22 6 - -		> > > > >	B 15		
	South Parkwood Blvd & Pintail Drive	TWSC	LOS Delay V/C Q	< < <	A 7 0.05 1		A 5		A 0 0.00 0	> > >	A 0						A 9 0.04 1		> > >	A 9	
	Burlwood Dr & South Parkwood Blvd	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0	> > >	A 0	< < <	A 7 0.00 0	> > >	A 0	< < <	A 0 0.00 0	> > >	A 0	< < <	A 10 0.02 0	> > >	A 9		
	Timber Trail Rd & Woodberry Cres	TWSC	LOS Delay V/C Q	< < <	A 9 0.01 0	> > >	A 9	< < <	A 0 0.00 0	> > >	A 0	< < <	A 7 0.00 0	> > >	A 0	< < <	A 0 0.00 0	> > >	A 0		
	Timber Trail Rd & Weymouth St	TWSC	LOS Delay V/C Q	< < <	A 9 0.01 0	> > >	A 9	< < <	A 0 0.00 0	> > >	A 0	< < <	A 8 0.01 0	> > >	A 2	< < <	A 0 0.00 0	> > >	A 0		

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



TABLE 2.1B: EXISTING TRAFFIC OPERATIONS – PM PEAK HOUR

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	
PM Peak Hour	Arthur St S & Listowel Rd/Union St	TCS	LOS Delay V/C Stor. Avail.	D 53 0.46 Q 36 60 24	D 45 0.21 20 - 38	B 12 0.65 27 65 38	C 24	D 39 0.62 70 30 -40	C 29 0.14 24 0 - 30	A 0 0.00 0 30	D 37	C 24 0.74 70 100 30	B 18 0.64 164 - -	A 2 0.09 6 100 94	B 19	C 26 0.00 2 50 48	D 35 0.65 150 - -	A 3 0.14 6 50 44	C 30	C 25
	Arthur St S & South Parkwood Blvd/Earl Martin Dr	TWSC	LOS Delay V/C Stor. Avail.	F 52 0.08 Q 2 15 13	B 15 0.06 2 - -	> > > >	C 23	E 45 0.02 1 25 24	B 15 0.11 3 - -	> > > >	C 16	A 9 0.04 1 70 69	A 0 0.00 0 - 55	A 0	A 9 0.04 1 75 74	A 0 0.00 0 - -	> > > >	A 1		
	Listowel Rd & Timber Trail Rd	TWSC	LOS Delay V/C Stor. Avail.	A 8 0.03 Q 1 35 34	A 0 0.00 0 - -		A 1		A 0 0.00 0 - -	> > > >	A 0					C 16	> > > >	C 16		
	South Parkwood Blvd & Pintail Drive	TWSC	LOS Delay V/C Stor. Avail.	< < < <	A 8 0.04 1		A 6		A 0 0.00 0	> > > >	A 0					A 9	> > > >	A 9		
	Burlwood Dr & South Parkwood Blvd	TWSC	LOS Delay V/C Stor. Avail.	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 10	> > > >	A 10	
	Timber Trail Rd & Woodberry Cres	TWSC	LOS Delay V/C Stor. Avail.	< < < <	A 9 0.01 0	> > > >	A 9	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 7 0.01 0	> > > >	A 1	< < < <	A 0	> > > >	A 0	
	Timber Trail Rd & Weymouth St	TWSC	LOS Delay V/C Stor. Avail.	< < < <	A 8 0.01 0	> > > >	A 9	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 7 0.00 0	> > > >	A 0	< < < <	A 0	> > > >	A 0	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



3 Development Concept

3.1 Development Description

The subject site is located on the north side of Listowel Road between Timber Trail Road and Arthur Street South. The proposed subdivision consists of 111 single family units, 229 street townhouse units and 250 multi-residential units.

Vehicular access is proposed via the southerly extension of Burlwood Drive from South Parkwood Boulevard to Listowel Road, the southerly extension of Pintail Drive, and the easterly extension of both Woodberry Crescent and Weymouth Street.

Figure 3.1 shows the development concept.

3.1.1 Burlwood Drive (Extension)

A clear line of sight is available to the east of the Burlwood Drive connection on Listowel Road. To the west, vertical curvature is present. Based on the *Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads*³, a minimum sight distance of 210 metres is required for a left-turn from stop (looking right/west) with a design speed of 100 km/h (20 km/h over the posted speed limit of 80 km/h).

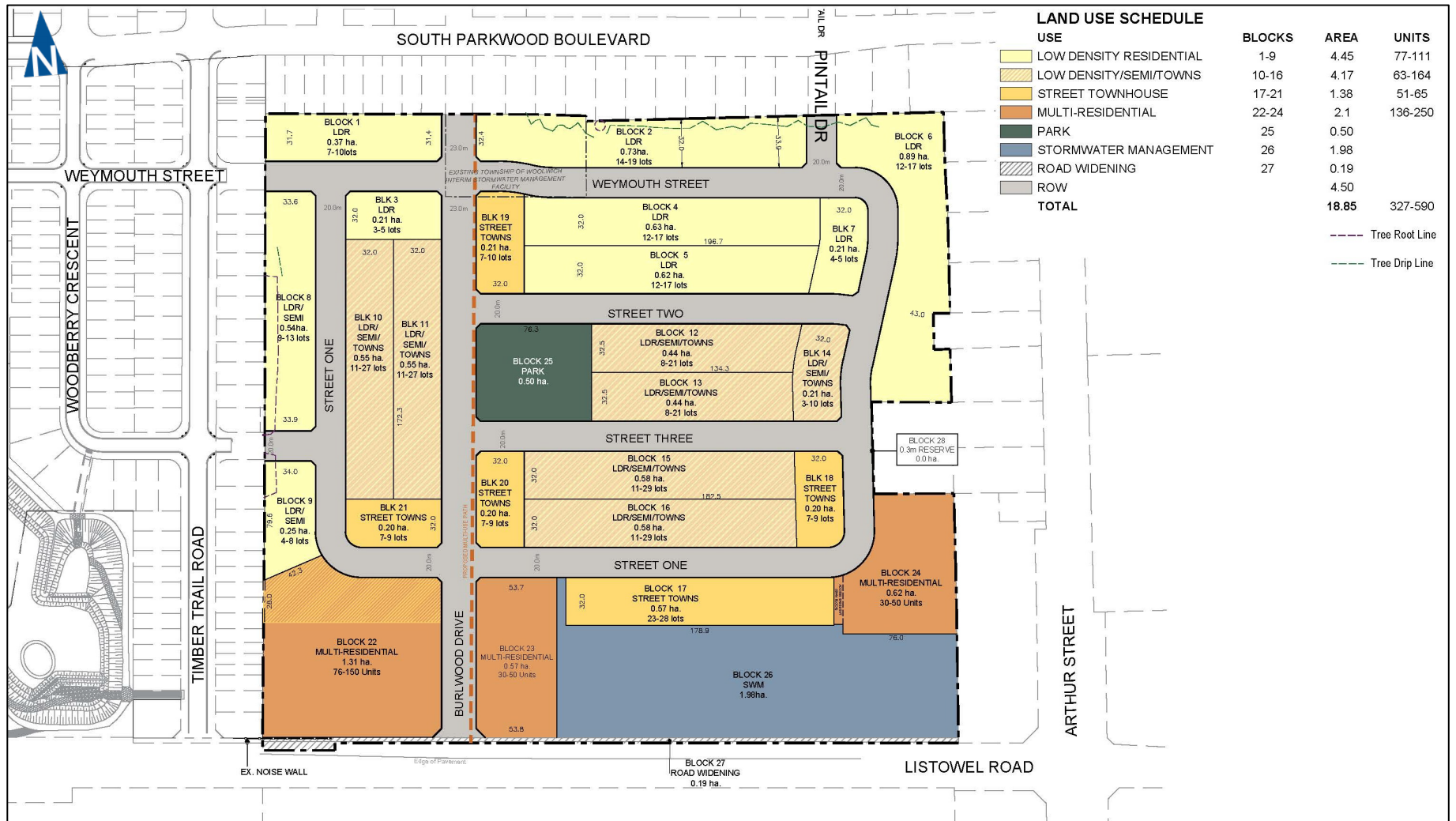
Road profile measurements were collected in November 2024 along Listowel Road starting at the proposed Burlwood Drive connection. The results indicate that approximately 290 metres of sight distance is available.

Therefore, the proposed Burlwood Drive connection to Listowel Road meets minimum sight distance requirements.

Appendix D contains the visibility at the proposed Burlwood Drive connection location on Listowel Road.

³ Transportation Association of Canada, "Intersections", chap. 9 in *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017).





3.2 Development Trip Generation

The *Institute of Transportation Engineers (ITE) Trip Generation Manual*⁴ provides rates and equations used to estimate the peak hour traffic volumes generated by the Land Use Codes (LUC) of the proposed subdivision:

- ▶ LUC 210 (Single-Family Detached Housing);
- ▶ LUC 215 (Single-Family Attached Housing); and
- ▶ LUC 220 (Multifamily Housing, Low Rise).

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

TABLE 3.1: TRIP GENERATION

Land Use	Number of Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
LUC 210 - Single-Family Detached Housing	111	Eq	20	62	82	Eq	69	41	110
LUC 215 - Single-Family Attached Housing	229	Eq	28	85	113	Eq	79	54	133
LUC 220 - Multifamily Housing (Low-Rise)	250	Eq	24	76	100	Eq	81	47	128
Total Trip Generation			72	223	295		229	142	371

LUC 210 - AM: $Ln(T) = 0.91Ln(X) + 0.12$ | PM: $Ln(T) = 0.94Ln(X) + 0.27$

LUC 215 - AM: $T = 0.52(X) - 5.70$ | PM: $T = 0.60(X) - 3.93$

LUC 220 - AM: $T = 0.31(X) + 22.85$ | PM: $T = 0.43(X) + 20.55$

3.3 Development Trip Distribution and Assignment

The trip distribution was determined based on existing travel patterns within the study area and is consistent with other studies completed within the surrounding area. **Table 3.2** displays the breakdown of trip distributions used in this study.

TABLE 3.2: ESTIMATED TRIP DISTRIBUTION

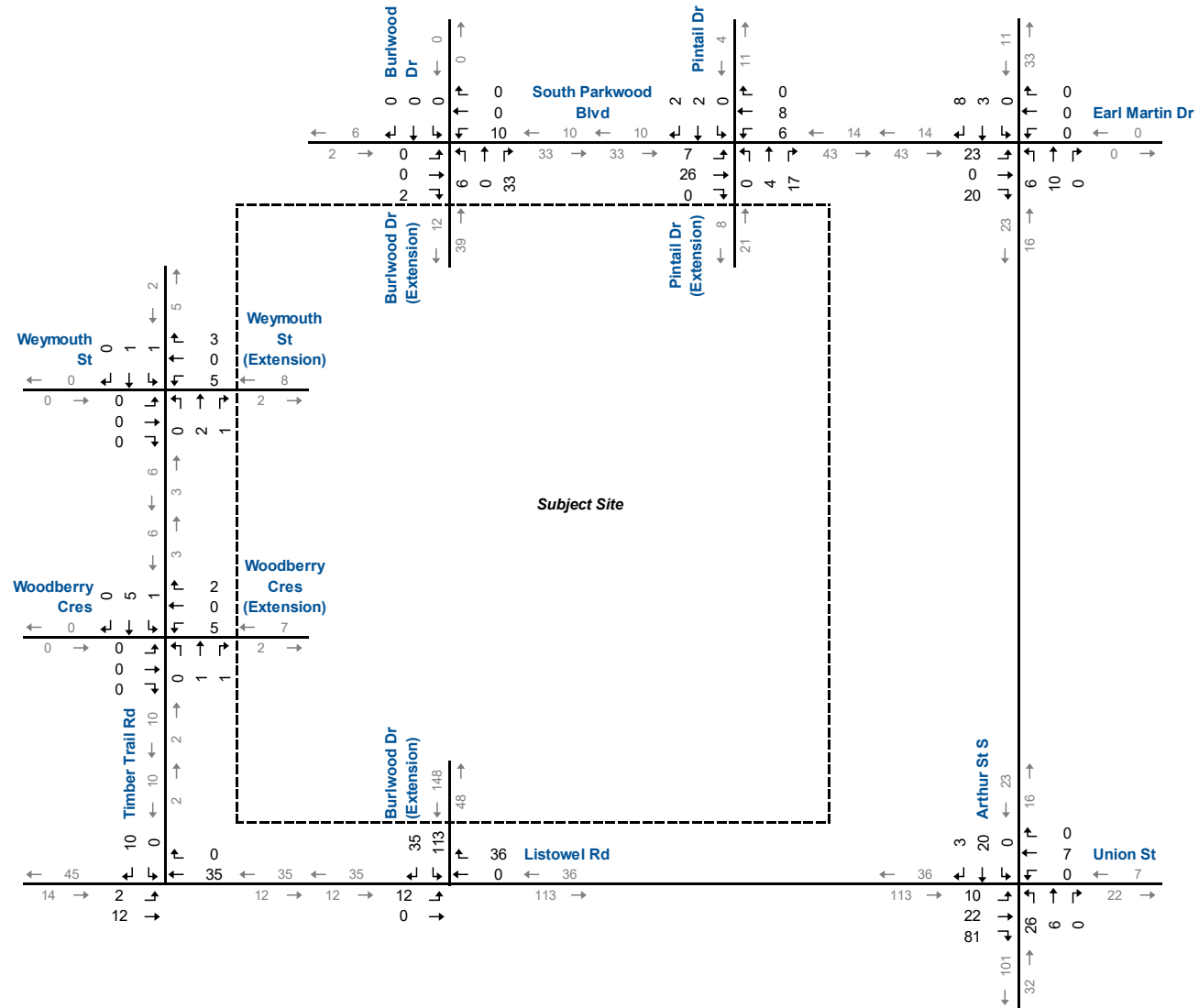
Direction	Distribution
North via Arthur St	15%
North via Pintail Dr	5%
South via Arthur St	45%
East via Union St	10%
West via Listowel Rd	20%
West via South Parkwood Blvd	5%
Total	100%

⁴ Institute of Transportation Engineers, *Trip Generation Manual*, 11th ed., (Washington, DC: ITE, 2021).



Figure 3.2a and **Figure 3.2b** illustrate the site-generated traffic volumes for the AM and PM peak hours, respectively.





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Site Generated Traffic Volumes AM Peak Hour

Southwood Subdivision, Elmira TIS
240588

Figure 3.2a



Figure 3.2b

4 Evaluation of Future Traffic Conditions

The assessment of future traffic conditions in this section includes estimates of future background and total traffic volumes, and the analyses for the 2030 horizon.

4.1 Background Traffic Forecasts

4.1.1 General Growth

To derive the 2030 generalized background traffic volumes, a growth rate of 1.5% was applied to the existing roadway traffic volumes. This growth rate was confirmed with the Region of Waterloo during the pre-study consultation.

4.1.2 Other Area Developments

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

- ▶ **401 Arthur Street South:** A new home building centre proposed at the southeast corner of Arthur Street South and Union Street, with up to 55,563 sq. ft. GFA. The TIB completed for this development in November 2024⁵ indicates a trip generation of 101 AM peak hour trips and 98 PM peak hour trips.
- ▶ **1665 Scotch Line:** An industrial subdivision located between Scotch Line to the south, South Field Drive to the north and rail line to the west. A preliminary concept for this development includes 741,000 sq. ft. GFA of industrial uses. Based on rates contained in the *ITE Trip Generation Manual*, 252 trips are forecast to be generated during the AM peak hour and 252 during the PM peak hour.
- ▶ **Southwood 4 (1143 Listowel Road):** The partially completed adjacent residential subdivision to the northwest. The TIS completed in 2017⁶ indicates a total unit count of 513 units with a forecast total trip generation of 301 AM peak hour trips and 384 PM peak hour trips. As of November 2024, approximately 30% of the subdivision has been completed (40% of estimated

⁵ Paradigm Transportation Solutions Limited, *401 Arthur Street South Elmira Transportation Impact Brief*, November 2024.

⁶ Salvini Consulting, *Southwood 4 Draft Plan of Subdivision Transportation Impact Study Township of Woolwich*, 2017.

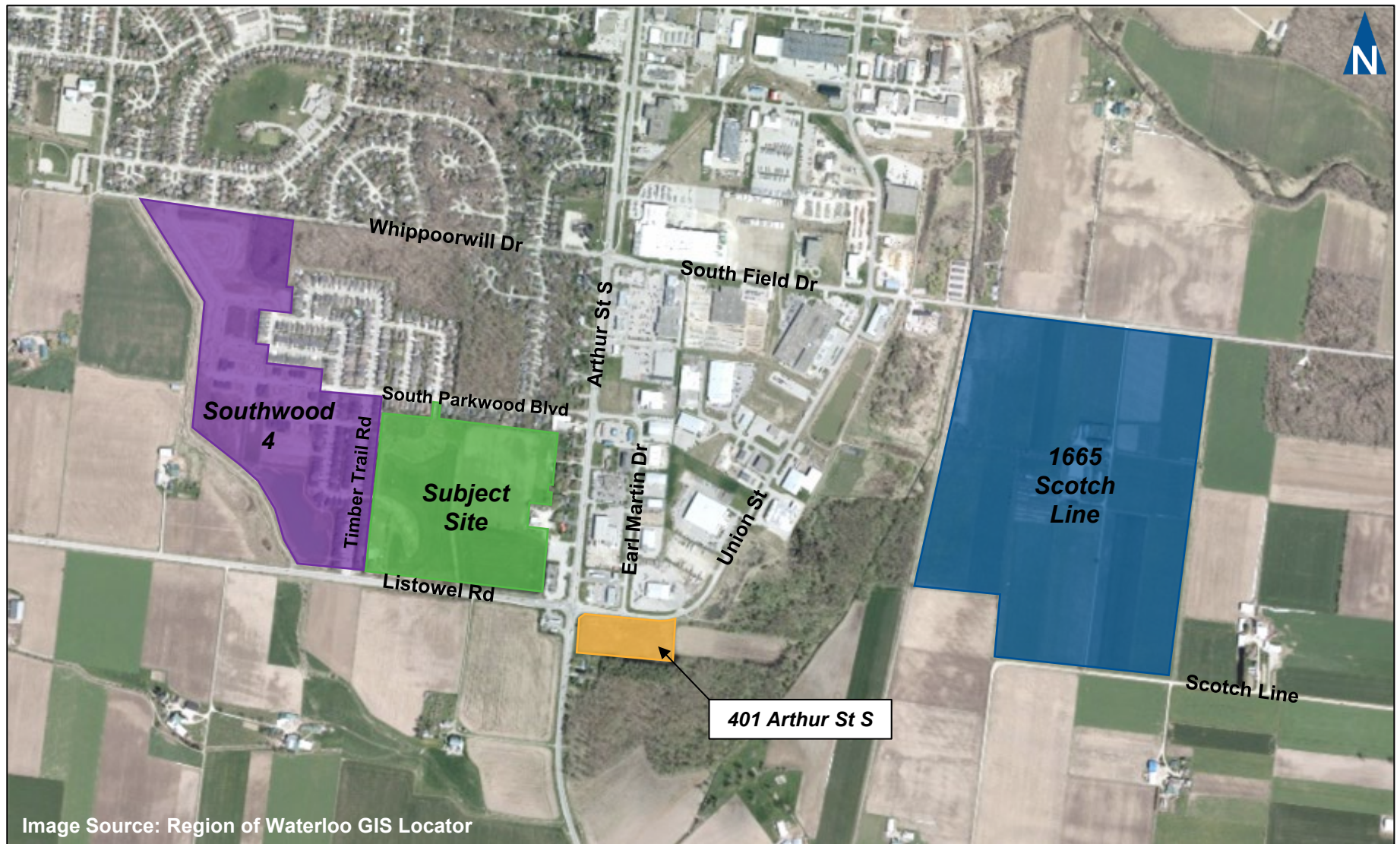


trips). This equates to approximately 60% of the trips generated within the 2017 TIS remaining.

Figure 4.1 illustrates the location of the other area developments.

Appendix E contains the other area development traffic volumes.





4.2 Background Traffic

Figure 4.2a and **Figure 4.2b** illustrate the 2030 background traffic volumes, including road traffic growth and other area development traffic.

The 2030 background traffic volumes have been analyzed using the same methodology as under existing traffic conditions. Signal timings have not been optimized.

Table 4.1a and **Table 4.1b** summarize the results of the 2030 background traffic operations. The results indicate that the study area intersections are forecast to operate with the same critical movements identified under existing traffic conditions, with the addition of the following critical movements:

Arthur Street South and Listowel Road/Union Street

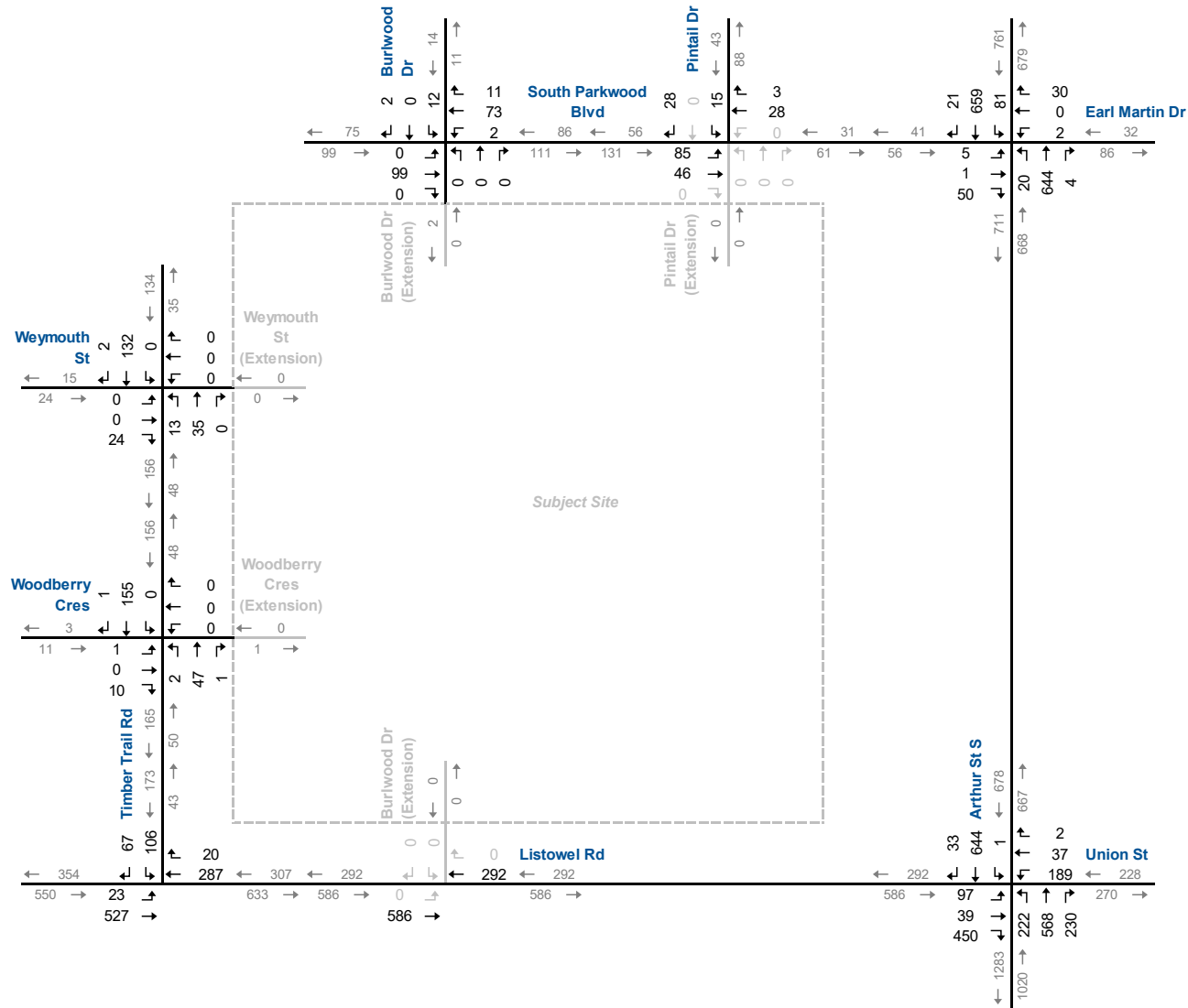
- ▶ The westbound left-turn movement is forecast to operate with delays greater than 55 seconds during the PM peak hour; and
- ▶ The northbound left-turn movement is forecast to operate with delays greater than 55 seconds and 95th percentile queues exceeding the available storage of 100 metres during the PM peak hour.

Arthur Street South and South Parkwood Boulevard/Earl Martin Drive

- ▶ The eastbound left-turn movement is forecast to operate with delays greater than 55 seconds during the AM and PM peak hours; and
- ▶ The westbound left-turn movement is forecast to operate with delays greater than 55 seconds during the PM peak hour.

Appendix F contains the supporting detailed Synchro 12 reports.





NTS



Background Traffic Volumes AM Peak Hour



Figure 4.2b

TABLE 4.1A: BACKGROUND TRAFFIC OPERATIONS – AM PEAK HOUR

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	Arthur St S & Listowel Rd/Union St	TCS	LOS Delay V/C Q Stor. Avail.	C 32 0.32 30 60 30	C 27 0.10 14 - -	B 14 0.73 49 65 16	B 18 - - -27	D 44 0.67 13 30 -	C 27 0.10 0 0 30	A 0 0.00 0 30 30	D 41 - - -	C 25 0.74 43 100 57	B 11 0.50 91 - -	A 2 0.24 9 100 91	B 12 - - -	B 15 0.00 1 50 49	C 26 0.73 160 - -	A 0 0.05 0 50 50	C 25 - - -	B 20
	Arthur St S & South Parkwood Blvd/Earl Martin Dr	TWSC	LOS Delay V/C Q Stor. Avail.	F 57 0.07 2 15 13	B 15 0.12 3 - -	> > > > >	C 18 - - -	F 52 0.03 1 25 24	B 14 0.07 2 - -	> > > > >	C 16 - - -	A 9 0.02 1 70 69	A 0 0.00 0 0 55	A 0 0.00 0 55 55	A 0 - - -	A 9 0.09 2 75 73	A 0 0.00 0 - -	> > > > >	A 1 - - -	
	Listowel Rd & Timber Trail Rd	TWSC	LOS Delay V/C Q Stor. Avail.	A 8 0.02 1 35 34	A 0 0.00 0 - -	> > > > >	A 0 - - -	> > > > >	A 0 0.00 0 - -	> > > > >	A 0 - - -	> > > > >	> > > > >	> > > > >	> > > > >	C 20 0.43 16 - -	> > > > >	C 20 - - -		
	South Parkwood Blvd & Pintail Drive	TWSC	LOS Delay V/C Q	< < <	A 7 0.06 2	> > >	A 5 - -	> > >	A 0 0.00 0	> > >	A 0 - -	> > >	> > >	> > >	> > >	A 9 0.05 2	> > >	> > >	A 9 - -	
	Burlwood Dr & South Parkwood Blvd	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0	> > >	A 0 - -	< < <	A 7 0.00 0	> > >	A 0 - -	< < <	A 0 0.00 0	> > >	A 0 - -	< < <	A 10 0.02 1	> > >	A 10 - -	
	Timber Trail Rd & Woodberry Cres	TWSC	LOS Delay V/C Q	< < <	A 9 0.01 0	> > >	A 9 - -	< < <	A 0 0.00 0	> > >	A 0 - -	< < <	A 8 0.00 0	> > >	A 0 - -	< < <	A 0 0.00 0	> > >	A 0 - -	
	Timber Trail Rd & Weymouth St	TWSC	LOS Delay V/C Q	< < <	A 9 0.03 1	> > >	A 9 - -	< < <	A 0 0.00 0	> > >	A 0 - -	< < <	A 8 0.01 0	> > >	A 2 - -	< < <	A 0 0.00 0	> > >	A 0 - -	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



TABLE 4.1B: BACKGROUND TRAFFIC OPERATIONS – PM PEAK HOUR

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	
PM Peak Hour	Arthur St S & Listowel Rd/Union St	TCS	LOS Delay V/C Q Stor. Avail.	D 53 0.49 39 60 21	D 46 0.27 26 - -	B 12 0.69 28 65 37	C 24 59 116 30 -86	E 59 0.88 29 - -	C 29 0.17 0 30 30	A 0 0.00 0 30 30	D 52 85 164 100 -64	F 85 1.02 211 - -	C 22 0.72 8 100 -	A 2 0.14 8 100 92	D 39 27 0.00 2 50 48	C 27 0.87 215 - -	A 4 0.16 8 50 42	D 45 45 45 45 45	D 40 40 40 40 40	
	Arthur St S & South Parkwood Blvd/Earl Martin Dr	TWSC	LOS Delay V/C Q Stor. Avail.	F 81 0.15 4 15 11	C 16 0.09 2 - -	> > > > > >	D 30 66 1 25 24	F 66 0.03 1 - -	C > > 4 - -	> > > > > >	C 18 18 18 18 18	A 9 0.06 2 70 68	A 0 0.00 0 - -	A 0 0.00 0 55 55	A 1 10 2 75 73	A 0 0.06 0 - -	> > > > > >	A 1 1 1 1 1		
	Listowel Rd & Timber Trail Rd	TWSC	LOS Delay V/C Q Stor. Avail.	A 9 0.06 2 35 33	A 0 0.00 0 - -	> > > > > >	A 1 1 1 1 1	> > > > > >	A 0 0 0 - -	> > > > > >	A 0 0 0 - -				C 21 0.31 10 - -	> > > > > >	C 21 21 21 21 21			
	South Parkwood Blvd & Pintail Drive	TWSC	LOS Delay V/C Q	< < < <	A 8 0.04 1	> > > >	A 5 5 5	> > > >	A 0 0 0	> > > >	A 0 0 0				A 9 0.05 2	> > > >	A 9 9 9			
	Burlwood Dr & South Parkwood Blvd	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0 0 0	< < < <	A 0 0 0	> > > >	A 0 0 0	< < < <	A 0 0.00 0	> > > >	A 0 0 0	< < < <	A 10 0.01 0	> > > >	B 10 10 10	
	Timber Trail Rd & Woodberry Cres	TWSC	LOS Delay V/C Q	< < < <	A 9 0.01 0	> > > >	A 9 9 9	< < < <	A 0 0.00 0	> > > >	A 0 0 0	< < < <	A 7 0.01 0	> > > >	A 0 0 0	< < < <	A 0 0.00 0	> > > >	A 0 0 0	
	Timber Trail Rd & Weymouth St	TWSC	LOS Delay V/C Q	< < < <	A 9 0.02 1	> > > >	A 9 9 9	< < < <	A 0 0.00 0	> > > >	A 0 0 0	< < < <	A 7 0.01 0	> > > >	A 1 0 0	< < < <	A 0 0.00 0	> > > >	A 0 0 0	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



4.3 Total Traffic

Figure 4.3a and **Figure 4.3b** illustrate the 2030 total traffic volumes, including trips generated by the proposed development.

The 2030 total traffic volumes have been analyzed using the same methodology as under existing and background traffic conditions. Signal timings have not been optimized.

Table 4.2a and **Table 4.2b** summarize the results of the 2030 total traffic operations. The results indicate that the study area intersections are forecast to operate with the same critical movements identified under background traffic conditions, with the addition of the following critical movements:

Arthur Street South and Listowel Road/Union Street

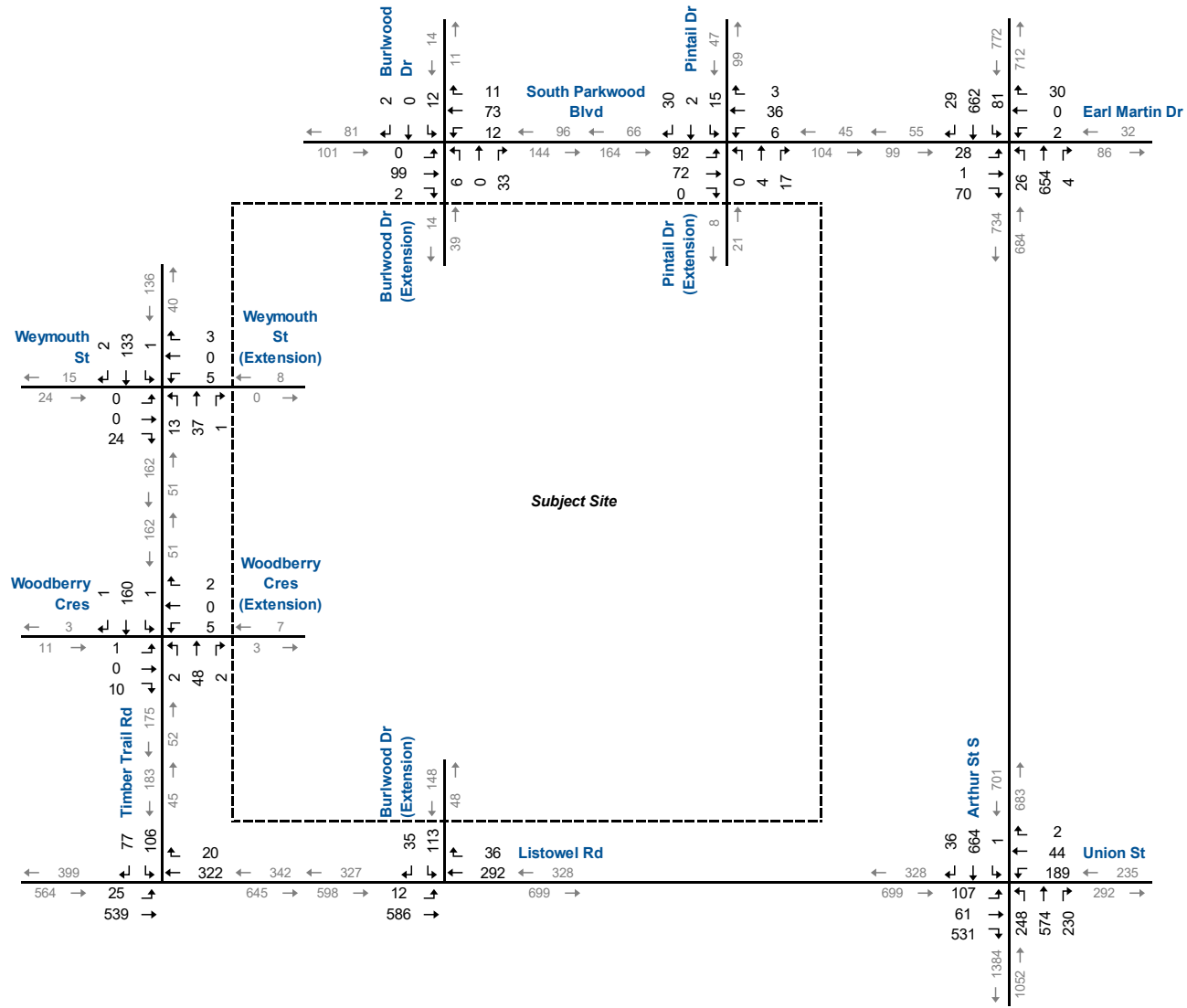
- ▶ The eastbound right-turn movement is forecast to operate with 95th percentile queues exceeding the available storage of 65 metres during the AM peak hour; and
- ▶ The southbound through movement is forecast to operate with delays of 55 seconds during the PM peak hour.

Arthur Street South and South Parkwood Boulevard/Earl Martin Drive

- ▶ The westbound left-turn movement is forecast to operate with delays greater than 55 seconds during the AM peak hour.

Appendix G contains the supporting detailed Synchro 12 reports.

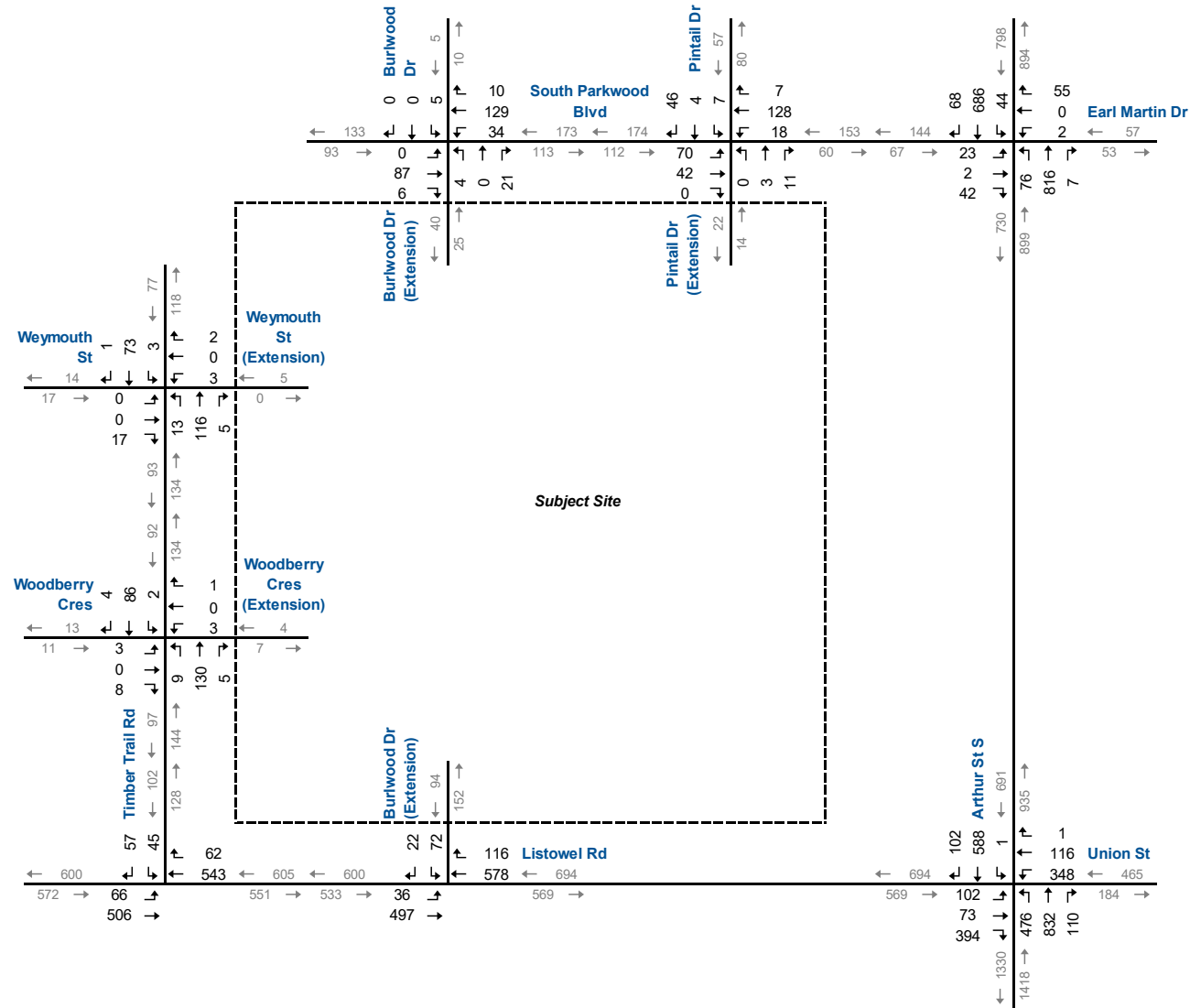




NTS



Total Traffic Volumes AM Peak Hour



NTS



Total Traffic Volumes PM Peak Hour

Southwood Subdivision, Elmira TIS
240588

Figure 4.3b

TABLE 4.2A: TOTAL TRAFFIC OPERATIONS – AM PEAK HOUR

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	Arthur St S & Listowel Rd/Union St	TCS	LOS Delay V/C Q Stor. Avail.	C 32 0.35 32 60 28	C 28 0.15 19 - -	C 26 0.87 97 65 -32	C 27	D 44 0.67 58 30 -28	C 27 0.12 15 0 30	A 0 0.00 0 30	D 41	D 42 0.86 73 100 27	B 12 0.51 93 - -	A 2 0.24 9 100 91	B 17	B 15 0.00 1 50 49	C 28 0.76 169 - -	A 0 0.05 0 50	C 27	C 24	
	Arthur St S & South Parkwood Blvd/Earl Martin Dr	TWSC	LOS Delay V/C Q Stor. Avail.	F 87 0.40 11 15 4	C 15 0.17 4 - -	> > > > >	E 36	F 57 0.03 1 25 24	B 14 0.07 2 - -	> > > > >	C 17	A 9 0.03 1 70 69	A 0 0.00 0 - 55 55	A 0	A 9 0.09 2 75 73	A 0 0.00 0 - -	> > > > >	A 1			
	Listowel Rd & Timber Trail Rd	TWSC	LOS Delay V/C Q Stor. Avail.	A 8 0.02 1 35 34	A 0 0.00 0 - -	> > > > >	A 0	> > 0.00 0 - -	A 0 > > > >	> > > > >	A 0	> > > > >	> > > > >	> > > > >	> > > > >	C 22 0.47 18 - -	> > > > >	C 22			
	South Parkwood Blvd & Pintail Drive	TWSC	LOS Delay V/C Q	< < < <	A 8 0.06 2	> > > >	A 4	< < < <	A 7 0.00 0	> > > >	A 1	< < < <	A 9 0.02 1	> > > >	A 9	< < < <	A 10 0.06 2	> > > >	A 10		
	Burlwood Dr & South Parkwood Blvd	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0	< < < <	A 7 0.01 0	> > > >	A 1	< < < <	A 9 0.04 1	> > > >	A 9	< < < <	A 10 0.02 1	> > > >	B 10		
	Timber Trail Rd & Woodberry Cres	TWSC	LOS Delay V/C Q	< < < <	A 9 0.01 0	> > > >	A 9	< < < <	A 10 0.01 0	> > > >	A 10	< < < <	A 8 0.00 0	> > > >	A 0	< < < <	A 7 0.00 0	> > > >	A 0		
	Timber Trail Rd & Weymouth St	TWSC	LOS Delay V/C Q	< < < <	A 9 0.03 1	> > > >	A 9	< < < <	A 9 0.01 0	> > > >	A 9	< < < <	A 8 0.01 0	> > > >	A 2	< < < <	A 7 0.00 0	> > > >	A 0		
	Listowel Rd & Burlwood Dr	TWSC	LOS Delay V/C Q	< < < <	A 8 0.01 0	> > > >	A 0	> > 0.00 0	A 0 > >	> > > >	A 0	> > > >	> > > >	> > > >	> > > >	C 23 0.43 16	> > > >	C 23			

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



TABLE 4.2B: TOTAL TRAFFIC OPERATIONS – PM PEAK HOUR

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	
PM Peak Hour	Arthur St S & Listowel Rd/Union St	TCS	LOS Delay V/C Q Stor. Avail.	D 54 0.51 41 60 19	D 47 0.33 30 - -	B 12 0.72 31 65 34	C 24 - - -83	E 58 0.87 113 30 -	C 29 0.21 35 0 30	A 0 0.00 0 30 30	D 51 - - -117	F 160 1.24 217 100 -	C 23 0.75 8 100 92	A 3 0.14 8 100 92	E 68 - - -	C 27 0.01 2 50 48	E 55 0.90 227 - -	A 5 0.18 11 50 39	D 48 - - -	D 53 - - -
	Arthur St S & South Parkwood Blvd/Earl Martin Dr	TWSC	LOS Delay V/C Q Stor. Avail.	F 137 0.48 14 15 1	C 17 0.13 3 - -	> > > > > >	F 58 - - -	F 77 0.04 1 25 24	C 16 0.15 4 - -	> > > > > >	C 18 - - -	A 10 0.09 2 70 68	A 0 0.00 0 55 55	A 0 0.00 0 55 55	A 1 - - -	A 10 0.06 2 75 73	A 0 0.00 0 - -	> > > > > >	A 1 - - -	- - -
	Listowel Rd & Timber Trail Rd	TWSC	LOS Delay V/C Q Stor. Avail.	A 9 0.07 2 35 33	A 0 0.00 0 - -	> > > > > >	A 1 - - -	> > > > > >	A 0 0.00 0 - -	> > > > > >	A 0 - - -	> > > > > >	> > > > > >	> > > > > >	> > > > > >	C 24 0.35 11 - -	> > > > > >	C 24 - - -	- - -	
	South Parkwood Blvd & Pintail Drive	TWSC	LOS Delay V/C Q	< < < <	A 8 0.05 2	> > > >	A 5 - -	< < < <	A 7 0.01 0	> > > >	A 1 - -	< < < <	A 9 0.02 0	> > > >	A 9 - -	< < < <	A 10 0.07 2	> > > >	A 10 - -	- - -
	Burlwood Dr & South Parkwood Blvd	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0	> > > >	A 0 - -	< < < <	A 7 0.02 1	> > > >	A 1 - -	< < < <	A 9 0.03 1	> > > >	A 9 - -	< < < <	B 11 0.01 0	> > > >	B 11 - -	- - -
	Timber Trail Rd & Woodberry Cres	TWSC	LOS Delay V/C Q	< < < <	A 9 0.01 0	> > > >	A 9 - -	< < < <	A 10 0.01 0	> > > >	A 10 - -	< < < <	A 7 0.01 0	> > > >	A 0 - -	< < < <	A 8 0.00 0	> > > >	A 0 - -	- - -
	Timber Trail Rd & Weymouth St	TWSC	LOS Delay V/C Q	< < < <	A 9 0.02 1	> > > >	A 9 - -	< < < <	A 10 0.01 0	> > > >	A 10 - -	< < < <	A 7 0.01 0	> > > >	A 1 - -	< < < <	A 7 0.00 0	> > > >	A 0 - -	- - -
	Listowel Rd & Burlwood Dr	TWSC	LOS Delay V/C Q	< < < <	A 9 0.04 1	> > > >	A 1 - -	> > > >	A 0 0.00 0	> > > >	A 0 - -	> > > >	> > > >	> > > >	> > > >	D 32 0.42 14	> > > >	D 32 - -	- - -	

MOE - Measure of Effectiveness

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Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



5 Remedial Measures

5.1 Site Access

5.1.1 Left-Turn Lanes

The *Ministry of Transportation Design Supplement for the TAC Geometric Design Guide for Canadian Roads*⁷ provides guidance on the assessment and/or need for auxiliary left-turn lanes. Warrants have been assessed for left-turn lanes at the proposed subdivision access points.

Warrant nomographs are used to determine if a left-turn lane is needed based on criteria such as design speed, advancing volume, opposing volume and percent of advancing vehicles performing a left-turn maneuver. A minimum threshold of greater than 100 vehicles per hour (vph) opposing vehicles and 2.5% of advancing vehicles performing a left-turn maneuver are used in assessing the requirement of a left-turn lane.

Based on the above noted thresholds, a southbound left-turn lane is not warranted on Timber Trail Road at Woodberry Crescent.

Warrants were calculated for eastbound left-turns at Listowel Road and Burlwood Drive, westbound left-turns at South Parkwood Boulevard and Burlwood Drive, westbound left-turns at South Parkwood Boulevard and Pintail Drive, southbound left-turns at Timber Trail Road and Weymouth Street, and eastbound left-turns at Listowel Road and Timber Trail Road.

The nomographs for left-turn lanes were assessed for a two-lane undivided highway at an unsignalized intersection with a design speed of 60 km/h (10 km/h over the posted speed limit) on South Parkwood Boulevard and Timber Trail Road, and 100 km/h (20 km/h over the posted speed limit) on Listowel Road.

Based on this criterion, the following left-turn lanes are warranted under 2030 total traffic conditions:

- ▶ **Listowel Road and Burlwood Drive:** An eastbound left-turn lane with 30 metres of storage is warranted.
- ▶ **South Parkwood Boulevard and Burlwood Drive:** A westbound left-turn lane is not warranted.

⁷ Ontario Ministry of Transportation, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads*, (Toronto: Queen's Printer for Ontario, 2020).



- ▶ **South Parkwood Boulevard and Pintail Drive:** A westbound left-turn lane is not warranted.
- ▶ **Timber Trail Road and Weymouth Street:** A southbound left-turn lane is not warranted.
- ▶ **Timber Trail Road and Listowel Road:** An eastbound left-turn lane with 30 metres of storage is warranted. It is noted that the existing 35-metre left-turn lane exceeds the storage warranted.

Appendix H contains the warrant nomographs.

5.1.2 Listowel Road Intersection Spacing

During pre-study consultation, the Region requested that the TIS evaluate whether the proposed Burlwood Drive connection to Listowel Road should be located less than 200 metres from the existing Timber Trail Road connection.

The proposed Burlwood Drive connection to Listowel Road is located approximately 160 metres from the existing Timber Trail Road connection, measured curb-to-curb. As identified above, an eastbound left-turn lane with 30 metres of storage is warranted at the proposed Burlwood Drive connection on Listowel Road under 2030 total traffic conditions.

The existing eastbound left-turn lane at Timber Trail Road consists of 35 metres of storage and approximately 130 metres of taper.

Based on the existing taper provided for the eastbound left-turn lane at Timber Trail Road and the 30 metres of storage warranted at the proposed Burlwood Drive connection, a separation distance of 160 metres would be sufficient.

5.2 Arthur Street South and South Parkwood Boulevard/Earl Martin Drive

As identified in **Section 4**, the eastbound and westbound left-turn movements are forecast to operate with delays exceeding the critical movement threshold starting under background traffic conditions.

The intersection has been assessed using the *Ontario Traffic Manual (OTM) Book 12*⁸ signal warrant guidelines for projected traffic volumes to determine if a change in traffic control is warranted. Based on the

⁸ Ontario Ministry of Transportation, *Ontario Traffic Manual Book 12: Traffic Signals*, (Toronto: Queen's Printer for Ontario, 2012).



warrant analysis, traffic control signals are not warranted under the forecast total traffic conditions.

It is noted that the eastbound and westbound left-turn movements are forecast to operate with delays exceeding the critical movement threshold; however, the movements are forecast to operate with low v/c ratios which indicates the delay is likely due to the high volumes of through traffic on Arthur Street South, limiting the number of available gaps for side street traffic.

The intersection could be monitored to ensure an appropriate form of traffic control is provided in the future. No changes to the existing form of traffic control are recommended at this time.

Appendix I contains the warrant analysis worksheets.

5.3 Arthur Street South and Listowel Road/Union Street

During pre-study consultation, the Region identified that the intersection of Arthur Street South and Listowel Road/Union Street is part of an ongoing Environmental Assessment (EA). It is anticipated that the critical movements identified at the intersection will be addressed as part of the ongoing EA.

5.4 Sensitivity Analysis

During pre-study consultation, the Region requested that the TIS demonstrate that vehicle access cannot occur only using the existing Timber Trail Road connection to Listowel Road.

The total traffic volumes at the Timber Trail Road and Burlwood Drive connections have been consolidated and the intersection of Listowel Road and Timber Trail Road has been analyzed. **Table 5.1** summarizes the results of the operational analysis, which indicates that the southbound approach is forecast to operate with poor levels of service during the AM and PM peak hours.

Appendix J contains the Synchro 12 reports.

Following the methodology outlined in **Section 5.2**, traffic signal control warrants have been reviewed for this scenario. Based on the warrant analysis, traffic control signals are not warranted.

Appendix I contains the signal warrant analysis worksheets.

Given the poor levels of service with a consolidated access to Listowel Road, it would be appropriate to consider the Burlwood Drive connection as a secondary access point to Listowel Road.



TABLE 5.1: LISTOWEL ROAD AND TIMBER TRAIL ROAD SENSITIVITY ANALYSIS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach															
				Eastbound				Westbound				Northbound				Southbound			
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach
AM Peak Hour	Listowel Rd & Timber Trail Rd	TWSC	LOS Delay V/C Q Stor. Avail.	A 8 0.03 1 35 34	A 0 0.00 0 - -		A 1		A 0 0.00 0 - -	> > > > >	A 0					F 60 0.91 69 - -	> > > > >	F 60	
PM Peak Hour	Listowel Rd & Timber Trail Rd	TWSC	LOS Delay V/C Q Stor. Avail.	A 10 0.11 3 35 32	A 0 0.00 0 - -		A 2		A 0 0.00 0 - -	> > > > >	A 0					F 78 0.88 52 - -	> > > > >	F 78	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TWSC - Two-Way Stop Control

</> - Shared with through movement



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

This section outlines the available resources within the surrounding area, as well as TDM measures proposed within the subject subdivision or measures that should be considered on-site.

6.1 Walking

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

The following sidewalks are currently provided along study area roads:

- ▶ The west side of Arthur Street South between Listowel Road and South Parkwood Boulevard and on both sides of the roadway to the north;
- ▶ The north side of Listowel Road for approximately 65 metres west of Arthur Street South;
- ▶ The north side of Union Street between Arthur Street South and Earl Martin Drive; and
- ▶ Both sides of South Parkwood Drive, Timber Trail Road, Pintail Drive, Burlwood Drive, Weymouth Street and Woodberry Crescent.

The Lions Ring Trail travels along the north side of Listowel Road and bisects the subject site.

Sidewalks are proposed on both sides of all subdivision roads, except for Burlwood Drive where a multi-use trail is proposed along the east side of the roadway and sidewalks along the west side. The multi-use trail along Burlwood Drive will replace the existing Lions Ring Trail connection that currently bisects the subject site.



6.1.1 Multi-Use Trail

It is recommended that the multi-use trail proposed along the east side of Burlwood Drive be extended along the Listowel Road frontage to continue the Lions Ring Trail connectivity.

The east side of Burlwood Drive has advantages compared to the west side. The proposed neighbourhood park is located on the east side of Burlwood, which would reduce the demand for pedestrian crossings on Burlwood Drive to get between the park and the multi-use trail. While there are proposed to be street towns on the east side of Burlwood Drive with direct driveways, there is also potential for street towns on the west side. The length of potential driveway locations is greater on the west side of Burlwood Drive with the location of the park being on the east side.

In addition, a multi-use trail could be considered through the stormwater management block at the southeast corner of the site, similar to what is provided surrounding the stormwater management facility in the northwest corner of Timber Trail Road and Listowel Road.

Figure 5.1 illustrates the active transportation plan including existing and future pedestrian facilities.

6.2 Cycling

Paved shoulders are provided on both sides of Arthur Street South and Listowel Road. Arthur Street South is designated as a bike route.

It is expected that low-density uses can accommodate bicycle parking within each unit. As specified in the *Township's Zoning By-law*⁹, multi-residential uses with five units or greater should provide two spaces for the first 20 units plus 0.20 spaces per unit beyond 20 units.

Figure 6.1 illustrates the active transportation plan including existing and future cycling facilities.

6.3 Transit

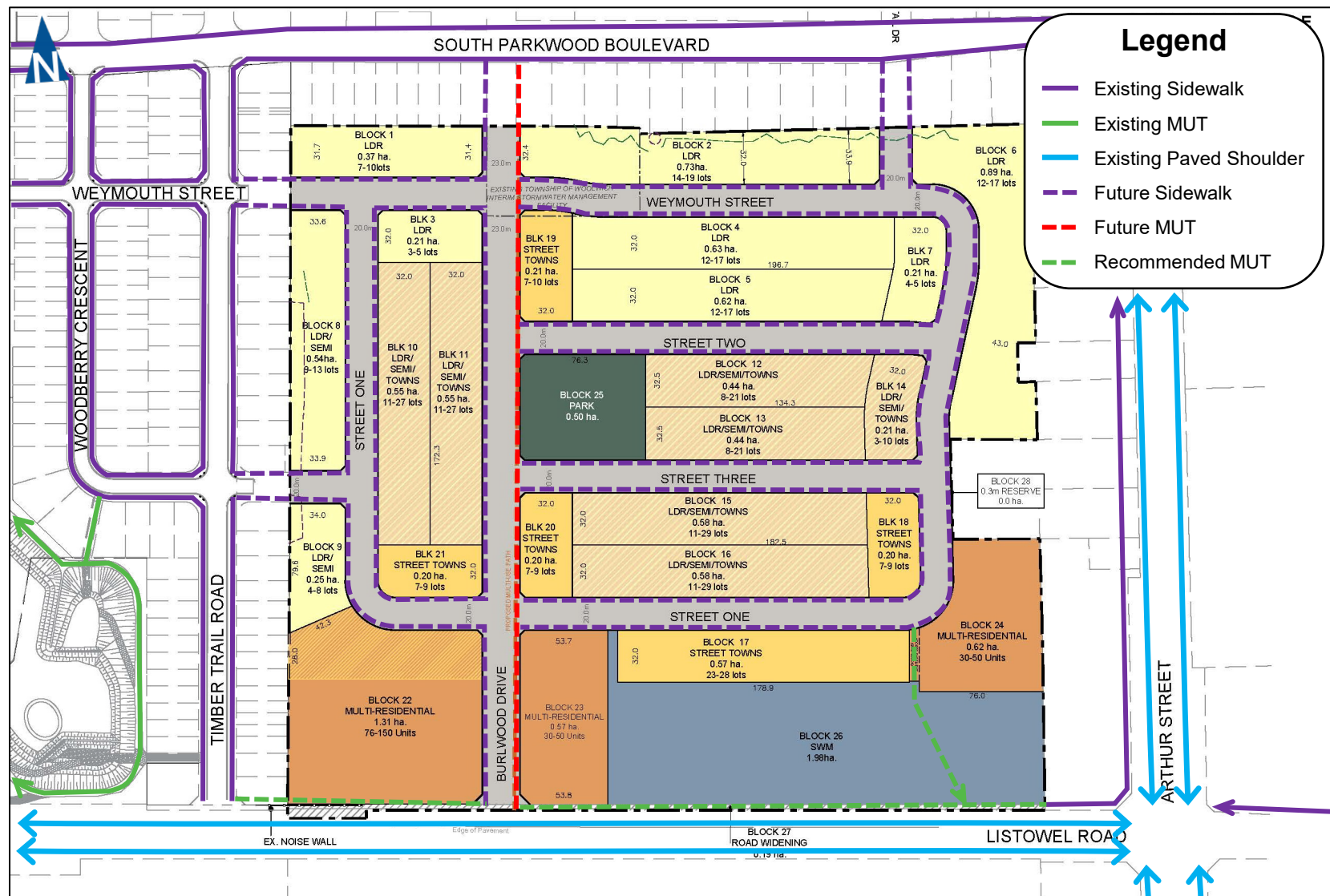
As discussed in **Section 2.3**, GRT currently operates one bus route through Elmira. Route 21 operates along Arthur Street South and travels between Elmira, St. Jacobs and Conestoga Station in Waterloo. The connection to Conestoga Station provides access to the ION Light Rail Transit (LRT) service that operates through Kitchener and Waterloo and multiple other bus routes.

⁹ Township of Woolwich Zoning By-law 26-2024, § section 5.



The closest stop is located on Arthur Street South north of Listowel Road (approximately 250 metres from the subject site).





7 Conclusions and Recommendations

7.1 Conclusions

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

- ▶ **Existing Traffic Conditions:** The study area intersections are operating with acceptable levels of service, except for the westbound left-turn movement at the intersection of Arthur Street South and Listowel Road/Union Street which is operating with 95th percentile queues exceeding the available storage of 70 metres during the AM and PM peak hours.
- ▶ **Development Trip Generation:** The development is forecast to generate 295 and 371 trips during the AM and PM peak hours, respectively.
- ▶ **Background Traffic Conditions:** The study area intersections are forecast to operate with the same critical movements identified under existing traffic conditions, with the addition of the following critical movements:
 - Arthur Street South and Listowel Road/Union Street:
 The westbound left-turn movement is forecast to operate with delays greater than 55 seconds during the PM peak hour; and

 The northbound left-turn movement is forecast to operate with delays greater than 55 seconds and 95th percentile queues exceeding the available storage of 100 metres during the PM peak hour.
 - Arthur Street South and South Parkwood Boulevard/Earl Martin Drive:
 The eastbound left-turn movement is forecast to operate with delays greater than 55 seconds during the AM and PM peak hours; and

 The westbound left-turn movement is forecast to operate with delays greater than 55 seconds during the PM peak hour.
- ▶ **Total Traffic Conditions:** The study area intersections are forecast to operate with the same critical movements identified under background traffic conditions, with the addition of the following critical movements:
 - Arthur Street South and Listowel Road/Union Street: The eastbound right-turn movement is forecast to operate with



95th percentile queues exceeding the available storage of 65 metres during the AM peak hour; and

The southbound through movement is forecast to operate with delays of 55 seconds during the PM peak hour.

- Arthur Street South and South Parkwood Boulevard/Earl Martin Drive: The westbound left-turn movement is forecast to operate with delays greater than 55 seconds during the AM peak hour.

- ▶ **Site Access:** An eastbound left-turn lane with 30 metres of storage is warranted on Listowel Road at Burlwood Drive under 2030 total traffic conditions.

The separation distance on Listowel Road between the existing Timber Trail Road and proposed Burlwood Drive connections can accommodate the warranted eastbound left-turn lane storage and taper length.

- ▶ **Arthur Street South and South Parkwood Boulevard/Earl Martin Drive:** Traffic control signals are not warranted under the forecast total traffic conditions.

It is noted that the eastbound and westbound left-turn movements are forecast to operate with delays exceeding the critical movement threshold; however, the movements are forecast to operate with low v/c ratios which indicates the delay is likely due to the high volumes of through traffic on Arthur Street South, limiting the number of available gaps for side street traffic.

The intersection could be monitored to ensure an appropriate form of traffic control is provided in the future.

- ▶ **Arthur Street South and Listowel Road/Union Street:** During pre-study consultation, the Region identified that the intersection of Arthur Street South and Listowel Road/Union Street is part of an ongoing Environmental Assessment (EA). It is anticipated that the critical movements identified at the intersection will be addressed as part of the ongoing EA.
- ▶ **Sensitivity Analysis:** The removal of the proposed Burlwood Drive connection to Listowel Road is forecast to result in poor levels of service for the Timber Trail Road intersection on Listowel Road, and traffic control signals are not forecast to be warranted. Therefore, it would be appropriate to consider the Burlwood Drive connection as a secondary access point to Listowel Road.



► **Active Transportation and Transportation Demand**

Management: The following measures are either provided nearby or proposed on-site:

- Sidewalks are provided on at least one side of all surrounding roadways, except for Arthur Street South south of Listowel Road and Listowel Road along the subject site frontage and to the west;
- Sidewalks are proposed on both sides of all internal roadways, except for Burlwood Drive where a multi-use trail is proposed along the east side of the roadway;
- The Lions Ring Trail currently travels along the north side of Listowel Road and bisects the subject site;
- Paved shoulders are provided on both sides of Arthur Street South and Listowel Road;
- A bus route between Elmira, St. Jacobs and Conestoga Station in Waterloo which provides connections to the ION Light Rail Transit (LRT) service and additional bus routes.

In addition to the above, the following measures could be considered:

- The multi-use trail proposed along the east side of Burlwood Drive be extended along the Listowel Road frontage to continue the Lions Ring Trail connectivity;
- A multi-use trail be considered through the stormwater management block at the southeast corner of the site, similar to what is provided surrounding the stormwater management facility in the northwest corner of Timber Trail Road and Listowel Road; and
- Multi-residential blocks provide bicycle parking to meet zoning requirements.

7.2 Recommendations

Based on the findings of this study, it is recommended that:

- An eastbound left-turn lane with 30 metres of storage be provided on Listowel Road at Burlwood Drive; and
- The above TDM measures be considered on-site.



Appendix A

Pre-Study Consultation



Maddison Murch

From: Tanikia Kinear <TKinear@regionofwaterloo.ca>
Sent: November 26, 2024 8:49 AM
To: Maddison Murch
Cc: Matt Brouwer; Bryan Bishop
Subject: RE: (240588) Southwood Subdivision, Elmira TIS Pre-Study Consultation

Good morning Maddison,

Let's use 1.5%/year AGR.

Thanks,
Tanikia

From: Maddison Murch <mmurch@ptsl.com>
Sent: November 25, 2024 2:18 PM
To: Tanikia Kinear <TKinear@regionofwaterloo.ca>
Cc: Matt Brouwer <mbrouwer@ptsl.com>; Bryan Bishop <BBishop@woolwich.ca>
Subject: RE: (240588) Southwood Subdivision, Elmira TIS Pre-Study Consultation

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Hi Tanikia,

Thank you for the response.

Regarding the growth rate, we applied a 3.5% growth rate/year over five years to the existing traffic volumes collected recently and subtracted the site/background development traffic. The resulting traffic volumes on Listowel Road showed a maximum growth of 1.5%, which is the same rate you provided us for the TIS at 401 Arthur St S.

Let me know if a 1.5% growth rate per year is acceptable or if you would still like to have a chat.

Regards,

Maddison Murch, P.Eng.
Transportation Engineer



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

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

From: Tanikia Kinear <TKinear@regionofwaterloo.ca>
Sent: November 21, 2024 9:32 AM
To: Maddison Murch <mmurch@ptsl.com>; Bryan Bishop <BBishop@woolwich.ca>
Cc: Matt Brouwer <mbrouwer@ptsl.com>
Subject: RE: (240588) Southwood Subdivision, Elmira TIS Pre-Study Consultation

Good morning,

Please see below comments from the Region:

1. Staff recently estimated the background growth rate on Listowel Road at 3.5%/year, but this was a total rate (i.e. it would include some of the background developments listed). It's not clear what the rate would be with the background developments added, so we don't double-count the traffic. Paradigm to proposed an approach (perhaps we should meet to chat).
2. There are no planned road improvements within five years, but note that Arthur Street & Listowel Road intersection is part of an ongoing Environmental Assessment. The Region currently plans to add two roundabouts on Listowel Road in 2030, at Three Bridges Road and Floradale Road, but these are just outside the proposed study area.
 - a. Also note the Region will expect the consultant to evaluate whether the proposed Burlwood Drive intersection with Listowel Road should be located less than 200m from the existing intersection of Timber Trail Road, as Listowel Road is a high speed Regional road. The TIS should demonstrate that vehicular access cannot occur using only Timber Trail Road.
3. The Pedestrian Assessment and Cycling Assessment should identify opportunities to improve connectivity to the proposed subdivision from Listowel Road and Arthur Street. If, for example, the proposed Burlwood Drive were found not to be needed for vehicular access, the Region may nevertheless consider it for walking and biking access.

Thanks,

Tanikia Kinear, C.E.T.

Transportation Planner (Corridor Development)
Region of Waterloo
150 Frederick Street, 8th Floor, Kitchener ON N2G 4J3
519-897-5691
www.regionofwaterloo.ca

From: Maddison Murch <mmurch@ptsl.com>
Sent: October 30, 2024 1:48 PM
To: Tanikia Kinear <TKinear@regionofwaterloo.ca>; Bryan Bishop <BBishop@woolwich.ca>
Cc: Matt Brouwer <mbrouwer@ptsl.com>
Subject: (240588) Southwood Subdivision, Elmira TIS Pre-Study Consultation

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Hi Tanikia and Bryan,

We have been retained to prepare a TIS for the proposed residential subdivision at 1065 Listowel Road in Elmira. The proposed subdivision includes 216 single family units, 39 street townhouse units, 104 stacked townhouse units. Access is proposed via the southerly extension of Burlwood Drive with connections to South Parkwood Boulevard and Listowel Drive, and easterly extension of Woodberry Crescent. A preliminary concept is attached.

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

- Analysis Periods: AM and PM peak hours.
- Study Area Intersections:
 - o Arthur Street South and Listowel Road/Union Street (signalized)
 - o Arthur Street South and South Parkwood Boulevard (unsignalized)
 - o Timber Trail Road and Woodberry Crescent/future extension (unsignalized)
 - o South Parkwood Boulevard and Burlwood Drive/future extension (unsignalized)
 - o Listowel Road and Future Burlwood Drive.
- Horizon Years: existing conditions and five-years from TIS (2029) as per Regional TIS guidelines.
- Background Growth: 2% per annum, **please confirm**.
- Background Developments: **please confirm the following**
 - o Remaining Southwood 4
 - o 401 Arthur St S
 - o 1665 Scotch Line
- Planned Road Improvements: **please confirm any within the five-year horizon**.
- Trip Generation: ITE Trip Generation Manual 11th Edition.
- Trip Distribution: Existing travel patterns.
- Sight distance assessment at new Listowel Road connection.
- The study will follow Woolwich EDIM TIS guidelines and Regional TIS guidelines.

I have attached the completed Regional PSC form to summarize the above scope of work.

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

Regards,

Maddison Murch, P.Eng.

Transportation Engineer



5A-150 Pinebush Road, Cambridge ON N1R 8J8
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Paradigm is operating on a 4-day workweek. Our offices are closed Fridays.

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Southwood Subdivision, Elmira (1065 Listowel Rd)

PRE-STUDY CONFERENCE FORM

Item	Description	Details
ISSUES		
1	List any issues expected that may impact the content or recommendations of the subject Transportation Impact Study.	
INTRODUCTION		
2	Nature of application (Attach a drawing)	○ Draft Plan of Subdivision
3	TIS process, and relevant policies, procedures and approvals	○ Guidelines for the preparation of Transportation Impact Studies in Support of Development Applications ○ Transportation Impact Studies Requirements for Capacity Analysis, Roundabouts, Turn Lanes ○ Policy and Procedures for Access onto Regional Roads ○ Woolwich EDIM TIS Guidelines
4	Public Meeting	
CONTEXT		
5	Study intersections (Intersections to be analyzed) Note: the consultant is responsible to identify any further intersections impacted as the study progresses.	○ Arthur St S & Union St/Listowel Rd
		○ Arthur St S & South Parkwood Blvd
		○ Timber Trail Rd & Woodberry Cres/future extension
		○ South Parkwood Blvd & Burlwood Dr/future extension
		○ Listowel Rd & Future Burlwood Dr
6	Size and number of phases of development	○ 216 single-family units
		○ 39 street townhouse units
		○ 104 stacked townhouse units
7	Approved and pending approval development applications	○ Remaining Southwood 4 ○ 401 Arthur St S ○ 1665 Scotch Line
8	Planned transportation system improvements	○ Please confirm any improvements within the 5-year horizon.
TRAVEL DEMAND		
9	Horizon years	○ 5 years from date of TIS

Item	Description	Details
10	Peak hour determination	○ AM weekday peak hour of adjacent roadway ○ PM weekday peak hour of adjacent roadway
11	Background	○ 2% growth rate, please confirm. ○ Developments included in Item 7.
12	Trip generation	○ ITE average rates ○ ITE fitted equation
13	Trip reductions (TDM, internal, pass-by)	○ N/A
14	Trip distribution	○ ITE trip distribution IN/OUT split
15	Trip assignment	○ Local traffic pattern ○ Site layout and access design ○ Existing turning movements
EVALUATION OF IMPACTS		
16	Traffic impact analysis (Use approved software)	○ Unsignalized intersections ○ left turn warrant analysis ○ signal warrant analysis ○ Signalized intersections ○ LOS, v/c, delay, queuing ○ ROW saturation flow rates ○ Existing signal timings for existing conditions ○ Optimize signal timings for future conditions ○ Use existing cycle length to respect coordinated corridor

Item	Description	Details
17	Roundabout feasibility (Use approved software)	○ N/A
18	Transit assessment	○ Frequency and hours of service ○ Presence of bus stops
19	Pedestrian assessment	○ Presence, connectivity, and width of sidewalks
20	Cycling assessment	○ Presence of a dedicated facility ○ Network connectivity
21	Safety analysis	○ N/A
22	Site access and circulation	○ Review sight distance at new access point to Listowel Rd.
23	Submission format	○ Electronic copy of complete report and all appendices

Appendix B

Existing Traffic Data





Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street & Listowel Road
Site Code: 240588
Start Date: 11/06/2024
Page No: 1

Turning Movement Data

Start Time	Listowel Road Eastbound						Union Street Westbound						Arthur Street Northbound						Arthur Street 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	19	12	86	0	0	117	15	11	1	0	0	27	37	98	26	0	0	161	0	121	7	0	0	128	433
7:15 AM	16	5	89	0	0	110	14	9	0	0	0	23	55	100	21	0	0	176	0	143	16	0	0	159	468
7:30 AM	15	3	108	0	0	126	24	11	0	0	0	35	47	119	31	0	0	197	0	149	7	0	0	156	514
7:45 AM	31	8	84	0	0	123	52	9	0	0	0	61	42	154	46	0	0	242	1	133	8	0	0	142	568
Hourly Total	81	28	367	0	0	476	105	40	1	0	0	146	181	471	124	0	0	776	1	546	38	0	0	585	1983
8:00 AM	18	9	103	0	0	130	27	3	1	0	0	31	51	95	24	0	0	170	0	148	11	0	0	159	490
8:15 AM	25	8	79	0	0	112	29	4	1	0	0	34	56	107	29	0	0	192	0	136	4	0	2	140	478
8:30 AM	15	13	76	0	0	104	20	7	1	0	0	28	52	112	16	0	0	180	0	132	15	0	0	147	459
8:45 AM	34	9	69	0	0	112	8	10	0	0	0	18	46	99	18	0	0	163	0	133	9	0	0	142	435
Hourly Total	92	39	327	0	0	458	84	24	3	0	0	111	205	413	87	0	0	705	0	549	39	0	2	588	1862
9:00 AM	15	10	48	0	0	73	14	4	3	0	0	21	59	97	18	0	0	174	0	130	10	0	1	140	408
9:15 AM	17	8	66	0	0	91	20	6	1	0	0	27	50	103	12	0	0	165	2	106	11	0	0	119	402
9:30 AM	22	4	61	0	0	87	10	3	1	0	0	14	51	90	18	0	0	159	2	133	17	0	0	152	412
9:45 AM	11	7	63	0	0	81	13	4	2	0	0	19	43	93	19	0	0	155	2	117	10	0	0	129	384
Hourly Total	65	29	238	0	0	332	57	17	7	0	0	81	203	383	67	0	0	653	6	486	48	0	1	540	1606
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	27	7	59	0	0	93	13	6	1	0	0	20	40	118	10	0	0	168	1	109	18	0	0	128	409
11:45 AM	11	14	55	0	0	80	17	5	4	0	0	26	59	109	13	0	0	181	0	120	16	0	0	136	423
Hourly Total	38	21	114	0	0	173	30	11	5	0	0	46	99	227	23	0	0	349	1	229	34	0	0	264	832
12:00 PM	30	10	55	0	0	95	16	11	2	0	0	29	50	111	12	0	0	173	1	100	27	0	0	128	425
12:15 PM	21	6	33	0	0	60	20	9	1	0	0	30	42	112	13	0	0	167	3	104	20	0	0	127	384
12:30 PM	7	4	58	0	0	69	11	9	1	1	0	22	47	118	11	0	0	176	0	100	25	0	0	125	392
12:45 PM	14	6	56	0	0	76	15	12	1	1	0	29	47	125	23	0	0	195	1	107	18	0	0	126	426
Hourly Total	72	26	202	0	0	300	62	41	5	2	0	110	186	466	59	0	0	711	5	411	90	0	0	506	1627
1:00 PM	22	10	51	0	0	83	17	8	4	0	0	29	58	106	19	0	0	183	0	115	22	0	0	137	432
1:15 PM	17	5	50	0	0	72	19	8	2	0	0	29	55	102	9	0	0	166	0	105	16	0	0	121	388
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	39	15	101	0	0	155	36	16	6	0	0	58	113	208	28	0	0	349	0	220	38	0	0	258	820
3:00 PM	10	11	56	0	0	77	31	22	0	0	0	53	62	148	12	0	0	222	2	122	11	0	1	135	487
3:15 PM	11	6	44	0	0	61	26	12	1	0	0	39	61	156	8	0	0	225	0	109	19	0	1	128	453
3:30 PM	18	6	66	0	0	90	47	19	0	0	0	66	78	140	13	0	0	231	1	115	17	0	0	133	520
3:45 PM	22	7	77	0	0	106	50	21	3	0	0	74	67	174	8	0	0	249	1	114	13	0	1	128	557
Hourly Total	61	30	243	0	0	334	154	74	4	0	0	232	268	618	41	0	0	927	4	460	60	0	3	524	2017
4:00 PM	14	15	53	0	0	82	73	22	0	0	0	95	57	165	10	0	0	232	2	129	17	0	0	148	557
4:15 PM	27	11	63	0	0	101	48	18	0	0	0	66	85	176	14	0	0	275	0	123	32	0	0	155	597

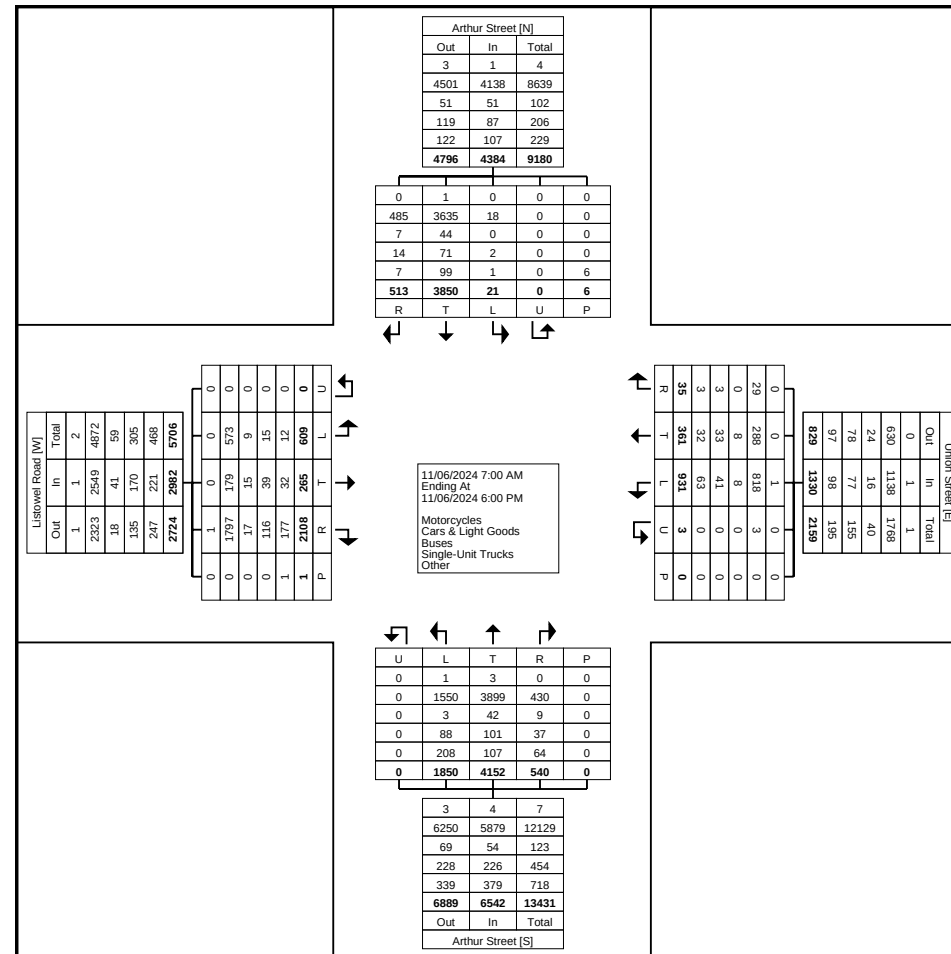
4:30 PM	29	10	88	0	1	127	80	24	1	0	0	105	69	153	13	0	0	235	0	121	20	0	0	141	608
4:45 PM	15	14	70	0	0	99	55	13	0	1	0	69	97	191	21	0	0	309	0	123	17	0	0	140	617
Hourly Total	85	50	274	0	1	409	256	77	1	1	0	335	308	685	58	0	0	1051	2	496	86	0	0	584	2379
5:00 PM	17	8	76	0	0	101	55	20	0	0	0	75	76	201	22	0	0	299	1	113	15	0	0	129	604
5:15 PM	31	3	59	0	0	93	31	15	0	0	0	46	72	155	11	0	0	238	0	124	12	0	0	136	513
5:30 PM	19	9	56	0	0	84	42	16	1	0	0	59	81	167	14	0	0	262	1	110	26	0	0	137	542
5:45 PM	9	7	51	0	0	67	19	10	2	0	0	31	58	158	6	0	0	222	0	106	27	0	0	133	453
Hourly Total	76	27	242	0	0	345	147	61	3	0	0	211	287	681	53	0	0	1021	2	453	80	0	0	535	2112
Grand Total	609	265	2108	0	1	2982	931	361	35	3	0	1330	1850	4152	540	0	0	6542	21	3850	513	0	6	4384	15238
Approach %	20.4	8.9	70.7	0.0	-	-	70.0	27.1	2.6	0.2	-	-	28.3	63.5	8.3	0.0	-	-	0.5	87.8	11.7	0.0	-	-	-
Total %	4.0	1.7	13.8	0.0	-	19.6	6.1	2.4	0.2	0.0	-	8.7	12.1	27.2	3.5	0.0	-	42.9	0.1	25.3	3.4	0.0	-	28.8	-
Motorcycles	0	0	1	0	-	1	1	0	0	0	-	1	1	3	0	0	-	4	0	1	0	0	-	1	7
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.1	0.0	0.0	0.0	-	0.1	0.1	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	573	179	1797	0	-	2549	818	288	29	3	-	1138	1550	3899	430	0	-	5879	18	3635	485	0	-	4138	13704
% Cars & Light Goods	94.1	67.5	85.2	-	-	85.5	87.9	79.8	82.9	100.0	-	85.6	83.8	93.9	79.6	-	-	89.9	85.7	94.4	94.5	-	-	94.4	89.9
Buses	9	15	17	0	-	41	8	8	0	0	-	16	3	42	9	0	-	54	0	44	7	0	-	51	162
% Buses	1.5	5.7	0.8	-	-	1.4	0.9	2.2	0.0	0.0	-	1.2	0.2	1.0	1.7	-	-	0.8	0.0	1.1	1.4	-	-	1.2	1.1
Single-Unit Trucks	15	39	116	0	-	170	41	33	3	0	-	77	88	101	37	0	-	226	2	71	14	0	-	87	560
% Single-Unit Trucks	2.5	14.7	5.5	-	-	5.7	4.4	9.1	8.6	0.0	-	5.8	4.8	2.4	6.9	-	-	3.5	9.5	1.8	2.7	-	-	2.0	3.7
Articulated Trucks	11	31	176	0	-	218	62	32	3	0	-	97	207	104	64	0	-	375	1	92	6	0	-	99	789
% Articulated Trucks	1.8	11.7	8.3	-	-	7.3	6.7	8.9	8.6	0.0	-	7.3	11.2	2.5	11.9	-	-	5.7	4.8	2.4	1.2	-	-	2.3	5.2
Bicycles on Road	1	1	0	0	-	2	1	0	0	0	-	1	0	1	0	0	-	1	0	4	0	0	-	4	



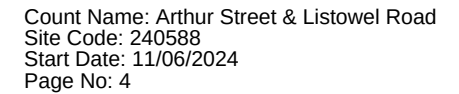
Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street & Listowel Road
Site Code: 240588
Start Date: 11/06/2024
Page No: 3

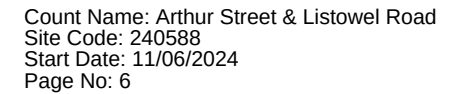


Turning Movement Data Plot



Start Time	Listowel Road Eastbound						Union Street Westbound						Arthur Street Northbound						Arthur Street 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	15	3	108	0	0	126	24	11	0	0	0	35	47	119	31	0	0	197	0	149	7	0	0	156	514
7:45 AM	31	8	84	0	0	123	52	9	0	0	0	61	42	154	46	0	0	242	1	133	8	0	0	142	568
8:00 AM	18	9	103	0	0	130	27	3	1	0	0	31	51	95	24	0	0	170	0	148	11	0	0	159	490
8:15 AM	25	8	79	0	0	112	29	4	1	0	0	34	56	107	29	0	0	192	0	136	4	0	2	140	478
Total	89	28	374	0	0	491	132	27	2	0	0	161	196	475	130	0	0	801	1	566	30	0	2	597	2050
Approach %	18.1	5.7	76.2	0.0	-	-	82.0	16.8	1.2	0.0	-	-	24.5	59.3	16.2	0.0	-	-	0.2	94.8	5.0	0.0	-	-	-
Total %	4.3	1.4	18.2	0.0	-	24.0	6.4	1.3	0.1	0.0	-	7.9	9.6	23.2	6.3	0.0	-	39.1	0.0	27.6	1.5	0.0	-	29.1	-
PHF	0.718	0.778	0.866	0.000	-	0.944	0.635	0.614	0.500	0.000	-	0.660	0.875	0.771	0.707	0.000	-	0.827	0.250	0.950	0.682	0.000	-	0.939	0.902
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	81	23	336	0	-	440	111	18	2	0	-	131	143	427	119	0	-	689	1	530	25	0	-	556	1816
% Cars & Light Goods	91.0	82.1	89.8	-	-	89.6	84.1	66.7	100.0	-	-	81.4	73.0	89.9	91.5	-	-	86.0	100.0	93.6	83.3	-	-	93.1	88.6
Buses	4	0	3	0	-	7	1	0	0	0	-	1	1	11	0	0	-	12	0	11	3	0	-	14	34
% Buses	4.5	0.0	0.8	-	-	1.4	0.8	0.0	0.0	-	-	0.6	0.5	2.3	0.0	-	-	1.5	0.0	1.9	10.0	-	-	2.3	1.7
Single-Unit Trucks	2	2	16	0	-	20	11	5	0	0	-	16	19	16	4	0	-	39	0	6	1	0	-	7	82
% Single-Unit Trucks	2.2	7.1	4.3	-	-	4.1	8.3	18.5	0.0	-	-	9.9	9.7	3.4	3.1	-	-	4.9	0.0	1.1	3.3	-	-	1.2	4.0
Articulated Trucks	2	3	19	0	-	24	9	4	0	0	-	13	32	21	7	0	-	60	0	17	1	0	-	18	115
% Articulated Trucks	2.2	10.7	5.1	-	-	4.9	6.8	14.8	0.0	-	-	8.1	16.3	4.4	5.4	-	-	7.5	0.0	3.0	3.3	-	-	3.0	5.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0
Horse and Buggy	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	1	0	0	-	1	2
% Horse and Buggy	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.5	0.0	0.0	-	-	0.1	0.0	0.2	0.0	-	-	0.2	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-

Turning Movement Peak Hour Data Plot (7:30 AM)



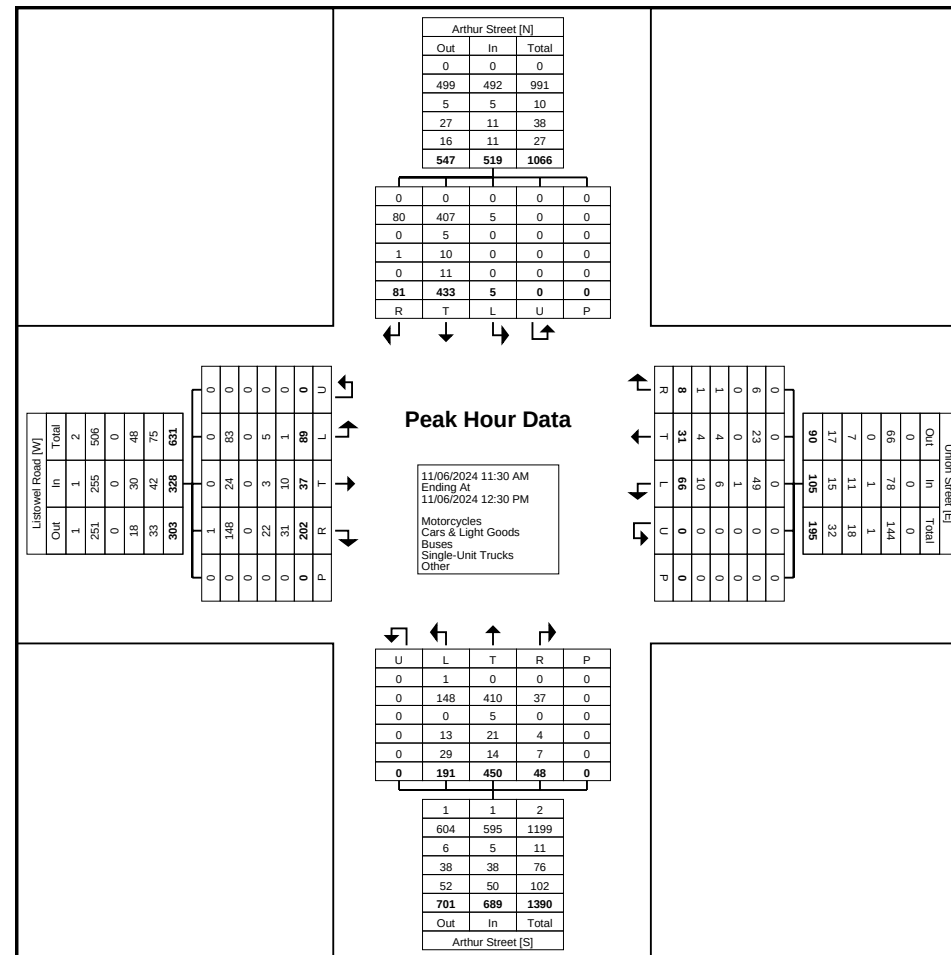
Start Time	Listowel Road Eastbound						Union Street Westbound						Arthur Street Northbound						Arthur Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:30 AM	27	7	59	0	0	93	13	6	1	0	0	20	40	118	10	0	0	168	1	109	18	0	0	128	409
11:45 AM	11	14	55	0	0	80	17	5	4	0	0	26	59	109	13	0	0	181	0	120	16	0	0	136	423
12:00 PM	30	10	55	0	0	95	16	11	2	0	0	29	50	111	12	0	0	173	1	100	27	0	0	128	425
12:15 PM	21	6	33	0	0	60	20	9	1	0	0	30	42	112	13	0	0	167	3	104	20	0	0	127	384
Total	89	37	202	0	0	328	66	31	8	0	0	105	191	450	48	0	0	689	5	433	81	0	0	519	1641
Approach %	27.1	11.3	61.6	0.0	-	-	62.9	29.5	7.6	0.0	-	-	27.7	65.3	7.0	0.0	-	-	1.0	83.4	15.6	0.0	-	-	-
Total %	5.4	2.3	12.3	0.0	-	20.0	4.0	1.9	0.5	0.0	-	6.4	11.6	27.4	2.9	0.0	-	42.0	0.3	26.4	4.9	0.0	-	31.6	-
PHF	0.742	0.661	0.856	0.000	-	0.863	0.825	0.705	0.500	0.000	-	0.875	0.809	0.953	0.923	0.000	-	0.952	0.417	0.902	0.750	0.000	-	0.954	0.965
Motorcycles	0	0	1	0	-	1	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	2
% Motorcycles	0.0	0.0	0.5	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.5	0.0	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.1
Cars & Light Goods	83	24	148	0	-	255	49	23	6	0	-	78	148	410	37	0	-	595	5	407	80	0	-	492	1420
% Cars & Light Goods	93.3	64.9	73.3	-	-	77.7	74.2	74.2	75.0	-	-	74.3	77.5	91.1	77.1	-	-	86.4	100.0	94.0	98.8	-	-	94.8	86.5
Buses	0	0	0	0	-	0	1	0	0	0	-	1	0	5	0	0	-	5	0	5	0	0	-	5	11
% Buses	0.0	0.0	0.0	-	-	0.0	1.5	0.0	0.0	-	-	1.0	0.0	1.1	0.0	-	-	0.7	0.0	1.2	0.0	-	-	1.0	0.7
Single-Unit Trucks	5	3	22	0	-	30	6	4	1	0	-	11	13	21	4	0	-	38	0	10	1	0	-	11	90
% Single-Unit Trucks	5.6	8.1	10.9	-	-	9.1	9.1	12.9	12.5	-	-	10.5	6.8	4.7	8.3	-	-	5.5	0.0	2.3	1.2	-	-	2.1	5.5
Articulated Trucks	1	10	31	0	-	42	10	4	1	0	-	15	29	14	7	0	-	50	0	11	0	0	-	11	118
% Articulated Trucks	1.1	27.0	15.3	-	-	12.8	15.2	12.9	12.5	-	-	14.3	15.2	3.1	14.6	-	-	7.3	0.0	2.5	0.0	-	-	2.1	7.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Horse and Buggy	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Horse and Buggy	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



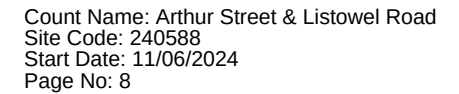
Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street & Listowel Road
Site Code: 240588
Start Date: 11/06/2024
Page No: 7



Turning Movement Peak Hour Data Plot (11:30 AM)



Turning Movement Peak Hour Data Plot (4:15 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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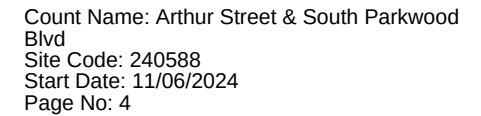
Count Name: Arthur Street & South Parkwood
Blvd
Site Code: 240588
Start Date: 11/06/2024
Page No: 1

Turning Movement Data

Start Time	South Parkwood Blvd Eastbound						Earl Martin Drive Westbound						Arthur Street Northbound						Arthur Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	1	1	7	0	0	9	0	0	5	0	1	5	2	112	1	0	0	115	4	141	1	0	0	146	275
7:15 AM	1	0	9	0	1	10	0	0	5	0	0	5	3	111	0	0	0	114	9	132	3	0	0	144	273
7:30 AM	1	0	6	0	0	7	1	0	4	0	0	5	1	133	2	0	0	136	13	165	1	0	0	179	327
7:45 AM	1	0	10	0	0	11	0	0	8	0	0	8	6	178	0	0	0	184	26	146	6	0	0	178	381
Hourly Total	4	1	32	0	1	37	1	0	22	0	1	23	12	534	3	0	0	549	52	584	11	0	0	647	1256
8:00 AM	0	0	10	0	0	10	1	0	4	0	0	5	4	113	1	0	0	118	14	149	7	1	0	171	304
8:15 AM	3	1	7	0	0	11	0	0	10	0	0	10	5	123	1	0	0	129	18	133	5	0	0	156	306
8:30 AM	1	1	7	0	0	9	0	0	6	0	0	6	3	128	0	0	0	131	5	142	3	0	0	150	296
8:45 AM	3	1	9	0	0	13	1	0	6	0	0	7	1	134	1	0	1	136	5	142	9	0	0	156	312
Hourly Total	7	3	33	0	0	43	2	0	26	0	0	28	13	498	3	0	1	514	42	566	24	1	0	633	1218
9:00 AM	2	1	10	0	0	13	1	0	6	0	0	7	3	111	1	0	0	115	4	124	5	0	0	133	268
9:15 AM	2	0	5	0	0	7	0	0	5	0	2	5	5	101	3	0	0	109	5	113	5	0	0	123	244
9:30 AM	4	3	3	0	1	10	3	0	7	0	0	10	4	107	0	0	0	111	7	131	8	0	0	146	277
9:45 AM	3	0	8	0	2	11	1	0	7	0	0	8	4	110	0	0	0	114	1	124	5	0	0	130	263
Hourly Total	11	4	26	0	3	41	5	0	25	0	2	30	16	429	4	0	0	449	17	492	23	0	0	532	1052
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	4	0	4	0	0	8	1	0	13	0	0	14	5	143	0	0	0	148	7	128	6	0	0	141	311
11:45 AM	3	1	4	0	0	8	0	0	7	0	0	7	4	126	0	0	0	130	6	125	6	0	0	137	282
Hourly Total	7	1	8	0	0	16	1	0	20	0	0	21	9	269	0	0	0	278	13	253	12	0	0	278	593
12:00 PM	3	0	9	0	1	12	5	0	6	0	0	11	3	131	3	0	0	137	6	123	9	0	0	138	298
12:15 PM	3	0	7	0	0	10	2	1	9	0	0	12	7	136	3	0	0	146	10	132	15	0	0	157	325
12:30 PM	0	1	7	0	0	8	0	0	9	0	1	9	4	122	1	0	0	127	4	122	7	0	0	133	277
12:45 PM	1	0	3	0	1	4	2	1	10	0	2	13	3	141	0	0	0	144	6	130	7	0	0	143	304
Hourly Total	7	1	26	0	2	34	9	2	34	0	3	45	17	530	7	0	0	554	26	507	38	0	0	571	1204
1:00 PM	2	0	4	0	0	6	0	0	11	0	0	11	4	121	1	0	0	126	6	137	10	0	0	153	296
1:15 PM	0	0	6	0	0	6	1	0	6	0	0	7	2	108	2	0	0	112	5	110	7	0	0	122	247
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	2	0	10	0	0	12	1	0	17	0	0	18	6	229	3	0	0	238	11	247	17	0	0	275	543
3:00 PM	4	1	3	0	0	8	0	0	9	0	0	9	6	129	1	0	0	136	4	139	6	0	0	149	302
3:15 PM	0	0	2	0	0	2	1	0	8	0	0	9	7	172	0	0	0	179	6	127	9	0	0	142	332
3:30 PM	0	1	5	0	0	6	0	0	10	0	0	10	2	142	1	0	0	145	3	154	10	0	0	167	328
3:45 PM	0	0	8	0	0	8	0	0	13	0	0	13	13	194	4	0	0	211	8	130	5	0	0	143	375
Hourly Total	4	2	18	0	0	24	1	0	40	0	0	41	28	637	6	0	0	671	21	550	30	0	0	601	1337
4:00 PM	2	2	6	0	0	10	1	0	9	0	0	10	7	169	0	0	0	176	10	150	11	1	0	172	368
4:15 PM	2	0	2	0	1	4	0	0	11	0	0	11	11	177	2	0	0	190	12	138	11	0	0	161	366

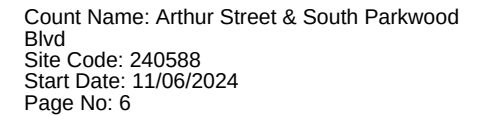
4:30 PM	3	0	5	0	0	8	1	0	15	0	1	16	9	190	0	0	0	199	8	160	13	0	0	181	404
4:45 PM	1	0	3	0	0	4	0	1	6	0	1	7	8	186	1	0	0	195	7	136	8	0	0	151	357
Hourly Total	8	2	16	0	1	26	2	1	41	0	2	44	35	722	3	0	0	760	37	584	43	1	0	665	1495
5:00 PM	0	1	4	0	1	5	0	0	13	0	0	13	5	196	2	0	0	203	2	134	10	0	0	146	367
5:15 PM	0	0	2	0	0	2	0	1	10	0	0	11	8	190	0	0	0	198	4	113	9	0	0	126	337
5:30 PM	2	0	3	0	0	5	1	0	14	0	0	15	15	189	0	0	0	204	5	142	11	0	0	158	382
5:45 PM	0	0	2	0	0	2	2	4	15	0	0	21	9	151	5	0	0	165	2	127	7	0	0	136	324
Hourly Total	2	1	11	0	1	14	3	5	52	0	0	60	37	726	7	0	0	770	13	516	37	0	0	566	1410
Grand Total	52	15	180	0	8	247	25	8	277	0	8	310	173	4574	36	0	1	4783	232	4299	235	2	0	4768	10108
Approach %	21.1	6.1	72.9	0.0	-	-	8.1	2.6	89.4	0.0	-	-	3.6	95.6	0.8	0.0	-	-	4.9	90.2	4.9	0.0	-	-	-
Total %	0.5	0.1	1.8	0.0	-	2.4	0.2	0.1	2.7	0.0	-	3.1	1.7	45.3	0.4	0.0	-	47.3	2.3	42.5	2.3	0.0	-	47.2	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	6	0	0	-	6	1	3	0	0	-	4	10
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.4	0.1	0.0	0.0	-	0.1	0.1
Cars & Light Goods	50	14	176	0	-	240	21	5	246	0	-	272	165	4302	28	0	-	4495	213	4057	226	2	-	4498	9505
% Cars & Light Goods	96.2	93.3	97.8	-	-	97.2	84.0	62.5	88.8	-	-	87.7	95.4	94.1	77.8	-	-	94.0	91.8	94.4	96.2	100.0	-	94.3	94.0
Buses	1	0	2	0	-	3	0	0	4	0	-	4	5	46	2	0	-	53	1	50	5	0	-	56	116
% Buses	1.9	0.0	1.1	-	-	1.2	0.0	0.0	1.4	-	-	1.3	2.9	1.0	5.6	-	-	1.1	0.4	1.2	2.1	0.0	-	1.2	1.1
Single-Unit Trucks	1	1	1	0	-	3	4	0	20	0	-	24	2	98	2	0	-	102	12	77	3	0	-	92	221
% Single-Unit Trucks	1.9	6.7	0.6	-	-	1.2	16.0	0.0	7.2	-	-	7.7	1.2	2.1	5.6	-	-	2.1	5.2	1.8	1.3	0.0	-	1.9	2.2
Articulated Trucks	0	0	0	0	-	0	0	0	7	0	-	7	0	113	4	0	-	117	5	103	0	0	-	108	232
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	2.5	-	-	2.3	0.0	2.5	11.1	-	-	2.4	2.2	2.4	0.0	0.0	-	2.3	2.3
Bicycles on Road	0	0	1	0	-	1	0	3	0	0	-	3	1	5	0	0	-	6	0	5	1	0	-	6	16
% Bicycles on Road	0.0	0.0	0.6	-	-	0.4	0.0	37.5	0.0	-	-	1.0	0.6	0.1	0.0	-	-	0.1	0.0	0.1	0.4	0.0	-	0.1	0.2
Horse and Buggy	0	0	0	0	-	0	0	0	0	0	-	0	0	4	0	0	-	4	0	4	0	0	-	4	8
% Horse and Buggy	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	0.1	0.0	0.0	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	12.5	-	-	-	-	-	0.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	7	-	-	-	-	-	8	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	87.5	-	-	-	-	-	100.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-

Turning Movement Data Plot



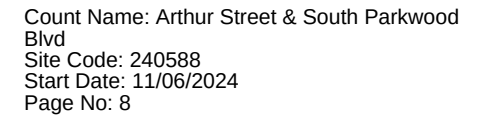
Start Time	South Parkwood Blvd Eastbound						Earl Martin Drive Westbound						Arthur Street Northbound						Arthur Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	1	0	6	0	0	7	1	0	4	0	0	5	1	133	2	0	0	136	13	165	1	0	0	179	327
7:45 AM	1	0	10	0	0	11	0	0	8	0	0	8	6	178	0	0	0	184	26	146	6	0	0	178	381
8:00 AM	0	0	10	0	0	10	1	0	4	0	0	5	4	113	1	0	0	118	14	149	7	1	0	171	304
8:15 AM	3	1	7	0	0	11	0	0	10	0	0	10	5	123	1	0	0	129	18	133	5	0	0	156	306
Total	5	1	33	0	0	39	2	0	26	0	0	28	16	547	4	0	0	567	71	593	19	1	0	684	1318
Approach %	12.8	2.6	84.6	0.0	-	-	7.1	0.0	92.9	0.0	-	-	2.8	96.5	0.7	0.0	-	-	10.4	86.7	2.8	0.1	-	-	-
Total %	0.4	0.1	2.5	0.0	-	3.0	0.2	0.0	2.0	0.0	-	2.1	1.2	41.5	0.3	0.0	-	43.0	5.4	45.0	1.4	0.1	-	51.9	-
PHF	0.417	0.250	0.825	0.000	-	0.886	0.500	0.000	0.650	0.000	-	0.700	0.667	0.768	0.500	0.000	-	0.770	0.683	0.898	0.679	0.250	-	0.955	0.865
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Cars & Light Goods	4	1	31	0	-	36	2	0	19	0	-	21	14	498	1	0	-	513	70	557	17	1	-	645	1215
% Cars & Light Goods	80.0	100.0	93.9	-	-	92.3	100.0	-	73.1	-	-	75.0	87.5	91.0	25.0	-	-	90.5	98.6	93.9	89.5	100.0	-	94.3	92.2
Buses	1	0	1	0	-	2	0	0	1	0	-	1	1	11	1	0	-	13	0	12	2	0	-	14	30
% Buses	20.0	0.0	3.0	-	-	5.1	0.0	-	3.8	-	-	3.6	6.3	2.0	25.0	-	-	2.3	0.0	2.0	10.5	0.0	-	2.0	2.3
Single-Unit Trucks	0	0	1	0	-	1	0	0	6	0	-	6	1	16	1	0	-	18	0	6	0	0	-	6	31
% Single-Unit Trucks	0.0	0.0	3.0	-	-	2.6	0.0	-	23.1	-	-	21.4	6.3	2.9	25.0	-	-	3.2	0.0	1.0	0.0	0.0	-	0.9	2.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	22	1	0	-	23	1	17	0	0	-	18	41
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	4.0	25.0	-	-	4.1	1.4	2.9	0.0	0.0	-	2.6	3.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Horse and Buggy	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Horse and Buggy	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	0.0	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Turning Movement Peak Hour Data Plot (7:30 AM)



Start Time	South Parkwood Blvd Eastbound						Earl Martin Drive Westbound						Arthur Street Northbound						Arthur Street 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	4	0	4	0	0	8	1	0	13	0	0	14	5	143	0	0	0	148	7	128	6	0	0	141	311
11:45 AM	3	1	4	0	0	8	0	0	7	0	0	7	4	126	0	0	0	130	6	125	6	0	0	137	282
12:00 PM	3	0	9	0	1	12	5	0	6	0	0	11	3	131	3	0	0	137	6	123	9	0	0	138	298
12:15 PM	3	0	7	0	0	10	2	1	9	0	0	12	7	136	3	0	0	146	10	132	15	0	0	157	325
Total	13	1	24	0	1	38	8	1	35	0	0	44	19	536	6	0	0	561	29	508	36	0	0	573	1216
Approach %	34.2	2.6	63.2	0.0	-	-	18.2	2.3	79.5	0.0	-	-	3.4	95.5	1.1	0.0	-	-	5.1	88.7	6.3	0.0	-	-	-
Total %	1.1	0.1	2.0	0.0	-	3.1	0.7	0.1	2.9	0.0	-	3.6	1.6	44.1	0.5	0.0	-	46.1	2.4	41.8	3.0	0.0	-	47.1	-
PHF	0.813	0.250	0.667	0.000	-	0.792	0.400	0.250	0.673	0.000	-	0.786	0.679	0.937	0.500	0.000	-	0.948	0.725	0.962	0.600	0.000	-	0.912	0.935
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	13	1	24	0	-	38	6	1	31	0	-	38	19	490	5	0	-	514	26	482	35	0	-	543	1133
% Cars & Light Goods	100.0	100.0	100.0	-	-	100.0	75.0	100.0	88.6	-	-	86.4	100.0	91.4	83.3	-	-	91.6	89.7	94.9	97.2	-	-	94.8	93.2
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	6	0	0	-	6	1	6	0	0	-	7	13
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.1	0.0	-	-	1.1	3.4	1.2	0.0	-	-	1.2	1.1
Single-Unit Trucks	0	0	0	0	-	0	2	0	4	0	-	6	0	23	1	0	-	24	2	8	1	0	-	11	41
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	25.0	0.0	11.4	-	-	13.6	0.0	4.3	16.7	-	-	4.3	6.9	1.6	2.8	-	-	1.9	3.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	17	0	0	-	17	0	12	0	0	-	12	29
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	3.2	0.0	-	-	3.0	0.0	2.4	0.0	-	-	2.1	2.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Horse and Buggy	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Horse and Buggy	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Turning Movement Peak Hour Data Plot (11:30 AM)



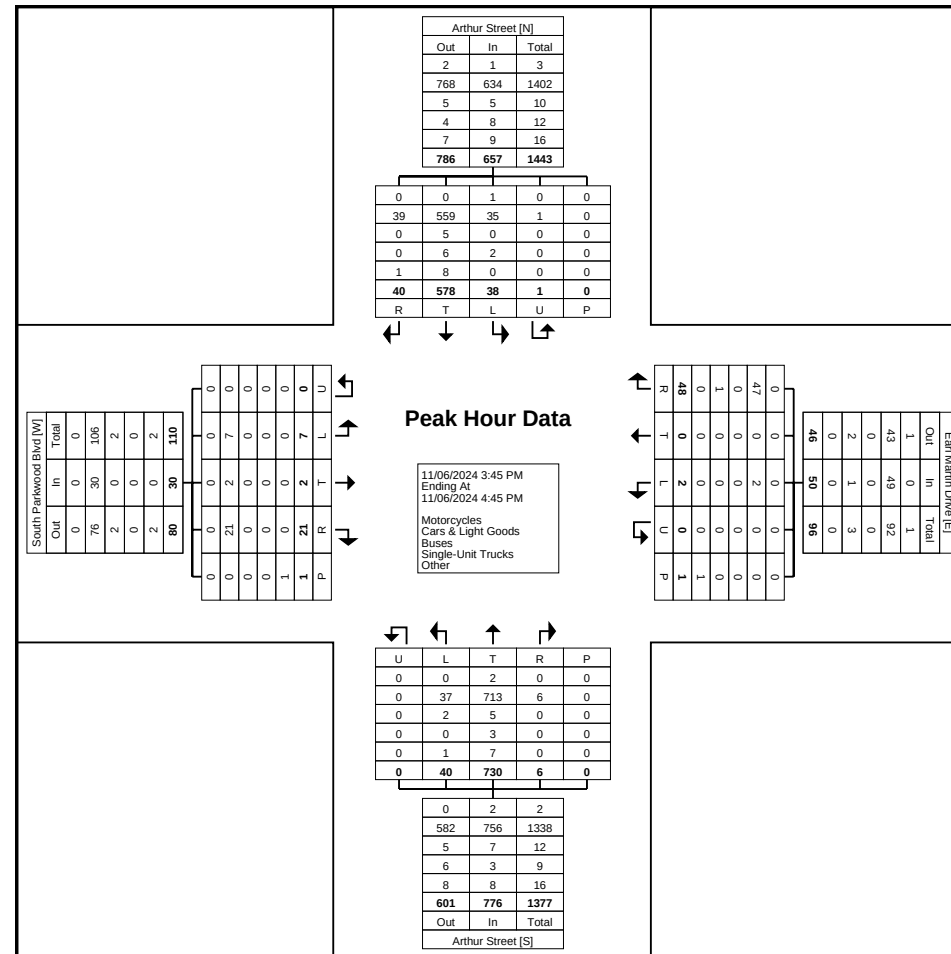
Start Time	South Parkwood Blvd Eastbound						Earl Martin Drive Westbound						Arthur Street Northbound						Arthur Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
3:45 PM	0	0	8	0	0	8	0	0	13	0	0	13	13	194	4	0	0	211	8	130	5	0	0	143	375
4:00 PM	2	2	6	0	0	10	1	0	9	0	0	10	7	169	0	0	0	176	10	150	11	1	0	172	368
4:15 PM	2	0	2	0	1	4	0	0	11	0	0	11	11	177	2	0	0	190	12	138	11	0	0	161	366
4:30 PM	3	0	5	0	0	8	1	0	15	0	1	16	9	190	0	0	0	199	8	160	13	0	0	181	404
Total	7	2	21	0	1	30	2	0	48	0	1	50	40	730	6	0	0	776	38	578	40	1	0	657	1513
Approach %	23.3	6.7	70.0	0.0	-	-	4.0	0.0	96.0	0.0	-	-	5.2	94.1	0.8	0.0	-	-	5.8	88.0	6.1	0.2	-	-	-
Total %	0.5	0.1	1.4	0.0	-	2.0	0.1	0.0	3.2	0.0	-	3.3	2.6	48.2	0.4	0.0	-	51.3	2.5	38.2	2.6	0.1	-	43.4	-
PHF	0.583	0.250	0.656	0.000	-	0.750	0.500	0.000	0.800	0.000	-	0.781	0.769	0.941	0.375	0.000	-	0.919	0.792	0.903	0.769	0.250	-	0.907	0.936
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	1	0	0	0	-	1	3
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.3	0.0	-	-	0.3	2.6	0.0	0.0	0.0	-	0.2	0.2
Cars & Light Goods	7	2	21	0	-	30	2	0	47	0	-	49	37	713	6	0	-	756	35	559	39	1	-	634	1469
% Cars & Light Goods	100.0	100.0	100.0	-	-	100.0	100.0	-	97.9	-	-	98.0	92.5	97.7	100.0	-	-	97.4	92.1	96.7	97.5	100.0	-	96.5	97.1
Buses	0	0	0	0	-	0	0	0	0	0	-	0	2	5	0	0	-	7	0	5	0	0	-	5	12
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	5.0	0.7	0.0	-	-	0.9	0.0	0.9	0.0	0.0	-	0.8	0.8
Single-Unit Trucks	0	0	0	0	-	0	0	0	1	0	-	1	0	3	0	0	-	3	2	6	0	0	-	8	12
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	-	2.1	-	-	2.0	0.0	0.4	0.0	-	-	0.4	5.3	1.0	0.0	0.0	-	1.2	0.8
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	7	0	0	-	7	0	5	0	0	-	5	12
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	1.0	0.0	-	-	0.9	0.0	0.9	0.0	0.0	-	0.8	0.8
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	1	1	0	-	2	3
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	2.5	0.0	0.0	-	-	0.1	0.0	0.2	2.5	0.0	-	0.3	0.2
Horse and Buggy	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	2
% Horse and Buggy	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	0.0	-	0.3	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	100.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	0.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street & South Parkwood
Blvd
Site Code: 240588
Start Date: 11/06/2024
Page No: 9



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



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Listowel Road & Timber Trail Road
Site Code: 240588
Start Date: 11/06/2024
Page No: 1

Turning Movement Data

Start Time	Listowel Road Eastbound					Listowel Road Westbound					Timber Trail Road Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	0	119	0	0	119	53	0	0	0	53	7	5	0	0	12	184
7:15 AM	5	109	0	0	114	76	2	0	0	78	16	7	0	0	23	215
7:30 AM	4	115	0	0	119	67	2	0	0	69	15	11	0	0	26	214
7:45 AM	1	117	0	0	118	49	3	0	0	52	12	14	0	0	26	196
Hourly Total	10	460	0	0	470	245	7	0	0	252	50	37	0	0	87	809
8:00 AM	4	134	0	0	138	64	4	0	0	68	16	11	0	0	27	233
8:15 AM	1	99	0	0	100	71	5	0	0	76	8	11	0	0	19	195
8:30 AM	3	104	0	0	107	65	2	0	0	67	15	4	0	0	19	193
8:45 AM	2	104	0	0	106	65	2	0	0	67	6	9	0	0	15	188
Hourly Total	10	441	0	0	451	265	13	0	0	278	45	35	0	0	80	809
9:00 AM	1	78	0	0	79	71	2	0	0	73	8	5	0	0	13	165
9:15 AM	7	87	0	0	94	67	1	0	0	68	7	4	0	0	11	173
9:30 AM	2	86	0	0	88	69	4	0	0	73	5	2	0	0	7	168
9:45 AM	3	78	0	0	81	62	1	0	0	63	4	1	0	0	5	149
Hourly Total	13	329	0	0	342	269	8	0	0	277	24	12	0	0	36	655
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	0	94	0	0	94	68	3	0	0	71	8	2	0	0	10	175
11:45 AM	4	67	0	0	71	77	1	0	0	78	5	2	0	0	7	156
Hourly Total	4	161	0	0	165	145	4	0	0	149	13	4	0	0	17	331
12:00 PM	2	85	0	0	87	76	9	0	0	85	6	4	0	0	10	182
12:15 PM	2	66	0	0	68	71	4	0	0	75	3	4	0	0	7	150
12:30 PM	4	69	0	0	73	77	3	0	0	80	4	4	0	0	8	161
12:45 PM	5	62	0	0	67	75	4	0	0	79	5	2	0	0	7	153
Hourly Total	13	282	0	0	295	299	20	0	0	319	18	14	0	0	32	646
1:00 PM	3	79	0	0	82	86	1	0	0	87	1	3	0	0	4	173
1:15 PM	2	69	0	0	71	75	1	0	0	76	4	4	1	0	9	156
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	5	148	0	0	153	161	2	0	0	163	5	7	1	0	13	329
3:00 PM	2	75	0	0	77	91	5	0	0	96	3	3	0	0	6	179
3:15 PM	5	58	0	0	63	95	5	0	0	100	4	1	0	0	5	168
3:30 PM	4	87	0	0	91	106	4	0	0	110	5	2	0	0	7	208
3:45 PM	5	100	0	0	105	99	7	0	0	106	3	4	0	0	7	218
Hourly Total	16	320	0	0	336	391	21	0	0	412	15	10	0	0	25	773
4:00 PM	8	73	0	0	81	92	5	0	0	97	10	9	0	0	19	197
4:15 PM	7	106	0	0	113	128	5	0	0	133	6	9	0	0	15	261
4:30 PM	8	125	0	0	133	110	3	0	0	113	3	8	0	0	11	257

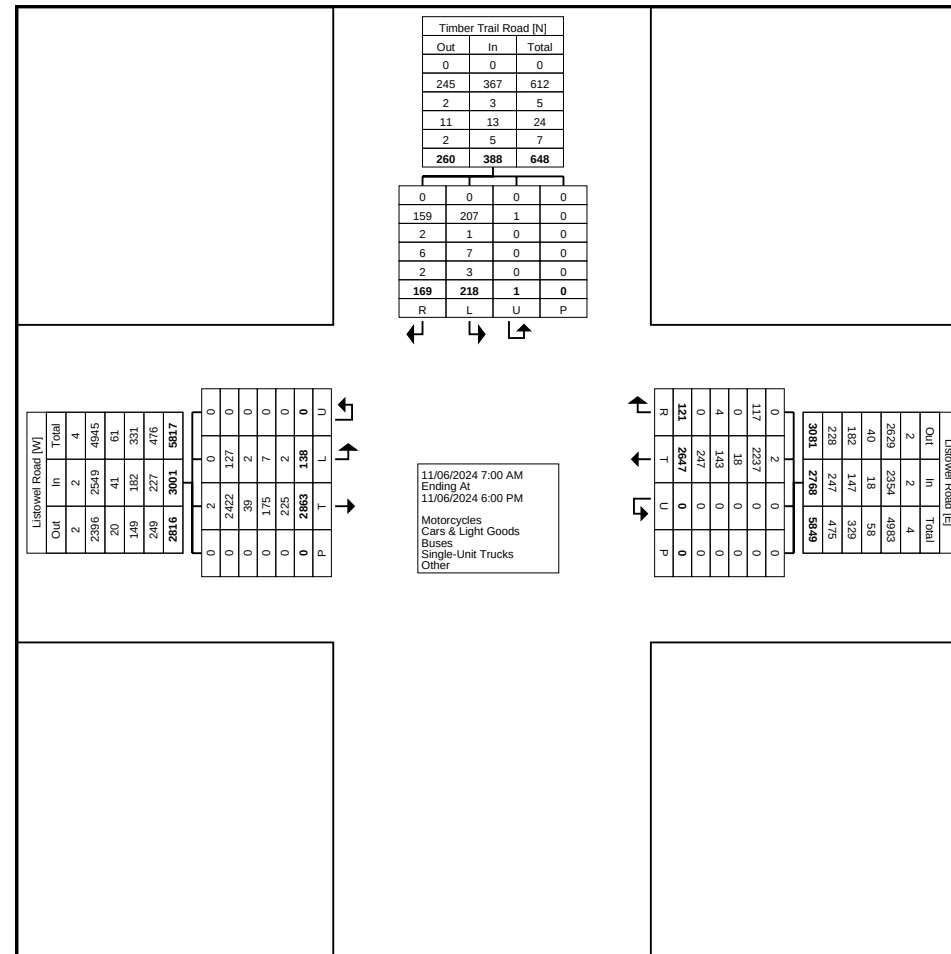
[illegible]



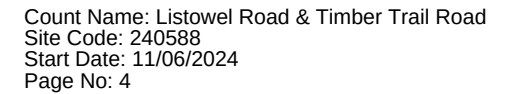
Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Listowel Road & Timber Trail Road
Site Code: 240588
Start Date: 11/06/2024
Page No: 3



Turning Movement Data Plot

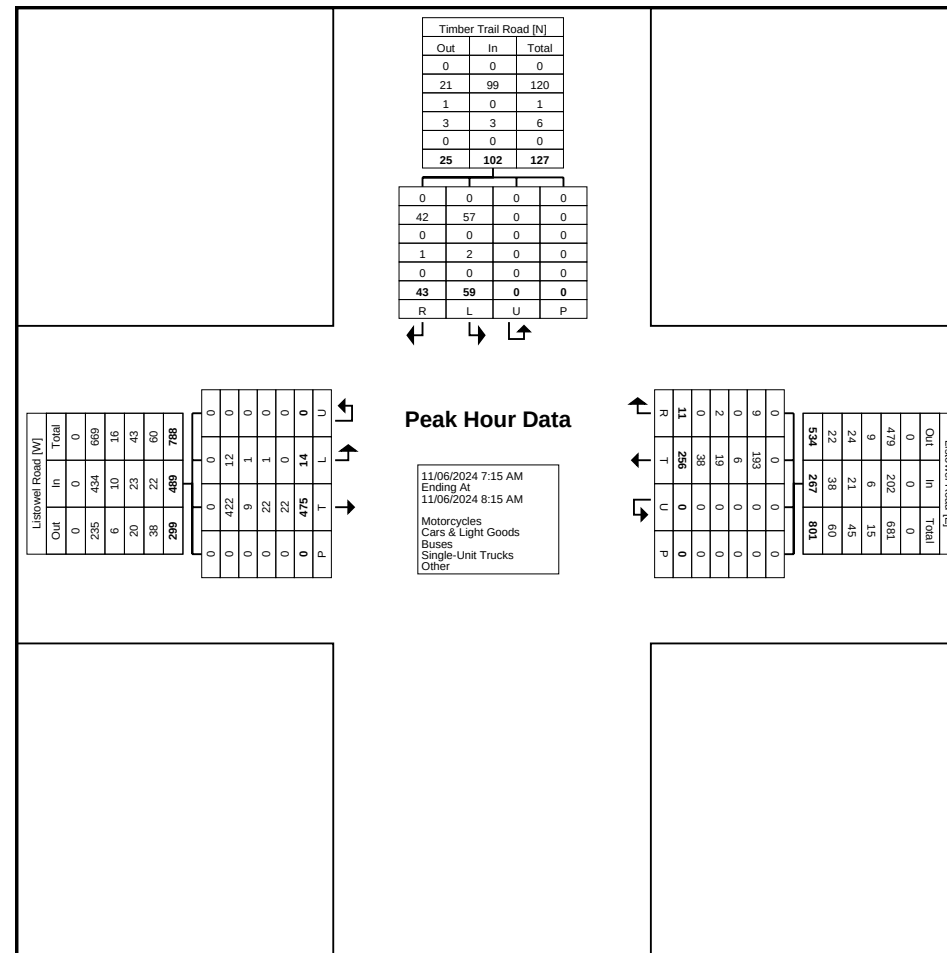




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Turning Movement Peak Hour Data Plot (7:15 AM)

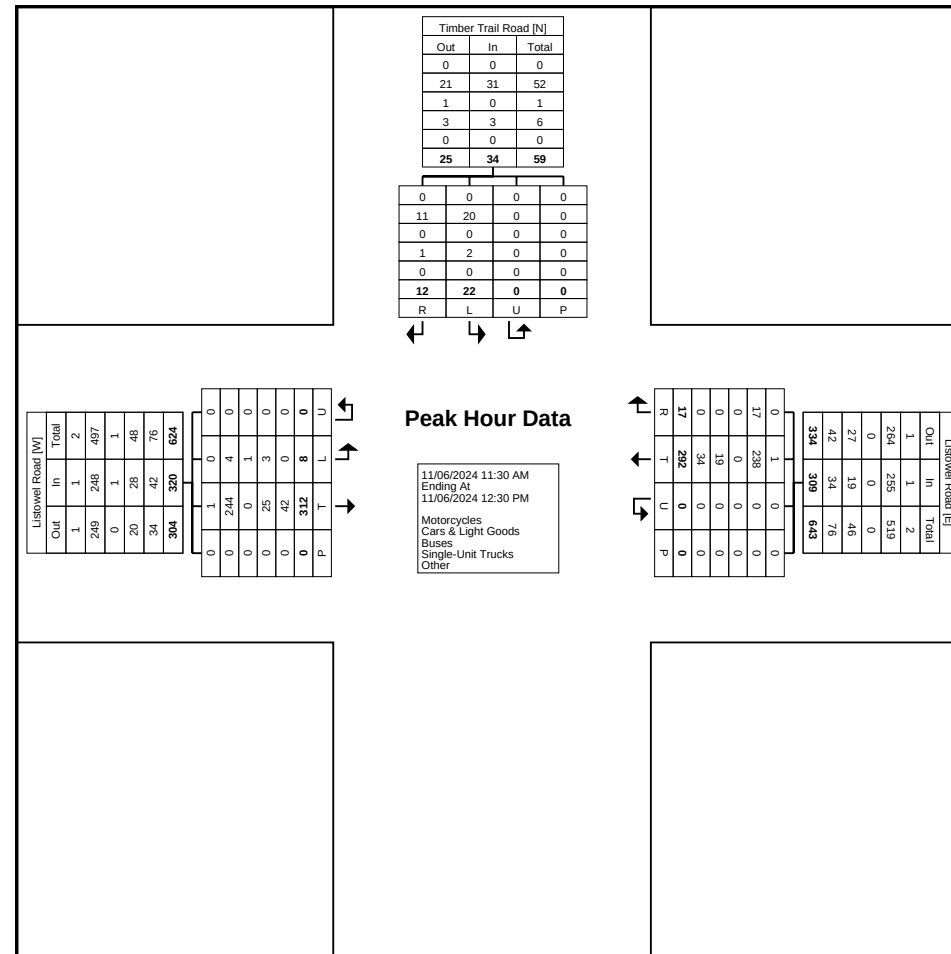
[illegible]



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519-896-3163 mmurch@ptsl.com

Count Name: Listowel Road & Timber Trail Road
Site Code: 240588
Start Date: 11/06/2024
Page No: 7



Turning Movement Peak Hour Data Plot (11:30 AM)

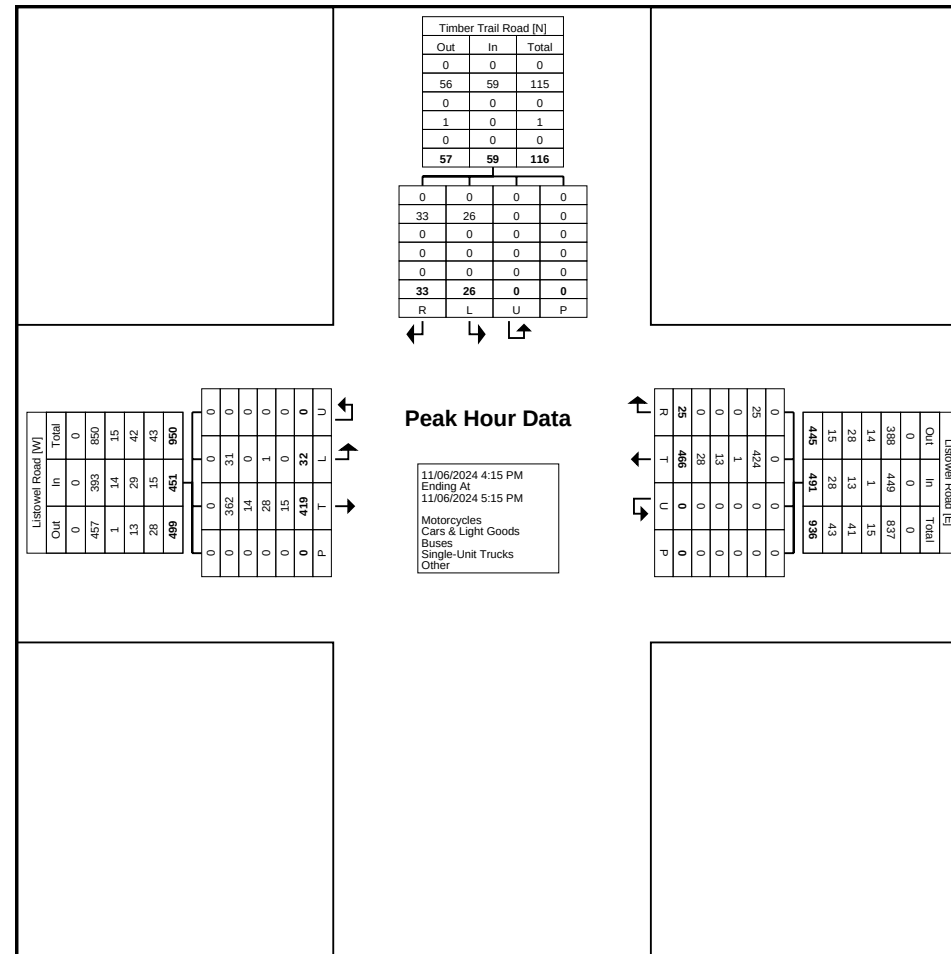
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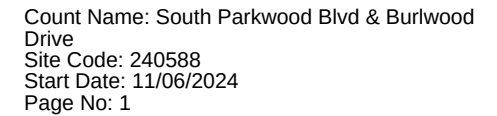
Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Listowel Road & Timber Trail Road
Site Code: 240588
Start Date: 11/06/2024
Page No: 9



Turning Movement Peak Hour Data Plot (4:15 PM)



Start Time	South Parkwood Blvd Eastbound						South Parkwood Blvd Westbound						Burlwood Drive Northbound						Burlwood Drive 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	10	0	0	0	10	0	6	0	0	0	6	0	0	0	0	1	0	0	0	0	0	0	0	16
7:15 AM	0	13	0	0	0	13	0	5	0	0	0	5	0	0	0	0	1	0	2	0	0	0	1	2	20
7:30 AM	0	13	0	1	1	14	0	7	1	0	1	8	0	0	0	0	2	0	3	0	0	0	1	3	25
7:45 AM	0	20	0	0	0	20	0	17	1	0	0	18	0	0	0	0	0	0	1	0	1	0	1	2	40
Hourly Total	0	56	0	1	1	57	0	35	2	0	1	37	0	0	0	0	4	0	6	0	1	0	3	7	101
8:00 AM	0	18	0	0	0	18	0	22	6	0	0	28	0	0	0	0	0	0	3	0	0	0	1	3	49
8:15 AM	0	15	0	0	0	15	2	16	2	0	1	20	0	0	0	0	0	0	4	0	0	0	2	4	39
8:30 AM	0	20	0	0	0	20	0	7	1	0	0	8	0	0	0	0	0	0	3	0	1	0	2	4	32
8:45 AM	0	19	0	0	0	19	0	13	0	1	0	14	0	0	0	0	2	0	2	0	1	0	0	3	36
Hourly Total	0	72	0	0	0	72	2	58	9	1	1	70	0	0	0	0	2	0	12	0	2	0	5	14	156
9:00 AM	0	13	0	0	0	13	0	9	1	0	0	10	0	0	0	0	0	0	1	0	1	0	2	2	25
9:15 AM	0	9	0	0	0	9	0	15	0	0	0	15	0	0	0	0	0	0	2	0	1	0	1	3	27
9:30 AM	0	11	0	0	0	11	0	11	2	0	0	13	0	0	0	0	0	0	4	0	0	0	2	4	28
9:45 AM	0	9	0	0	0	9	0	11	1	0	0	12	0	0	0	0	0	0	1	0	0	0	0	1	22
Hourly Total	0	42	0	0	0	42	0	46	4	0	0	50	0	0	0	0	0	0	8	0	2	0	5	10	102
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	1	10	0	0	0	11	0	10	2	0	0	12	0	0	0	0	1	0	2	0	0	0	0	2	25
11:45 AM	0	20	0	0	0	20	0	9	2	0	1	11	0	0	0	0	0	0	2	0	0	0	0	2	33
Hourly Total	1	30	0	0	0	31	0	19	4	0	1	23	0	0	0	0	1	0	4	0	0	0	0	4	58
12:00 PM	0	14	0	0	0	14	0	13	0	0	0	13	0	0	0	0	0	0	1	0	0	0	0	1	28
12:15 PM	1	12	0	0	0	13	0	22	1	1	0	24	0	0	0	0	0	0	1	0	0	0	5	1	38
12:30 PM	0	12	0	0	0	12	0	11	2	0	0	13	0	0	0	0	0	0	0	0	0	0	4	0	25
12:45 PM	0	12	0	0	0	12	0	14	1	0	0	15	0	0	0	0	1	0	1	0	0	0	3	1	28
Hourly Total	1	50	0	0	0	51	0	60	4	1	0	65	0	0	0	0	1	0	3	0	0	0	12	3	119
1:00 PM	0	8	0	0	0	8	0	11	2	0	0	13	0	0	0	0	0	0	2	0	0	0	1	2	23
1:15 PM	0	10	0	0	0	10	0	13	0	0	0	13	0	0	0	0	2	0	3	0	0	0	3	3	26
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	18	0	0	0	18	0	24	2	0	0	26	0	0	0	0	2	0	5	0	0	0	4	5	49
3:00 PM	0	11	0	0	0	11	0	13	3	0	0	16	0	0	0	0	0	0	3	0	0	0	0	3	30
3:15 PM	0	6	0	0	0	6	0	17	3	1	0	21	0	0	0	0	0	0	2	0	0	0	0	2	29
3:30 PM	0	10	0	0	0	10	0	13	5	0	0	18	0	0	0	0	1	0	2	0	0	0	0	2	30
3:45 PM	0	14	0	0	0	14	0	19	0	0	0	19	0	0	0	0	0	0	2	0	0	0	3	2	35
Hourly Total	0	41	0	0	0	41	0	62	11	1	0	74	0	0	0	0	1	0	9	0	0	0	3	9	124
4:00 PM	0	20	0	0	0	20	0	23	4	0	1	27	0	0	0	0	1	0	2	0	0	0	4	2	49
4:15 PM	0	19	0	0	0	19	0	23	2	0	0	25	0	0	0	0	0	0	0	0	0	0	2	0	44

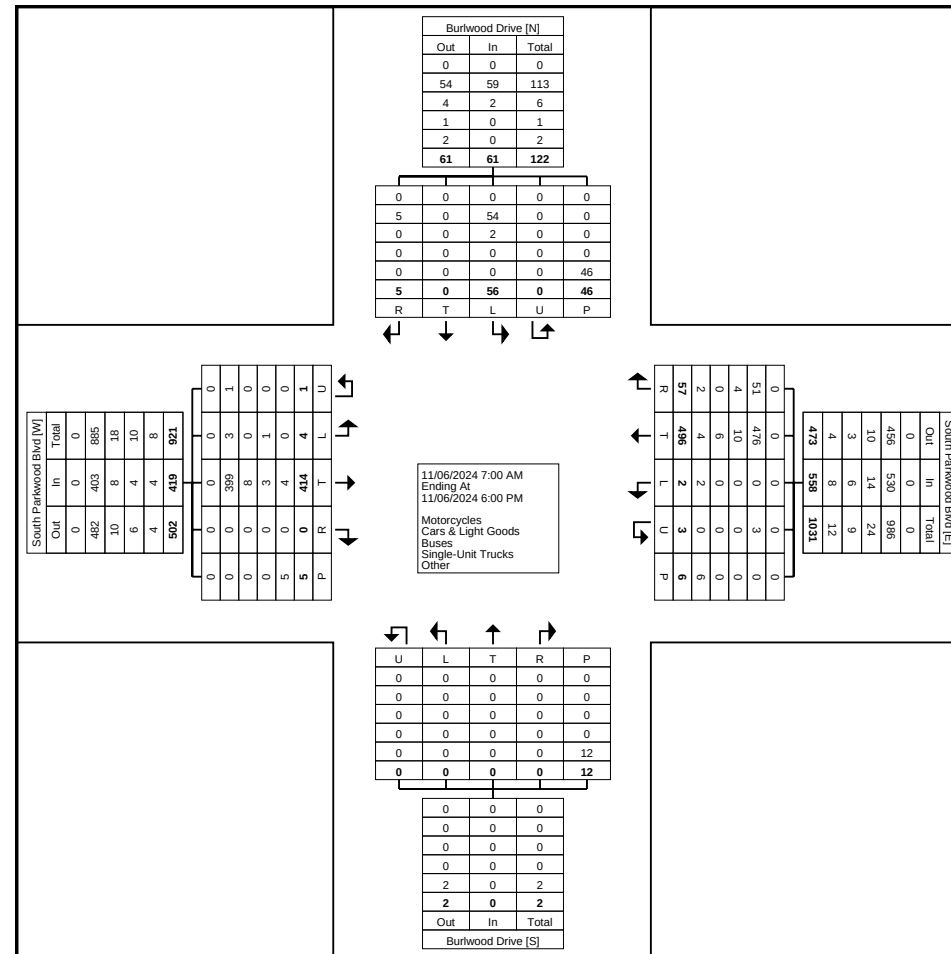
4:30 PM	0	17	0	0	0	17	0	36	3	0	0	39	0	0	0	0	0	0	0	2	1	57
4:45 PM	1	12	0	0	0	13	0	18	1	0	2	19	0	0	0	0	0	0	0	3	0	32
Hourly Total	1	68	0	0	0	69	0	100	10	0	3	110	0	0	0	0	1	0	3	0	3	182
5:00 PM	1	9	0	0	0	10	0	27	2	0	0	29	0	0	0	0	0	0	3	0	3	42
5:15 PM	0	12	0	0	3	12	0	21	2	0	0	23	0	0	0	0	0	0	2	0	2	37
5:30 PM	0	8	0	0	1	8	0	23	7	0	0	30	0	0	0	0	0	0	0	1	0	38
5:45 PM	0	8	0	0	0	8	0	21	0	0	0	21	0	0	0	0	0	0	1	0	1	30
Hourly Total	1	37	0	0	4	38	0	92	11	0	0	103	0	0	0	0	0	0	6	0	6	147
Grand Total	4	414	0	1	5	419	2	496	57	3	6	558	0	0	0	0	12	0	56	0	5	1038
Approach %	1.0	98.8	0.0	0.2	-	-	0.4	88.9	10.2	0.5	-	-	0.0	0.0	0.0	0.0	-	-	91.8	0.0	8.2	-
Total %	0.4	39.9	0.0	0.1	-	40.4	0.2	47.8	5.5	0.3	-	53.8	0.0	0.0	0.0	0.0	-	0.0	5.4	0.0	0.5	-
Motorcycles	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	-
Cars & Light Goods	3	399	0	1	-	403	0	476	51	3	-	530	0	0	0	0	-	0	54	0	5	-
% Cars & Light Goods	75.0	96.4	-	100.0	-	96.2	0.0	96.0	89.5	100.0	-	95.0	-	-	-	-	-	-	96.4	-	100.0	-
Buses	0	8	0	0	-	8	0	10	4	0	-	14	0	0	0	0	-	0	2	0	0	-
% Buses	0.0	1.9	-	0.0	-	1.9	0.0	2.0	7.0	0.0	-	2.5	-	-	-	-	-	-	3.6	-	0.0	-
Single-Unit Trucks	1	3	0	0	-	4	0	6	0	0	-	6	0	0	0	0	-	0	0	0	0	-
% Single-Unit Trucks	25.0	0.7	-	0.0	-	1.0	0.0	1.2	0.0	0.0	-	1.1	-	-	-	-	-	-	0.0	-	0.0	-
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	-
% Articulated Trucks	0.0	0.2	-	0.0	-	0.2	0.0	0.0	0.0	0.0	-	0.0	-	-	-	-	-	-	0.0	-	0.0	-
Bicycles on Road	0	2	0	0	-	2	2	4	2	0	-	8	0	0	0	0	-	0	0	0	0	-
% Bicycles on Road	0.0	0.5	-	0.0	-	0.5	100.0	0.8	3.5	0.0	-	1.4	-	-	-	-	-	-	0.0	-	0.0	-
Horse and Buggy	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	-
% Horse and Buggy	0.0	0.2	-	0.0	-	0.2	0.0	0.0	0.0	0.0	-	0.0	-	-	-	-	-	-	0.0	-	0.0	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	6.5	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	6	-	-	-	-	12	-	-	-	-	43	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	93.5	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: South Parkwood Blvd & Burlwood Drive
Site Code: 240588
Start Date: 11/06/2024
Page No: 3



Turning Movement Data Plot



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: South Parkwood Blvd & Burlwood Drive
Site Code: 240588
Start Date: 11/06/2024
Page No: 4

Turning Movement Peak Hour Data (7:45 AM)

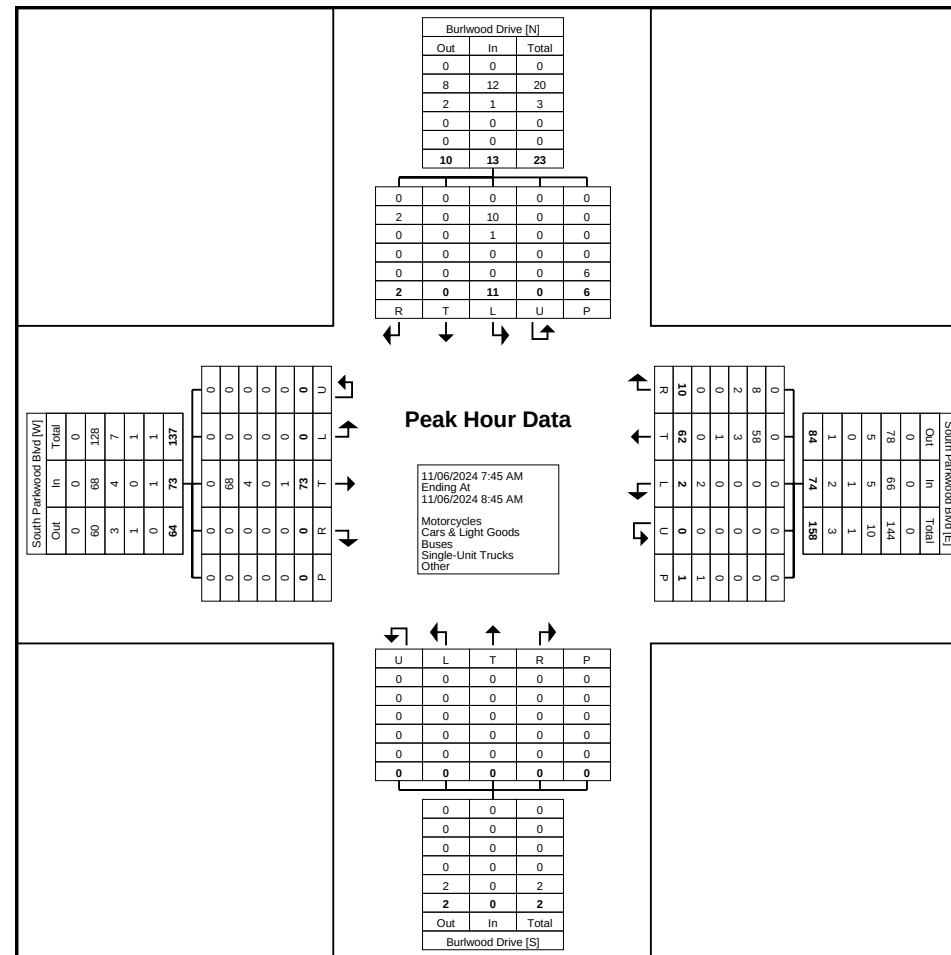
Start Time	South Parkwood Blvd Eastbound						South Parkwood Blvd Westbound						Burlwood Drive Northbound						Burlwood Drive Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:45 AM	0	20	0	0	0	20	0	17	1	0	0	18	0	0	0	0	0	0	1	0	1	0	1	2	40
8:00 AM	0	18	0	0	0	18	0	22	6	0	0	28	0	0	0	0	0	0	3	0	0	0	1	3	49
8:15 AM	0	15	0	0	0	15	2	16	2	0	1	20	0	0	0	0	0	0	4	0	0	0	2	4	39
8:30 AM	0	20	0	0	0	20	0	7	1	0	0	8	0	0	0	0	0	0	3	0	1	0	2	4	32
Total	0	73	0	0	0	73	2	62	10	0	1	74	0	0	0	0	0	0	11	0	2	0	6	13	160
Approach %	0.0	100.0	0.0	0.0	-	-	2.7	83.8	13.5	0.0	-	-	0.0	0.0	0.0	0.0	-	-	84.6	0.0	15.4	0.0	-	-	-
Total %	0.0	45.6	0.0	0.0	-	45.6	1.3	38.8	6.3	0.0	-	46.3	0.0	0.0	0.0	0.0	-	0.0	6.9	0.0	1.3	0.0	-	8.1	-
PHF	0.000	0.913	0.000	0.000	-	0.913	0.250	0.705	0.417	0.000	-	0.661	0.000	0.000	0.000	0.000	-	0.000	0.688	0.000	0.500	0.000	-	0.813	0.816
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
Cars & Light Goods	0	68	0	0	-	68	0	58	8	0	-	66	0	0	0	0	-	0	10	0	2	0	-	12	146
% Cars & Light Goods	-	93.2	-	-	-	93.2	0.0	93.5	80.0	-	-	89.2	-	-	-	-	-	-	90.9	-	100.0	-	-	92.3	91.3
Buses	0	4	0	0	-	4	0	3	2	0	-	5	0	0	0	0	-	0	1	0	0	0	-	1	10
% Buses	-	5.5	-	-	-	5.5	0.0	4.8	20.0	-	-	6.8	-	-	-	-	-	-	9.1	-	0.0	-	-	7.7	6.3
Single-Unit Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Single-Unit Trucks	-	0.0	-	-	-	0.0	0.0	1.6	0.0	-	-	1.4	-	-	-	-	-	-	0.0	-	0.0	-	-	0.0	0.6
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
Bicycles on Road	0	1	0	0	-	1	2	0	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	3
% Bicycles on Road	-	1.4	-	-	-	1.4	100.0	0.0	0.0	-	-	2.7	-	-	-	-	-	-	0.0	-	0.0	-	-	0.0	1.9
Horse and Buggy	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Horse and Buggy	-	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	-	-	-	-	-	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: South Parkwood Blvd & Burlwood Drive
Site Code: 240588
Start Date: 11/06/2024
Page No: 6

Turning Movement Peak Hour Data (11:30 AM)

Start Time	South Parkwood Blvd Eastbound						South Parkwood Blvd Westbound						Burlwood Drive Northbound						Burlwood Drive 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	1	10	0	0	0	11	0	10	2	0	0	12	0	0	0	0	1	0	2	0	0	0	0	2	25
11:45 AM	0	20	0	0	0	20	0	9	2	0	1	11	0	0	0	0	0	0	2	0	0	0	0	2	33
12:00 PM	0	14	0	0	0	14	0	13	0	0	0	13	0	0	0	0	0	0	1	0	0	0	0	1	28
12:15 PM	1	12	0	0	0	13	0	22	1	1	0	24	0	0	0	0	0	0	1	0	0	0	5	1	38
Total	2	56	0	0	0	58	0	54	5	1	1	60	0	0	0	0	1	0	6	0	0	0	5	6	124
Approach %	3.4	96.6	0.0	0.0	-	-	0.0	90.0	8.3	1.7	-	-	0.0	0.0	0.0	0.0	-	-	100.0	0.0	0.0	0.0	-	-	-
Total %	1.6	45.2	0.0	0.0	-	46.8	0.0	43.5	4.0	0.8	-	48.4	0.0	0.0	0.0	0.0	-	0.0	4.8	0.0	0.0	0.0	-	4.8	-
PHF	0.500	0.700	0.000	0.000	-	0.725	0.000	0.614	0.625	0.250	-	0.625	0.000	0.000	0.000	0.000	-	0.000	0.750	0.000	0.000	0.000	-	0.750	0.816
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
Cars & Light Goods	1	55	0	0	-	56	0	53	5	1	-	59	0	0	0	0	-	0	6	0	0	0	-	6	121
% Cars & Light Goods	50.0	98.2	-	-	-	96.6	-	98.1	100.0	100.0	-	98.3	-	-	-	-	-	-	100.0	-	-	-	-	100.0	97.6
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	-	0.0	-	0.0	0.0	0.0	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	0.0	0.0
Single-Unit Trucks	1	1	0	0	-	2	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	3
% Single-Unit Trucks	50.0	1.8	-	-	-	3.4	-	1.9	0.0	0.0	-	1.7	-	-	-	-	-	-	0.0	-	-	-	-	0.0	2.4
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
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	-	0.0	-	0.0	0.0	0.0	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	0.0	0.0
Horse and Buggy	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Horse and Buggy	0.0	0.0	-	-	-	0.0	-	0.0	0.0	0.0	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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@pts1.com

Count Name: South Parkwood Blvd & Burlwood Drive
Site Code: 240588
Start Date: 11/06/2024
Page No: 8

Turning Movement Peak Hour Data (3:45 PM)

Start Time	South Parkwood Blvd Eastbound						South Parkwood Blvd Westbound						Burlwood Drive Northbound						Burlwood Drive 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	
3:45 PM	0	14	0	0	0	14	0	19	0	0	0	19	0	0	0	0	0	0	2	0	0	0	3	2	35
4:00 PM	0	20	0	0	0	20	0	23	4	0	1	27	0	0	0	0	1	0	2	0	0	0	4	2	49
4:15 PM	0	19	0	0	0	19	0	23	2	0	0	25	0	0	0	0	0	0	0	0	0	0	2	0	44
4:30 PM	0	17	0	0	0	17	0	36	3	0	0	39	0	0	0	0	0	0	1	0	0	0	2	1	57
Total	0	70	0	0	0	70	0	101	9	0	1	110	0	0	0	0	1	0	5	0	0	0	11	5	185
Approach %	0.0	100.0	0.0	0.0	-	-	0.0	91.8	8.2	0.0	-	-	0.0	0.0	0.0	0.0	-	-	100.0	0.0	0.0	0.0	-	-	-
Total %	0.0	37.8	0.0	0.0	-	37.8	0.0	54.6	4.9	0.0	-	59.5	0.0	0.0	0.0	0.0	-	0.0	2.7	0.0	0.0	0.0	-	2.7	-
PHF	0.000	0.875	0.000	0.000	-	0.875	0.000	0.701	0.563	0.000	-	0.705	0.000	0.000	0.000	0.000	-	0.000	0.625	0.000	0.000	0.000	-	0.625	0.811
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
Cars & Light Goods	0	69	0	0	-	69	0	99	7	0	-	106	0	0	0	0	-	0	5	0	0	0	-	5	180
% Cars & Light Goods	-	98.6	-	-	-	98.6	-	98.0	77.8	-	-	96.4	-	-	-	-	-	-	100.0	-	-	-	-	100.0	97.3
Buses	0	1	0	0	-	1	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	2
% Buses	-	1.4	-	-	-	1.4	-	1.0	0.0	-	-	0.9	-	-	-	-	-	-	0.0	-	-	-	-	0.0	1.1
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Single-Unit Trucks	-	0.0	-	-	-	0.0	-	0.0	0.0	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	0.0	0.0
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
Bicycles on Road	0	0	0	0	-	0	0	1	2	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	3
% Bicycles on Road	-	0.0	-	-	-	0.0	-	1.0	22.2	-	-	2.7	-	-	-	-	-	-	0.0	-	-	-	-	0.0	1.6
Horse and Buggy	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Horse and Buggy	-	0.0	-	-	-	0.0	-	0.0	0.0	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	18.2	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	9	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	81.8	-	-

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



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Timber Trail Road & Woodberry
Cres
Site Code: 240588
Start Date: 11/06/2024
Page No: 1

Turning Movement Data

Start Time	Woodberry Cres Eastbound						Woodberry Cres Westbound						Timber Trail Road Northbound						Timber Trail Road 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	2	0	1	0	1	3	0	0	0	0	1	0	0	1	0	0	0	1	0	9	1	0	0	10	14
7:15 AM	0	0	2	0	2	2	0	0	0	0	1	0	1	8	1	0	1	10	0	16	0	0	0	16	28
7:30 AM	0	0	3	0	1	3	0	0	0	0	1	0	0	7	0	0	0	7	0	23	1	0	0	24	34
7:45 AM	0	0	2	0	3	2	0	0	0	0	0	0	0	5	0	0	0	5	0	25	0	0	2	25	32
Hourly Total	2	0	8	0	7	10	0	0	0	0	3	0	1	21	1	0	1	23	0	73	2	0	2	75	108
8:00 AM	1	0	2	0	0	3	0	0	0	0	0	0	1	8	0	0	2	9	0	22	0	0	0	22	34
8:15 AM	1	0	2	0	3	3	0	0	0	0	0	0	1	5	0	0	0	6	0	18	1	0	0	19	28
8:30 AM	1	0	2	0	6	3	0	0	0	0	0	0	1	8	0	0	4	9	0	14	1	0	0	15	27
8:45 AM	0	0	3	0	5	3	0	0	0	0	2	0	0	5	0	0	0	5	0	11	0	0	0	11	19
Hourly Total	3	0	9	0	14	12	0	0	0	0	2	0	3	26	0	0	6	29	0	65	2	0	0	67	108
9:00 AM	1	0	3	0	0	4	0	0	0	0	1	0	0	5	0	0	0	5	0	11	0	0	0	11	20
9:15 AM	0	0	2	0	0	2	0	0	0	0	0	0	0	9	0	0	0	9	0	6	0	0	0	6	17
9:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	1	5	0	0	0	6	0	6	0	0	0	6	13
9:45 AM	0	0	1	0	3	1	0	0	0	0	1	0	1	2	0	0	0	3	0	6	0	0	0	6	10
Hourly Total	1	0	7	0	3	8	0	0	0	0	2	0	2	21	0	0	0	23	0	29	0	0	0	29	60
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	1	0	4	0	13	5	0	0	0	0	0	0	0	5	0	0	0	5	0	4	2	2	0	8	18
11:45 AM	2	0	1	0	0	3	0	0	0	0	0	0	1	6	0	0	0	7	0	5	1	1	0	7	17
Hourly Total	3	0	5	0	13	8	0	0	0	0	0	0	1	11	0	0	0	12	0	9	3	3	0	15	35
12:00 PM	1	0	2	0	0	3	0	0	0	0	0	0	1	8	0	0	0	9	0	8	0	0	0	8	20
12:15 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	8	0	0	0	8	0	6	1	0	0	7	16
12:30 PM	1	0	1	0	0	2	0	0	0	0	0	0	3	3	0	0	0	6	0	8	0	0	0	8	16
12:45 PM	0	0	2	0	9	2	0	0	0	0	4	0	1	7	0	0	1	8	0	5	1	0	0	6	16
Hourly Total	3	0	5	0	9	8	0	0	0	0	4	0	5	26	0	0	1	31	0	27	2	0	0	29	68
1:00 PM	0	0	2	0	5	2	0	0	0	0	0	0	1	6	0	0	0	7	0	5	0	0	0	5	14
1:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	3	0	1	0	4	0	8	0	0	0	8	12
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	2	0	5	2	0	0	0	0	2	0	1	9	0	1	0	11	0	13	0	0	0	13	26
3:00 PM	0	0	1	0	1	1	0	0	0	0	0	0	1	5	0	0	0	6	0	5	1	0	1	6	13
3:15 PM	1	0	0	0	2	1	0	0	0	0	0	0	0	11	0	0	0	11	0	5	2	0	1	7	19
3:30 PM	0	0	2	0	8	2	0	0	0	0	2	0	0	7	0	0	2	7	0	6	0	0	5	6	15
3:45 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	11	1	1	0	13	0	6	1	0	0	7	21
Hourly Total	1	0	4	0	11	5	0	0	0	0	2	0	1	34	1	1	2	37	0	22	4	0	7	26	68
4:00 PM	1	0	2	0	1	3	0	0	0	0	0	0	0	9	0	0	0	9	0	16	0	0	0	16	28
4:15 PM	0	0	2	0	1	2	0	0	0	0	1	0	3	8	0	0	0	11	0	12	0	0	0	12	25

4:30 PM	0	0	2	0	3	2	0	0	0	0	0	0	2	9	0	0	0	11	0	10	1	0	0	11	24
4:45 PM	0	0	2	0	1	2	0	0	0	0	0	0	2	14	0	0	0	16	0	17	1	0	0	18	36
Hourly Total	1	0	8	0	6	9	0	0	0	0	1	0	7	40	0	0	0	47	0	55	2	0	0	57	113
5:00 PM	1	0	3	0	1	4	0	0	0	0	0	0	4	17	0	0	0	21	0	12	2	0	0	14	39
5:15 PM	2	0	1	0	2	3	0	0	0	0	0	0	0	17	0	0	0	17	0	9	1	0	0	10	30
5:30 PM	0	0	1	0	1	1	0	0	0	0	0	0	2	15	0	0	0	17	0	9	0	0	2	9	27
5:45 PM	1	0	1	0	2	2	0	0	0	0	1	0	0	7	0	0	0	7	0	6	0	0	1	6	15
Hourly Total	4	0	6	0	6	10	0	0	0	0	1	0	6	56	0	0	0	62	0	36	3	0	3	39	111
Grand Total	18	0	54	0	74	72	0	0	0	0	17	0	27	244	2	2	10	275	0	329	18	3	12	350	697
Approach %	25.0	0.0	75.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	9.8	88.7	0.7	0.7	-	-	0.0	94.0	5.1	0.9	-	-	-
Total %	2.6	0.0	7.7	0.0	-	10.3	0.0	0.0	0.0	0.0	-	0.0	3.9	35.0	0.3	0.3	-	39.5	0.0	47.2	2.6	0.4	-	50.2	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Motorcycles	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	0.4	0.0	0.0	-	0.4	-	0.0	0.0	0.0	-	0.0	0.1
Cars & Light Goods	15	0	51	0	-	66	0	0	0	0	-	0	27	228	2	2	-	259	0	311	16	0	-	327	652
% Cars & Light Goods	83.3	-	94.4	-	-	91.7	-	-	-	-	-	-	100.0	93.4	100.0	100.0	-	94.2	-	94.5	88.9	0.0	-	93.4	93.5
Buses	1	0	0	0	-	1	0	0	0	0	-	0	0	2	0	0	-	2	0	2	0	0	-	2	5
% Buses	5.6	-	0.0	-	-	1.4	-	-	-	-	-	-	0.0	0.8	0.0	0.0	-	0.7	-	0.6	0.0	0.0	-	0.6	0.7
Single-Unit Trucks	2	0	3	0	-	5	0	0	0	0	-	0	0	11	0	0	-	11	0	13	2	3	-	18	34
% Single-Unit Trucks	11.1	-	5.6	-	-	6.9	-	-	-	-	-	-	0.0	4.5	0.0	0.0	-	4.0	-	4.0	11.1	100.0	-	5.1	4.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	1	0	0	-	1	2
% Articulated Trucks	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	0.4	0.0	0.0	-	0.4	-	0.3	0.0	0.0	-	0.3	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	2
% Bicycles on Road	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	0.0	0.0	0.0	-	0.0	-	0.6	0.0	0.0	-	0.6	0.3
Horse and Buggy	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Horse and Buggy	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	0.4	0.0	0.0	-	0.4	-	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	5.9	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	74	-	-	-	-	-	16	-	-	-	-	-	10	-	-	-	-	-	12	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	94.1	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Turning Movement Data Plot



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

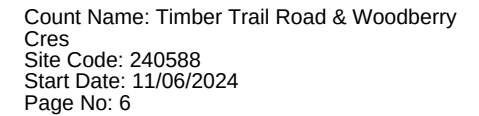
Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Timber Trail Road & Woodberry
Cres
Site Code: 240588
Start Date: 11/06/2024
Page No: 4

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Woodberry Cres Eastbound						Woodberry Cres Westbound						Timber Trail Road Northbound						Timber Trail Road 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	
7:15 AM	0	0	2	0	2	2	0	0	0	0	1	0	1	8	1	0	1	10	0	16	0	0	0	16	28
7:30 AM	0	0	3	0	1	3	0	0	0	0	1	0	0	7	0	0	0	7	0	23	1	0	0	24	34
7:45 AM	0	0	2	0	3	2	0	0	0	0	0	0	0	5	0	0	0	5	0	25	0	0	2	25	32
8:00 AM	1	0	2	0	0	3	0	0	0	0	0	0	1	8	0	0	2	9	0	22	0	0	0	22	34
Total	1	0	9	0	6	10	0	0	0	0	2	0	2	28	1	0	3	31	0	86	1	0	2	87	128
Approach %	10.0	0.0	90.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	6.5	90.3	3.2	0.0	-	-	0.0	98.9	1.1	0.0	-	-	-
Total %	0.8	0.0	7.0	0.0	-	7.8	0.0	0.0	0.0	0.0	-	0.0	1.6	21.9	0.8	0.0	-	24.2	0.0	67.2	0.8	0.0	-	68.0	-
PHF	0.250	0.000	0.750	0.000	-	0.833	0.000	0.000	0.000	0.000	-	0.000	0.500	0.875	0.250	0.000	-	0.775	0.000	0.860	0.250	0.000	-	0.870	0.941
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
Cars & Light Goods	1	0	9	0	-	10	0	0	0	0	-	0	2	24	1	0	-	27	0	83	1	0	-	84	121
% Cars & Light Goods	100.0	-	100.0	-	-	100.0	-	-	-	-	-	-	100.0	85.7	100.0	-	-	87.1	-	96.5	100.0	-	-	96.6	94.5
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Buses	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	3.6	0.0	-	-	3.2	-	0.0	0.0	-	-	0.0	0.8
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	0	3	0	0	-	3	6
% Single-Unit Trucks	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	10.7	0.0	-	-	9.7	-	3.5	0.0	-	-	3.4	4.7
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
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Horse and Buggy	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Horse and Buggy	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	50.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	50.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Turning Movement Peak Hour Data Plot (7:15 AM)



Start Time	Woodberry Cres Eastbound						Woodberry Cres Westbound						Timber Trail Road Northbound						Timber Trail Road 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	1	0	4	0	13	5	0	0	0	0	0	0	0	5	0	0	0	5	0	4	2	2	0	8	18
11:45 AM	2	0	1	0	0	3	0	0	0	0	0	0	1	6	0	0	0	7	0	5	1	1	0	7	17
12:00 PM	1	0	2	0	0	3	0	0	0	0	0	0	1	8	0	0	0	9	0	8	0	0	0	8	20
12:15 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	8	0	0	0	8	0	6	1	0	0	7	16
Total	5	0	7	0	13	12	0	0	0	0	0	0	2	27	0	0	0	29	0	23	4	3	0	30	71
Approach %	41.7	0.0	58.3	0.0	-	-	0.0	0.0	0.0	0.0	-	-	6.9	93.1	0.0	0.0	-	-	0.0	76.7	13.3	10.0	-	-	-
Total %	7.0	0.0	9.9	0.0	-	16.9	0.0	0.0	0.0	0.0	-	0.0	2.8	38.0	0.0	0.0	-	40.8	0.0	32.4	5.6	4.2	-	42.3	-
PHF	0.625	0.000	0.438	0.000	-	0.600	0.000	0.000	0.000	0.000	-	0.000	0.500	0.844	0.000	0.000	-	0.806	0.000	0.719	0.500	0.375	-	0.938	0.888
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
Cars & Light Goods	3	0	6	0	-	9	0	0	0	0	-	0	2	22	0	0	-	24	0	21	2	0	-	23	56
% Cars & Light Goods	60.0	-	85.7	-	-	75.0	-	-	-	-	-	-	100.0	81.5	-	-	-	82.8	-	91.3	50.0	0.0	-	76.7	78.9
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Buses	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	3.7	-	-	-	3.4	-	0.0	0.0	0.0	-	0.0	1.4
Single-Unit Trucks	2	0	1	0	-	3	0	0	0	0	-	0	0	4	0	0	-	4	0	2	2	3	-	7	14
% Single-Unit Trucks	40.0	-	14.3	-	-	25.0	-	-	-	-	-	-	0.0	14.8	-	-	-	13.8	-	8.7	50.0	100.0	-	23.3	19.7
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
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	0.0	-	-	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Horse and Buggy	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Horse and Buggy	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	0.0	-	-	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	13	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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@pts1.com

Count Name: Timber Trail Road & Woodberry
Cres
Site Code: 240588
Start Date: 11/06/2024
Page No: 8

Turning Movement Peak Hour Data (4:45 PM)

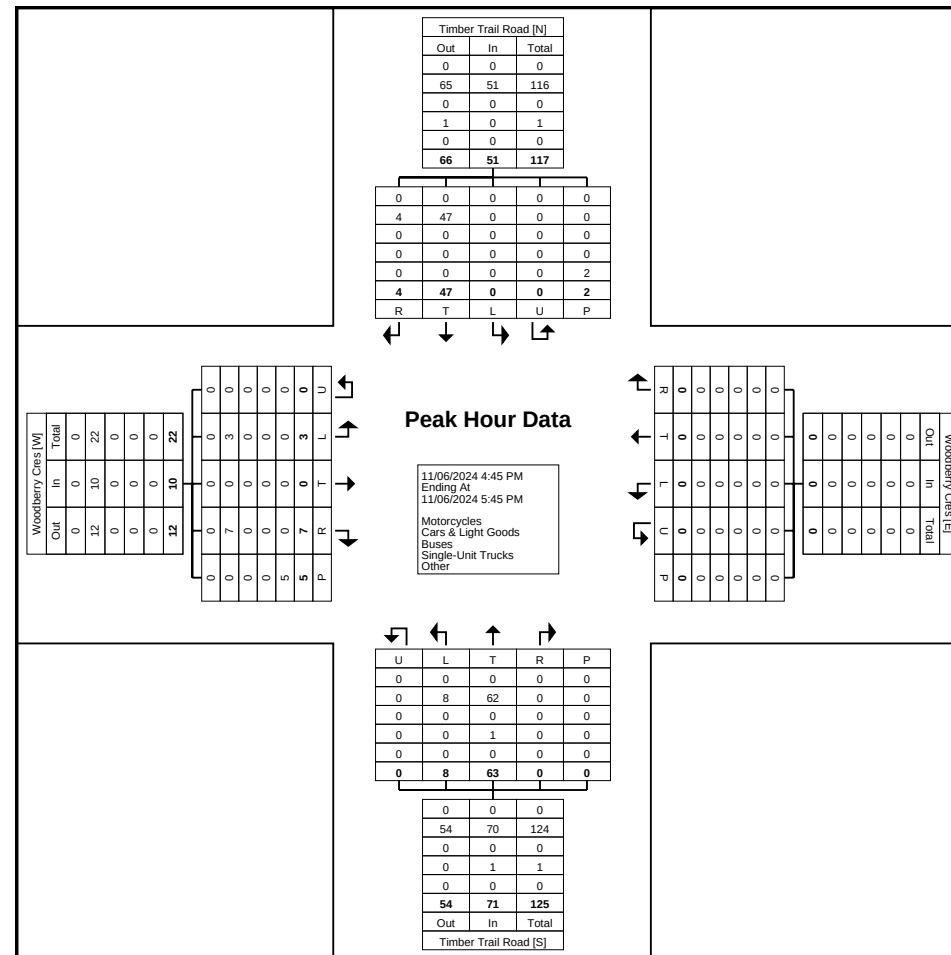
Start Time	Woodberry Cres Eastbound						Woodberry Cres Westbound						Timber Trail Road Northbound						Timber Trail Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	0	0	2	0	1	2	0	0	0	0	0	0	2	14	0	0	0	16	0	17	1	0	0	18	36
5:00 PM	1	0	3	0	1	4	0	0	0	0	0	0	4	17	0	0	0	21	0	12	2	0	0	14	39
5:15 PM	2	0	1	0	2	3	0	0	0	0	0	0	0	17	0	0	0	17	0	9	1	0	0	10	30
5:30 PM	0	0	1	0	1	1	0	0	0	0	0	0	2	15	0	0	0	17	0	9	0	0	2	9	27
Total	3	0	7	0	5	10	0	0	0	0	0	0	8	63	0	0	0	71	0	47	4	0	2	51	132
Approach %	30.0	0.0	70.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	11.3	88.7	0.0	0.0	-	-	0.0	92.2	7.8	0.0	-	-	-
Total %	2.3	0.0	5.3	0.0	-	7.6	0.0	0.0	0.0	0.0	-	0.0	6.1	47.7	0.0	0.0	-	53.8	0.0	35.6	3.0	0.0	-	38.6	-
PHF	0.375	0.000	0.583	0.000	-	0.625	0.000	0.000	0.000	0.000	-	0.000	0.500	0.926	0.000	0.000	-	0.845	0.000	0.691	0.500	0.000	-	0.708	0.846
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
Cars & Light Goods	3	0	7	0	-	10	0	0	0	0	-	0	8	62	0	0	-	70	0	47	4	0	-	51	131
% Cars & Light Goods	100.0	-	100.0	-	-	100.0	-	-	-	-	-	-	100.0	98.4	-	-	-	98.6	-	100.0	100.0	-	-	100.0	99.2
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	0.0	-	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Single-Unit Trucks	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	1.6	-	-	-	1.4	-	0.0	0.0	-	-	0.0	0.8
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
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	0.0	-	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Horse and Buggy	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Horse and Buggy	0.0	-	0.0	-	-	0.0	-	-	-	-	-	-	0.0	0.0	-	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	2	-	-	-
% Pedestrians	-	-	-	-	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: Timber Trail Road & Woodberry
Cres
Site Code: 240588
Start Date: 11/06/2024
Page No: 9



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



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: South Parkwood Blvd & Pintail Drive
Site Code: 240588
Start Date: 03/27/2025
Page No: 1

Turning Movement Data

Start Time	South Parkwood Blvd Eastbound					South Parkwood Blvd Westbound					Pintail Drive Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	5	4	0	0	9	1	1	0	0	2	5	4	0	0	9	20
7:15 AM	10	5	0	0	15	4	0	0	0	4	4	1	0	1	5	24
7:30 AM	8	8	0	0	16	3	0	0	0	3	3	5	0	0	8	27
7:45 AM	18	10	0	0	28	2	1	0	0	3	4	4	0	0	8	39
Hourly Total	41	27	0	0	68	10	2	0	0	12	16	14	0	1	30	110
8:00 AM	11	7	0	0	18	8	1	0	0	9	3	6	0	0	9	36
8:15 AM	27	3	0	2	30	8	1	0	0	9	2	6	0	0	8	47
8:30 AM	17	9	0	1	26	5	0	0	0	5	5	8	0	0	13	44
8:45 AM	12	4	0	1	16	5	1	0	0	6	5	7	0	1	12	34
Hourly Total	67	23	0	4	90	26	3	0	0	29	15	27	0	1	42	161
9:00 AM	12	7	0	0	19	1	1	0	0	2	3	3	0	0	6	27
9:15 AM	4	4	0	0	8	5	0	0	0	5	1	2	0	0	3	16
9:30 AM	9	6	1	0	16	7	1	0	0	8	1	4	0	0	5	29
9:45 AM	7	4	0	0	11	8	0	0	0	8	3	1	0	0	4	23
Hourly Total	32	21	1	0	54	21	2	0	0	23	8	10	0	0	18	95
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	6	4	1	0	11	7	0	0	0	7	5	7	0	0	12	30
11:45 AM	4	7	0	0	11	11	5	0	0	16	1	6	0	0	7	34
Hourly Total	10	11	1	0	22	18	5	0	0	23	6	13	0	0	19	64
12:00 PM	7	5	0	1	12	16	2	0	0	18	2	7	0	0	9	39
12:15 PM	7	6	0	0	13	8	0	0	0	8	0	4	0	0	4	25
12:30 PM	7	8	0	0	15	9	4	0	0	13	2	3	0	1	5	33
12:45 PM	3	6	0	0	9	13	1	0	0	14	1	3	0	0	4	27
Hourly Total	24	25	0	1	49	46	7	0	0	53	5	17	0	1	22	124
1:00 PM	9	7	0	0	16	2	1	1	0	4	0	1	0	0	1	21
1:15 PM	6	5	0	0	11	11	1	0	0	12	2	3	0	0	5	28
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	15	12	0	0	27	13	2	1	0	16	2	4	0	0	6	49
3:00 PM	9	4	0	0	13	15	2	0	0	17	1	7	0	0	8	38
3:15 PM	14	4	0	2	18	16	4	0	0	20	1	7	0	1	8	46
3:30 PM	8	4	0	0	12	10	4	0	0	14	2	11	0	1	13	39
3:45 PM	8	3	0	0	11	17	5	0	0	22	2	7	0	1	9	42
Hourly Total	39	15	0	2	54	58	15	0	0	73	6	32	0	3	38	165
4:00 PM	2	5	0	0	7	12	3	0	0	15	1	13	0	4	14	36
4:15 PM	13	6	0	0	19	21	2	0	0	23	1	7	0	1	8	50
4:30 PM	9	0	0	1	9	20	2	0	0	22	2	9	0	0	11	42

4:45 PM	15	3	0	0	18	22	2	0	0	24	2	9	0	0	11	53
Hourly Total	39	14	0	1	53	75	9	0	0	84	6	38	0	5	44	181
5:00 PM	20	8	0	0	28	19	0	0	0	19	1	3	0	1	4	51
5:15 PM	5	2	0	0	7	14	1	0	0	15	1	4	0	2	5	27
5:30 PM	10	5	0	0	15	15	5	0	1	20	1	6	0	3	7	42
5:45 PM	3	1	0	0	4	18	0	0	0	18	2	1	0	0	3	25
Hourly Total	38	16	0	0	54	66	6	0	1	72	5	14	0	6	19	145
Grand Total	305	164	2	8	471	333	51	1	1	385	69	169	0	17	238	1094
Approach %	64.8	34.8	0.4	-	-	86.5	13.2	0.3	-	-	29.0	71.0	0.0	-	-	-
Total %	27.9	15.0	0.2	-	43.1	30.4	4.7	0.1	-	35.2	6.3	15.4	0.0	-	21.8	-
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.6	-	-	0.4	0.1
Cars & Light Goods	291	158	1	-	450	321	46	1	-	368	67	161	0	-	228	1046
% Cars & Light Goods	95.4	96.3	50.0	-	95.5	96.4	90.2	100.0	-	95.6	97.1	95.3	-	-	95.8	95.6
Buses	9	3	0	-	12	9	2	0	-	11	1	4	0	-	5	28
% Buses	3.0	1.8	0.0	-	2.5	2.7	3.9	0.0	-	2.9	1.4	2.4	-	-	2.1	2.6
Single-Unit Trucks	4	3	1	-	8	3	1	0	-	4	0	1	0	-	1	13
% Single-Unit Trucks	1.3	1.8	50.0	-	1.7	0.9	2.0	0.0	-	1.0	0.0	0.6	-	-	0.4	1.2
Articulated Trucks	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
Bicycles on Road	1	0	0	-	1	0	2	0	-	2	1	2	0	-	3	6
% Bicycles on Road	0.3	0.0	0.0	-	0.2	0.0	3.9	0.0	-	0.5	1.4	1.2	-	-	1.3	0.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	0.0	-
Pedestrians	-	-	-	8	-	-	-	-	1	-	-	-	-	17	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Turning Movement Data Plot

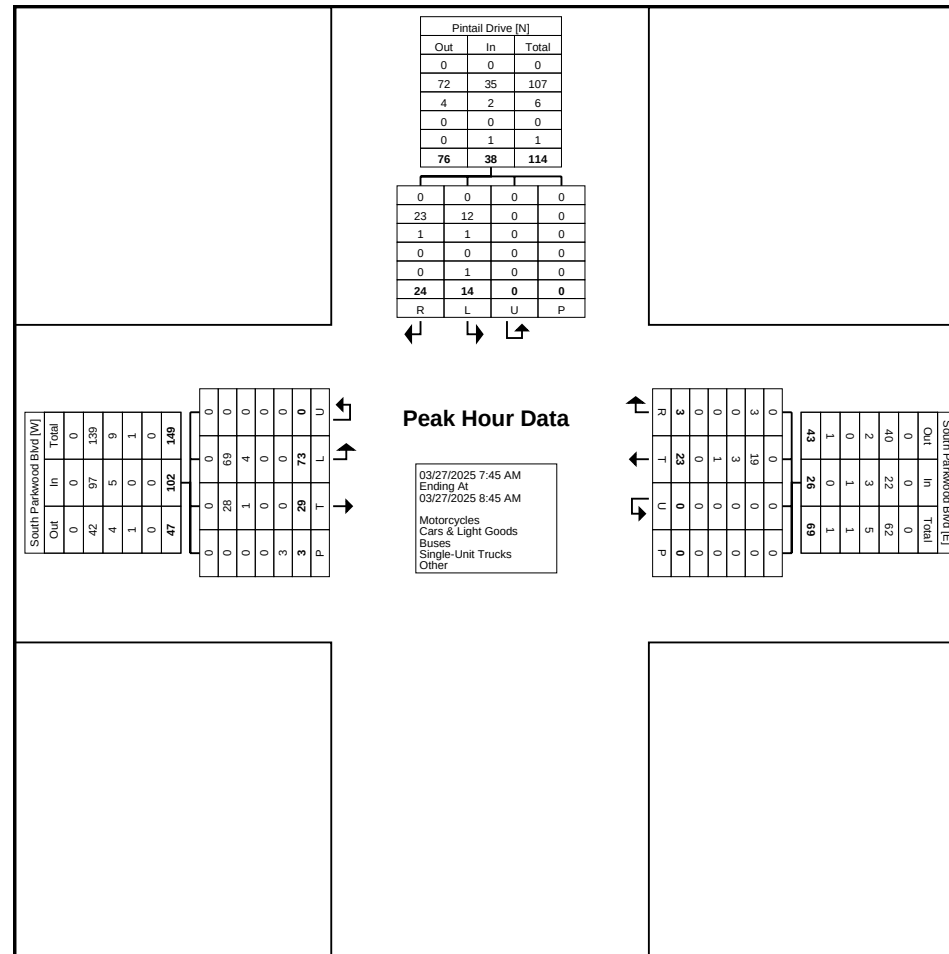
Start Time	South Parkwood Blvd Eastbound					South Parkwood Blvd Westbound					Pintail Drive Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:45 AM	18	10	0	0	28	2	1	0	0	3	4	4	0	0	8	39
8:00 AM	11	7	0	0	18	8	1	0	0	9	3	6	0	0	9	36
8:15 AM	27	3	0	2	30	8	1	0	0	9	2	6	0	0	8	47
8:30 AM	17	9	0	1	26	5	0	0	0	5	5	8	0	0	13	44
Total	73	29	0	3	102	23	3	0	0	26	14	24	0	0	38	166
Approach %	71.6	28.4	0.0	-	-	88.5	11.5	0.0	-	-	36.8	63.2	0.0	-	-	-
Total %	44.0	17.5	0.0	-	61.4	13.9	1.8	0.0	-	15.7	8.4	14.5	0.0	-	22.9	-
PHF	0.676	0.725	0.000	-	0.850	0.719	0.750	0.000	-	0.722	0.700	0.750	0.000	-	0.731	0.883
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	69	28	0	-	97	19	3	0	-	22	12	23	0	-	35	154
% Cars & Light Goods	94.5	96.6	-	-	95.1	82.6	100.0	-	-	84.6	85.7	95.8	-	-	92.1	92.8
Buses	4	1	0	-	5	3	0	0	-	3	1	1	0	-	2	10
% Buses	5.5	3.4	-	-	4.9	13.0	0.0	-	-	11.5	7.1	4.2	-	-	5.3	6.0
Single-Unit Trucks	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Single-Unit Trucks	0.0	0.0	-	-	0.0	4.3	0.0	-	-	3.8	0.0	0.0	-	-	0.0	0.6
Articulated Trucks	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
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	7.1	0.0	-	-	2.6	0.6
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	3	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-



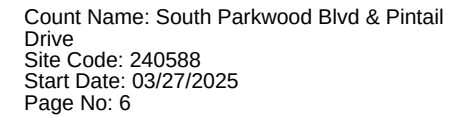
Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: South Parkwood Blvd & Pintail
Drive
Site Code: 240588
Start Date: 03/27/2025
Page No: 5



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



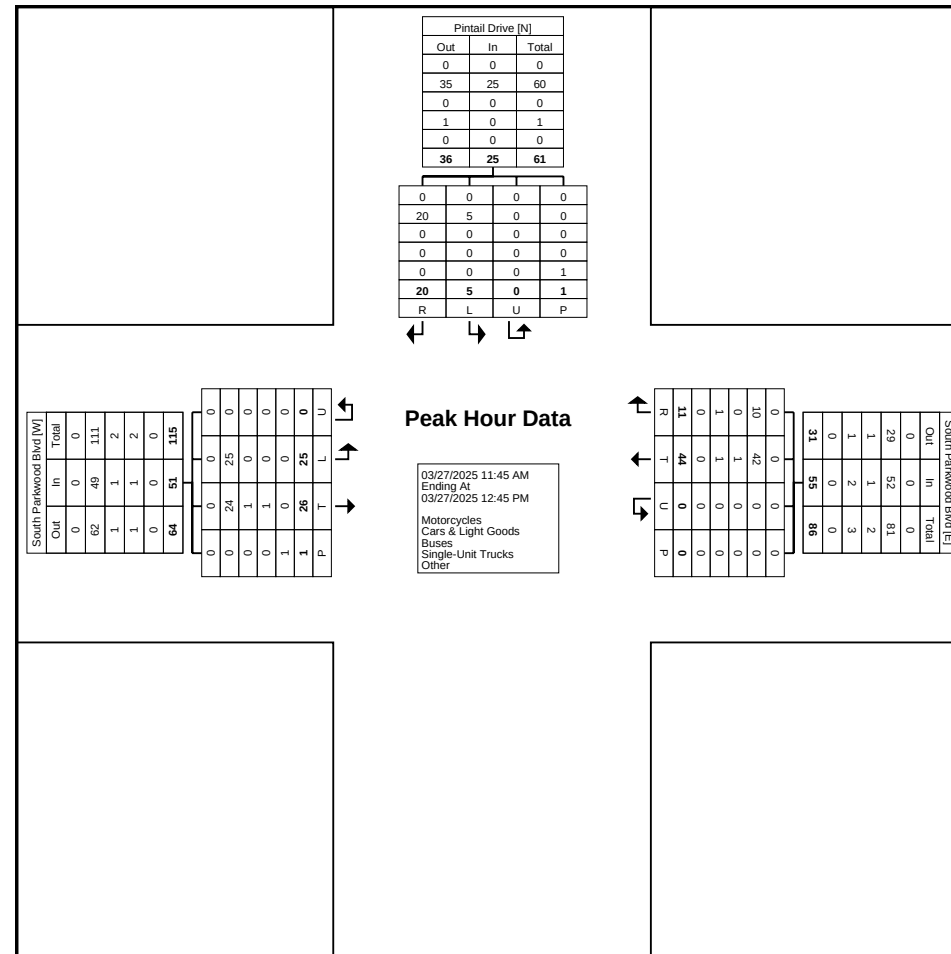
Start Time	South Parkwood Blvd Eastbound					South Parkwood Blvd Westbound					Pintail Drive Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
11:45 AM	4	7	0	0	11	11	5	0	0	16	1	6	0	0	7	34
12:00 PM	7	5	0	1	12	16	2	0	0	18	2	7	0	0	9	39
12:15 PM	7	6	0	0	13	8	0	0	0	8	0	4	0	0	4	25
12:30 PM	7	8	0	0	15	9	4	0	0	13	2	3	0	1	5	33
Total	25	26	0	1	51	44	11	0	0	55	5	20	0	1	25	131
Approach %	49.0	51.0	0.0	-	-	80.0	20.0	0.0	-	-	20.0	80.0	0.0	-	-	-
Total %	19.1	19.8	0.0	-	38.9	33.6	8.4	0.0	-	42.0	3.8	15.3	0.0	-	19.1	-
PHF	0.893	0.813	0.000	-	0.850	0.688	0.550	0.000	-	0.764	0.625	0.714	0.000	-	0.694	0.840
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	25	24	0	-	49	42	10	0	-	52	5	20	0	-	25	126
% Cars & Light Goods	100.0	92.3	-	-	96.1	95.5	90.9	-	-	94.5	100.0	100.0	-	-	100.0	96.2
Buses	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Buses	0.0	3.8	-	-	2.0	2.3	0.0	-	-	1.8	0.0	0.0	-	-	0.0	1.5
Single-Unit Trucks	0	1	0	-	1	1	1	0	-	2	0	0	0	-	0	3
% Single-Unit Trucks	0.0	3.8	-	-	2.0	2.3	9.1	-	-	3.6	0.0	0.0	-	-	0.0	2.3
Articulated Trucks	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
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
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Cambridge, Ontario, Canada N1R 8J8
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Count Name: South Parkwood Blvd & Pintail
Drive
Site Code: 240588
Start Date: 03/27/2025
Page No: 7



Turning Movement Peak Hour Data Plot (11:45 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: South Parkwood Blvd & Pintail Drive
Site Code: 240588
Start Date: 03/27/2025
Page No: 8

Turning Movement Peak Hour Data (4:15 PM)

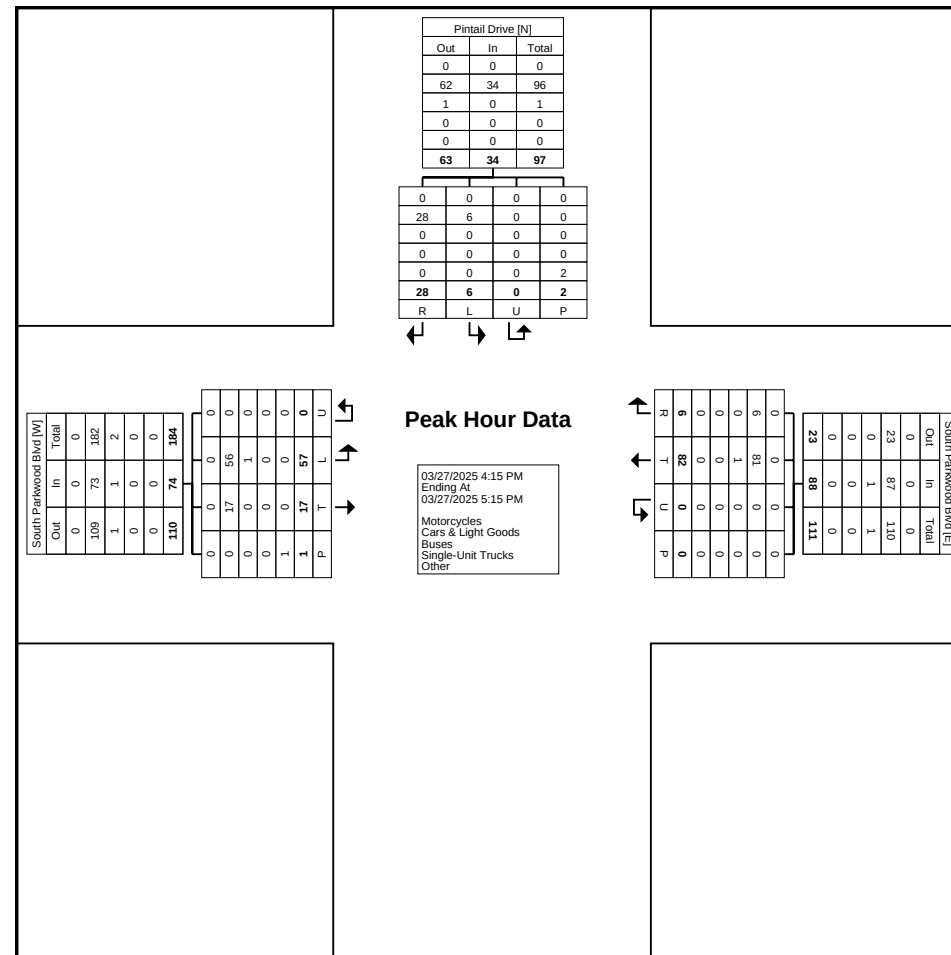
Start Time	South Parkwood Blvd Eastbound					South Parkwood Blvd Westbound					Pintail Drive Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
4:15 PM	13	6	0	0	19	21	2	0	0	23	1	7	0	1	8	50
4:30 PM	9	0	0	1	9	20	2	0	0	22	2	9	0	0	11	42
4:45 PM	15	3	0	0	18	22	2	0	0	24	2	9	0	0	11	53
5:00 PM	20	8	0	0	28	19	0	0	0	19	1	3	0	1	4	51
Total	57	17	0	1	74	82	6	0	0	88	6	28	0	2	34	196
Approach %	77.0	23.0	0.0	-	-	93.2	6.8	0.0	-	-	17.6	82.4	0.0	-	-	-
Total %	29.1	8.7	0.0	-	37.8	41.8	3.1	0.0	-	44.9	3.1	14.3	0.0	-	17.3	-
PHF	0.713	0.531	0.000	-	0.661	0.932	0.750	0.000	-	0.917	0.750	0.778	0.000	-	0.773	0.925
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	56	17	0	-	73	81	6	0	-	87	6	28	0	-	34	194
% Cars & Light Goods	98.2	100.0	-	-	98.6	98.8	100.0	-	-	98.9	100.0	100.0	-	-	100.0	99.0
Buses	1	0	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Buses	1.8	0.0	-	-	1.4	1.2	0.0	-	-	1.1	0.0	0.0	-	-	0.0	1.0
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Articulated Trucks	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
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-



Paradigm Transportation Solutions Limited
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Count Name: South Parkwood Blvd & Pintail
Drive
Site Code: 240588
Start Date: 03/27/2025
Page No: 9



Turning Movement Peak Hour Data Plot (4:15 PM)

Start Time	Weymouth Street Eastbound			WB Peds	Timber Trail Road Northbound			Timber Trail Road Southbound		
	Left	Right	Peds		Left	Thru	Peds	Thru	Right	Peds
7:15 AM	0	2	1	0	4		0		0	0
7:30 AM	0	1	0	1	2		0		1	0
7:45 AM	0	3	0	1	1		0		1	0
8:00 AM	0	2	2	1	2		0		0	0
AM Total	0	8	3	3	9		0		2	0
Heavy's	0	0	-	-	2		-		0	-

4:45 PM	0	3	2	0	2		0		1	0
5:00 PM	0	2	0	1	0		0		0	0
5:15 PM	0	2	0	0	0		0		0	0
5:30 PM	0	1	0	0	0		0		0	0
PM Total	0	8	2	1	2		0		1	0
Heavy's	0	0	-	-	0		-		0	-



CURRENT TRAFFIC SIGNAL TIMING

INT # 840 ARTHUR STREET @ Listowel Road-Union Street T08-50/ 14WOOL

Date Prepared: November 7, 2024

Mode of Control Pre-timed running SEMI-ACTUATED

Left Info	Actuated	NB	LT	-	ARTHUR STREET
	Actuated	WB	LT	-	UNION STREET

*Offsets are a percentage of the cycle length and refers to the beginning of Main Street green

Max 1 06:00-15:00 Mon-Fri, 0830-20:00 Sat, 09:00-18:00 Sun

ARTHUR STREET

NBL	Green Arrow	Min	7.0	seconds			
		Ext	5.0	seconds			
		Max	12.0	seconds			
NBL	Amber Arrow		3.0	seconds			
			1.0	seconds			
			45.0	seconds			
			3.7	seconds	Walk	25.0	seconds
			2.7	seconds	FDW	20.0	seconds

Listowel Road-Union Street

Green	Min	10.0	seconds	<u>Pedestrian Call</u>			
	Ext	3.0	seconds	Green/Walk	7.0	seconds	
	Max	27.0	seconds	Green/FDW	19.0	seconds	
Amber		4.6	seconds	Green/SDW	1.0	seconds	
		3.4	seconds	Amber	4.6	seconds	
				All Red	3.4	seconds	
TOTAL		102.4	seconds				

Max 2 15:00-20:00 Mon-Fri

ARTHUR STREET

NBL	Green Arrow	Min	7.0	seconds			
		Ext	5.0	seconds			
		Max	25.0	seconds			
NBL	Amber Arrow		3.0	seconds			
All Red			1.0	seconds			
Green			40.0	seconds			
Amber			3.7	seconds	Walk	20.0	seconds
All Red			2.7	seconds	FDW	20.0	seconds

Listowel Road-Union Street

WBL	Green Arrow	Min	7.0	seconds			
		Ext	3.0	seconds			
		Max	15.0	seconds			
WBL	Amber Arrow		3.0	seconds			
All Red			1.0	seconds			
					<u>Pedestrian Call</u>		
Green		Min	10.0	seconds	Green/Walk	7.0	seconds
		Ext	3.0	seconds	Green/FDW	19.0	seconds
		Max	25.0	seconds	Green/SDW	0.0	seconds
Amber			4.6	seconds	Amber	4.6	seconds
All Red			3.4	seconds	All Red	3.4	seconds
TOTAL			127.4	seconds			

Max 3 All other times

ARTHUR STREET

Green			50.0	seconds			
Amber			3.7	seconds	Walk	30.0	seconds
All Red			2.7	seconds	FDW	20.0	seconds

Listowel Road-Union Street

Green		Min	10.0	seconds	<u>Pedestrian Call</u>		
		Ext	3.0	seconds	Green/Walk	7.0	seconds
		Max	25.0	seconds	Green/FDW	19.0	seconds
Amber			4.6	seconds	Green/SDW	0.0	seconds
All Red			3.4	seconds	Amber	4.6	seconds
					All Red	3.4	seconds
TOTAL			89.4	seconds			

Appendix C

Existing Traffic Operations Reports



Lanes, Volumes, Timings

1: Arthur St S & Listowel Rd/Union St

Existing AM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	89	28	374	132	27	2	196	475	130	1	566	30
Future Volume (vph)	89	28	374	132	27	2	196	475	130	1	566	30
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0		65.0	30.0			100.0		100.0	50.0		50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			30.0			80.0			65.0		
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	1.00					0.98						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1592	1337	1438	1413	1471	1313	1708	1350	1668	1773	1257
Flt Permitted	0.740			0.739			0.281			0.491		
Satd. Flow (perm)	1187	1592	1337	1118	1413	1436	388	1708	1350	862	1773	1257
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			374			79			130			96
Link Speed (k/h)		80			50			60			60	
Link Distance (m)		579.0			174.3			195.8			164.0	
Travel Time (s)		26.1			12.5			11.7			9.8	
Confl. Peds. (#/hr)	2					2						
Peak Hour 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
Heavy Vehicles (%)	9%	18%	10%	16%	33%	0%	27%	10%	9%	0%	6%	17%
Adj. Flow (vph)	89	28	374	132	27	2	196	475	130	1	566	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	28	374	132	27	2	196	475	130	1	566	30
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Synchro 12 Report

PTSL

Lanes, Volumes, Timings

1: Arthur St S & Listowel Rd/Union St

Existing AM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4					8	2		2	6	6
Permitted Phases	4		4	8		8				2	6	6
Detector Phase	4	4	4	8	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	35.0	11.0	51.4	51.4	51.4	51.4	51.4
Total Split (s)	35.0	35.0	35.0	35.0	35.0	35.0	16.0	67.4	67.4	51.4	51.4	51.4
Total Split (%)	34.2%	34.2%	34.2%	34.2%	34.2%	34.2%	15.6%	65.8%	65.8%	50.2%	50.2%	50.2%
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0	27.0	12.0	61.0	61.0	45.0	45.0	45.0
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.0	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	3.4	1.0	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		25.0	25.0	25.0	25.0	25.0
Flash Don't Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0		0	0	0	0	0
Act Effct Green (s)	20.3	20.3	20.3	20.3	20.3	20.3	63.6	63.6	63.6	49.6	49.6	49.6
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22	0.22	0.69	0.69	0.69	0.54	0.54	0.54
v/c Ratio	0.34	0.08	0.64	0.54	0.09	0.01	0.53	0.40	0.13	0.00	0.59	0.04
Control Delay (s/veh)	33.4	27.9	8.7	39.8	28.1	0.0	11.6	8.1	1.6	13.0	19.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.4	27.9	8.7	39.8	28.1	0.0	11.6	8.1	1.6	13.0	19.1	0.1
LOS	C	C	A	D	C	A	B	A	A	B	B	A
Approach Delay (s/veh)		14.2			37.3			7.9			18.1	
Approach LOS		B			D			A			B	

Intersection Summary

Area Type: Other

Cycle Length: 102.4

Actuated Cycle Length: 91.9

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay (s/veh): 14.7 Intersection LOS: B

Intersection Capacity Utilization 73.3% ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Arthur St S & Listowel Rd/Union St



Synchro 12 Report

PTSL

Queues

1: Arthur St S & Listowel Rd/Union St

Existing AM

Southwood, Elmira TIS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	28	374	132	27	2	196	475	130	1	566	30
v/c Ratio	0.34	0.08	0.64	0.54	0.09	0.01	0.53	0.40	0.13	0.00	0.59	0.04
Control Delay (s/veh)	33.4	27.9	8.7	39.8	28.1	0.0	11.6	8.1	1.6	13.0	19.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.4	27.9	8.7	39.8	28.1	0.0	11.6	8.1	1.6	13.0	19.1	0.1
Queue Length 50th (m)	14.0	4.2	0.0	21.8	4.0	0.0	11.2	32.1	0.0	0.1	66.9	0.0
Queue Length 95th (m)	27.7	11.0	23.6	40.0	10.7	0.0	26.4	65.9	6.4	1.0	125.4	0.0
Internal Link Dist (m)	555.0			150.3			171.8			140.0		
Turn Bay Length (m)	60.0		65.0	30.0		30.0	100.0		100.0	50.0		50.0
Base Capacity (vph)	401	538	699	378	478	538	389	1182	974	465	957	723
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.05	0.54	0.35	0.06	0.00	0.50	0.40	0.13	0.00	0.59	0.04

Intersection Summary

Lanes, Volumes, Timings

2: Arthur St S & South Parkwood Blvd/Earl Martin Dr

Existing AM

Southwood, Elmira TIS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1	33	2	0	26	16	547	4	71	593	19
Future Volume (vph)	5	1	33	2	0	26	16	547	4	71	593	19
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	15.0		0	25.0		0.0	70.0		55.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	20.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.854			0.850			0.850			0.995		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1390	1317	0	1668	1092	0	1476	1724	841	1651	1529	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1390	1317	0	1668	1092	0	1476	1724	841	1651	1529	0
Link Speed (k/h)	50			50			60			60		
Link Distance (m)	158.6			105.5			325.8			133.1		
Travel Time (s)	11.4			7.6			19.5			8.0		
Peak Hour 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
Heavy Vehicles (%)	20%	0%	6%	0%	0%	27%	13%	9%	75%	1%	6%	11%
Adj. Flow (vph)	5	1	33	2	0	26	16	547	4	71	593	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	34	0	2	26	0	16	547	4	71	612	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	3.5			3.5			3.5			3.5		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane								Yes				Yes
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25		15		25		15		25		15	
Sign Control	Stop			Stop			Free			Free		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 55.0%

ICU Level of Service B

Analysis Period (min) 15

HCM 7th TWSC
2: Arthur St S & South Parkwood Blvd/Earl Martin Dr

Existing AM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	5	1	33	2	0	26	16	547	4	71	593	19
Future Vol, veh/h	5	1	33	2	0	26	16	547	4	71	593	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	15	-	-	25	-	-	70	-	55	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	20	0	6	0	0	27	13	9	75	1	6	11
Mvmt Flow	5	1	33	2	0	26	16	547	4	71	593	19

Major/Minor	Minor2		Minor1		Major1		Major2			
Conflicting Flow All	1324	1328	603	1315	1333	547	612	0	0	551
Stage 1	745	745	-	579	579	-	-	-	-	-
Stage 2	579	583	-	736	754	-	-	-	-	-
Critical Hdwy	7.3	6.5	6.26	7.1	6.5	6.47	4.23	-	-	4.11
Critical Hdwy Stg 1	6.3	5.5	-	6.1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.5	-	6.1	5.5	-	-	-	-	-
Follow-up Hdwy	3.68	4	3.354	3.5	4	3.543	2.317	-	-	2.209
Pot Cap-1 Maneuver	122	157	492	136	155	492	916	-	-	1024
Stage 1	380	424	-	504	504	-	-	-	-	-
Stage 2	471	502	-	414	420	-	-	-	-	-
Platoon blocked, %										
Mov Cap-1 Maneuver	106	143	492	116	142	492	916	-	-	1024
Mov Cap-2 Maneuver	106	143	-	116	142	-	-	-	-	-
Stage 1	353	395	-	495	495	-	-	-	-	-
Stage 2	438	493	-	359	391	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v16.97		14.44	0.25	0.91
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	916	-	-	106	459	116	492	1024	-	-
HCM Lane V/C Ratio	0.017	-	-	0.047	0.074	0.017	0.053	0.069	-	-
HCM Control Delay (s/veh)	9	-	-	40.8	13.5	36.7	12.7	8.8	-	-
HCM Lane LOS	A	-	-	E	B	E	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.2	0.1	0.2	0.2	-	-

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
3: Listowel Rd & Timber Trail Rd

Existing AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰		↰	↱
Traffic Volume (vph)	14	475	256	11	59	43
Future Volume (vph)	14	475	256	11	59	43
Ideal Flow (vphpl)	1775	1900	1650	1650	1765	1765
Storage Length (m)	35.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.943	
Flt Protected	0.950				0.972	
Satd. Flow (prot)	1463	1693	1301	0	1560	0
Flt Permitted	0.950				0.972	
Satd. Flow (perm)	1463	1693	1301	0	1560	0
Link Speed (k/h)		80	80		50	
Link Distance (m)		168.0	579.0		214.8	
Travel Time (s)		7.6	26.1		15.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	11%	25%	18%	3%	2%
Adj. Flow (vph)	14	475	256	11	59	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	475	267	0	102	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	3.5	3.5			3.5	
Link Offset(m)	0.0	0.0			0.0	
Crosswalk Width(m)	4.8	4.8			4.8	
Two way Left Turn Lane						
Headway Factor	1.11	1.01	1.21	1.21	1.12	1.12
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.0%
ICU Level of Service A	
Analysis Period (min)	15

PTSL

Synchro 12 Report

HCM 7th TWSC
3: Listowel Rd & Timber Trail Rd

Existing AM
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	475	256	11	59	43
Future Vol, veh/h	14	475	256	11	59	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	35	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	14	11	25	18	3	2
Mvmt Flow	14	475	256	11	59	43

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	267	0	765
Stage 1	-	-	262
Stage 2	-	-	503
Critical Hdwy	4.24	-	6.43
Critical Hdwy Stg 1	-	-	5.43
Critical Hdwy Stg 2	-	-	5.43
Follow-up Hdwy	2.326	-	3.527
Pot Cap-1 Maneuver	1230	-	370
Stage 1	-	-	780
Stage 2	-	-	605
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1230	-	366
Mov Cap-2 Maneuver	-	-	366
Stage 1	-	-	771
Stage 2	-	-	605

Approach	EB	WB	SB
HCM Control Delay, s/v	0.23	0	14.74
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1230	-	-	-	471
HCM Lane V/C Ratio	0.011	-	-	-	0.217
HCM Control Delay (s/veh)	8	-	-	-	14.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.8

Lanes, Volumes, Timings
4: South Parkwood Blvd & Pintail Drive

Existing AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	73	29	23	3	14	24
Future Volume (vph)	73	29	23	3	14	24
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.984		0.915	
Flt Protected		0.965			0.982	
Satd. Flow (prot)	0	1497	1396	0	1492	0
Flt Permitted		0.965			0.982	
Satd. Flow (perm)	0	1497	1396	0	1492	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		241.1	158.6		116.0	
Travel Time (s)		17.4	11.4		8.4	
Confl. Peds. (#/hr)						3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	3%	17%	0%	7%	4%
Adj. Flow (vph)	73	29	23	3	14	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	102	26	0	38	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.12	1.12
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM 7th TWSC
4: South Parkwood Blvd & Pintail Drive

Existing AM
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	5.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	73	29	23	3	14	24
Future Vol, veh/h	73	29	23	3	14	24
Conflicting Peds, #/hr	0	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	3	17	0	7	4
Mvmt Flow	73	29	23	3	14	24

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	26	0	200
Stage 1	-	-	25
Stage 2	-	-	175
Critical Hdwy	4.16	-	6.47
Critical Hdwy Stg 1	-	-	5.47
Critical Hdwy Stg 2	-	-	5.47
Follow-up Hdwy	2.254	-	3.363
Pot Cap-1 Maneuver	1563	-	778
Stage 1	-	-	985
Stage 2	-	-	843
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1563	-	741
Mov Cap-2 Maneuver	-	-	741
Stage 1	-	-	939
Stage 2	-	-	843

Approach	EB	WB	SB
HCM Control Delay, s/v	5.31	0	9.15
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1288	-	-	-	905
HCM Lane V/C Ratio	0.047	-	-	-	0.042
HCM Control Delay (s/veh)	7.4	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
5: Burlwood Dr & South Parkwood Blvd

Existing AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	73	0	2	62	10	0	0	0	11	0	2
Future Volume (vph)	0	73	0	2	62	10	0	0	0	11	0	2
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					0.982						0.979	
Flt Protected					0.999						0.959	
Satd. Flow (prot)	0	1446	0	0	1396	0	0	1533	0	0	1337	0
Flt Permitted					0.999						0.959	
Satd. Flow (perm)	0	1446	0	0	1396	0	0	1533	0	0	1337	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		220.1			241.1			55.1			92.8	
Travel Time (s)		15.8			17.4			4.0			6.7	
Confl. Peds. (#/hr)	6					6			1	1		
Peak Hour 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
Heavy Vehicles (%)	0%	6%	0%	0%	6%	20%	0%	0%	0%	9%	0%	0%
Adj. Flow (vph)	0	73	0	2	62	10	0	0	0	11	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	73	0	0	74	0	0	0	0	0	13	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)		4.8			4.8			4.8			4.8	
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)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.3%
Analysis Period (min)	15
ICU Level of Service	A

PTSL

Synchro 12 Report

HCM 7th TWSC
5: Burlwood Dr & South Parkwood Blvd

Existing AM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	73	0	2	62	10	0	0	0	11	0	2
Future Vol, veh/h	0	73	0	2	62	10	0	0	0	11	0	2
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	6	0	0	6	20	0	0	0	9	0	0
Mvmt Flow	0	73	0	2	62	10	0	0	0	11	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	78	0	0	73	0	0	139	155	74	151	150	73
Stage 1	-	-	-	-	-	-	73	73	-	77	77	-
Stage 2	-	-	-	-	-	-	66	82	-	74	73	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.19	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.19	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.19	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.581	4	3.3
Pot Cap-1 Maneuver	1533	-	-	1540	-	-	836	741	993	801	745	995
Stage 1	-	-	-	-	-	-	942	838	-	915	835	-
Stage 2	-	-	-	-	-	-	950	831	-	918	838	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1526	-	-	1540	-	-	833	736	993	795	741	990
Mov Cap-2 Maneuver	-	-	-	-	-	-	833	736	-	795	741	-
Stage 1	-	-	-	-	-	-	942	838	-	909	830	-
Stage 2	-	-	-	-	-	-	946	826	-	917	838	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.2	0	9.46
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1526	-	-	47	-	-	820
HCM Lane V/C Ratio	-	-	-	-	0.001	-	-	0.016
HCM Control Delay (s/veh)	0	0	-	-	7.3	0	-	9.5
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

Lanes, Volumes, Timings
6: Timber Trail Rd & Woodberry Cres

Existing AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	1	0	9	0	0	0	2	28	1	0	86	1
Future Volume (vph)	1	0	9	0	0	0	2	28	1	0	86	1
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		0.878						0.996			0.998	
Flt Protected		0.995						0.997				
Satd. Flow (prot)	0	1339	0	0	1533	0	0	1351	0	0	1472	0
Flt Permitted		0.995						0.997				
Satd. Flow (perm)	0	1339	0	0	1533	0	0	1351	0	0	1472	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		98.1			55.8			214.8			179.4	
Travel Time (s)		7.1			4.0			15.5			12.9	
Confl. Peds. (#/hr)	2		3	3		2	6		2	2		6
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	14%	0%	0%	4%	0%
Adj. Flow (vph)	1	0	9	0	0	0	2	28	1	0	86	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	0	0	0	31	0	0	87	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)		4.8			4.8			4.8			4.8	
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)	25		15	25		15	25		15	25		15
Sign Control	Stop		Stop				Free				Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	18.0%				ICU Level of Service A							
Analysis Period (min)	15											

HCM 7th TWSC
6: Timber Trail Rd & Woodberry Cres

Existing AM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	1	0	9	0	0	0	2	28	1	0	86	1
Future Vol, veh/h	1	0	9	0	0	0	2	28	1	0	86	1
Conflicting Peds, #/hr	2	0	3	3	0	2	6	0	2	2	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	14	0	0	4	0
Mvmt Flow	1	0	9	0	0	0	2	28	1	0	86	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	127	128	96	124	128	33	93	0	0	31	0	0
Stage 1	93	93	-	35	35	-	-	-	-	-	-	-
Stage 2	34	35	-	89	93	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	852	767	967	856	767	1047	1514	-	-	1595	-	-
Stage 1	919	822	-	987	870	-	-	-	-	-	-	-
Stage 2	987	870	-	923	822	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	845	761	960	843	761	1044	1507	-	-	1592	-	-
Mov Cap-2 Maneuver	845	761	-	843	761	-	-	-	-	-	-	-
Stage 1	915	818	-	984	868	-	-	-	-	-	-	-
Stage 2	984	867	-	913	818	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s/v	8.84		0		0.48		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	115	-	-	947	-	1592	-	-
HCM Lane V/C Ratio	0.001	-	-	0.011	-	-	-	-
HCM Control Delay (s/veh)	7.4	0	-	8.8	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
7: Timber Trail Rd & Weymouth St

Existing AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	8	0	0	0	9	20	0	0	79	2
Future Volume (vph)	0	0	8	0	0	0	9	20	0	0	79	2
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	0.865						0.997					
Flt Protected							0.985					
Satd. Flow (prot)	0	1326	0	0	1533	0	0	1336	0	0	1471	0
Flt Permitted							0.985					
Satd. Flow (perm)	0	1326	0	0	1533	0	0	1336	0	0	1471	0
Link Speed (k/h)	50				50				50			
Link Distance (m)	85.5				50.1				179.4			
Travel Time (s)	6.2				3.6				12.9			
Confl. Peds. (#/hr)									3		3	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	22%	9%	0%	0%	4%	0%
Adj. Flow (vph)	0	0	8	0	0	0	9	20	0	0	79	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	0	0	0	29	0	0	81	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			
Link Offset(m)	0.0				0.0				0.0			
Crosswalk Width(m)	4.8				4.8				4.8			
Two way Left Turn Lane												
Headway Factor	1.31	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)	25		15		25		15		25		15	
Sign Control	Stop				Stop				Free			
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 19.0%												
ICU Level of Service A												
Analysis Period (min) 15												

PTSL

Synchro 12 Report

HCM 7th TWSC
7: Timber Trail Rd & Weymouth St

Existing AM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	0	0	8	0	0	0	9	20	0	0	79	2
Future Vol, veh/h	0	0	8	0	0	0	9	20	0	0	79	2
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	3	3	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	22	9	0	0	4	0
Mvmt Flow	0	0	8	0	0	0	9	20	0	0	79	2

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	121	124	83	120	125	23	84	0	0	23	0	0
Stage 1	83	83	-	41	41	-	-	-	-	-	-	-
Stage 2	38	41	-	79	84	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.32	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.398	-	-	2.2	-	-
Pot Cap-1 Maneuver	859	770	982	860	769	1060	1396	-	-	1605	-	-
Stage 1	930	830	-	979	865	-	-	-	-	-	-	-
Stage 2	982	865	-	935	829	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	851	762	980	846	761	1057	1392	-	-	1602	-	-
Mov Cap-2 Maneuver	851	762	-	846	761	-	-	-	-	-	-	-
Stage 1	928	828	-	970	857	-	-	-	-	-	-	-
Stage 2	976	857	-	927	827	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.7	0	2.36	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	559	-	-	980	-	1602	-	-
HCM Lane V/C Ratio	0.006	-	-	0.008	-	-	-	-
HCM Control Delay (s/veh)	7.6	0	-	8.7	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
1: Arthur St S & Listowel Rd/Union St

Existing PM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	88	43	297	238	75	1	327	721	70	1	480	84
Future Volume (vph)	88	43	297	238	75	1	327	721	70	1	480	84
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0		65.0	30.0		30.0	100.0		100.0	50.0		50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			30.0			80.0			65.0		
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							1.00					
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1323	1313	1619	1678	1471	1544	1842	1257	1668	1824	1388
Fit Permitted	0.708			0.568			0.235			0.381		
Satd. Flow (perm)	1230	1323	1313	968	1678	1471	382	1842	1257	669	1824	1358
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			297			63			77			111
Link Speed (k/h)		80			50			60			60	
Link Distance (m)		579.0			174.3			195.8			164.0	
Travel Time (s)		26.1			12.5			11.7			9.8	
Confl. Peds. (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	1%	42%	12%	3%	12%	0%	8%	2%	17%	0%	3%	6%
Adj. Flow (vph)	88	43	297	238	75	1	327	721	70	1	480	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	43	297	238	75	1	327	721	70	1	480	84
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

PTSL

Synchro 12 Report

Lanes, Volumes, Timings

1: Arthur St S & Listowel Rd/Union St

Existing PM
Southwood, Elmira TIS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	34.0	34.0	34.0	11.0	34.0	34.0	11.0	46.4	46.4	46.4	46.4	46.4
Total Split (s)	33.0	33.0	33.0	19.0	52.0	52.0	29.0	75.4	75.4	46.4	46.4	46.4
Total Split (%)	25.9%	25.9%	25.9%	14.9%	40.8%	40.8%	22.8%	59.2%	59.2%	36.4%	36.4%	36.4%
Maximum Green (s)	25.0	25.0	25.0	15.0	44.0	44.0	25.0	69.0	69.0	40.0	40.0	40.0
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.4	3.4	3.4	1.0	3.4	3.4	1.0	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-4.0	-4.0	-4.0	0.0	-4.0	-4.0	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		20.0	20.0	20.0	20.0	20.0
Flash Don't Walk (s)	19.0	19.0	19.0		19.0	19.0		20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0	0		0	0		0	0	0	0	0
Act Effct Green (s)	18.1	18.1	18.1	36.6	36.6	36.6	71.5	71.5	71.5	46.9	46.9	46.9
Actuated g/C Ratio	0.16	0.16	0.16	0.32	0.32	0.32	0.62	0.62	0.62	0.40	0.40	0.40
v/c Ratio	0.46	0.21	0.65	0.62	0.14	0.00	0.74	0.64	0.09	0.00	0.65	0.14
Control Delay (s/veh)	52.7	45.0	12.2	39.4	28.8	0.0	24.2	18.1	2.3	26.0	35.3	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.7	45.0	12.2	39.4	28.8	0.0	24.2	18.1	2.3	26.0	35.3	2.9
LOS	D	D	B	D	C	A	C	B	A	C	D	A
Approach Delay (s/veh)	23.8			36.8			18.9			30.4		
Approach LOS	C			D			B			C		

Intersection Summary

Area Type: Other

Cycle Length: 127.4

Actuated Cycle Length: 116.1

Natural Cycle: 105

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay (s/veh): 24.8

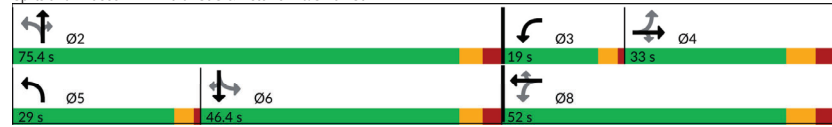
Intersection LOS: C

Intersection Capacity Utilization 83.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Arthur St S & Listowel Rd/Union St



Synchro 12 Report

PTSL

Queues

1: Arthur St S & Listowel Rd/Union St

Existing PM
Southwood, Elmira TIS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	88	43	297	238	75	1	327	721	70	1	480	84
v/c Ratio	0.46	0.21	0.65	0.62	0.14	0.00	0.74	0.64	0.09	0.00	0.65	0.14
Control Delay (s/veh)	52.7	45.0	12.2	39.4	28.8	0.0	24.2	18.1	2.3	26.0	35.3	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.7	45.0	12.2	39.4	28.8	0.0	24.2	18.1	2.3	26.0	35.3	2.9
Queue Length 50th (m)	19.5	9.1	0.0	45.5	12.8	0.0	35.5	101.5	0.0	0.2	94.5	0.0
Queue Length 95th (m)	36.4	20.1	26.7	69.7	24.3	0.0	69.8	163.7	5.7	1.5	150.3	6.5
Internal Link Dist (m)	555.0			150.3			171.8			140.0		
Turn Bay Length (m)	60.0		65.0	30.0		30.0	100.0		100.0	50.0		50.0
Base Capacity (vph)	307	330	551	389	694	645	485	1134	803	270	737	614
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.13	0.54	0.61	0.11	0.00	0.67	0.64	0.09	0.00	0.65	0.14

Intersection Summary

PTSL

Synchro 12 Report

Lanes, Volumes, Timings

2: Arthur St S & South Parkwood Blvd/Earl Martin Dr

Existing PM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	7	2	21	2	0	48	40	730	6	38	578	40
Future Volume (vph)	7	2	21	2	0	48	40	730	6	38	578	40
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	15.0		0.0	25.0		0.0	70.0		55.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	20.0			7.5			7.5			7.5		
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		0.863			0.850			0.850		0.990		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1408	0	1668	1360	0	1588	1842	1471	1588	1571	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1668	1408	0	1668	1360	0	1588	1842	1471	1588	1571	0
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		158.6			105.5			325.8			133.1	
Travel Time (s)		11.4			7.6			19.5			8.0	
Confl. Peds. (#/hr)							1		1	1		1
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	5%	2%	0%	5%	3%	0%
Adj. Flow (vph)	7	2	21	2	0	48	40	730	6	38	578	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	23	0	2	48	0	40	730	6	38	618	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane							Yes			Yes		
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 51.3%

ICU Level of Service A

Analysis Period (min) 15

PTSL

Synchro 12 Report

HCM 7th TWSC

2: Arthur St S & South Parkwood Blvd/Earl Martin Dr

Existing PM

Southwood, Elmira TIS

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Vol, veh/h	7	2	21	2	0	48	40	730	6	38	578	40
Future Vol, veh/h	7	2	21	2	0	48	40	730	6	38	578	40
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	15	-	-	25	-	-	70	-	55	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	2	5	2	0	5	3	0
Mvmt Flow	7	2	21	2	0	48	40	730	6	38	578	40

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	1485	1492	599	1466
Stage 1	675	675	-	811
Stage 2	810	817	-	655
Critical Hdwy	7.1	6.5	6.2	7.1
Critical Hdwy Stg 1	6.1	5.5	-	6.1
Critical Hdwy Stg 2	6.1	5.5	-	6.1
Follow-up Hdwy	3.5	4	3.3	3.5
Pot Cap-1 Maneuver	104	125	505	107
Stage 1	447	456	-	376
Stage 2	377	393	-	458
Platoon blocked, %				
Mov Cap-1 Maneuver	84	114	505	92
Mov Cap-2 Maneuver	84	114	-	92
Stage 1	427	436	-	360
Stage 2	320	376	-	418

Approach	EB	WB	NB	SB
HCM Control Delay, s/v23.42		15.85	0.46	0.55
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	946	-	-	84	389	92	421	855	-	-
HCM Lane V/C Ratio	0.042	-	-	0.083	0.059	0.022	0.114	0.044	-	-
HCM Control Delay (s/veh)	9	-	-	51.6	14.8	44.8	14.6	9.4	-	-
HCM Lane LOS	A	-	-	F	B	E	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0.1	0.4	0.1	-	-

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
3: Listowel Rd & Timber Trail Rd

Existing PM
Southwood, Elmira TIS

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	32	419	466	25	26	33
Future Volume (vph)	32	419	466	25	26	33
Ideal Flow (vphpl)	1775	1900	1650	1650	1765	1765
Storage Length (m)	35.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.993		0.924	
Flt Protected	0.950				0.978	
Satd. Flow (prot)	1619	1663	1493	0	1577	0
Flt Permitted	0.950				0.978	
Satd. Flow (perm)	1619	1663	1493	0	1577	0
Link Speed (k/h)		80	80		50	
Link Distance (m)		168.0	579.0		214.8	
Travel Time (s)		7.6	26.1		15.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	13%	9%	0%	0%	0%
Adj. Flow (vph)	32	419	466	25	26	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	419	491	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.11	1.01	1.21	1.21	1.12	1.12
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	40.4%					
Analysis Period (min)	15					
ICU Level of Service A						

PTSL

Synchro 12 Report

HCM 7th TWSC
3: Listowel Rd & Timber Trail Rd

Existing PM
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	419	466	25	26	33
Future Vol, veh/h	32	419	466	25	26	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	35	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	13	9	0	0	0
Mvmt Flow	32	419	466	25	26	33
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	491	0	-	0	962	479
Stage 1	-	-	-	-	479	-
Stage 2	-	-	-	-	483	-
Critical Hdwy	4.13	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.227	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1067	-	-	-	287	591
Stage 1	-	-	-	-	628	-
Stage 2	-	-	-	-	625	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1067	-	-	-	278	591
Mov Cap-2 Maneuver	-	-	-	-	278	-
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	625	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.6	0		15.71		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1067	-	-	-	395	
HCM Lane V/C Ratio	0.03	-	-	-	0.149	
HCM Control Delay (s/veh)	8.5	-	-	-	15.7	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
4: South Parkwood Blvd & Pintail Drive

Existing PM
Southwood, Elmira TIS

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	57	17	82	6	6	28
Future Volume (vph)	57	17	82	6	6	28
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.991		0.889	
Flt Protected		0.963			0.991	
Satd. Flow (prot)	0	1547	1602	0	1538	0
Flt Permitted		0.963			0.991	
Satd. Flow (perm)	0	1547	1602	0	1538	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		241.1	158.6		116.0	
Travel Time (s)		17.4	11.4		8.4	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%
Adj. Flow (vph)	57	17	82	6	6	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	74	88	0	34	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.12	1.12
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.7%			ICU Level of Service A		
Analysis Period (min)	15					

PTSL

Synchro 12 Report

HCM 7th TWSC
4: South Parkwood Blvd & Pintail Drive

Existing PM
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	3.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	57	17	82	6	6	28
Future Vol, veh/h	57	17	82	6	6	28
Conflicting Peds, #/hr	2	0	0	2	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	0	1	0	0	0
Mvmt Flow	57	17	82	6	6	28
Major/Minor						
Major1	Major2		Minor2			
Conflicting Flow All	90	0	-	0	218	88
Stage 1	-	-	-	-	87	-
Stage 2	-	-	-	-	131	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1505	-	-	-	775	976
Stage 1	-	-	-	-	941	-
Stage 2	-	-	-	-	900	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1503	-	-	-	743	974
Mov Cap-2 Maneuver	-	-	-	-	743	-
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	899	-
Approach						
EB	WB		SB			
HCM Control Delay, s/v	5.77	0	9.05			
HCM LOS			A			
Minor Lane/Major Mvmt						
EBL	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	1386	-	-	-	923	
HCM Lane V/C Ratio	0.038	-	-	-	0.037	
HCM Control Delay (s/veh)	7.5	0	-	-	9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	

PTSL

Synchro 12 Report

Lanes, Volumes, Timings

5: Burlwood Dr & South Parkwood Blvd

Existing PM

Southwood, Elmira TIS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	70	0	0	101	9	0	0	0	5	0	0
Future Volume (vph)	0	70	0	0	101	9	0	0	0	5	0	0
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					0.989							
Flt Protected											0.950	
Satd. Flow (prot)	0	1518	0	0	1502	0	0	1533	0	0	1456	0
Flt Permitted											0.950	
Satd. Flow (perm)	0	1518	0	0	1502	0	0	1533	0	0	1456	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		220.1			241.1			55.1			92.8	
Travel Time (s)		15.8			17.4			4.0			6.7	
Confl. Peds. (#/hr)	11		1	1		11			1	1		
Peak Hour 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
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	70	0	0	101	9	0	0	0	5	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	70	0	0	110	0	0	0	0	0	5	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)		4.8			4.8			4.8			4.8	
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)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	19.5%											
Analysis Period (min)	15											
ICU Level of Service A												

PTSL

Synchro 12 Report

HCM 7th TWSC

5: Burlwood Dr & South Parkwood Blvd

Existing PM

Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	70	0	0	101	9	0	0	0	5	0	0
Future Vol, veh/h	0	70	0	0	101	9	0	0	0	5	0	0
Conflicting Peds, #/hr	11	0	1	1	0	11	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	0	70	0	0	101	9	0	0	0	5	0	0
Major/Minor												
Major1	Major2		Minor1		Minor2							
Conflicting Flow All	121	0	0	71	0	0	172	192	72	188	188	117
Stage 1	-	-	-	-	-	-	71	71	-	117	117	-
Stage 2	-	-	-	-	-	-	101	121	-	71	71	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1479	-	-	1542	-	-	796	707	996	777	711	941
Stage 1	-	-	-	-	-	-	944	840	-	893	803	-
Stage 2	-	-	-	-	-	-	910	800	-	944	840	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1466	-	-	1541	-	-	795	700	994	770	704	933
Mov Cap-2 Maneuver	-	-	-	-	-	-	795	700	-	770	704	-
Stage 1	-	-	-	-	-	-	943	839	-	885	796	-
Stage 2	-	-	-	-	-	-	910	793	-	943	839	-
Approach												
EB	WB		NB		SB							
HCM Control Delay, s/v	0		0		0		9.71					
HCM LOS					A		A					
Minor Lane/Major Mvmt												
NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)	-	1466	-	-	1541	-	-	770				
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.006				
HCM Control Delay (s/veh)	0	0	-	-	0	-	-	9.7				
HCM Lane LOS	A	A	-	-	A	-	-	A				
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0				

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
6: Timber Trail Rd & Woodberry Cres

Existing PM
Southwood, Elmira TIS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	7	0	0	0	8	63	0	0	47	4
Future Volume (vph)	3	0	7	0	0	0	8	63	0	0	47	4
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	0.905								0.989			
Flt Protected	0.985		0.994									
Satd. Flow (prot)	0	1366	0	0	1533	0	0	1497	0	0	1516	0
Flt Permitted	0.985		0.994									
Satd. Flow (perm)	0	1366	0	0	1533	0	0	1497	0	0	1516	0
Link Speed (k/h)	50		50				50		50			
Link Distance (m)	98.1		55.8				214.8		179.4			
Travel Time (s)	7.1		4.0				15.5		12.9			
Confl. Peds. (#/hr)	2					2	5					
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%
Adj. Flow (vph)	3	0	7	0	0	0	8	63	0	0	47	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	0	0	0	71	0	0	51	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)	4.8		4.8				4.8		4.8			
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)	25	15		25	15		25	15		25	15	
Sign Control	Stop		Stop				Free		Free			
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	21.9%				ICU Level of Service A							
Analysis Period (min)	15											

PTSL

Synchro 12 Report

HCM 7th TWSC
6: Timber Trail Rd & Woodberry Cres

Existing PM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	3	0	7	0	0	0	8	63	0	0	47	4
Future Vol, veh/h	3	0	7	0	0	0	8	63	0	0	47	4
Conflicting Peds, #/hr	2	0	0	0	0	2	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	0	0
Mvmt Flow	3	0	7	0	0	0	8	63	0	0	47	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	135	133	54	126	135	65	56	0	0	63	0	0
Stage 1	54	54	-	79	79	-	-	-	-	-	-	-
Stage 2	81	79	-	47	56	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	841	761	1019	852	760	1005	1562	-	-	1553	-	-
Stage 1	963	854	-	935	833	-	-	-	-	-	-	-
Stage 2	932	833	-	972	852	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	832	754	1015	842	753	1003	1556	-	-	1553	-	-
Mov Cap-2 Maneuver	832	754	-	842	753	-	-	-	-	-	-	-
Stage 1	960	851	-	930	829	-	-	-	-	-	-	-
Stage 2	926	829	-	965	849	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s/v	8.82		0		0.83		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	203	-	-	952	-	1553	-	-
HCM Lane V/C Ratio	0.005	-	-	0.011	-	-	-	-
HCM Control Delay (s/veh)	7.3	0	-	8.8	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

PTSL

Synchro 12 Report

Lanes, Volumes, Timings

7: Timber Trail Rd & Weymouth St

Existing PM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	8	0	0	0	2	64	0	0	43	1
Future Volume (vph)	0	0	8	0	0	0	2	64	0	0	43	1
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		0.865									0.997	
Flt Protected								0.998				
Satd. Flow (prot)	0	1326	0	0	1533	0	0	1501	0	0	1528	0
Flt Permitted								0.998				
Satd. Flow (perm)	0	1326	0	0	1533	0	0	1501	0	0	1528	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		85.5			50.1			179.4			67.0	
Travel Time (s)		6.2			3.6			12.9			4.8	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	8	0	0	0	2	64	0	0	43	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	0	0	0	66	0	0	44	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)		4.8			4.8			4.8			4.8	
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)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 16.3%

ICU Level of Service A

Analysis Period (min) 15

PTSL

Synchro 12 Report

HCM 7th TWSC

7: Timber Trail Rd & Weymouth St

Existing PM

Southwood, Elmira TIS

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	8	0	0	0	2	64	0	0	43	1
Future Vol, veh/h	0	0	8	0	0	0	2	64	0	0	43	1
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	1	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	0	0
Mvmt Flow	0	0	8	0	0	0	2	64	0	0	43	1

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	114	115	46	112
Stage 1	46	46	-	69
Stage 2	68	69	-	43
Critical Hdwy	7.1	6.5	6.2	7.1
Critical Hdwy Stg 1	6.1	5.5	-	6.1
Critical Hdwy Stg 2	6.1	5.5	-	6.1
Follow-up Hdwy	3.5	4	3.3	3.5
Pot Cap-1 Maneuver	868	779	1030	870
Stage 1	973	861	-	946
Stage 2	947	841	-	976
Platoon blocked, %				
Mov Cap-1 Maneuver	866	777	1028	862
Mov Cap-2 Maneuver	866	777	-	862
Stage 1	972	860	-	944
Stage 2	946	840	-	969

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.53	0	0.22	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	55	-	-	1028	-	1549	-
HCM Lane V/C Ratio	0.001	-	-	0.008	-	-	-
HCM Control Delay (s/veh)	7.3	0	-	8.5	0	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-

PTSL

Synchro 12 Report

Appendix D

Burwood Drive (Extension) Visibility





Visibility along Listowel Road at Burlwood Drive (Extension)

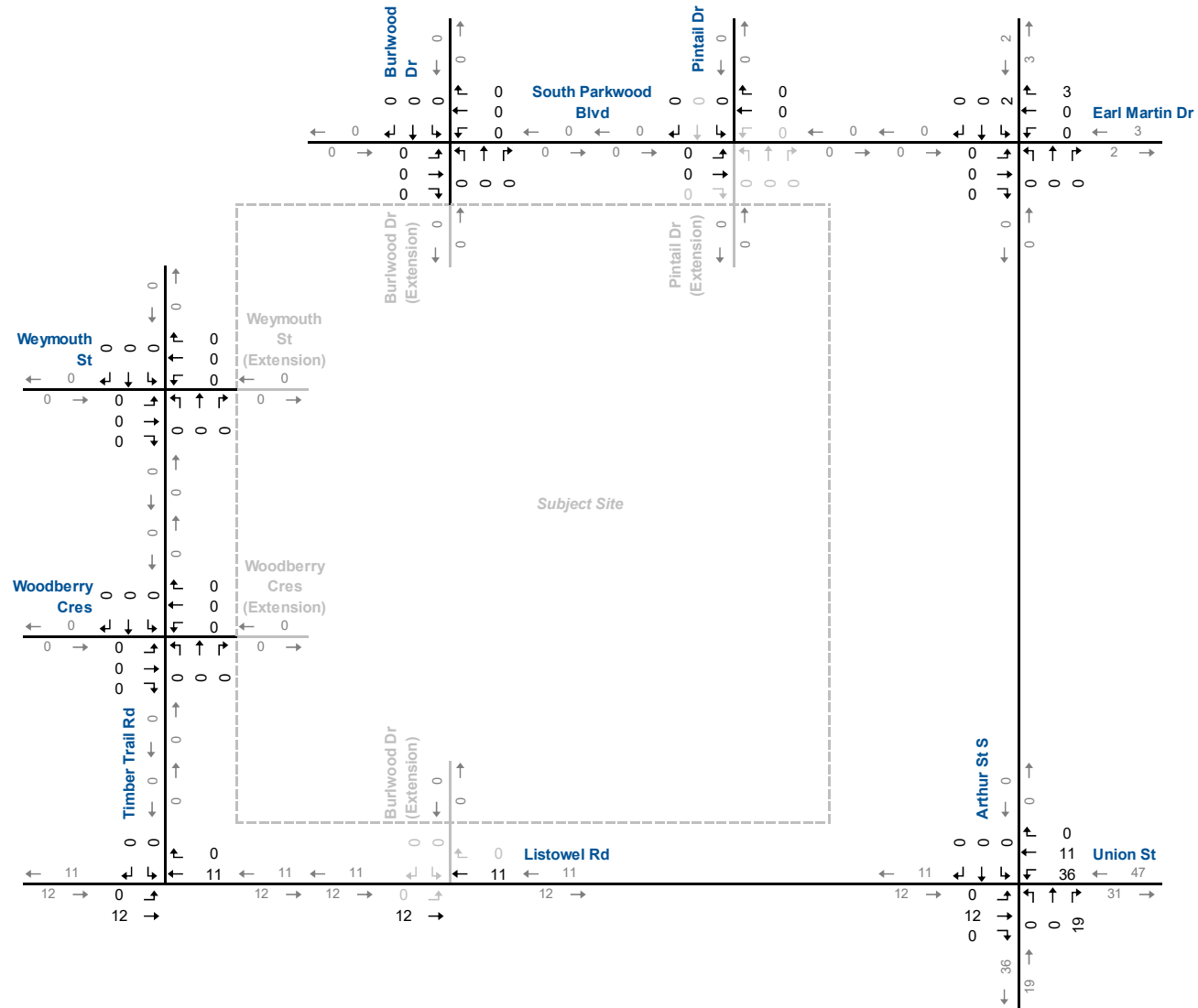
Southwood 5 Subdivision, Elmira TIS
240588

Appendix D

Appendix E

Other Area Development Traffic Volumes

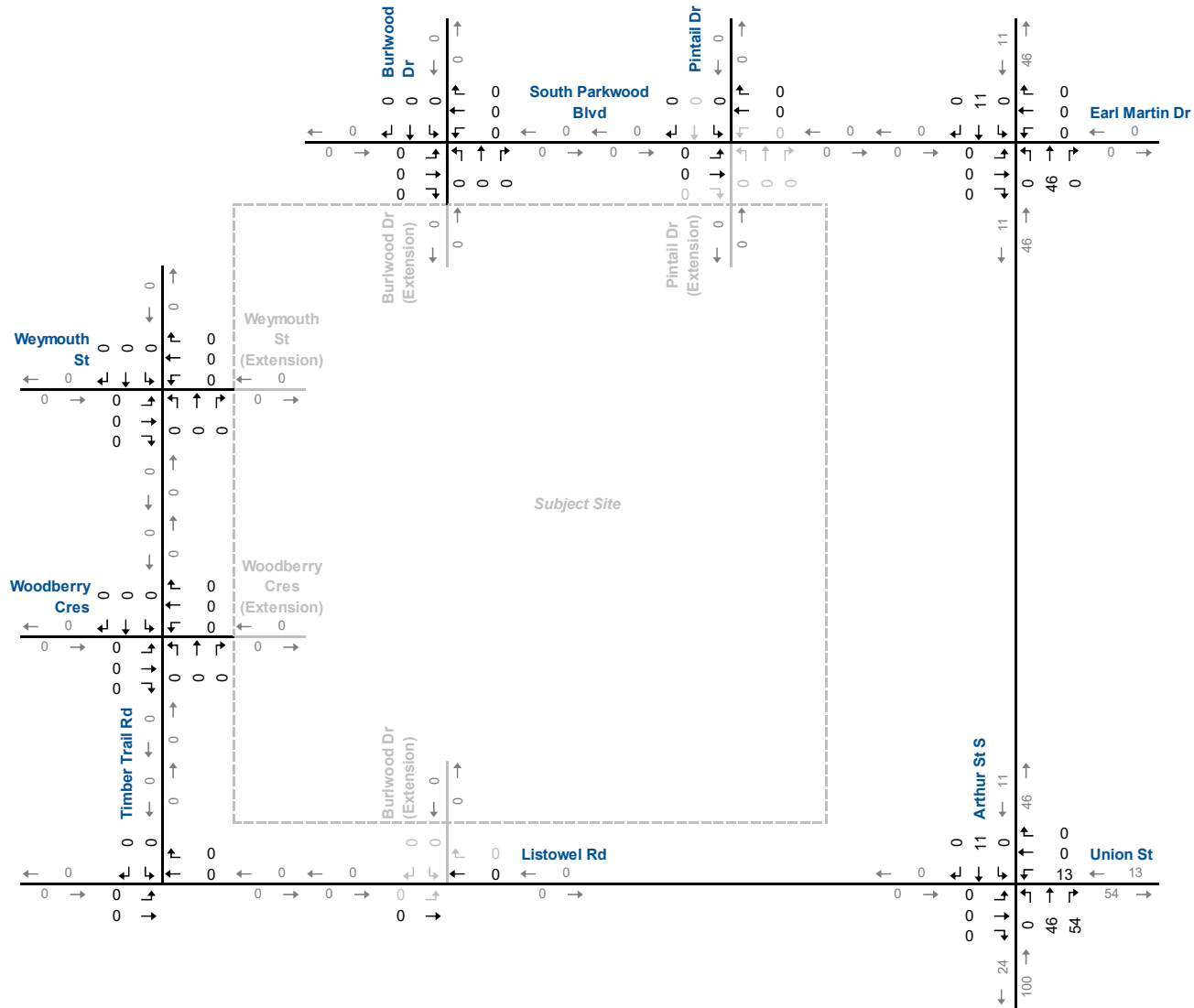




NTS



Other Area Development Traffic Volumes 401 Arthur St S PM Peak Hour



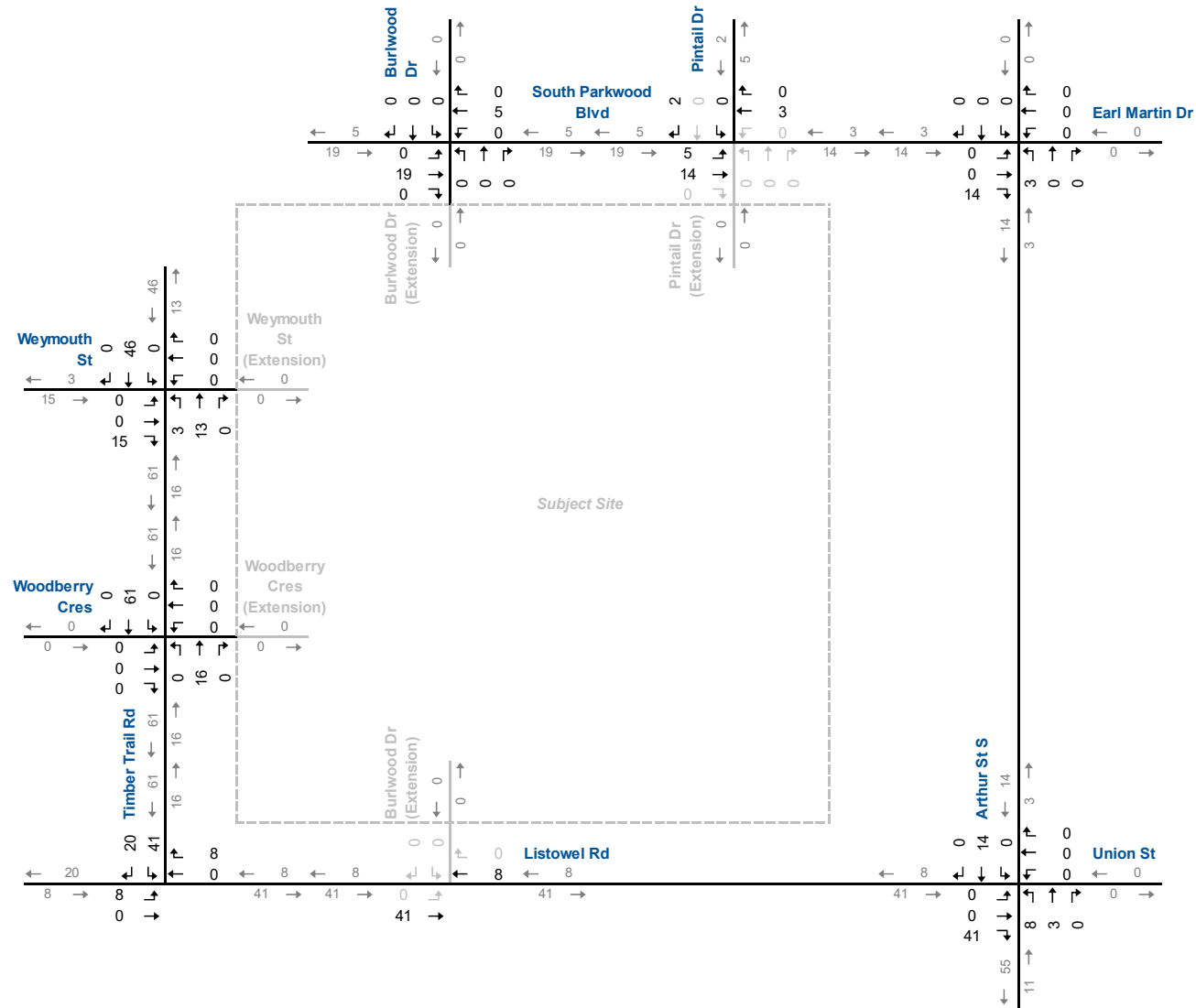
NTS



Other Area Development Traffic Volumes 1665 Scotch Line AM Peak Hour



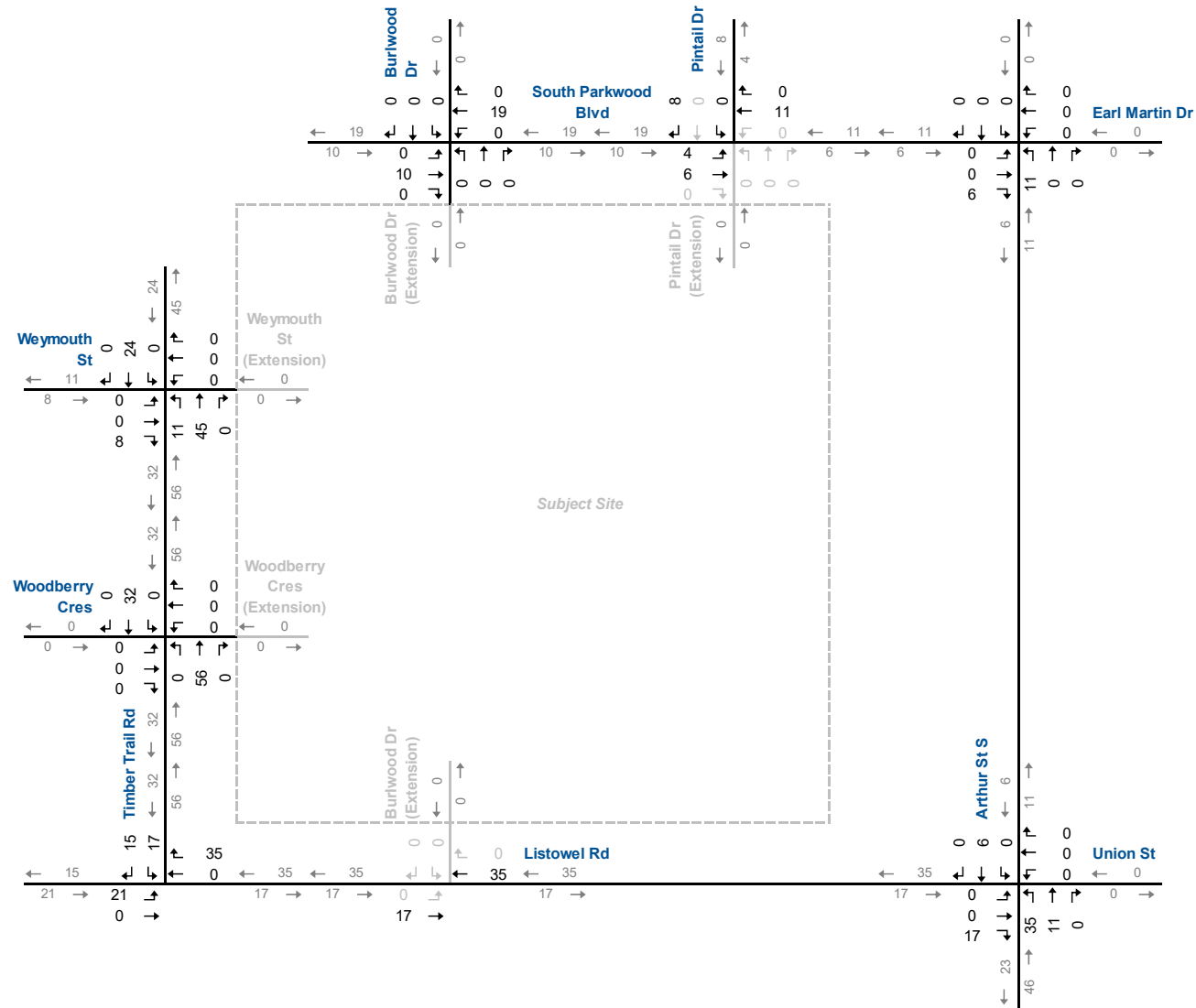
Appendix E



NTS



Other Area Development Traffic Volumes Southwood 4 AM Peak Hour



NTS



Other Area Development Traffic Volumes Southwood 4 PM Peak Hour

Appendix F

Background Traffic Operations Reports



Lanes, Volumes, Timings

1: Arthur St S & Listowel Rd/Union St

Background AM

Southwood, Elmira TIS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	97	39	450	189	37	2	222	568	230	1	644	33
Future Volume (vph)	97	39	450	189	37	2	222	568	230	1	644	33
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0		65.0	30.0			100.0		100.0	50.0		50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			30.0			80.0			65.0		
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	1.00					0.98						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1592	1337	1438	1413	1471	1313	1708	1350	1668	1773	1257
Flt Permitted	0.733			0.732			0.193			0.451		
Satd. Flow (perm)	1176	1592	1337	1108	1413	1436	267	1708	1350	792	1773	1257
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			368			79			230			96
Link Speed (k/h)		80			50			60			60	
Link Distance (m)		579.0			174.3			195.8			164.0	
Travel Time (s)		26.1			12.5			11.7			9.8	
Confl. Peds. (#/hr)	2					2						
Peak Hour 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
Heavy Vehicles (%)	9%	18%	10%	16%	33%	0%	27%	10%	9%	0%	6%	17%
Adj. Flow (vph)	97	39	450	189	37	2	222	568	230	1	644	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	39	450	189	37	2	222	568	230	1	644	33
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Synchro 12 Report

PTSL

Lanes, Volumes, Timings

1: Arthur St S & Listowel Rd/Union St

Background AM

Southwood, Elmira TIS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		5	2		6		6
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	35.0	11.0	51.4	51.4	51.4	51.4	51.4
Total Split (s)	35.0	35.0	35.0	35.0	35.0	35.0	16.0	67.4	67.4	51.4	51.4	51.4
Total Split (%)	34.2%	34.2%	34.2%	34.2%	34.2%	34.2%	15.6%	65.8%	65.8%	50.2%	50.2%	50.2%
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0	27.0	12.0	61.0	61.0	45.0	45.0	45.0
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.0	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	3.4	1.0	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		25.0	25.0	25.0	25.0	25.0
Flash Don't Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0		0	0	0	0	0
Act Effct Green (s)	24.5	24.5	24.5	24.5	24.5	24.5	63.6	63.6	63.6	48.0	48.0	48.0
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25	0.25	0.66	0.66	0.66	0.50	0.50	0.50
v/c Ratio	0.32	0.10	0.73	0.67	0.10	0.00	0.74	0.50	0.24	0.00	0.73	0.05
Control Delay (s/veh)	31.6	26.9	14.3	44.4	27.1	0.0	25.4	11.1	1.7	15.0	26.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.6	26.9	14.3	44.4	27.1	0.0	25.4	11.1	1.7	15.0	26.3	0.2
LOS	C	C	B	D	C	A	C	B	A	B	C	A
Approach Delay (s/veh)		18.0			41.2			12.1			25.1	
Approach LOS		B			D			B			C	
Intersection Summary												
Area Type:	Other											
Cycle Length: 102.4												
Actuated Cycle Length: 96.1												
Natural Cycle: 100												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.74												
Intersection Signal Delay (s/veh): 19.6	Intersection LOS: B											
Intersection Capacity Utilization 85.4%	ICU Level of Service E											
Analysis Period (min) 15												

Splits and Phases: 1: Arthur St S & Listowel Rd/Union St



Synchro 12 Report

PTSL

Queues

1: Arthur St S & Listowel Rd/Union St

Background AM

Southwood, Elmira TIS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	97	39	450	189	37	2	222	568	230	1	644	33
v/c Ratio	0.32	0.10	0.73	0.67	0.10	0.00	0.74	0.50	0.24	0.00	0.73	0.05
Control Delay (s/veh)	31.6	26.9	14.3	44.4	27.1	0.0	25.4	11.1	1.7	15.0	26.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.6	26.9	14.3	44.4	27.1	0.0	25.4	11.1	1.7	15.0	26.3	0.2
Queue Length 50th (m)	15.4	5.8	12.7	33.1	5.5	0.0	16.4	52.1	0.0	0.1	97.8	0.0
Queue Length 95th (m)	29.7	13.9	49.4	57.4	13.3	0.0	#43.2	91.4	8.8	1.1	160.0	0.0
Internal Link Dist (m)	555.0			150.3			171.8			140.0		
Turn Bay Length (m)	60.0		65.0	30.0		30.0	100.0		100.0	50.0		50.0
Base Capacity (vph)	380	515	681	358	457	518	307	1130	971	395	886	676
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.08	0.66	0.53	0.08	0.00	0.72	0.50	0.24	0.00	0.73	0.05

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings

2: Arthur St S & South Parkwood Blvd/Earl Martin Dr

Background AM

Southwood, Elmira TIS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1	50	2	0	30	20	644	4	81	659	21
Future Volume (vph)	5	1	50	2	0	30	20	644	4	81	659	21
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	15.0		0.0	25.0		0.0	70.0		55.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	20.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.853			0.850			0.850			0.995		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1390	1314	0	1668	1092	0	1476	1724	841	1651	1529	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1390	1314	0	1668	1092	0	1476	1724	841	1651	1529	0
Link Speed (k/h)	50			50			60			60		
Link Distance (m)	158.6			105.5			325.8			133.1		
Travel Time (s)	11.4			7.6			19.5			8.0		
Peak Hour 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
Heavy Vehicles (%)	20%	0%	6%	0%	0%	27%	13%	9%	75%	1%	6%	11%
Adj. Flow (vph)	5	1	50	2	0	30	20	644	4	81	659	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	51	0	2	30	0	20	644	4	81	680	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	3.5			3.5			3.5			3.5		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane								Yes				Yes
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25			15			25			15		
Sign Control	Stop			Stop			Free			Free		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 59.2%

ICU Level of Service B

Analysis Period (min) 15

HCM 7th TWSC
2: Arthur St S & South Parkwood Blvd/Earl Martin Dr

Background AM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	5	1	50	2	0	30	20	644	4	81	659	21
Future Vol, veh/h	5	1	50	2	0	30	20	644	4	81	659	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	15	-	-	25	-	-	70	-	55	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	20	0	6	0	0	27	13	9	75	1	6	11
Mvmt Flow	5	1	50	2	0	30	20	644	4	81	659	21

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1516	1520	670	1506	1526	644	680	0	0	648	0	0
Stage 1	832	832	-	684	684	-	-	-	-	-	-	-
Stage 2	684	688	-	822	842	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.5	6.26	7.1	6.5	6.47	4.23	-	-	4.11	-	-
Critical Hdwy Stg 1	6.3	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4	3.354	3.5	4	3.543	2.317	-	-	2.209	-	-
Pot Cap-1 Maneuver	89	120	450	101	119	431	863	-	-	943	-	-
Stage 1	339	387	-	442	452	-	-	-	-	-	-	-
Stage 2	411	450	-	371	383	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	74	107	450	79	106	431	863	-	-	943	-	-
Mov Cap-2 Maneuver	74	107	-	79	106	-	-	-	-	-	-	-
Stage 1	310	354	-	432	441	-	-	-	-	-	-	-
Stage 2	373	440	-	301	350	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v18.45		16.33	0.28	0.98
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	863	-	-	74	424	79	431	943	-	-
HCM Lane V/C Ratio	0.023	-	-	0.068	0.12	0.025	0.07	0.086	-	-
HCM Control Delay (s/veh)	9.3	-	-	57.2	14.7	51.7	14	9.2	-	-
HCM Lane LOS	A	-	-	F	B	F	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.4	0.1	0.2	0.3	-	-

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
3: Listowel Rd & Timber Trail Rd

Background AM
Southwood, Elmira TIS

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰		↰	↱
Traffic Volume (vph)	23	527	287	20	106	67
Future Volume (vph)	23	527	287	20	106	67
Ideal Flow (vphpl)	1775	1900	1650	1650	1765	1765
Storage Length (m)	35.0				0.0	0.0
Storage Lanes	1				1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.948	
Flt Protected	0.950				0.970	
Satd. Flow (prot)	1463	1693	1298	0	1564	0
Flt Permitted	0.950				0.970	
Satd. Flow (perm)	1463	1693	1298	0	1564	0
Link Speed (k/h)		80	80		50	
Link Distance (m)		168.0	579.0		214.8	
Travel Time (s)		7.6	26.1		15.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	11%	25%	18%	3%	2%
Adj. Flow (vph)	23	527	287	20	106	67
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	527	307	0	173	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.11	1.01	1.21	1.21	1.12	1.12
Turning Speed (k/h)		25		15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.1%
ICU Level of Service A	
Analysis Period (min)	15

PTSL

Synchro 12 Report

HCM 7th TWSC
3: Listowel Rd & Timber Trail Rd

Background AM
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	527	287	20	106	67
Future Vol, veh/h	23	527	287	20	106	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	35	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	14	11	25	18	3	2
Mvmt Flow	23	527	287	20	106	67

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	307	0	870
Stage 1	-	-	297
Stage 2	-	-	573
Critical Hdwy	4.24	-	6.43
Critical Hdwy Stg 1	-	-	5.43
Critical Hdwy Stg 2	-	-	5.43
Follow-up Hdwy	2.326	-	3.527
Pot Cap-1 Maneuver	1189	-	321
Stage 1	-	-	752
Stage 2	-	-	562
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1189	-	314
Mov Cap-2 Maneuver	-	-	314
Stage 1	-	-	737
Stage 2	-	-	562

Approach	EB	WB	SB
HCM Control Delay, s/v	0.34	0	20.37
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1189	-	-	-	405
HCM Lane V/C Ratio	0.019	-	-	-	0.427
HCM Control Delay (s/veh)	8.1	-	-	-	20.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	2.1

Lanes, Volumes, Timings
4: South Parkwood Blvd & Pintail Drive

Background AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	85	46	28	3	15	28
Future Volume (vph)	85	46	28	3	15	28
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.987		0.912	
Flt Protected		0.969			0.983	
Satd. Flow (prot)	0	1507	1396	0	1490	0
Flt Permitted		0.969			0.983	
Satd. Flow (perm)	0	1507	1396	0	1490	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		241.1	158.6		116.0	
Travel Time (s)		17.4	11.4		8.4	
Confl. Peds. (#/hr)						3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	3%	17%	0%	7%	4%
Adj. Flow (vph)	85	46	28	3	15	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	131	31	0	43	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.12	1.12
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.8%
Analysis Period (min)	15
	ICU Level of Service A

HCM 7th TWSC
4: South Parkwood Blvd & Pintail Drive

Background AM
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	85	46	28	3	15	28
Future Vol, veh/h	85	46	28	3	15	28
Conflicting Peds, #/hr	0	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	3	17	0	7	4
Mvmt Flow	85	46	28	3	15	28

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	31	0	246
Stage 1	-	-	30
Stage 2	-	-	216
Critical Hdwy	4.16	-	6.47
Critical Hdwy Stg 1	-	-	5.47
Critical Hdwy Stg 2	-	-	5.47
Follow-up Hdwy	2.254	-	3.363
Pot Cap-1 Maneuver	1556	-	732
Stage 1	-	-	980
Stage 2	-	-	808
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1556	-	691
Mov Cap-2 Maneuver	-	-	691
Stage 1	-	-	925
Stage 2	-	-	808

Approach	EB	WB	SB
HCM Control Delay, s/v	4.83	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1168	-	-	-	881
HCM Lane V/C Ratio	0.055	-	-	-	0.049
HCM Control Delay (s/veh)	7.4	0	-	-	9.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
5: Burlwood Dr & South Parkwood Blvd

Background AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	99	0	2	73	11	0	0	0	12	0	2
Future Volume (vph)	0	99	0	2	73	11	0	0	0	12	0	2
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					0.983						0.981	
Flt Protected					0.999						0.959	
Satd. Flow (prot)	0	1446	0	0	1398	0	0	1533	0	0	1339	0
Flt Permitted					0.999						0.959	
Satd. Flow (perm)	0	1446	0	0	1398	0	0	1533	0	0	1339	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		220.1			241.1			55.1			92.8	
Travel Time (s)		15.8			17.4			4.0			6.7	
Confl. Peds. (#/hr)	6					6			1	1		
Peak Hour 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
Heavy Vehicles (%)	0%	6%	0%	0%	6%	20%	0%	0%	0%	9%	0%	0%
Adj. Flow (vph)	0	99	0	2	73	11	0	0	0	12	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	99	0	0	86	0	0	0	0	0	14	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)		4.8			4.8			4.8			4.8	
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)	25	15	25	25	15	25	25	15	25	15	25	15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	19.0%
Analysis Period (min)	15
ICU Level of Service	A

PTSL

Synchro 12 Report

HCM 7th TWSC
5: Burlwood Dr & South Parkwood Blvd

Background AM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	0	99	0	2	73	11	0	0	0	12	0	2
Future Vol, veh/h	0	99	0	2	73	11	0	0	0	12	0	2
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	6	0	0	6	20	0	0	0	9	0	0
Mvmt Flow	0	99	0	2	73	11	0	0	0	12	0	2

Major/Minor	Major1		Major2		Minor1		Minor2			
Conflicting Flow All	90	0	0	99	0	0	176	193	100	189
Stage 1	-	-	-	-	-	-	99	99	-	89
Stage 2	-	-	-	-	-	-	77	94	-	100
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.19
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.19
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.19
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.581
Pot Cap-1 Maneuver	1518	-	-	1507	-	-	791	706	961	757
Stage 1	-	-	-	-	-	-	912	817	-	902
Stage 2	-	-	-	-	-	-	937	821	-	889
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1511	-	-	1507	-	-	788	701	960	751
Mov Cap-2 Maneuver	-	-	-	-	-	-	788	701	-	751
Stage 1	-	-	-	-	-	-	912	817	-	897
Stage 2	-	-	-	-	-	-	934	816	-	889

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.17	0	9.72
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1511	-	-	41	-	-	777
HCM Lane V/C Ratio	-	-	-	-	0.001	-	-	0.018
HCM Control Delay (s/veh)	0	0	-	-	7.4	0	-	9.7
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
6: Timber Trail Rd & Woodberry Cres

Background AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	1	0	10	0	0	0	2	47	1	0	155	1
Future Volume (vph)	1	0	10	0	0	0	2	47	1	0	155	1
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	0.877							0.997		0.999		
Flt Protected	0.995							0.998				
Satd. Flow (prot)	0	1338	0	0	1533	0	0	1348	0	0	1473	0
Flt Permitted	0.995							0.998				
Satd. Flow (perm)	0	1338	0	0	1533	0	0	1348	0	0	1473	0
Link Speed (k/h)	50				50				50			
Link Distance (m)	98.1				55.8				214.8			
Travel Time (s)	7.1				4.0				15.5			
Confl. Peds. (#/hr)	2	3		3	2		6	2		2	6	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	14%	0%	0%	4%	0%
Adj. Flow (vph)	1	0	10	0	0	0	2	47	1	0	155	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	0	0	0	50	0	0	156	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)	4.8			4.8			4.8			4.8		
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)	25	15		25	15		25	15		25	15	
Sign Control	Stop				Stop				Free			
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	21.6%				ICU Level of Service A							
Analysis Period (min)	15											

PTSL

Synchro 12 Report

HCM 7th TWSC
6: Timber Trail Rd & Woodberry Cres

Background AM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	1	0	10	0	0	0	2	47	1	0	155	1
Future Vol, veh/h	1	0	10	0	0	0	2	47	1	0	155	1
Conflicting Peds, #/hr	2	0	3	3	0	2	6	0	2	2	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	14	0	0	4	0
Mvmt Flow	1	0	10	0	0	0	2	47	1	0	155	1

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	215	216	165	212	216	52	162	0	0	50	0	0
Stage 1	162	162	-	54	54	-	-	-	-	-	-	-
Stage 2	53	54	-	158	162	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	746	686	885	750	686	1022	1429	-	-	1570	-	-
Stage 1	845	768	-	964	854	-	-	-	-	-	-	-
Stage 2	965	854	-	849	768	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	741	681	879	737	681	1019	1422	-	-	1567	-	-
Mov Cap-2 Maneuver	741	681	-	737	681	-	-	-	-	-	-	-
Stage 1	841	765	-	961	852	-	-	-	-	-	-	-
Stage 2	962	851	-	837	764	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.22	0	0.3	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	72	-	-	864	-	1567	-	-
HCM Lane V/C Ratio	0.001	-	-	0.013	-	-	-	-
HCM Control Delay (s/veh)	7.5	0	-	9.2	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
7: Timber Trail Rd & Weymouth St

Background AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	24	0	0	0	13	35	0	0	132	2
Future Volume (vph)	0	0	24	0	0	0	13	35	0	0	132	2
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	0.865						0.998					
Flt Protected							0.987					
Satd. Flow (prot)	0	1326	0	0	1533	0	0	1345	0	0	1472	0
Flt Permitted							0.987					
Satd. Flow (perm)	0	1326	0	0	1533	0	0	1345	0	0	1472	0
Link Speed (k/h)	50				50				50			
Link Distance (m)	85.5				50.1				179.4			
Travel Time (s)	6.2				3.6				12.9			
Confl. Peds. (#/hr)							3			3		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	22%	9%	0%	0%	4%	0%
Adj. Flow (vph)	0	0	24	0	0	0	13	35	0	0	132	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	24	0	0	0	0	0	48	0	0	134	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			
Link Offset(m)	0.0				0.0				0.0			
Crosswalk Width(m)	4.8				4.8				4.8			
Two way Left Turn Lane												
Headway Factor	1.31	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)	25		15		25		15		25		15	
Sign Control	Stop				Stop				Free			
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	26.2%						ICU Level of Service A					
Analysis Period (min)	15											

PTSL

Synchro 12 Report

HCM 7th TWSC
7: Timber Trail Rd & Weymouth St

Background AM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	0	0	24	0	0	0	13	35	0	0	132	2
Future Vol, veh/h	0	0	24	0	0	0	13	35	0	0	132	2
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	3	3	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	22	9	0	0	4	0
Mvmt Flow	0	0	24	0	0	0	13	35	0	0	132	2

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	197	200	136	196	201	38	137	0	0	38	0	0
Stage 1	136	136	-	64	64	-	-	-	-	-	-	-
Stage 2	61	64	-	132	137	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.32	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.398	-	-	2.2	-	-
Pot Cap-1 Maneuver	766	699	918	767	699	1040	1333	-	-	1585	-	-
Stage 1	872	788	-	952	846	-	-	-	-	-	-	-
Stage 2	955	846	-	876	787	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	757	689	916	738	688	1037	1330	-	-	1582	-	-
Mov Cap-2 Maneuver	757	689	-	738	688	-	-	-	-	-	-	-
Stage 1	870	786	-	940	835	-	-	-	-	-	-	-
Stage 2	946	835	-	853	785	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.04	0	2.09	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	488	-	-	916	-	1582	-	-
HCM Lane V/C Ratio	0.01	-	-	0.026	-	-	-	-
HCM Control Delay (s/veh)	7.7	0	-	9	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
1: Arthur St S & Listowel Rd/Union St

Background PM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	96	59	342	348	93	1	393	811	110	1	575	92
Future Volume (vph)	96	59	342	348	93	1	393	811	110	1	575	92
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0	65.0	30.0	30.0	30.0	100.0	100.0	100.0	100.0	50.0	50.0	50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0		30.0			80.0			65.0			
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							1.00					
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1323	1313	1619	1678	1471	1544	1842	1257	1668	1824	1388
Fit Permitted	0.697			0.569			0.091			0.318		
Satd. Flow (perm)	1211	1323	1313	970	1678	1471	148	1842	1257	558	1824	1358
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			342			63			110			111
Link Speed (k/h)		80			50			60			60	
Link Distance (m)		579.0			174.3			195.8			164.0	
Travel Time (s)		26.1			12.5			11.7			9.8	
Confl. Peds. (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	1%	42%	12%	3%	12%	0%	8%	2%	17%	0%	3%	6%
Adj. Flow (vph)	96	59	342	348	93	1	393	811	110	1	575	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	59	342	348	93	1	393	811	110	1	575	92
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

PTSL

Synchro 12 Report

Lanes, Volumes, Timings

1: Arthur St S & Listowel Rd/Union St

Background PM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	34.0	34.0	34.0	11.0	34.0	34.0	11.0	46.4	46.4	46.4	46.4	46.4
Total Split (s)	33.0	33.0	33.0	19.0	52.0	52.0	29.0	75.4	75.4	46.4	46.4	46.4
Total Split (%)	25.9%	25.9%	25.9%	14.9%	40.8%	40.8%	22.8%	59.2%	59.2%	36.4%	36.4%	36.4%
Maximum Green (s)	25.0	25.0	25.0	15.0	44.0	44.0	25.0	69.0	69.0	40.0	40.0	40.0
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.4	3.4	3.4	1.0	3.4	3.4	1.0	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-4.0	-4.0	-4.0	0.0	-4.0	-4.0	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		20.0	20.0	20.0	20.0	20.0
Flash Don't Walk (s)	19.0	19.0	19.0		19.0	19.0		20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0	0		0	0		0	0	0	0	0
Act Effct Green (s)	19.1	19.1	19.1	38.2	38.2	38.2	71.5	71.5	71.5	42.5	42.5	42.5
Actuated g/C Ratio	0.16	0.16	0.16	0.32	0.32	0.32	0.61	0.61	0.61	0.36	0.36	0.36
v/c Ratio	0.49	0.27	0.69	0.88	0.17	0.00	1.02	0.72	0.14	0.00	0.87	0.16
Control Delay (s/veh)	53.3	46.0	12.1	58.9	28.9	0.0	84.8	21.8	2.5	27.0	51.5	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	53.3	46.0	12.1	58.9	28.9	0.0	84.8	21.8	2.5	27.0	51.5	4.1
LOS	D	D	B	E	C	A	F	C	A	C	D	A
Approach Delay (s/veh)	24.1			52.5			39.1			45.0		
Approach LOS	C			D			D			D		

Intersection Summary

Area Type: Other

Cycle Length: 127.4

Actuated Cycle Length: 117.7

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay (s/veh): 39.9

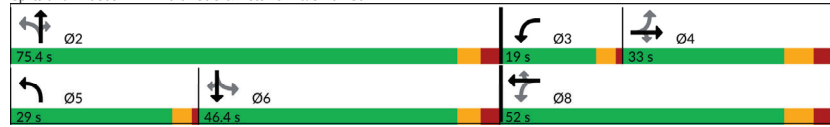
Intersection LOS: D

Intersection Capacity Utilization 93.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Arthur St S & Listowel Rd/Union St



PTSL

Synchro 12 Report

Queues

1: Arthur St S & Listowel Rd/Union St

Background PM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	59	342	348	93	1	393	811	110	1	575	92
v/c Ratio	0.49	0.27	0.69	0.88	0.17	0.00	1.02	0.72	0.14	0.00	0.87	0.16
Control Delay (s/veh)	53.3	46.0	12.1	58.9	28.9	0.0	84.8	21.8	2.5	27.0	51.5	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	53.3	46.0	12.1	58.9	28.9	0.0	84.8	21.8	2.5	27.0	51.5	4.1
Queue Length 50th (m)	21.4	12.7	0.0	72.4	16.1	0.0	~81.7	127.2	0.0	0.2	127.8	0.0
Queue Length 95th (m)	39.0	25.6	28.5	#116.0	28.9	0.0	#163.6	211.3	8.2	1.6	#215.1	8.5
Internal Link Dist (m)	555.0			150.3			171.8			140.0		
Turn Bay Length (m)	60.0		65.0	30.0		30.0	100.0		100.0	50.0		50.0
Base Capacity (vph)	298	326	581	397	685	638	386	1119	807	201	658	560
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.18	0.59	0.88	0.14	0.00	1.02	0.72	0.14	0.00	0.87	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

PTSL

Synchro 12 Report

Lanes, Volumes, Timings

2: Arthur St S & South Parkwood Blvd/Earl Martin Dr

Background PM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	8	2	29	2	0	55	55	810	7	44	676	44
Future Volume (vph)	8	2	29	2	0	55	55	810	7	44	676	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	15.0		0.0	25.0		0.0	70.0		55.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	20.0			7.5			7.5			7.5		
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		0.860			0.850			0.850		0.991		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1403	0	1668	1360	0	1588	1842	1471	1588	1573	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1668	1403	0	1668	1360	0	1588	1842	1471	1588	1573	0
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		158.6			105.5			325.8			133.1	
Travel Time (s)		11.4			7.6			19.5			8.0	
Confl. Peds. (#/hr)							1		1	1		1
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	5%	2%	0%	5%	3%	0%
Adj. Flow (vph)	8	2	29	2	0	55	55	810	7	44	676	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	31	0	2	55	0	55	810	7	44	720	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane							Yes			Yes		
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 62.7%

ICU Level of Service B

Analysis Period (min) 15

PTSL

Synchro 12 Report

HCM 7th TWSC

2: Arthur St S & South Parkwood Blvd/Earl Martin Dr

Background PM

Southwood, Elmira TIS

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Vol, veh/h	8	2	29	2	0	55	55	810	7	44	676	44
Future Vol, veh/h	8	2	29	2	0	55	55	810	7	44	676	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	1	0	1	1	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	15	-	-	25	-	-	70	-	55	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	2	5	2	0	5	3	0
Mvmt Flow	8	2	29	2	0	55	55	810	7	44	676	44

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	1707	1715	699	1686
Stage 1	787	787	-	921
Stage 2	920	928	-	765
Critical Hdwy	7.1	6.5	6.2	7.1
Critical Hdwy Stg 1	6.1	5.5	-	6.1
Critical Hdwy Stg 2	6.1	5.5	-	6.1
Follow-up Hdwy	3.5	4	3.3	3.5
Pot Cap-1 Maneuver	73	91	443	75
Stage 1	388	406	-	327
Stage 2	327	349	-	399
Platoon blocked, %				
Mov Cap-1 Maneuver	55	80	443	61
Mov Cap-2 Maneuver	55	80	-	61
Stage 1	366	383	-	306
Stage 2	262	327	-	350

Approach	EB	WB	NB	SB
HCM Control Delay, s/v29.82		17.86	0.6	0.56
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	866	-	-	55	343	61	379	797	-	-
HCM Lane V/C Ratio	0.063	-	-	0.146	0.09	0.033	0.145	0.055	-	-
HCM Control Delay (s/veh)	9.4	-	-	81.3	16.5	66.2	16.1	9.8	-	-
HCM Lane LOS	A	-	-	F	C	F	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5	0.3	0.1	0.5	0.2	-	-

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
3: Listowel Rd & Timber Trail Rd

Background PM
Southwood, Elmira TIS

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	56	470	521	62	45	51
Future Volume (vph)	56	470	521	62	45	51
Ideal Flow (vphpl)	1775	1900	1650	1650	1765	1765
Storage Length (m)	35.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.986		0.928	
Flt Protected	0.950				0.977	
Satd. Flow (prot)	1619	1663	1489	0	1582	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1619	1663	1489	0	1582	0
Link Speed (k/h)		80	80		50	
Link Distance (m)		168.0	579.0		214.8	
Travel Time (s)		7.6	26.1		15.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	13%	9%	0%	0%	0%
Adj. Flow (vph)	56	470	521	62	45	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	470	583	0	96	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.11	1.01	1.21	1.21	1.12	1.12
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	55.3%					
ICU Level of Service B						
Analysis Period (min)	15					

PTSL

Synchro 12 Report

HCM 7th TWSC
3: Listowel Rd & Timber Trail Rd

Background PM
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	56	470	521	62	45	51
Future Vol, veh/h	56	470	521	62	45	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	35	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	13	9	0	0	0
Mvmt Flow	56	470	521	62	45	51
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	583	0	-	0	1134	552
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	582	-
Critical Hdwy	4.13	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.227	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	986	-	-	-	226	537
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	563	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	986	-	-	-	213	537
Mov Cap-2 Maneuver	-	-	-	-	213	-
Stage 1	-	-	-	-	548	-
Stage 2	-	-	-	-	563	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.94	0		21.45		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	986	-	-	-	314	
HCM Lane V/C Ratio	0.057	-	-	-	0.306	
HCM Control Delay (s/veh)	8.9	-	-	-	21.4	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.2	-	-	-	1.3	

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
4: South Parkwood Blvd & Pintail Drive

Background PM
Southwood, Elmira TIS

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	66	25	101	7	7	39
Future Volume (vph)	66	25	101	7	7	39
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.991		0.886	
Flt Protected		0.965			0.992	
Satd. Flow (prot)	0	1552	1602	0	1534	0
Flt Permitted		0.965			0.992	
Satd. Flow (perm)	0	1552	1602	0	1534	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		241.1	158.6		116.0	
Travel Time (s)		17.4	11.4		8.4	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%
Adj. Flow (vph)	66	25	101	7	7	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	91	108	0	46	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.12	1.12
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 22.7%	ICU Level of Service A					
Analysis Period (min) 15						

PTSL

Synchro 12 Report

HCM 7th TWSC
4: South Parkwood Blvd & Pintail Drive

Background PM
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	66	25	101	7	7	39
Future Vol, veh/h	66	25	101	7	7	39
Conflicting Peds, #/hr	2	0	0	2	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	0	1	0	0	0
Mvmt Flow	66	25	101	7	7	39
Major/Minor						
Major1	Major2		Minor2			
Conflicting Flow All	110	0	-	0	264	108
Stage 1	-	-	-	-	107	-
Stage 2	-	-	-	-	157	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1480	-	-	-	730	952
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	876	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1478	-	-	-	695	950
Mov Cap-2 Maneuver	-	-	-	-	695	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	875	-
Approach						
EB	WB		SB			
HCM Control Delay, s/v	5.48	0	9.22			
HCM LOS			A			
Minor Lane/Major Mvmt						
EBL	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	1305	-	-	-	899	
HCM Lane V/C Ratio	0.045	-	-	-	0.051	
HCM Control Delay (s/veh)	7.5	0	-	-	9.2	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
5: Burlwood Dr & South Parkwood Blvd

Background PM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	87	0	0	129	10	0	0	0	5	0	0
Future Volume (vph)	0	87	0	0	129	10	0	0	0	5	0	0
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					0.990							
Flt Protected											0.950	
Satd. Flow (prot)	0	1518	0	0	1503	0	0	1533	0	0	1456	0
Flt Permitted											0.950	
Satd. Flow (perm)	0	1518	0	0	1503	0	0	1533	0	0	1456	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		220.1			241.1			55.1			92.8	
Travel Time (s)		15.8			17.4			4.0			6.7	
Confl. Peds. (#/hr)	11		1	1		11			1	1		
Peak Hour 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
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	87	0	0	129	10	0	0	0	5	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	0	139	0	0	0	0	0	5	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)		4.8			4.8			4.8			4.8	
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)	25		15	25		15	25	1.31		15	25	1.31
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	20.8%											
Analysis Period (min)	15											
ICU Level of Service A												

HCM 7th TWSC
5: Burlwood Dr & South Parkwood Blvd

Background PM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	87	0	0	129	10	0	0	0	5	0	0
Future Vol, veh/h	0	87	0	0	129	10	0	0	0	5	0	0
Conflicting Peds, #/hr	11	0	1	1	0	11	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	0	87	0	0	129	10	0	0	0	5	0	0
Major/Minor												
Major1	Major2		Minor1		Minor2							
Conflicting Flow All	150	0	0	88	0	0	217	238	89	233	233	145
Stage 1	-	-	-	-	-	-	88	88	-	145	145	-
Stage 2	-	-	-	-	-	-	129	150	-	88	88	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1444	-	-	1520	-	-	744	666	975	726	671	908
Stage 1	-	-	-	-	-	-	925	826	-	863	781	-
Stage 2	-	-	-	-	-	-	880	777	-	925	826	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1431	-	-	1519	-	-	743	660	973	719	664	900
Mov Cap-2 Maneuver	-	-	-	-	-	-	743	660	-	719	664	-
Stage 1	-	-	-	-	-	-	924	825	-	855	774	-
Stage 2	-	-	-	-	-	-	880	770	-	924	825	-
Approach												
EB	WB		NB		SB							
HCM Control Delay, s/v	0		0		0		10.04					
HCM LOS					A		B					
Minor Lane/Major Mvmt												
NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)	-	1431	-	-	1519	-	-	719				
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.007				
HCM Control Delay (s/veh)	0	0	-	-	0	-	-	10				
HCM Lane LOS	A	A	-	-	A	-	-	B				
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0				

Lanes, Volumes, Timings
6: Timber Trail Rd & Woodberry Cres

Background PM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	3	0	8	0	0	0	9	125	0	0	83	4
Future Volume (vph)	3	0	8	0	0	0	9	125	0	0	83	4
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		0.902									0.994	
Flt Protected		0.987						0.997				
Satd. Flow (prot)	0	1365	0	0	1533	0	0	1500	0	0	1524	0
Flt Permitted		0.987						0.997				
Satd. Flow (perm)	0	1365	0	0	1533	0	0	1500	0	0	1524	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		98.1			55.8			214.8			179.4	
Travel Time (s)		7.1			4.0			15.5			12.9	
Confl. Peds. (#/hr)	2					2	5					5
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%
Adj. Flow (vph)	3	0	8	0	0	0	9	125	0	0	83	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	0	0	0	134	0	0	87	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)		4.8			4.8			4.8			4.8	
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)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 26.0%												
Analysis Period (min) 15												
ICU Level of Service A												

HCM 7th TWSC
6: Timber Trail Rd & Woodberry Cres

Background PM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	3	0	8	0	0	0	9	125	0	0	83	4
Future Vol, veh/h	3	0	8	0	0	0	9	125	0	0	83	4
Conflicting Peds, #/hr	2	0	0	0	0	2	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	0	0
Mvmt Flow	3	0	8	0	0	0	9	125	0	0	83	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	235	233	90	226	235	127	92	0	0	125	0	0
Stage 1	90	90	-	143	143	-	-	-	-	-	-	-
Stage 2	145	143	-	83	92	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	724	671	973	734	669	929	1515	-	-	1474	-	-
Stage 1	922	824	-	865	782	-	-	-	-	-	-	-
Stage 2	863	782	-	930	823	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	715	664	970	723	662	927	1510	-	-	1474	-	-
Mov Cap-2 Maneuver	715	664	-	723	662	-	-	-	-	-	-	-
Stage 1	919	821	-	859	777	-	-	-	-	-	-	-
Stage 2	856	777	-	922	819	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s/v	9.12		0		0.5		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	121	-	-	884	-	1474	-	-
HCM Lane V/C Ratio	0.006	-	-	0.012	-	-	-	-
HCM Control Delay (s/veh)	7.4	0	-	9.1	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Lanes, Volumes, Timings

7: Timber Trail Rd & Weymouth St

Background PM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	17	0	0	0	13	115	0	0	71	1
Future Volume (vph)	0	0	17	0	0	0	13	115	0	0	71	1
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		0.865									0.998	
Flt Protected								0.995				
Satd. Flow (prot)	0	1326	0	0	1533	0	0	1498	0	0	1530	0
Flt Permitted								0.995				
Satd. Flow (perm)	0	1326	0	0	1533	0	0	1498	0	0	1530	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		85.5			50.1			179.4			67.0	
Travel Time (s)		6.2			3.6			12.9			4.8	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	17	0	0	0	13	115	0	0	71	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	17	0	0	0	0	0	128	0	0	72	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)		4.8			4.8			4.8			4.8	
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)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 25.0%

ICU Level of Service A

Analysis Period (min) 15

PTSL

Synchro 12 Report

HCM 7th TWSC

7: Timber Trail Rd & Weymouth St

Background PM

Southwood, Elmira TIS

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	0	17	0	0	0	13	115	0	0	71	1
Future Vol, veh/h	0	0	17	0	0	0	13	115	0	0	71	1
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	1	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	0	0
Mvmt Flow	0	0	17	0	0	0	13	115	0	0	71	1

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	215	216	74	213
Stage 1	74	74	-	142
Stage 2	141	142	-	71
Critical Hdwy	7.1	6.5	6.2	7.1
Critical Hdwy Stg 1	6.1	5.5	-	6.1
Critical Hdwy Stg 2	6.1	5.5	-	6.1
Follow-up Hdwy	3.5	4	3.3	3.5
Pot Cap-1 Maneuver	746	686	994	748
Stage 1	941	838	-	866
Stage 2	867	783	-	944
Platoon blocked, %				
Mov Cap-1 Maneuver	739	678	992	728
Mov Cap-2 Maneuver	739	678	-	728
Stage 1	939	836	-	857
Stage 2	859	775	-	928

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.69	0	0.75	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	183	-	-	992	-	1484	-	-
HCM Lane V/C Ratio	0.008	-	-	0.017	-	-	-	-
HCM Control Delay (s/veh)	7.4	0	-	8.7	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

PTSL

Synchro 12 Report

Appendix G

Total Traffic Operations Reports



Lanes, Volumes, Timings

1: Arthur St S & Listowel Rd/Union St

Total AM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	107	61	531	189	44	2	248	574	230	1	664	36
Future Volume (vph)	107	61	531	189	44	2	248	574	230	1	664	36
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0		65.0	30.0			100.0		100.0	50.0		50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0			30.0			80.0			65.0		
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	1.00					0.98						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1592	1337	1438	1413	1471	1313	1708	1350	1668	1773	1257
Flt Permitted	0.728			0.717			0.171			0.448		
Satd. Flow (perm)	1168	1592	1337	1085	1413	1436	236	1708	1350	786	1773	1257
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			360			79			230		96	
Link Speed (k/h)		80			50			60			60	
Link Distance (m)		399.0			174.3			195.8			164.0	
Travel Time (s)		18.0			12.5			11.7			9.8	
Confl. Peds. (#/hr)	2					2						
Peak Hour 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
Heavy Vehicles (%)	9%	18%	10%	16%	33%	0%	27%	10%	9%	0%	6%	17%
Adj. Flow (vph)	107	61	531	189	44	2	248	574	230	1	664	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	61	531	189	44	2	248	574	230	1	664	36
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Synchro 12 Report

PTSL

Lanes, Volumes, Timings

1: Arthur St S & Listowel Rd/Union St

Total AM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		5	2		6		6
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	35.0	11.0	51.4	51.4	51.4	51.4	51.4
Total Split (s)	35.0	35.0	35.0	35.0	35.0	35.0	16.0	67.4	67.4	51.4	51.4	51.4
Total Split (%)	34.2%	34.2%	34.2%	34.2%	34.2%	34.2%	15.6%	65.8%	65.8%	50.2%	50.2%	50.2%
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0	27.0	12.0	61.0	61.0	45.0	45.0	45.0
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.0	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	3.4	1.0	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		25.0	25.0	25.0	25.0	25.0
Flash Don't Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0		0	0	0	0	0
Act Effct Green (s)	25.2	25.2	25.2	25.2	25.2	25.2	63.6	63.6	63.6	47.6	47.6	47.6
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26	0.26	0.66	0.66	0.66	0.49	0.49	0.49
v/c Ratio	0.35	0.15	0.87	0.67	0.12	0.00	0.86	0.51	0.24	0.00	0.76	0.05
Control Delay (s/veh)	32.1	27.6	26.5	44.4	27.3	0.0	42.2	11.6	1.7	15.0	28.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.1	27.6	26.5	44.4	27.3	0.0	42.2	11.6	1.7	15.0	28.5	0.2
LOS	C	C	C	D	C	A	D	B	A	B	C	A
Approach Delay (s/veh)		27.4			40.8			16.7			27.0	
Approach LOS		C			D			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 102.4

Actuated Cycle Length: 96.8

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay (s/veh): 24.3

Intersection LOS: C

Intersection Capacity Utilization 91.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Arthur St S & Listowel Rd/Union St



Synchro 12 Report

PTSL

Queues

1: Arthur St S & Listowel Rd/Union St

Total AM
Southwood, Elmira TIS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	107	61	531	189	44	2	248	574	230	1	664	36
v/c Ratio	0.35	0.15	0.87	0.67	0.12	0.00	0.86	0.51	0.24	0.00	0.76	0.05
Control Delay (s/veh)	32.1	27.6	26.5	44.4	27.3	0.0	42.2	11.6	1.7	15.0	28.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.1	27.6	26.5	44.4	27.3	0.0	42.2	11.6	1.7	15.0	28.5	0.2
Queue Length 50th (m)	17.1	9.2	33.3	33.3	6.6	0.0	21.8	57.0	0.0	0.1	107.7	0.0
Queue Length 95th (m)	32.4	19.4	#97.2	57.8	15.3	0.0	#72.7	93.0	8.8	1.1	#169.1	0.0
Internal Link Dist (m)	375.0			150.3			171.8			140.0		
Turn Bay Length (m)	60.0	65.0		30.0	30.0		100.0	100.0		50.0	50.0	
Base Capacity (vph)	375	511	673	348	454	514	289	1122	966	386	870	666
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.12	0.79	0.54	0.10	0.00	0.86	0.51	0.24	0.00	0.76	0.05

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings

2: Arthur St S & South Parkwood Blvd/Earl Martin Dr

Total AM
Southwood, Elmira TIS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	1	70	2	0	30	26	654	4	81	662	29
Future Volume (vph)	28	1	70	2	0	30	26	654	4	81	662	29
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	15.0		0.0	25.0		0.0	70.0		55.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	20.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.852			0.850				0.850		0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1390	1313	0	1668	1092	0	1476	1724	841	1651	1527	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1390	1313	0	1668	1092	0	1476	1724	841	1651	1527	0
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		158.6			105.5			325.8			133.1	
Travel Time (s)		11.4			7.6			19.5			8.0	
Peak Hour 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
Heavy Vehicles (%)	20%	0%	6%	0%	0%	27%	13%	9%	75%	1%	6%	11%
Adj. Flow (vph)	28	1	70	2	0	30	26	654	4	81	662	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	71	0	2	30	0	26	654	4	81	691	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 63.8%

ICU Level of Service B

Analysis Period (min) 15

HCM 7th TWSC

2: Arthur St S & South Parkwood Blvd/Earl Martin Dr

Total AM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	28	1	70	2	0	30	26	654	4	81	662	29
Future Vol, veh/h	28	1	70	2	0	30	26	654	4	81	662	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	15	-	-	25	-	-	70	-	55	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	20	0	6	0	0	27	13	9	75	1	6	11
Mvmt Flow	28	1	70	2	0	30	26	654	4	81	662	29

Major/Minor	Minor2		Minor1		Major1		Major2			
Conflicting Flow All	1545	1549	677	1531	1559	654	691	0	0	658
Stage 1	839	839	-	706	706	-	-	-	-	-
Stage 2	706	710	-	825	853	-	-	-	-	-
Critical Hdwy	7.3	6.5	6.26	7.1	6.5	6.47	4.23	-	-	4.11
Critical Hdwy Stg 1	6.3	5.5	-	6.1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.5	-	6.1	5.5	-	-	-	-	-
Follow-up Hdwy	3.68	4	3.354	3.5	4	3.543	2.317	-	-	2.209
Pot Cap-1 Maneuver	85	115	446	97	113	425	855	-	-	935
Stage 1	336	384	-	430	442	-	-	-	-	-
Stage 2	399	440	-	370	378	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	70	102	446	72	100	425	855	-	-	935
Mov Cap-2 Maneuver	70	102	-	72	100	-	-	-	-	-
Stage 1	307	351	-	417	428	-	-	-	-	-
Stage 2	360	426	-	284	346	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v35.58		16.77	0.36	0.97
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	855	-	-	70	426	72	425	935	-	-
HCM Lane V/C Ratio	0.03	-	-	0.401	0.167	0.028	0.071	0.087	-	-
HCM Control Delay (s/veh)	9.3	-	-	87.4	15.1	56.8	14.1	9.2	-	-
HCM Lane LOS	A	-	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.5	0.6	0.1	0.2	0.3	-	-

PTSL

Synchro 12 Report

Lanes, Volumes, Timings

3: Listowel Rd & Timber Trail Rd

Total AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	25	539	322	20	106	77
Future Volume (vph)	25	539	322	20	106	77
Ideal Flow (vphpl)	1775	1900	1650	1650	1765	1765
Storage Length (m)	35.0				0.0	0.0
Storage Lanes	1				1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.992		0.943	
Flt Protected	0.950				0.972	
Satd. Flow (prot)	1463	1693	1299	0	1560	0
Flt Permitted	0.950				0.972	
Satd. Flow (perm)	1463	1693	1299	0	1560	0
Link Speed (k/h)		80	80		50	
Link Distance (m)		168.0	180.0		214.8	
Travel Time (s)		7.6	8.1		15.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	11%	25%	18%	3%	2%
Adj. Flow (vph)	25	539	322	20	106	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	539	342	0	183	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.11	1.01	1.21	1.21	1.12	1.12
Turning Speed (k/h)		25		15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization 46.4%	ICU Level of Service A
Analysis Period (min) 15	

PTSL

Synchro 12 Report

HCM 7th TWSC
3: Listowel Rd & Timber Trail Rd

Total AM
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	539	322	20	106	77
Future Vol, veh/h	25	539	322	20	106	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	35	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	14	11	25	18	3	2
Mvmt Flow	25	539	322	20	106	77
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	342	0	-	0	921	332
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	589	-
Critical Hdwy	4.24	-	-	-	6.43	6.22
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.326	-	-	-	3.527	3.318
Pot Cap-1 Maneuver	1153	-	-	-	299	710
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	553	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1153	-	-	-	293	710
Mov Cap-2 Maneuver	-	-	-	-	293	-
Stage 1	-	-	-	-	709	-
Stage 2	-	-	-	-	553	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.36	0		22.23		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1153	-	-	-	389	
HCM Lane V/C Ratio	0.022	-	-	-	0.471	
HCM Control Delay (s/veh)	8.2	-	-	-	22.2	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	2.4	

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
4: South Parkwood Blvd & Pintail Drive

Total AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	72	0	6	36	3	0	4	17	15	2	30
Future Volume (vph)	92	72	0	6	36	3	0	4	17	15	2	30
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					0.991				0.891			
Flt Protected	0.973				0.993				0.984			
Satd. Flow (prot)	0	1425	0	0	1328	0	0	1366	0	0	1316	0
Flt Permitted	0.973				0.993				0.984			
Satd. Flow (perm)	0	1425	0	0	1328	0	0	1366	0	0	1316	0
Link Speed (k/h)	50				50				50			
Link Distance (m)	241.1				158.6				89.3			
Travel Time (s)	17.4				11.4				6.4			
Confl. Peds. (#/hr)					3				3			
Peak Hour 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
Heavy Vehicles (%)	6%	3%	0%	0%	17%	0%	0%	0%	0%	7%	0%	4%
Adj. Flow (vph)	92	72	0	6	36	3	0	4	17	15	2	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	164	0	0	45	0	0	21	0	0	47	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	3.5				3.5				0.0			
Link Offset(m)	0.0				0.0				0.0			
Crosswalk Width(m)	4.8				4.8				4.8			
Two way Left Turn Lane												
Headway Factor	1.31	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)	25	15	25	25	15	25	25	15	25	15	25	15
Sign Control	Free				Free				Stop			
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	34.8%				ICU Level of Service A							
Analysis Period (min)	15											

PTSL

Synchro 12 Report

HCM 7th TWSC
4: South Parkwood Blvd & Pintail Drive

Total AM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	92	72	0	6	36	3	0	4	17	15	2	30
Future Vol, veh/h	92	72	0	6	36	3	0	4	17	15	2	30
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	6	3	0	0	17	0	0	0	0	7	0	4
Mvmt Flow	92	72	0	6	36	3	0	4	17	15	2	30

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	39	0	0	72	0	0	308	307	72	308	306	41
Stage 1	-	-	-	-	-	-	256	256	-	50	50	-
Stage 2	-	-	-	-	-	-	52	51	-	258	256	-
Critical Hdwy	4.16	-	-	4.1	-	-	7.1	6.5	6.2	7.17	6.5	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.17	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.17	5.5	-
Follow-up Hdwy	2.254	-	-	2.2	-	-	3.5	4	3.3	3.563	4	3.336
Pot Cap-1 Maneuver	1545	-	-	1541	-	-	648	610	996	635	611	1025
Stage 1	-	-	-	-	-	-	753	699	-	951	858	-
Stage 2	-	-	-	-	-	-	966	856	-	736	699	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1545	-	-	1541	-	-	585	570	996	579	571	1023
Mov Cap-2 Maneuver	-	-	-	-	-	-	585	570	-	579	571	-
Stage 1	-	-	-	-	-	-	706	656	-	947	854	-
Stage 2	-	-	-	-	-	-	929	853	-	674	656	-

Approach	EB		WB		NB		SB
HCM Control Delay, s/v	4.19		0.98		9.23		9.78
HCM LOS					A		A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	872	1010	-	-	236	-	-	800
HCM Lane V/C Ratio	0.024	0.06	-	-	0.004	-	-	0.059
HCM Control Delay (s/veh)	9.2	7.5	0	-	7.3	0	-	9.8
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	0.2

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
5: Burlwood Dr & South Parkwood Blvd

Total AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	99	2	12	73	11	6	0	33	12	0	2
Future Volume (vph)	0	99	2	12	73	11	6	0	33	12	0	2
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		0.997			0.985			0.886			0.981	
Flt Protected					0.994			0.992			0.959	
Satd. Flow (prot)	0	1443	0	0	1404	0	0	1347	0	0	1339	0
Flt Permitted					0.994			0.992			0.959	
Satd. Flow (perm)	0	1443	0	0	1404	0	0	1347	0	0	1339	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		220.1			241.1			55.1			92.8	
Travel Time (s)		15.8			17.4			4.0			6.7	
Confl. Peds. (#/hr)	6					6			1	1		
Peak Hour 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
Heavy Vehicles (%)	0%	6%	0%	0%	6%	20%	0%	0%	0%	9%	0%	0%
Adj. Flow (vph)	0	99	2	12	73	11	6	0	33	12	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	101	0	0	96	0	0	39	0	0	14	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)		4.8			4.8			4.8			4.8	
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)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	23.6%
Analysis Period (min)	15
ICU Level of Service	A

PTSL

Synchro 12 Report

HCM 7th TWSC
5: Burlwood Dr & South Parkwood Blvd

Total AM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	99	2	12	73	11	6	0	33	12	0	2
Future Vol, veh/h	0	99	2	12	73	11	6	0	33	12	0	2
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	6	0	0	6	20	0	0	0	9	0	0
Mvmt Flow	0	99	2	12	73	11	6	0	33	12	0	2

Major/Minor	Major1	Major2	Minor1	Minor2								
Conflicting Flow All	90	0	0	101	0	0	197	214	101	209	210	85
Stage 1	-	-	-	-	-	100	100	-	109	109	-	-
Stage 2	-	-	-	-	-	97	114	-	100	101	-	-
Critical Hdwy	4.1	-	-	4.1	-	7.1	6.5	6.2	7.19	6.5	6.2	-
Critical Hdwy Stg 1	-	-	-	-	-	6.1	5.5	-	6.19	5.5	-	-
Critical Hdwy Stg 2	-	-	-	-	-	6.1	5.5	-	6.19	5.5	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	3.5	4	3.3	3.581	4	3.3	-
Pot Cap-1 Maneuver	1518	-	-	1504	-	766	687	960	734	691	980	-
Stage 1	-	-	-	-	-	911	816	-	880	809	-	-
Stage 2	-	-	-	-	-	914	805	-	889	815	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1511	-	-	1504	-	758	678	959	699	682	976	-
Mov Cap-2 Maneuver	-	-	-	-	-	758	678	-	699	682	-	-
Stage 1	-	-	-	-	-	911	816	-	869	799	-	-
Stage 2	-	-	-	-	-	905	795	-	858	815	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.93	9.08	10.04
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	922	1511	-	-	219	-	-	729
HCM Lane V/C Ratio	0.042	-	-	-	0.008	-	-	0.019
HCM Control Delay (s/veh)	9.1	0	-	-	7.4	0	-	10
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
6: Timber Trail Rd & Woodberry Cres

Total AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	10	5	0	2	2	48	2	1	160	1
Future Volume (vph)	1	0	10	5	0	2	2	48	2	1	160	1
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		0.877			0.961			0.995			0.999	
Flt Protected		0.995			0.966			0.998				
Satd. Flow (prot)	0	1338	0	0	1423	0	0	1348	0	0	1473	0
Flt Permitted		0.995			0.966			0.998				
Satd. Flow (perm)	0	1338	0	0	1423	0	0	1348	0	0	1473	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		98.1			55.8			214.8			179.4	
Travel Time (s)		7.1			4.0			15.5			12.9	
Confl. Peds. (#/hr)	2		3	3		2	6		2	2		6
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	14%	0%	0%	4%	0%
Adj. Flow (vph)	1	0	10	5	0	2	2	48	2	1	160	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	7	0	0	52	0	0	162	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	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	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)	25		15	25		15	25		15	25		15
Sign Control	Stop			Stop			Free			Free		

Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	22.3%											
Analysis Period (min)	15											

PTSL

Synchro 12 Report

HCM 7th TWSC
6: Timber Trail Rd & Woodberry Cres

Total AM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	1	0	10	5	0	2	2	48	2	1	160	1
Future Vol, veh/h	1	0	10	5	0	2	2	48	2	1	160	1
Conflicting Peds, #/hr	2	0	3	3	0	2	6	0	2	2	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	14	0	0	4	0
Mvmt Flow	1	0	10	5	0	2	2	48	2	1	160	1

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	223	225	170	220
Stage 1	169	169	-	55
Stage 2	54	56	-	165
Critical Hdwy	7.1	6.5	6.2	7.1
Critical Hdwy Stg 1	6.1	5.5	-	6.1
Critical Hdwy Stg 2	6.1	5.5	-	6.1
Follow-up Hdwy	3.5	4	3.3	3.5
Pot Cap-1 Maneuver	738	678	880	740
Stage 1	838	763	-	962
Stage 2	963	852	-	842
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	730	672	874	727
Mov Cap-2 Maneuver	730	672	-	727
Stage 1	834	759	-	959
Stage 2	959	850	-	830

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.25	9.59	0.29	0.05
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	69	-	-	858	792	11	-	-
HCM Lane V/C Ratio	0.001	-	-	0.013	0.009	0.001	-	-
HCM Control Delay (s/veh)	7.5	0	-	9.2	9.6	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
7: Timber Trail Rd & Weymouth St

Total AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	24	5	0	3	13	37	1	1	133	2
Future Volume (vph)	0	0	24	5	0	3	13	37	1	1	133	2
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	0.865				0.949				0.997		0.998	
Flt Protected					0.970				0.987			
Satd. Flow (prot)	0	1326	0	0	1411	0	0	1345	0	0	1472	0
Flt Permitted					0.970				0.987			
Satd. Flow (perm)	0	1326	0	0	1411	0	0	1345	0	0	1472	0
Link Speed (k/h)	50				50				50		50	
Link Distance (m)	85.5				50.1				179.4		67.0	
Travel Time (s)	6.2				3.6				12.9		4.8	
Confl. Peds. (#/hr)							3		3		3	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	22%	9%	0%	0%	4%	0%
Adj. Flow (vph)	0	0	24	5	0	3	13	37	1	1	133	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	24	0	0	8	0	0	51	0	0	136	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)	4.8				4.8				4.8		4.8	
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)	25		15	25		15	25		15	25		15
Sign Control	Stop				Stop				Free		Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	27.0%				ICU Level of Service A							
Analysis Period (min)	15											

PTSL

Synchro 12 Report

HCM 7th TWSC
7: Timber Trail Rd & Weymouth St

Total AM
Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	0	0	24	5	0	3	13	37	1	1	133	2
Future Vol, veh/h	0	0	24	5	0	3	13	37	1	1	133	2
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	3	3	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	22	9	0	0	4	0
Mvmt Flow	0	0	24	5	0	3	13	37	1	1	133	2

Major/Minor	Minor2		Minor1		Major1		Major2			
Conflicting Flow All	202	206	137	202	207	41	138	0	0	41
Stage 1	139	139	-	67	67	-	-	-	-	-
Stage 2	63	67	-	135	140	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.32	-	-	4.1
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.398	-	-	2.2
Pot Cap-1 Maneuver	761	694	917	761	694	1036	1332	-	-	1581
Stage 1	869	785	-	949	843	-	-	-	-	-
Stage 2	953	843	-	873	785	-	-	-	-	-
Platoon blocked, %										
Mov Cap-1 Maneuver	749	684	915	732	683	1034	1328	-	-	1578
Mov Cap-2 Maneuver	749	684	-	732	683	-	-	-	-	-
Stage 1	866	783	-	937	833	-	-	-	-	-
Stage 2	941	833	-	850	782	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.04	9.42	1.97	0.05
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	456	-	-	915	822	13	-	-
HCM Lane V/C Ratio	0.01	-	-	0.026	0.01	0.001	-	-
HCM Control Delay (s/veh)	7.7	0	-	9	9.4	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
8: Listowel Rd & Burlwood Dr

Total AM
Southwood, Elmira TIS

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	12	586	292	36	113	35
Future Volume (vph)	12	586	292	36	113	35
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.985		0.968	
Flt Protected		0.999			0.963	
Satd. Flow (prot)	0	1471	1277	0	1627	0
Flt Permitted		0.999			0.963	
Satd. Flow (perm)	0	1471	1277	0	1627	0
Link Speed (k/h)		80	80		50	
Link Distance (m)		180.0	399.0		78.1	
Travel Time (s)		8.1	18.0		5.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	11%	29%	0%	0%	0%
Adj. Flow (vph)	12	586	292	36	113	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	598	328	0	148	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.12	1.12
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 62.3%	ICU Level of Service B					
Analysis Period (min) 15						

PTSL

Synchro 12 Report

HCM 7th TWSC
8: Listowel Rd & Burlwood Dr

Total AM
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	586	292	36	113	35
Future Vol, veh/h	12	586	292	36	113	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	11	29	0	0	0
Mvmt Flow	12	586	292	36	113	35

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	328	0	920
Stage 1	-	-	310
Stage 2	-	-	610
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1243	-	303
Stage 1	-	-	748
Stage 2	-	-	546
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1243	-	299
Mov Cap-2 Maneuver	-	-	299
Stage 1	-	-	738
Stage 2	-	-	546

Approach	EB	WB	SB
HCM Control Delay, s/v	0.16	0	22.82
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	36	-	-	-	348
HCM Lane V/C Ratio	0.01	-	-	-	0.426
HCM Control Delay (s/veh)	7.9	0	-	-	22.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	2.1

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
1: Arthur St S & Listowel Rd/Union St

Total PM
Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	73	394	348	116	1	476	832	110	1	588	102
Future Volume (vph)	102	73	394	348	116	1	476	832	110	1	588	102
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0		65.0	30.0		30.0	100.0		100.0	50.0		50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	50.0		30.0			80.0			65.0			
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			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1323	1313	1619	1678	1471	1544	1842	1257	1668	1824	1388
Flt Permitted	0.682			0.562			0.091			0.291		
Satd. Flow (perm)	1185	1323	1313	958	1678	1471	148	1842	1257	511	1824	1358
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			394			63			110			111
Link Speed (k/h)		80			50			60			60	
Link Distance (m)		399.0			174.3			195.8			164.0	
Travel Time (s)		18.0			12.5			11.7			9.8	
Confl. Peds. (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	1%	42%	12%	3%	12%	0%	8%	2%	17%	0%	3%	6%
Adj. Flow (vph)	102	73	394	348	116	1	476	832	110	1	588	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	73	394	348	116	1	476	832	110	1	588	102
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

PTSL

Synchro 12 Report

Lanes, Volumes, Timings

1: Arthur St S & Listowel Rd/Union St

Total PM

Southwood, Elmira TIS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	34.0	34.0	34.0	11.0	34.0	34.0	11.0	46.4	46.4	46.4	46.4	46.4
Total Split (s)	33.0	33.0	33.0	19.0	52.0	52.0	29.0	75.4	75.4	46.4	46.4	46.4
Total Split (%)	25.9%	25.9%	25.9%	14.9%	40.8%	40.8%	22.8%	59.2%	59.2%	36.4%	36.4%	36.4%
Maximum Green (s)	25.0	25.0	25.0	15.0	44.0	44.0	25.0	69.0	69.0	40.0	40.0	40.0
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.4	3.4	3.4	1.0	3.4	3.4	1.0	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-4.0	-4.0	-4.0	0.0	-4.0	-4.0	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		20.0	20.0	20.0	20.0	20.0
Flash Don't Walk (s)	19.0	19.0	19.0		19.0	19.0		20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0	0		0	0		0	0	0	0	0
Act Effct Green (s)	19.9	19.9	19.9	39.0	39.0	39.0	71.5	71.5	42.5	42.5	42.5	42.5
Actuated g/C Ratio	0.17	0.17	0.17	0.33	0.33	0.33	0.60	0.60	0.36	0.36	0.36	0.36
v/c Ratio	0.51	0.33	0.72	0.87	0.21	0.00	1.24	0.75	0.14	0.01	0.90	0.18
Control Delay (s/veh)	53.9	46.9	12.2	58.2	29.3	0.0	159.9	23.4	2.6	27.0	55.1	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	53.9	46.9	12.2	58.2	29.3	0.0	159.9	23.4	2.6	27.0	55.1	5.3
LOS	D	D	B	E	C	A	F	C	A	C	E	A
Approach Delay (s/veh)	24.2			50.9			67.6			47.7		
Approach LOS	C			D			E			D		

Intersection Summary

Area Type: Other

Cycle Length: 127.4

Actuated Cycle Length: 118.5

Natural Cycle: 125

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.24

Intersection Signal Delay (s/veh): 52.9

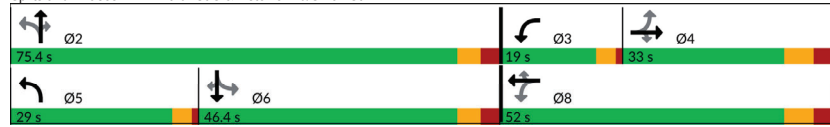
Intersection LOS: D

Intersection Capacity Utilization 98.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Arthur St S & Listowel Rd/Union St



PTSL

Synchro 12 Report

Queues

1: Arthur St S & Listowel Rd/Union St

Total PM

Southwood, Elmira TIS

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	102	73	394	348	116	1	476	832	110	1	588	102
v/c Ratio	0.51	0.33	0.72	0.87	0.21	0.00	1.24	0.75	0.14	0.01	0.90	0.18
Control Delay (s/veh)	53.9	46.9	12.2	58.2	29.3	0.0	159.9	23.4	2.6	27.0	55.1	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	53.9	46.9	12.2	58.2	29.3	0.0	159.9	23.4	2.6	27.0	55.1	5.3
Queue Length 50th (m)	22.9	15.9	0.0	72.4	20.3	0.0	~128.5	136.0	0.0	0.2	133.7	0.0
Queue Length 95th (m)	41.0	30.3	30.8	#113.3	34.8	0.0	#216.8	229.0	8.4	1.6	#226.9	11.0
Internal Link Dist (m)	375.0			150.3			171.8			140.0		
Turn Bay Length (m)	60.0		65.0	30.0		30.0	100.0		100.0	50.0		50.0
Base Capacity (vph)	290	324	619	398	680	634	384	1111	802	183	653	557
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.23	0.64	0.87	0.17	0.00	1.24	0.75	0.14	0.01	0.90	0.18

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

PTSL

Synchro 12 Report

Lanes, Volumes, Timings

2: Arthur St S & South Parkwood Blvd/Earl Martin Dr

Total PM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	2	42	2	0	55	76	816	7	44	686	68
Future Volume (vph)	23	2	42	2	0	55	76	816	7	44	686	68
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	15.0		0.0	25.0		0.0	70.0		55.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	20.0			7.5			7.5			7.5		
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		0.857			0.850			0.850			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1398	0	1668	1360	0	1588	1842	1471	1588	1566	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1668	1398	0	1668	1360	0	1588	1842	1471	1588	1566	0
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		158.6			105.5			325.8			133.1	
Travel Time (s)		11.4			7.6			19.5			8.0	
Confl. Peds. (#/hr)							1		1	1		1
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	5%	2%	0%	5%	3%	0%
Adj. Flow (vph)	23	2	42	2	0	55	76	816	7	44	686	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	44	0	2	55	0	76	816	7	44	754	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane							Yes				Yes	
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15

PTSL

Synchro 12 Report

HCM 7th TWSC

2: Arthur St S & South Parkwood Blvd/Earl Martin Dr

Total PM

Southwood, Elmira TIS

Intersection

Int Delay, s/veh 3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	2	42	2	0	55	76	816	7	44	686	68
Future Vol, veh/h	23	2	42	2	0	55	76	816	7	44	686	68
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	15	-	-	25	-	-	70	-	55	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	2	5	2	0	5	3	0
Mvmt Flow	23	2	42	2	0	55	76	816	7	44	686	68

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	1777	1785	721	1744
Stage 1	809	809	-	969
Stage 2	968	976	-	775
Critical Hdwy	7.1	6.5	6.2	7.1
Critical Hdwy Stg 1	6.1	5.5	-	6.1
Critical Hdwy Stg 2	6.1	5.5	-	6.1
Follow-up Hdwy	3.5	4	3.3	3.5
Pot Cap-1 Maneuver	65	82	431	69
Stage 1	377	396	-	307
Stage 2	308	332	-	394
Platoon blocked, %				
Mov Cap-1 Maneuver	48	71	430	52
Mov Cap-2 Maneuver	48	71	-	52
Stage 1	356	374	-	279
Stage 2	239	302	-	334

Approach	EB	WB	NB	SB
HCM Control Delay, s/v58.19		18.35	0.82	0.54
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	841	-	-	48	350	52	376	793	-	-
HCM Lane V/C Ratio	0.09	-	-	0.483	0.126	0.039	0.146	0.056	-	-
HCM Control Delay (s/veh)	9.7	-	-	137.4	16.8	77.3	16.2	9.8	-	-
HCM Lane LOS	A	-	-	F	C	F	C	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	1.8	0.4	0.1	0.5	0.2	-	-

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
3: Listowel Rd & Timber Trail Rd

Total PM
Southwood, Elmira TIS

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	66	506	543	62	45	57
Future Volume (vph)	66	506	543	62	45	57
Ideal Flow (vphpl)	1775	1900	1650	1650	1765	1765
Storage Length (m)	35.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.986		0.925	
Flt Protected	0.950				0.978	
Satd. Flow (prot)	1619	1663	1489	0	1579	0
Flt Permitted	0.950				0.978	
Satd. Flow (perm)	1619	1663	1489	0	1579	0
Link Speed (k/h)		80	80		50	
Link Distance (m)		168.0	180.0		214.8	
Travel Time (s)		7.6	8.1		15.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	13%	9%	0%	0%	0%
Adj. Flow (vph)	66	506	543	62	45	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	506	605	0	102	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.11	1.01	1.21	1.21	1.12	1.12
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	57.6%					
ICU Level of Service B						
Analysis Period (min)	15					

PTSL

Synchro 12 Report

HCM 7th TWSC
3: Listowel Rd & Timber Trail Rd

Total PM
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	66	506	543	62	45	57
Future Vol, veh/h	66	506	543	62	45	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	35	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	13	9	0	0	0
Mvmt Flow	66	506	543	62	45	57

Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	605	0	-	0	1212	574
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	638	-
Critical Hdwy	4.13	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.227	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	968	-	-	-	203	522
Stage 1	-	-	-	-	567	-
Stage 2	-	-	-	-	530	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	968	-	-	-	189	522
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	529	-
Stage 2	-	-	-	-	530	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.04	0	23.62
HCM LOS	C		

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	968	-	-	-	294
HCM Lane V/C Ratio	0.068	-	-	-	0.347
HCM Control Delay (s/veh)	9	-	-	-	23.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.5

PTSL

Synchro 12 Report

Lanes, Volumes, Timings

4: South Parkwood Blvd & Pintail Drive

Total PM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	70	42	0	18	128	7	0	3	11	7	4	46
Future Volume (vph)	70	42	0	18	128	7	0	3	11	7	4	46
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				0.994				0.894			0.891	
Flt Protected		0.970			0.994						0.994	
Satd. Flow (prot)	0	1468	0	0	1502	0	0	1370	0	0	1358	0
Flt Permitted		0.970			0.994						0.994	
Satd. Flow (perm)	0	1468	0	0	1502	0	0	1370	0	0	1358	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		241.1			158.6			89.3			116.0	
Travel Time (s)		17.4			11.4			6.4			8.4	
Confl. Peds. (#/hr)	2					2	1					1
Peak Hour 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
Heavy Vehicles (%)	2%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	70	42	0	18	128	7	0	3	11	7	4	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	112	0	0	153	0	0	14	0	0	57	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	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)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 38.7%

ICU Level of Service A

Analysis Period (min) 15

PTSL

Synchro 12 Report

HCM 7th TWSC

4: South Parkwood Blvd & Pintail Drive

Total PM

Southwood, Elmira TIS

Intersection

Int Delay, s/veh 4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	70	42	0	18	128	7	0	3	11	7	4	46
Future Vol, veh/h	70	42	0	18	128	7	0	3	11	7	4	46
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	0	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	70	42	0	18	128	7	0	3	11	7	4	46

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	137	0	0	42	0	0	349	355	42	353	352	135
Stage 1	-	-	-	-	-	-	182	182	-	170	170	-
Stage 2	-	-	-	-	-	-	167	173	-	184	182	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1447	-	-	1580	-	-	609	574	1034	606	576	920
Stage 1	-	-	-	-	-	-	824	753	-	837	762	-
Stage 2	-	-	-	-	-	-	840	760	-	823	753	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1445	-	-	1580	-	-	539	538	1034	559	540	918
Mov Cap-2 Maneuver	-	-	-	-	-	-	539	538	-	559	540	-
Stage 1	-	-	-	-	-	-	784	715	-	826	752	-
Stage 2	-	-	-	-	-	-	783	749	-	771	715	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	4.76	0.86	9.24	9.76
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	864	1125	-	-	210	-	-	814
HCM Lane V/C Ratio	0.016	0.048	-	-	0.011	-	-	0.07
HCM Control Delay (s/veh)	9.2	7.6	0	-	7.3	0	-	9.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0.2	-	-	0	-	-	0.2

PTSL

Synchro 12 Report

Lanes, Volumes, Timings

5: Burlwood Dr & South Parkwood Blvd

Total PM

Southwood, Elmira TIS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	87	6	34	129	10	4	0	21	5	0	0
Future Volume (vph)	0	87	6	34	129	10	4	0	21	5	0	0
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		0.991			0.992			0.887				
Flt Protected					0.990			0.992			0.950	
Satd. Flow (prot)	0	1505	0	0	1494	0	0	1349	0	0	1456	0
Flt Permitted					0.990			0.992			0.950	
Satd. Flow (perm)	0	1505	0	0	1494	0	0	1349	0	0	1456	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		220.1			241.1			55.1			92.8	
Travel Time (s)		15.8			17.4			4.0			6.7	
Confl. Peds. (#/hr)	11		1	1		11			1	1		
Peak Hour 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
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	87	6	34	129	10	4	0	21	5	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	0	0	173	0	0	25	0	0	5	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)		4.8			4.8			4.8			4.8	
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)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	28.4%											
Analysis Period (min)	15											
ICU Level of Service A												

PTSL

Synchro 12 Report

HCM 7th TWSC

5: Burlwood Dr & South Parkwood Blvd

Total PM

Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	87	6	34	129	10	4	0	21	5	0	0
Future Vol, veh/h	0	87	6	34	129	10	4	0	21	5	0	0
Conflicting Peds, #/hr	11	0	1	1	0	11	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	0	87	6	34	129	10	4	0	21	5	0	0
Major/Minor	Major1	Major2			Minor1			Minor2				
Conflicting Flow All	150	0	0	94	0	0	288	309	92	301	307	145
Stage 1	-	-	-	-	-	-	91	91	-	213	213	-
Stage 2	-	-	-	-	-	-	197	218	-	88	94	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1444	-	-	1513	-	-	668	609	971	655	610	908
Stage 1	-	-	-	-	-	-	921	823	-	794	730	-
Stage 2	-	-	-	-	-	-	809	726	-	925	821	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1431	-	-	1512	-	-	651	588	969	620	590	900
Mov Cap-2 Maneuver	-	-	-	-	-	-	651	588	-	620	590	-
Stage 1	-	-	-	-	-	-	920	823	-	768	706	-
Stage 2	-	-	-	-	-	-	790	703	-	904	820	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	0		1.46		9.12		10.86					
HCM LOS					A		B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	899	1431	-	-	349	-	-	620				
HCM Lane V/C Ratio	0.028	-	-	-	0.022	-	-	0.008				
HCM Control Delay (s/veh)	9.1	0	-	-	7.4	0	-	10.9				
HCM Lane LOS	A	A	-	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0				

PTSL

Synchro 12 Report

Lanes, Volumes, Timings

6: Timber Trail Rd & Woodberry Cres

Total PM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	8	3	0	1	9	130	5	2	86	4
Future Volume (vph)	3	0	8	3	0	1	9	130	5	2	86	4
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		0.902			0.966			0.995			0.994	
Flt Protected		0.987			0.964			0.997			0.999	
Satd. Flow (prot)	0	1365	0	0	1427	0	0	1494	0	0	1522	0
Flt Permitted		0.987			0.964			0.997			0.999	
Satd. Flow (perm)	0	1365	0	0	1427	0	0	1494	0	0	1522	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		98.1			55.8			214.8			179.4	
Travel Time (s)		7.1			4.0			15.5			12.9	
Confl. Peds. (#/hr)	2					2	5					5
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%
Adj. Flow (vph)	3	0	8	3	0	1	9	130	5	2	86	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	4	0	0	144	0	0	92	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)		4.8			4.8			4.8			4.8	
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)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 25.0%	ICU Level of Service A											
Analysis Period (min) 15												

PTSL

Synchro 12 Report

HCM 7th TWSC

6: Timber Trail Rd & Woodberry Cres

Total PM

Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	8	3	0	1	9	130	5	2	86	4
Future Vol, veh/h	3	0	8	3	0	1	9	130	5	2	86	4
Conflicting Peds, #/hr	2	0	0	0	0	2	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	0	0
Mvmt Flow	3	0	8	3	0	1	9	130	5	2	86	4
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	247	250	93	241	250	135	95	0	0	135	0	0
Stage 1	97	97	-	151	151	-	-	-	-	-	-	-
Stage 2	150	153	-	90	99	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	711	656	970	718	657	920	1512	-	-	1462	-	-
Stage 1	914	819	-	857	777	-	-	-	-	-	-	-
Stage 2	857	775	-	922	817	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	701	649	966	706	649	918	1506	-	-	1462	-	-
Mov Cap-2 Maneuver	701	649	-	706	649	-	-	-	-	-	-	-
Stage 1	910	814	-	851	772	-	-	-	-	-	-	-
Stage 2	850	770	-	913	813	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	9.16		9.83		0.46		0.16					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	112	-	-	875	750	39	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.013	0.005	0.001	-	-				
HCM Control Delay (s/veh)	7.4	0	-	9.2	9.8	7.5	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-				

PTSL

Synchro 12 Report

Lanes, Volumes, Timings

7: Timber Trail Rd & Weymouth St

Total PM

Southwood, Elmira TIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	17	3	0	2	13	116	5	3	73	1
Future Volume (vph)	0	0	17	3	0	2	13	116	5	3	73	1
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		0.865			0.946			0.995			0.998	
Flt Protected					0.971			0.995			0.998	
Satd. Flow (prot)	0	1326	0	0	1408	0	0	1492	0	0	1527	0
Flt Permitted					0.971			0.995			0.998	
Satd. Flow (perm)	0	1326	0	0	1408	0	0	1492	0	0	1527	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		85.5			50.1			179.4			67.0	
Travel Time (s)		6.2			3.6			12.9			4.8	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	17	3	0	2	13	116	5	3	73	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	17	0	0	5	0	0	134	0	0	77	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)		4.8			4.8			4.8			4.8	
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)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	24.6%											
Analysis Period (min)	15											
ICU Level of Service A												

PTSL

Synchro 12 Report

HCM 7th TWSC

7: Timber Trail Rd & Weymouth St

Total PM

Southwood, Elmira TIS

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	17	3	0	2	13	116	5	3	73	1
Future Vol, veh/h	0	0	17	3	0	2	13	116	5	3	73	1
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	1	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	0	0
Mvmt Flow	0	0	17	3	0	2	13	116	5	3	73	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	224	230	76	225	228	120	76	0	0	122	0	0
Stage 1	82	82	-	146	146	-	-	-	-	-	-	-
Stage 2	142	148	-	79	82	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	736	674	991	735	675	938	1536	-	-	1478	-	-
Stage 1	932	831	-	862	780	-	-	-	-	-	-	-
Stage 2	866	779	-	935	831	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	726	665	990	714	666	937	1533	-	-	1477	-	-
Mov Cap-2 Maneuver	726	665	-	714	666	-	-	-	-	-	-	-
Stage 1	928	828	-	854	773	-	-	-	-	-	-	-
Stage 2	856	771	-	917	828	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	8.7		9.59		0.71		0.29					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	173	-	-	990	789	70	-	-				
HCM Lane V/C Ratio	0.008	-	-	0.017	0.006	0.002	-	-				
HCM Control Delay (s/veh)	7.4	0	-	8.7	9.6	7.4	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

PTSL

Synchro 12 Report

Lanes, Volumes, Timings
8: Listowel Rd & Burlwood Dr

Total PM
Southwood, Elmira TIS

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	36	497	578	116	72	22
Future Volume (vph)	36	497	578	116	72	22
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.977		0.968	
Flt Protected		0.997			0.963	
Satd. Flow (prot)	0	1451	1495	0	1627	0
Flt Permitted		0.997			0.963	
Satd. Flow (perm)	0	1451	1495	0	1627	0
Link Speed (k/h)		80	80		50	
Link Distance (m)		180.0	399.0		78.1	
Travel Time (s)		8.1	18.0		5.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	13%	8%	0%	0%	0%
Adj. Flow (vph)	36	497	578	116	72	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	533	694	0	94	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.12	1.12
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 76.6%	ICU Level of Service D					
Analysis Period (min) 15						

PTSL

Synchro 12 Report

HCM 7th TWSC
8: Listowel Rd & Burlwood Dr

Total PM
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	36	497	578	116	72	22
Future Vol, veh/h	36	497	578	116	72	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	13	8	0	0	0
Mvmt Flow	36	497	578	116	72	22
Major/Minor						
Major1	Major2		Minor2			
Conflicting Flow All	694	0	-	0	1205	636
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	569	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	911	-	-	-	205	481
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	911	-	-	-	194	481
Mov Cap-2 Maneuver	-	-	-	-	194	-
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	570	-
Approach						
EB	WB		SB			
HCM Control Delay, s/v	0.62	0	31.96			
HCM LOS			D			
Minor Lane/Major Mvmt						
EBL	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	122	-	-	-	225	
HCM Lane V/C Ratio	0.04	-	-	-	0.417	
HCM Control Delay (s/veh)	9.1	0	-	-	32	
HCM Lane LOS	A	A	-	-	D	
HCM 95th %tile Q(veh)	0.1	-	-	-	1.9	

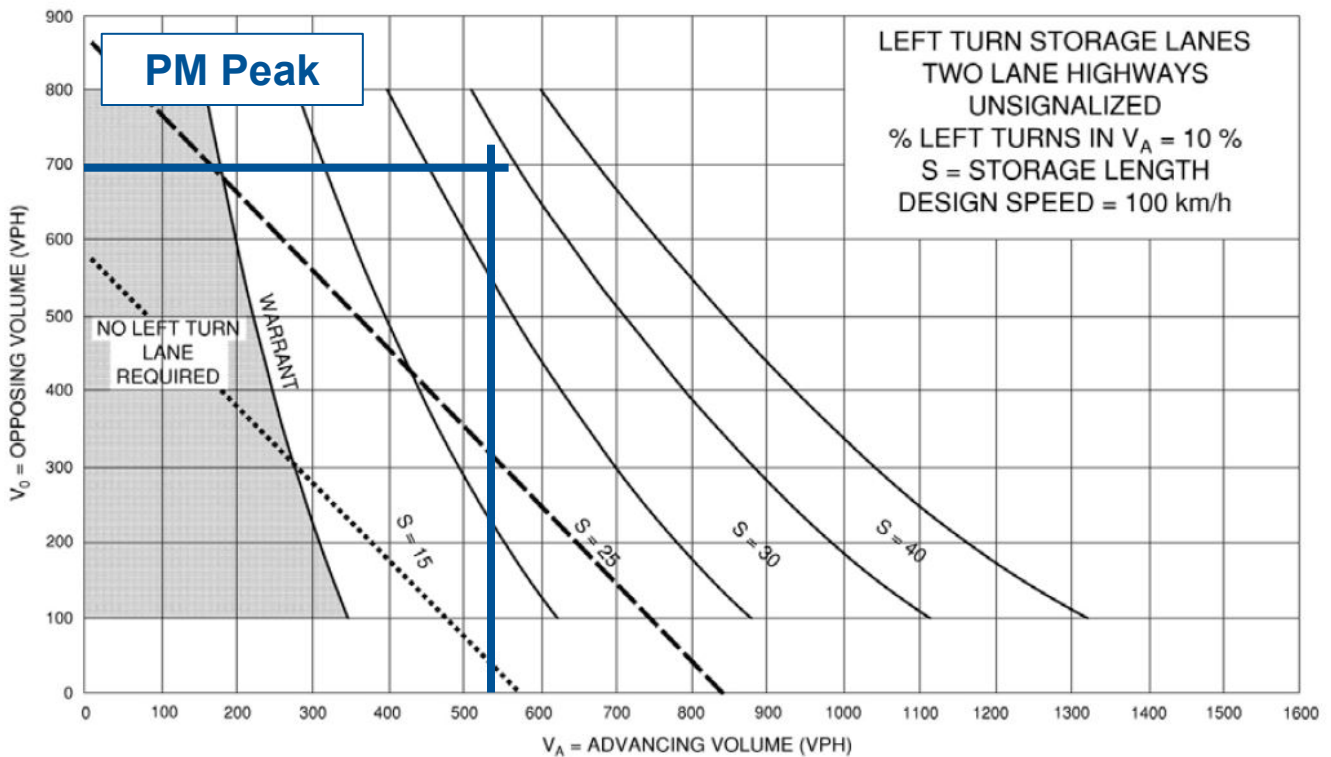
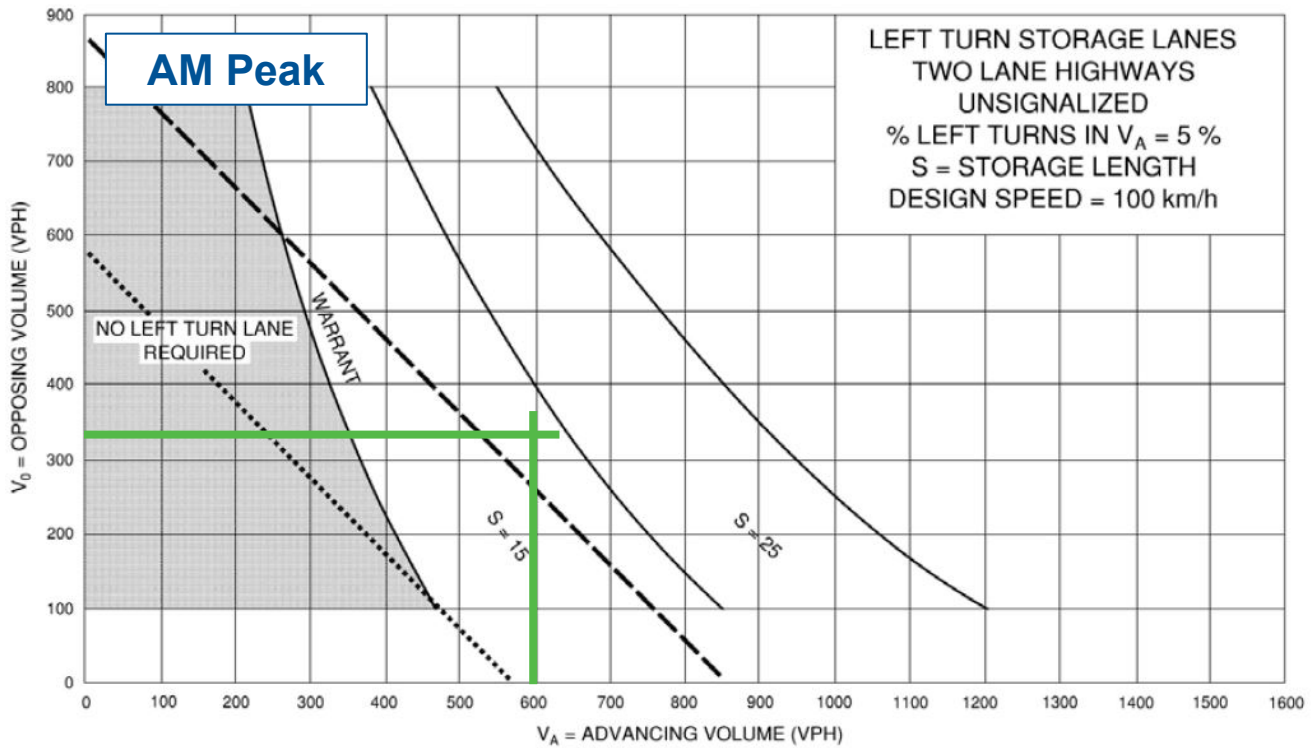
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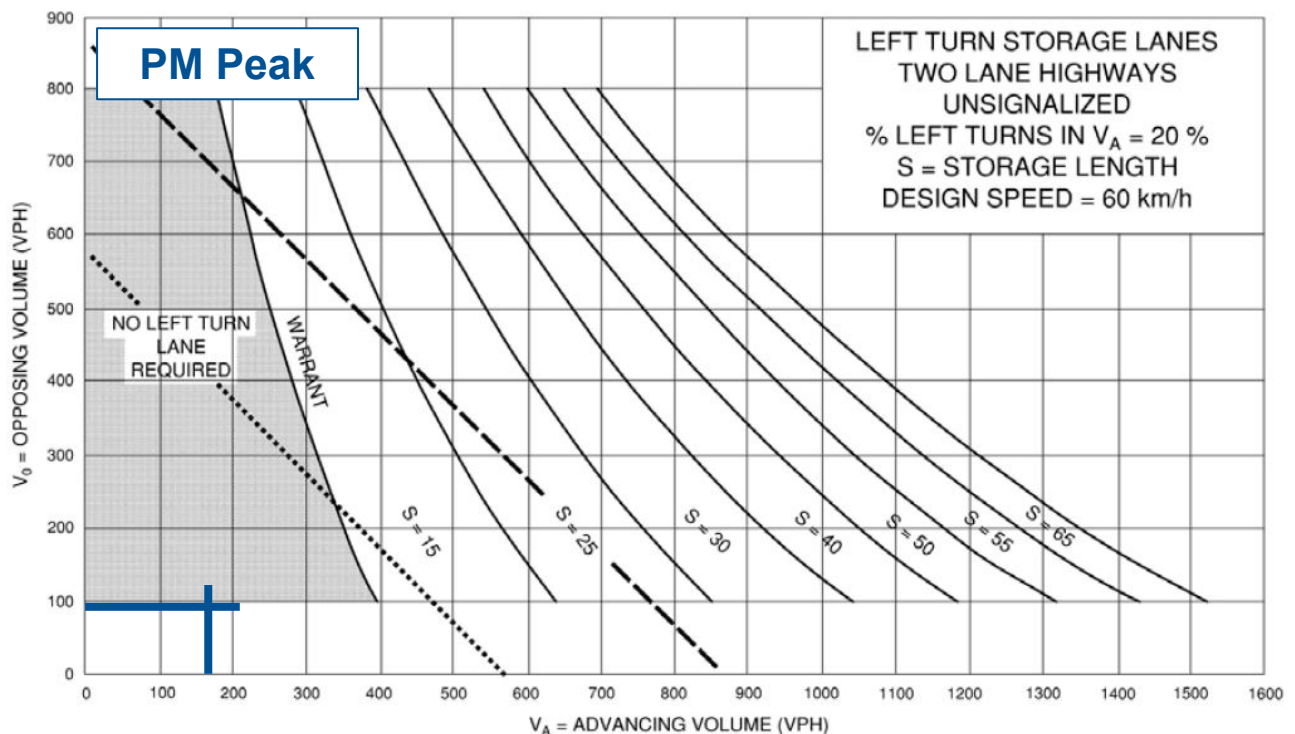
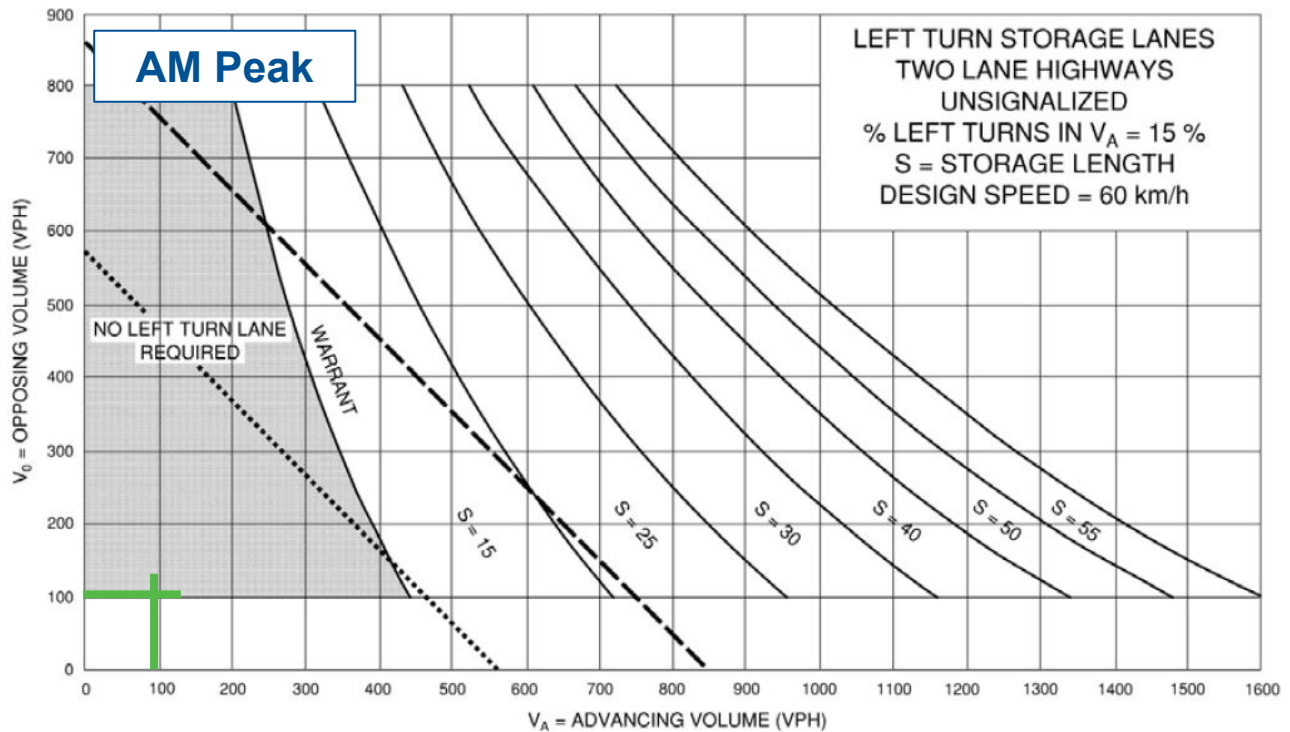
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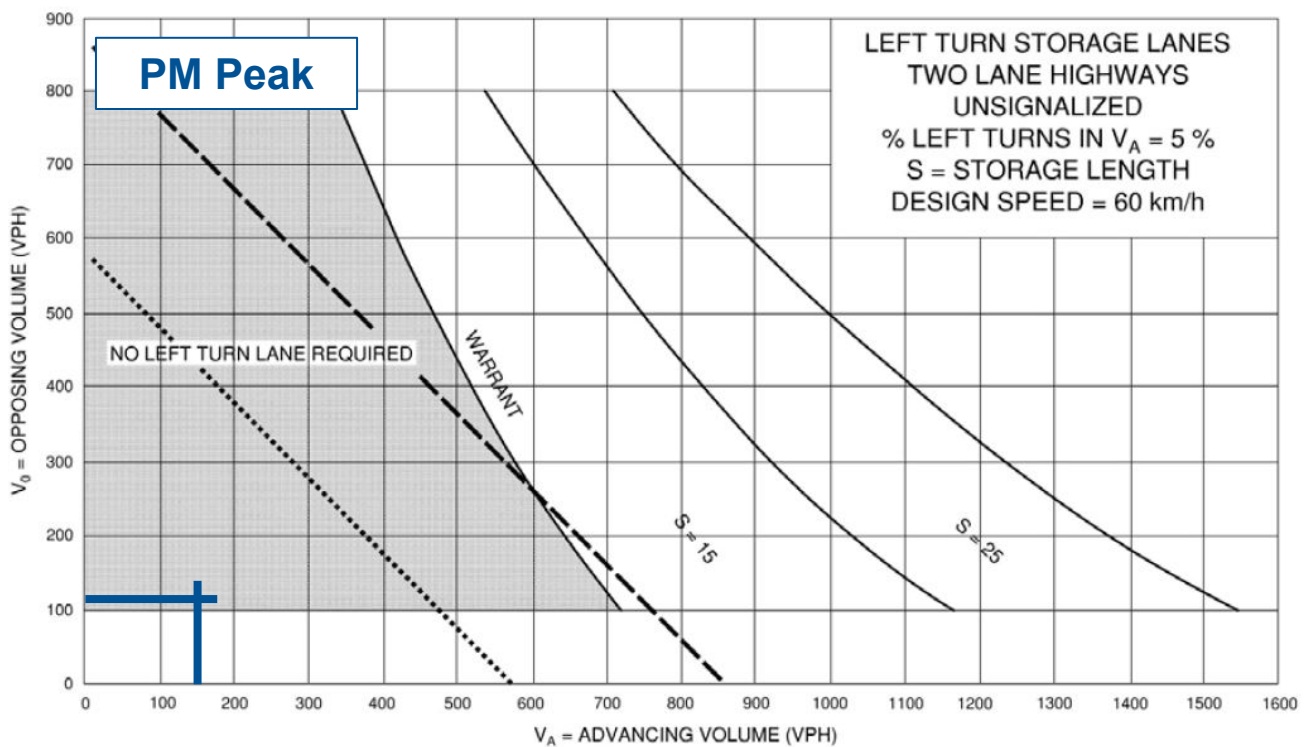
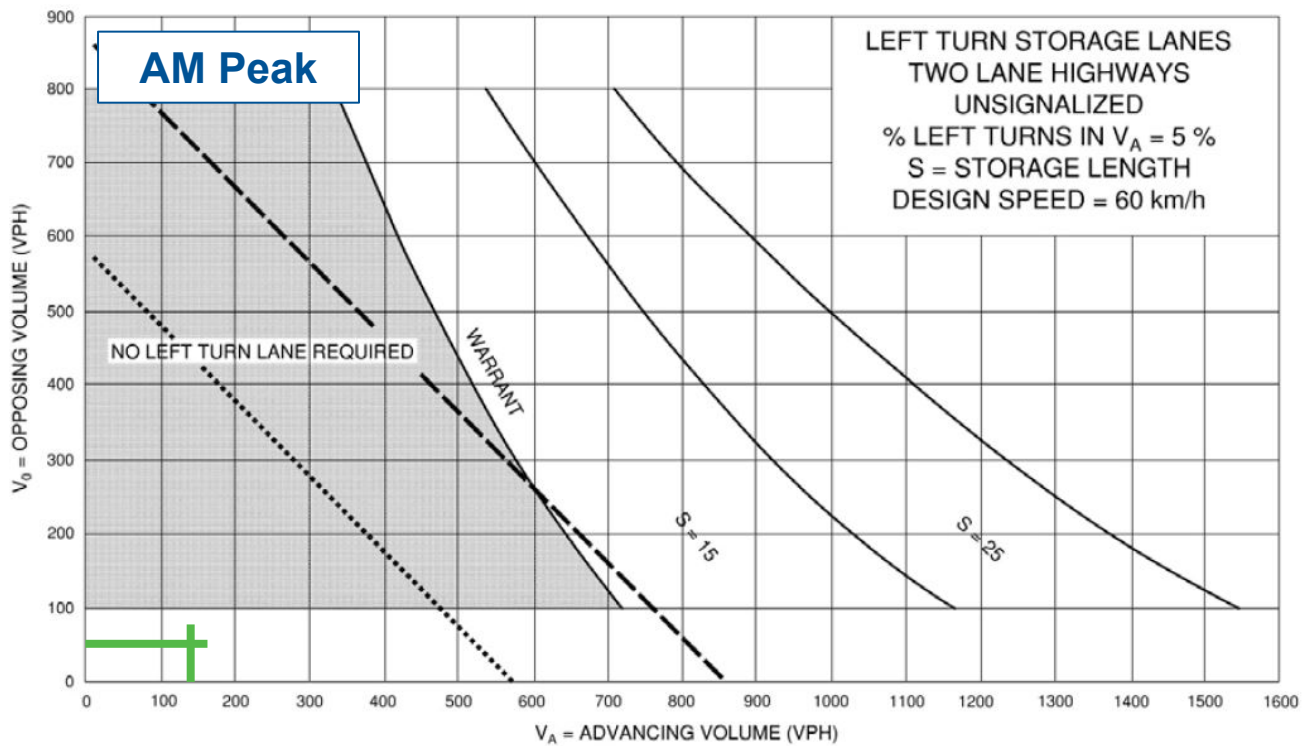
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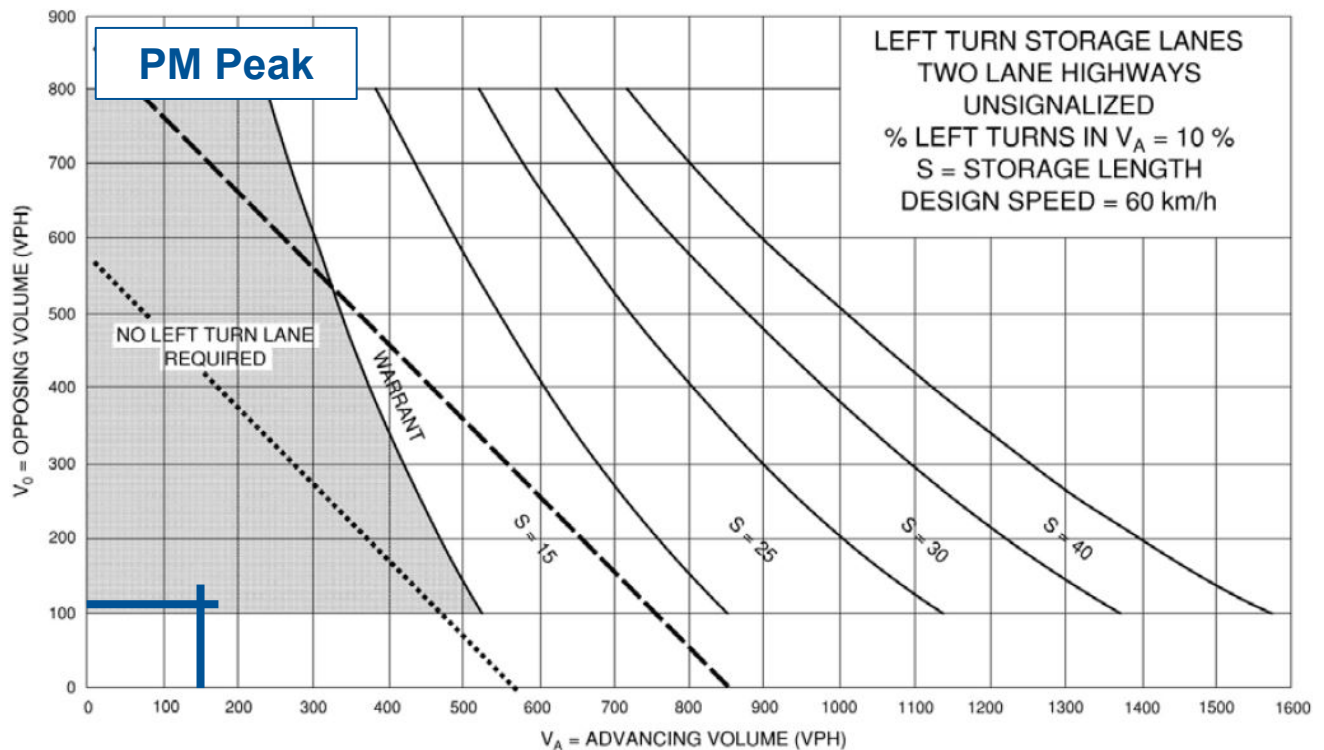
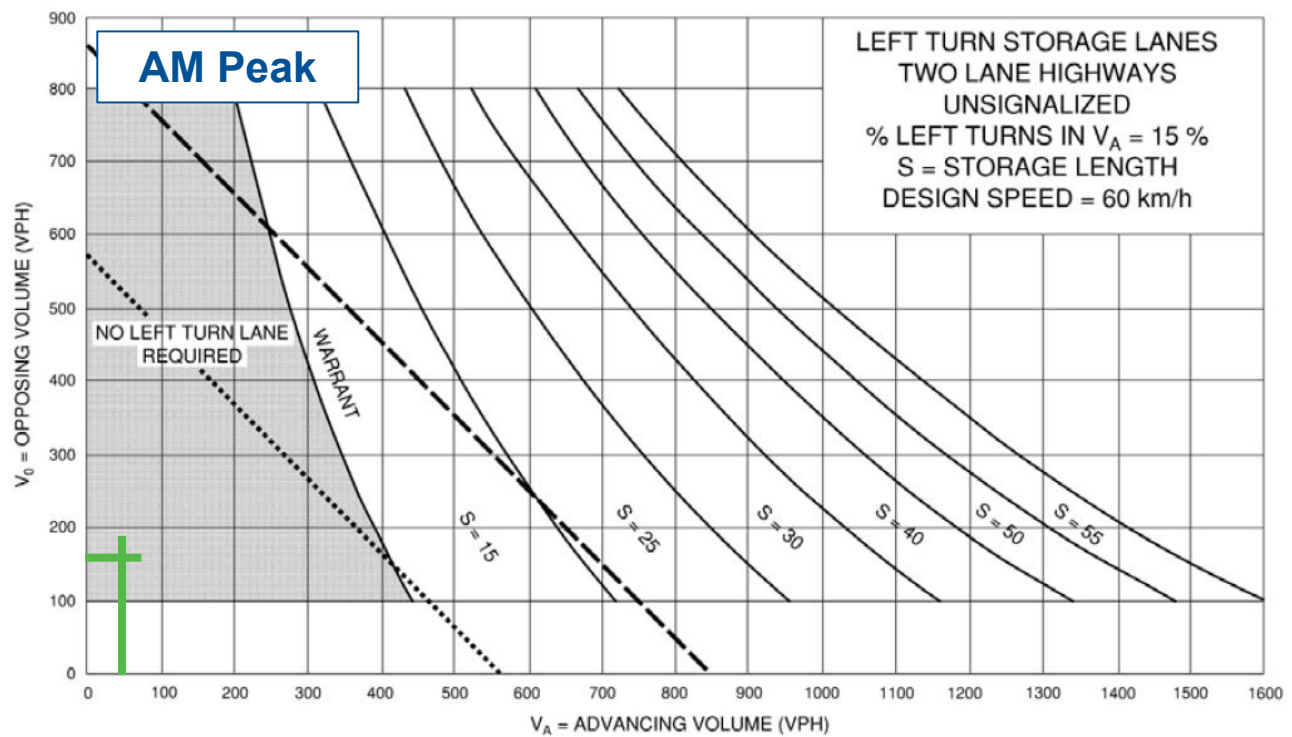
Left-Turn Lane Warrants

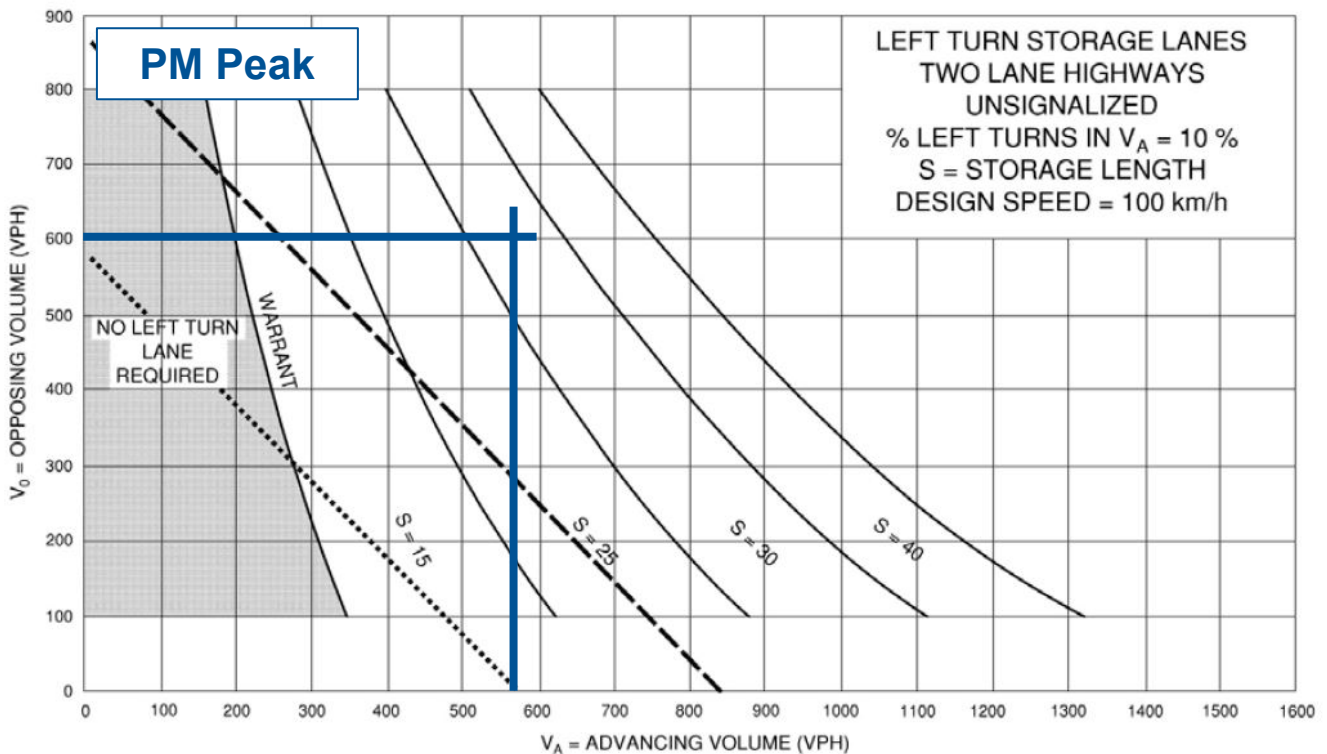
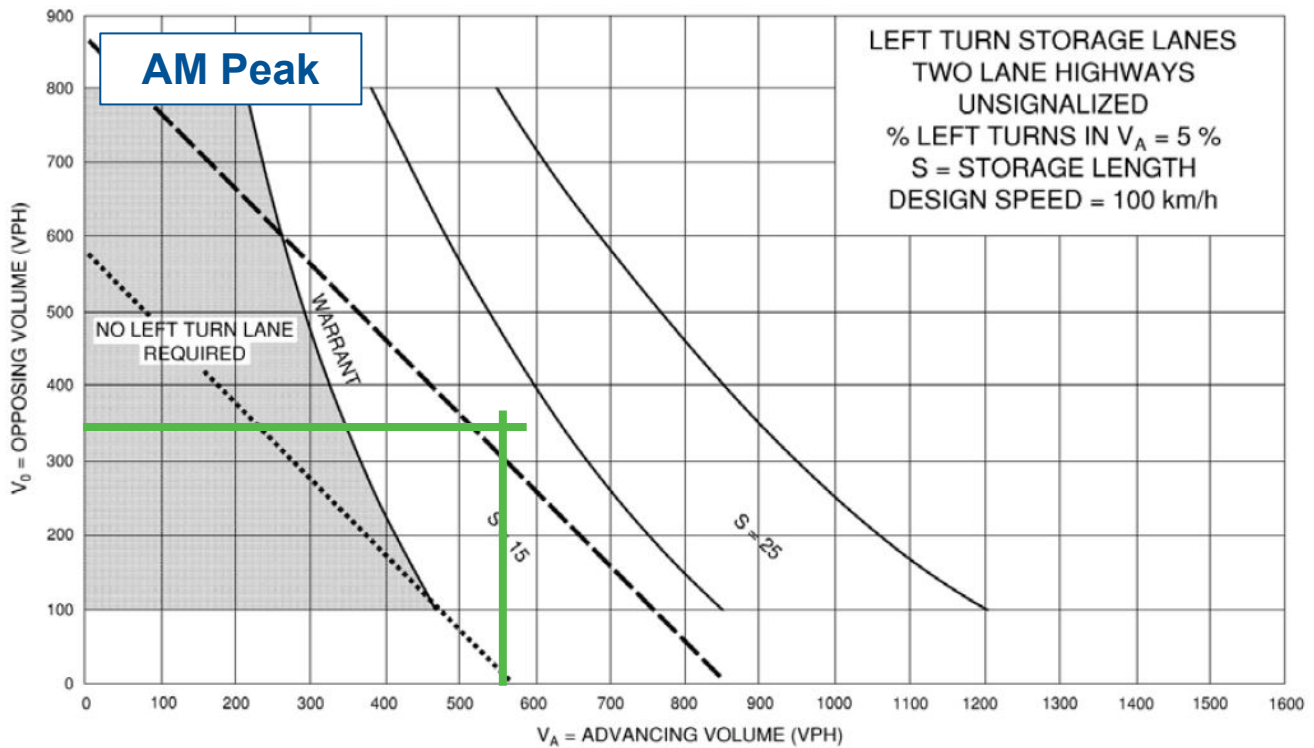












Appendix I

Signal Warrants



Signal Justification Calculation for Forecast Volumes (OTM Book 12 - Justification 7)



Horizon Year: 2030 Total Traffic
Region/City/Township: Region of Waterloo/Woolwich

Major Street: Arthur St S
Minor Street: S Parkwood Blvd/Earl Martin Dr

North/South?: Y

Number of Approach Lanes: 1
Tee Intersection? N
Flow Conditions: Restricted

PM Forecast Only? N

Warrant Results			
150% Satisfied	No	Justification for new intersections with forecast traffic	
120% Satisfied	No	Justification for existing intersections with forecast traffic	

Time Period	Major Street						Minor Street						Peds Crossing
	Arthur St S						S Parkwood Blvd/Earl Martin Dr						
	Northbound			Southbound			Eastbound			Westbound			
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
AM Peak Hour	26	654	4	81	662	29	28	1	70	2	0	30	0
PM Peak Hour	76	816	7	44	686	68	23	2	42	2	0	55	2
average Hourly Volume	26	368	3	31	337	24	13	1	28	1	0	21	1

Warrant	AHV
1A - All	852
1B - Minor	64
2A - Major	788
2B - Cross	15

Warrant 1 - Minimum Vehicular Volume

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	All Approaches	480	720	600	900	
					% Fulfilled	118.3%

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	
					% Fulfilled	37.5%

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Major Street Approaches	480	720	600	900	
					% Fulfilled	109.5%

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	50	75	
					% Fulfilled	20.0%

Signal Justification Calculation for Forecast Volumes (OTM Book 12 - Justification 7)



Horizon Year: 2030 Total Traffic
Region/City/Township: Region of Waterloo/Woolwich

Major Street: Listowel Road
Minor Street: Timber Trail Road

North/South?: N

Number of Approach Lanes: 1
Tee Intersection? Y
Flow Conditions: Free

PM Forecast Only? N

Warrant Results			
150% Satisfied	No	Justification for new intersections with forecast traffic	
120% Satisfied	No	Justification for existing intersections with forecast traffic	

Time Period	Major Street Listowel Road						Minor Street Timber Trail Road						Peds Crossing
	Eastbound			Westbound			Northbound			Southbound			
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
	AM Peak Hour	37	527			287	56				219		
PM Peak Hour	102	470			521	178				117		79	0
verage Hourly Volum	35	249	0	0	202	59	0	0	0	84	0	48	0

Warrant	AHV
1A - All	676
1B - Minor	132
2A - Major	545
2B - Cross	84

Warrant 1 - Minimum Vehicular Volume

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	X					
	All Approaches	480	720	600	900	
					% Fulfilled	140.9%

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	X					
	Minor Street Approaches	180	255	180	255	
					% Fulfilled	73.2%

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	X					
	Major Street Approaches	480	720	600	900	
					% Fulfilled	113.4%

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
	X					
	Traffic Crossing Major Street	50	75	50	75	
					% Fulfilled	168.0%

Appendix J

Sensitivity Analysis Operations Reports



Lanes, Volumes, Timings
3: Listowel Rd & Timber Trail Rd

Total AM SA
Southwood, Elmira TIS

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	37	527	287	56	219	112
Future Volume (vph)	37	527	287	56	219	112
Ideal Flow (vphpl)	1775	1900	1650	1650	1765	1765
Storage Length (m)	35.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.978		0.954	
Flt Protected	0.950				0.968	
Satd. Flow (prot)	1463	1693	1288	0	1570	0
Flt Permitted	0.950				0.968	
Satd. Flow (perm)	1463	1693	1288	0	1570	0
Link Speed (k/h)		80	80		50	
Link Distance (m)		168.0	180.0		214.8	
Travel Time (s)		7.6	8.1		15.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	11%	25%	18%	3%	2%
Adj. Flow (vph)	37	527	287	56	219	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	37	527	343	0	331	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.11	1.01	1.21	1.21	1.12	1.12
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	55.1%					
ICU Level of Service B						
Analysis Period (min)	15					

PTSL

Synchro 12 Report

HCM 7th TWSC
3: Listowel Rd & Timber Trail Rd

Total AM SA
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	16.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	527	287	56	219	112
Future Vol, veh/h	37	527	287	56	219	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	35	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	14	11	25	18	3	2
Mvmt Flow	37	527	287	56	219	112
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	343	0	-	0	916	315
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	601	-
Critical Hdwy	4.24	-	-	-	6.43	6.22
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.326	-	-	-	3.527	3.318
Pot Cap-1 Maneuver	1152	-	-	-	301	725
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	546	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1152	-	-	-	291	725
Mov Cap-2 Maneuver	-	-	-	-	291	-
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	546	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.54	0		60.47		
HCM LOS				F		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1152	-	-	-	365	
HCM Lane V/C Ratio	0.032	-	-	-	0.906	
HCM Control Delay (s/veh)	8.2	-	-	-	60.5	
HCM Lane LOS	A	-	-	-	F	
HCM 95th %tile Q(veh)	0.1	-	-	-	9.2	

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Synchro 12 Report

Lanes, Volumes, Timings
3: Listowel Rd & Timber Trail Rd

Total PM SA
Southwood, Elmira TIS

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	102	470	521	178	117	79
Future Volume (vph)	102	470	521	178	117	79
Ideal Flow (vphpl)	1775	1900	1650	1650	1765	1765
Storage Length (m)	35.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.966		0.946	
Flt Protected	0.950				0.971	
Satd. Flow (prot)	1619	1663	1477	0	1603	0
Flt Permitted	0.950				0.971	
Satd. Flow (perm)	1619	1663	1477	0	1603	0
Link Speed (k/h)		80	80		50	
Link Distance (m)		168.0	180.0		214.8	
Travel Time (s)		7.6	8.1		15.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	13%	9%	0%	0%	0%
Adj. Flow (vph)	102	470	521	178	117	79
Shared Lane Traffic (%)						
Lane Group Flow (vph)	102	470	699	0	196	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		3.5	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.11	1.01	1.21	1.21	1.12	1.12
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	72.3%					
ICU Level of Service C						
Analysis Period (min)	15					

PTSL

Synchro 12 Report

HCM 7th TWSC
3: Listowel Rd & Timber Trail Rd

Total PM SA
Southwood, Elmira TIS

Intersection						
Int Delay, s/veh	11.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	102	470	521	178	117	79
Future Vol, veh/h	102	470	521	178	117	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	35	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	13	9	0	0	0
Mvmt Flow	102	470	521	178	117	79
Major/Minor						
Major1	Major2		Minor2			
Conflicting Flow All	699	0	-	0	1284	610
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	674	-
Critical Hdwy	4.13	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.227	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	893	-	-	-	184	498
Stage 1	-	-	-	-	546	-
Stage 2	-	-	-	-	510	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	893	-	-	-	163	498
Mov Cap-2 Maneuver	-	-	-	-	163	-
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	510	-
Approach						
EB	WB		SB			
HCM Control Delay, s/v	1.7	0	77.99			
HCM LOS			F			
Minor Lane/Major Mvmt						
EBL	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	893	-	-	-	223	
HCM Lane V/C Ratio	0.114	-	-	-	0.878	
HCM Control Delay (s/veh)	9.6	-	-	-	78	
HCM Lane LOS	A	-	-	-	F	
HCM 95th %tile Q(veh)	0.4	-	-	-	7	

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Synchro 12 Report