Northwest Quadrant of Oil Tank Road and Highway 67, Iroquois Falls, ON

Proposed Industrial Park Development

Traffic Impact Study

Paradigm Transportation Solutions Limited

April 2024
240078

Project Summary

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Proposed Industrial Park Development
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Adrian Soo, P.Eng.

Disclaimer

Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct a Traffic Impact Study (TIS) for a proposed industrial park development located generally in the northwest quadrant of Oil Tank Road and Highway 67 (Ambridge Drive), Iroquois Falls, Ontario. This study has been prepared in support of a Schedule B Municipal Class Environmental Assessment (MCEA).

This TIS includes a description of the proposed development, an assessment of existing transportation infrastructure, site trip generation forecasts, traffic impact assessment, and recommendations for future transportation requirements and/or considerations, if any.

The findings, conclusions, and recommendations of this study are summarized below and outlined in further detail in the body of the report.

Proposed Development

The subject site is generally located in the northwest quadrant of Oil Tank Road and Highway 67 (Ambridge Drive) in the Town of Iroquois Falls, Ontario. The developable property is approximately 44 acres in size.

The property owner proposes to develop the vacant lands to construct an industrial park. It is understood the land uses would range from light industrial to heavy industrial developments, with lots approximately 10 acres in size.

Vehicle access is proposed via a full-movement connection with Oil Tank Road. The industrial road will be located approximately 300 metres west of Highway 67 (Ambridge Drive). Specifically, an 800-metre-long two-lane paved asphalt roadway would be constructed ending with a cul-de-sac at its northern terminus. The site access intersection will be unsignalized with the driveway approach operating under stop control.

As we understand, as part of the development the following would be completed:

- Approximately 300 metres of existing Oil Tank Road will be upgraded with new paved asphalt, westerly from Highway 67 (Ambridge Drive); and

- The Oil Tank Road intersection/crossing with the ONR spur rail line and Highway 67 (Ambridge Drive) will be reconstructed, specifically to address the grade on Oil Tank Road.

For assessment purposes full build-out and occupancy of the proposed development is assumed to occur by 2026.

Conclusions

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

- Under **base year (2024) traffic conditions**, the study area intersections are operating at good levels of service and well within capacity during the weekday AM and PM peak hours;
- Under **2026 and 2036 background (without the subject development) traffic conditions**, the study area intersections and their associated traffic movements are forecast to continue operating at good levels of service and well within capacity during both peak periods;
- Development of the proposed industrial park site is conservatively forecast to **generate a total of 130 AM and 130 PM peak hour vehicular trips**; and
- Under **2026 and 2036 total (with the subject development) traffic conditions**, the study area intersections and their associated traffic movements are forecast to continue operating at good levels of service and well within capacity during the weekday AM and PM peak hours.

  The site-generated traffic is determined to be accommodated by the existing transportation network without the need for any intersection geometric improvements or traffic control upgrades.

  The proposed development will not adversely affect capacity, safety, or operations on the adjacent transportation network.

Recommendations

The recommendations of the study area are as follows:

- The review agencies recognize the conclusions drawn above;
- The applicable roadway jurisdiction to confirm the implementation of all-way stop control (AWSC) at Ambridge Drive/Oil Tank Road. Based on the analysis, there are no anticipated future operational issues in maintaining the current

intersection control type (stop control on the Oil Tank Road approach), or converting to AWSC. The provision of AWSC would provide a safer environment in consideration of the adjacent rail line crossing; and

- From a transportation perspective, the required planning applications to allow the proposed development should be approved.

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1 Introduction

Paradigm Transportation Solutions Limited (Paradigm) was retained by EXP Services Inc. (EXP) to prepare this Traffic Impact Study (TIS) for a proposed industrial park development in the Town of Iroquois Falls, Ontario. This study has been prepared in support of a Schedule B Municipal Class Environmental Assessment (MCEA).

Figure 1.1 illustrates the site location. The subject site is generally located in the northwest quadrant of the Oil Tank Road and Highway 67 (Ambridge Drive) intersection. The subject lands are currently zoned as "M2 – Heavy Industrial" under the Town's Zoning By-law.

The scope of the study is as follows:

- A study area comprising the following intersections:
  - Highway 67 (Ambridge Drive) and Nosov Drive (unsignalized);
  - Highway 67 (Ambridge Drive) and Oil Tank Road (unsignalized);
  - Highway 11 and Highway 67/Cemetery Road (unsignalized); and
  - Oil Tank Road and the proposed site access (proposed unsignalized).
- Traffic forecasts for the horizon years 2026 and 2036, representing the anticipated full build-out year, and a period of ten years beyond full build-out; and
- Analysis time periods including the weekday AM and PM peak hours.

The methodology used in the study is summarized below:

- Estimate future peak hour background traffic conditions for the 2026 and 2036 horizon years by applying a growth rate to the base year traffic volumes, and inclusion of other area background developments (approved and/or in-stream), if any;
- Estimate the net increase in traffic due to the proposed development using data from the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition);
- Combine future background traffic forecasts with the net increase in site traffic for the future horizon years;

- Analyze the peak hour intersection operations for future background and total traffic conditions; and
- Determine the net impact on operational performance due to the site traffic, and the need for any road and/or operational traffic control improvements to address any identified impacts.

This study has been carried out in general accordance with the Ministry of Transportation Ontario (MTO) *General Guidelines for the Preparation of Traffic Impact Studies* (March 2023).[1]

[1] Ministry of Transportation Ontario, *General Guidelines for the Preparation of Traffic Impact Studies*, March 2023.

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Site Location

2 Proposed Development

The subject site is generally located in the northwest quadrant of Oil Tank Road and Highway 67 (Ambridge Drive) in the Town of Iroquois Falls, Ontario. The developable property is approximately 44 acres in size.

The property owner proposes to develop the vacant lands to construct an industrial park. It is understood the land uses would range from light industrial to heavy industrial developments, with lots approximately 10 acres in size.

Vehicle access is proposed via a full-movement connection with Oil Tank Road. The industrial road will be located approximately 300 metres west of Highway 67 (Ambridge Drive). Specifically, an 800-metre-long two-lane paved asphalt roadway would be constructed ending with a cul-de-sac at its northern terminus. The site access intersection will be unsignalized with the driveway approach operating under stop control.

As we understand, as part of the development the following would be completed:

- Approximately 300 metres of existing Oil Tank Road will be upgraded with new paved asphalt, westerly from Highway 67 (Ambridge Drive); and
- The Oil Tank Road intersection/crossing with the ONR spur rail line and Highway 67 (Ambridge Drive) will be reconstructed, specifically to address the grade on Oil Tank Road.

For assessment purposes full build-out and occupancy of the proposed development is assumed to occur by 2026.

Figure 2.1 illustrates the proposed development concept site plan.

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Concept Site Plan

3 Existing Conditions

3.1 Roads and Traffic Control

The characteristics of the roads in the vicinity of the subject site are described below. Reference was made to the Town of Iroquois Falls *Official Plan* (Draft to Public/Ministry).[2]

- **Highway 67 (Ambridge Drive)** is an undivided roadway with two travel lanes (one lane in each direction) within the study area. Highway 67 is a provincial highway that operates under the jurisdiction of the Ministry of Transportation, Ontario (MTO); however, the section of Highway 67 from the boundary of the Urban Settlement Area (approximately 200 metres south of Majestic Street) to Synagogue Avenue is a municipal road operating under the jurisdiction of the Town of Iroquois Falls. This section is referred to as Ambridge Drive.

  Highway 67 (Ambridge Drive) runs in a north-east/south-west diagonal fashion within the study area. The posted speed limit is 80 km/h; however, as the highway transitions into Town the posted speed limit transitions to 40 km/h at the boundary of the Urban Settlement Area (approximately 200 metres south of Majestic Street).

  It is noted a rail line crosses Highway 67 approximately 215 metres east of Highway 11. Signage and pavement marking delineations are provided on the eastbound and westbound approaches to the rail crossing;
- **Highway 11** is a north-south undivided provincial highway with two travel lanes (one lane in each direction) with paved shoulders. Highway 11 is part of the northern route of the TransCanada Highway and runs north-south through the rural area of the Town of Iroquois Falls. Highway 11 operates under the jurisdiction of the MTO with a posted speed limit of 90 km/h;
- **Oil Tank Road** is an east-west municipal road providing two travel lanes (one lane in each direction). The road operates under the jurisdiction of the Town of Iroquois Falls. No posted speed limit signage was observed within the study area; therefore, it is assumed the statutory limit of 50 km/h governs.

  A truck load restriction sign is posted advising trucks should be limited to “5 tonnes per axle”.

[2] Town of Iroquois Falls, *Official Plan (Draft to Public/Ministry), Schedule A – Urban Area,* February 2022.

It is noted a rail line crosses Oil Tank Road approximately 15 metres west of Highway 67 (Ambridge Drive). It was confirmed by Ontario Northland Railway (ONR) that the rail line is not abandoned, but is currently not in use;

- **Nosov Drive** is an east-west municipal road providing two travel lanes (one lane in each direction). The road operates under the jurisdiction of the Town of Iroquois Falls. No posted speed limit signage was observed within the study area; therefore, it is assumed the statutory limit of 50 km/h governs. This roadway is slightly offset from Oil Tank Road; and
- **Cemetery Road** is an east-west roadway providing two travel lanes (one lane in each direction). The roadway intersects with Highway 11 and continues as Highway 67 east of Highway 11. No posted speed limit signage was observed within the study area; therefore, it is assumed the statutory limit of 50 km/h governs.

All study area intersections are unsignalized with stop control provided on the minor road approaches (i.e., Oil Tank Road and Nosov Drive approaches).

At the intersection of Highway 67/Cemetery Road and Highway 11, the Highway 67 and Cemetery Road approaches operate under stop control. A channelized northbound auxiliary right-turn lane is provided at the intersection.

Figure 3.1 illustrates the existing lane configurations and traffic control at the study area intersections.

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Existing Lane Configurations and Traffic Control

3.2 Transit

There are no transit services provided or serving the study area.

3.3 Active Transportation

There is no dedicated active transportation infrastructure provided or serving the study area.

3.4 Traffic Volumes

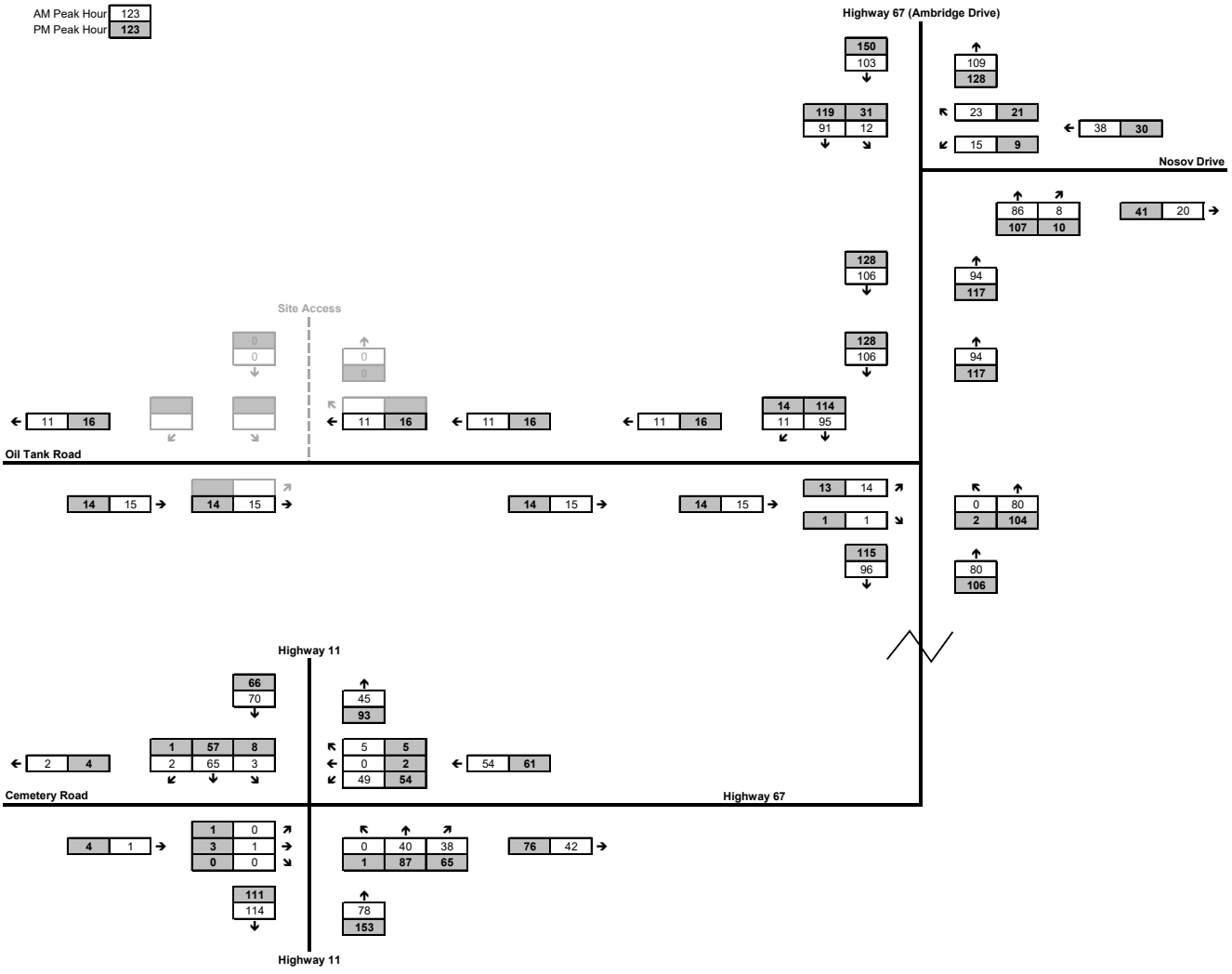
To assess intersection operations, turning movement counts (TMCs) are used to quantify the movement of vehicles, pedestrians, trucks, buses, and cyclists through an intersection. Existing traffic data at an intersection or on a road section forms the foundation for operational analysis. The counts are usually collected during peak periods to complete level of service (LOS) analysis under its worst-case operating conditions.

TMCs at the study area intersections were collected on Monday, February 26, 2024, from 7:00 AM to 10:00 AM, and from 2:00 PM to 6:00 PM. The data was counted in 15-minute intervals and vehicles were classified by type.

Figure 3.2 illustrates the base year (2024) weekday AM and PM peak hour traffic volumes. **Appendix A** contains the raw traffic data for reference.

The MTO document “Provincial Highways, Traffic Volumes, 1988-2019” was also referenced to review historical volumes and trends.

The most recent daily traffic volume data reports the subject section of Highway 67 carries less than 2,000 vehicles per day. This is considered a low volume highway, and one that operates well within capacity. For context, a two-lane highway that exhibits near capacity or capacity conditions during the peak hours would typically have a daily traffic volume in the order of 15,000 vehicles per day.



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Base Year (2024) Traffic Volumes

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Figure 3.2

3.5 Traffic Operations

The quality of intersection operations at signalized intersections and unsignalized intersections is evaluated in terms of level of service (LOS) and volume to capacity (v/c) as defined by the Highway Capacity Manual (HCM). LOS is evaluated based on average control delay per vehicle which includes deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections LOS ranges from LOS A for 10 seconds or less average delay to LOS F for average delay greater than 80 seconds. For unsignalized intersections, LOS ranges from LOS A for 10 seconds or less average delay to LOS F for average delay greater than 50 seconds. Capacity is evaluated in terms of the ratio of demand flow to capacity with an at capacity condition represented by a v/c ratio of 1.00 (i.e., volume demand equals capacity).

While the LOS and v/c for each movement are related, they are calculated independently. Therefore, it is possible to have a poor intersection LOS associated with a low v/c ratio or a good LOS associated with a high v/c ratio. The designation LOS F does not automatically imply that the volume demands at an intersection or on a specific movement exceed the theoretical capacity, nor does a LOS better than E automatically imply that unused capacity is available.

The MTO *General Guidelines for the Preparation of Traffic Impact Studies*[3] indicates at signalized intersections, movements with a v/c ratio of or greater than 0.85 (85% of capacity) are deemed to be “critical” in terms of operations. For ramps, a v/c ratio for terminal approaches with a value greater than 0.75 would be deemed critical and shall be evaluated for possible operational improvements.

To assess the base year peak hour automobile conditions, a level of service analysis was conducted using Synchro software, which implements the methods of the Highway Capacity Manual. The key parameters include:

- Existing lane configurations;
- Heavy vehicles percentages and pedestrian volumes as derived from the existing turning movement counts;
- Calculated intersection peak hour factors (PHF), which facilitates an assessment of the busiest 15-minute period within the peak hour; and

[3] Ministry of Transportation Ontario, *General Guidelines for the Preparation of Traffic Impact Studies*, March 2023, p17.

- Synchro default values for all other inputs.

Table 3.1 summarizes the results of the base year automobile conditions, indicating the existing level of service (LOS), average vehicular delay, v/c ratio, and 95th percentile queues experienced within the study area for the weekday AM and PM peak hours. Any movements identified as critical movements are highlighted within the results table. **Appendix B** contains the Synchro analysis outputs for reference.

The analysis of base year conditions indicates all intersections and traffic movements are currently operating at good levels of service (LOS A) and well within capacity (v/c < 0.85).

The 95th percentile queue lengths were checked for all movements. No spillback issues are identified.

As advised by ONR, the spur rail line which crosses Oil Tank Road approximately 15 metres west of Highway 67 (Ambridge Drive) is currently not in use; therefore, train crossings currently do not result in any impacts to the traffic operations at the adjacent Oil Tank Road/Highway 67 (Ambridge Drive) intersection.

TABLE 3.1: BASE YEAR (2024) TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	Overall
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
AM Peak Hour	Ambridge Drive & Nosov Drive	TWSC	LOS					A		>	**A**		A	>	**A**	<	A		**A**		
			Delay					10		>	**10**		0	>	**0**	<	1		**1**		
			V/C					0.06		>			0.07	>		<	0.01				
			Q					2		>			0	>		<	0				
	Ambridge Drive & Oil Tank Road	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**		
			Delay	10		>	**10**					<	0		**0**		0	>	**0**		
			V/C	0.02		>						<	0				0.07	>			
			Q	1		>						<	0				0	>			
	Highway 11 & Cemetery Road/Highway 67	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	A	A	**A**	<	A	>	**A**		
			Delay	<	10	>	**10**	<	10	>	**10**	<	0	0	**0**	<	0	>	**0**		
			V/C	<	0	>		<	0.08	>		<	0	0.03		<	0	>			
			Q	<	0	>		<	2	>		<	0	0		<	0	>			
			Stor.	<	-	>		<	-	>		<	-	70		<	-	>			
			Avail.	<	-	>		<	-	>		<	-	70		<	-	>			
PM Peak Hour	Ambridge Drive & Nosov Drive	TWSC	LOS					A		>	**A**		A	>	**A**	<	A		**A**		
			Delay					10		>	**10**		0	>	**0**	<	2		**2**		
			V/C					0.04		>			0.08	>		<	0.02				
			Q					1		>			0	>		<	1				
	Ambridge Drive & Oil Tank Road	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**		
			Delay	10		>	**10**					<	0		**0**		0	>	**0**		
			V/C	0.02		>						<	0				0.08	>			
			Q	1		>						<	0				0	>			
	Highway 11 & Cemetery Road/Highway 67	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	A	A	**A**	<	A	>	**A**		
			Delay	<	10	>	**10**	<	10	>	**10**	<	0	0	**0**	<	1	>	**1**		
			V/C	<	0.01	>		<	0.08	>		<	0	0.04		<	0.01	>			
			Q	<	0	>		<	2	>		<	0	0		<	0	>			
			Stor.	<	-	>		<	-	>		<	-	70		<	-	>			
			Avail.	<	-	>		<	-	>		<	-	70		<	-	>			

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

4 Forecasts

4.1 Horizon Years and Future Background Traffic

For the purpose of this assessment, horizon years of 2026 and 2036 have been analyzed representing the anticipated full build-out year, and a period of ten years beyond full build-out, respectively.

The future background traffic volumes comprise higher non-site traffic volumes due to the application of a growth factor and inclusion of site-traffic generated by other area developments, if any.

4.1.1 Generalized Background Growth

General background traffic growth reflects increase in traffic unrelated to developments within the immediate area of the subject site.

Background traffic growth has been estimated through the application of a compounded per annum growth rate. Specifically, a 1.0% per annum compounded growth rate was applied to the base year traffic volumes to derive background traffic growth.

This growth rate was adopted based on a review of the Town's Official Plan (Draft to Public/Ministry)[4] and was further confirmed applicable by Town staff.

The 1.0% growth rate represents a conservative approach (i.e., errs on the high side). Based upon population data available through Statistics Canada, the population of the Town of Iroquois Falls reported a slight decrease from 2016 to 2021 (4,537 to 4,418).

Additionally, reference was made to the MTO document, "Provincial Highways, Traffic Volumes, 1988-2019". The historical annual average daily traffic (AADT) along Highway 67 within the study area indicates negative growth between 2009 and 2019.

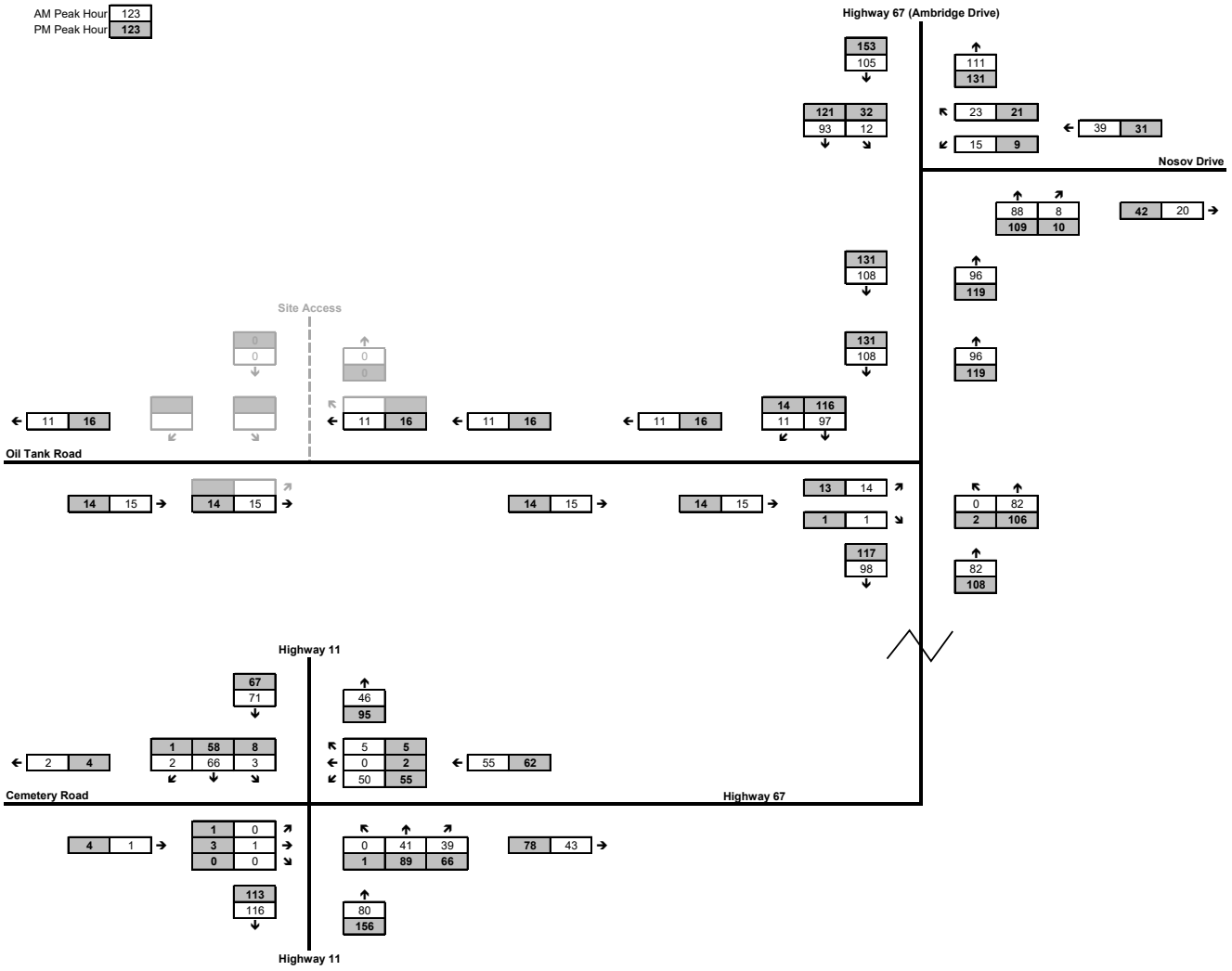
4.1.2 Other Area Developments

Town staff confirmed there are no other area developments (active and/or in-stream) to be accounted for within the traffic forecasts.

Figure 4.1 illustrates the 2026 background traffic forecasts for the weekday AM and PM peak hours.

[4] Town of Iroquois Falls, *Official Plan (Draft to Public/Ministry),* February 10, 2022, p5.

Figure 4.2 illustrates the 2036 background traffic forecasts for the weekday AM and PM peak hours.



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2026 Background Traffic Forecasts

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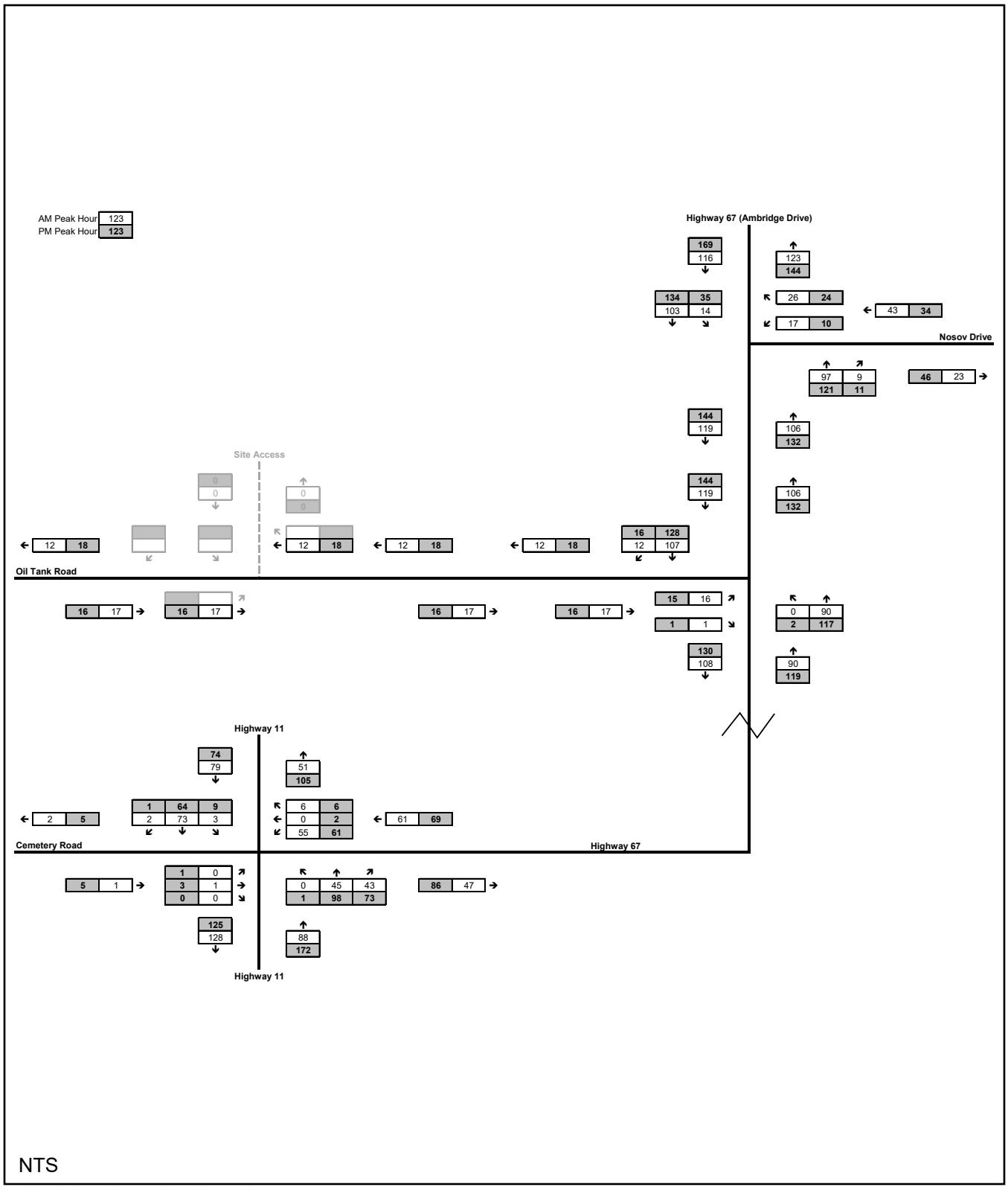
Figure 4.1



2036 Background Traffic Forecasts

Northwest Quadrant of Oil Tank Road and Highway 67, Iroquois Falls – Traffic Impact Study
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Figure 4.2

4.2 Future Transportation Network Improvements

No planned infrastructure improvements have been identified within the study area. Accordingly, the existing road network and intersection lane configurations are utilized for all future traffic operational analyses.

4.3 Site Trip Generation

The Institute of Transportation Engineers (ITE) publication "*Trip Generation Manual (11th Edition)*[5]" was referenced to estimate the peak hour vehicular traffic volumes generated by the proposed industrial park development.

Specifically, trip rates for Land Use Code (LUC) 130 – Industrial Park are used. This land use is defined as:

"An industrial park contains several individual industrial or related facilities. It is characterized by a mix of manufacturing, service, and warehouse facilities with a wide variation in the proportion of each type of use from one location to another."

Through a review of other similar industrial park sites, it was conservatively assumed that 20% of the developable land will be covered by industrial buildings. With a total size of the subject lands being 44 acres; accordingly, 8.8 acres could be developed for industrial use.

Table 4.1 summarizes the resultant weekday AM and PM peak hour site trip generation. The proposed industrial park development is estimated to generate a total of 130 AM and 130 PM peak hour vehicular trips.

TABLE 4.1: SITE TRIP GENERATION

LUC	GFA	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
130[1]	8.8 acres (383,328 SF)	105	25	130	29	101	130
Total		***105***	***25***	***130***	***29***	***101***	***130***

[1] AM: Average trip rate of 0.34 per 1,000 SF of GFA (81% in, 19% out); PM: Average trip rate of 0.34 per 1,000 SF of GFA (22% in, 78% out).

It is noted of the 130 AM and 130 PM peak hour vehicular trips, 15 truck trips are estimated to be generated during each peak hour

[5] Institute of Transportation Engineers, *Trip Generation Manual (11th Edition)*, September 2021.

(approximately 12% of the vehicular trips) based upon ITE data. Under future total traffic analyses, the heavy vehicle percentages for all movements at the study area intersections have been accounted for.

4.4 Site Trip Distribution and Assignment

The directional distribution of traffic approaching and departing the subject lands is a function of several variables including population density, existing travel patterns, and efficiency of the roadways leading to the site.

Trip distribution for traffic to and from the subject lands was estimated based on a review of the existing trip patterns documented in the turning movement count data. **Table 4.2** summarizes the estimated trip distribution.

TABLE 4.2: SITE TRIP DISTRIBUTION

To/From	Via	AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
North	Highway 67 (Ambridge Drive)	56%	53%	59%	53%
South		44%	47%	41%	47%
Total		***100%***	***100%***	***100%***	***100%***

The site trips were assigned to the transportation network in accordance with the noted trip distribution.

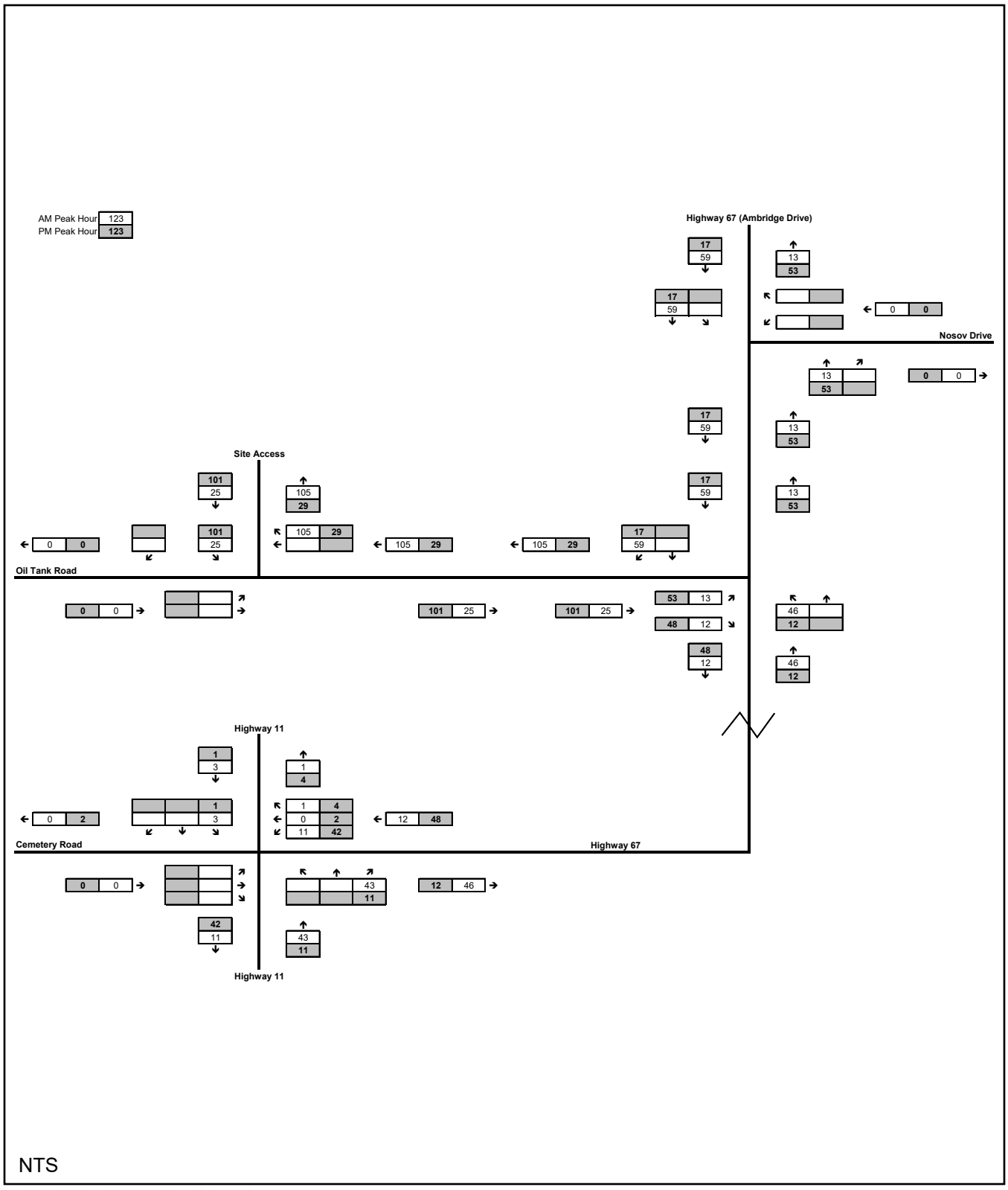
Figure 4.3 illustrates the trip assignments for the site-generated trips during the weekday AM and PM peak hours.

4.5 Future Total Traffic

The weekday AM and PM peak hour background traffic forecasts were combined with the site traffic assignments to determine the total traffic forecasts for the 2026 and 2036 horizon years.

Figure 4.4 illustrates the 2026 total traffic forecasts for the weekday AM and PM peak hours.

Figure 4.5 illustrates the 2036 total traffic forecasts for the weekday AM and PM peak hours.



Site-Generated Traffic Forecasts

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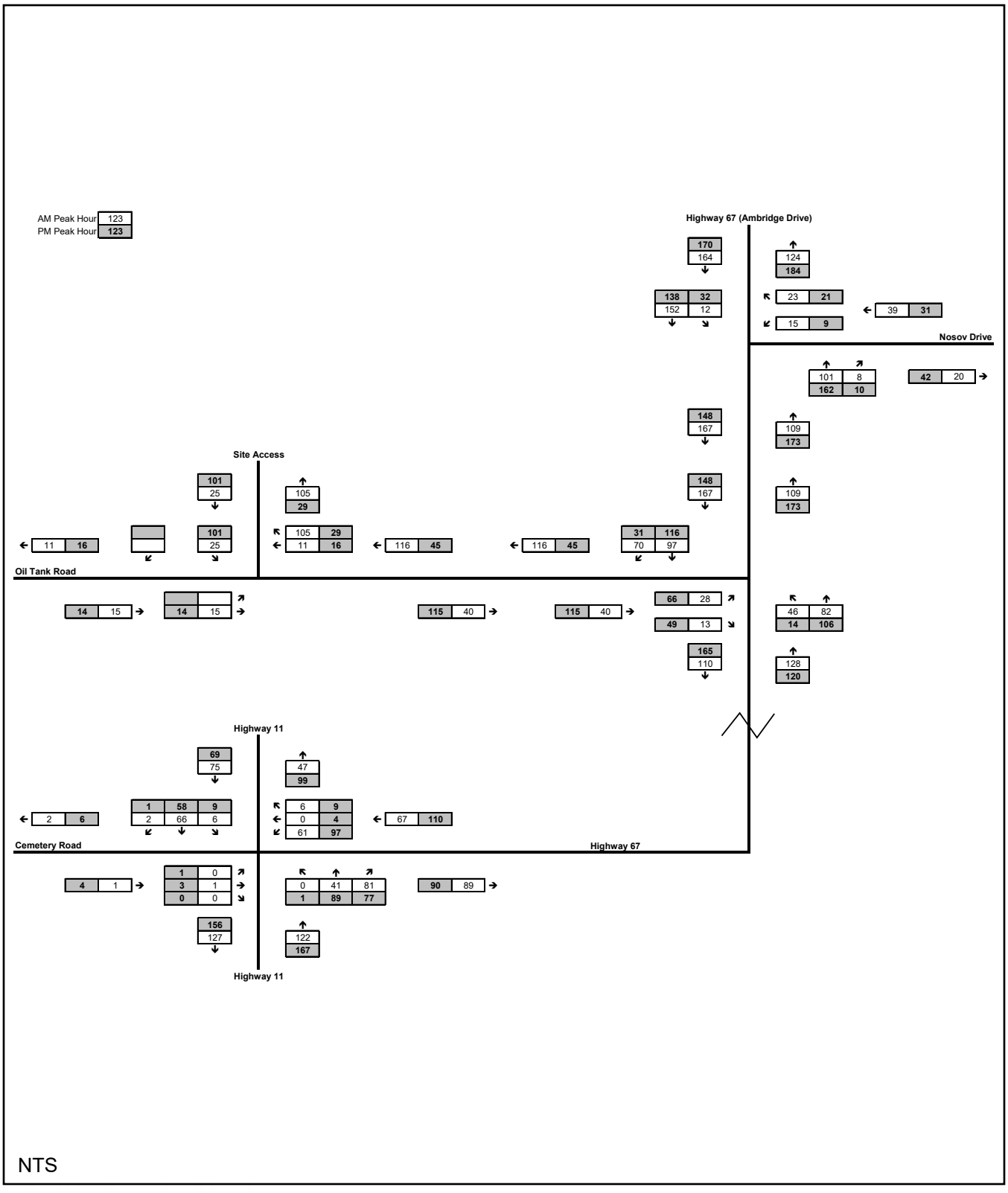
Figure 4.3



2026 Total Traffic Forecasts

Northwest Quadrant of Oil Tank Road and Highway 67, Iroquois Falls – Traffic Impact Study
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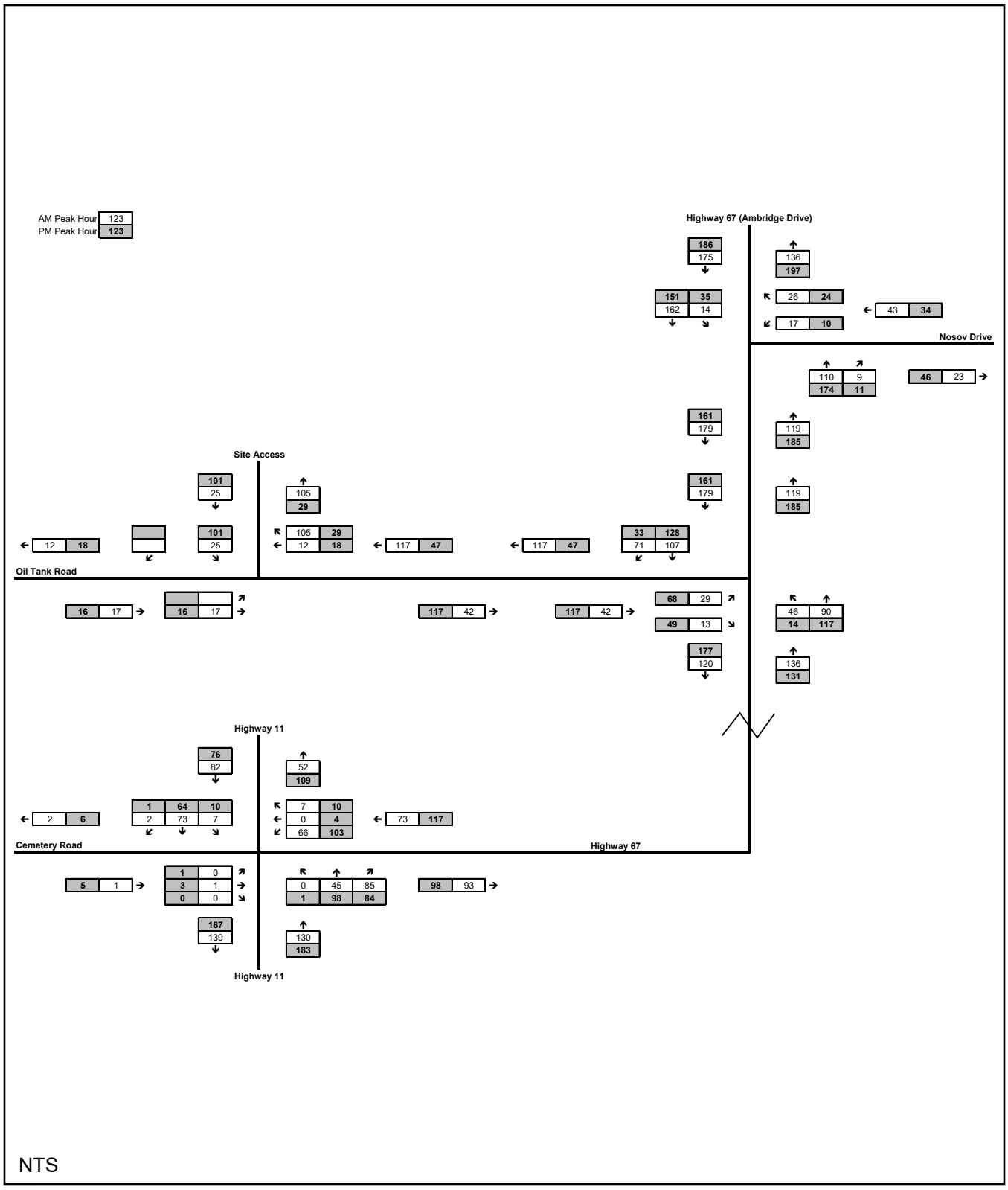
Figure 4.4



2036 Total Traffic Forecasts

Northwest Quadrant of Oil Tank Road and Highway 67, Iroquois Falls – Traffic Impact Study
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Figure 4.5

5 Traffic Impact Assessment

5.1 Future Background Traffic

To assess the operating conditions for the weekday AM and PM peak hour background traffic forecasts, a level of service analysis was undertaken using the same methodology, parameters, lane arrangements, and traffic control devices as in the analysis of base year conditions.

EXP advised they are proposing the intersection of Ambridge Drive/Oil Tank Road to operate under all-way stop control (AWSC). This proposal is in consideration of the works related to address roadway grades, as well of the proximity to the rail line crossing. The intersection has been assessed with only stop-control on the Oil Tank Road approach, and under all-way stop control.

Table 5.1 and **Table 5.2** summarize the results of the operational analysis for the 2026 and 2036 background traffic conditions (without the proposed development). Any movements identified as critical movements are highlighted within the results tables. **Appendix C** contains the Synchro analysis outputs for reference.

Highway 67 (Ambridge Drive)/Oil Tank Road Operating Under TWSC

The results indicate the study area intersections are forecast to continue operating at similar levels of service as noted under base year conditions, but slightly exacerbated accounting for background growth.

Under the 2026 and 2036 background conditions (without the subject development), the study area intersections are forecast to continue operating at good levels of service and well within capacity (v/c < 0.85). No critical movements are identified.

The 95th percentile queue lengths were checked for all movements. No spillback issues are identified.

Highway 67 (Ambridge Drive)/Oil Tank Road Operating Under AWSC

With the intersection of Highway 67 (Ambridge Drive)/Oil Tank Road operating under AWSC, the intersections of Highway 67 (Ambridge Drive) with Oil Tank Road and Nosov Drive are forecast to continue operating at acceptable levels of service and well within capacity (v/c < 0.85).

It is noted the 95th percentile queue lengths of all approaches at Highway 67 (Ambridge Drive) with Oil Tank Road and Nosov Drive are slightly exacerbated during the AM and PM peak hours under both horizons, due to Highway 67 (Ambridge Drive)/Oil Tank Road being AWSC. However, no major queuing issues are found.

Under the furthest horizon (2036) which represents the worst-case scenario, at Highway 67 (Ambridge Drive)/Oil Tank Road the southbound shared through/right-turn movement is anticipated to experience a 95th percentile queue length of up to 21 metres. This queue length encroaches the upstream intersection of Highway 67 (Ambridge Drive)/Nosov Drive; however, the forecast queue length does not block the intersection.

The anticipated vehicular queues for the southbound approach is not considered a critical issue as the 95th percentile queue length would not fully block the upstream intersection of Highway 67 (Ambridge Drive)/Nosov Drive.

Furthermore, it is noted the 95th percentile queue is an estimate of the longest queue that could occur during the peak hour; however, this level of queuing only has a five percent probability of occurring during the analysis period. It is not typical of what a motorist would experience on average. The 50th percentile average queue length for the southbound shared movement is estimated to be 10 to 13 metres and would not block the upstream intersection of Highway 67 (Ambridge Drive)/Nosov Drive.

TABLE 5.1: 2026 BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	**Amrbidge Drive & Oil Tank Road Operating under TWSC**																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					A		>	**A**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	1		**1**	
			V/C					0.06		>			0.07	>		<	0.01			
			Q					2		>			0	>		<	0			
	Ambridge Drive & Oil Tank Road	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	10		>	**10**					<	0		**0**		0	>	**0**	
			V/C	0.02		>						<	0				0.07	>		
			Q	1		>						<	0				0	>		
	Highway 11 & Cemetery Road/Highway 67	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	10	>	**10**	<	10	>	**10**	<	0	0	**0**	<	0	>	**0**	
			V/C	<	0	>		<	0.08	>		<	0	0.03		<	0	>		
			Q	<	0	>		<	2	>		<	0	0		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	70		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	70		<	-	>		
	Amrbidge Drive & Oil Tank Road Operating under AWSC																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					A		>	**A**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	1		**1**	
			V/C					0.06		>			0.07	>		<	0.01			
			Q					16		>			4	>		<	12			
	Ambridge Drive & Oil Tank Road	AWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	8		>	**8**					<	8		**8**		8	>	**8**	
			V/C	0.02		>						<	0.11				0.15	>		
			Q	8		>						<	18				19	>		
PM Peak Hour	**Amrbidge Drive & Oil Tank Road Operating under TWSC**																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					A		>	**A**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	2		**2**	
			V/C					0.04		>			0.08	>		<	0.02			
			Q					1		>			0	>		<	1			
	Ambridge Drive & Oil Tank Road	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	10		>	**10**					<	0		**0**		0	>	**0**	
			V/C	0.02		>						<	0				0.09	>		
			Q	1		>						<	0				0	>		
	Highway 11 & Cemetery Road/Highway 67	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	10	>	**10**	<	10	>	**10**	<	0	0	**0**	<	1	>	**1**	
			V/C	<	0.01	>		<	0.09	>		<	0	0.04		<	0.01	>		
			Q	<	0	>		<	2	>		<	0	0		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	70		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	70		<	-	>		
	Amrbidge Drive & Oil Tank Road Operating under AWSC																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					A		>	**A**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	2		**2**	
			V/C					0.04		>			0.08	>		<	0.02			
			Q					14		>			0	>		<	12			
	Ambridge Drive & Oil Tank Road	AWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	8		>	**8**					<	8		**8**		8	>	**8**	
			V/C	0.02		>						<	0.14				0.16	>		
			Q	8		>						<	17				14	>		

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)
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control
< / > - Shared with through movement

TABLE 5.2: 2036 BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	**Amrbidge Drive & Oil Tank Road Operating under TWSC**																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					A		>	**A**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	1		**1**	
			V/C					0.07		>			0.08	>		<	0.01			
			Q					2		>			0	>		<	0			
	Ambridge Drive & Oil Tank Road	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	10		>	**10**					<	0		**0**		0	>	**0**	
			V/C	0.03		>						<	0				0.08	>		
			Q	1		>						<	0				0	>		
	Highway 11 & Cemetery Road/Highway 67	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	10	>	**10**	<	10	>	**10**	<	0	0	**0**	<	0	>	**0**	
			V/C	<	0	>		<	0.09	>		<	0	0.03		<	0	>		
			Q	<	0	>		<	2	>		<	0	0		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	70		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	70		<	-	>		
	Amrbidge Drive & Oil Tank Road Operating under AWSC																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					A		>	**A**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	1		**1**	
			V/C					0.07		>			0.08	>		<	0.01			
			Q					18		>			5	>		<	13			
	Ambridge Drive & Oil Tank Road	AWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	8		>	**8**					<	8		**8**		8	>	**8**	
			V/C	0.03		>						<	0.12				0.17	>		
			Q	9		>						<	19				21	>		
PM Peak Hour	**Amrbidge Drive & Oil Tank Road Operating under TWSC**																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					A		>	**A**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	2		**2**	
			V/C					0.05		>			0.09	>		<	0.03			
			Q					1		>			0	>		<	1			
	Ambridge Drive & Oil Tank Road	TWSC	LOS	B		>	**B**					<	A		**A**		A	>	**A**	
			Delay	10		>	**10**					<	0		**0**		0	>	**0**	
			V/C	0.03		>						<	0				0.09	>		
			Q	1		>						<	0				0	>		
	Highway 11 & Cemetery Road/Highway 67	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	10	>	**10**	<	10	>	**10**	<	0	0	**0**	<	1	>	**1**	
			V/C	<	0.01	>		<	0.1	>		<	0	0.05		<	0.01	>		
			Q	<	0	>		<	3	>		<	0	0		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	70		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	70		<	-	>		
	Amrbidge Drive & Oil Tank Road Operating under AWSC																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					A		>	**A**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	2		**2**	
			V/C					0.05		>			0.09	>		<	0.03			
			Q					13		>			0	>		<	17			
	Ambridge Drive & Oil Tank Road	AWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	8		>	**8**					<	8		**8**		8	>	**8**	
			V/C	0.02		>						<	0.15				0.18	>		
			Q	9		>						<	17				15	>		

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)
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control
< / > - Shared with through movement

5.2 Future Total Traffic

To assess the operating conditions for the weekday AM and PM peak hour total traffic forecasts, an operational analysis was undertaken using the same methodology, parameters, lane arrangements, and traffic control devices as in the analysis of background conditions. The exceptions include the following:

- Inclusion and assessment of the proposed site access intersection with Oil Tank Road.

  Based upon direction provided it is assumed the site access driveway will operate under stop control; and
- Recalculated heavy vehicle percentages for all movements at the study area intersections to reflect the additional trucks on the network.

Similar to Section 5.1, the Highway 67 (Ambridge Drive)/Oil Tank Road intersection has also been assessed operating under all-way stop control (AWSC).

Table 5.3 and **Table 5.4** present the results of the operational analysis for the 2026 and 2036 total traffic conditions (with the proposed development). Any movements identified as critical movements are highlighted within the results tables. **Appendix D** contains the Synchro analysis outputs for reference.

Highway 67 (Ambridge Drive)/Oil Tank Road Operating Under TWSC

It is forecast under the 2026 and 2036 total traffic conditions (with the proposed development) the study area intersections would operate similar to background conditions, albeit slightly exacerbated with the inclusion of site-generated traffic. All intersections and traffic movements are forecast to operate at good levels of service and well within capacity.

The site access intersection is forecast to operate at good levels of service and well within capacity. No auxiliary turn lanes (i.e., westbound right turn lane or eastbound left turn lane) on Oil Tank Road are required to accommodate the site-generated traffic from an operational perspective.

The 95th percentile queue lengths were checked for all movements. No spillback issues are identified.

The adjacent spur rail line that crosses Oil Tank Road approximately 15 metres west of Highway 67 (Ambridge Drive) was acknowledged by ONR not to be in use; however, it is understood that train activities may

resume in the future at a frequency of potentially two trips a day, three to four days a week pending the redevelopment of the Old Mill Property.

With the projected low train activity and a lack of detailed information (i.e., time and schedule of train crossings), it is anticipated the potential future train crossings will result in minimal impacts to the traffic operations at the adjacent Oil Tank Road/Highway 67 (Ambridge Drive) intersection.

Highway 67 (Ambridge Drive)/Oil Tank Road Operating Under AWSC

With Highway 67 (Ambridge Drive)/Oil Tank Road operating under AWSC, the intersection is anticipated to operate with acceptable levels of service and with all movements operating well within capacity (v/c < 0.85).

Similar to the discussion provided in Section 5.1, vehicle queuing is anticipated to be further exacerbated for all movements at the intersection when operating under AWSC.

The reported 95th percentile queue length for the southbound shared movement is less than 20 metres under the furthest horizon 2036, and is not anticipated to block the upstream intersection of Highway 67 (Ambridge Drive)/Nosov Drive.

Furthermore, the more commonly anticipated average 50th percentile queue length is estimated to be 10 to 13 metres and would not extend to the upstream intersection.

TABLE 5.3: 2026 TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	**Amrbidge Drive & Oil Tank Road Operating under TWSC**																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					B		>	**B**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	1		**1**	
			V/C					0.06		>			0.08	>		<	0.01			
			Q					2		>			0	>		<	0			
	Ambridge Drive & Oil Tank Road	TWSC	LOS	B		>	**B**					<	A		**A**		A	>	**A**	
			Delay	11		>	**11**					<	3		**3**		0	>	**0**	
			V/C	0.07		>						<	0.04				0.12	>		
			Q	2		>						<	1				0	>		
	Highway 11 & Cemetery Road/Highway 67	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	10	>	**10**	<	10	>	**10**	<	0	0	**0**	<	1	>	**1**	
			V/C	<	0	>		<	0.1	>		<	0	0.06		<	0	>		
			Q	<	0	>		<	3	>		<	0	0		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	70		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	70		<	-	>		
	Oil Tank Road & Site Access	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	
			Delay	<	0		**0**		0	>	**0**					9		>	**9**	
			V/C	<	0				0.07	>						0.03		>		
			Q	<	0				0	>						1		>		
	Amrbidge Drive & Oil Tank Road Operating under AWSC																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					B		>	**B**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	1		**1**	
			V/C					0.06		>			0.08	>		<	0.01			
			Q					16		>			5	>		<	19			
	Ambridge Drive & Oil Tank Road	AWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	8		>	**8**					<	8		**8**		8	>	**8**	
			V/C	0.07		>						<	0.18				0.23	>		
			Q	18		>						<	20				20	>		
PM Peak Hour	**Amrbidge Drive & Oil Tank Road Operating under TWSC**																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					B		>	**B**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	2		**2**	
			V/C					0.05		>			0.11	>		<	0.03			
			Q					1		>			0	>		<	1			
	Ambridge Drive & Oil Tank Road	TWSC	LOS	B		>	**B**					<	A		**A**		A	>	**A**	
			Delay	11		>	**11**					<	1		**1**		0	>	**0**	
			V/C	0.17		>						<	0.01				0.1	>		
			Q	5		>						<	0				0	>		
	Highway 11 & Cemetery Road/Highway 67	TWSC	LOS	<	A	>	**A**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	10	>	**10**	<	10	>	**10**	<	0	0	**0**	<	1	>	**1**	
			V/C	<	0.01	>		<	0.16	>		<	0	0.05		<	0.01	>		
			Q	<	0	>		<	4	>		<	0	0		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	70		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	70		<	-	>		
	Oil Tank Road & Site Access	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	
			Delay	<	0		**0**		0	>	**0**					9		>	**9**	
			V/C	<	0				0.03	>						0.12		>		
			Q	<	0				0	>						3		>		
	Amrbidge Drive & Oil Tank Road Operating under AWSC																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					B		>	**B**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	2		**2**	
			V/C					0.05		>			0.11	>		<	0.03			
			Q					13		>			4	>		<	16			
	Ambridge Drive & Oil Tank Road	AWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	8		>	**8**					<	8		**8**		8	>	**8**	
			V/C	0.16		>						<	0.17				0.20	>		
			Q	18		>						<	19				17	>		

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)
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control
< / > - Shared with through movement

TABLE 5.4: 2036 TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	**Amrbidge Drive & Oil Tank Road Operating under TWSC**																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					B		>	**B**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	1		**1**	
			V/C					0.07		>			0.09	>		<	0.01			
			Q					2		>			0	>		<	0			
	Ambridge Drive & Oil Tank Road	TWSC	LOS	B		>	**B**					<	A		**A**		A	>	**A**	
			Delay	11		>	**11**					<	3		**3**		0	>	**0**	
			V/C	0.08		>						<	0.04				0.12	>		
			Q	2		>						<	1				0	>		
	Highway 11 & Cemetery Road/Highway 67	TWSC	LOS	<	A	>	**A**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	10	>	**10**	<	10	>	**10**	<	0	0	**0**	<	1	>	**1**	
			V/C	<	0	>		<	0.11	>		<	0	0.06		<	0.01	>		
			Q	<	0	>		<	3	>		<	0	0		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	70		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	70		<	-	>		
	Oil Tank Road & Site Access	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	
			Delay	<	0		**0**		0	>	**0**					9		>	**9**	
			V/C	<	0				0.07	>						0.03		>		
			Q	<	0				0	>						1		>		
	Amrbidge Drive & Oil Tank Road Operating under AWSC																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					B		>	**B**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	1		**1**	
			V/C					0.07		>			0.09	>		<	0.01			
			Q					17		>			5	>		<	19			
	Ambridge Drive & Oil Tank Road	AWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	8		>	**8**					<	8		**8**		8	>	**8**	
			V/C	0.07		>						<	0.20				0.24	>		
			Q	16		>						<	20				20	>		
PM Peak Hour	**Amrbidge Drive & Oil Tank Road Operating under TWSC**																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					B		>	**B**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	2		**2**	
			V/C					0.05		>			0.12	>		<	0.03			
			Q					1		>			0	>		<	1			
	Ambridge Drive & Oil Tank Road	TWSC	LOS	B		>	**B**					<	A		**A**		A	>	**A**	
			Delay	11		>	**11**					<	1		**1**		0	>	**0**	
			V/C	0.18		>						<	0.01				0.11	>		
			Q	5		>						<	0				0	>		
	Highway 11 & Cemetery Road/Highway 67	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	10	>	**10**	<	11	>	**11**	<	0	0	**0**	<	1	>	**1**	
			V/C	<	0.01	>		<	0.17	>		<	0	0.05		<	0.01	>		
			Q	<	0	>		<	5	>		<	0	0		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	70		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	70		<	-	>		
	Oil Tank Road & Site Access	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	
			Delay	<	0		**0**		0	>	**0**					9		>	**9**	
			V/C	<	0				0.03	>						0.12		>		
			Q	<	0				0	>						3		>		
	Amrbidge Drive & Oil Tank Road Operating under AWSC																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					B		>	**B**		A	>	**A**	<	A		**A**	
			Delay					10		>	**10**		0	>	**0**	<	2		**2**	
			V/C					0.05		>			0.12	>		<	0.03			
			Q					13		>			3	>		<	15			
	Ambridge Drive & Oil Tank Road	AWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	9		>	**9**					<	9		**9**		9	>	**9**	
			V/C	0.17		>						<	0.18				0.22	>		
			Q	16		>						<	20				17	>		

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)
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control
< / > - Shared with through movement

5.3 Sensitivity Analysis

A sensitivity analysis was conducted where all site-generated traffic was assigned to/from the north along Highway 67 (Ambridge Drive), assuming all staff/employees of the proposed industrial park development reside in Town.

Table 5.5 summarizes the sensitivity analysis results, which indicates with all site traffic assigned to/from the north via Highway 67 (Ambridge Drive), the study area intersections, specifically, the intersection of Highway 67 (Ambridge Drive) and Oil Tank Road is determined to operate at good levels of service and well within capacity.

Appendix E contains the Synchro analysis outputs for reference.

TABLE 5.5: 2036 TOTAL TRAFFIC OPERATIONS – SENSITIVITY ANALYSIS

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	**Amrbidge Drive & Oil Tank Road Operating under TWSC**																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					B		>	**B**		A	>	**A**	<	A		**A**	
			Delay					11		>	**11**		0	>	**0**	<	1		**1**	
			V/C					0.08		>			0.1	>		<	0.01			
			Q					2		>			0	>		<	0			
	Ambridge Drive & Oil Tank Road	TWSC	LOS	B		>	**B**					<	A		**A**		A	>	**A**	
			Delay	11		>	**11**					<	0		**0**		0	>	**0**	
			V/C	0.07		>						<	0				0.16	>		
			Q	2		>						<	0				0	>		
	Highway 11 & Cemetery Road/Highway 67	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	10	>	**10**	<	10	>	**10**	<	0	0	**0**	<	0	>	**0**	
			V/C	<	0	>		<	0.09	>		<	0	0.03		<	0	>		
			Q	<	0	>		<	2	>		<	0	0		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	70		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	70		<	-	>		
	Oil Tank Road & Site Access	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	
			Delay	<	0		**0**		0	>	**0**					9		>	**9**	
			V/C	<	0				0.07	>						0.03		>		
			Q	<	0				0	>						1		>		
	Amrbidge Drive & Oil Tank Road Operating under AWSC																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					B		>	**B**		A	>	**A**	<	A		**A**	
			Delay					11		>	**11**		0	>	**0**	<	1		**1**	
			V/C					0.08		>			0.1	>		<	0.01			
			Q					21		>			3	>		<	28			
	Ambridge Drive & Oil Tank Road	AWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	9		>	**9**					<	8		**8**		9	>	**9**	
			V/C	0.07		>						<	0.13				0.30	>		
			Q	17		>						<	19				21	>		
PM Peak Hour	**Amrbidge Drive & Oil Tank Road Operating under TWSC**																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					B		>	**B**		A	>	**A**	<	A		**A**	
			Delay					11		>	**11**		0	>	**0**	<	2		**2**	
			V/C					0.06		>			0.15	>		<	0.03			
			Q					2		>			0	>		<	1			
	Ambridge Drive & Oil Tank Road	TWSC	LOS	B		>	**B**					<	A		**A**		A	>	**A**	
			Delay	12		>	**12**					<	0		**0**		0	>	**0**	
			V/C	0.19		>						<	0				0.11	>		
			Q	6		>						<	0				0	>		
	Highway 11 & Cemetery Road/Highway 67	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	10	>	**10**	<	10	>	**10**	<	0	0	**0**	<	1	>	**1**	
			V/C	<	0.01	>		<	0.1	>		<	0	0.05		<	0.01	>		
			Q	<	0	>		<	3	>		<	0	0		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	70		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	70		<	-	>		
	Oil Tank Road & Site Access	TWSC	LOS	<	A		**A**		A	>	**A**					A		>	**A**	
			Delay	<	0		**0**		0	>	**0**					9		>	**9**	
			V/C	<	0				0.03	>						0.12		>		
			Q	<	0				0	>						3		>		
	Amrbidge Drive & Oil Tank Road Operating under AWSC																			
	Ambridge Drive & Nosov Drive	TWSC	LOS					B		>	**B**		A	>	**A**	<	A		**A**	
			Delay					11		>	**11**		0	>	**0**	<	2		**2**	
			V/C					0.06		>			0.15	>		<	0.03			
			Q					15		>			2	>		<	21			
	Ambridge Drive & Oil Tank Road	AWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**	
			Delay	9		>	**9**					<	8		**8**		9	>	**9**	
			V/C	0.18		>						<	0.17				0.23	>		
			Q	18		>						<	17				18	>		

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)
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control
< / > - Shared with through movement

5.4 Impact Assessment Summary

As reported in **Section 5.2** and **Section 5.3**, all intersections and traffic movements are forecast to operate at good levels of service and well within capacity under 2026 and 2036 total traffic conditions. Therefore, the site-generated traffic can be accommodated by the existing transportation network without the need for any intersection geometric improvements or traffic control upgrades.

The exception being EXP's proposal for the intersection of Highway 69 (Ambridge Drive)/Oil Tank Road to operate under all-way stop control. This proposal is in consideration of the adjacent rail line crossing.

From a traffic volume perspective, **Table 5.6** provides a summary of how traffic volumes are anticipated to increase with the subject development. The proposed industrial park development is anticipated to generate 130 vehicular trips (two-way) during each study peak hour. Even though the subject development site trips are forecast to increase traffic volumes by 15 to 60% during each study peak hour, the overall magnitude of additional traffic is relatively low and would not pose any traffic operational issues within the study area.

In conclusion, no intersection geometric improvements or traffic control upgrades are determined to be required to accommodate the proposed industrial park development.

TABLE 5.6: TRAFFIC VOLUME INCREASE

Intersection	2036 Background vs. 2036 Total % Volume Increase (Total Entering)	
	AM Peak Hour	PM Peak Hour
Highway 67 (Ambridge Drive) and Nosov Drive	27%	21%
Highway 67 (Ambridge Drive) and Oil Tank Road	57%	47%
Highway 11 and Highway 67/Cemetery Road	25%	19%

6 Conclusions and Recommendations

6.1 Conclusions

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

- Under **base year (2024) traffic conditions**, the study area intersections are operating at good levels of service and well within capacity during the weekday AM and PM peak hours;
- Under **2026 and 2036 background (without the subject development) traffic conditions**, the study area intersections and their associated traffic movements are forecast to continue operating at good levels of service and well within capacity during both peak periods;
- Development of the proposed industrial park site is conservatively forecast to **generate a total of 130 AM and 130 PM peak hour vehicular trips**; and
- Under **2026 and 2036 total (with the subject development) traffic conditions**, the study area intersections and their associated traffic movements are forecast to continue operating at good levels of service and well within capacity during the weekday AM and PM peak hours.

  The site-generated traffic is determined to be accommodated by the existing transportation network without the need for any intersection geometric improvements or traffic control upgrades.

  The proposed development will not adversely affect capacity, safety, or operations on the adjacent transportation network.

6.2 Recommendations

The recommendations of the study area are as follows:

- The review agencies recognize the conclusions drawn above;
- The applicable roadway jurisdiction to confirm the implementation of all-way stop control (AWSC) at Ambridge Drive/Oil Tank Road. Based on the analysis, there are no anticipated future operational issues in maintaining the current intersection control type (stop control on the Oil Tank Road approach), or converting to AWSC. The provision of AWSC would provide a safer environment in consideration of the adjacent rail line crossing; and

- From a transportation perspective, the required planning applications to allow the proposed development should be approved.

Appendix A

Turning Movement Count Data

23008853
Ph. 700

Intersection Location:

Street 1: Hwy 11 (North & South)

Street 2: Cemetery Rd & Hwy 67 (East & West)

Date: Feb 24/26

Tech: Austin Gilbert

Arrive at least 15 before start, setup camera to record.

Vehicle Under 5t	Semi Truck 5t plus	School Bus + Other
ticks in groups of 5	T'	B'

SETUP @ 6:45	HWY 11 NORTH BOUND			HWY 11 SOUTH BOUND			HWY 67 WEST BOUND			CEMETERY RD EAST BOUND		
Time Period:	LEFT TURN	STRAIGHT THRU	RIGHT TURN LANE	LEFT TURN	STRAIGHT THRU	RIGHT TURN	LEFT TURN	STRAIGHT THRU	RIGHT TURN	LEFT TURN	STRAIGHT THRU	RIGHT TURN
7:00-7:15		B' T' C' ++++	++++ |||		C' C' C' C' C' C' T' T' ++++ |||		13 ++++ ++++ |		|		
7:15-7:30		C' C' C' C' C' C' |||	B' ++++ ||	|	C' C' C' T' |||	|	B' ++++ ++++ |		C' |		
7:30-7:45		C' C' C' C' C' C' C' C' C' ++++	B' ++++ |	|	C' T' T' C' C' B' ++++ |||	|	B' T' C' ++++ ++++ ||		|		
7:45-8:00		C' C' C' C' C' |||	++++ |		C' C' C' C' C' C' ++++		++++ ++++		|		
8:00-8:15		C' C' C' C' C' C' C' C' C' ++++ |	B' B' ++++ |||		C' T' C' C' C' C' C' T' ++++ |		++++ ++++ ||||		C' |		
8:15-8:30		++	B' ++++ ++++ |||	|	C' C' C' C' C' C' C' T' ++++ |||	|	++++ ++++ ||				
8:30-8:45		C' C' C' C' C' C' C' ++++ |	++++ |||	C' T' |	C' C' C' C' C' C' C' T' ++++ ||||		B' ++++ |||				
8:45-9:00	|	C' C' C' C' C' C' C' C' C' C' ++++ |	T' ++++ |		C' T' C' C' C' C' C' ++++ ||||		C' T' B' B' B' B' ++++ |||			|	|	
9:00-9:15		C' T' C' C' C' ++++ |||	B' B' ++		C' C' C' C' C' C' C' B' ++++ ||||		++++ |	|			
9:15-9:30		C' B' C' ++	T' ++++ |||	B' T'	C' C' C' C' C' C' C' ++++ ||		++++ ++++	|				
9:30-9:45		C' T' C' C' C' C' C' ++++ |	T' ++++ ||		C' C' C' C' C' C' C' C' C' C' C' ++++ |	B'	B' ++++		|	|		
9:45-10:00		C' C' C' C' C' C' C' ++++ |	++++		C' C' C' C' C' C' C' ++++		T' ++++ |||				| B'	

Intersection Location:

Street 1: Hwy 11 (North & South)

Street 2: Cemetery Rd & Hwy 67 (East & West)

Date: Feb 26/24 PM

Tech: Austin Gilbert

Arrive at least 15 before start, setup camera to record.

Vehicle Under 5t	Semi Truck 5t plus	School Bus + Other
ticks in groups of 5	T'	B'

SETUP @ 1:45	HWY 11 NORTH BOUND			HWY 11 SOUTH BOUND			HWY 67 WEST BOUND			CEMETERY RD EAST BOUND		
Time Period:	LEFT TURN	STRAIGH THRU	RIGHT TURN LANE	LEFT TURN	STRAIGH THRU	RIGHT TURN	LEFT TURN	STRAIGH THRU	RIGHT TURN	LEFT TURN	STRAIGH THRU	RIGHT TURN
2:00-2:15												
2:15-2:30												
2:30-2:45												
2:45-3:00												
3:00-3:15												
3:15-3:30												
3:30-3:45												
3:45-4:00												
4:00-4:15												
4:15-4:30												
4:30-4:45												
4:45-5:00												
5:00-5:15												
5:15-5:30												
5:30-5:45												
5:45-6:00												

- PARKED FACING SOUTH ON AMBRIDGE

Intersection Location:

Street 1: Ambridge Drive (North & South)
Street 2: Oil Tank Road & Nosov Drive (East & West)

Date: FEB 26/24 AM
Tech: S. MEDLAND

Arrive at least 15 before start, setup camera to record.

Vehicle Under 5t	Semi Truck 5t plus	School Bus + Other
ticks in groups of 5	T'	B'

23008853-00
Ph. 700

SETUP @ 6:45	AMBRIDGE DRIVE - NORTH BOUND			AMBRIDGE DRIVE - SOUTH BOUND			NOSOV DRIVE - WEST BOUND			OIL TANK ROAD - EAST BOUND		
Time Period:	OIL TANK LEFT TURN	IN STRAIGHT THRU	NOSOV RIGHT TURN LANE	NOSOV LEFT TURN	OUT STRAIGHT THRU	OIL TANK RIGHT TURN	LEFT TURN OUT	STRAIGHT THRU	RIGHT TURN IN	LEFT TURN IN	STRAIGHT THRU	RIGHT TURN OUT
7:00-7:15		BACKHOE SKID STEER	T		BACKHOE							
7:15-7:30					B				B			
7-30-7:45		B			T							
7:45-8:00		B										
8:00-8:15		BB			BT LOADER			SKIDSTEER	B		B	
8:15-8:30		TBB	B		B LOADER		SKIDSTEER		B			
8:30-8:45		BT	LOADER		BBTTBB				B			
8:45-9:00					BBBT		B					
9:00-9:15		T	LOADER									
9:15-9:30		BT										
9:30-9:45		T LOADER ATV			ATV							
9:45-10:00		T	T		B T LOADER				B			

*EQUIPMENT + ATV DUE TO SNOW REMOVAL

CAMERA STOP 9:52

- PARKED FACING SOUTH ON AMBRIDGE

Intersection Location:

Street 1: Ambridge Drive (North & South)

Street 2: Oil Tank Road & Nosov Drive (East & West)

Date: FEB 26/24 PM

Tech: S. MEDLAND

Arrive at least 15 before start, setup camera to record.

Vehicle Under 5t	Semi Truck 5t plus	School Bus + Other
ticks in groups of 5	T'	B'

SETUP @ 1:45	AMBRIDGE DRIVE - NORTH BOUND			AMBRIDGE DRIVE - SOUTH BOUND			NOSOV DRIVE - WEST BOUND			OIL TANK ROAD - EAST BOUND		
Time Period:	OIL TANK LEFT TURN	IN STRAIGH THRU	NOSOV RIGHT TURN LANE	NOSOV LEFT TURN	OUT STRAIGH THRU	OIL TANK RIGHT TURN	LEFT TURN OUT	STRAIGH THRU	RIGHT TURN IN	LEFT TURN IN	STRAIGH THRU	RIGHT TURN OUT
2:00-2:15	1	𝍸 𝍸 𝍸 II	1	𝍸 𝍸	𝍸 𝍸 𝍸 𝍸 III	𝍸 TRACTOR	II		III	TRACTOR		1
2:15-2:30		𝍸 𝍸 𝍸 𝍸 T .T T BBB LOADER	III	𝍸 II	𝍸 𝍸 𝍸 𝍸 BB	II	I	1	IIII	III	1	1
2:30-2:45		𝍸 𝍸 𝍸 𝍸 𝍸 III BB	𝍸		𝍸 𝍸 III TB	II	III		B III B	III	II	
2:45-3:00		𝍸 𝍸 𝍸 𝍸 𝍸 BBB T	III	𝍸	𝍸 𝍸 𝍸 II	III			𝍸 IIII	II		
3:00-3:15		𝍸 𝍸 𝍸 𝍸	III	𝍸 II	𝍸 𝍸 𝍸 𝍸 𝍸 BB	I	1	1	𝍸 1	𝍸		
3:15-3:30		𝍸 𝍸 𝍸 𝍸 IIII	II	𝍸 𝍸 1 B	𝍸 𝍸 𝍸 𝍸 III BB	III	II B	1 B	IIII	III	1	
3:30-3:45	II	𝍸 𝍸 𝍸 𝍸 1 B	1	𝍸 II	𝍸 𝍸 𝍸 𝍸 𝍸 IIII B	III	I	1	II	II		1
3:45-4:00		𝍸 𝍸 𝍸 1 T	I	II B	𝍸 𝍸 𝍸 𝍸	1	II	1	𝍸 III	II		
4:00-4:15		𝍸 𝍸 𝍸 III B	II	𝍸	𝍸 𝍸 𝍸 𝍸 𝍸 II	III			II		𝍸 III	
4:15-4:30		𝍸 𝍸 𝍸 B B 𝍸 IIII		IIII	𝍸 𝍸 IIII TB	I	𝍸		III B	II I		
4:30-4:45		𝍸 𝍸 𝍸 𝍸 1 TB	II	𝍸	𝍸 𝍸 𝍸 𝍸 II	III	II LOADER		III	1	1	
4:45-5:00	1	𝍸 𝍸 𝍸 BB 𝍸	I	IIII	𝍸 𝍸 𝍸 B	II	I B	III	II	II		
5:00-5:15		𝍸 𝍸 𝍸 𝍸 𝍸 1 TB	𝍸	𝍸	𝍸 𝍸 𝍸 𝍸 1 T	1			III	II		
5:15-5:30		𝍸 𝍸 𝍸 𝍸 IIII	IIII	IIII	𝍸 𝍸 𝍸 𝍸	I	//		𝍸 III	II		
5:30-5:45		𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 T 1	𝍸	𝍸 1	𝍸 𝍸 1	II	1 1 1		IIII	1	1	
5:45-6:00		𝍸 𝍸 𝍸 𝍸 𝍸	III	II	𝍸 𝍸 II	II	I		IIII			

Appendix B

Base Year (2024) Traffic Operation Reports

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	23	86	8	12	91
Future Volume (Veh/h)	15	23	86	8	12	91
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	19	28	106	10	15	112
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	253	111			116	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	111			116	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	97	97			99	
cM capacity (veh/h)	701	913			1485	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	47	116	127
Volume Left	19	0	15
Volume Right	28	10	0
cSH	814	1700	1485
Volume to Capacity	0.06	0.07	0.01
Queue Length 95th (m)	1.5	0.0	0.2
Control Delay (s)	9.7	0.0	1.0
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	1.0
Approach LOS	A		

Intersection Summary				
Average Delay		2.0		
Intersection Capacity Utilization		22.1%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	1	0	80	95	11
Future Volume (Veh/h)	14	1	0	80	95	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	16	1	0	94	112	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	212	118	125			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	212	118	125			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	100			
cM capacity (veh/h)	780	939	1474			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	17	94	125
Volume Left	16	0	0
Volume Right	1	0	13
cSH	788	1474	1700
Volume to Capacity	0.02	0.00	0.07
Queue Length 95th (m)	0.5	0.0	0.0
Control Delay (s)	9.7	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.7	0.0	0.0
Approach LOS	A		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		15.7%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	0	49	0	5	0	40	38	3	65	2
Future Volume (Veh/h)	0	1	0	49	0	5	0	40	38	3	65	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	1	0	59	0	6	0	48	46	4	78	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	141	135	79	136	136	48	80			48		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	141	135	79	136	136	48	80			48		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
p0 queue free %	100	100	100	93	100	99	100			100		
cM capacity (veh/h)	827	758	987	820	757	972	1531			1572		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	1	65	48	46	84
Volume Left	0	59	0	0	4
Volume Right	0	6	0	46	2
cSH	758	832	1531	1700	1572
Volume to Capacity	0.00	0.08	0.00	0.03	0.00
Queue Length 95th (m)	0.0	2.0	0.0	0.0	0.1
Control Delay (s)	9.8	9.7	0.0	0.0	0.4
Lane LOS	A	A			A
Approach Delay (s)	9.8	9.7	0.0		0.4
Approach LOS	A	A			

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	22.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	21	107	10	31	119
Future Volume (Veh/h)	9	21	107	10	31	119
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	10	24	120	11	35	134
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	330	126			131	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	330	126			131	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	98	97			98	
cM capacity (veh/h)	615	930			1448	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	34	131	169
Volume Left	10	0	35
Volume Right	24	11	0
cSH	808	1700	1448
Volume to Capacity	0.04	0.08	0.02
Queue Length 95th (m)	1.1	0.0	0.6
Control Delay (s)	9.6	0.0	1.7
Lane LOS	A		A
Approach Delay (s)	9.6	0.0	1.7
Approach LOS	A		

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	24.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	1	2	104	114	14
Future Volume (Veh/h)	13	1	2	104	114	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	1	2	116	127	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	255	135	143			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	255	135	143			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	100			
cM capacity (veh/h)	737	919	1452			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	15	118	143
Volume Left	14	2	0
Volume Right	1	0	16
cSH	747	1452	1700
Volume to Capacity	0.02	0.00	0.08
Queue Length 95th (m)	0.5	0.0	0.0
Control Delay (s)	9.9	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.9	0.1	0.0
Approach LOS	A		

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization	17.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	3	0	54	2	5	1	87	65	8	57	1
Future Volume (Veh/h)	1	3	0	54	2	5	1	87	65	8	57	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1	3	0	59	2	5	1	96	71	9	63	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	186	180	64	181	180	96	64			96		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	186	180	64	181	180	96	64			96		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	92	100	99	100			99		
cM capacity (veh/h)	770	713	1007	779	713	966	1551			1510		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	4	66	97	71	73
Volume Left	1	59	1	0	9
Volume Right	0	5	0	71	1
cSH	727	788	1551	1700	1510
Volume to Capacity	0.01	0.08	0.00	0.04	0.01
Queue Length 95th (m)	0.1	2.2	0.0	0.0	0.1
Control Delay (s)	10.0	10.0	0.1	0.0	1.0
Lane LOS	A	A	A		A
Approach Delay (s)	10.0	10.0	0.0		1.0
Approach LOS	A	A			

Intersection Summary				
Average Delay	2.5			
Intersection Capacity Utilization	26.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Appendix C

Future Background Traffic Operation Reports

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	23	88	8	12	93
Future Volume (Veh/h)	15	23	88	8	12	93
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	19	28	109	10	15	115
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	259	114			119	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	259	114			119	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	97	97			99	
cM capacity (veh/h)	695	910			1482	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	47	119	130
Volume Left	19	0	15
Volume Right	28	10	0
cSH	809	1700	1482
Volume to Capacity	0.06	0.07	0.01
Queue Length 95th (m)	1.5	0.0	0.2
Control Delay (s)	9.7	0.0	0.9
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	0.9
Approach LOS	A		

Intersection Summary				
Average Delay		2.0		
Intersection Capacity Utilization		22.2%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	1	0	82	97	11
Future Volume (Veh/h)	14	1	0	82	97	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	16	1	0	96	114	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	216	120	127			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	216	120	127			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	100			
cM capacity (veh/h)	776	936	1472			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	17	96	127
Volume Left	16	0	0
Volume Right	1	0	13
cSH	784	1472	1700
Volume to Capacity	0.02	0.00	0.07
Queue Length 95th (m)	0.5	0.0	0.0
Control Delay (s)	9.7	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.7	0.0	0.0
Approach LOS	A		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		15.8%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	0	50	0	5	0	41	39	3	66	2
Future Volume (Veh/h)	0	1	0	50	0	5	0	41	39	3	66	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	1	0	60	0	6	0	49	47	4	80	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	144	138	81	138	139	49	82			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	144	138	81	138	139	49	82			49		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
p0 queue free %	100	100	100	93	100	99	100			100		
cM capacity (veh/h)	823	755	985	816	754	971	1528			1571		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	1	66	49	47	86
Volume Left	0	60	0	0	4
Volume Right	0	6	0	47	2
cSH	755	828	1528	1700	1571
Volume to Capacity	0.00	0.08	0.00	0.03	0.00
Queue Length 95th (m)	0.0	2.1	0.0	0.0	0.1
Control Delay (s)	9.8	9.7	0.0	0.0	0.4
Lane LOS	A	A			A
Approach Delay (s)	9.8	9.7	0.0		0.4
Approach LOS	A	A			

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	22.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	21	109	10	32	121
Future Volume (Veh/h)	9	21	109	10	32	121
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	10	24	122	11	36	136
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	336	128			133	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	336	128			133	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	98	97			98	
cM capacity (veh/h)	609	928			1446	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	34	133	172
Volume Left	10	0	36
Volume Right	24	11	0
cSH	804	1700	1446
Volume to Capacity	0.04	0.08	0.02
Queue Length 95th (m)	1.1	0.0	0.6
Control Delay (s)	9.7	0.0	1.7
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	1.7
Approach LOS	A		

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	24.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	1	2	106	116	14
Future Volume (Veh/h)	13	1	2	106	116	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	1	2	118	129	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	259	137	145			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	259	137	145			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	100			
cM capacity (veh/h)	733	917	1450			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	15	120	145
Volume Left	14	2	0
Volume Right	1	0	16
cSH	743	1450	1700
Volume to Capacity	0.02	0.00	0.09
Queue Length 95th (m)	0.5	0.0	0.0
Control Delay (s)	9.9	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.9	0.1	0.0
Approach LOS	A		

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	3	0	55	2	5	1	89	66	8	58	1
Future Volume (Veh/h)	1	3	0	55	2	5	1	89	66	8	58	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1	3	0	60	2	5	1	98	73	9	64	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	188	182	64	184	183	98	65			98		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	188	182	64	184	183	98	65			98		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	92	100	99	100			99		
cM capacity (veh/h)	767	710	1005	775	710	963	1550			1508		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	4	67	99	73	74
Volume Left	1	60	1	0	9
Volume Right	0	5	0	73	1
cSH	724	784	1550	1700	1508
Volume to Capacity	0.01	0.09	0.00	0.04	0.01
Queue Length 95th (m)	0.1	2.2	0.0	0.0	0.1
Control Delay (s)	10.0	10.0	0.1	0.0	0.9
Lane LOS	B	B	A		A
Approach Delay (s)	10.0	10.0	0.0		0.9
Approach LOS	B	B			

Intersection Summary				
Average Delay		2.5		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	23	88	8	12	93
Future Volume (Veh/h)	15	23	88	8	12	93
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	19	28	109	10	15	115
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	259	114			119	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	259	114			119	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	97	97			99	
cM capacity (veh/h)	695	910			1482	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	47	119	130
Volume Left	19	0	15
Volume Right	28	10	0
cSH	809	1700	1482
Volume to Capacity	0.06	0.07	0.01
Queue Length 95th (m)	1.5	0.0	0.2
Control Delay (s)	9.7	0.0	0.9
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	0.9
Approach LOS	A		

Intersection Summary				
Average Delay		2.0		
Intersection Capacity Utilization		22.2%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	14	1	0	82	97	11
Future Volume (vph)	14	1	0	82	97	11
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	16	1	0	96	114	13

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	17	96	127
Volume Left (vph)	16	0	0
Volume Right (vph)	1	0	13
Hadj (s)	0.15	0.15	0.21
Departure Headway (s)	4.5	4.2	4.2
Degree Utilization, x	0.02	0.11	0.15
Capacity (veh/h)	751	835	837
Control Delay (s)	7.6	7.8	8.0
Approach Delay (s)	7.6	7.8	8.0
Approach LOS	A	A	A

Intersection Summary				
Delay		7.9		
Level of Service		A		
Intersection Capacity Utilization		15.8%	ICU Level of Service	A
Analysis Period (min)		15		

Intersection: 1: Ambridge Drive & Nosov Drive

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	22.4	7.0	17.4
Average Queue (m)	7.0	0.3	3.0
95th Queue (m)	16.1	4.1	11.5
Link Distance (m)	102.8	5.4	207.6
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ambridge Drive & Oil Tank Road

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	7.5	21.8	19.7
Average Queue (m)	2.6	10.2	12.0
95th Queue (m)	8.4	17.7	18.5
Link Distance (m)		169.0	5.4
Upstream Blk Time (%)			7
Queuing Penalty (veh)			7
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	21	109	10	32	121
Future Volume (Veh/h)	9	21	109	10	32	121
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	10	24	122	11	36	136
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	336	128			133	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	336	128			133	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	98	97			98	
cM capacity (veh/h)	609	928			1446	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	34	133	172
Volume Left	10	0	36
Volume Right	24	11	0
cSH	804	1700	1446
Volume to Capacity	0.04	0.08	0.02
Queue Length 95th (m)	1.1	0.0	0.6
Control Delay (s)	9.7	0.0	1.7
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	1.7
Approach LOS	A		

Intersection Summary				
Average Delay		1.9		
Intersection Capacity Utilization		24.8%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	13	1	2	106	116	14
Future Volume (vph)	13	1	2	106	116	14
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	1	2	118	129	16

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	15	120	145
Volume Left (vph)	14	2	0
Volume Right (vph)	1	0	16
Hadj (s)	0.15	0.09	0.01
Departure Headway (s)	4.6	4.2	4.1
Degree Utilization, x	0.02	0.14	0.16
Capacity (veh/h)	725	847	875
Control Delay (s)	7.7	7.8	7.9
Approach Delay (s)	7.7	7.8	7.9
Approach LOS	A	A	A

Intersection Summary				
Delay		7.8		
Level of Service		A		
Intersection Capacity Utilization	17.2%	ICU Level of Service		A
Analysis Period (min)		15		

Intersection: 1: Ambridge Drive & Nosov Drive

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (m)	18.7	15.5
Average Queue (m)	5.5	3.9
95th Queue (m)	14.2	12.3
Link Distance (m)	102.8	207.6
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Ambridge Drive & Oil Tank Road

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	7.5	21.0	17.8
Average Queue (m)	2.6	10.7	10.1
95th Queue (m)	8.3	16.7	14.2
Link Distance (m)		169.0	5.4
Upstream Blk Time (%)			7
Queuing Penalty (veh)			9
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	17	26	97	9	14	103
Future Volume (Veh/h)	17	26	97	9	14	103
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	21	32	120	11	17	127
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	286	126			131	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	286	126			131	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	97	96			99	
cM capacity (veh/h)	669	896			1467	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	53	131	144
Volume Left	21	0	17
Volume Right	32	11	0
cSH	790	1700	1467
Volume to Capacity	0.07	0.08	0.01
Queue Length 95th (m)	1.7	0.0	0.3
Control Delay (s)	9.9	0.0	1.0
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	1.0
Approach LOS	A		

Intersection Summary				
Average Delay		2.0		
Intersection Capacity Utilization		22.9%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	1	0	90	107	12
Future Volume (Veh/h)	16	1	0	90	107	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	19	1	0	106	126	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	239	133	140			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	239	133	140			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	100			
cM capacity (veh/h)	754	922	1456			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	20	106	140
Volume Left	19	0	0
Volume Right	1	0	14
cSH	761	1456	1700
Volume to Capacity	0.03	0.00	0.08
Queue Length 95th (m)	0.6	0.0	0.0
Control Delay (s)	9.9	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.9	0.0	0.0
Approach LOS	A		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		16.4%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	0	55	0	6	0	45	43	3	73	2
Future Volume (Veh/h)	0	1	0	55	0	6	0	45	43	3	73	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	1	0	66	0	7	0	54	52	4	88	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	158	151	89	152	152	54	90			54		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	158	151	89	152	152	54	90			54		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
p0 queue free %	100	100	100	92	100	99	100			100		
cM capacity (veh/h)	805	742	975	800	741	965	1518			1564		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	1	73	54	52	94
Volume Left	0	66	0	0	4
Volume Right	0	7	0	52	2
cSH	742	813	1518	1700	1564
Volume to Capacity	0.00	0.09	0.00	0.03	0.00
Queue Length 95th (m)	0.0	2.4	0.0	0.0	0.1
Control Delay (s)	9.9	9.9	0.0	0.0	0.3
Lane LOS	A	A			A
Approach Delay (s)	9.9	9.9	0.0		0.3
Approach LOS	A	A			

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	23.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	24	121	11	35	134
Future Volume (Veh/h)	10	24	121	11	35	134
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	27	136	12	39	151
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	371	142			148	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	371	142			148	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	98	97			97	
cM capacity (veh/h)	579	911			1427	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	148	190
Volume Left	11	0	39
Volume Right	27	12	0
cSH	781	1700	1427
Volume to Capacity	0.05	0.09	0.03
Queue Length 95th (m)	1.2	0.0	0.7
Control Delay (s)	9.8	0.0	1.7
Lane LOS	A		A
Approach Delay (s)	9.8	0.0	1.7
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	1	2	117	128	16
Future Volume (Veh/h)	15	1	2	117	128	16
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	1	2	130	142	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	285	151	160			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	285	151	160			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	100			
cM capacity (veh/h)	709	901	1432			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	18	132	160
Volume Left	17	2	0
Volume Right	1	0	18
cSH	717	1432	1700
Volume to Capacity	0.03	0.00	0.09
Queue Length 95th (m)	0.6	0.0	0.0
Control Delay (s)	10.1	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	10.1	0.1	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization	17.8%	ICU Level of Service		A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	3	0	61	2	6	1	98	73	9	64	1
Future Volume (Veh/h)	1	3	0	61	2	6	1	98	73	9	64	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1	3	0	67	2	7	1	108	80	10	70	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	208	200	70	202	201	108	71			108		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	208	200	70	202	201	108	71			108		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	91	100	99	100			99		
cM capacity (veh/h)	742	694	998	754	693	951	1542			1495		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	4	76	109	80	81
Volume Left	1	67	1	0	10
Volume Right	0	7	0	80	1
cSH	705	767	1542	1700	1495
Volume to Capacity	0.01	0.10	0.00	0.05	0.01
Queue Length 95th (m)	0.1	2.6	0.0	0.0	0.2
Control Delay (s)	10.1	10.2	0.1	0.0	1.0
Lane LOS	B	B	A		A
Approach Delay (s)	10.1	10.2	0.0		1.0
Approach LOS	B	B			

Intersection Summary				
Average Delay		2.6		
Intersection Capacity Utilization	27.8%	ICU Level of Service		A
Analysis Period (min)		15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	17	26	97	9	14	103
Future Volume (Veh/h)	17	26	97	9	14	103
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	21	32	120	11	17	127
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	286	126			131	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	286	126			131	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	97	96			99	
cM capacity (veh/h)	669	896			1467	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	53	131	144
Volume Left	21	0	17
Volume Right	32	11	0
cSH	790	1700	1467
Volume to Capacity	0.07	0.08	0.01
Queue Length 95th (m)	1.7	0.0	0.3
Control Delay (s)	9.9	0.0	1.0
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	1.0
Approach LOS	A		

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	22.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	16	1	0	90	107	12
Future Volume (vph)	16	1	0	90	107	12
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	19	1	0	106	126	14

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	20	106	140
Volume Left (vph)	19	0	0
Volume Right (vph)	1	0	14
Hadj (s)	0.16	0.15	0.22
Departure Headway (s)	4.6	4.2	4.3
Degree Utilization, x	0.03	0.12	0.17
Capacity (veh/h)	739	830	833
Control Delay (s)	7.7	7.8	8.1
Approach Delay (s)	7.7	7.8	8.1
Approach LOS	A	A	A

Intersection Summary				
Delay	8.0			
Level of Service	A			
Intersection Capacity Utilization	16.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection: 1: Ambridge Drive & Nosov Drive

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	22.4	10.0	19.3
Average Queue (m)	7.8	0.5	3.3
95th Queue (m)	17.5	5.1	12.6
Link Distance (m)	102.8	5.4	207.6
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ambridge Drive & Oil Tank Road

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	7.5	23.4	23.1
Average Queue (m)	3.0	11.1	12.9
95th Queue (m)	8.9	19.1	20.9
Link Distance (m)		169.0	5.4
Upstream Blk Time (%)			7
Queuing Penalty (veh)			8
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	24	121	11	35	134
Future Volume (Veh/h)	10	24	121	11	35	134
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	27	136	12	39	151
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	371	142			148	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	371	142			148	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	98	97			97	
cM capacity (veh/h)	579	911			1427	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	148	190
Volume Left	11	0	39
Volume Right	27	12	0
cSH	781	1700	1427
Volume to Capacity	0.05	0.09	0.03
Queue Length 95th (m)	1.2	0.0	0.7
Control Delay (s)	9.8	0.0	1.7
Lane LOS	A		A
Approach Delay (s)	9.8	0.0	1.7
Approach LOS	A		

Intersection Summary				
Average Delay		1.9		
Intersection Capacity Utilization		29.4%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	15	1	2	117	128	16
Future Volume (vph)	15	1	2	117	128	16
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	1	2	130	142	18

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	18	132	160
Volume Left (vph)	17	2	0
Volume Right (vph)	1	0	18
Hadj (s)	0.16	0.09	0.01
Departure Headway (s)	4.7	4.2	4.1
Degree Utilization, x	0.02	0.15	0.18
Capacity (veh/h)	712	842	870
Control Delay (s)	7.8	7.9	8.0
Approach Delay (s)	7.8	7.9	8.0
Approach LOS	A	A	A

Intersection Summary				
Delay		8.0		
Level of Service		A		
Intersection Capacity Utilization	17.8%	ICU Level of Service		A
Analysis Period (min)		15		

Intersection: 1: Ambridge Drive & Nosov Drive

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (m)	15.3	26.2
Average Queue (m)	5.5	5.3
95th Queue (m)	12.8	16.5
Link Distance (m)	102.8	207.6
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Ambridge Drive & Oil Tank Road

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	7.6	20.2	19.5
Average Queue (m)	2.9	11.1	10.0
95th Queue (m)	8.8	17.1	14.9
Link Distance (m)		169.0	5.4
Upstream Blk Time (%)			8
Queuing Penalty (veh)			12
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 12

Appendix D

Future Total Traffic Operation Reports

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	23	101	8	12	152
Future Volume (Veh/h)	15	23	101	8	12	152
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	19	28	125	10	15	188
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	348	130			135	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	348	130			135	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	97	97			99	
cM capacity (veh/h)	617	891			1462	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	47	135	203
Volume Left	19	0	15
Volume Right	28	10	0
cSH	756	1700	1462
Volume to Capacity	0.06	0.08	0.01
Queue Length 95th (m)	1.6	0.0	0.2
Control Delay (s)	10.1	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	0.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		25.3%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	13	46	82	97	70
Future Volume (Veh/h)	28	13	46	82	97	70
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	33	15	54	96	114	82
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	359	155	196			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	359	155	196			
tC, single (s)	6.5	6.5	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.6	2.3			
p0 queue free %	94	98	96			
cM capacity (veh/h)	590	825	1347			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	48	150	196
Volume Left	33	54	0
Volume Right	15	0	82
cSH	647	1347	1700
Volume to Capacity	0.07	0.04	0.12
Queue Length 95th (m)	1.9	1.0	0.0
Control Delay (s)	11.0	3.0	0.0
Lane LOS	B	A	
Approach Delay (s)	11.0	3.0	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		2.5		
Intersection Capacity Utilization		29.6%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	0	61	0	6	0	41	81	6	66	2
Future Volume (Veh/h)	0	1	0	61	0	6	0	41	81	6	66	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	1	0	73	0	7	0	49	98	7	80	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	151	144	81	144	145	49	82			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	151	144	81	144	145	49	82			49		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.4	2.2			2.2		
p0 queue free %	100	100	100	91	100	99	100			100		
cM capacity (veh/h)	812	748	985	796	747	981	1528			1571		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	1	80	49	98	89
Volume Left	0	73	0	0	7
Volume Right	0	7	0	98	2
cSH	748	810	1528	1700	1571
Volume to Capacity	0.00	0.10	0.00	0.06	0.00
Queue Length 95th (m)	0.0	2.6	0.0	0.0	0.1
Control Delay (s)	9.8	9.9	0.0	0.0	0.6
Lane LOS	A	A			A
Approach Delay (s)	9.8	9.9	0.0		0.6
Approach LOS	A	A			

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	25.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	15	11	105	25	0
Future Volume (Veh/h)	0	15	11	105	25	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	16	12	114	27	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	126				85	69
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	126				85	69
tC, single (s)	4.1				6.7	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.8	3.3
p0 queue free %	100				97	100
cM capacity (veh/h)	1473				848	1000

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	16	126	27
Volume Left	0	0	27
Volume Right	0	114	0
cSH	1473	1700	848
Volume to Capacity	0.00	0.07	0.03
Queue Length 95th (m)	0.0	0.0	0.8
Control Delay (s)	0.0	0.0	9.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.4
Approach LOS			A

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	17.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	21	162	10	32	138
Future Volume (Veh/h)	9	21	162	10	32	138
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	10	24	182	11	36	155
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	414	188			193	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	414	188			193	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	98	97			97	
cM capacity (veh/h)	547	860			1374	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	34	193	191
Volume Left	10	0	36
Volume Right	24	11	0
cSH	736	1700	1374
Volume to Capacity	0.05	0.11	0.03
Queue Length 95th (m)	1.2	0.0	0.6
Control Delay (s)	10.1	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	1.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		31.5%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	66	49	14	106	116	31
Future Volume (Veh/h)	66	49	14	106	116	31
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	73	54	16	118	129	34
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	296	146	163			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296	146	163			
tC, single (s)	6.5	6.3	4.3			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.4			
p0 queue free %	89	94	99			
cM capacity (veh/h)	676	883	1324			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	127	134	163
Volume Left	73	16	0
Volume Right	54	0	34
cSH	751	1324	1700
Volume to Capacity	0.17	0.01	0.10
Queue Length 95th (m)	4.8	0.3	0.0
Control Delay (s)	10.8	1.0	0.0
Lane LOS	B	A	
Approach Delay (s)	10.8	1.0	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		3.5		
Intersection Capacity Utilization		30.7%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	3	0	97	4	9	1	89	77	9	58	1
Future Volume (Veh/h)	1	3	0	97	4	9	1	89	77	9	58	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1	3	0	107	4	10	1	98	85	10	64	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	196	184	64	186	185	98	65			98		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	196	184	64	186	185	98	65			98		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	86	99	99	100			99		
cM capacity (veh/h)	752	708	1005	764	708	963	1550			1508		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	4	121	99	85	75
Volume Left	1	107	1	0	10
Volume Right	0	10	0	85	1
cSH	719	775	1550	1700	1508
Volume to Capacity	0.01	0.16	0.00	0.05	0.01
Queue Length 95th (m)	0.1	4.4	0.0	0.0	0.2
Control Delay (s)	10.0	10.5	0.1	0.0	1.0
Lane LOS	B	B	A		A
Approach Delay (s)	10.0	10.5	0.0		1.0
Approach LOS	B	B			

Intersection Summary				
Average Delay	3.6			
Intersection Capacity Utilization	29.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	14	16	29	101	0
Future Volume (Veh/h)	0	14	16	29	101	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	15	17	32	110	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	49				48	33
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	49				48	33
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	100				88	100
cM capacity (veh/h)	1571				944	1046

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	15	49	110
Volume Left	0	0	110
Volume Right	0	32	0
cSH	1571	1700	944
Volume to Capacity	0.00	0.03	0.12
Queue Length 95th (m)	0.0	0.0	3.2
Control Delay (s)	0.0	0.0	9.3
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.3
Approach LOS			A

Intersection Summary				
Average Delay	5.9			
Intersection Capacity Utilization	15.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	23	101	8	12	152
Future Volume (Veh/h)	15	23	101	8	12	152
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	19	28	125	10	15	188
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	348	130			135	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	348	130			135	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	97	97			99	
cM capacity (veh/h)	617	891			1462	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	47	135	203
Volume Left	19	0	15
Volume Right	28	10	0
cSH	756	1700	1462
Volume to Capacity	0.06	0.08	0.01
Queue Length 95th (m)	1.6	0.0	0.2
Control Delay (s)	10.1	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	0.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		25.3%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	28	13	46	82	97	70
Future Volume (vph)	28	13	46	82	97	70
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	33	15	54	96	114	82

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	48	150	196
Volume Left (vph)	33	54	0
Volume Right (vph)	15	0	82
Hadj (s)	0.28	0.21	-0.03
Departure Headway (s)	4.9	4.4	4.2
Degree Utilization, x	0.07	0.18	0.23
Capacity (veh/h)	672	790	850
Control Delay (s)	8.3	8.4	8.4
Approach Delay (s)	8.3	8.4	8.4
Approach LOS	A	A	A

Intersection Summary				
Delay		8.4		
Level of Service		A		
Intersection Capacity Utilization		29.6%	ICU Level of Service	A
Analysis Period (min)		15		

Intersection: 1: Ambridge Drive & Nosov Drive

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	21.2	11.5	28.3
Average Queue (m)	6.9	0.5	6.5
95th Queue (m)	16.4	5.1	19.1
Link Distance (m)	102.8	5.4	207.6
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ambridge Drive & Oil Tank Road

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	21.9	25.6	23.2
Average Queue (m)	7.4	12.2	12.6
95th Queue (m)	17.5	19.8	19.7
Link Distance (m)	342.9	169.0	5.4
Upstream Blk Time (%)			10
Queuing Penalty (veh)			17
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 17

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	21	162	10	32	138
Future Volume (Veh/h)	9	21	162	10	32	138
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	10	24	182	11	36	155
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	414	188			193	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	414	188			193	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	98	97			97	
cM capacity (veh/h)	547	860			1374	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	34	193	191
Volume Left	10	0	36
Volume Right	24	11	0
cSH	736	1700	1374
Volume to Capacity	0.05	0.11	0.03
Queue Length 95th (m)	1.2	0.0	0.6
Control Delay (s)	10.1	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	1.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		31.5%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	66	49	14	106	116	31
Future Volume (vph)	66	49	14	106	116	31
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	73	54	16	118	129	34

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	127	134	163
Volume Left (vph)	73	16	0
Volume Right (vph)	54	0	34
Hadj (s)	-0.01	0.14	-0.02
Departure Headway (s)	4.6	4.5	4.3
Degree Utilization, x	0.16	0.17	0.20
Capacity (veh/h)	735	763	793
Control Delay (s)	8.4	8.4	8.4
Approach Delay (s)	8.4	8.4	8.4
Approach LOS	A	A	A

Intersection Summary				
Delay		8.4		
Level of Service		A		
Intersection Capacity Utilization	30.7%	ICU Level of Service		A
Analysis Period (min)		15		

Intersection: 1: Ambridge Drive & Nosov Drive

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	14.6	6.6	18.4
Average Queue (m)	5.2	0.3	6.0
95th Queue (m)	12.6	4.0	15.5
Link Distance (m)	102.8	5.4	207.6
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ambridge Drive & Oil Tank Road

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	23.8	23.0	21.7
Average Queue (m)	10.1	11.8	10.9
95th Queue (m)	18.0	19.1	16.9
Link Distance (m)	342.9	169.0	5.4
Upstream Blk Time (%)			9
Queuing Penalty (veh)			13
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 13

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	17	26	110	9	14	162
Future Volume (Veh/h)	17	26	110	9	14	162
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	21	32	136	11	17	200
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	376	142			147	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	376	142			147	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	96	96			99	
cM capacity (veh/h)	594	878			1447	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	53	147	217
Volume Left	21	0	17
Volume Right	32	11	0
cSH	738	1700	1447
Volume to Capacity	0.07	0.09	0.01
Queue Length 95th (m)	1.9	0.0	0.3
Control Delay (s)	10.3	0.0	0.7
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	0.7
Approach LOS	B		

Intersection Summary				
Average Delay		1.7		
Intersection Capacity Utilization		26.0%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	13	46	90	107	71
Future Volume (Veh/h)	29	13	46	90	107	71
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	34	15	54	106	126	84
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	382	168	210			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	382	168	210			
tC, single (s)	6.5	6.5	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.6	2.3			
p0 queue free %	94	98	96			
cM capacity (veh/h)	572	811	1331			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	49	160	210
Volume Left	34	54	0
Volume Right	15	0	84
cSH	628	1331	1700
Volume to Capacity	0.08	0.04	0.12
Queue Length 95th (m)	2.0	1.0	0.0
Control Delay (s)	11.2	2.9	0.0
Lane LOS	B	A	
Approach Delay (s)	11.2	2.9	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		2.4		
Intersection Capacity Utilization		30.6%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	0	66	0	7	0	45	85	7	73	2
Future Volume (Veh/h)	0	1	0	66	0	7	0	45	85	7	73	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	1	0	80	0	8	0	54	102	8	88	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	167	159	89	160	160	54	90			54		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	167	159	89	160	160	54	90			54		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
p0 queue free %	100	100	100	90	100	99	100			99		
cM capacity (veh/h)	792	733	975	778	732	972	1518			1564		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	1	88	54	102	98
Volume Left	0	80	0	0	8
Volume Right	0	8	0	102	2
cSH	733	792	1518	1700	1564
Volume to Capacity	0.00	0.11	0.00	0.06	0.01
Queue Length 95th (m)	0.0	3.0	0.0	0.0	0.1
Control Delay (s)	9.9	10.1	0.0	0.0	0.6
Lane LOS	A	B			A
Approach Delay (s)	9.9	10.1	0.0		0.6
Approach LOS	A	B			

Intersection Summary					
Average Delay	2.8				
Intersection Capacity Utilization	27.2%	ICU Level of Service		A	
Analysis Period (min)	15				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	17	12	105	25	0
Future Volume (Veh/h)	0	17	12	105	25	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	18	13	114	27	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	127				88	70
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	127				88	70
tC, single (s)	4.1				6.7	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.8	3.3
p0 queue free %	100				97	100
cM capacity (veh/h)	1472				844	998

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	18	127	27
Volume Left	0	0	27
Volume Right	0	114	0
cSH	1472	1700	844
Volume to Capacity	0.00	0.07	0.03
Queue Length 95th (m)	0.0	0.0	0.8
Control Delay (s)	0.0	0.0	9.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.4
Approach LOS			A

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	17.1%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	24	174	11	35	151
Future Volume (Veh/h)	10	24	174	11	35	151
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	27	196	12	39	170
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	450	202			208	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	450	202			208	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	98	97			97	
cM capacity (veh/h)	519	844			1357	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	208	209
Volume Left	11	0	39
Volume Right	27	12	0
cSH	715	1700	1357
Volume to Capacity	0.05	0.12	0.03
Queue Length 95th (m)	1.3	0.0	0.7
Control Delay (s)	10.3	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	1.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		33.0%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	68	49	14	117	128	33
Future Volume (Veh/h)	68	49	14	117	128	33
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	76	54	16	130	142	37
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	322	160	179			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	322	160	179			
tC, single (s)	6.5	6.3	4.3			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.4			
p0 queue free %	88	94	99			
cM capacity (veh/h)	653	867	1311			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	130	146	179
Volume Left	76	16	0
Volume Right	54	0	37
cSH	727	1311	1700
Volume to Capacity	0.18	0.01	0.11
Queue Length 95th (m)	5.2	0.3	0.0
Control Delay (s)	11.0	0.9	0.0
Lane LOS	B	A	
Approach Delay (s)	11.0	0.9	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		3.5		
Intersection Capacity Utilization		31.3%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	3	0	103	4	10	1	98	84	10	64	1
Future Volume (Veh/h)	1	3	0	103	4	10	1	98	84	10	64	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1	3	0	113	4	11	1	108	92	11	70	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	216	202	70	204	203	108	71			108		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	216	202	70	204	203	108	71			108		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	85	99	99	100			99		
cM capacity (veh/h)	729	692	998	743	691	951	1542			1495		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	4	128	109	92	82
Volume Left	1	113	1	0	11
Volume Right	0	11	0	92	1
cSH	701	755	1542	1700	1495
Volume to Capacity	0.01	0.17	0.00	0.05	0.01
Queue Length 95th (m)	0.1	4.9	0.0	0.0	0.2
Control Delay (s)	10.2	10.7	0.1	0.0	1.0
Lane LOS	B	B	A		A
Approach Delay (s)	10.2	10.7	0.0		1.0
Approach LOS	B	B			

Intersection Summary					
Average Delay	3.6				
Intersection Capacity Utilization	30.5%	ICU Level of Service	A		
Analysis Period (min)	15				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	16	18	29	101	0
Future Volume (Veh/h)	0	16	18	29	101	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	17	20	32	110	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	52				53	36
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	52				53	36
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	100				88	100
cM capacity (veh/h)	1567				938	1042

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	17	52	110
Volume Left	0	0	110
Volume Right	0	32	0
cSH	1567	1700	938
Volume to Capacity	0.00	0.03	0.12
Queue Length 95th (m)	0.0	0.0	3.2
Control Delay (s)	0.0	0.0	9.3
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.3
Approach LOS			A

Intersection Summary				
Average Delay	5.7			
Intersection Capacity Utilization	15.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	17	26	110	9	14	162
Future Volume (Veh/h)	17	26	110	9	14	162
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	21	32	136	11	17	200
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	376	142			147	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	376	142			147	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	96	96			99	
cM capacity (veh/h)	594	878			1447	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	53	147	217
Volume Left	21	0	17
Volume Right	32	11	0
cSH	738	1700	1447
Volume to Capacity	0.07	0.09	0.01
Queue Length 95th (m)	1.9	0.0	0.3
Control Delay (s)	10.3	0.0	0.7
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	0.7
Approach LOS	B		

Intersection Summary				
Average Delay		1.7		
Intersection Capacity Utilization		26.0%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	29	13	46	90	107	71
Future Volume (vph)	29	13	46	90	107	71
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	34	15	54	106	126	84

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	49	160	210
Volume Left (vph)	34	54	0
Volume Right (vph)	15	0	84
Hadj (s)	0.28	0.21	-0.02
Departure Headway (s)	5.0	4.5	4.2
Degree Utilization, x	0.07	0.20	0.24
Capacity (veh/h)	663	787	844
Control Delay (s)	8.4	8.5	8.5
Approach Delay (s)	8.4	8.5	8.5
Approach LOS	A	A	A

Intersection Summary				
Delay		8.5		
Level of Service		A		
Intersection Capacity Utilization		30.6%	ICU Level of Service	A
Analysis Period (min)		15		

Intersection: 1: Ambridge Drive & Nosov Drive

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	19.8	8.0	27.8
Average Queue (m)	8.5	0.4	7.1
95th Queue (m)	16.9	4.5	19.4
Link Distance (m)	102.8	5.4	207.6
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ambridge Drive & Oil Tank Road

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	19.9	23.3	21.0
Average Queue (m)	7.2	13.0	13.1
95th Queue (m)	15.5	20.4	20.2
Link Distance (m)	342.9	169.0	5.4
Upstream Blk Time (%)			11
Queuing Penalty (veh)			20
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 20

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	24	174	11	35	151
Future Volume (Veh/h)	10	24	174	11	35	151
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	27	196	12	39	170
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	450	202			208	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	450	202			208	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	98	97			97	
cM capacity (veh/h)	519	844			1357	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	208	209
Volume Left	11	0	39
Volume Right	27	12	0
cSH	715	1700	1357
Volume to Capacity	0.05	0.12	0.03
Queue Length 95th (m)	1.3	0.0	0.7
Control Delay (s)	10.3	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	1.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		33.0%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	68	49	14	117	128	33
Future Volume (vph)	68	49	14	117	128	33
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	76	54	16	130	142	37

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	130	146	179
Volume Left (vph)	76	16	0
Volume Right (vph)	54	0	37
Hadj (s)	0.00	0.13	-0.02
Departure Headway (s)	4.6	4.6	4.4
Degree Utilization, x	0.17	0.18	0.22
Capacity (veh/h)	721	759	786
Control Delay (s)	8.6	8.6	8.6
Approach Delay (s)	8.6	8.6	8.6
Approach LOS	A	A	A

Intersection Summary				
Delay		8.6		
Level of Service		A		
Intersection Capacity Utilization	31.3%	ICU Level of Service		A
Analysis Period (min)		15		

Intersection: 1: Ambridge Drive & Nosov Drive

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	16.4	4.7	19.6
Average Queue (m)	5.8	0.2	6.0
95th Queue (m)	13.4	2.7	15.4
Link Distance (m)	102.8	5.4	207.6
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ambridge Drive & Oil Tank Road

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	22.7	25.0	18.9
Average Queue (m)	9.3	12.4	10.8
95th Queue (m)	16.4	20.3	16.7
Link Distance (m)	342.9	169.0	5.4
Upstream Blk Time (%)			10
Queuing Penalty (veh)			16
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 16

Appendix E

2036 Total Traffic Operation Reports – Sensitivity Analysis

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	17	26	122	9	14	208
Future Volume (Veh/h)	17	26	122	9	14	208
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	21	32	151	11	17	257
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	448	156			162	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	448	156			162	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	96	96			99	
cM capacity (veh/h)	539	861			1429	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	53	162	274
Volume Left	21	0	17
Volume Right	32	11	0
cSH	696	1700	1429
Volume to Capacity	0.08	0.10	0.01
Queue Length 95th (m)	2.0	0.0	0.3
Control Delay (s)	10.6	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	10.6	0.0	0.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.5		
Intersection Capacity Utilization		32.0%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	1	0	90	107	117
Future Volume (Veh/h)	41	1	0	90	107	117
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	48	1	0	106	126	138
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	301	195	264			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	301	195	264			
tC, single (s)	6.6	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.7	3.3	2.2			
p0 queue free %	93	100	100			
cM capacity (veh/h)	654	851	1312			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	49	106	264
Volume Left	48	0	0
Volume Right	1	0	138
cSH	658	1312	1700
Volume to Capacity	0.07	0.00	0.16
Queue Length 95th (m)	1.9	0.0	0.0
Control Delay (s)	10.9	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.9	0.0	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		1.3		
Intersection Capacity Utilization		22.8%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	0	55	0	6	0	45	43	3	73	2
Future Volume (Veh/h)	0	1	0	55	0	6	0	45	43	3	73	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	1	0	66	0	7	0	54	52	4	88	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	158	151	89	152	152	54	90			54		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	158	151	89	152	152	54	90			54		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.5	2.2			2.2		
p0 queue free %	100	100	100	92	100	99	100			100		
cM capacity (veh/h)	805	742	975	800	741	965	1518			1564		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	1	73	54	52	94
Volume Left	0	66	0	0	4
Volume Right	0	7	0	52	2
cSH	742	813	1518	1700	1564
Volume to Capacity	0.00	0.09	0.00	0.03	0.00
Queue Length 95th (m)	0.0	2.4	0.0	0.0	0.1
Control Delay (s)	9.9	9.9	0.0	0.0	0.3
Lane LOS	A	A			A
Approach Delay (s)	9.9	9.9	0.0		0.3
Approach LOS	A	A			

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	23.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	17	12	105	25	0
Future Volume (Veh/h)	0	17	12	105	25	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	18	13	114	27	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	127				88	70
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	127				88	70
tC, single (s)	4.1				6.7	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.8	3.3
p0 queue free %	100				97	100
cM capacity (veh/h)	1472				844	998

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	18	127	27
Volume Left	0	0	27
Volume Right	0	114	0
cSH	1472	1700	844
Volume to Capacity	0.00	0.07	0.03
Queue Length 95th (m)	0.0	0.0	0.8
Control Delay (s)	0.0	0.0	9.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.4
Approach LOS			A

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	17.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	24	222	11	35	163
Future Volume (Veh/h)	10	24	222	11	35	163
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	27	249	12	39	183
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	516	255			261	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	516	255			261	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	98	97			97	
cM capacity (veh/h)	474	789			1298	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	261	222
Volume Left	11	0	39
Volume Right	27	12	0
cSH	662	1700	1298
Volume to Capacity	0.06	0.15	0.03
Queue Length 95th (m)	1.5	0.0	0.7
Control Delay (s)	10.8	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	1.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.5		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	116	1	2	117	128	45
Future Volume (Veh/h)	116	1	2	117	128	45
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	129	1	2	130	142	50
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	301	167	192			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	301	167	192			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	81	100	100			
cM capacity (veh/h)	677	882	1394			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	130	132	192
Volume Left	129	2	0
Volume Right	1	0	50
cSH	678	1394	1700
Volume to Capacity	0.19	0.00	0.11
Queue Length 95th (m)	5.6	0.0	0.0
Control Delay (s)	11.6	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	11.6	0.1	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		3.3		
Intersection Capacity Utilization		22.6%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	3	0	61	2	6	1	98	73	9	64	1
Future Volume (Veh/h)	1	3	0	61	2	6	1	98	73	9	64	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1	3	0	67	2	7	1	108	80	10	70	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	208	200	70	202	201	108	71			108		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	208	200	70	202	201	108	71			108		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	91	100	99	100			99		
cM capacity (veh/h)	742	694	998	754	693	951	1542			1495		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	4	76	109	80	81
Volume Left	1	67	1	0	10
Volume Right	0	7	0	80	1
cSH	705	767	1542	1700	1495
Volume to Capacity	0.01	0.10	0.00	0.05	0.01
Queue Length 95th (m)	0.1	2.6	0.0	0.0	0.2
Control Delay (s)	10.1	10.2	0.1	0.0	1.0
Lane LOS	B	B	A		A
Approach Delay (s)	10.1	10.2	0.0		1.0
Approach LOS	B	B			

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	27.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	16	18	29	101	0
Future Volume (Veh/h)	0	16	18	29	101	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	17	20	32	110	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	52				53	36
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	52				53	36
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	100				88	100
cM capacity (veh/h)	1567				938	1042

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	17	52	110
Volume Left	0	0	110
Volume Right	0	32	0
cSH	1567	1700	938
Volume to Capacity	0.00	0.03	0.12
Queue Length 95th (m)	0.0	0.0	3.2
Control Delay (s)	0.0	0.0	9.3
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.3
Approach LOS			A

Intersection Summary				
Average Delay	5.7			
Intersection Capacity Utilization	15.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	17	26	122	9	14	208
Future Volume (Veh/h)	17	26	122	9	14	208
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	21	32	151	11	17	257
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	448	156			162	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	448	156			162	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	96	96			99	
cM capacity (veh/h)	539	861			1429	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	53	162	274
Volume Left	21	0	17
Volume Right	32	11	0
cSH	696	1700	1429
Volume to Capacity	0.08	0.10	0.01
Queue Length 95th (m)	2.0	0.0	0.3
Control Delay (s)	10.6	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	10.6	0.0	0.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.5		
Intersection Capacity Utilization		32.0%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	41	1	0	90	107	117
Future Volume (vph)	41	1	0	90	107	117
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	48	1	0	106	126	138

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	49	106	264
Volume Left (vph)	48	0	0
Volume Right (vph)	1	0	138
Hadj (s)	0.52	0.15	-0.11
Departure Headway (s)	5.2	4.4	4.0
Degree Utilization, x	0.07	0.13	0.30
Capacity (veh/h)	638	785	878
Control Delay (s)	8.6	8.1	8.7
Approach Delay (s)	8.6	8.1	8.7
Approach LOS	A	A	A

Intersection Summary				
Delay		8.6		
Level of Service		A		
Intersection Capacity Utilization		22.8%	ICU Level of Service	A
Analysis Period (min)		15		

Intersection: 1: Ambridge Drive & Nosov Drive

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	30.2	5.0	35.1
Average Queue (m)	8.7	0.2	11.8
95th Queue (m)	21.0	3.0	27.5
Link Distance (m)	102.8	5.4	207.6
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ambridge Drive & Oil Tank Road

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	18.8	23.1	23.2
Average Queue (m)	7.8	11.4	13.5
95th Queue (m)	16.7	19.0	20.5
Link Distance (m)	342.9	169.0	5.4
Upstream Blk Time (%)			14
Queuing Penalty (veh)			32
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 33

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	24	222	11	35	163
Future Volume (Veh/h)	10	24	222	11	35	163
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	27	249	12	39	183
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	516	255			261	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	516	255			261	
tC, single (s)	6.6	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	98	97			97	
cM capacity (veh/h)	474	789			1298	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	261	222
Volume Left	11	0	39
Volume Right	27	12	0
cSH	662	1700	1298
Volume to Capacity	0.06	0.15	0.03
Queue Length 95th (m)	1.5	0.0	0.7
Control Delay (s)	10.8	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	1.6
Approach LOS	B		

Intersection Summary				
Average Delay		1.5		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	116	1	2	117	128	45
Future Volume (vph)	116	1	2	117	128	45
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	129	1	2	130	142	50

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	130	132	192
Volume Left (vph)	129	2	0
Volume Right (vph)	1	0	50
Hadj (s)	0.33	0.09	-0.04
Departure Headway (s)	5.0	4.5	4.4
Degree Utilization, x	0.18	0.17	0.23
Capacity (veh/h)	677	758	789
Control Delay (s)	9.1	8.5	8.7
Approach Delay (s)	9.1	8.5	8.7
Approach LOS	A	A	A

Intersection Summary				
Delay			8.7	
Level of Service			A	
Intersection Capacity Utilization			22.6%	ICU Level of Service A
Analysis Period (min)			15	

Intersection: 1: Ambridge Drive & Nosov Drive

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	22.9	3.6	25.9
Average Queue (m)	6.2	0.2	8.4
95th Queue (m)	15.2	2.1	20.8
Link Distance (m)	102.8	5.4	207.6
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ambridge Drive & Oil Tank Road

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	22.1	21.2	21.7
Average Queue (m)	10.2	11.0	11.7
95th Queue (m)	17.8	16.7	18.2
Link Distance (m)	342.9	169.0	5.4
Upstream Blk Time (%)			11
Queuing Penalty (veh)			19
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 20