

# **100 Oxford Boulevard Residential Subdivision**

Traffic Impact Study  
Final

**November 30, 2023**

Prepared for:

Rosedale Estates Ltd.



# **100 Oxford Boulevard Residential Subdivision**

## **Traffic Impact Study Final**

**Rosedale Estates Ltd.**

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**RVA 237038**

**November 30, 2023**



**100 OXFORD BOULEVARD RESIDENTIAL SUBDIVISION**  
**TRAFFIC IMPACT STUDY**  
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## 1.0 Introduction

R.V. Anderson Associates Limited (RVA) was retained by Rosedale Estates Ltd. to conduct a Transportation Impact Study (TIS) in support of a Draft Plan of Subdivision for the proposed residential development located at 100 Oxford Boulevard, in the City of Port Colborne.

This report has been structured to include sections, as outlined in the Ministry of Transportation (MTO) General Guidelines for the Preparation of Traffic Impact Studies, dated March 2023.

## 2.0 Study Area

### 2.1 Description of Proposed Development

Based on the information provided, it is our understanding that the proponent is seeking City approval for the development of approximately 12.77 ha of vacant land municipally known as 100 Oxford Boulevard, within the City of Port Colborne. The subject site is located on the east side of Highway 58, approximately 220 meters north of the Oxford/Windsor Terrace intersection. The site is bounded by Stonebridge Drive to the north, vacant land to the east, existing residential housing to the south, and Highway 58 to the west.

The latest Draft Plan of Subdivision depicts the proposed development will consist of approximately 131 single-family detached homes, 118 townhomes, and 0.12 ha of open space (park).

The primary connection to/from the subject development site will be via the extension of Oxford Boulevard. Secondary connections will be through the adjacent proposed residential lands immediately east of the site.

The subject development site will be constructed in a single phase, with an estimated build-out year of 2025.

The following **Figure 2-1** depicts the local context surrounding the subject development site and the proposed Draft Plan of Subdivision is depicted in the subsequent **Figure 2-2**.



Figure 2-1 – Study Area

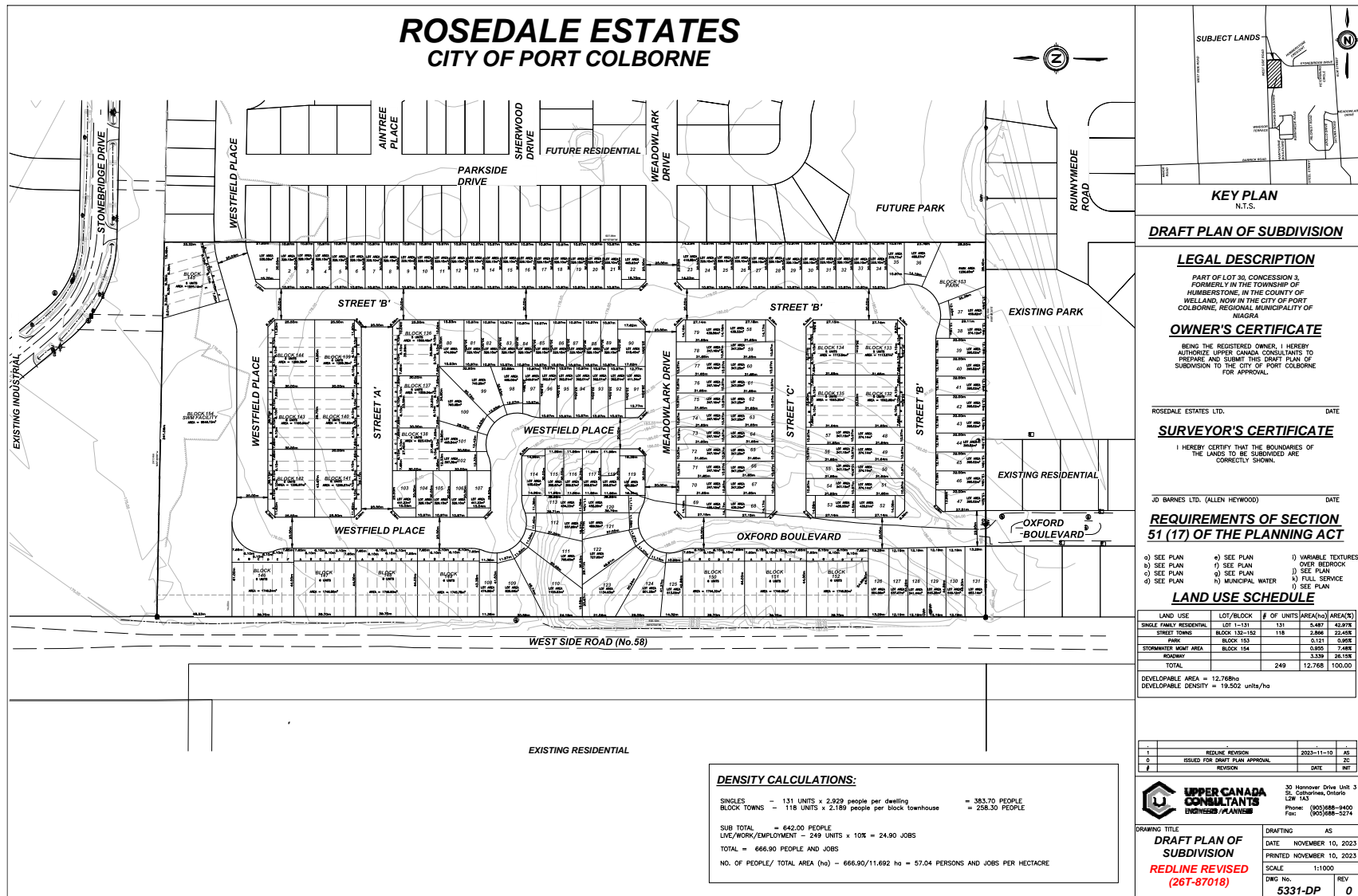


Figure 2-2 – Draft Plan of Subdivision



## 2.2 Existing Area Road Network

**Highway 58** (also referred to as West Side Road) is a north-south oriented four-lane rural arterial (i.e., two travel lanes per direction) with a center two-way left-turn lane between Barrick Road and Highway 3, which is under the jurisdiction of MTO. This road extends between Highway 58A in the north, where it continues north as Highway 54 and Killaly Street W in the south. Within the vicinity of the subject development site, the posted speed limit is 80 km/h and on-street parking regulations are unposted.

**Stonebridge Drive** is an east-west oriented two-lane local roadway (i.e., one travel lane per direction), which is under the jurisdiction of the City of Port Colborne and extends between Highway 58 in the west and Elm Street in the east. Within the vicinity of the subject development site the posted speed limit is 50 km/h and on-street parking is not permitted along either side of the roadway.

**Windsor Terrace** is an east-west oriented two-lane local roadway (i.e., one travel lane per direction), which is under the jurisdiction of the City of Port Colborne and extends between Highway 58 in the west and Thorncrest Road in the east. Within the vicinity of the subject development site the speed limit is unposted and therefore assumed to be 50 km/h and on-street parking regulations are unposted.

**Oxford Boulevard** is a north-south oriented two-lane local roadway (i.e., one travel lane per direction), which is under the jurisdiction of the City of Port Colborne and begins at Windsor Terrace in the south and terminates approximately 205 metres north of the Oxford/Windsor intersection. Within the vicinity of the subject development site the speed limit is unposted and therefore assumed to be 50 km/h and on-street parking regulations are unposted.

**Barrick Road** is an east-west oriented two-lane collector roadway (i.e., one travel lane per direction), which is under the jurisdiction of the City of Port Colborne and begins approximately 445 metres west of Minor Road and terminates approximately 540 metres east of Elm Street. Within the vicinity of the subject development site the posted speed limit is 50 km/h and on-street parking regulations are unposted.

## 2.3 Existing Area Intersections

### Highway 58/Stonebridge Drive

The Highway 58/Stonebridge intersection is an unsignalized, three-legged intersection with STOP control on the minor approach only (Stonebridge Drive). The north approach (Highway 58) consists of one through lane and one right-turn lane with approximately 100 meters of storage. The south approach (Highway 58) consists of one through lane and one left-turn lane with approximately 100 meters of storage. The west approach (Stonebridge Drive) consists of a single lane that accommodates all possible movements.

All movements are permitted at this location.



### Highway 58/Windsor Terrace

The Highway 58/Windsor intersection is an unsignalized, three-legged intersection with STOP control on the minor approach only (Windsor Terrace). The north approach (Highway 58) consists of one through lane and one right-turn lane with approximately 30 meters of storage. The south approach (Highway 58) consists of one through lane and one left-turn lane with approximately 90 meters of storage. The west approach (Windsor Terrace) consists of a single lane that accommodates all possible movements.

Heavy trucks are prohibited on Windsor Terrace; however, all other movements are permitted at this location.



### Highway 58/Barrick Road

The Highway 58/Barrick intersection is an unsignalized, four-legged intersection with STOP control on the minor approach only (Barrick Road). The north approach (Highway 58) consists of one left-turn lane with approximately 110 meters of storage, one through lane and one shared through-right turn lane. The south approach (Highway 58) consists of one left-turn lane, one through lane and one shared through-right turn lane. The east and west approaches (Barrick Road) each consist of a single lane that accommodates all possible movements.



Heavy trucks are prohibited on Barrick Road; however, all other movements are permitted at this location.

### Oxford Boulevard/Windsor Terrace

The Oxford/Windsor intersection is an unsignalized, three-legged intersection with STOP control on the minor approach only (Oxford Boulevard). All approaches consist of a single lane that accommodates all possible movements.



All movements are permitted at this location.

## 2.4 Existing Traffic Conditions

For the purpose of this assessment and based on discussions with the City and MTO, the following study area intersections have been identified for intersection capacity analysis:

- Oxford Boulevard/Windsor Terrace

- Highway 58/Windsor Terrace
- Highway 58/Barrick Road
- Highway 58/Stonebridge Drive

## 2.5 Pedestrian and Cycling Facilities

Within the vicinity of the subject development site, there are currently no designated sidewalks or cycling facilities provided. However, it should be noted that Barrick Road is considered part of Niagara Regions Bikeways Master Plan.

## 2.6 Transit Services

There is one Niagara Region Transit bus stop within walking distance to/from the subject development site located at the intersection of Highway 58/Barrick Road, which is serviced by Route 25.

## 3.0 Study Methodology

### 3.1 Intersection Operational Analysis Methodology

The industry standard Synchro macroscopic traffic analysis software was utilized to analyze the intersections for the various horizon years, as per the latest edition of the MTO Traffic Impact Study Guidelines. Key performance measures such as Level of Service (LOS), volume-to-capacity ratio (v/c ratio), and 95<sup>th</sup> percentile queuing was reported, and are defined below:

- **Average vehicle control delay** is used to characterize LOS for the entire intersection, an approach, or movement. Delay quantifies the variations in travel time and is also a surrogate measure of driver discomfort and fuel consumption.
- **V/c ratio** quantifies the degree to which the capacity is utilized by a defined lane group.
- **95th percentile queue** is the queue length which is expected to be exceeded only 5% of the time; it is common practice to identify preferred storage length requirements for auxiliary turn lanes based on estimated peak hour 95th percentile queueing.

**Table 3-1** identifies the control delay thresholds (seconds of delay per vehicle) for each LOS based on Highway Capacity Manual (HCM 2000) methodology.

Table 3-1 – Characteristics of Level of Service at Intersections

Level of Service (LOS)	Control Delay (seconds/vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	≤ 10	≤ 10
B	> 10 to 20	> 10 to 15
C	> 20 to 35	> 15 to 25
D	> 35 to 55	> 25 to 35
E	> 55 to 80	> 35 to 50
F	> 80	> 50

## 3.2 Ministry of Transportation TIS Guidelines

### 3.2.1 Study Horizons

For the purpose of this assessment and as discussed with MTO, the following horizon years have been selected for analysis:

- **2025**– Estimated full build-out of the subject development
- **2030**– 5 years beyond full build-out, required under the MTO Guidelines
- **2035** – 10 years beyond full build-out, required under the MTO Guidelines

### 3.2.2 Operation Analysis

According to the MTO’s General Guidelines for the Preparation of Traffic Impact Study Guidelines, March 2023, the following intersection capacity analysis performance measures were utilized for signalized and unsignalized intersections:

The analysis should include the identification of intersection movements where:

- v/c ratios greater than 0.85 are deemed “critical” in terms of operations and shall be evaluated for possible operational improvements;
- v/c ratios for terminal ramp approaches greater than 0.75 are deemed “critical” and shall be evaluated for possible improvements.

## 4.0 Existing Traffic Conditions

### 4.1 Existing Traffic Data

The following **Figure 4-1** depicts observed weekday morning and afternoon peak hour traffic volumes for the study area intersections. Data for the intersections of Highway 58 with Windsor Terrace and Barrick Road were obtained from the MTO. The data was collected on Tuesday, July 26, 2022 and on Tuesday, November 24, 2022 respectively. For the intersection of Oxford Boulevard and Windsor Terrace, data was collected on Wednesday October 25, 2023 by Pyramid Traffic Inc. and for Highway 58 and Stonebridge Drive data was collected by RVA on Thursday, November 23, 2023.

It should be noted that all 2022 traffic data has been grown to an existing base year of 2023. Detailed traffic volume data is provided as **Appendix A**.

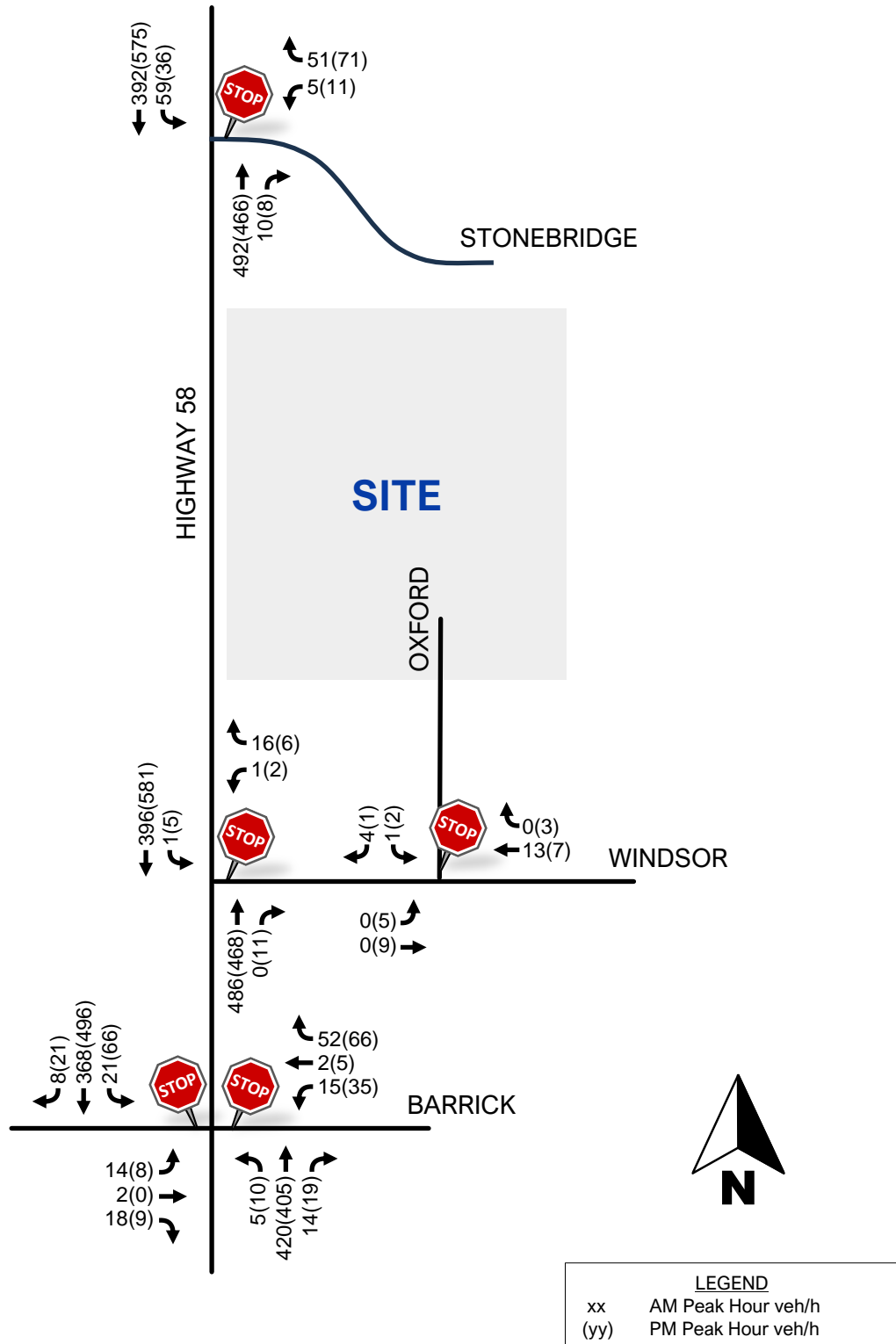


Figure 4-1 – Existing (2023) Traffic Volumes

## 4.2 Peak Periods

Based on existing travel patterns within the area, the weekday morning and after peak hours will be evaluated for the purpose of this assessment, which were observed to typically occur between 7:45 AM to 8:45 AM and 3:30 PM to 4:30 PM.

## 4.3 Existing Intersection Operational Analysis

### 4.3.1 Existing (2023) Traffic Conditions

The following **Table 4-1** summarizes the intersection operational analysis results for the study area intersections under existing (2023) traffic conditions. The objective of this analysis is to determine if there are any operational issues present at the intersections which may require capacity improvements. Detailed Synchro output reports are provided in **Appendix B**.

Table 4-1 – Existing (2023) Intersection Operational Analysis

Movement	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Highway 58/Stonebridge Dr - Unsignalized</b>										
<b>WB</b>	1 L/R		0.12	13.4	B	3	0.20	15.0	B	6
<b>NBT</b>	1 T		0.31	0.0	A	0	0.30	0.0	A	0
<b>NBR</b>	1 R	100	0.01	0.0	A	0	0.01	0.0	A	0
<b>SBL</b>	1 L	100	0.06	8.8	A	2	0.04	8.6	A	1
<b>SBT</b>	1 T		0.25	0.0	A	0	0.37	0.0	A	0
<b>Overall</b>			<b>0.55</b>	<b>1.2</b>	<b>A</b>	<b>-</b>	<b>0.52</b>	<b>1.3</b>	<b>A</b>	<b>-</b>
<b>Highway 58/Windsor Ter - Unsignalized</b>										
<b>WB</b>	1 L/R		0.03	12.1	B	1	0.02	13.8	B	1
<b>NBT</b>	1 T		0.31	0.0	A	0	0.30	0.0	A	0
<b>NBR</b>	1 R	30	0.00	0.0	A	0	0.01	0.0	A	0
<b>SBL</b>	1 L	90	0.00	8.5	A	0	0.00	8.5	A	0
<b>SBT</b>	1 T		0.25	0.0	A	0	0.37	0.0	A	0
<b>Overall</b>			<b>0.44</b>	<b>0.2</b>	<b>A</b>	<b>-</b>	<b>0.50</b>	<b>0.1</b>	<b>A</b>	<b>-</b>
<b>Highway 58/Barrick Rd - Unsignalized</b>										
<b>EBL</b>	1 L/T/R		0.06	11.4	B	2	0.04	13.2	B	1
<b>WBL</b>	1 L/T/R		0.11	11.1	B	3	0.20	12.8	B	6
<b>NBL</b>	1 L		0.00	8.2	A	0	0.01	8.6	A	0
<b>NBT</b>	1 T		0.18	0.0	A	0	0.17	0.0	A	0
<b>NB</b>	1 T/R		0.10	0.0	A	0	0.10	0.0	A	0



Movement	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>SBL</b>	1 L	110	0.02	8.4	A	1	0.07	8.5	A	2
<b>SBT</b>	1 T		0.16	0.0	A	0	0.21	0.0	A	0
<b>SB</b>	1 T/R		0.08	0.0	A	0	0.12	0.0	A	0
<b>Overall</b>			<b>0.37</b>	<b>1.5</b>	<b>A</b>	<b>-</b>	<b>0.47</b>	<b>2.0</b>	<b>A</b>	<b>-</b>
<b>Windsor Ter/Oxford Blvd - Unsignalized</b>										
<b>EB</b>	1 T/L		0.00	3.6	A	0	0.00	2.4	A	0
<b>WB</b>	1 T/R		0.01	0.0	A	0	0.01	0.0	A	0
<b>SB</b>	1 L/R		0.00	8.4	A	0	0.00	8.6	A	0
<b>Overall</b>			<b>0.20</b>	<b>2.2</b>	<b>A</b>	<b>-</b>	<b>0.22</b>	<b>2.1</b>	<b>A</b>	<b>-</b>

As shown in Table 4-1, the study area intersections are currently operating with an overall LOS 'A' during weekday morning and afternoon peak hours. With regard to all other movements, they are currently operating with an LOS 'B' or better during both peak hours. In terms of 95<sup>th</sup> percentile queues, sufficient vehicle storage is provided such that vehicle queues do not spill or block adjacent lanes or intersections.

## 5.0 Future Background Traffic Conditions

As previously mentioned, it has been assumed that the development will be constructed in a single phase, with an anticipated build-out year of 2025. As such the following horizon years were selected for analysis 2025, 2030 and 2035.

### 5.1 Future Background Development

RVA is aware of the proposed Meadow Heights subdivision located immediately east of the subject development site, however, no TIS report was able to be provided at the time of completion of this study. Based on a review of the location and layout of the proposed Meadow Heights subdivision plus the existing travel patterns of the area, it is our professional opinion that the majority of trips originating or destined to this subdivision will travel north and south via Elm Street and not travel through the subject intersections of this study. It is anticipated that only a minor number of trips would pass through the Rosedale subdivision to access Highway 58.

### 5.2 Future Background Traffic Forecast

Based on direction from MTO staff, a 2% per annum background traffic growth rate has been applied to all movements for the forecasting of future background 2025, 2030, and

2035 horizon years. Based on this growth rate, the following **Figure 5-1**, **Figure 5-2**, and **Figure 5-3** depict future background traffic volumes for the horizon years 2025, 2030 and 2035, respectively.

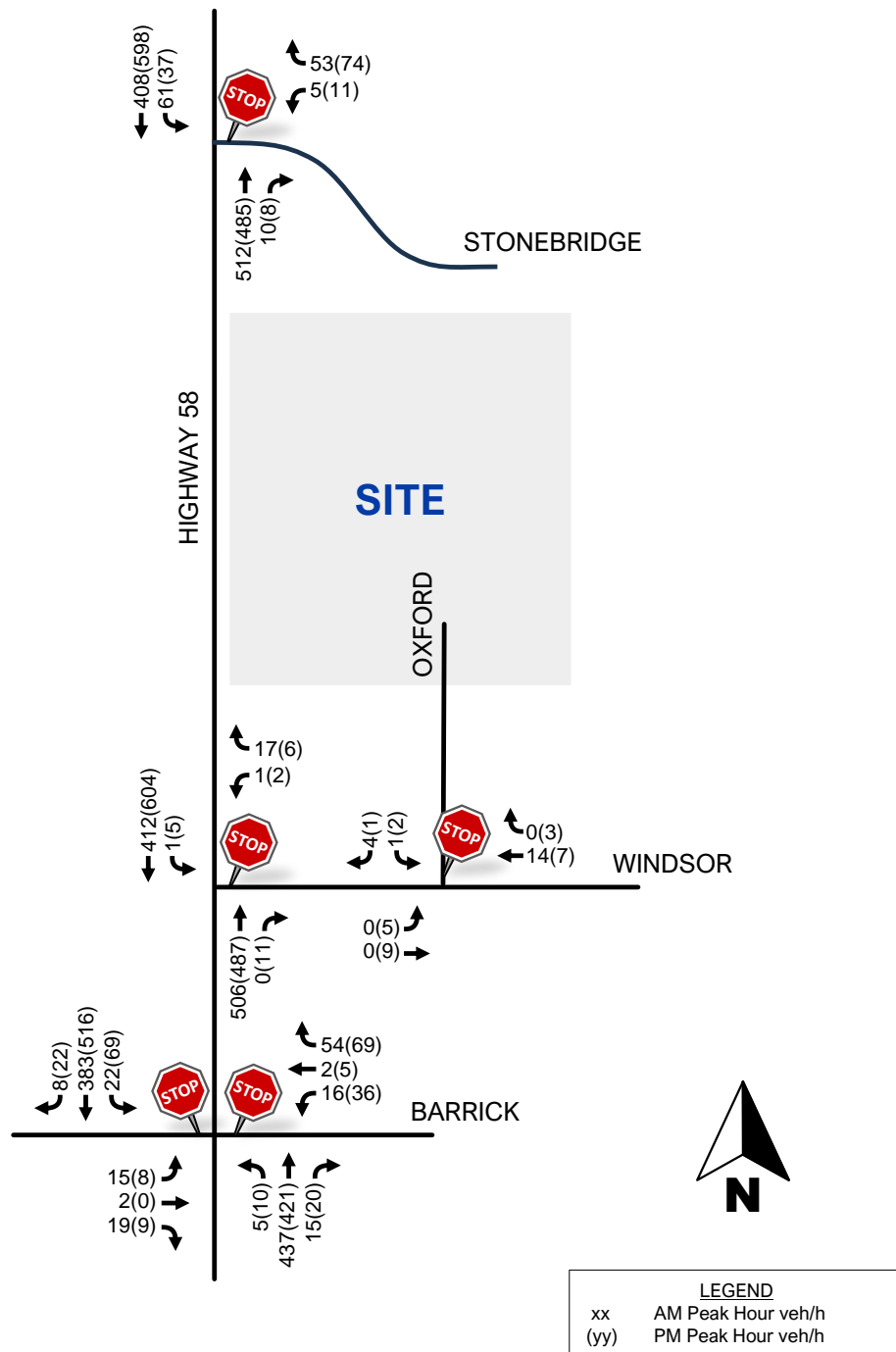


Figure 5-1 – Future Background (2025) Traffic Volumes

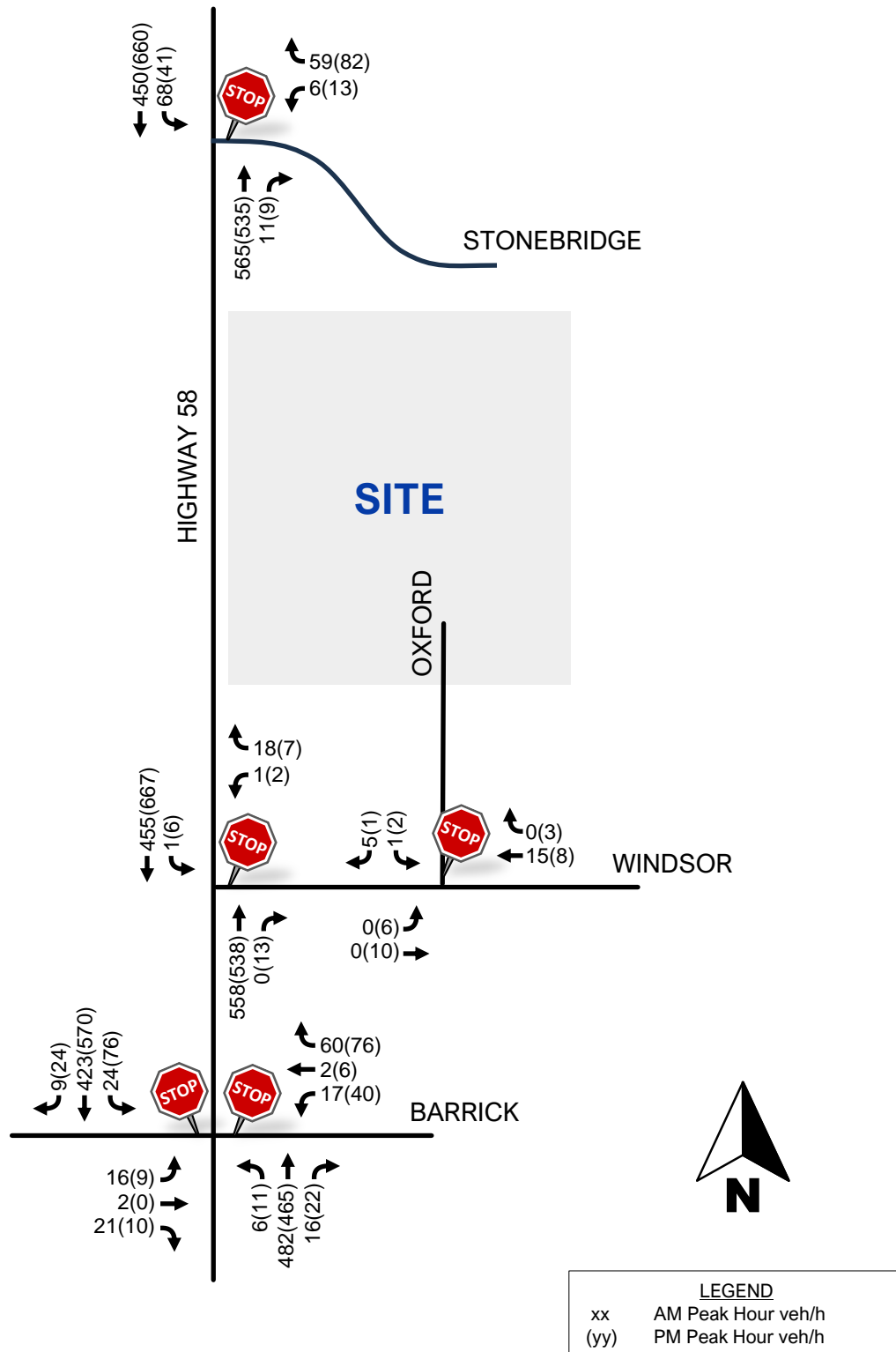


Figure 5-2 – Future Background (2030) Traffic Volumes

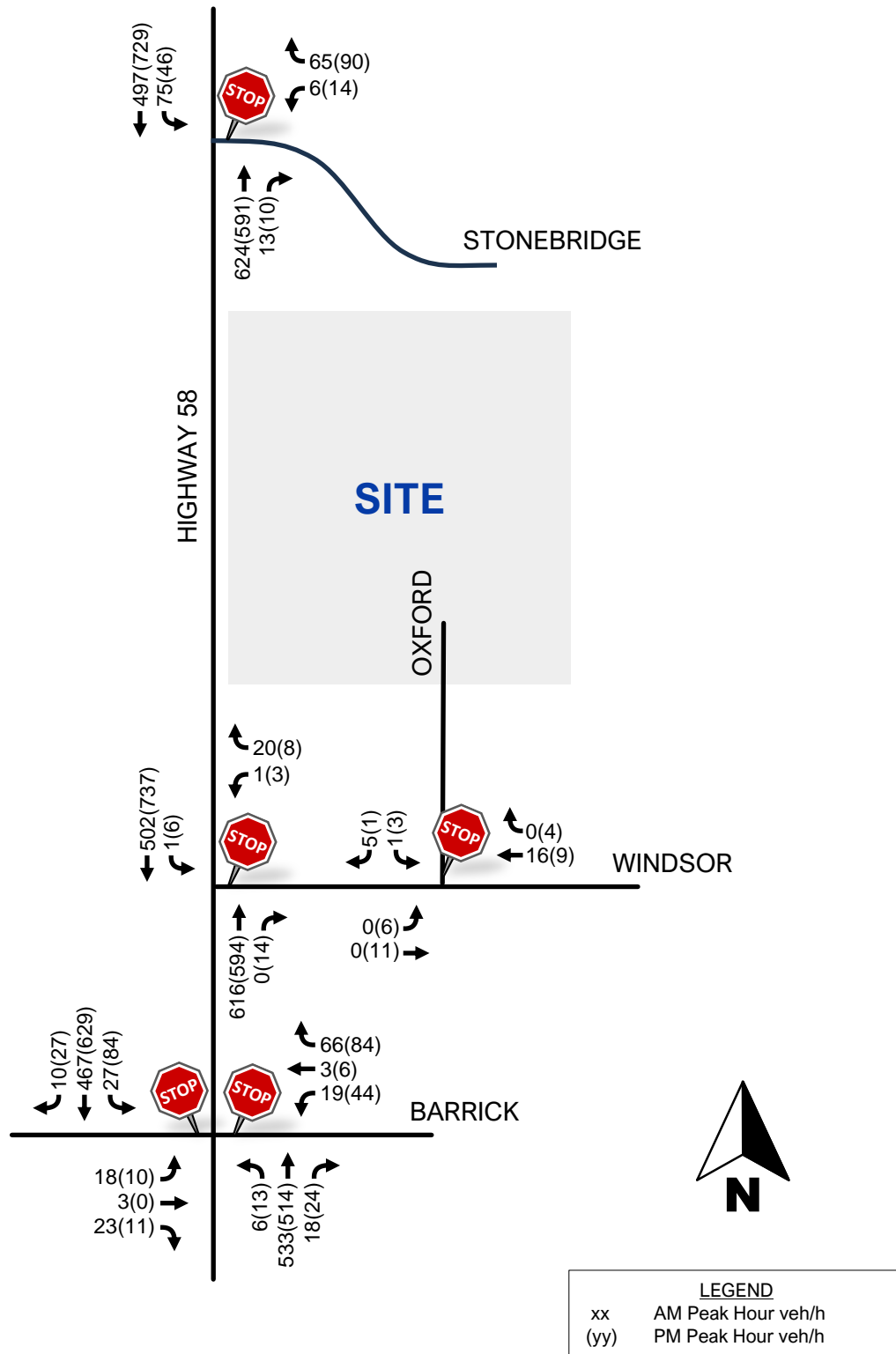


Figure 5-3 – Future Background (2035) Traffic Volumes

## 5.3 Future Background Intersection Operational Analysis

### 5.3.1 Future Background (2025) Traffic Conditions

The following Table 5-1 summarizes the operational analysis results for the study area intersections under future background (2025) traffic conditions based on the traffic volumes depicted in Figure 5-1. The objective of this analysis is to determine if intersection capacity improvements will be required to support background traffic growth. As such, the following network performance analysis only assumes an increase in network volumes and no improvements to network capacity (i.e., intersection control, vehicle lanes and network links are consistent with existing conditions). Detailed Synchro output data for background traffic conditions are provided in Appendix C.

Table 5-1 – Future Background (2025) Operational Analysis

Movement	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Highway 58/Stonebridge Dr - Unsignalized</b>										
WB	1 L/R		0.13	13.8	B	4	0.21	15.5	C	6
NBT	1 T		0.33	0.0	A	0	0.31	0.0	A	0
NBR	1 R	100	0.01	0.0	A	0	0.01	0.0	A	0
SBL	1 L	100	0.07	8.8	A	2	0.04	8.6	A	1
SBT	1 T		0.26	0.0	A	0	0.38	0.0	A	0
<b>Overall</b>			<b>0.57</b>	<b>1.3</b>	<b>A</b>	<b>-</b>	<b>0.53</b>	<b>1.3</b>	<b>A</b>	<b>-</b>
<b>Highway 58/Windsor Ter - Unsignalized</b>										
WB	1 L/R		0.04	12.4	B	1	0.02	14.2	B	1
NBT	1 T		0.32	0.0	A	0	0.31	0.0	A	0
NBR	1 R	30	0.00	0.0	A	0	0.01	0.0	A	0
SBL	1 L	90	0.00	8.5	A	0	0.00	8.5	A	0
SBT	1 T		0.26	0.0	A	0	0.39	0.0	A	0
<b>Overall</b>			<b>0.46</b>	<b>0.2</b>	<b>A</b>	<b>-</b>	<b>0.51</b>	<b>0.1</b>	<b>A</b>	<b>-</b>
<b>Highway 58/Barrick Rd - Unsignalized</b>										
EBL	1 L/T/R		0.07	11.6	B	2	0.04	13.5	B	1
WBL	1 L/T/R		0.12	11.3	B	3	0.21	13.1	B	6
NBL	1 L		0.00	8.2	A	0	0.01	8.7	A	0
NBT	1 T		0.19	0.0	A	0	0.18	0.0	A	0
NB	1 T/R		0.10	0.0	A	0	0.10	0.0	A	0
SBL	1 L	110	0.02	8.4	A	1	0.07	8.6	A	2
SBT	1 T		0.16	0.0	A	0	0.22	0.0	A	0

Movement	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>SB</b>	1 T/R		0.09	0.0	A	0	0.12	0.0	A	0
<b>Overall</b>			<b>0.38</b>	<b>1.5</b>	<b>A</b>	<b>-</b>	<b>0.48</b>	<b>2.0</b>	<b>A</b>	<b>-</b>
<b>Windsor Ter/Oxford Blvd - Unsignalized</b>										
<b>EB</b>	1 T/L		0.00	3.6	A	0	0.00	2.4	A	0
<b>WB</b>	1 T/R		0.01	0.0	A	0	0.01	0.0	A	0
<b>SB</b>	1 L/R		0.00	8.4	A	0	0.00	8.6	A	0
<b>Overall</b>			<b>0.20</b>	<b>2.2</b>	<b>A</b>	<b>-</b>	<b>0.22</b>	<b>2.1</b>	<b>A</b>	<b>-</b>

As shown in **Table 5-1**, study area intersections are projected to continue operating similar to existing conditions with an overall LOS ‘A’ during weekday morning and afternoon peak hours. With regard to all other movements, they are projected to operate with an LOS ‘B’ or better during the AM peak hour and LOS ‘C’ or better during the PM peak hour. In terms of 95<sup>th</sup> percentile queues, sufficient vehicle storage is provided such that vehicle queues do not spill or block adjacent lanes or intersections.

### 5.3.2 Future Background (2030) Traffic Conditions

The following **Table 5-2** summarizes the operational analysis results for the study area intersections under future background (2030) traffic conditions based on the traffic volumes depicted in **Figure 5-2**. The objective of this analysis is to determine if intersection capacity improvements will be required to support background traffic growth. As such, the following network performance analysis only assumes an increase in network volumes and no improvements to network capacity (i.e., intersection control, vehicle lanes and network links are consistent with existing conditions). Detailed Synchro output data for background traffic conditions are provided in **Appendix C**.

Table 5-2 – Future Background (2030) Operational Analysis

Movement	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Highway 58/Stonebridge Dr - Unsignalized</b>										
<b>WB</b>	1 L/R		0.17	15.4	C	5	0.27	17.7	C	9
<b>NBT</b>	1 T		0.36	0.0	A	0	0.34	0.0	A	0
<b>NBR</b>	1 R	100	0.01	0.0	A	0	0.01	0.0	A	0
<b>SBL</b>	1 L	100	0.08	9.1	A	2	0.05	8.8	A	1

Movement	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
SBT	1 T		0.29	0.0	A	0	0.42	0.0	A	0
<b>Overall</b>			<b>0.61</b>	<b>1.4</b>	<b>A</b>	<b>-</b>	<b>0.57</b>	<b>1.5</b>	<b>A</b>	<b>-</b>
<b>Highway 58/Windsor Ter - Unsignalized</b>										
WB	1 L/R		0.04	13.0	B	1	0.03	15.1	C	1
NBT	1 T		0.36	0.0	A	0	0.34	0.0	A	0
NBR	1 R	30	0.00	0.0	A	0	0.01	0.0	A	0
SBL	1 L	90	0.00	8.7	A	0	0.01	8.7	A	0
SBT	1 T		0.29	0.0	A	0	0.43	0.0	A	0
<b>Overall</b>			<b>0.49</b>	<b>0.3</b>	<b>A</b>	<b>-</b>	<b>0.55</b>	<b>0.2</b>	<b>A</b>	<b>-</b>
<b>Highway 58/Barrick Rd - Unsignalized</b>										
EBL	1 L/T/R		0.08	12.1	B	2	0.05	14.5	B	1
WBL	1 L/T/R		0.14	11.7	B	4	0.25	14.2	B	8
NBL	1 L		0.01	8.3	A	0	0.01	8.9	A	0
NBT	1 T		0.21	0.0	A	0	0.20	0.0	A	0
NB	1 T/R		0.11	0.0	A	0	0.11	0.0	A	0
SBL	1 L	110	0.03	8.6	A	1	0.08	8.8	A	2
SBT	1 T		0.18	0.0	A	0	0.24	0.0	A	0
SB	1 T/R		0.10	0.0	A	0	0.14	0.0	A	0
<b>Overall</b>			<b>0.41</b>	<b>1.5</b>	<b>A</b>	<b>-</b>	<b>0.50</b>	<b>2.1</b>	<b>A</b>	<b>-</b>
<b>Windsor Ter/Oxford Blvd - Unsignalized</b>										
EB	1 T/L		0.00	3.6	A	0	0.00	2.8	A	0
WB	1 T/R		0.01	0.0	A	0	0.01	0.0	A	0
SB	1 L/R		0.01	8.4	A	0	0.00	8.6	A	0
<b>Overall</b>			<b>0.20</b>	<b>2.3</b>	<b>A</b>	<b>-</b>	<b>0.23</b>	<b>2.3</b>	<b>A</b>	<b>-</b>

As shown in Table 5-2, study area intersections are projected to continue operating similar to existing conditions with an overall LOS 'A' during weekday morning and afternoon peak hours. With regard to all other movements, they are projected to continue operating similar to existing conditions with an LOS 'C' or better during both peak hours. In terms of 95<sup>th</sup> percentile queues, sufficient vehicle storage is provided such that vehicle queues do not spill or block adjacent lanes or intersections.

### 5.3.3 Future Background (2035) Traffic Conditions

The following Table 5-3 summarizes the operational analysis results for the study area intersections under future background (2035) traffic conditions based on the traffic volumes depicted in Figure 5-3. The objective of this analysis is to determine if intersection capacity improvements will be required to support background traffic growth. As such, the following

network performance analysis only assumes an increase in network volumes and no improvements to network capacity (i.e., intersection control, vehicle lanes and network links are consistent with existing conditions). Detailed Synchro output data for background traffic conditions are provided in **Appendix C**.

Table 5-3 – Future Background (2035) Operational Analysis

Movement	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Highway 58/Stonebridge Dr - Unsignalized</b>										
WB	1 L/R		0.21	16.9	C	6	0.33	20.6	C	11
NBT	1 T		0.40	0.0	A	0	0.38	0.0	A	0
NBR	1 R	100	0.01	0.0	A	0	0.01	0.0	A	0
SBL	1 L	100	0.09	9.4	A	2	0.05	9.1	A	1
SBT	1 T		0.32	0.0	A	0	0.47	0.0	A	0
<b>Overall</b>			<b>0.65</b>	<b>1.5</b>	<b>A</b>	<b>-</b>	<b>0.62</b>	<b>1.7</b>	<b>A</b>	<b>-</b>
<b>Highway 58/Windsor Ter - Unsignalized</b>										
WB	1 L/R		0.05	13.8	B	1	0.04	17.6	C	1
NBT	1 T		0.39	0.0	A	0	0.38	0.0	A	0
NBR	1 R	30	0.00	0.0	A	0	0.01	0.0	A	0
SBL	1 L	90	0.00	8.9	A	0	0.01	8.9	A	0
SBT	1 T		0.32	0.0	A	0	0.47	0.0	A	0
<b>Overall</b>			<b>0.52</b>	<b>0.3</b>	<b>A</b>	<b>-</b>	<b>0.59</b>	<b>0.2</b>	<b>A</b>	<b>-</b>
<b>Highway 58/Barrick Rd - Unsignalized</b>										
EBL	1 L/T/R		0.10	12.9	B	3	0.06	15.8	C	2
WBL	1 L/T/R		0.16	12.4	B	5	0.30	15.5	C	10
NBL	1 L		0.01	8.5	A	0	0.02	9.1	A	0
NBT	1 T		0.23	0.0	A	0	0.22	0.0	A	0
NB	1 T/R		0.13	0.0	A	0	0.12	0.0	A	0
SBL	1 L	110	0.03	8.8	A	1	0.09	9.0	A	2
SBT	1 T		0.20	0.0	A	0	0.27	0.0	A	0
SB	1 T/R		0.11	0.0	A	0	0.15	0.0	A	0
<b>Overall</b>			<b>0.44</b>	<b>1.6</b>	<b>A</b>	<b>-</b>	<b>0.53</b>	<b>2.3</b>	<b>A</b>	<b>-</b>
<b>Windsor Ter/Oxford Blvd - Unsignalized</b>										
EB	1 T/L		0.00	3.6	A	0	0.00	2.7	A	0
WB	1 T/R		0.01	0.0	A	0	0.01	0.0	A	0
SB	1 L/R		0.01	8.4	A	0	0.00	8.6	A	0
<b>Overall</b>			<b>0.20</b>	<b>2.2</b>	<b>A</b>	<b>-</b>	<b>0.23</b>	<b>2.3</b>	<b>A</b>	<b>-</b>



As shown in **Table 5-3**, study area intersections are projected to continue operating similar to existing conditions with an overall LOS ‘A’ during weekday morning and afternoon peak hours. With regard to all other movements, they are projected to operate with an LOS ‘C’ or better during both peak hours. In terms of 95<sup>th</sup> percentile queues they are estimated to be no longer than 2 vehicles in length.

## 6.0 Site Generated Traffic

### 6.1 Trip Generation

As previously described, the latest Draft Plan of Subdivision depicts the proposed development will consist of approximately 131 single-family detached homes, 118 townhomes, and 0.12 ha of open space (park). It has been assumed that the proposed development will be constructed in a single phase, with an anticipated build-out year of 2025.

Consistent with MTO’s TIS Guidelines, projected site generated traffic was estimated using appropriate trip generation rates from the 11<sup>th</sup> Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. Based on the location and type of development envisioned, the following **Table 6-1** summarizes the appropriate trip generation rates for estimating projected site-generated traffic.

**Table 6-1 – ITE Peak Hour Trip Generation Rates**

Land Use	ITE Land Use Code	AM Peak Hour	PM Peak Hour
Single-Family Detached Housing	ITE 210 General Urban/Suburban Vehicle Trips	$\ln(T) = 0.91\ln(X) + 0.12$	$\ln(T) = 0.94\ln(X) + 0.27$
Single-Family Attached Housing	ITE 215 General Urban/Suburban Vehicle Trips	$T_F = 0.52(X) - 5.70$	$T_F = 0.60(X) - 3.93$
<b>Notes:</b> $T_A$ = Average Vehicle Trips $T_F$ = Vehicle Trips by Fitted Curve $X$ = Per Dwelling Unit			

Based on the foregoing the projected weekday morning and afternoon site-generated vehicle traffic is summarized in the following **Table 6-2**.

**Table 6-2 – Peak Hour Site-Generated Vehicle Trips**

Land Use	Units	AM Peak Hour (Veh/h)			PM Peak Hour (Veh/h)		
		In	Out	Total	In	Out	Total
Single-Family Detached Housing	131	23	72	95	80	48	128
Single-Family Attached Housing	118	14	42	56	39	28	67
<b>Total 'New' Vehicle Trips</b>		<b>37</b>	<b>114</b>	<b>151</b>	<b>119</b>	<b>76</b>	<b>195</b>

As summarized in **Table 6-2**, the proposed development is projected to generate approximately 151 total two-way trips (37 inbound and 114 outbound) during weekday a.m. peak hours and 195 total two-way trips (119 inbound and 76 outbound) during the weekday p.m. peak hour.

## 6.2 Trip Distribution and Assignment

### 6.2.1 Trip Distribution

The projected distribution of site-generated traffic was derived based on existing travel patterns, the site's connections to/from the surrounding road network, the 2016 Transportation Tomorrow Survey (TTS) commuter data, and our local area knowledge. The following **Table 6-3** outlines the estimated site-generated trip distribution for the 2025 horizon year and beyond. The TTS commuter data is provided in **Appendix D**.

**Table 6-3 – Site-Generated Trip Distribution**

Direction	Vehicle Distribution Percentages
To/from the north via Highway 58	54%
To/from the south via Highway 58	46%
<b>Total</b>	<b>100%</b>

### 6.2.2 Trip Assignment

Based on the above assumed distribution, projected 'new' site-generated traffic was assigned to the study area network and is depicted in the following **Figure 6-1**.

### 6.3 Pass-By & Internal Capture Trips

Given the proposed development is a single land use and given its nature, pass-by and internal trips are not anticipated. Pass-by trips are typical for restaurant and retail land uses (e.g., attracting/diverting regular commuter traffic to/from the site, as opposed to generating new traffic) and internal trips are typical for developments with multiple land uses occupying a single site (e.g., a single trip to visit a gas station and a retail store located on the same site, that otherwise would count as two separate trips if the land uses were located on different sites).

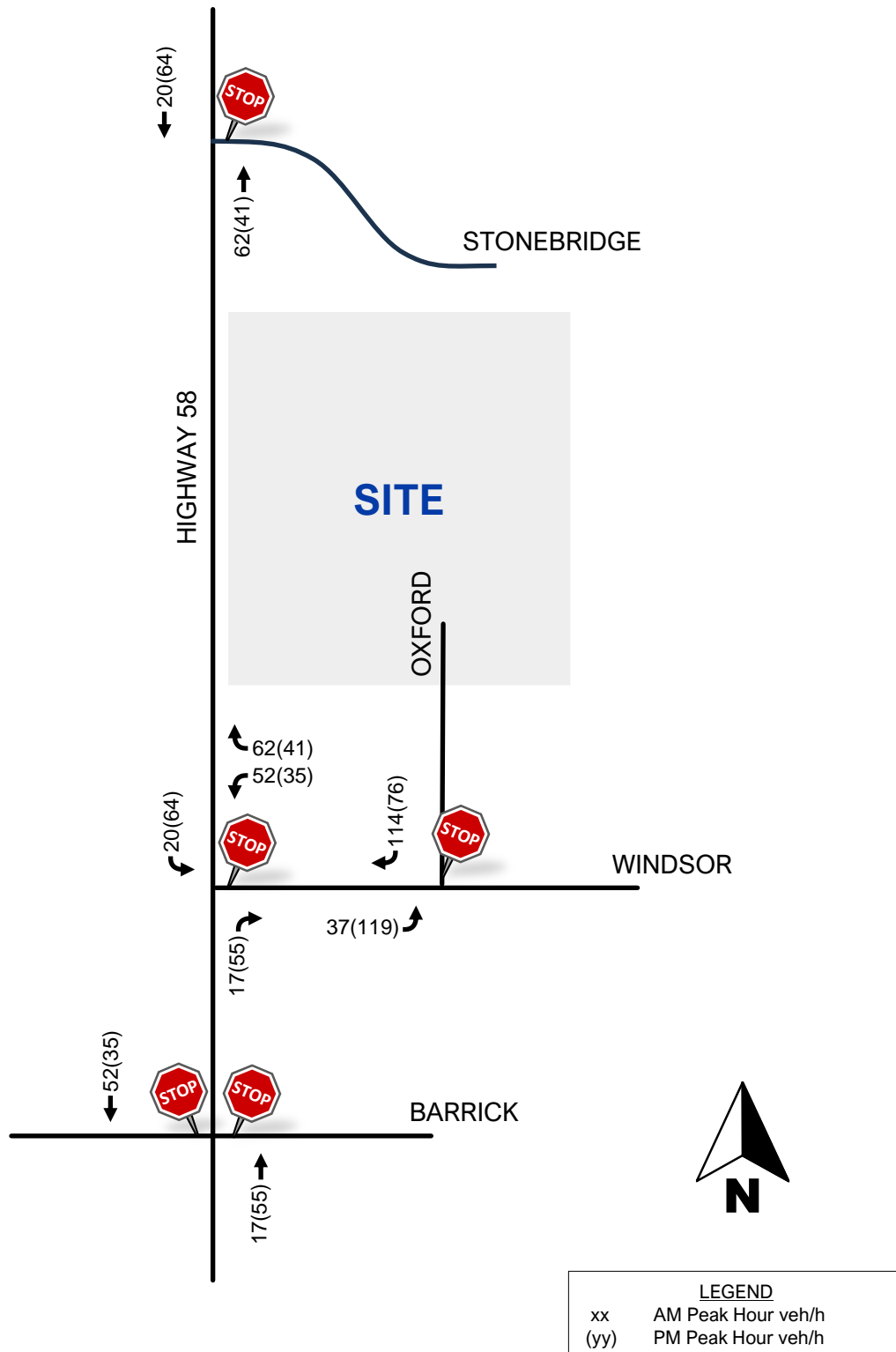


Figure 6-1 – Projected Site-Generated Trips

## 7.0 Future Total Traffic Conditions

### 7.1 Future Total Traffic Volumes

The following **Figure 7-1**, **Figure 7-2**, and **Figure 7-3** depict future total traffic volumes for the horizon years 2025, 2030 and 2035, respectively. These were derived by superimposing forecasted site-generated traffic volumes onto projected background traffic volumes for each respective horizon year (e.g., summing together the volumes depicted in **Figure 5-1 – 2025 Future Background Traffic Volumes** and **Figure 6-1 – Projected Site-Generated Trips**, resulting in **Figure 7-1 – 2025 Future Total Traffic Volumes**).

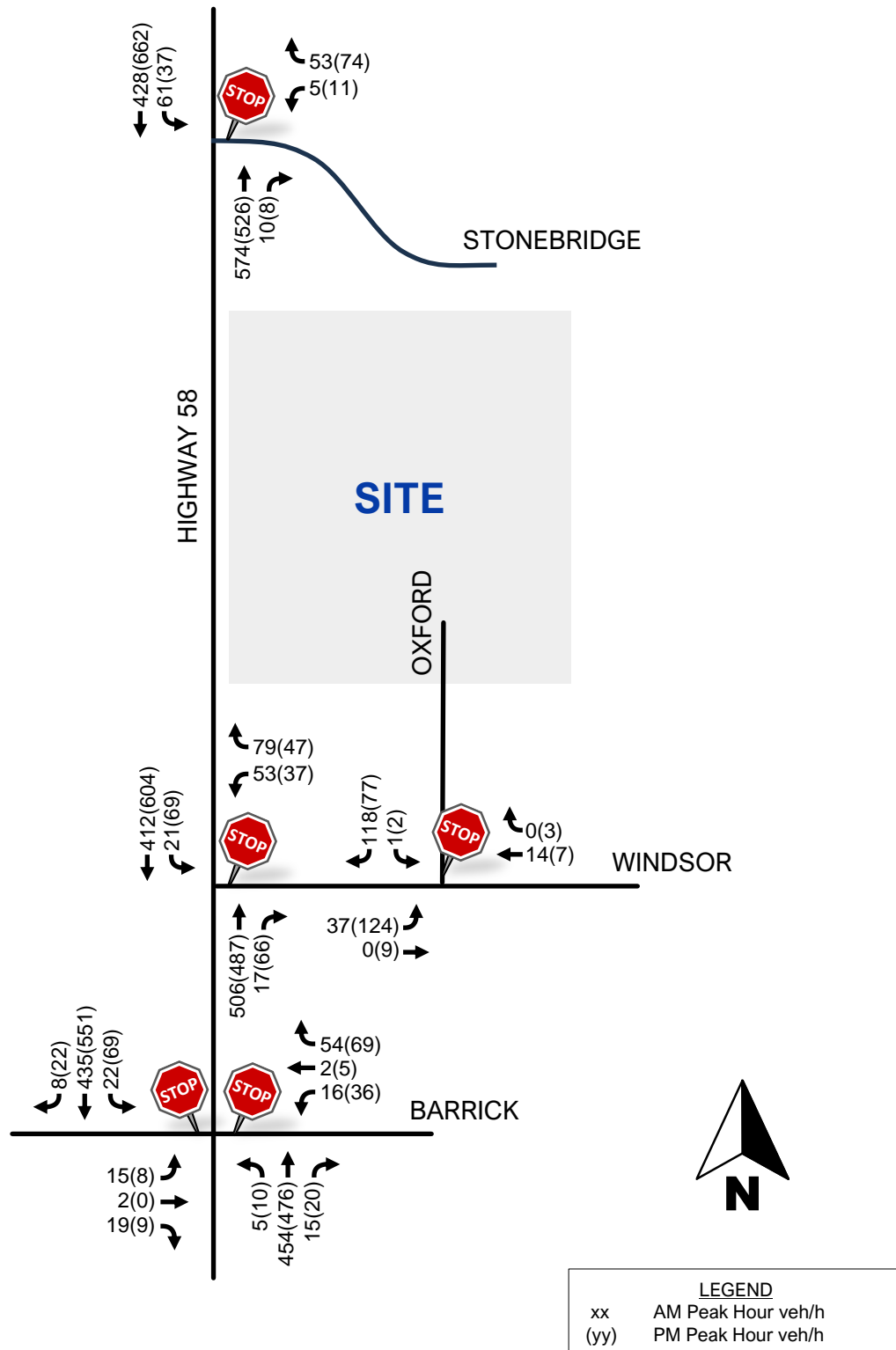


Figure 7-1 – Future Total (2025) Traffic Volumes

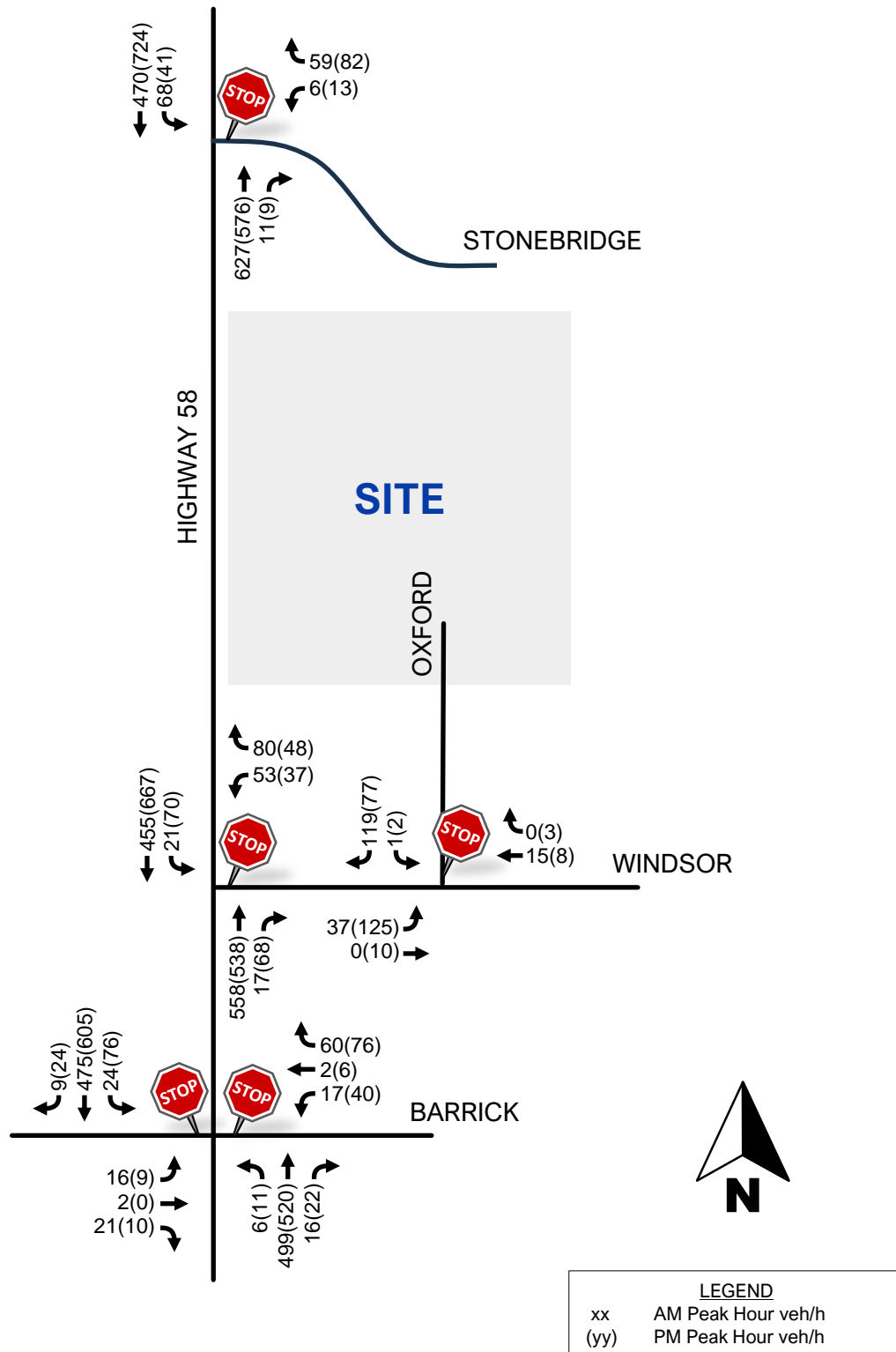


Figure 7-2 – Future Total (2030) Traffic Volumes

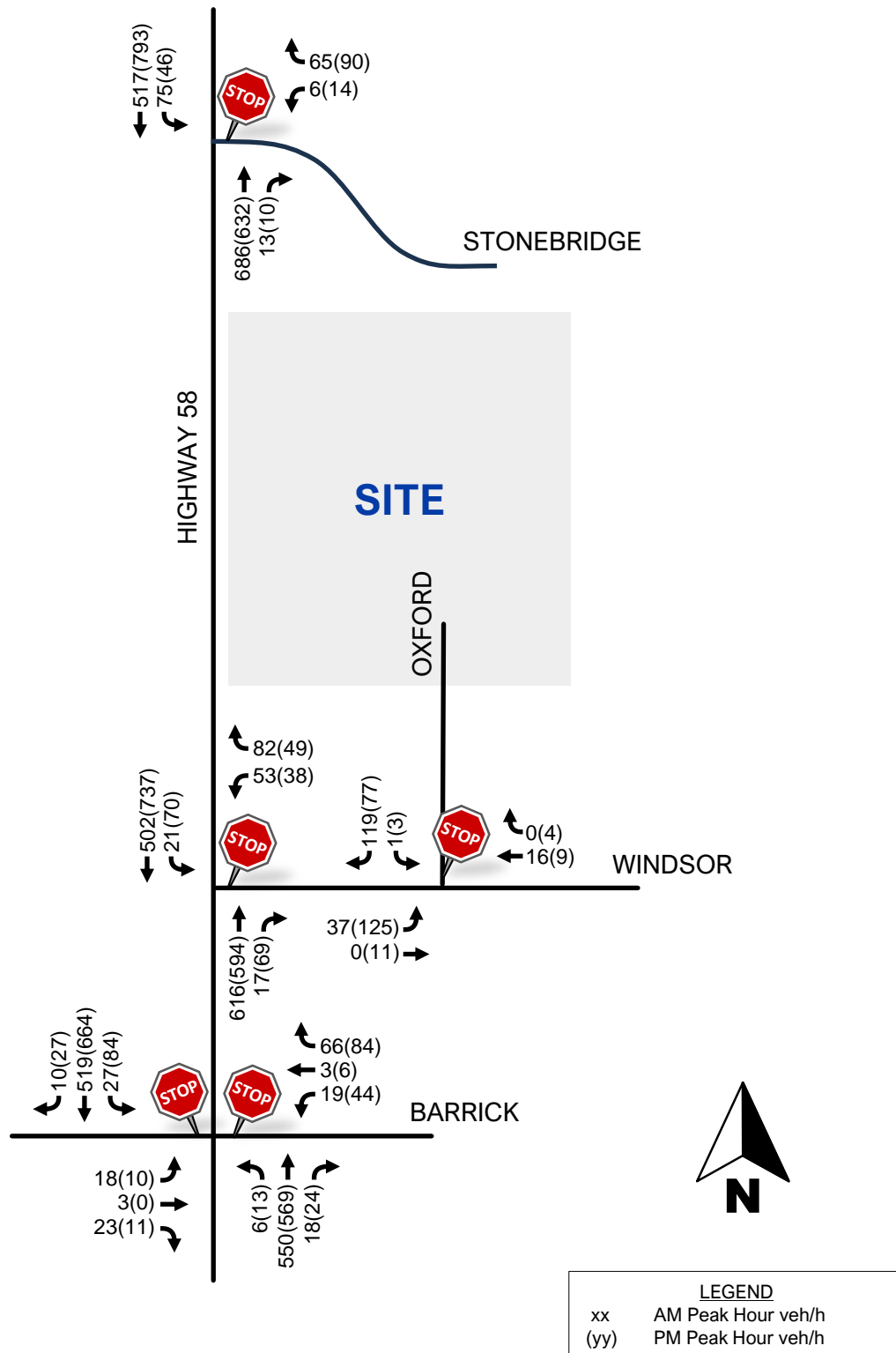


Figure 7-3 - Future Total (2035) Traffic Volumes



## 7.2 Future Total Intersection Operational Analysis

### 7.2.1 Future Total (2025) Traffic Conditions

Assuming no network improvements, the following Table 7-1 summarizes the intersection operational analysis of study area intersections for the future total (2025) horizon year (i.e., total projected volumes depicted in Figure 7-1). Detailed Synchro output data for future total traffic conditions is provided in Appendix E.

Table 7-1 – Future Total Intersection (2025) Operational Analysis

Movement	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Highway 58/Stonebridge Dr - Unsignalized</b>										
WB	1 L/R		0.15	14.8	B	4	0.23	16.8	C	7
NBT	1 T		0.37	0.0	A	0	0.34	0.0	A	0
NBR	1 R	100	0.01	0.0	A	0	0.01	0.0	A	0
SBL	1 L	100	0.07	9.1	A	2	0.04	8.8	A	1
SBT	1 T		0.27	0.0	A	0	0.42	0.0	A	0
<b>Overall</b>			<b>0.60</b>	<b>1.2</b>	<b>A</b>	<b>-</b>	<b>0.57</b>	<b>1.3</b>	<b>A</b>	<b>-</b>
<b>Highway 58/Windsor Ter - Unsignalized</b>										
WB	1 L/R		0.39	21.2	C	15	0.35	26.0	D	12
NBT	1 T		0.32	0.0	A	0	0.31	0.0	A	0
NBR	1 R	30	0.01	0.0	A	0	0.04	0.0	A	0
SBL	1 L	90	0.02	8.7	A	1	0.08	9.0	A	2
SBT	1 T		0.26	0.0	A	0	0.39	0.0	A	0
<b>Overall</b>			<b>0.51</b>	<b>2.7</b>	<b>A</b>	<b>-</b>	<b>0.57</b>	<b>2.1</b>	<b>A</b>	<b>-</b>
<b>Highway 58/Barrick Rd - Unsignalized</b>										
EBL	1 L/T/R		0.07	12.0	B	2	0.05	14.0	B	1
WBL	1 L/T/R		0.12	11.4	B	3	0.22	13.7	B	7
NBL	1 L		0.00	8.4	A	0	0.01	8.8	A	0
NBT	1 T		0.19	0.0	A	0	0.20	0.0	A	0
NB	1 T/R		0.11	0.0	A	0	0.11	0.0	A	0
SBL	1 L	110	0.02	8.5	A	1	0.07	8.8	A	2
SBT	1 T		0.19	0.0	A	0	0.23	0.0	A	0
SB	1 T/R		0.10	0.0	A	0	0.13	0.0	A	0
<b>Overall</b>			<b>0.38</b>	<b>1.4</b>	<b>A</b>	<b>-</b>	<b>0.49</b>	<b>1.9</b>	<b>A</b>	<b>-</b>
<b>Windsor Ter/Oxford Blvd - Unsignalized</b>										
EB	1 T/L		0.02	7.1	A	1	0.08	7.0	A	2
WB	1 T/R		0.01	0.0	A	0	0.01	0.0	A	0

Movement	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>SB</b>	1 L/R		0.12	8.9	A	3	0.08	8.7	A	2
<b>Overall</b>			<b>0.30</b>	<b>7.7</b>	<b>A</b>	<b>-</b>	<b>0.33</b>	<b>7.3</b>	<b>A</b>	<b>-</b>

As shown in **Table 7-1**, study area intersections are projected to continue operating similar to existing conditions with an overall LOS 'A' during weekday morning and afternoon peak hours. With regard to all other movements, they are projected to continue operating similar to existing conditions with an LOS 'C' or better during both peak hours, with the exception of the westbound movement at the Highway 58/Windsor Terrace intersection, which is projected to operate with an LOS 'D' during the PM peak hour. In terms of 95<sup>th</sup> percentile queues they are estimated to be no longer than 3 vehicles in length.

## 7.2.2 Future Total (2030) Traffic Conditions

Assuming no network improvements, the following **Table 7-2** summarizes the intersection operational analysis of study area intersections for the future total (2030) horizon year (i.e., total projected volumes depicted in **Figure 7-2**). Detailed Synchro output data for future total traffic conditions is provided in **Appendix E**.

Table 7-2 –Future Total (2030) Intersection Operational Analysis

Movement	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Highway 58/Stonebridge Dr - Unsignalized</b>										
<b>WB</b>	1 L/R		0.19	16.7	C	5	0.29	19.5	C	10
<b>NBT</b>	1 T		0.40	0.0	A	0	0.37	0.0	A	0
<b>NBR</b>	1 R	100	0.01	0.0	A	0	0.01	0.0	A	0
<b>SBL</b>	1 L	100	0.08	9.4	A	2	0.05	9.0	A	1
<b>SBT</b>	1 T		0.30	0.0	A	0	0.46	0.0	A	0
<b>Overall</b>			<b>0.64</b>	<b>1.4</b>	<b>A</b>	<b>-</b>	<b>0.61</b>	<b>1.5</b>	<b>A</b>	<b>-</b>
<b>Highway 58/Windsor Ter - Unsignalized</b>										
<b>WB</b>	1 L/R		0.45	24.7	C	18	0.41	31.7	D	15
<b>NBT</b>	1 T		0.36	0.0	A	0	0.34	0.0	A	0
<b>NBR</b>	1 R	30	0.01	0.0	A	0	0.04	0.0	A	0
<b>SBL</b>	1 L	90	0.02	8.9	A	1	0.08	9.2	A	2
<b>SBT</b>	1 T		0.29	0.0	A	0	0.43	0.0	A	0
<b>Overall</b>			<b>0.54</b>	<b>2.9</b>	<b>A</b>	<b>-</b>	<b>0.60</b>	<b>2.3</b>	<b>A</b>	<b>-</b>

Movement	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Highway 58/Barrick Rd - Unsignalized</b>										
<b>EBL</b>	1 L/T/R		0.08	12.5	B	2	0.06	15.1	C	1
<b>WBL</b>	1 L/T/R		0.14	11.9	B	4	0.27	14.9	B	9
<b>NBL</b>	1 L		0.01	8.5	A	0	0.01	9.0	A	0
<b>NBT</b>	1 T		0.21	0.0	A	0	0.22	0.0	A	0
<b>NB</b>	1 T/R		0.12	0.0	A	0	0.12	0.0	A	0
<b>SBL</b>	1 L	110	0.03	8.7	A	1	0.08	9.0	A	2
<b>SBT</b>	1 T		0.20	0.0	A	0	0.26	0.0	A	0
<b>SB</b>	1 T/R		0.11	0.0	A	0	0.14	0.0	A	0
<b>Overall</b>			<b>0.41</b>	<b>1.5</b>	<b>A</b>	<b>-</b>	<b>0.51</b>	<b>2.1</b>	<b>A</b>	<b>-</b>
<b>Windsor Ter/Oxford Blvd - Unsignalized</b>										
<b>EB</b>	1 T/L		0.02	7.1	A	1	0.08	6.9	A	2
<b>WB</b>	1 T/R		0.01	0.0	A	0	0.01	0.0	A	0
<b>SB</b>	1 L/R		0.12	8.9	A	3	0.08	8.7	A	2
<b>Overall</b>			<b>0.30</b>	<b>7.7</b>	<b>A</b>	<b>-</b>	<b>0.33</b>	<b>7.2</b>	<b>A</b>	<b>-</b>

As shown in **Table 7-2**, study area intersections are projected to continue operating similar to existing conditions with an overall LOS 'A' during weekday morning and afternoon peak hours. With regard to all other movements, they are projected to operate with an LOS 'C' or better, with the exception of the westbound movement at the Highway 58/Windsor Terrace intersection, which is projected to operate with an LOS 'D' during the afternoon peak hour. In terms of 95<sup>th</sup> percentile queues they are estimated to be no longer than 3 vehicles in length.

### 7.2.3 Future Total (2035) Traffic Conditions

Assuming no network improvements, the following **Table 7-3** summarizes the intersection operational analysis of study area intersections for the future total (2035) horizon year (i.e., total projected volumes depicted in **Figure 7-3**). Detailed Synchro output data for future total traffic conditions is provided in **Appendix E**.

Table 7-3 –Future Total (2035) Intersection Operational Analysis

Movement	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Highway 58/Stonebridge Dr - Unsignalized</b>										
WB	1 L/R		0.23	18.5	C	7	0.37	23.2	C	13
NBT	1 T		0.44	0.0	A	0	0.40	0.0	A	0
NBR	1 R	100	0.01	0.0	A	0	0.01	0.0	A	0
SBL	1 L	100	0.10	9.7	A	3	0.06	9.2	A	1
SBT	1 T		0.33	0.0	A	0	0.51	0.0	A	0
<b>Overall</b>			<b>0.68</b>	<b>1.5</b>	<b>A</b>	<b>-</b>	<b>0.66</b>	<b>1.8</b>	<b>A</b>	<b>-</b>
<b>Highway 58/Windsor Ter - Unsignalized</b>										
WB	1 L/R		0.51	30.0	D	22	0.50	41.4	E	20
NBT	1 T		0.39	0.0	A	0	0.38	0.0	A	0
NBR	1 R	30	0.01	0.0	A	0	0.04	0.0	A	0
SBL	1 L	90	0.03	9.1	A	1	0.09	9.5	A	2
SBT	1 T		0.32	0.0	A	0	0.47	0.0	A	0
<b>Overall</b>			<b>0.57</b>	<b>3.3</b>	<b>A</b>	<b>-</b>	<b>0.64</b>	<b>2.7</b>	<b>A</b>	<b>-</b>
<b>Highway 58/Barrick Rd - Unsignalized</b>										
EBL	1 L/T/R		0.10	13.4	B	3	0.07	16.4	C	2
WBL	1 L/T/R		0.17	12.6	B	5	0.32	16.4	C	11
NBL	1 L		0.01	8.6	A	0	0.02	9.3	A	0
NBT	1 T		0.23	0.0	A	0	0.24	0.0	A	0
NB	1 T/R		0.13	0.0	A	0	0.14	0.0	A	0
SBL	1 L	110	0.03	8.9	A	1	0.10	9.3	A	3
SBT	1 T		0.22	0.0	A	0	0.28	0.0	A	0
SB	1 T/R		0.12	0.0	A	0	0.16	0.0	A	0
<b>Overall</b>			<b>0.44</b>	<b>1.6</b>	<b>A</b>	<b>-</b>	<b>0.54</b>	<b>2.2</b>	<b>A</b>	<b>-</b>
<b>Windsor Ter/Oxford Blvd - Unsignalized</b>										
EB	1 T/L		0.03	7.1	A	1	0.08	6.9	A	2
WB	1 T/R		0.01	0.0	A	0	0.01	0.0	A	0
SB	1 L/R		0.12	8.9	A	3	0.08	8.8	A	2
<b>Overall</b>			<b>0.30</b>	<b>7.7</b>	<b>A</b>	<b>-</b>	<b>0.34</b>	<b>7.2</b>	<b>A</b>	<b>-</b>

As shown in **Table 7-3**, study area intersections are projected to continue operating similar to existing conditions with an overall LOS 'A' during weekday morning and afternoon peak hours. With regard to all other movements, they are projected to operate with an LOS 'C' or better, with the exception of the westbound movement at the Highway 58/Windsor Terrace intersection, which is projected to operate with an LOS 'D' during the AM peak hour and an

LOS 'E' during the PM peak hour. In terms of 95<sup>th</sup> percentile queues they are estimated to be no longer than 4 vehicles in length.

## 7.3 Evaluation of Impacts of Site Generated Traffic

### 7.3.1 Timing and Signal Justification

An MTO signal warrant was completed for all study area intersections using the Future Total (2035) Traffic Volumes depicted in **Figure 7-3**, and it was determined that traffic signal control is not warranted at any intersection.

MTO signal warrant analysis is provided in **Appendix F**.

### 7.3.2 Left-Turn Lane Warrants

Based on the intersection operational analysis results for the future total (2035) projected horizon year, the existing northbound and southbound auxiliary left-turn lanes along Highway 58 are sufficient in length such that vehicle queues do not spill and block adjacent lanes or intersections. Therefore, additional left-turn lanes are not warranted.

### 7.3.3 Other Modes of Transportation

Given the context of the surrounding area and the nature of the site, site-generated traffic is projected to predominantly be vehicular traffic. However, to encourage sustainable travel modes, it is recommended that sidewalks be provided throughout the subdivision's internal road network. Implementing sidewalks should be in compliance with the Accessibility for Ontarians with Disabilities Act (AODA) and Ontario Provincial Standard Drawings (OPSD).

## 8.0 Site Plan Review

### 8.1 Site Access & Circulation

As described previously and depicted in **Figure 2-2**, access to/from the proposed development will be via an extension of Oxford Boulevard. The internal road network is proposed to have a 20-meter-wide right-of-way cross section, which complies with the City of Port Colborne's minimum requirement for local roadways. During detailed design, sufficient turning radii for critical design vehicles should be confirmed against applicable design standards (e.g., fire, garbage trucks and snowplows). As previously mentioned, sidewalks should be provided throughout the subdivision's internal road network and pedestrian connections should be provided to public amenities.

## 9.0 Conclusions and Recommendations

R.V. Anderson Associates Limited has completed a review of the subject development impacts and has summarized the findings within the transportation assessment, which follows the format of the Ministry of Transportation Traffic Impact Study (TIS) Guidelines. Based on the foregoing, the following conclusions and recommendations are offered:

- The proposed development will consist of approximately 131 single-family detached homes, 118 townhomes, and 0.12 ha of open space (park).
- Under existing traffic conditions, all study area intersections are currently operating with a LOS 'A', and with the addition of background traffic only, they are projected to continue operating with an LOS 'A'.
- The proposed development is projected to generate an approximately 151 total two-way trips (37 inbound and 114 outbound) during weekday a.m. peak hours and 195 total two-way trips (119 inbound and 76 outbound) during the weekday p.m. peak hour.
- With the addition of site-generated traffic, study area intersections are projected to continue operating similar to existing and background conditions with an overall LOS 'A'. With regard to all other movements, they are projected to operate with an LOS 'C' or better with the exception of the westbound movements at the Highway 58/Windsor Terrace intersection, which are projected to operate with an LOS 'D' during the AM peak hour and LOS 'E' during the PM peak hour for the 2035 horizon year.
- Based on the future total (2035) projected volumes and the results of the intersection capacity analysis, network modifications such as traffic signal control or auxiliary turn lanes are not warranted.
- As the subdivision's internal road network is built-out, sufficient road turning radii for critical design vehicles should be confirmed (e.g., fire, garbage trucks and snowplows). Sidewalks should also be provided throughout the subdivision's internal road network and pedestrian connections should be provided to/from public amenities.
- The existing study area intersections have sufficient capacity to accommodate the anticipated traffic generated from the subject development site without the need for any capacity modifications.

**APPENDIX A**

Existing Traffic Volume Data



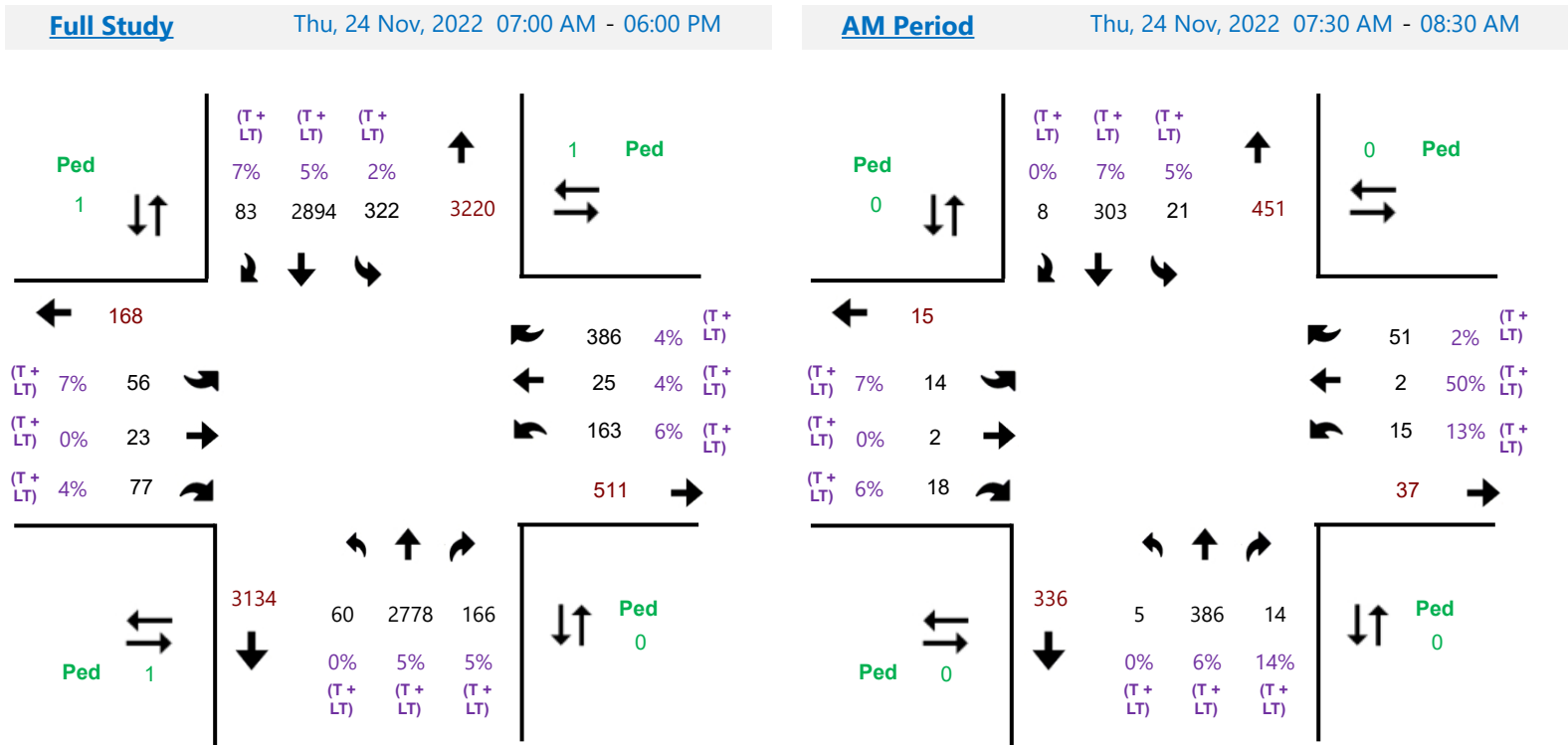


# TES - Traffic Engineering System

## Turning Movement Total Count and Peak Summary Report

**Description:** HWY 58 @ BARRICK RD  
**Region:** CENTRAL  
**LHRS\_Offset:** 32700\_0136  
**Count Date:** Thursday, 24 November, 2022

**Hwy #:** HWY 58  
**Int. Type:** Cross



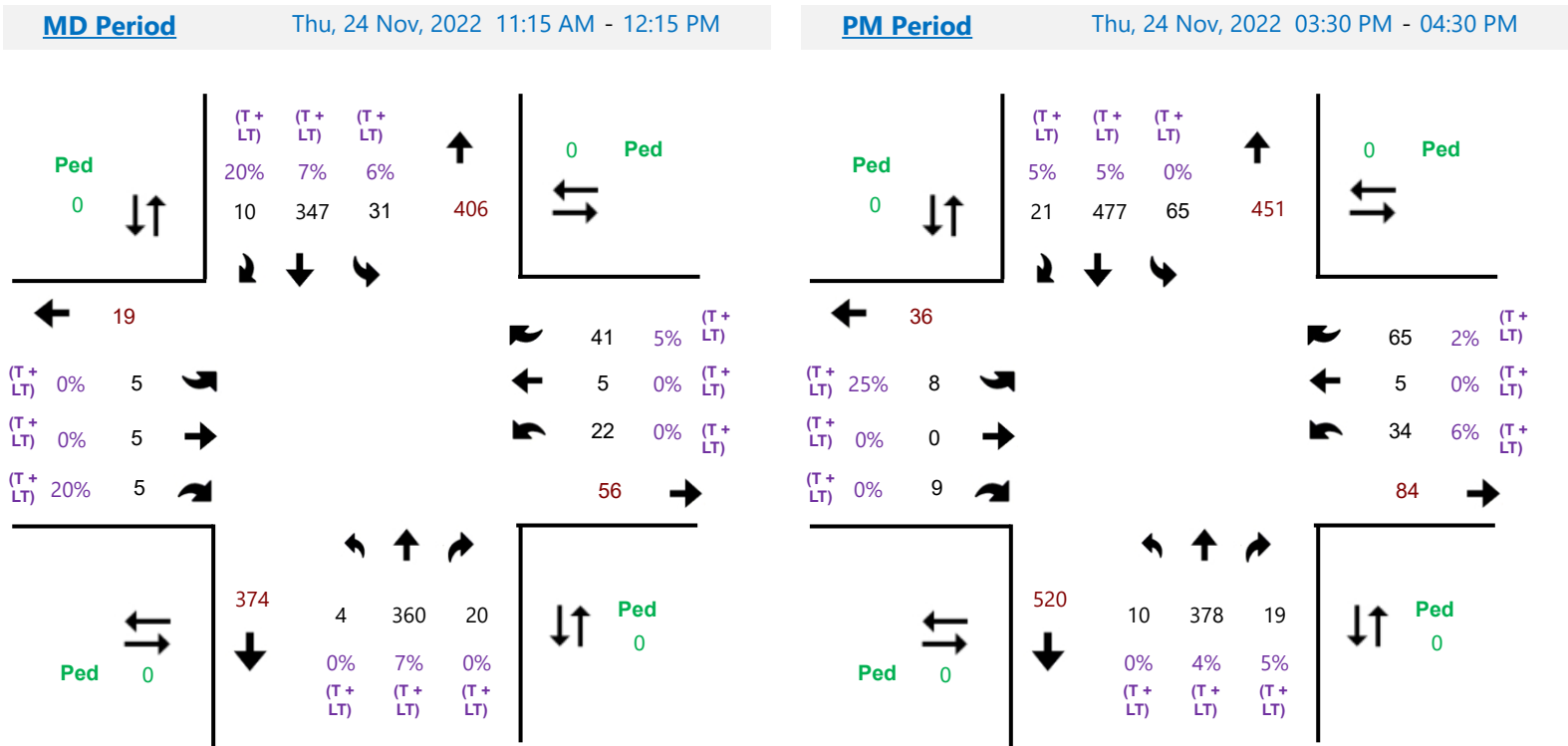




## TES - Traffic Engineering System Turning Movement Total Count and Peak Summary Report

**Description:** HWY 58 @ BARRICK RD  
**Region:** CENTRAL  
**LHRS\_Offset:** 32700\_0136  
**Count Date:** Thursday, 24 November, 2022

**Hwy #:** HWY 58  
**Int. Type:** Cross





# TES - Traffic Engineering System

## Turning Movement Total Count and Peak Summary Report

**Description:** HWY 58 @ WINDSOR TERR

**Region:** CENTRAL

**Hwy #:** HWY 58

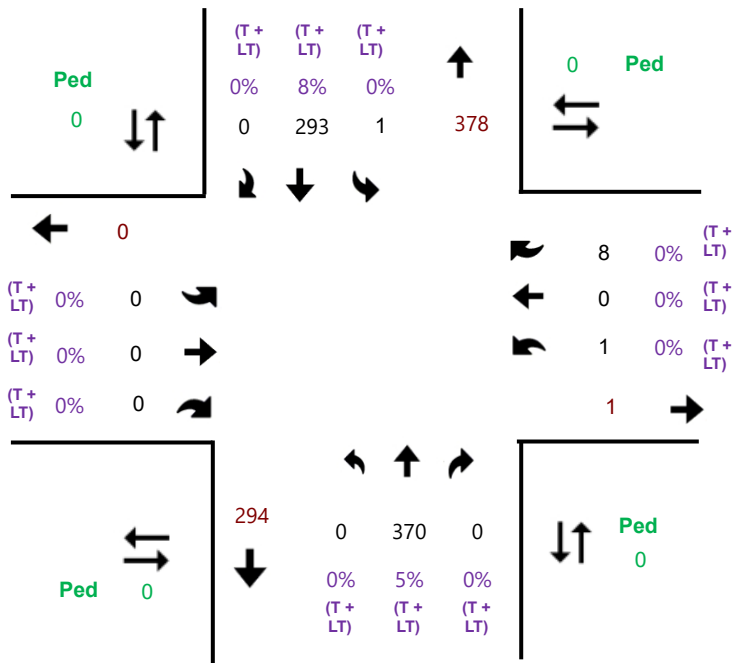
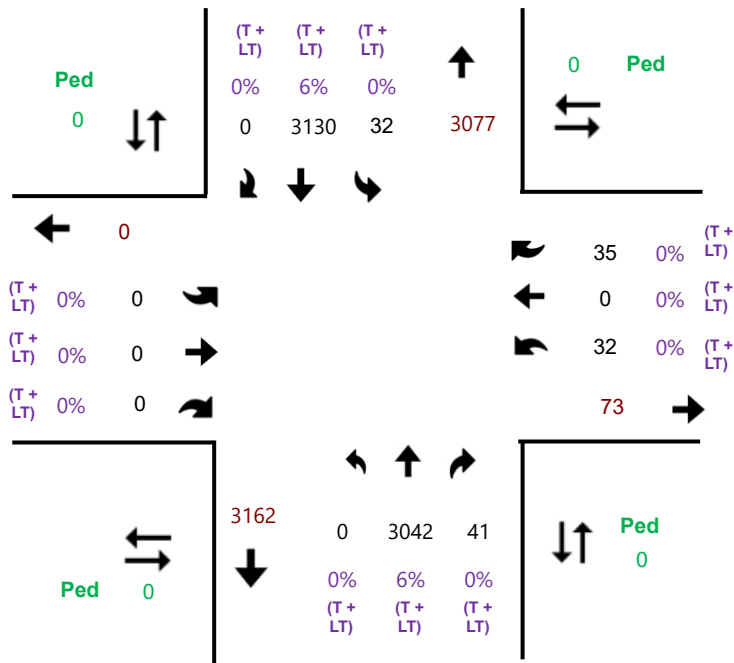
**LHRS\_Offset:** 32700\_0166

**Int. Type:**

**Count Date:** Tuesday, 26 July, 2022

**Full Study** Tue, 26 Jul, 2022 07:00 AM - 06:00 PM

**AM Period** Tue, 26 Jul, 2022 07:45 AM - 08:45 AM





# TES - Traffic Engineering System

## Turning Movement Total Count and Peak Summary Report

**Description:** HWY 58 @ WINDSOR TERR  
**Region:** CENTRAL **Hwy #:** HWY 58  
**LHRS\_Offset:** 32700\_0166 **Int. Type:**  
**Count Date:** Tuesday, 26 July, 2022

**MD Period** Tue, 26 Jul, 2022 12:00 PM - 01:00 PM

**PM Period** Tue, 26 Jul, 2022 03:30 PM - 04:30 PM

**MD Period Data:**

Movement	(T+ LT)	(T+ LT)	(T+ LT)	Total	Percentage
Northbound (Ped)	0	0	0	0	0%
Northbound (T+ LT)	0	412	3	415	8%
Northbound Total				415	
Westbound (T+ LT)	0	0	0	0	0%
Westbound (T+ LT)	0	0	0	0	0%
Westbound (T+ LT)	0	0	0	0	0%
Westbound Total				0	
Eastbound (T+ LT)	5	0	0	5	0%
Eastbound (T+ LT)	0	0	0	0	0%
Eastbound (T+ LT)	6	0	0	6	0%
Eastbound Total				11	
Southbound (T+ LT)	0	402	7	409	6%
Southbound (T+ LT)	0	0	0	0	0%
Southbound (T+ LT)	0	0	0	0	0%
Southbound Total				409	

**PM Period Data:**

Movement	(T+ LT)	(T+ LT)	(T+ LT)	Total	Percentage
Northbound (Ped)	0	0	0	0	0%
Northbound (T+ LT)	0	475	5	480	3%
Northbound Total				480	
Westbound (T+ LT)	0	0	0	0	0%
Westbound (T+ LT)	0	0	0	0	0%
Westbound (T+ LT)	0	0	0	0	0%
Westbound Total				0	
Eastbound (T+ LT)	1	0	0	1	0%
Eastbound (T+ LT)	0	0	0	0	0%
Eastbound (T+ LT)	2	0	0	2	0%
Eastbound Total				3	
Southbound (T+ LT)	0	474	11	485	4%
Southbound (T+ LT)	0	0	0	0	0%
Southbound (T+ LT)	0	0	0	0	0%
Southbound Total				485	

# Intersection Volume Count

Time: 7:45 AM to 8:45 AM

N/S Street: Highway 58

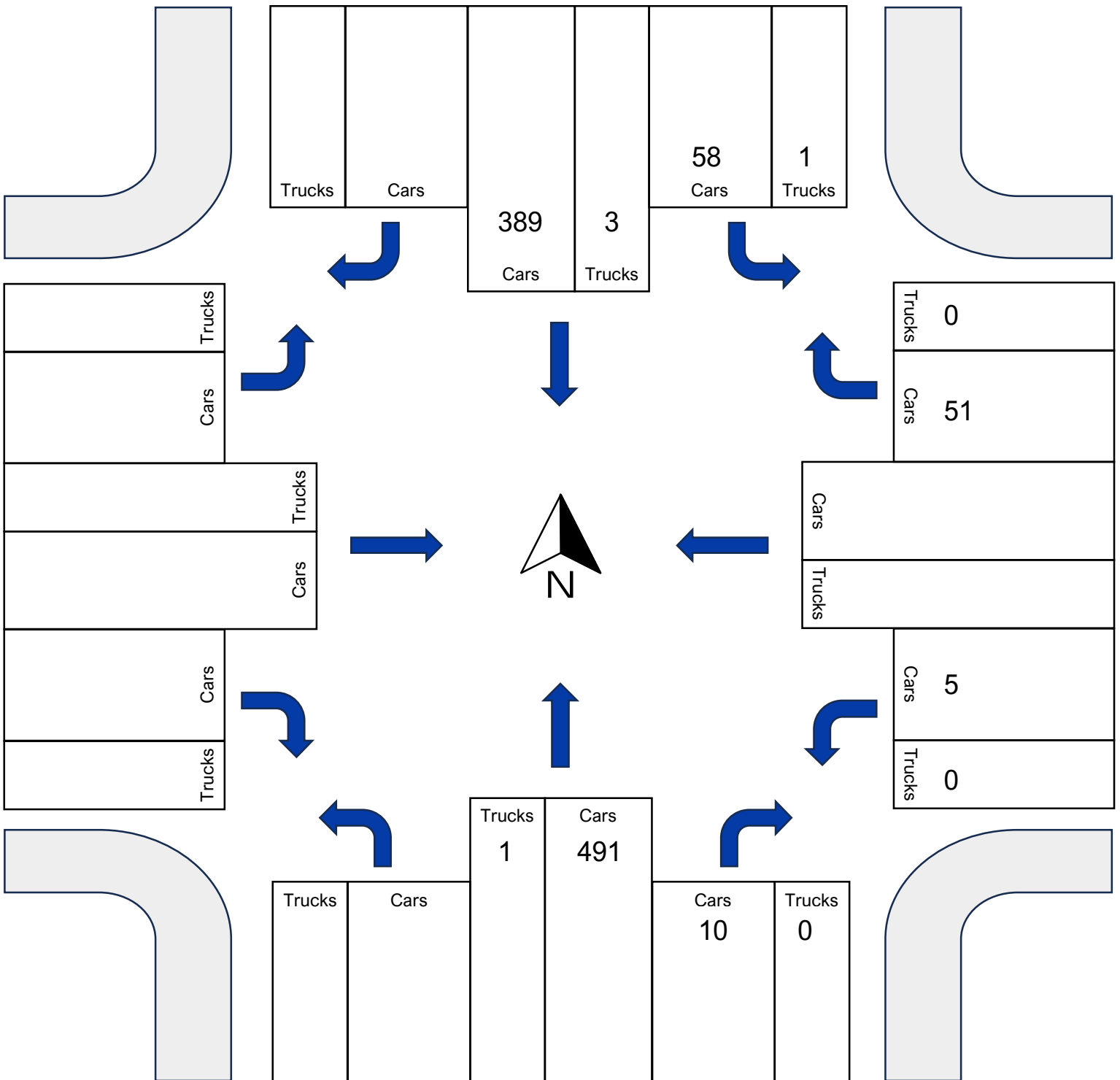
Date: 23-Nov-23

E/W Street: Stonebridge Drive

Weather: \_\_\_\_\_

Intersection Control Type: Unsignalized

Observer: MDM



# Intersection Volume Count

Time: 3:30 PM to 4:30 PM

N/S Street: Highway 58

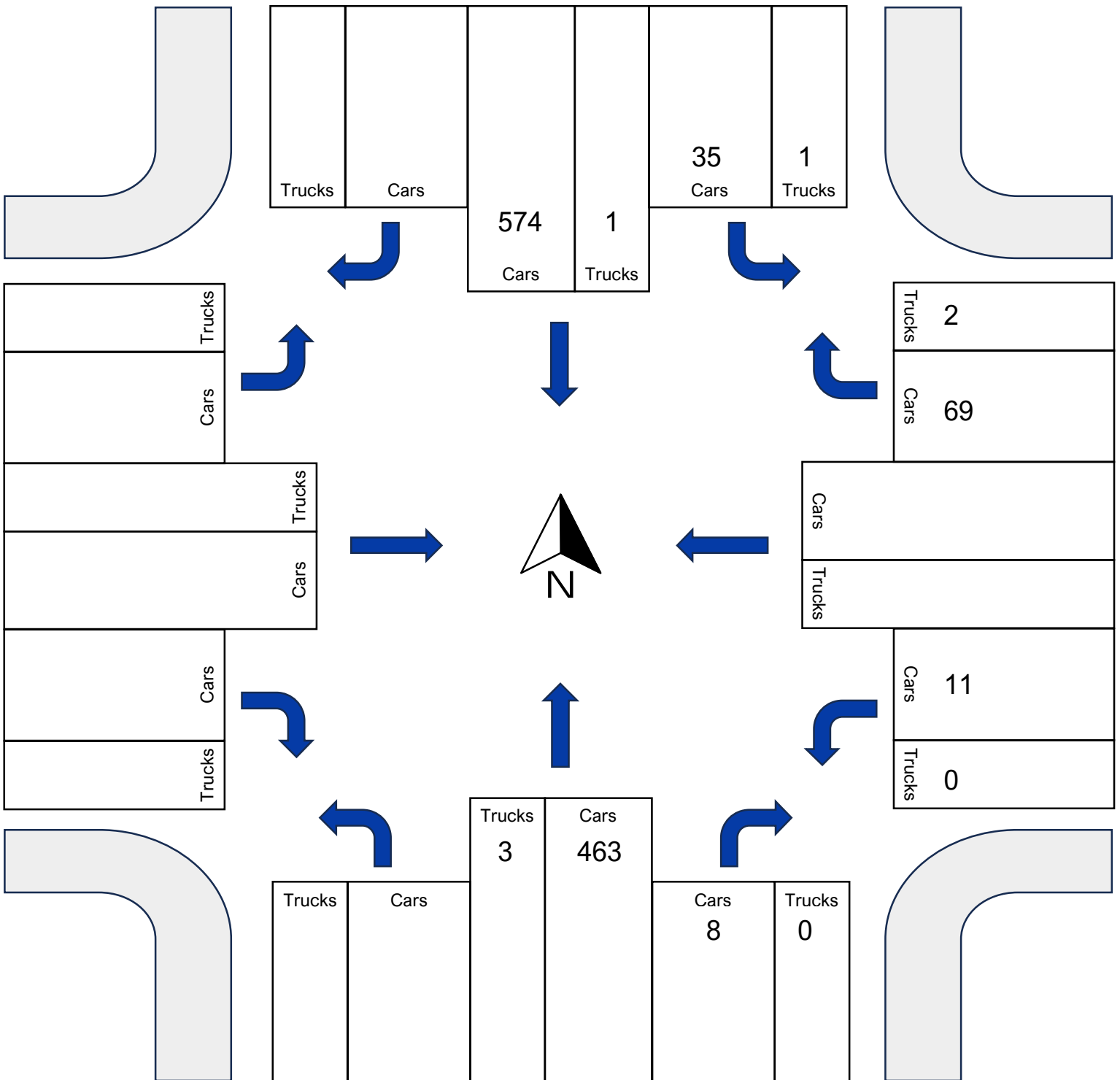
Date: 23-Nov-23

E/W Street: Stonebridge Drive

Weather: \_\_\_\_\_

Intersection Control Type: Unsignalized

Observer: MDM



# Windsor Terrace @ Oxford Blvd

## Morning Peak Diagram

### Specified Period

**From:** 7:00:00

**To:** 9:00:00

### One Hour Peak

**From:** 7:15:00

**To:** 8:15:00

**Municipality:** Port Colborne  
**Site #:** 000000002  
**Intersection:** Windsor Terrace & Oxford Blvd  
**TFR File #:** 2  
**Count date:** 25-Oct-2023

**Weather conditions:**  
Clear/Dry  
**Person(s) who counted:**  
Cam

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Windsor Terrace runs W/E

North Leg Total: 5  
 North Entering: 5  
 North Peds: 0  
 Peds Cross: 0

Heavys	0	0	0
Trucks	0	0	0
Cars	4	1	5
Totals	4	1	



Heavys	0
Trucks	0
Cars	0
Totals	0

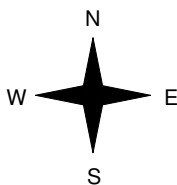
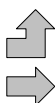
East Leg Total: 14  
 East Entering: 13  
 East Peds: 0  
 Peds Cross: 0

Heavys	Trucks	Cars	Totals
1	0	16	17



Windsor Terrace

Heavys	Trucks	Cars	Totals
0	0	0	0
0	0	0	0
0	0	0	0



Oxford Blvd



Cars	Trucks	Heavys	Totals
0	0	0	0
12	0	1	13
12	0	1	

Windsor Terrace



Cars	Trucks	Heavys	Totals
1	0	0	1

Peds Cross: 0  
 West Peds: 0  
 West Entering: 0  
 West Leg Total: 17

## Comments

# Windsor Terrace @ Oxford Blvd

## Mid-day Peak Diagram

### Specified Period

**From:** 11:00:00

**To:** 14:00:00

### One Hour Peak

**From:** 12:00:00

**To:** 13:00:00

**Municipality:** Port Colborne  
**Site #:** 000000002  
**Intersection:** Windsor Terrace & Oxford Blvd  
**TFR File #:** 2  
**Count date:** 25-Oct-2023

**Weather conditions:**  
Clear/Dry  
**Person(s) who counted:**  
Cam

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Windsor Terrace runs W/E

North Leg Total: 12

North Entering: 8

North Peds: 0

Peds Cross:  $\times$

Heavys	0	0	0
Trucks	0	0	0
Cars	2	6	8
Totals	2	6	



Heavys 0

Trucks 0

Cars 4

Totals 4

East Leg Total: 26

East Entering: 8

East Peds: 0

Peds Cross:  $\times$

Heavys	Trucks	Cars	Totals
0	0	8	8



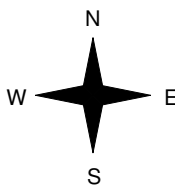
Oxford Blvd



Cars	Trucks	Heavys	Totals
2	0	0	2
6	0	0	6
8	0	0	



Windsor Terrace



Heavys	Trucks	Cars	Totals
0	0	2	2
0	0	12	12
0	0	14	



Windsor Terrace



Cars	Trucks	Heavys	Totals
18	0	0	18

Peds Cross:  $\times$

West Peds: 0

West Entering: 14

West Leg Total: 22

## Comments

# Windsor Terrace @ Oxford Blvd

## Afternoon Peak Diagram

### Specified Period

**From:** 15:00:00

**To:** 18:00:00

### One Hour Peak

**From:** 16:45:00

**To:** 17:45:00

**Municipality:** Port Colborne  
**Site #:** 000000002  
**Intersection:** Windsor Terrace & Oxford Blvd  
**TFR File #:** 2  
**Count date:** 25-Oct-2023

**Weather conditions:**  
Clear/Dry  
**Person(s) who counted:**  
Cam

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Windsor Terrace runs W/E

North Leg Total: 11

North Entering: 3

North Peds: 0

Peds Cross:  $\times$

Heavys	0	0	0
Trucks	0	0	0
Cars	1	2	3
Totals	1	2	



Heavys 0

Trucks 0

Cars 8

Totals 8

East Leg Total: 21

East Entering: 10

East Peds: 1

Peds Cross:  $\times$

Heavys	Trucks	Cars	Totals
0	0	8	8



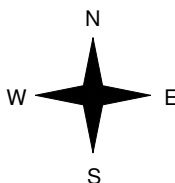
Oxford Blvd



Cars	Trucks	Heavys	Totals
3	0	0	3
7	0	0	7
10	0	0	



Windsor Terrace



Heavys	Trucks	Cars	Totals
0	0	5	5
0	0	9	9
0	0	14	



Windsor Terrace



Cars	Trucks	Heavys	Totals
11	0	0	11

Peds Cross:  $\times$

West Peds: 0

West Entering: 14

West Leg Total: 22

## Comments



# Windsor Terrace @ Oxford Blvd

## Total Count Diagram

**Municipality:** Port Colborne  
**Site #:** 000000002  
**Intersection:** Windsor Terrace & Oxford Blvd  
**TFR File #:** 2  
**Count date:** 25-Oct-2023

**Weather conditions:**  
 Clear/Dry  
**Person(s) who counted:**  
 Cam

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Windsor Terrace runs W/E

North Leg Total: 49  
 North Entering: 26  
 North Peds: 3  
 Peds Cross:  $\times$

Heavys	0	0	0
Trucks	1	0	1
Cars	11	14	25
Totals	12	14	



Heavys	0
Trucks	0
Cars	23
Totals	23

East Leg Total: 147  
 East Entering: 74  
 East Peds: 8  
 Peds Cross:  $\times$

Heavys	Trucks	Cars	Totals
3	2	69	74



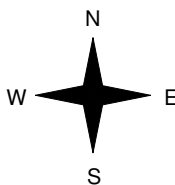
Oxford Blvd



Cars	Trucks	Heavys	Totals
12	0	0	12
58	1	3	62
<hr/>			
70	1	3	



Windsor Terrace



Heavys	Trucks	Cars	Totals
0	0	11	11
2	1	56	59



Windsor Terrace



2	1	67
---	---	----

Cars	Trucks	Heavys	Totals
70	1	2	73

Peds Cross:  $\times$   
 West Peds: 0  
 West Entering: 70  
 West Leg Total: 144

### Comments












## **APPENDIX B**

### Synchro Output Data for Existing Conditions (2023)














100 Oxford Boulevard TIS  
 1: Highway 58 & Stonebridge Dr

2023 Existing AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	51	492	10	59	392
Future Volume (Veh/h)	5	51	492	10	59	392
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	55	535	11	64	426
<b>Pedestrians</b>						
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	1089	535			546	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1089	535			546	
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	90			94	
cM capacity (veh/h)	224	545			1023	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	60	535	11	64	426	
Volume Left	5	0	0	64	0	
Volume Right	55	0	11	0	0	
cSH	487	1700	1700	1023	1700	
Volume to Capacity	0.12	0.31	0.01	0.06	0.25	
Queue Length 95th (m)	3.3	0.0	0.0	1.6	0.0	
Control Delay (s)	13.4	0.0	0.0	8.8	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.4	0.0		1.1		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			1.2			
Intersection Capacity Utilization			55.4%	ICU Level of Service	B	
Analysis Period (min)	15					



















100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter

2023 Existing AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	16	486	0	1	396
Future Volume (Veh/h)	1	16	486	0	1	396
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	17	528	0	1	430
<b>Pedestrians</b>						
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	960	528			528	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	960	528			528	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			100	
cM capacity (veh/h)	284	550			1039	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	18	528	0	1	430	
Volume Left	1	0	0	1	0	
Volume Right	17	0	0	0	0	
cSH	523	1700	1700	1039	1700	
Volume to Capacity	0.03	0.31	0.04	0.00	0.25	
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	
Control Delay (s)	12.1	0.0	0.0	8.5	0.0	
Lane LOS	B			A		
Approach Delay (s)	12.1	0.0		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			44.4%		ICU Level of Service	A
Analysis Period (min)			15			

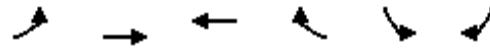
100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2023 Existing AM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	2	18	15	2	52	5	420	14	21	368	8
Future Volume (Veh/h)	14	2	18	15	2	52	5	420	14	21	368	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	2	20	16	2	57	5	457	15	23	400	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL				None
Median storage veh								2				
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	747	932	204	742	930	236	409			472		
vC1, stage 1 conf vol	450	450		474	474							
vC2, stage 2 conf vol	296	482		267	455							
vCu, unblocked vol	747	932	204	742	930	236	409			472		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	98	97	100	93	100			98		
cM capacity (veh/h)	462	436	802	476	443	766	1146			1086		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	37	75	5	305	167	23	267	142				
Volume Left	15	16	5	0	0	23	0	0				
Volume Right	20	57	0	0	15	0	0	9				
cSH	597	666	1146	1700	1700	1086	1700	1700				
Volume to Capacity	0.06	0.11	0.00	0.18	0.10	0.02	0.16	0.08				
Queue Length 95th (m)	1.6	3.0	0.1	0.0	0.0	0.5	0.0	0.0				
Control Delay (s)	11.4	11.1	8.2	0.0	0.0	8.4	0.0	0.0				
Lane LOS	B	B	A			A						
Approach Delay (s)	11.4	11.1	0.1			0.4						
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			37.2%		ICU Level of Service					A		
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
4: Windsor Ter & Oxford Blvd












2023 Existing AM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	13	0	1	4
Future Volume (Veh/h)	0	0	13	0	1	4
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	0	14	0	1	4
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	14				14	14
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	14				14	14
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1604				1005	1066
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	0	14	5			
Volume Left	0	0	1			
Volume Right	0	0	4			
cSH	1700	1700	1053			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.1			
Control Delay (s)	0.0	0.0	8.4			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization		20.0%		ICU Level of Service		A
Analysis Period (min)			15			












100 Oxford Boulevard TIS  
 1: Highway 58 & Stonebridge Dr

2023 Existing PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	71	466	8	36	575
Future Volume (Veh/h)	11	71	466	8	36	575
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	77	507	9	39	625
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	1210	507			516	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1210	507			516	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	86			96	
cM capacity (veh/h)	194	566			1050	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	89	507	9	39	625	
Volume Left	12	0	0	39	0	
Volume Right	77	0	9	0	0	
cSH	450	1700	1700	1050	1700	
Volume to Capacity	0.20	0.30	0.01	0.04	0.37	
Queue Length 95th (m)	5.8	0.0	0.0	0.9	0.0	
Control Delay (s)	15.0	0.0	0.0	8.6	0.0	
Lane LOS	B			A		
Approach Delay (s)	15.0	0.0		0.5		
Approach LOS	B					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			51.6%	ICU Level of Service	A	
Analysis Period (min)			15			

100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter



















2023 Existing PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	6	468	11	5	581
Future Volume (Veh/h)	2	6	468	11	5	581
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	509	12	5	632
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	1151	509			521	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1151	509			521	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			100	
cM capacity (veh/h)	218	564			1045	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	9	509	12	5	632	
Volume Left	2	0	0	5	0	
Volume Right	7	0	12	0	0	
cSH	417	1700	1700	1045	1700	
Volume to Capacity	0.02	0.30	0.01	0.00	0.37	
Queue Length 95th (m)	0.5	0.0	0.0	0.1	0.0	
Control Delay (s)	13.8	0.0	0.0	8.5	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.8	0.0		0.1		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			49.9%		ICU Level of Service	A
Analysis Period (min)			15			



100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2023 Existing PM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	0	9	35	5	66	10	405	19	66	496	21
Future Volume (Veh/h)	8	0	9	35	5	66	10	405	19	66	496	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	0	10	38	5	72	11	440	21	72	539	23
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLT				None
Median storage veh								2				
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1011	1178	281	896	1178	230	562			461		
vC1, stage 1 conf vol	694	694		472	472							
vC2, stage 2 conf vol	316	483		424	706							
vCu, unblocked vol	1011	1178	281	896	1178	230	562			461		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	91	99	91	99			93		
cM capacity (veh/h)	328	342	716	415	349	772	1005			1096		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	19	115	11	293	168	72	359	203				
Volume Left	9	38	11	0	0	72	0	0				
Volume Right	10	72	0	0	21	0	0	23				
cSH	459	577	1005	1700	1700	1096	1700	1700				
Volume to Capacity	0.04	0.20	0.01	0.17	0.10	0.07	0.21	0.12				
Queue Length 95th (m)	1.0	5.9	0.3	0.0	0.0	1.7	0.0	0.0				
Control Delay (s)	13.2	12.8	8.6	0.0	0.0	8.5	0.0	0.0				
Lane LOS	B	B	A			A						
Approach Delay (s)	13.2	12.8	0.2			1.0						
Approach LOS	B	B										
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization			46.7%		ICU Level of Service					A		
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
4: Windsor Ter & Oxford Blvd

2023 Existing PM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	9	7	3	2	1
Future Volume (Veh/h)	5	9	7	3	2	1
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)	5	10	8	3	2	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	11				30	10
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	11				30	10
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1608				982	1072
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	15	11	3			
Volume Left	5	0	2			
Volume Right	0	3	1			
cSH	1608	1700	1010			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.1	0.0	0.1			
Control Delay (s)	2.4	0.0	8.6			
Lane LOS	A		A			
Approach Delay (s)	2.4	0.0	8.6			
Approach LOS			A			
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization		22.0%		ICU Level of Service		A
Analysis Period (min)			15			












## **APPENDIX C**

### **Synchro Output Data for Background Conditions 2025, 2030 & 2035**














100 Oxford Boulevard TIS  
 1: Highway 58 & Stonebridge Dr

2025 Future Background AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	53	512	10	61	408
Future Volume (Veh/h)	5	53	512	10	61	408
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	58	557	11	66	443
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	1132	557			568	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1132	557			568	
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	89			93	
cM capacity (veh/h)	210	530			1004	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	63	557	11	66	443	
Volume Left	5	0	0	66	0	
Volume Right	58	0	11	0	0	
cSH	473	1700	1700	1004	1700	
Volume to Capacity	0.13	0.33	0.01	0.07	0.26	
Queue Length 95th (m)	3.7	0.0	0.0	1.7	0.0	
Control Delay (s)	13.8	0.0	0.0	8.8	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.8	0.0		1.1		
Approach LOS	B					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			56.8%		ICU Level of Service	B
Analysis Period (min)			15			



















100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter

2025 Future Background AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	17	506	0	1	412
Future Volume (Veh/h)	1	17	506	0	1	412
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	18	550	0	1	448
<b>Pedestrians</b>						
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	1000	550			550	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1000	550			550	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			100	
cM capacity (veh/h)	269	535			1020	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	19	550	0	1	448	
Volume Left	1	0	0	1	0	
Volume Right	18	0	0	0	0	
cSH	508	1700	1700	1020	1700	
Volume to Capacity	0.04	0.32	0.01	0.00	0.26	
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	
Control Delay (s)	12.4	0.0	0.0	8.5	0.0	
Lane LOS	B			A		
Approach Delay (s)	12.4	0.0		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			45.6%		ICU Level of Service	A
Analysis Period (min)			15			

100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2025 Future Background AM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	2	19	16	2	54	5	437	15	22	383	8
Future Volume (Veh/h)	15	2	19	16	2	54	5	437	15	22	383	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	2	21	17	2	59	5	475	16	24	416	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							TWLTL			None		
Median storage veh							2					
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	776	970	212	771	966	246	425			491		
vC1, stage 1 conf vol	468	468		493	493							
vC2, stage 2 conf vol	308	501		278	473							
vCu, unblocked vol	776	970	212	771	966	246	425			491		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	97	96	100	92	100			98		
cM capacity (veh/h)	448	424	793	463	432	755	1131			1069		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	39	78	5	317	174	24	277	148				
Volume Left	16	17	5	0	0	24	0	0				
Volume Right	21	59	0	0	16	0	0	9				
cSH	583	653	1131	1700	1700	1069	1700	1700				
Volume to Capacity	0.07	0.12	0.00	0.19	0.10	0.02	0.16	0.09				
Queue Length 95th (m)	1.7	3.2	0.1	0.0	0.0	0.6	0.0	0.0				
Control Delay (s)	11.6	11.3	8.2	0.0	0.0	8.4	0.0	0.0				
Lane LOS	B	B	A			A						
Approach Delay (s)	11.6	11.3	0.1			0.5						
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			38.3%		ICU Level of Service				A			
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
4: Windsor Ter & Oxford Blvd












2025 Future Background AM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	14	0	1	4
Future Volume (Veh/h)	0	0	14	0	1	4
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	0	15	0	1	4
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	15				15	15
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	15				15	15
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1603				1004	1065
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	0	15	5			
Volume Left	0	0	1			
Volume Right	0	0	4			
cSH	1700	1700	1052			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.1			
Control Delay (s)	0.0	0.0	8.4			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization		20.0%		ICU Level of Service		A
Analysis Period (min)			15			

100 Oxford Boulevard TIS  
1: Highway 58 & Stonebridge Dr












2025 Future Background PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	74	485	8	37	598
Future Volume (Veh/h)	11	74	485	8	37	598
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	80	527	9	40	650
<b>Pedestrians</b>						
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	1257	527			536	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1257	527			536	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	85			96	
cM capacity (veh/h)	182	551			1032	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	92	527	9	40	650	
Volume Left	12	0	0	40	0	
Volume Right	80	0	9	0	0	
cSH	435	1700	1700	1032	1700	
Volume to Capacity	0.21	0.31	0.01	0.04	0.38	
Queue Length 95th (m)	6.3	0.0	0.0	1.0	0.0	
Control Delay (s)	15.5	0.0	0.0	8.6	0.0	
Lane LOS	C			A		
Approach Delay (s)	15.5	0.0			0.5	
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			1.3			
Intersection Capacity Utilization			53.1%	ICU Level of Service	A	
Analysis Period (min)	15					





















100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter

2025 Future Background PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	6	487	11	5	604
Future Volume (Veh/h)	2	6	487	11	5	604
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	529	12	5	657
<b>Pedestrians</b>						
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	1196	529			541	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1196	529			541	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			100	
cM capacity (veh/h)	205	550			1028	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	9	529	12	5	657	
Volume Left	2	0	0	5	0	
Volume Right	7	0	12	0	0	
cSH	400	1700	1700	1028	1700	
Volume to Capacity	0.02	0.31	0.01	0.00	0.39	
Queue Length 95th (m)	0.6	0.0	0.0	0.1	0.0	
Control Delay (s)	14.2	0.0	0.0	8.5	0.0	
Lane LOS	B			A		
Approach Delay (s)	14.2	0.0		0.1		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			51.2%		ICU Level of Service	A
Analysis Period (min)			15			

100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2025 Future Background PM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	0	9	36	5	69	10	421	20	69	516	22
Future Volume (Veh/h)	8	0	9	36	5	69	10	421	20	69	516	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	0	10	39	5	75	11	458	22	75	561	24
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWTL				None
Median storage veh								2				
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1052	1225	292	932	1226	240	585			480		
vC1, stage 1 conf vol	723	723		491	491							
vC2, stage 2 conf vol	328	502		440	735							
vCu, unblocked vol	1052	1225	292	932	1226	240	585			480		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	90	99	90	99			93		
cM capacity (veh/h)	313	330	704	402	336	761	986			1079		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	19	119	11	305	175	75	374	211				
Volume Left	9	39	11	0	0	75	0	0				
Volume Right	10	75	0	0	22	0	0	24				
cSH	443	565	986	1700	1700	1079	1700	1700				
Volume to Capacity	0.04	0.21	0.01	0.18	0.10	0.07	0.22	0.12				
Queue Length 95th (m)	1.1	6.3	0.3	0.0	0.0	1.8	0.0	0.0				
Control Delay (s)	13.5	13.1	8.7	0.0	0.0	8.6	0.0	0.0				
Lane LOS	B	B	A			A						
Approach Delay (s)	13.5	13.1	0.2			1.0						
Approach LOS	B	B										
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization			47.6%	ICU Level of Service	A							
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
4: Windsor Ter & Oxford Blvd












2025 Future Background PM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	9	7	3	2	1
Future Volume (Veh/h)	5	9	7	3	2	1
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)	5	10	8	3	2	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	11				30	10
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	11				30	10
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1608				982	1072
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	15	11	3			
Volume Left	5	0	2			
Volume Right	0	3	1			
cSH	1608	1700	1010			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.1	0.0	0.1			
Control Delay (s)	2.4	0.0	8.6			
Lane LOS	A		A			
Approach Delay (s)	2.4	0.0	8.6			
Approach LOS			A			
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization		22.0%		ICU Level of Service		A
Analysis Period (min)			15			












100 Oxford Boulevard TIS  
 1: Highway 58 & Stonebridge Dr

2030 Future Background AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	59	565	11	68	450
Future Volume (Veh/h)	6	59	565	11	68	450
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	64	614	12	74	489
<b>Pedestrians</b>						
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	1251	614			626	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1251	614			626	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	87			92	
cM capacity (veh/h)	176	492			956	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	71	614	12	74	489	
Volume Left	7	0	0	74	0	
Volume Right	64	0	12	0	0	
cSH	418	1700	1700	956	1700	
Volume to Capacity	0.17	0.36	0.01	0.08	0.29	
Queue Length 95th (m)	4.8	0.0	0.0	2.0	0.0	
Control Delay (s)	15.4	0.0	0.0	9.1	0.0	
Lane LOS	C			A		
Approach Delay (s)	15.4	0.0		1.2		
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			1.4			
Intersection Capacity Utilization			60.7%	ICU Level of Service	B	
Analysis Period (min)	15					



















100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter

2030 Future Background AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	18	558	0	1	455
Future Volume (Veh/h)	1	18	558	0	1	455
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	20	607	0	1	495
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	1104	607			607	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1104	607			607	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			100	
cM capacity (veh/h)	233	496			971	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	21	607	0	1	495	
Volume Left	1	0	0	1	0	
Volume Right	20	0	0	0	0	
cSH	471	1700	1700	971	1700	
Volume to Capacity	0.04	0.36	0.01	0.00	0.29	
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	
Control Delay (s)	13.0	0.0	0.0	8.7	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.0	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			48.6%		ICU Level of Service	A
Analysis Period (min)			15			

100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2030 Future Background AM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	2	21	17	2	60	6	482	16	24	423	9
Future Volume (Veh/h)	16	2	21	17	2	60	6	482	16	24	423	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	2	23	18	2	65	7	524	17	26	460	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							TWLTL			None		
Median storage veh							2					
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	859	1072	235	852	1068	270	470			541		
vC1, stage 1 conf vol	517	517		546	546							
vC2, stage 2 conf vol	342	555		306	522							
vCu, unblocked vol	859	1072	235	852	1068	270	470			541		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	99	97	96	100	91	99			97		
cM capacity (veh/h)	412	394	767	427	402	727	1088			1024		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	42	85	7	349	192	26	307	163				
Volume Left	17	18	7	0	0	26	0	0				
Volume Right	23	65	0	0	17	0	0	10				
cSH	550	623	1088	1700	1700	1024	1700	1700				
Volume to Capacity	0.08	0.14	0.01	0.21	0.11	0.03	0.18	0.10				
Queue Length 95th (m)	2.0	3.8	0.2	0.0	0.0	0.6	0.0	0.0				
Control Delay (s)	12.1	11.7	8.3	0.0	0.0	8.6	0.0	0.0				
Lane LOS	B	B	A			A						
Approach Delay (s)	12.1	11.7	0.1			0.5						
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			40.6%		ICU Level of Service				A			
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
4: Windsor Ter & Oxford Blvd












2030 Future Background AM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	15	0	1	5
Future Volume (Veh/h)	0	0	15	0	1	5
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	0	16	0	1	5
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	16				16	16
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	16				16	16
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1602				1002	1063
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	0	16	6			
Volume Left	0	0	1			
Volume Right	0	0	5			
cSH	1700	1700	1053			
Volume to Capacity	0.00	0.01	0.01			
Queue Length 95th (m)	0.0	0.0	0.1			
Control Delay (s)	0.0	0.0	8.4			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization		20.0%		ICU Level of Service		A
Analysis Period (min)			15			

100 Oxford Boulevard TIS  
 1: Highway 58 & Stonebridge Dr












2030 Future Background PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	82	535	9	41	660
Future Volume (Veh/h)	13	82	535	9	41	660
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	89	582	10	45	717
<b>Pedestrians</b>						
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	1389	582			592	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1389	582			592	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	83			95	
cM capacity (veh/h)	150	513			984	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	103	582	10	45	717	
Volume Left	14	0	0	45	0	
Volume Right	89	0	10	0	0	
cSH	386	1700	1700	984	1700	
Volume to Capacity	0.27	0.34	0.01	0.05	0.42	
Queue Length 95th (m)	8.5	0.0	0.0	1.1	0.0	
Control Delay (s)	17.7	0.0	0.0	8.8	0.0	
Lane LOS	C			A		
Approach Delay (s)	17.7	0.0			0.5	
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			1.5			
Intersection Capacity Utilization			57.3%		ICU Level of Service	B
Analysis Period (min)	15					





















100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter

2030 Future Background PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	7	538	13	6	667
Future Volume (Veh/h)	2	7	538	13	6	667
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	8	585	14	7	725
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	1324	585			599	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1324	585			599	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			99	
cM capacity (veh/h)	171	511			978	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	10	585	14	7	725	
Volume Left	2	0	0	7	0	
Volume Right	8	0	14	0	0	
cSH	365	1700	1700	978	1700	
Volume to Capacity	0.03	0.34	0.01	0.01	0.43	
Queue Length 95th (m)	0.7	0.0	0.0	0.2	0.0	
Control Delay (s)	15.1	0.0	0.0	8.7	0.0	
Lane LOS	C			A		
Approach Delay (s)	15.1	0.0		0.1		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			54.8%	ICU Level of Service	A	
Analysis Period (min)			15			

100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2030 Future Background PM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	0	10	40	6	76	11	465	22	76	570	24
Future Volume (Veh/h)	9	0	10	40	6	76	11	465	22	76	570	24
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	0	11	43	7	83	12	505	24	83	620	26
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL				None
Median storage veh								2				
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1162	1352	323	1028	1353	264	646			529		
vC1, stage 1 conf vol	799	799		541	541							
vC2, stage 2 conf vol	363	553		487	812							
vCu, unblocked vol	1162	1352	323	1028	1353	264	646			529		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	98	88	98	89	99			92		
cM capacity (veh/h)	276	297	673	366	304	734	935			1034		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	21	133	12	337	192	83	413	233				
Volume Left	10	43	12	0	0	83	0	0				
Volume Right	11	83	0	0	24	0	0	26				
cSH	400	525	935	1700	1700	1034	1700	1700				
Volume to Capacity	0.05	0.25	0.01	0.20	0.11	0.08	0.24	0.14				
Queue Length 95th (m)	1.3	8.0	0.3	0.0	0.0	2.1	0.0	0.0				
Control Delay (s)	14.5	14.2	8.9	0.0	0.0	8.8	0.0	0.0				
Lane LOS	B	B	A			A						
Approach Delay (s)	14.5	14.2	0.2			1.0						
Approach LOS	B	B										
Intersection Summary												
Average Delay			2.1									
Intersection Capacity Utilization			50.1%	ICU Level of Service	A							
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
 4: Windsor Ter & Oxford Blvd












2030 Future Background PM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	10	8	3	2	1
Future Volume (Veh/h)	6	10	8	3	2	1
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)	7	11	9	3	2	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	12				36	10
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	12				36	10
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1607				973	1071
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	18	12	3			
Volume Left	7	0	2			
Volume Right	0	3	1			
cSH	1607	1700	1004			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.1	0.0	0.1			
Control Delay (s)	2.8	0.0	8.6			
Lane LOS	A		A			
Approach Delay (s)	2.8	0.0	8.6			
Approach LOS			A			
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization		23.0%		ICU Level of Service		A
Analysis Period (min)			15			












100 Oxford Boulevard TIS  
 1: Highway 58 & Stonebridge Dr

2035 Future Background AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	65	624	13	75	497
Future Volume (Veh/h)	6	65	624	13	75	497
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	71	678	14	82	540
<b>Pedestrians</b>						
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	1382	678			692	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1382	678			692	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	84			91	
cM capacity (veh/h)	144	452			903	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	78	678	14	82	540	
Volume Left	7	0	0	82	0	
Volume Right	71	0	14	0	0	
cSH	379	1700	1700	903	1700	
Volume to Capacity	0.21	0.40	0.01	0.09	0.32	
Queue Length 95th (m)	6.1	0.0	0.0	2.4	0.0	
Control Delay (s)	16.9	0.0	0.0	9.4	0.0	
Lane LOS	C			A		
Approach Delay (s)	16.9	0.0			1.2	
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			1.5			
Intersection Capacity Utilization			64.9%	ICU Level of Service	C	
Analysis Period (min)	15					



















100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter

2035 Future Background AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	20	616	0	1	502
Future Volume (Veh/h)	1	20	616	0	1	502
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	22	670	0	1	546
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	1218	670			670	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1218	670			670	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	95			100	
cM capacity (veh/h)	199	457			920	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	23	670	0	1	546	
Volume Left	1	0	0	1	0	
Volume Right	22	0	0	0	0	
cSH	433	1700	1700	920	1700	
Volume to Capacity	0.05	0.39	0.01	0.00	0.32	
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	
Control Delay (s)	13.8	0.0	0.0	8.9	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.8	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			51.9%		ICU Level of Service	A
Analysis Period (min)			15			

100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2035 Future Background AM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	3	23	19	3	66	6	533	18	27	467	10
Future Volume (Veh/h)	18	3	23	19	3	66	6	533	18	27	467	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	3	25	21	3	72	7	579	20	29	508	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							TWLTL			None		
Median storage veh							2					
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	948	1184	260	942	1180	300	519			599		
vC1, stage 1 conf vol	572	572		603	603							
vC2, stage 2 conf vol	377	613		338	577							
vCu, unblocked vol	948	1184	260	942	1180	300	519			599		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	99	97	95	99	90	99			97		
cM capacity (veh/h)	376	363	739	392	372	697	1043			974		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	48	96	7	386	213	29	339	180				
Volume Left	20	21	7	0	0	29	0	0				
Volume Right	25	72	0	0	20	0	0	11				
cSH	504	582	1043	1700	1700	974	1700	1700				
Volume to Capacity	0.10	0.16	0.01	0.23	0.13	0.03	0.20	0.11				
Queue Length 95th (m)	2.5	4.7	0.2	0.0	0.0	0.7	0.0	0.0				
Control Delay (s)	12.9	12.4	8.5	0.0	0.0	8.8	0.0	0.0				
Lane LOS	B	B	A			A						
Approach Delay (s)	12.9	12.4	0.1			0.5						
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			44.0%		ICU Level of Service				A			
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
4: Windsor Ter & Oxford Blvd












2035 Future Background AM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	16	0	1	5
Future Volume (Veh/h)	0	0	16	0	1	5
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	0	17	0	1	5
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	17				17	17
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	17				17	17
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1600				1001	1062
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	0	17	6			
Volume Left	0	0	1			
Volume Right	0	0	5			
cSH	1700	1700	1051			
Volume to Capacity	0.00	0.01	0.01			
Queue Length 95th (m)	0.0	0.0	0.1			
Control Delay (s)	0.0	0.0	8.4			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization		20.0%		ICU Level of Service		A
Analysis Period (min)			15			

100 Oxford Boulevard TIS  
 1: Highway 58 & Stonebridge Dr












2035 Future Background PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	90	591	10	46	729
Future Volume (Veh/h)	14	90	591	10	46	729
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	98	642	11	50	792
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	1534	642			653	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1534	642			653	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	79			95	
cM capacity (veh/h)	121	474			934	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	113	642	11	50	792	
Volume Left	15	0	0	50	0	
Volume Right	98	0	11	0	0	
cSH	342	1700	1700	934	1700	
Volume to Capacity	0.33	0.38	0.01	0.05	0.47	
Queue Length 95th (m)	11.3	0.0	0.0	1.4	0.0	
Control Delay (s)	20.6	0.0	0.0	9.1	0.0	
Lane LOS	C			A		
Approach Delay (s)	20.6	0.0		0.5		
Approach LOS	C					
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			61.9%		ICU Level of Service	B
Analysis Period (min)			15			





















100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter

2035 Future Background PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	8	594	14	6	737
Future Volume (Veh/h)	3	8	594	14	6	737
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	9	646	15	7	801
<b>Pedestrians</b>						
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	1461	646			661	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1461	646			661	
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	98			99	
cM capacity (veh/h)	141	472			927	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	646	15	7	801	
Volume Left	3	0	0	7	0	
Volume Right	9	0	15	0	0	
cSH	297	1700	1700	927	1700	
Volume to Capacity	0.04	0.38	0.01	0.01	0.47	
Queue Length 95th (m)	1.0	0.0	0.0	0.2	0.0	
Control Delay (s)	17.6	0.0	0.0	8.9	0.0	
Lane LOS	C			A		
Approach Delay (s)	17.6	0.0		0.1		
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			58.8%		ICU Level of Service B	
Analysis Period (min)			15			

100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2035 Future Background PM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	0	11	44	6	84	13	514	24	84	629	27
Future Volume (Veh/h)	10	0	11	44	6	84	13	514	24	84	629	27
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	0	12	48	7	91	14	559	26	91	684	29
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							TWLTL			None		
Median storage veh							2					
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1282	1494	356	1136	1495	292	713			585		
vC1, stage 1 conf vol	880	880		600	600							
vC2, stage 2 conf vol	402	613		536	895							
vCu, unblocked vol	1282	1494	356	1136	1495	292	713			585		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	100	98	85	97	87	98			91		
cM capacity (veh/h)	241	265	640	331	271	704	883			986		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	23	146	14	373	212	91	456	257				
Volume Left	11	48	14	0	0	91	0	0				
Volume Right	12	91	0	0	26	0	0	29				
cSH	358	486	883	1700	1700	986	1700	1700				
Volume to Capacity	0.06	0.30	0.02	0.22	0.12	0.09	0.27	0.15				
Queue Length 95th (m)	1.6	10.0	0.4	0.0	0.0	2.4	0.0	0.0				
Control Delay (s)	15.8	15.5	9.1	0.0	0.0	9.0	0.0	0.0				
Lane LOS	C	C	A			A						
Approach Delay (s)	15.8	15.5	0.2			1.0						
Approach LOS	C	C										
Intersection Summary												
Average Delay			2.3									
Intersection Capacity Utilization			52.9%		ICU Level of Service				A			
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
4: Windsor Ter & Oxford Blvd

2035 Future Background PM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	11	9	4	3	1
Future Volume (Veh/h)	6	11	9	4	3	1
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)	7	12	10	4	3	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	14				38	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	14				38	12
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1604				970	1069
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	19	14	4			
Volume Left	7	0	3			
Volume Right	0	4	1			
cSH	1604	1700	993			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.1	0.0	0.1			
Control Delay (s)	2.7	0.0	8.6			
Lane LOS	A		A			
Approach Delay (s)	2.7	0.0	8.6			
Approach LOS			A			
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization		23.1%		ICU Level of Service		A
Analysis Period (min)			15			

**APPENDIX D**  
TTS Survey



Thu Nov 09 2023 09:36:03 GMT-0500 (Eastern Standard Time) - Run Time: 1782ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of household - pd\_hhld

Column: Planning district of employment - pd\_emp

RowG:(59)

ColG:

TblG:

Filters:

No Filters

Trip 2016

Table:

	Not employed	PD 8 of Toronto	Oakville	Hamilton	Grimsby	Lincoln	Pelham	Niagara-on-the-Lake	St. Catharines	Thorold	Niagara Falls	Welland	Port Colborne	Fort Erie	Wainfleet	Haldimand-Norfolk	No Usual Place		
1	15379	28	33	251	356	639	181	1308	2793	464	1276	3399	8369	1212	203	346	1461	20858	
		0%	0%	1%	2%	3%	1%	6%	13%	2%	6%	16%	40%	6%	1%	2%		100%	

Routes

North Hwy 58	54%
South Hwy 58	46%
	<hr/>
	100%












## **APPENDIX E**

### **Synchro Output Data for Future Total Conditions 2025, 2030 & 2035**














100 Oxford Boulevard TIS  
 1: Highway 58 & Stonebridge Dr

2025 Future Total AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	53	574	10	61	428
Future Volume (Veh/h)	5	53	574	10	61	428
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	58	624	11	66	465
<b>Pedestrians</b>						
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	1221	624			635	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1221	624			635	
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	88			93	
cM capacity (veh/h)	185	485			948	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	63	624	11	66	465	
Volume Left	5	0	0	66	0	
Volume Right	58	0	11	0	0	
cSH	430	1700	1700	948	1700	
Volume to Capacity	0.15	0.37	0.01	0.07	0.27	
Queue Length 95th (m)	4.1	0.0	0.0	1.8	0.0	
Control Delay (s)	14.8	0.0	0.0	9.1	0.0	
Lane LOS	B			A		
Approach Delay (s)	14.8	0.0			1.1	
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			1.2			
Intersection Capacity Utilization			60.3%	ICU Level of Service	B	
Analysis Period (min)	15					

100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter




















2025 Future Total AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	53	79	506	17	21	412
Future Volume (Veh/h)	53	79	506	17	21	412
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	86	550	18	23	448
<b>Pedestrians</b>						
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	1044	550			568	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1044	550			568	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	77	84			98	
cM capacity (veh/h)	248	535			1004	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	144	550	18	23	448	
Volume Left	58	0	0	23	0	
Volume Right	86	0	18	0	0	
cSH	365	1700	1700	1004	1700	
Volume to Capacity	0.39	0.32	0.01	0.02	0.26	
Queue Length 95th (m)	14.7	0.0	0.0	0.6	0.0	
Control Delay (s)	21.2	0.0	0.0	8.7	0.0	
Lane LOS	C			A		
Approach Delay (s)	21.2	0.0			0.4	
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.7			
Intersection Capacity Utilization			50.7%	ICU Level of Service	A	
Analysis Period (min)	15					



100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2025 Future Total AM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	2	19	16	2	54	5	454	15	22	435	8
Future Volume (Veh/h)	15	2	19	16	2	54	5	454	15	22	435	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	2	21	17	2	59	5	493	16	24	473	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							TWLTL			None		
Median storage veh							2					
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	842	1044	241	818	1041	254	482			509		
vC1, stage 1 conf vol	526	526		511	511							
vC2, stage 2 conf vol	316	519		306	530							
vCu, unblocked vol	842	1044	241	818	1041	254	482			509		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	97	96	100	92	100			98		
cM capacity (veh/h)	420	404	760	446	411	745	1077			1052		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	39	78	5	329	180	24	315	167				
Volume Left	16	17	5	0	0	24	0	0				
Volume Right	21	59	0	0	16	0	0	9				
cSH	552	638	1077	1700	1700	1052	1700	1700				
Volume to Capacity	0.07	0.12	0.00	0.19	0.11	0.02	0.19	0.10				
Queue Length 95th (m)	1.8	3.3	0.1	0.0	0.0	0.6	0.0	0.0				
Control Delay (s)	12.0	11.4	8.4	0.0	0.0	8.5	0.0	0.0				
Lane LOS	B	B	A			A						
Approach Delay (s)	12.0	11.4	0.1			0.4						
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			38.3%		ICU Level of Service				A			
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
4: Windsor Ter & Oxford Blvd












2025 Future Total AM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	0	14	0	1	118
Future Volume (Veh/h)	37	0	14	0	1	118
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)	40	0	15	0	1	128
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	15				95	15
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	15				95	15
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				100	88
cM capacity (veh/h)	1603				882	1065
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	40	15	129			
Volume Left	40	0	1			
Volume Right	0	0	128			
cSH	1603	1700	1063			
Volume to Capacity	0.02	0.01	0.12			
Queue Length 95th (m)	0.6	0.0	3.3			
Control Delay (s)	7.3	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	7.3	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			7.8			
Intersection Capacity Utilization		30.2%		ICU Level of Service		A
Analysis Period (min)			15			












100 Oxford Boulevard TIS  
1: Highway 58 & Stonebridge Dr

2025 Future Total PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	74	526	8	37	662
Future Volume (Veh/h)	11	74	526	8	37	662
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	80	572	9	40	720
<b>Pedestrians</b>						
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	1372	572			581	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1372	572			581	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	85			96	
cM capacity (veh/h)	154	520			993	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	92	572	9	40	720	
Volume Left	12	0	0	40	0	
Volume Right	80	0	9	0	0	
cSH	397	1700	1700	993	1700	
Volume to Capacity	0.23	0.34	0.01	0.04	0.42	
Queue Length 95th (m)	7.1	0.0	0.0	1.0	0.0	
Control Delay (s)	16.8	0.0	0.0	8.8	0.0	
Lane LOS	C			A		
Approach Delay (s)	16.8	0.0	0.5			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			1.3			
Intersection Capacity Utilization			56.8%	ICU Level of Service	B	
Analysis Period (min)			15			



















100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter

2025 Future Total PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	37	47	487	66	69	604
Future Volume (Veh/h)	37	47	487	66	69	604
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	51	529	72	75	657
<b>Pedestrians</b>						
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	1336	529			601	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1336	529			601	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	74	91			92	
cM capacity (veh/h)	156	550			976	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	91	529	72	75	657	
Volume Left	40	0	0	75	0	
Volume Right	51	0	72	0	0	
cSH	261	1700	1700	976	1700	
Volume to Capacity	0.35	0.31	0.04	0.08	0.39	
Queue Length 95th (m)	12.0	0.0	0.0	2.0	0.0	
Control Delay (s)	26.0	0.0	0.0	9.0	0.0	
Lane LOS	D			A		
Approach Delay (s)	26.0	0.0		0.9		
Approach LOS	D					
<b>Intersection Summary</b>						
Average Delay			2.1			
Intersection Capacity Utilization			57.3%	ICU Level of Service	B	
Analysis Period (min)	15					

100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2025 Future Total PM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	0	9	36	5	69	10	476	20	69	551	22
Future Volume (Veh/h)	8	0	9	36	5	69	10	476	20	69	551	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	0	10	39	5	75	11	517	22	75	599	24
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWTL				None
Median storage veh								2				
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1119	1322	312	1010	1323	270	623			539		
vC1, stage 1 conf vol	761	761		550	550							
vC2, stage 2 conf vol	358	561		460	773							
vCu, unblocked vol	1119	1322	312	1010	1323	270	623			539		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	90	98	90	99			93		
cM capacity (veh/h)	294	308	684	375	316	728	954			1025		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	19	119	11	345	194	75	399	224				
Volume Left	9	39	11	0	0	75	0	0				
Volume Right	10	75	0	0	22	0	0	24				
cSH	420	534	954	1700	1700	1025	1700	1700				
Volume to Capacity	0.05	0.22	0.01	0.20	0.11	0.07	0.23	0.13				
Queue Length 95th (m)	1.1	6.8	0.3	0.0	0.0	1.9	0.0	0.0				
Control Delay (s)	14.0	13.7	8.8	0.0	0.0	8.8	0.0	0.0				
Lane LOS	B	B	A			A						
Approach Delay (s)	14.0	13.7	0.2			0.9						
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization			48.6%		ICU Level of Service				A			
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
4: Windsor Ter & Oxford Blvd












2025 Future Total PM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	124	9	7	3	2	77
Future Volume (Veh/h)	124	9	7	3	2	77
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)	135	10	8	3	2	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	11				290	10
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	11				290	10
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	92				100	92
cM capacity (veh/h)	1608				642	1072
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	145	11	86			
Volume Left	135	0	2			
Volume Right	0	3	84			
cSH	1608	1700	1056			
Volume to Capacity	0.08	0.01	0.08			
Queue Length 95th (m)	2.2	0.0	2.1			
Control Delay (s)	7.0	0.0	8.7			
Lane LOS	A		A			
Approach Delay (s)	7.0	0.0	8.7			
Approach LOS			A			
Intersection Summary						
Average Delay			7.3			
Intersection Capacity Utilization		33.3%		ICU Level of Service		A
Analysis Period (min)			15			












100 Oxford Boulevard TIS  
 1: Highway 58 & Stonebridge Dr

2030 Future Total AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	59	627	11	68	470
Future Volume (Veh/h)	6	59	627	11	68	470
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	64	682	12	74	511
<b>Pedestrians</b>						
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	1341	682			694	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1341	682			694	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	86			92	
cM capacity (veh/h)	154	450			901	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	71	682	12	74	511	
Volume Left	7	0	0	74	0	
Volume Right	64	0	12	0	0	
cSH	378	1700	1700	901	1700	
Volume to Capacity	0.19	0.40	0.01	0.08	0.30	
Queue Length 95th (m)	5.4	0.0	0.0	2.1	0.0	
Control Delay (s)	16.7	0.0	0.0	9.4	0.0	
Lane LOS	C			A		
Approach Delay (s)	16.7	0.0	1.2			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			1.4			
Intersection Capacity Utilization			64.2%	ICU Level of Service	C	
Analysis Period (min)	15					

100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter



















2030 Future Total AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	53	80	558	17	21	455
Future Volume (Veh/h)	53	80	558	17	21	455
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	87	607	18	23	495
<b>Pedestrians</b>						
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	1148	607			625	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1148	607			625	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	73	82			98	
cM capacity (veh/h)	214	496			956	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	145	607	18	23	495	
Volume Left	58	0	0	23	0	
Volume Right	87	0	18	0	0	
cSH	325	1700	1700	956	1700	
Volume to Capacity	0.45	0.36	0.01	0.02	0.29	
Queue Length 95th (m)	17.6	0.0	0.0	0.6	0.0	
Control Delay (s)	24.7	0.0	0.0	8.9	0.0	
Lane LOS	C			A		
Approach Delay (s)	24.7	0.0			0.4	
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.9			
Intersection Capacity Utilization			53.7%		ICU Level of Service	A
Analysis Period (min)	15					



100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2030 Future Total AM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	2	21	17	2	60	6	499	16	24	475	9
Future Volume (Veh/h)	16	2	21	17	2	60	6	499	16	24	475	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	2	23	18	2	65	7	542	17	26	516	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL				None
Median storage veh								2				
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	924	1146	263	898	1142	280	526			559		
vC1, stage 1 conf vol	573	573		564	564							
vC2, stage 2 conf vol	351	573		334	578							
vCu, unblocked vol	924	1146	263	898	1142	280	526			559		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	99	97	96	99	91	99			97		
cM capacity (veh/h)	387	375	735	412	382	718	1037			1008		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	42	85	7	361	198	26	344	182				
Volume Left	17	18	7	0	0	26	0	0				
Volume Right	23	65	0	0	17	0	0	10				
cSH	521	609	1037	1700	1700	1008	1700	1700				
Volume to Capacity	0.08	0.14	0.01	0.21	0.12	0.03	0.20	0.11				
Queue Length 95th (m)	2.1	3.9	0.2	0.0	0.0	0.6	0.0	0.0				
Control Delay (s)	12.5	11.9	8.5	0.0	0.0	8.7	0.0	0.0				
Lane LOS	B	B	A			A						
Approach Delay (s)	12.5	11.9	0.1			0.4						
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			40.6%	ICU Level of Service	A							
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
4: Windsor Ter & Oxford Blvd












2030 Future Total AM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	0	15	0	1	119
Future Volume (Veh/h)	37	0	15	0	1	119
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)	40	0	16	0	1	129
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	16				96	16
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	16				96	16
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				100	88
cM capacity (veh/h)	1602				881	1063
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	40	16	130			
Volume Left	40	0	1			
Volume Right	0	0	129			
cSH	1602	1700	1062			
Volume to Capacity	0.02	0.01	0.12			
Queue Length 95th (m)	0.6	0.0	3.3			
Control Delay (s)	7.3	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	7.3	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			7.8			
Intersection Capacity Utilization		30.3%		ICU Level of Service		A
Analysis Period (min)			15			












100 Oxford Boulevard TIS  
 1: Highway 58 & Stonebridge Dr

2030 Future Total PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	82	576	9	41	724
Future Volume (Veh/h)	13	82	576	9	41	724
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	89	626	10	45	787
<b>Pedestrians</b>						
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	1503	626			636	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1503	626			636	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	82			95	
cM capacity (veh/h)	127	484			947	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	103	626	10	45	787	
Volume Left	14	0	0	45	0	
Volume Right	89	0	10	0	0	
cSH	351	1700	1700	947	1700	
Volume to Capacity	0.29	0.37	0.01	0.05	0.46	
Queue Length 95th (m)	9.6	0.0	0.0	1.2	0.0	
Control Delay (s)	19.5	0.0	0.0	9.0	0.0	
Lane LOS	C			A		
Approach Delay (s)	19.5	0.0		0.5		
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			1.5			
Intersection Capacity Utilization			61.0%		ICU Level of Service	B
Analysis Period (min)			15			



















100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter

2030 Future Total PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	37	48	538	68	70	667
Future Volume (Veh/h)	37	48	538	68	70	667
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	52	585	74	76	725
<b>Pedestrians</b>						
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	1462	585			659	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1462	585			659	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	69	90			92	
cM capacity (veh/h)	130	511			929	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	92	585	74	76	725	
Volume Left	40	0	0	76	0	
Volume Right	52	0	74	0	0	
cSH	225	1700	1700	929	1700	
Volume to Capacity	0.41	0.34	0.04	0.08	0.43	
Queue Length 95th (m)	14.9	0.0	0.0	2.1	0.0	
Control Delay (s)	31.7	0.0	0.0	9.2	0.0	
Lane LOS	D			A		
Approach Delay (s)	31.7	0.0		0.9		
Approach LOS	D					
<b>Intersection Summary</b>						
Average Delay			2.3			
Intersection Capacity Utilization			60.4%	ICU Level of Service	B	
Analysis Period (min)	15					

100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2030 Future Total PM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	0	10	40	6	76	11	520	22	76	605	24
Future Volume (Veh/h)	9	0	10	40	6	76	11	520	22	76	605	24
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	0	11	43	7	83	12	565	24	83	658	26
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh								2				
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1230	1450	342	1107	1451	294	684			589		
vC1, stage 1 conf vol	837	837		601	601							
vC2, stage 2 conf vol	393	613		506	850							
vCu, unblocked vol	1230	1450	342	1107	1451	294	684			589		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	98	87	98	88	99			92		
cM capacity (veh/h)	259	277	654	342	286	702	905			982		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	21	133	12	377	212	83	439	245				
Volume Left	10	43	12	0	0	83	0	0				
Volume Right	11	83	0	0	24	0	0	26				
cSH	379	495	905	1700	1700	982	1700	1700				
Volume to Capacity	0.06	0.27	0.01	0.22	0.12	0.08	0.26	0.14				
Queue Length 95th (m)	1.4	8.6	0.3	0.0	0.0	2.2	0.0	0.0				
Control Delay (s)	15.1	14.9	9.0	0.0	0.0	9.0	0.0	0.0				
Lane LOS	C	B	A			A						
Approach Delay (s)	15.1	14.9	0.2			1.0						
Approach LOS	C	B										
Intersection Summary												
Average Delay			2.1									
Intersection Capacity Utilization			51.2%		ICU Level of Service					A		
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
4: Windsor Ter & Oxford Blvd












2030 Future Total PM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	125	10	8	3	2	77
Future Volume (Veh/h)	125	10	8	3	2	77
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)	136	11	9	3	2	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	12				294	10
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	12				294	10
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	92				100	92
cM capacity (veh/h)	1607				638	1071
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	147	12	86			
Volume Left	136	0	2			
Volume Right	0	3	84			
cSH	1607	1700	1054			
Volume to Capacity	0.08	0.01	0.08			
Queue Length 95th (m)	2.2	0.0	2.1			
Control Delay (s)	6.9	0.0	8.7			
Lane LOS	A		A			
Approach Delay (s)	6.9	0.0	8.7			
Approach LOS			A			
Intersection Summary						
Average Delay			7.2			
Intersection Capacity Utilization		33.4%		ICU Level of Service		A
Analysis Period (min)			15			












100 Oxford Boulevard TIS  
1: Highway 58 & Stonebridge Dr

2035 Future Total AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	65	686	13	75	517
Future Volume (Veh/h)	6	65	686	13	75	517
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	71	746	14	82	562
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	1472	746			760	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1472	746			760	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	83			90	
cM capacity (veh/h)	126	413			852	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	78	746	14	82	562	
Volume Left	7	0	0	82	0	
Volume Right	71	0	14	0	0	
cSH	343	1700	1700	852	1700	
Volume to Capacity	0.23	0.44	0.01	0.10	0.33	
Queue Length 95th (m)	6.9	0.0	0.0	2.5	0.0	
Control Delay (s)	18.5	0.0	0.0	9.7	0.0	
Lane LOS	C			A		
Approach Delay (s)	18.5	0.0		1.2		
Approach LOS	C					
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			68.4%		ICU Level of Service	C
Analysis Period (min)			15			

100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter



















2035 Future Total AM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	53	82	616	17	21	502
Future Volume (Veh/h)	53	82	616	17	21	502
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	89	670	18	23	546
<b>Pedestrians</b>						
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	1262	670			688	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1262	670			688	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	68	81			97	
cM capacity (veh/h)	183	457			906	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	147	670	18	23	546	
Volume Left	58	0	0	23	0	
Volume Right	89	0	18	0	0	
cSH	287	1700	1700	906	1700	
Volume to Capacity	0.51	0.39	0.01	0.03	0.32	
Queue Length 95th (m)	21.8	0.0	0.0	0.6	0.0	
Control Delay (s)	30.0	0.0	0.0	9.1	0.0	
Lane LOS	D			A		
Approach Delay (s)	30.0	0.0	0.4			
Approach LOS	D					
<b>Intersection Summary</b>						
Average Delay			3.3			
Intersection Capacity Utilization			57.2%	ICU Level of Service	B	
Analysis Period (min)	15					



100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2035 Future Total AM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	3	23	19	3	66	6	550	18	27	519	10
Future Volume (Veh/h)	18	3	23	19	3	66	6	550	18	27	519	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	3	25	21	3	72	7	598	20	29	564	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							TWLTL			None		
Median storage veh							2					
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1014	1260	288	988	1255	309	575			618		
vC1, stage 1 conf vol	628	628		622	622							
vC2, stage 2 conf vol	386	632		366	633							
vCu, unblocked vol	1014	1260	288	988	1255	309	575			618		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	99	96	94	99	90	99			97		
cM capacity (veh/h)	353	345	709	378	354	687	994			958		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	48	96	7	399	219	29	376	199				
Volume Left	20	21	7	0	0	29	0	0				
Volume Right	25	72	0	0	20	0	0	11				
cSH	477	568	994	1700	1700	958	1700	1700				
Volume to Capacity	0.10	0.17	0.01	0.23	0.13	0.03	0.22	0.12				
Queue Length 95th (m)	2.7	4.8	0.2	0.0	0.0	0.7	0.0	0.0				
Control Delay (s)	13.4	12.6	8.6	0.0	0.0	8.9	0.0	0.0				
Lane LOS	B	B	A			A						
Approach Delay (s)	13.4	12.6	0.1			0.4						
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			44.0%		ICU Level of Service				A			
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
4: Windsor Ter & Oxford Blvd












2035 Future Total AM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	0	16	0	1	119
Future Volume (Veh/h)	37	0	16	0	1	119
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)	40	0	17	0	1	129
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	17				97	17
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	17				97	17
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				100	88
cM capacity (veh/h)	1600				880	1062
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	40	17	130			
Volume Left	40	0	1			
Volume Right	0	0	129			
cSH	1600	1700	1060			
Volume to Capacity	0.02	0.01	0.12			
Queue Length 95th (m)	0.6	0.0	3.3			
Control Delay (s)	7.3	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	7.3	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			7.7			
Intersection Capacity Utilization		30.3%		ICU Level of Service		A
Analysis Period (min)			15			












100 Oxford Boulevard TIS  
 1: Highway 58 & Stonebridge Dr

2035 Future Total PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	90	632	10	46	793
Future Volume (Veh/h)	14	90	632	10	46	793
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	98	687	11	50	862
<b>Pedestrians</b>						
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	1649	687			698	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1649	687			698	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	78			94	
cM capacity (veh/h)	103	447			898	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	113	687	11	50	862	
Volume Left	15	0	0	50	0	
Volume Right	98	0	11	0	0	
cSH	309	1700	1700	898	1700	
Volume to Capacity	0.37	0.40	0.01	0.06	0.51	
Queue Length 95th (m)	13.0	0.0	0.0	1.4	0.0	
Control Delay (s)	23.2	0.0	0.0	9.2	0.0	
Lane LOS	C		A			
Approach Delay (s)	23.2	0.0		0.5		
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			1.8			
Intersection Capacity Utilization			65.5%	ICU Level of Service		C
Analysis Period (min)			15			



















100 Oxford Boulevard TIS  
2: Highway 58 & Windsor Ter

2035 Future Total PM Traffic

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	38	49	594	69	70	737
Future Volume (Veh/h)	38	49	594	69	70	737
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	53	646	75	76	801
<b>Pedestrians</b>						
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	1599	646			721	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1599	646			721	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	62	89			91	
cM capacity (veh/h)	107	472			881	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	94	646	75	76	801	
Volume Left	41	0	0	76	0	
Volume Right	53	0	75	0	0	
cSH	189	1700	1700	881	1700	
Volume to Capacity	0.50	0.38	0.04	0.09	0.47	
Queue Length 95th (m)	19.6	0.0	0.0	2.3	0.0	
Control Delay (s)	41.4	0.0	0.0	9.5	0.0	
Lane LOS	E		A			
Approach Delay (s)	41.4	0.0		0.8		
Approach LOS	E					
<b>Intersection Summary</b>						
Average Delay			2.7			
Intersection Capacity Utilization			63.7%		ICU Level of Service	B
Analysis Period (min)			15			

100 Oxford Boulevard TIS  
3: Highway 58 & Barrick Rd

2035 Future Total PM Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	0	11	44	6	84	13	569	24	84	664	27
Future Volume (Veh/h)	10	0	11	44	6	84	13	569	24	84	664	27
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	0	12	48	7	91	14	618	26	91	722	29
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL				None
Median storage veh								2				
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1350	1590	376	1214	1592	322	751			644		
vC1, stage 1 conf vol	918	918		659	659							
vC2, stage 2 conf vol	432	672		555	933							
vCu, unblocked vol	1350	1590	376	1214	1592	322	751			644		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	100	98	84	97	86	98			90		
cM capacity (veh/h)	226	247	622	309	255	674	854			937		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	23	146	14	412	232	91	481	270				
Volume Left	11	48	14	0	0	91	0	0				
Volume Right	12	91	0	0	26	0	0	29				
cSH	338	459	854	1700	1700	937	1700	1700				
Volume to Capacity	0.07	0.32	0.02	0.24	0.14	0.10	0.28	0.16				
Queue Length 95th (m)	1.7	10.8	0.4	0.0	0.0	2.6	0.0	0.0				
Control Delay (s)	16.4	16.4	9.3	0.0	0.0	9.3	0.0	0.0				
Lane LOS	C	C	A			A						
Approach Delay (s)	16.4	16.4	0.2			1.0						
Approach LOS	C	C										
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilization			53.9%	ICU Level of Service	A							
Analysis Period (min)			15									

100 Oxford Boulevard TIS  
4: Windsor Ter & Oxford Blvd

2035 Future Total PM Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	125	11	9	4	3	77
Future Volume (Veh/h)	125	11	9	4	3	77
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)	136	12	10	4	3	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	14				296	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	14				296	12
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	92				100	92
cM capacity (veh/h)	1604				636	1069
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	148	14	87			
Volume Left	136	0	3			
Volume Right	0	4	84			
cSH	1604	1700	1044			
Volume to Capacity	0.08	0.01	0.08			
Queue Length 95th (m)	2.2	0.0	2.2			
Control Delay (s)	6.9	0.0	8.8			
Lane LOS	A		A			
Approach Delay (s)	6.9	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			7.2			
Intersection Capacity Utilization		33.5%		ICU Level of Service		A
Analysis Period (min)			15			

**APPENDIX F**  
Signal Warrants



Highway 58/Stonebridge Drive - (peak hour signal warrant)

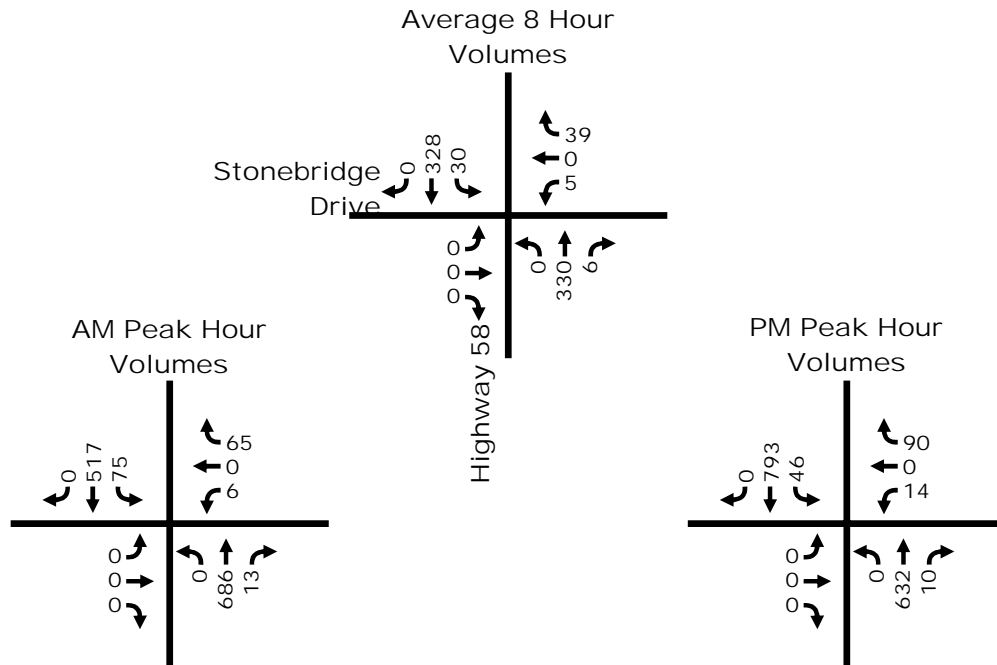
Signal Warrant	Description	Minimum Requirement for Two Lane Roadways	Compliance			
		Free Flow - Operating Speed Greater Than or Equal to 70 km/h	Sectional %	Entire %	Warrant	
Intersection	1. Minimum Vehicular Volume	(1) A Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of on Average Day, and	480	154%	24%	24% No
		(4) B Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	180	24%		
	2. Delay to Cross Traffic	(1) A Vehicle Volume, Along Major Street for Each of the Heaviest 8 Hours of an Average Day, and	480	145%	10%	
		(2) B Combined Vehicle and Pedestrian Volume <u>Crossing</u> the Major Street for Each of the Same 8 Hours	50	10%		

Notes

- 1 Vehicle Volume Warrants (1A), (2A) and (5B) for Roadways Having Two or More Moving Lanes in one Direction Should Be 25% Higher Than Values Given Above
- 2 For Definition of Crossing Volume Refer to Note 4 on the Signal Warrant Analysis Form B2.03.08
- 3 The Lowest Sectional Percentage Governs the Entire Warrant
- 4 For "T" Intersections the Warrant Values for Minor Street Should be Increased by 50% (Warrant 1B only)

No

Yes



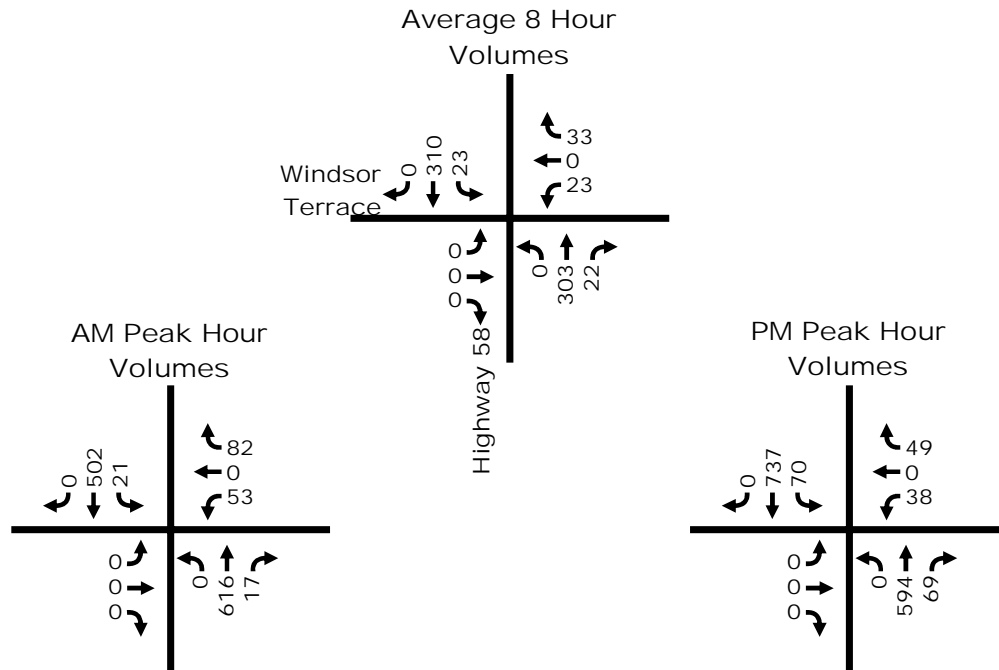


Highway 58/Windsor Terrace - (peak hour signal warrant)

Signal Warrant		Description		Minimum Requirement for Two Lane Roadways	Compliance		
				Free Flow - Operating Speed Greater Than or Equal to 70 km/h	Sectional %	Entire %	Warrant
Intersection	1. Minimum Vehicular Volume	(1) A	Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of on Average Day, and	480	149%	31%	46% No
		(4) B	Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	180	31%		
	2. Delay to Cross Traffic	(1) A	Vehicle Volume, Along Major Street for Each of the Heaviest 8 Hours of an Average Day, and	480	137%	46%	
		(2) B	Combined Vehicle and Pedestrian Volume <u>Crossing</u> the Major Street for Each of the Same 8 Hours	50	46%		

Notes

- 1 Vehicle Volume Warrants (1A), (2A) and (5B) for Roadways Having Two or More Moving Lanes in one Direction Should Be 25% Higher Than Values Given Above No
- 2 For Definition of Crossing Volume Refer to Note 4 on the Signal Warrant Analysis Form B2.03.08
- 3 The Lowest Sectional Percentage Governs the Entire Warrant
- 4 For "T" Intersections the Warrant Values for Minor Street Should be Increased by 50% (Warrant 1B only) Yes

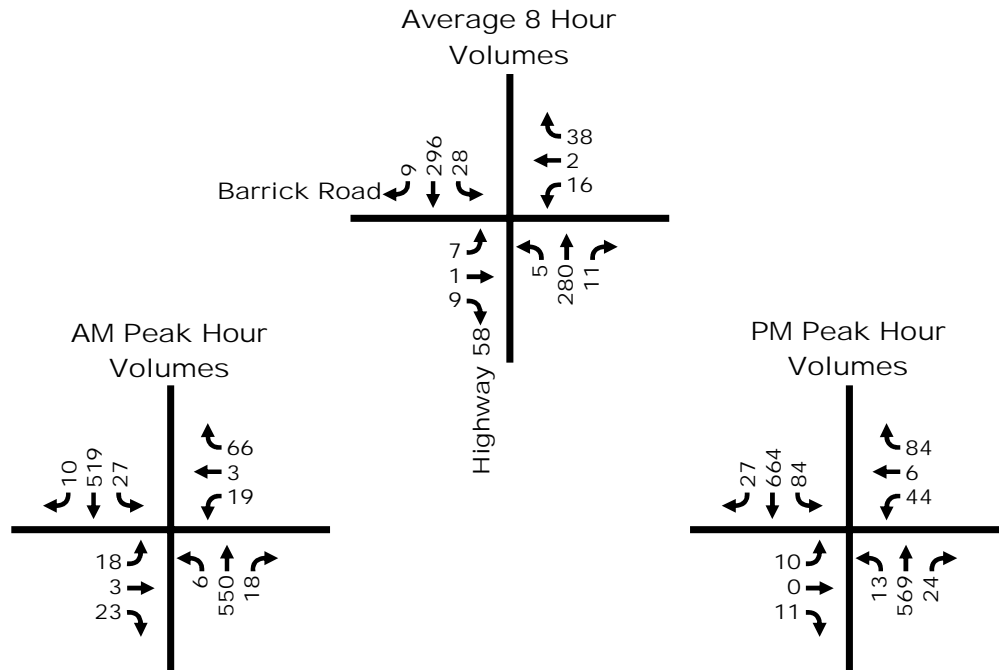


Highway 58/Barrick Road - (peak hour signal warrant)

Signal Warrant		Description		Minimum Requirement for Two Lane Roadways	Compliance		
				Free Flow - Operating Speed Greater Than or Equal to 70 km/h	Sectional %	Entire %	Warrant
Intersection	1. Minimum Vehicular Volume	(1) A	Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of on Average Day, and	480	146%	61%	61% No
		(4) B	Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	120	61%		
	2. Delay to Cross Traffic	(1) A	Vehicle Volume, Along Major Street for Each of the Heaviest 8 Hours of an Average Day, and	480	131%	50%	
		(2) B	Combined Vehicle and Pedestrian Volume <u>Crossing</u> the Major Street for Each of the Same 8 Hours	50	50%		

Notes

- 1 Vehicle Volume Warrants (1A), (2A) and (5B) for Roadways Having Two or More Moving Lanes in one Direction Should Be 25% Higher Than Values Given Above No
- 2 For Definition of Crossing Volume Refer to Note 4 on the Signal Warrant Analysis Form B2.03.08
- 3 The Lowest Sectional Percentage Governs the Entire Warrant
- 4 For "T" Intersections the Warrant Values for Minor Street Should be Increased by 50% (Warrant 1B only) No



Windsor Terrace/Oxford Boulevard - (peak hour signal warrant)

Signal Warrant	Description	Minimum Requirement for Two Lane Roadways	Compliance			
		Restricted Flow - Operating Speed Less Than 70 km/h	Sectional %	Entire %	Warrant	
Intersection	1. Minimum Vehicular Volume	(1) A Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of on Average Day, and	720	14%	14%	14% No
		(4) B Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	255	20%		
	2. Delay to Cross Traffic	(1) A Vehicle Volume, Along Major Street for Each of the Heaviest 8 Hours of an Average Day, and	720	7%	7%	
		(2) B Combined Vehicle and Pedestrian Volume <u>Crossing</u> the Major Street for Each of the Same 8 Hours	75	63%		

Notes

- 1 Vehicle Volume Warrants (1A), (2A) and (5B) for Roadways Having Two or More Moving Lanes in one Direction Should Be 25% Higher Than Values Given Above
- 2 For Definition of Crossing Volume Refer to Note 4 on the Signal Warrant Analysis Form B2.03.08
- 3 The Lowest Sectional Percentage Governs the Entire Warrant
- 4 For "T" Intersections the Warrant Values for Minor Street Should be Increased by 50% (Warrant 1B only)

No

Yes

