nextrans
CONSULTING ENGINEERS

nextrans.ca

Transportation Impact Study - DRAFT

PROPOSED RESIDENTIAL DEVELOPMENT

9380 Burwash Road, Township of Hamilton

August 11, 2026
Project No: NT-24-178

nexTrans
Consulting Engineers
A Division of NextEng Consulting Group Inc.

August 11, 2026

Rose Development Corp.
44 University Avenue West
Cobourg, ON K9A 2G5

Attention: Al Rose

Re: Transportation Impact Study
Proposed Residential Develoment
9380 Burwash Road, Township of Hamilton
Our Project No. NT-24-178

Nextrans Consulting Engineers (a Division of NextEng Consulting Group Inc.) is pleased to present the enclosed Transportation Impact Study in support of the Official Plan Amendment and Zoning By-law Amendment Applications for the above noted property.

The subject property is located on the north side of Burwash Road and Community Centre Road, municipally known as 9380 Burwash Road, in the Township of Hamilton (the "Township"). The subject site is currently occupied by one (1) single-detached dwelling. The development proposal is to redevelop the land to facilitate a residential subdivision with 135-167 single-detached dwellings. Vehicle access is proposed through two (2) new streets intersecting with Burwash Road and Community Centre Road.

The transportation study concludes that the proposed development can adequately be accommodated by the existing transportation network with negligible traffic impact to the adjacent public roadways.

We trust the enclosed sufficiently addresses your needs. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

NEXTRANS CONSULTING ENGINEERS

Prepared by:

Janus Mora, B.Eng.
Transportation Analyst

Approved by:

Richard Pernicky, MITE
Principal

EXECUTIVE SUMMARY

Nextrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) was retained through Rose Development Corp. (the 'Client') to undertake a Transportation Impact Study in support of the Official Plan Amendment and Zoning By-law Amendment Applications for the above noted property. The subject property is located on the north side of Burwash Road and Community Centre Road, municipally known as 9380 Burwash Road, in the Township of Hamilton (the "Township").

Development Proposal

The subject site is currently occupied by one (1) single-detached dwelling. The development proposal is to redevelop the land to facilitate a residential subdivision with 135-167 single-detached dwellings. Vehicle access is proposed through two (2) new streets intersecting with Burwash Road and Community Centre Road.

Capacity Analysis

The proposed development is anticipated to generate of 117 new two-way automobile trips (32 inbound and 85 outbound) during the AM peak hour 155 new two-way automobile trips (98 inbound and 57 outbound) during the PM peak hour.

The intersection capacity analysis results (based on the methodology and procedures outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board) indicate that the study intersections and proposed accesses are expected to continue to operate within acceptable levels of service under existing and future conditions.

Site Plan Review

AutoTURN analysis demonstrates that a heavy single-unit truck (HSU TAC-2017) and a fire truck can access the site and maneuver internally without conflict.

TDM measures are recommended to manage the encourage alternative modes of transportation and reduce the number of single occupant vehicle trips generated by the proposed development, also reducing parking demand, allowing the proposed development to support a parking reduction.

TABLE OF CONTENTS

1.0 INTRODUCTION 6

2.0 EXISTING TRAFFIC CONDITIONS 7

2.1. Existing Road Network 7

2.2. Existing Active Transportation Network 8

2.3. Existing Traffic Volumes 9

2.4. Existing Traffic Assessment 9

3.0 FUTURE BACKGROUND CONDITIONS 10

3.1. Future Corridor Growth 10

3.2. Future Background 10

4.0 SITE TRAFFIC 11

4.1. Trip Generation 11

4.2. Trip Distribution 11

5.0 FUTURE TOTAL ANALYSIS 12

6.0 PARKING ASSESSMENT 13

6.1. Vehicle Parking Requirements 13

7.0 SITE CIRCULATION ..... Error! Bookmark not defined.

8.0 Road Network Geometric Design 13

9.0 TRANSPORTATION DEMAND MANAGEMENT 14

9.1. Active Transportation 14

10.0 CONCLUSION 16

LIST OF FIGURES

Figure 1-1 Site Location
Figure 1-2 Proposed Site Plan
Figure 2-1 Existing Lane Configurations
Figure 2-2 Transit Provisions in Subject Area
Figure 2-3 Existing Traffic Volumes
Figure 3-1 2033 Future Background Traffic Volumes
Figure 4-1 Site Generated Traffic Volumes
Figure 5-1 2033 Future Total Traffic Volumes
Figure 7-1 AutoTURN – Maneuverability Demonstration (HSU TAC-2017)
Figure 7-2 AutoTURN – Maneuverability Demonstration (15 m Fire Truck)

LIST OF TABLES

Table 2.1 – Traffic Data Collection Summary
Table 2.2 – Capacity Analysis Summary – Existing Conditions
Table 3.1 – Capacity Analysis Summary – 2033 Future Background
Table 4.1 – Site Traffic Trip Generation (ITE)
Table 4.2 – Site Traffic Trip Distribution
Table 5.1 – Capacity Analysis Summary – 2033 Future Total
Table 6.1 – Vehicle Parking Requirements (By-law 2001-58)

APPENDICES

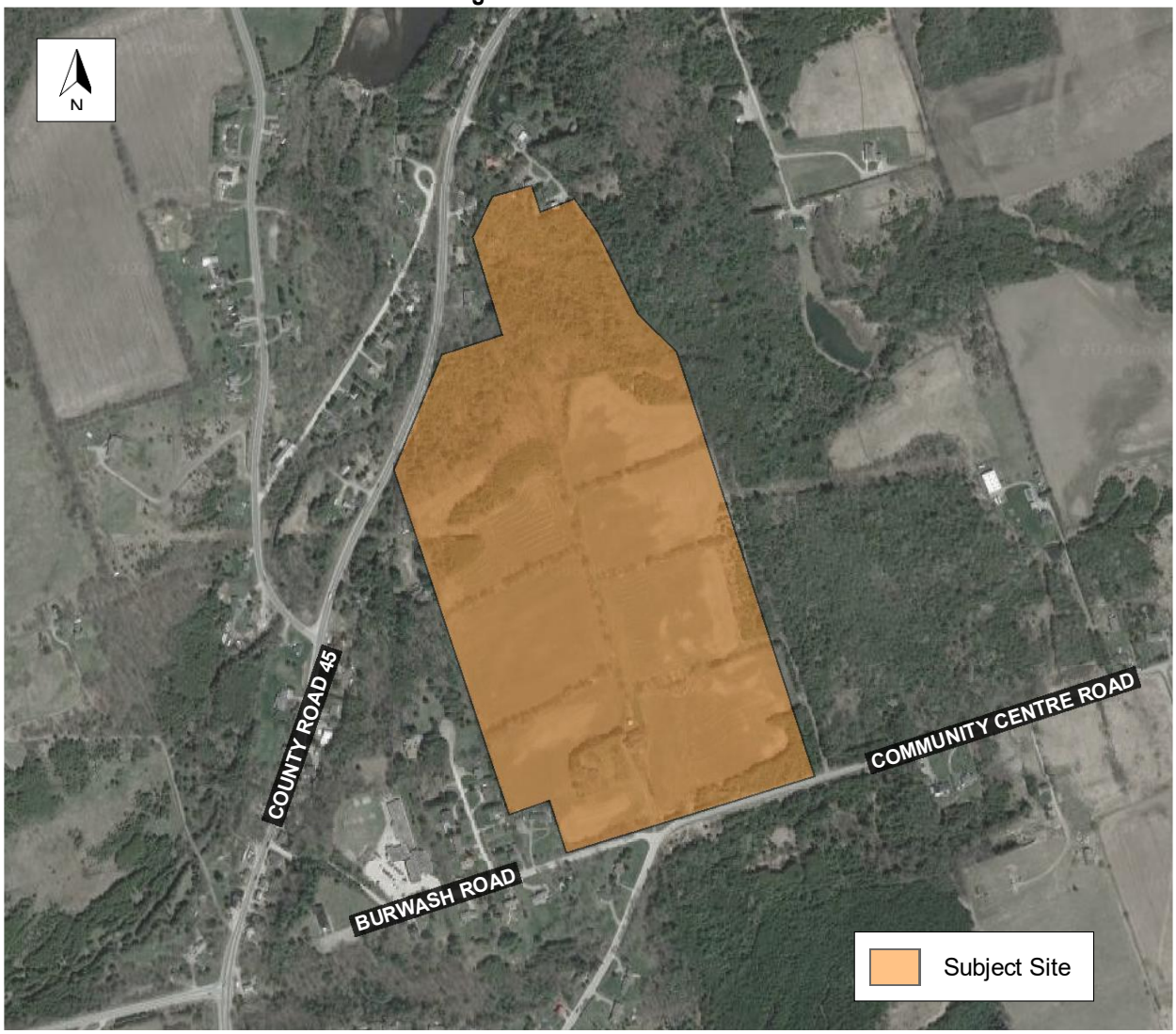
Appendix A – Proposed Site Plan
Appendix B – Existing Traffic Data
Appendix C – Capacity Analysis Results - Existing
Appendix D – Capacity Analysis Results – 2033 Future Background
Appendix E – Capacity Analysis Results – 2033 Future Total
Appendix F – Functional Design

1.0 INTRODUCTION

Nextrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) was retained through Rose Development Corp. (the 'Client') to undertake a Transportation Impact Study in support of the Official Plan Amendment and Zoning By-law Amendment Applications for the above noted property. The subject property is located on the north side of Burwash Road and Community Centre Road, municipally known as 9380 Burwash Road, in the Township of Hamilton (the "Township").

The location of the proposed development is illustrated in **Figure 1-1**.

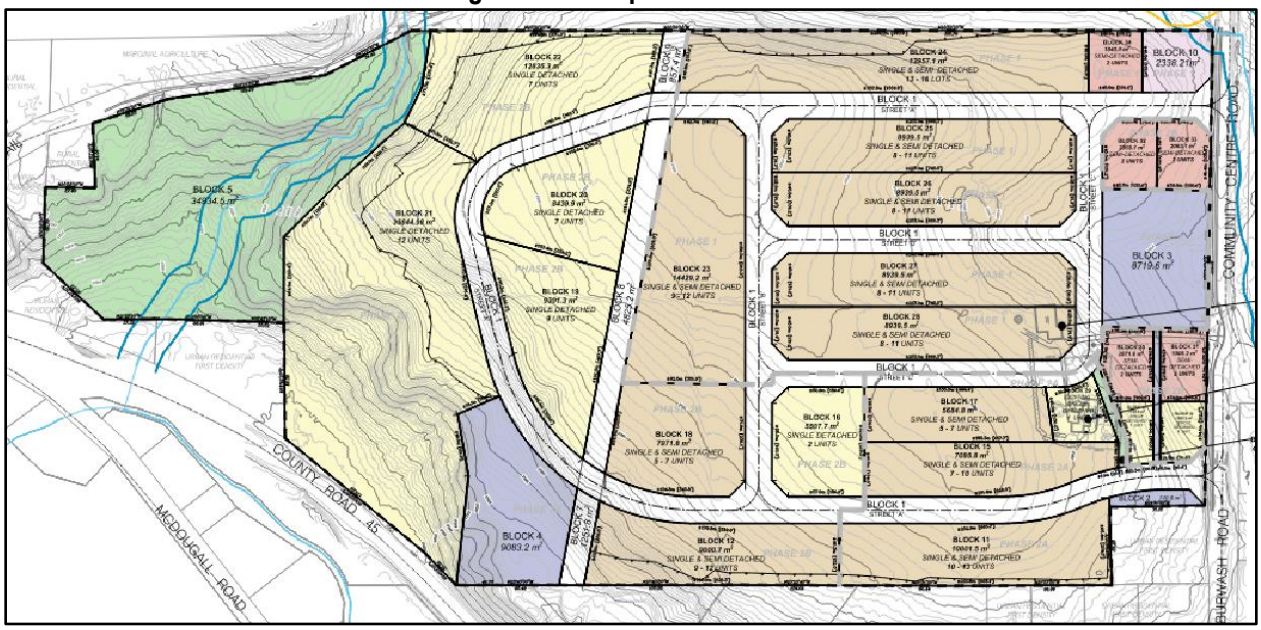
Figure 1-1 – Site Location



The subject site is currently occupied by one (1) single-detached dwelling. The development proposal is to redevelop the land to facilitate a residential subdivision with 135-167 dwellings, consisting of single-detached and semi-detached units. Vehicle access is proposed through two (2) new streets intersecting with Burwash Road and Community Centre Road. The existing single-detached dwelling on the property will remain.

The proposed site plan is shown in **Appendix A**.

Figure 1-2 – Proposed Site Plan



2.0 EXISTING TRAFFIC CONDITIONS

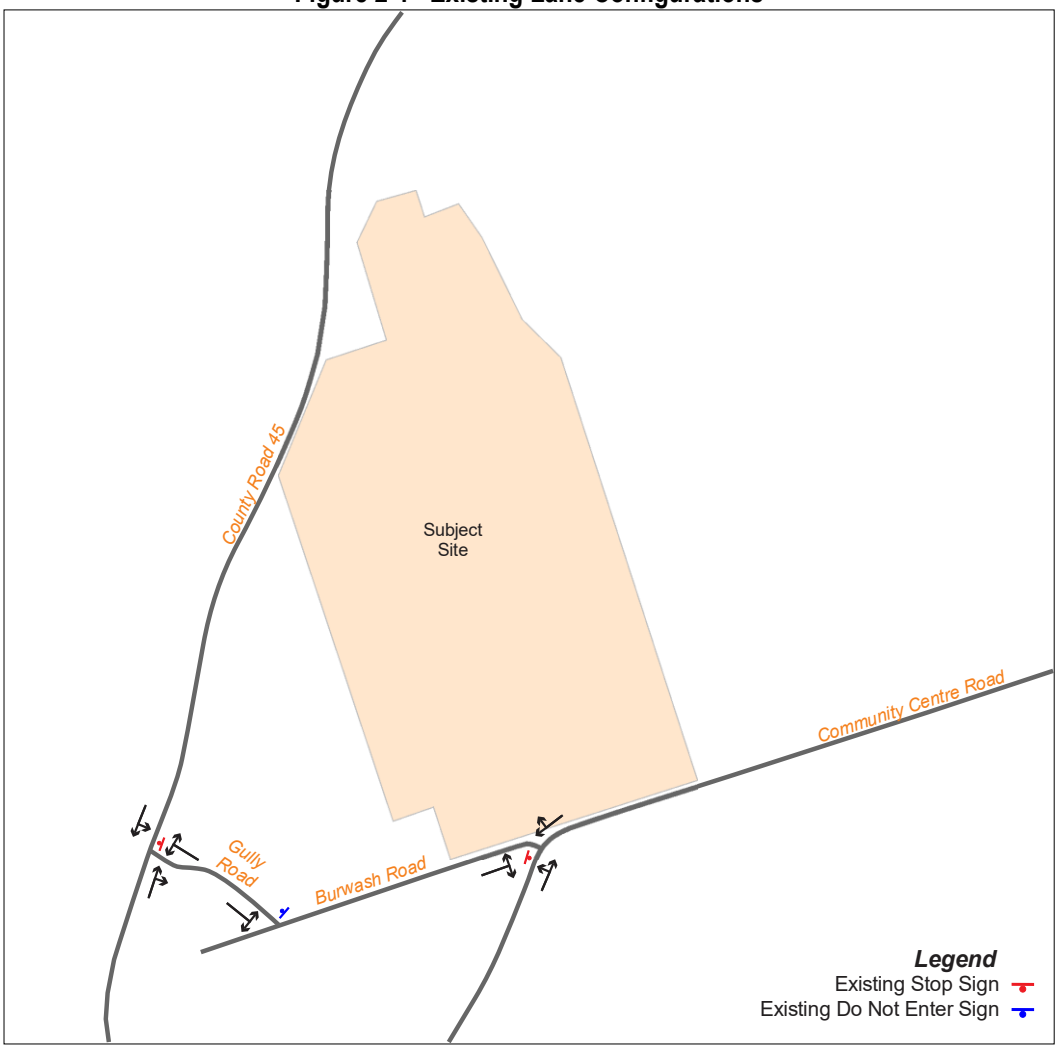
2.1. Existing Road Network

The existing road network in the study area is described below:

- **Burwash Road:** An east-west local road under the jurisdiction of the Township. Burwash Road has a two (2)-lane cross-section (one (1) lane per travel direction) and has a posted speed limit of 50 km/h.
- **Community Centre Road:** An east-west local road under the jurisdiction of the Township. Community Centre Road has a two (2)-lane cross-section (one (1) lane per travel direction) and has a posted speed limit of 50 km/h.
- **Gully Road:** a Township road connecting County Road 45 to Burwash Road. Gully Road has a two (2)-lane cross-section (one (1) lane per travel direction). Although there is two-way traffic, vehicles are not permitted to enter this street via Burwash Road. Only exits onto Burwash Road are permitted.
- **County Road 45:** A north-south arterial road under the jurisdiction of the County of Northumberland (The "County"), designated as County Road 45. Within the study area, Highway 45 has a two (2)-lane cross-section (one (1) lane per travel direction) and has a posted speed limit of 50 km/h.

Existing road network lane configurations are illustrated in **Figure 2-1**.

Figure 2-1 –Existing Lane Configurations



2.2. Existing Active Transportation Network

Sidewalks

Existing sidewalks are provided on both sides County Road 45, which provide pedestrian access to the various amenities in the are. There is currently no dedicated pedestrian connection from County Road 45 to Burwash Road and Community Centre Road.

Cycling

Paved shoulders are provided on both sides of County Road 45. The County is currently assessing the implementation of a County-wide cycling network, in accordance with the Cycling Master Plan (CMP).

2.3. Existing Traffic Volumes

To capture adjacent peak hour traffic volumes under existing conditions, new traffic counts were collected for all study area intersections for weekday AM and PM peak period. Traffic counts are provided in **Appendix B**.

Traffic data collection is summarized in **Table 2.1.** TMC reports are provided in **Appendix B**.

Table 2.1 – Traffic Data Collection Summary

Intersection	Source	Survey Date and Times
County Road 45 and Gully Street	Spectrum Traffic Inc.	Thursday, October 24, 2024 7:00 AM – 10:00 AM 4:00 PM – 7:00 PM
County Road 45 and Community Centre Road		
Burwash Road and Community Centre Road		

The collected traffic data dated 2024 was used to model 2026 baseline traffic volumes with no growth applied, as the counts are not older than two (2) years.

2.4. Existing Traffic Assessment

2026 baseline existing traffic volumes are illustrated in **Figure 2-2**. Capacity analysis was conducted using model in Synchro 10, in accordance with the methodology outlined in the Highway Capacity Manual (HCM 2000) published by the Transportation Research Board. Detailed results are provided in **Appendix C** and summarized in **Table 2.2**.

Table 2.2 – Capacity Analysis Summary – Existing Traffic Conditions

Intersection	Movement	AM Peak Hour					PM Peak Hour				
		v/c	Delay (s)	LOS	Queue		v/c	Delay (s)	LOS	Queue	
					50th	95th				50th	95th
Unsignalized Intersections											
County Road 45 and Community Centre Road	WBLR	0.19	15.2	C	--	5.2	0.27	20.3	C	--	8.2
	SBLT	0.03	0.9	A	--	0.6	0.02	0.8	A	--	0.5
County Road 45 and Gully Road	WBLR	0.01	14.1	B	--	0.1	0.00	0.0	A	--	0.0
	SBLT	0.00	0.0	A	--	0.0	0.01	0.2	A	--	0.1
Community Centre Road and Burwash Road	NBLT	0.10	9.1	A	--	2.5	0.04	8.7	A	--	0.9
	EBLR	0.02	4.8	A	--	0.4	0.01	1.1	A	--	0.1

Under existing traffic conditions, all study area intersections operate with acceptable overall Levels of Service (LOS) during the and AM and PM peak hours, with Levels of Service (LOS) at 'D' or better and no volume-to-capacity ratios (v/c) approaching 1.00. Delays are negligible.

3.0 FUTURE BACKGROUND CONDITIONS

For the purpose of this study, all future scenarios were assessed under the 2033 horizon year, five (5) years after the assumed buildout year of 2028.

3.1. Future Corridor Growth

Future corridor growth was estimated using a growth rate of 2% per annum, which is considered conservative.

3.2. Future Background

The 2033 future background traffic volumes, which incorporate future corridor growth, are provided in **Figure 3-1**. The detailed calculations are provided in **Appendix D** and **Table 3.1** summarizes the level of service at the study area intersections under future background traffic conditions.

Table 3.1 – Capacity Analysis Summary – 2033 Future Background

Intersection	Movement	AM Peak Hour					PM Peak Hour				
		v/c	Delay (s)	LOS	Queue		v/c	Delay (s)	LOS	Queue	
					50th	95th				50th	95th
Unsignalized Intersections											
County Road 45 and Community Centre Road	WBLR	0.21	16.9	C	--	6.0	0.32	10.2	C	--	24.5
	SBLT	0.03	0.8	A	--	0.7	0.02	0.6	A	--	0.7
County Road 45 and Gully Road	WBLR	0.01	15.5	C	--	0.1	0.00	0.0	A	--	0.0
	SBLT	0.00	0.0	A	--	0.0	0.01	0.1	A	--	0.2
Community Centre Road and Burwash Road	NBLT	0.10	9.1	A	--	2.5	0.04	0.9	A	--	8.7
	EBLR	0.02	4.8	A	--	0.4	0.01	0.1	A	--	1.1

Under 2033 future background conditions, all study area intersections are expected to continue to operate with acceptable overall LOS during the and AM and PM peak hours. LOS are 'C' or better and no v/c values approach 1.00.

4.0 SITE TRAFFIC

4.1. Trip Generation

Trip rates and site generated trips were determined using the *Trip Generation Manual, 12th Edition* published by the Institute of Transportation Engineers (ITE). The trip data provided for ITE Land Use Code (LUC) 210 'Single-Family Detached Housing" was used, based on the maximum number of dwelling units (167). using the ITE. The estimated future site-generate trips were taken as the greater of the values determined using the average trip rate and the fitted curve equation. The peak hour trip generation summary for the proposed development is summarized in **Table 4.1.**

The trip generation summary for the proposed development, using the ITE trip rates is shown in **Table 4.1.**

Table 4.1 – Site Traffic Trip Generation (ITE)

ITE Land Use	Parameter	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Single-Family Detached Dwelling LUC 210 *167 Dwelling Units*	**Trips**	32	85	117	98	57	155
	Trip Rate	0.19	0.51	0.70	0.59	0.34	0.93

The proposed development is anticipated to generate of 117 new two-way automobile trips (32 inbound and 85 outbound) during the AM peak hour 155 new two-way automobile trips (98 inbound and 57 outbound) during the PM peak hour.

4.2. Trip Distribution

The distribution of site-generated trips was estimated based on the existing distribution of trips observed in the TMC collected at the study area intersections. Trips were routed based on routes that travellers would be likely take when accessing the subject site. Trip distribution is summarized in **Table 4.2**.

Table 4.2 – Site Traffic Trip Distribution

Corridor	To/ From Direction	AM		PM		MD	
		In	Out	In	Out	In	Out
County Road 45	N	32%	20%	16%	16%	32%	20%
	S	39%	65%	67%	45%	39%	65%
Burwash Road / Community Centre Road	E	30%	15%	17%	39%	30%	15%
	W	0%	0%	0%	0%	0%	0%

It should be noted that the number of trips routed in the westward direction is not actually 0. Due to the study area road network configuration, westbound trips were routed on Community Centre Road, turning into the northbound and southbound directions at County Road 45. As such, westbound trips were expressed in the north and south distribution. The site-generated traffic volumes are illustrated in **Figure 4-1**.

5.0 FUTURE TOTAL ANALYSIS

The 2033 forecasted future total traffic volumes under proposed conditions were determined as the summation of the distributed site-generated traffic and future background traffic volumes. Future total traffic volumes are illustrated in **Figure 5-1.** Capacity analysis is summarized in **Table 5.1**. and detailed results are provided in **Appendix E**.

Table 5.1 – Capacity Analysis Summary – 2033 Future Total

Intersection	Movement	AM Peak Hour					PM Peak Hour				
		v/c	Delay (s)	LOS	Queue		v/c	Delay (s)	LOS	Queue	
					50th	95th				50th	95th
Unsignalized Intersections											
County Road 45 and Community Centre Road	WBLR	0.42	21.6	C	--	15.4	0.49	31.7	D	--	18.7
	SBLT	0.04	1.1	A	--	0.9	0.04	1.3	A	--	1.1
County Road 45 and Gully Road	WBLR	0.01	15.9	C	--	0.1	0.00	0.0	A	--	0.0
	SBLT	0.00	0.0	A	--	0.0	0.01	0.2	A	--	0.1
Community Centre Road and Burwash Road	NBLT	0.14	9.0	A	--	3.6	0.05	8.5	A	--	1.1
	EBLR	0.03	7.3	A	--	0.6	0.04	7.3	A	--	0.9
Burwash Road and Site Access	SBLR	0.05	9.2	A	--	1.2	0.03	9.0	A	--	0.8
Community Center Road and Site Access	EBLT	0.01	2.5	A	--	0.2	0.03	3.1	A	--	0.7
	SBLR	0.05	8.7	A	--	1.1	0.03	9.1	A	--	0.8

Under 2033 future total conditions, with the introduction of the site-generated traffic, the study area intersections are expected to continue to operate with excellent LOS during the AM and PM peak hours.

The proposed site accesses are expected to operate with excellent LOS during all peak hours, with minimal delays and queueing.

It is acknowledged that site-generated traffic accessing Burwash Road through Gully Road may present operational and safety issues on County Road 45. Currently, the entrance into Gully Road from Burwash Road has “NO ENTRY” and “ONE WAY” signage posted to prevent vehicles from exiting from Burwash Road directly onto County Road 45. It is recommended that “LOCAL TRAFFIC ONLY” signage be posted at the entrance of Gully Road from County Road 45 to discourage vehicles from entering. Based on the number of site-generated trips, the proposed development is not expected to have a negative impact on the intersection of County Road 45 and Gully Road.

Based on the intersection LOS under future total conditions, the proposed development is anticipated to introduce and acceptable impact to the surrounding road network.

6.0 PARKING ASSESSMENT

6.1. Vehicle Parking Requirements

The subject lands are subject to the provisions in the Township of Hamilton Zoning By-law 2001-58. The vehicular parking requirements in accordance with the Zoning By-law are detailed in **Table 6.1**.

Table 6.1 – Vehicle Parking Requirements (By-law 2001-58)

Use	No. of units / rooms / GFA	Maximum Parking Rate	Min. Spaces Required
Single-Detached Dwelling	167 units	2 spaces per dwelling unit	334

In accordance with the parking rates stipulated in the Zoning By-law, based on the maximum potential unit count, the proposed development is required to provide two (2) spaces per dwelling unit. Once the number of lots is confirmed, each lot occupied by a single-detached dwelling shall provide a minimum of two (2) spaces per lot.

7.0 Road Network Geometric Design

The configuration of the proposed new streets within the development were assessed in accordance with the guidelines of the Transportation Association of Canada 2017 Geometric Design Guide for Canadian Roads (the “TAC Manual”). The design criteria are as follows:

Intersection spacing:

For the proposed internal road network, the intersection spacing and angles of intersection (skew angle) of the new streets must be designed to ensure effective operation and level of service. According to Section 9.4.2.3 of the TAC Manual, for intersections of local roads, the recommended spacing for four-legged intersections and three-legged intersections are 60 m and 40 m, respectively. All proposed intersections satisfy the TAC standard. The of Street A with Burwash Road and Community Centre Road are located approximately 100m and 170 m, respectively, from the intersection of Community Centre Road and Burwash Road.

Intersection Angle:

According to the TAC Guidelines, the design domain for skew angle is 70° to 90°. All proposed street intersections intersect at 90° angles.

Site Access

Site access is proposed through two (2) new streets which will intersect Burwash Road / Community Centre Road. A function design was prepared for the proposed intersections of each Street A and Burwash Road and Community Centre Road. The intersections were designed to provide curb return radii of 9 m and 8.5 m widths. The Functional Design of the proposed intersections prepared by Nextrans is provided in **Appendix F**.

AutoTURN software was used to generate a vehicular turning template to confirm and demonstrate the accessibility of the proposed intersection designs. The AutoTURN analysis demonstrates that a heavy single-unit truck (HSU TAC-2017), and a 15m Fire Truck can perform ingress and egress movements without conflict. The AutoTURN diagrams are provided in **Figure 7-1** and **Figure 7-2**.

Corner Clearance

The TAC manual defines corner clearance as the distance between the near edge of a roadway intersection and the near edge of a driveway throat. According to section 8.7.8 of the TAC Manual, the minimum corner clearances are 2.0 m for residential driveways. The proposed locations of driveways of each residential lot will be confirmed at a later stage.

8.0 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) refers to a variety of strategies to reduce congestion, minimize the number of single-occupant vehicle, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system. In short, TDM works to change how, when, where, and why people travel.

The primary objectives of this TDM plan are as follows:

- Provision of facilities / operations to promote behavioural change for reduced automobile uses and encourage the use of alternative sustainable transportation modes aside from single-occupancy vehicle (SOV).
- Maximize average auto occupancies, with the intent of a net minimization of site-related auto trips.
- Create and support opportunities for an inclusive transportation system to accommodate and facilitate all potential road users in a safe and efficient manner.

TDM strategies have multiple benefits including the following:

- Reduced auto-related emissions to improve air quality.
- Decreased traffic congestion to reduce travel time.
- Increased travel options.
- Reduced personal transportation costs and energy consumption.
- Support Provincial smart growth objectives.

8.1. Active Transportation

The proposed development should provide an adequate number of bicycle parking spaces to encourage and allow employees to take advantage of the dedicated cycling facilities available in the area, as well as future facilities that are planned by the Township or the County.

For new residential developments, it is important to active transportation facilities with walking and cycling connections to public facilities. The following should be considered in the site design.

Walkability:

Walkability reflects overall walking conditions in an area. It considers the quality of pedestrian facilities, roadway conditions, land use patterns, community support, security and comfort for walking.

Generally, walkability can be evaluated at various scales:

- Site scale – affected by the quality of pathways, building accessways and related facilities;
- Street or neighborhood level – affected by the existence of sidewalks and crosswalks, and roadway conditions (road widths, traffic volumes and speeds); and,
- Community level – affected by land use accessibility, such as the relative location of common destinations and the quality of connections between them.

Cycling:

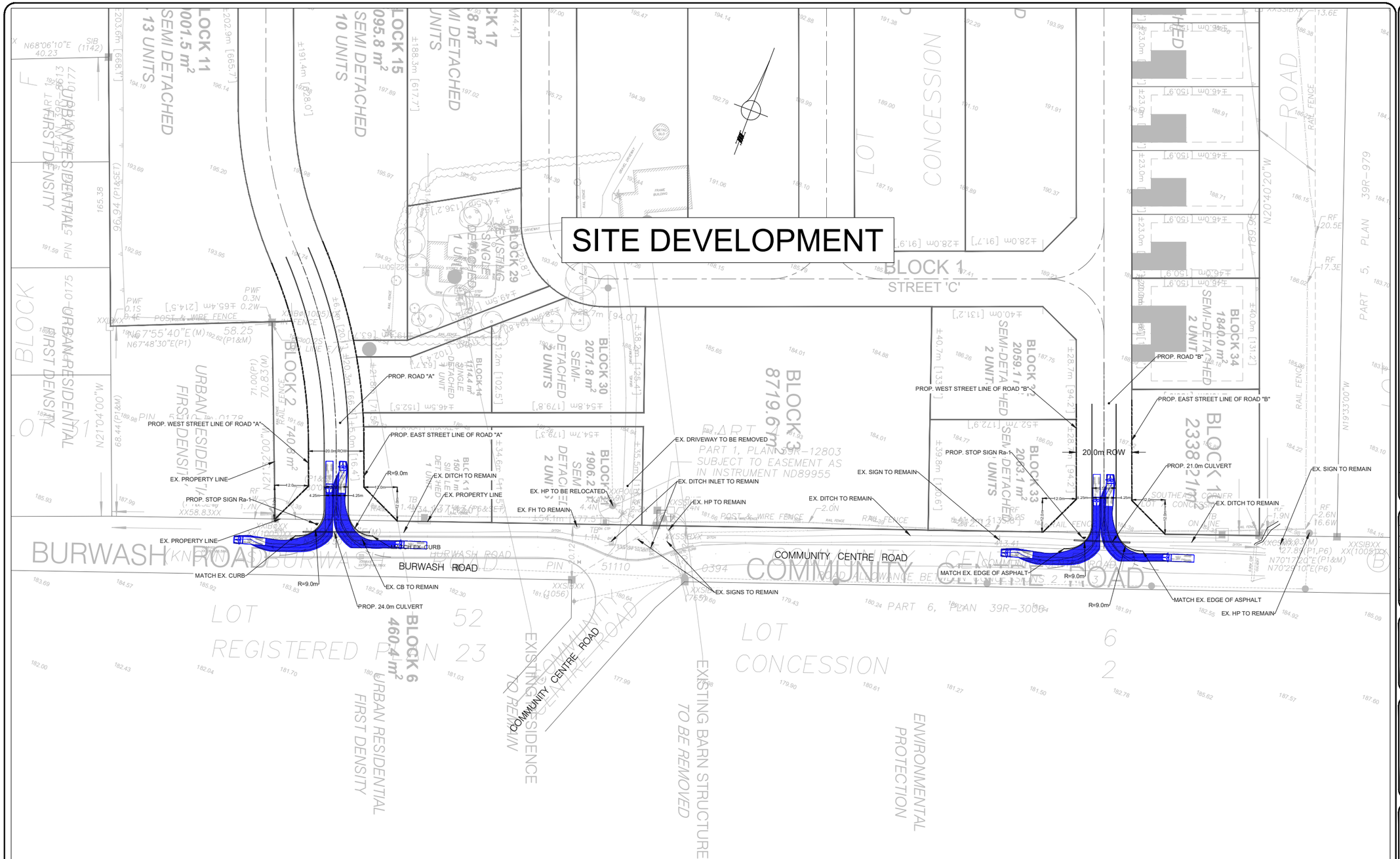
There are numerous ways to improve bicycle transportation, including the following:

- Improving paths and bike lanes;
- Correcting specific roadway hazards (potholes, cracks, narrow lanes, etc.);
- Improving road, road shoulder and path management and maintenance;
- Improving bicycling parking facilities;
- Develop a more connected street network and clustered development;
- Establish public bike systems that provide convenient rental bicycles for short utilitarian trips;
- Safety education, law enforcement and encouragement programs; and,
- Integration with transit

9.0 CONCLUSION

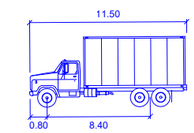
The findings and conclusions of the analysis are as follows:

- The development proposal is to redevelop the land to facilitate a residential subdivision with 135-167 single-detached dwellings. Vehicle access is proposed through two (2) new streets intersecting with Burwash Road and Community Centre Road. The existing single-detached dwelling on the property will remain.
- The proposed development is anticipated to generate of 117 new two-way automobile trips (32 inbound and 85 outbound) during the AM peak hour 155 new two-way automobile trips (98 inbound and 57 outbound) during the PM peak hour.
- Capacity analysis results showed that the study area intersections operate with excellent LOS during the AM and PM peak hours.
- The proposed site accesses are expected to operate with excellent LOS during all peak hours, with minimal delays and queueing.
- Overall, the proposed development is expected to introduce an acceptable traffic impact to the surrounding road network.
- In accordance with the parking rates stipulated in the Zoning By-law, the proposed development is required to provide two (2) parking spaces per unit.
- AutoTURN analysis demonstrates that a heavy single-unit truck (HSU TAC-2017) and a fire truck can access the site and maneuver internally without conflict.
- TDM measures are recommended to encourage alternative modes of transportation and reduce the number of single occupant vehicle trips generated by the proposed development as well as to reduce parking demand, allowing the proposed development to support a parking reduction.



KEY PLAN

DESIGN VEHICLE



HSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

SCALE: NTS

REVISONS

NO	REVISION	DATE	BY

STAMP

nexTrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

PROJECT NAME:

Residential Development

9380 Buwash Road

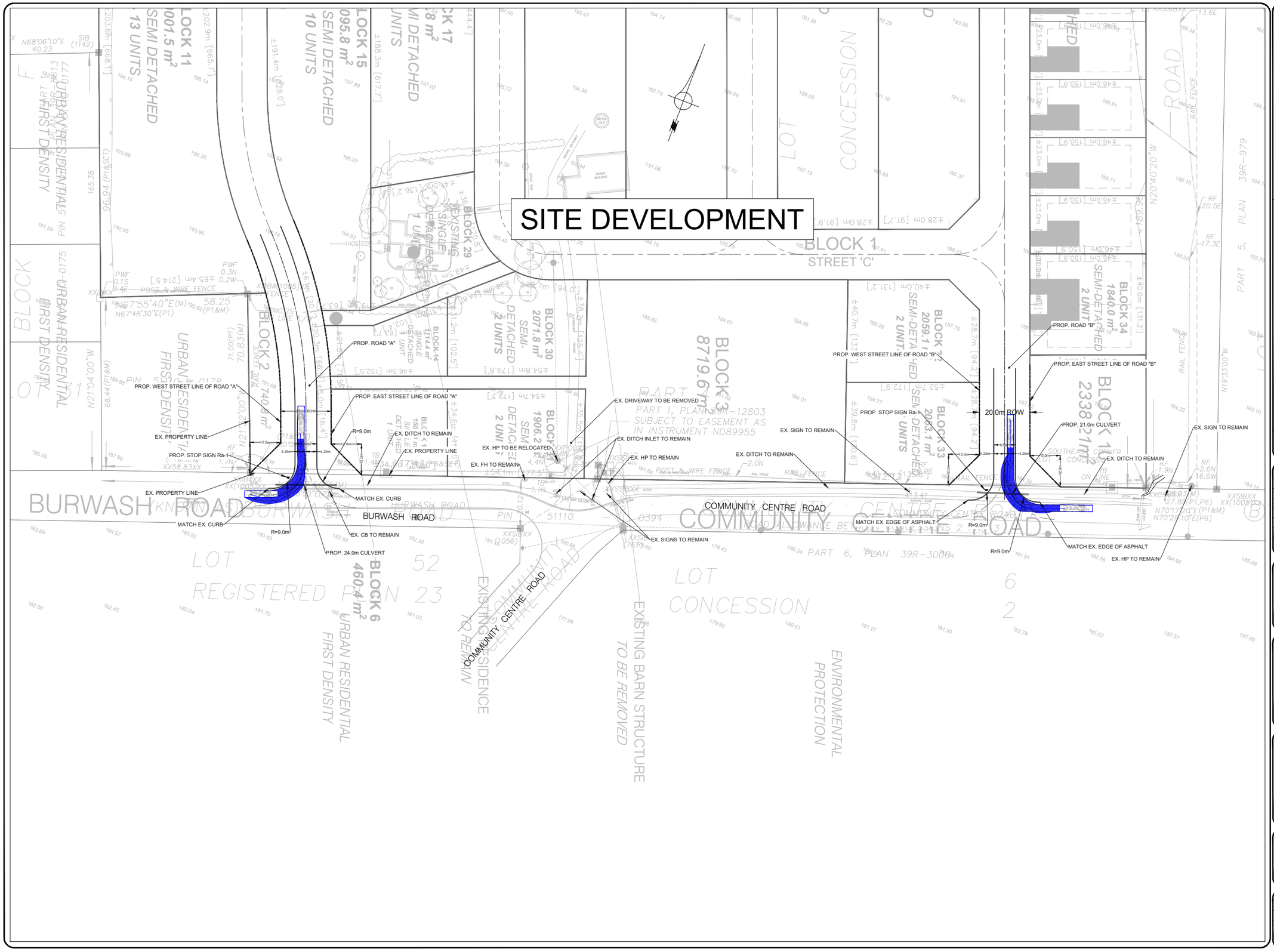
Township of Hamilton

DRAWING TITLE:

AutoTURN Analysis
HSU TAC-2017

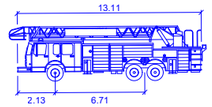
DESIGN BY: J.M.	DATE: August 10, 2026
CHECKED BY: R.P.	PROJECT NO. NT-24-178
DRAWN BY: J.M.	
SCALE: NTS	DRAWING NO. Figure 7-1

SITE DEVELOPMENT



KEY PLAN

DESIGN VEHICLE



Aerial Fire Truck

	meters
Width	: 2.59
Track	: 2.59
Lock to Lock Time	: 6.0
Steering Angle	: 33.3

SCALE: NTS

REVISONS

NO	REVISION	DATE	BY

STAMP

nexTrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

PROJECT NAME:

Residential Development

9380 Buwash Road

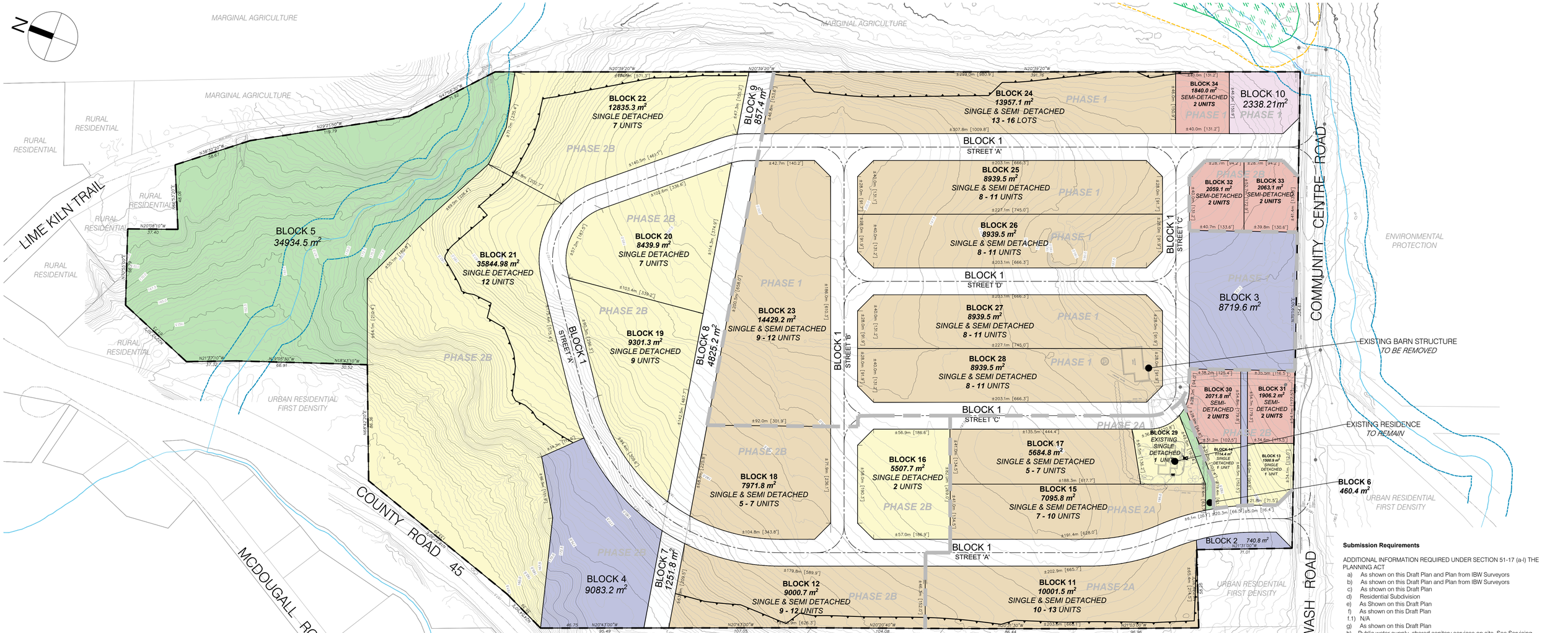
Township of Hamilton

DRAWING TITLE:

AutoTURN Analysis
Aerial Fire Truck

DESIGN BY: J.M.	DATE: August 10, 2026
CHECKED BY: R.P.	PROJECT NO. NT-24-178
DRAWN BY: J.M.	
SCALE: NTS	DRAWING NO. Figure 7-2

Appendix A – Proposed Site Plan



Submission Requirements

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51-17 (a-l) THE PLANNING ACT

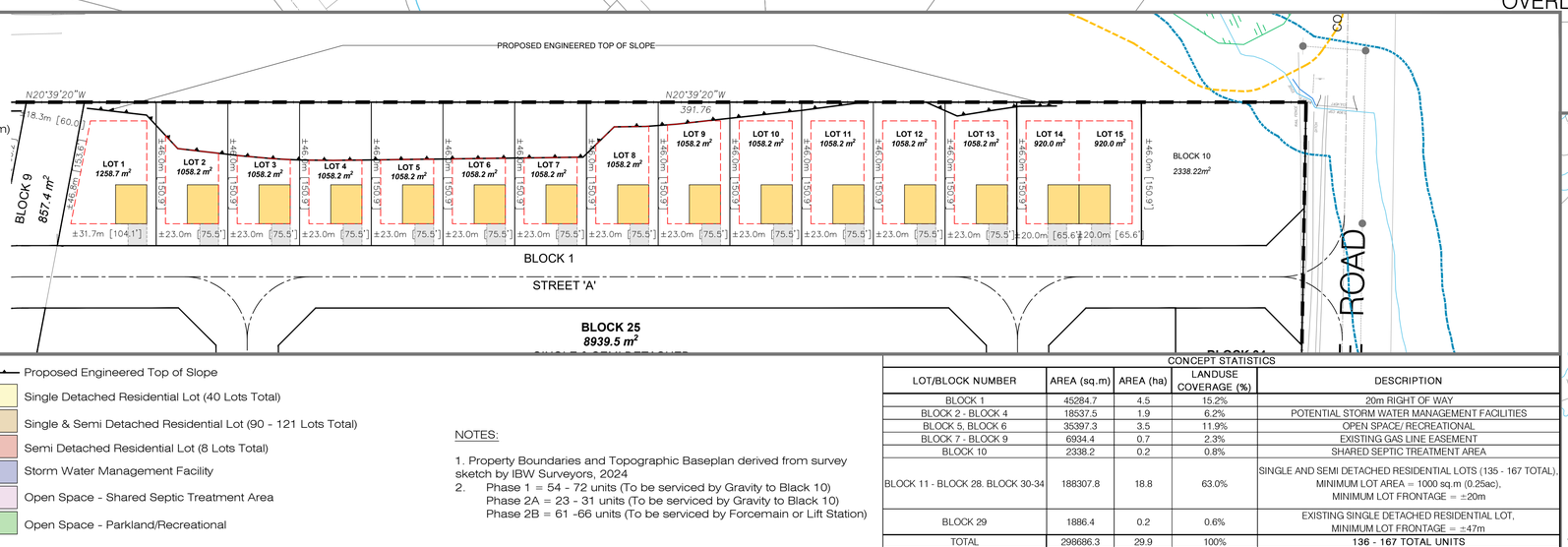
a) As shown on this Draft Plan and Plan from IBW Surveyors
b) As shown on this Draft Plan and Plan from IBW Surveyors
c) As shown on this Draft Plan
d) Residential Subdivision
e) As Shown on this Draft Plan
f) As shown on this Draft Plan
f.1) N/A
g) As shown on this Draft Plan
h) Public water supply, shared sanitary services on site. See Servicing report by Engage Engineering for full details.
i) N/A (Future Studies)
j) As shown on this Draft Plan. Proposed grading and elevations details shown on Grading Plans by Engage Engineering
k) Refer to Refer to Servicing Report from Engage Engineering for full details.
l) As shown on this Draft Plan

CONCEPT LOT LAYOUT (TYP.)

Building Envelope
Front Yard Setback: 7.0 m
Side Yard Setback: 3.0 m
Rear Yard Setback: 6.0 m

Potential 2 storey Residence (125 sq.m)
Gross Floor Area: 250 m²

Potential Driveway



LEGEND

- Subject Lands
- Existing Parcel Line
- Proposed Lot/Block Line
- Proposed ROW Centreline
- Existing Watercourse
- Watercourse Buffer (15m)
- Existing Unevaluated Wetland
- Wetland Buffer (15m)
- Proposed Engineered Top of Slope
- Single Detached Residential Lot (40 Lots Total)
- Single & Semi Detached Residential Lot (90 - 121 Lots Total)
- Semi Detached Residential Lot (8 Lots Total)
- Storm Water Management Facility
- Open Space - Shared Septic Treatment Area
- Open Space - Parkland/Recreational

NOTES:

1. Property Boundaries and Topographic Baseplan derived from survey sketch by IBW Surveyors, 2024
2. Phase 1 = 54 - 72 units (To be serviced by Gravity to Black 10)
   Phase 2A = 23 - 31 units (To be serviced by Gravity to Black 10)
   Phase 2B = 61 -66 units (To be serviced by Forcemain or Lift Station)

CONCEPT STATISTICS

LOT/BLOCK NUMBER	AREA (sq.m)	AREA (ha)	LANDUSE COVERAGE (%)	DESCRIPTION
BLOCK 1	45284.7	4.5	15.2%	20m RIGHT OF WAY
BLOCK 2 - BLOCK 4	18537.5	1.9	6.2%	POTENTIAL STORM WATER MANAGEMENT FACILITIES
BLOCK 5, BLOCK 6	35397.3	3.5	11.9%	OPEN SPACE/ RECREATIONAL
BLOCK 7 - BLOCK 9	6934.4	0.7	2.3%	EXISTING GAS LINE EASEMENT
BLOCK 10	2338.2	0.2	0.8%	SHARED SEPTIC TREATMENT AREA
BLOCK 11 - BLOCK 28. BLOCK 30-34	188307.8	18.8	63.0%	SINGLE AND SEMI DETACHED RESIDENTIAL LOTS (135 - 167 TOTAL), MINIMUM LOT AREA = 1000 sq.m (0.25ac), MINIMUM LOT FRONTAGE = ±20m
BLOCK 29	1886.4	0.2	0.6%	EXISTING SINGLE DETACHED RESIDENTIAL LOT, MINIMUM LOT FRONTAGE = ±47m
TOTAL	298686.3	29.9	100%	136 - 167 TOTAL UNITS



CONCEPT DRAFT PLAN
CDP1

BURWASH SUBDIVISION
Stalwood Homes - c/o Anthony Dew

PART OF 9380 BURWASH ROAD

TOWNSHIP OF HAMILTON
COUNTY OF NORTHUMBERLAND

Project Number:	24-2700
Drawn By:	MC/PP
Horiz. Scale:	1:1300
Revision Date:	July 24, 2026

416 Chambers Street
Peterborough, ON K9H 3V1
T 705.876.8340 | F 705.742.8343

Appendix B – Existing Traffic Data

Spectrum

Turning Movement Count
Location Name: BURWASH ROAD & COMMUNITY CENTRE ROAD
Date: Thu, Oct 24, 2024 Deployment Lead: Rey Fernandez

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (1 . BURWASH ROAD & COMMUNITY CENTRE ROAD)

Start Time	Southbound PRIVATE DRIVEWAY						Westbound COMMUNITY CENTRE ROAD						Northbound COMMUNITY CENTRE ROAD						Eastbound BURWASH ROAD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	0	0	0	0	0	0	0	0	8	0	0	8	3	2	0	0	0	5	2	1	0	0	1	3	16	
07:15:00	0	0	0	0	0	0	0	0	8	0	0	8	1	0	0	0	0	1	1	0	0	0	0	1	10	
07:30:00	0	0	0	0	0	0	0	1	10	0	0	11	4	0	1	0	0	5	5	1	0	0	0	6	22	
07:45:00	0	0	0	0	0	0	0	0	12	0	0	12	9	0	2	0	0	11	9	0	0	0	0	9	32	80
08:00:00	0	0	0	0	0	0	0	0	5	0	0	5	3	0	3	0	0	6	4	0	0	0	0	4	15	79
08:15:00	0	0	0	0	0	0	0	0	9	0	0	9	2	0	1	0	0	3	3	0	0	0	0	3	15	84
08:30:00	0	0	0	0	0	0	0	1	5	0	0	6	5	1	5	0	0	11	3	0	0	0	0	3	20	82
08:45:00	0	1	1	0	0	2	0	0	6	0	0	6	2	0	2	0	0	4	3	1	0	0	0	4	16	66
09:00:00	0	0	0	0	0	0	0	2	8	0	0	10	2	0	7	0	0	9	19	0	0	0	0	19	38	89
09:15:00	0	0	0	0	2	0	0	0	6	0	0	6	2	0	6	0	0	8	30	2	0	0	3	32	46	120
09:30:00	0	0	0	0	0	0	0	0	4	0	0	4	3	0	2	0	0	5	9	3	0	0	0	12	21	121
09:45:00	0	1	0	0	0	1	0	0	13	0	0	13	2	1	0	0	0	3	3	0	0	0	1	3	20	125
BREAK																										
16:00:00	0	0	0	0	0	0	0	0	7	0	0	7	7	1	1	0	0	9	8	2	0	0	0	10	26	
16:15:00	0	1	0	0	0	1	0	0	6	0	0	6	11	0	3	0	0	14	6	1	0	0	0	7	28	
16:30:00	0	1	0	0	0	1	0	1	5	0	0	6	13	0	1	0	0	14	9	4	0	0	0	13	34	
16:45:00	0	1	0	0	0	1	0	0	4	0	0	4	6	0	4	0	0	10	2	1	0	0	0	3	18	106
17:00:00	0	0	0	0	0	0	0	0	6	0	0	6	14	0	0	0	0	14	4	2	0	0	0	6	26	106
17:15:00	0	1	0	0	0	1	0	0	6	0	0	6	12	1	0	0	0	13	2	3	0	0	0	5	25	103
17:30:00	0	0	0	0	0	0	0	0	5	0	0	5	4	1	4	0	0	9	2	2	0	0	0	4	18	87
17:45:00	0	0	0	0	0	0	0	0	10	0	0	10	8	0	0	0	0	8	0	2	0	0	0	2	20	89
18:00:00	0	0	0	0	0	0	0	0	7	0	0	7	9	0	0	0	0	9	2	2	0	0	0	4	20	83
18:15:00	0	0	0	0	0	0	0	0	7	0	0	7	11	0	2	0	0	13	2	1	0	0	0	3	23	81
18:30:00	0	0	0	0	0	0	0	0	11	0	0	11	7	0	0	0	0	7	1	1	0	0	0	2	20	83
18:45:00	0	0	0	0	0	0	0	0	8	0	0	8	9	0	0	0	0	9	2	0	0	0	0	2	19	82
Grand Total	0	6	1	0	2	7	0	5	176	0	0	181	149	7	44	0	0	200	131	29	0	0	5	160	**548**	-
Approach%	0%	85.7%	14.3%	0%		-	0%	2.8%	97.2%	0%		-	74.5%	3.5%	22%	0%		-	81.9%	18.1%	0%	0%		-	**-**	-
Totals %	0%	1.1%	0.2%	0%		1.3%	0%	0.9%	32.1%	0%		33%	27.2%	1.3%	8%	0%		36.5%	23.9%	5.3%	0%	0%		29.2%	**-**	-
Heavy	0	0	0	0		-	0	1	5	0		-	6	0	3	0		-	6	0	0	0		-	**-**	-
Heavy %	0%	0%	0%	0%		-	0%	20%	2.8%	0%		-	4%	0%	6.8%	0%		-	4.6%	0%	0%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 09:00 AM - 10:00 AM **Weather: Clear Sky (2.33 °C)**

Start Time	Southbound PRIVATE DRIVEWAY						Westbound COMMUNITY CENTRE ROAD						Northbound COMMUNITY CENTRE ROAD						Eastbound BURWASH ROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
09:00:00	0	0	0	0	0	0	0	2	8	0	0	10	2	0	7	0	0	9	19	0	0	0	0	19	38
09:15:00	0	0	0	0	2	0	0	0	6	0	0	6	2	0	6	0	0	8	30	2	0	0	3	32	46
09:30:00	0	0	0	0	0	0	0	0	4	0	0	4	3	0	2	0	0	5	9	3	0	0	0	12	21
09:45:00	0	1	0	0	0	1	0	0	13	0	0	13	2	1	0	0	0	3	3	0	0	0	1	3	20
Grand Total	0	1	0	0	2	1	0	2	31	0	0	33	9	1	15	0	0	25	61	5	0	0	4	66	**125**
Approach%	0%	100%	0%	0%		-	0%	6.1%	93.9%	0%		-	36%	4%	60%	0%		-	92.4%	7.6%	0%	0%		-	**-**
Totals %	0%	0.8%	0%	0%		0.8%	0%	1.6%	24.8%	0%		26.4%	7.2%	0.8%	12%	0%		20%	48.8%	4%	0%	0%		52.8%	**-**
PHF	0	0.25	0	0		0.25	0	0.25	0.6	0		0.63	0.75	0.25	0.54	0		0.69	0.51	0.42	0	0		0.52	**-**
Heavy	0	0	0	0		0	0	1	1	0		2	0	0	3	0		3	6	0	0	0		6	**-**
Heavy %	0%	0%	0%	0%		0%	0%	50%	3.2%	0%		6.1%	0%	0%	20%	0%		12%	9.8%	0%	0%	0%		9.1%	**-**
Lights	0	1	0	0		1	0	1	30	0		31	9	1	12	0		22	55	5	0	0		60	**-**
Lights %	0%	100%	0%	0%		100%	0%	50%	96.8%	0%		93.9%	100%	100%	80%	0%		88%	90.2%	100%	0%	0%		90.9%	**-**
Single-Unit Trucks	0	0	0	0		0	0	0	1	0		1	0	0	0	0		0	1	0	0	0		1	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	3.2%	0%		3%	0%	0%	0%	0%		0%	1.6%	0%	0%	0%		1.5%	**-**
Buses	0	0	0	0		0	0	1	0	0		1	0	0	3	0		3	5	0	0	0		5	**-**
Buses %	0%	0%	0%	0%		0%	0%	50%	0%	0%		3%	0%	0%	20%	0%		12%	8.2%	0%	0%	0%		7.6%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	**-**
Pedestrians%	-	-	-	-	33.3%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	66.7%		**-**

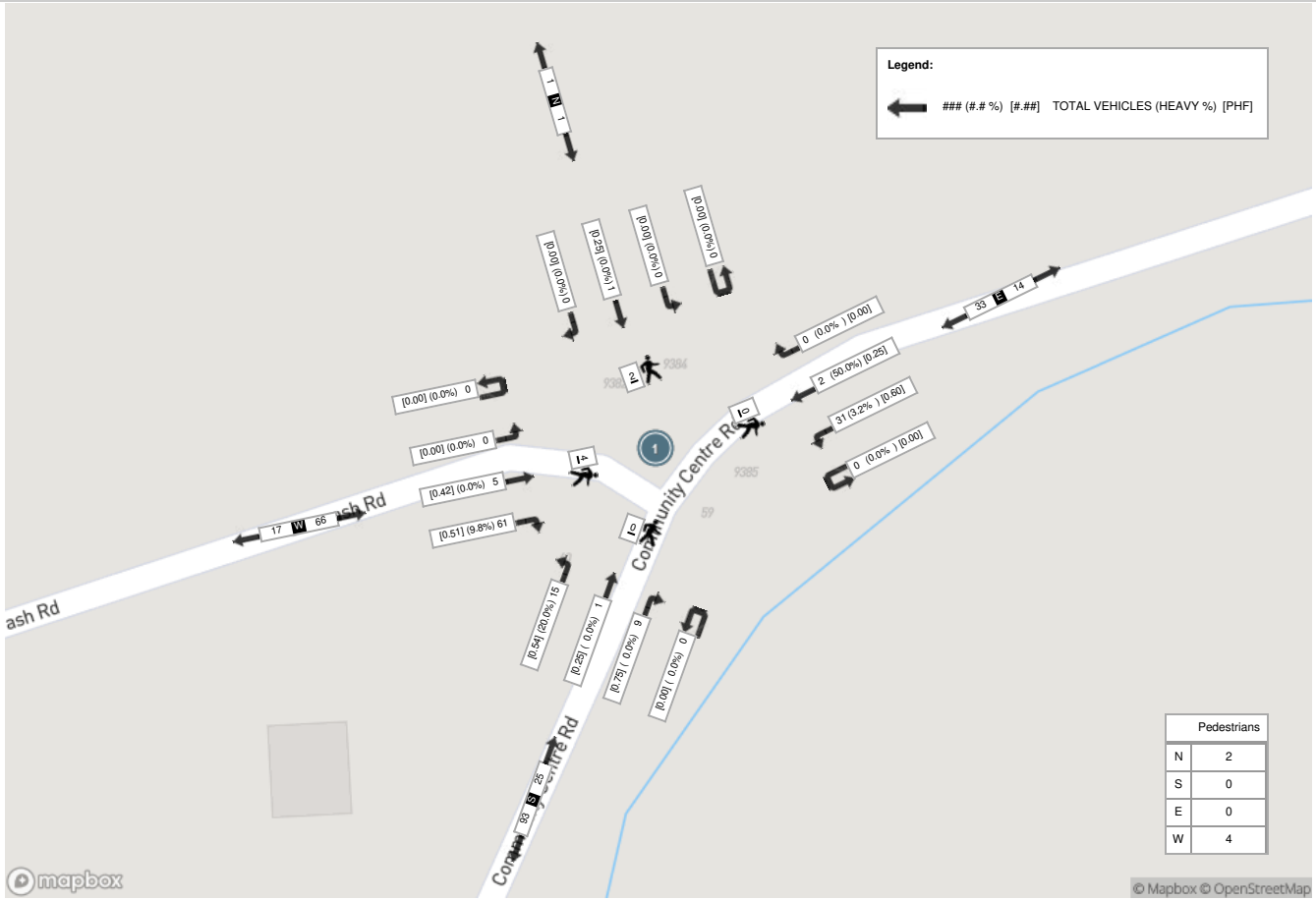
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (11.33 °C)

Start Time	Southbound PRIVATE DRIVEWAY						Westbound COMMUNITY CENTRE ROAD						Northbound COMMUNITY CENTRE ROAD						Eastbound BURWASH ROAD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:15:00	0	1	0	0	0	1	0	0	6	0	0	6	11	0	3	0	0	14	6	1	0	0	0	7	28
16:30:00	0	1	0	0	0	1	0	1	5	0	0	6	13	0	1	0	0	14	9	4	0	0	0	13	34
16:45:00	0	1	0	0	0	1	0	0	4	0	0	4	6	0	4	0	0	10	2	1	0	0	0	3	18
17:00:00	0	0	0	0	0	0	0	0	6	0	0	6	14	0	0	0	0	14	4	2	0	0	0	6	26
Grand Total	0	3	0	0	0	3	0	1	21	0	0	22	44	0	8	0	0	52	21	8	0	0	0	29	**106**
Approach%	0%	100%	0%	0%		-	0%	4.5%	95.5%	0%		-	84.6%	0%	15.4%	0%		-	72.4%	27.6%	0%	0%		-	**-**
Totals %	0%	2.8%	0%	0%		2.8%	0%	0.9%	19.8%	0%		20.8%	41.5%	0%	7.5%	0%		49.1%	19.8%	7.5%	0%	0%		27.4%	**-**
PHF	0	0.75	0	0		0.75	0	0.25	0.88	0		0.92	0.79	0	0.5	0		0.93	0.58	0.5	0	0		0.56	**-**
Heavy	0	0	0	0		0	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	**-**
Heavy %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	2.3%	0%	0%	0%		1.9%	0%	0%	0%	0%		0%	**-**
Lights	0	3	0	0		3	0	1	21	0		22	42	0	8	0		50	20	8	0	0		28	**-**
Lights %	0%	100%	0%	0%		100%	0%	100%	100%	0%		100%	95.5%	0%	100%	0%		96.2%	95.2%	100%	0%	0%		96.6%	**-**
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	2.3%	0%	0%	0%		1.9%	0%	0%	0%	0%		0%	**-**
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	1	0	0	0		1	1	0	0	0		1	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	2.3%	0%	0%	0%		1.9%	4.8%	0%	0%	0%		3.4%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

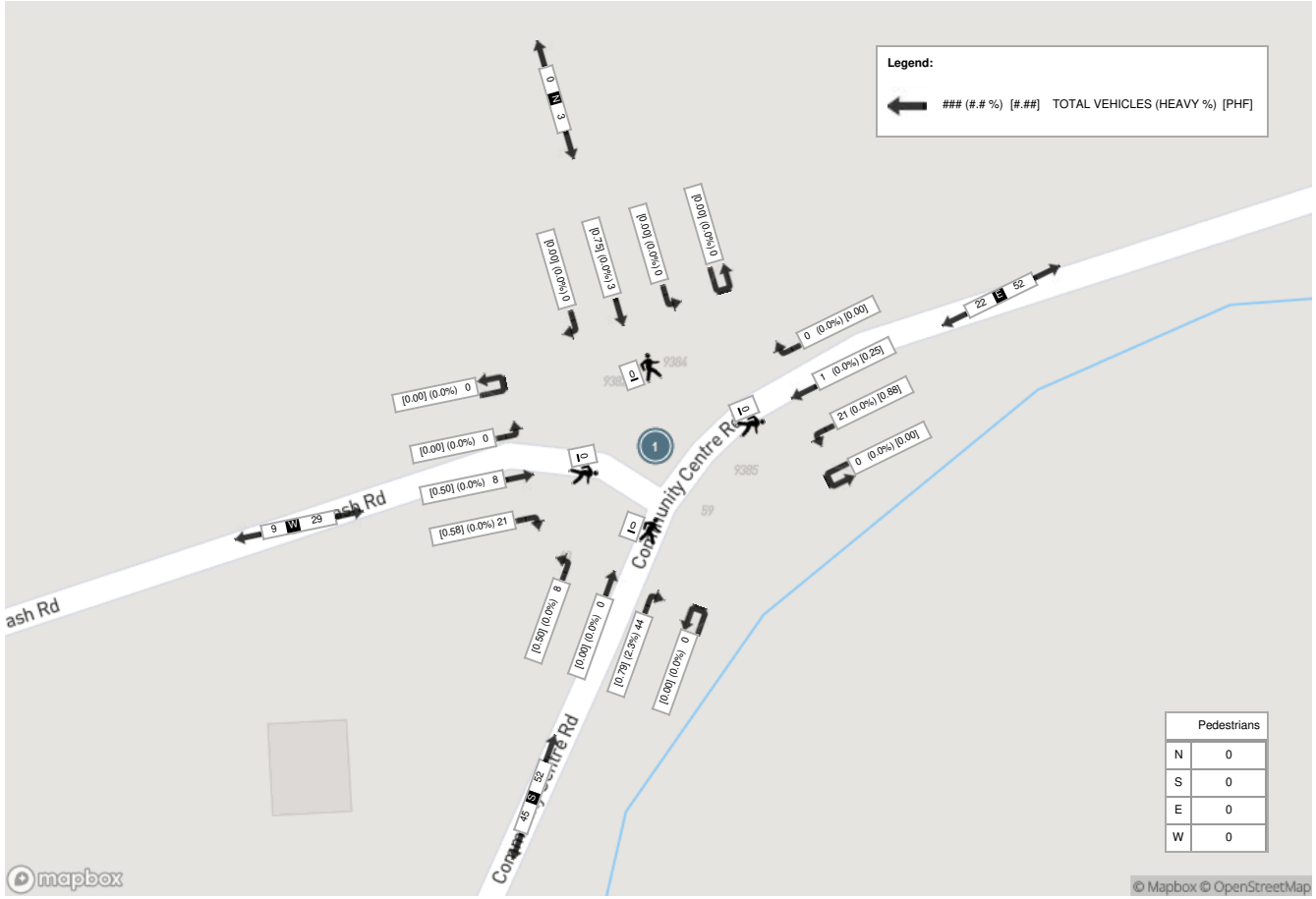
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 09:00 AM - 10:00 AM Weather: Clear Sky (2.33 °C)



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (11.33 °C)



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (2 . COUNTY ROAD 45 & COMMUNITY CENTRE ROAD)

Start Time	Southbound COUNTY ROAD 45					Westbound COMMUNITY CENTRE ROAD					Northbound COUNTY ROAD 45					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total		
07:00:00	48	1	0	0	49	1	8	0	0	9	5	27	0	0	32	90	
07:15:00	69	2	0	0	71	4	8	0	0	12	3	31	0	0	34	117	
07:30:00	98	7	0	1	105	3	15	0	0	18	5	42	0	0	47	170	
07:45:00	117	3	0	0	120	5	20	0	0	25	13	44	0	0	57	202	579
08:00:00	113	7	0	1	120	6	14	0	0	20	7	55	0	0	62	202	691
08:15:00	90	19	0	0	109	6	15	0	0	21	8	56	0	0	64	194	768
08:30:00	92	6	0	0	98	1	11	0	0	12	15	64	0	0	79	189	787
08:45:00	89	4	0	0	93	2	15	0	0	17	10	40	0	0	50	160	745
09:00:00	75	3	0	0	78	9	24	0	0	33	11	58	0	0	69	180	723
09:15:00	83	1	0	0	84	9	39	0	0	48	8	44	0	0	52	184	713
09:30:00	76	5	0	0	81	4	16	0	1	20	7	48	0	0	55	156	680
09:45:00	84	0	0	0	84	7	10	0	1	17	9	49	0	0	58	159	679
BREAK																	
16:00:00	77	6	0	0	83	15	20	0	0	35	12	108	0	0	120	238	
16:15:00	81	8	0	0	89	9	20	0	0	29	21	139	0	0	160	278	
16:30:00	79	5	0	0	84	6	18	0	0	24	32	120	0	0	152	260	
16:45:00	88	2	0	0	90	3	10	0	0	13	18	125	0	0	143	246	1022
17:00:00	74	5	0	0	79	4	12	0	0	16	15	149	0	0	164	259	1043
17:15:00	76	4	0	0	80	3	11	0	0	14	21	124	0	0	145	239	1004
17:30:00	78	4	0	0	82	2	5	0	0	7	17	106	0	0	123	212	956
17:45:00	55	8	0	0	63	4	14	0	0	18	23	108	0	0	131	212	922
18:00:00	60	2	0	0	62	9	30	0	0	39	11	83	0	0	94	195	858
18:15:00	53	5	0	0	58	0	13	0	0	13	14	77	0	0	91	162	781
18:30:00	66	7	0	0	73	4	8	0	0	12	14	79	0	0	93	178	747
18:45:00	45	16	0	0	61	5	13	0	0	18	26	52	0	0	78	157	692
Grand Total	1866	130	0	2	1996	121	369	0	2	490	325	1828	0	0	2153	**4639**	-
Approach%	93.5%	6.5%	0%		-	24.7%	75.3%	0%		-	15.1%	84.9%	0%		-	**-**	-
Totals %	40.2%	2.8%	0%		43%	2.6%	8%	0%		10.6%	7%	39.4%	0%		46.4%	**-**	-
Heavy	64	3	0		-	4	9	0		-	7	52	0		-	**-**	-
Heavy %	3.4%	2.3%	0%		-	3.3%	2.4%	0%		-	2.2%	2.8%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

Peak Hour: 07:45 AM - 08:45 AM Weather: Clear Sky (2.33 °C)

Start Time	Southbound COUNTY ROAD 45					Westbound COMMUNITY CENTRE ROAD					Northbound COUNTY ROAD 45					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
07:45:00	117	3	0	0	120	5	20	0	0	25	13	44	0	0	57	202
08:00:00	113	7	0	1	120	6	14	0	0	20	7	55	0	0	62	202
08:15:00	90	19	0	0	109	6	15	0	0	21	8	56	0	0	64	194
08:30:00	92	6	0	0	98	1	11	0	0	12	15	64	0	0	79	189
Grand Total	412	35	0	1	447	18	60	0	0	78	43	219	0	0	262	**787**
Approach%	92.2%	7.8%	0%		-	23.1%	76.9%	0%		-	16.4%	83.6%	0%		-	**-**
Totals %	52.4%	4.4%	0%		56.8%	2.3%	7.6%	0%		9.9%	5.5%	27.8%	0%		33.3%	**-**
PHF	0.88	0.46	0		0.93	0.75	0.75	0		0.78	0.72	0.86	0		0.83	**-**
Heavy	10	0	0		10	0	1	0		1	3	19	0		22	**-**
Heavy %	2.4%	0%	0%		2.2%	0%	1.7%	0%		1.3%	7%	8.7%	0%		8.4%	**-**
Lights	402	35	0		437	18	59	0		77	40	200	0		240	**-**
Lights %	97.6%	100%	0%		97.8%	100%	98.3%	0%		98.7%	93%	91.3%	0%		91.6%	**-**
Single-Unit Trucks	8	0	0		8	0	0	0		0	1	9	0		10	**-**
Single-Unit Trucks %	1.9%	0%	0%		1.8%	0%	0%	0%		0%	2.3%	4.1%	0%		3.8%	**-**
Buses	2	0	0		2	0	1	0		1	2	8	0		10	**-**
Buses %	0.5%	0%	0%		0.4%	0%	1.7%	0%		1.3%	4.7%	3.7%	0%		3.8%	**-**
Articulated Trucks	0	0	0		0	0	0	0		0	0	2	0		2	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.9%	0%		0.8%	**-**
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	100%		-	-	-	0%		-	-	-	0%		**-**

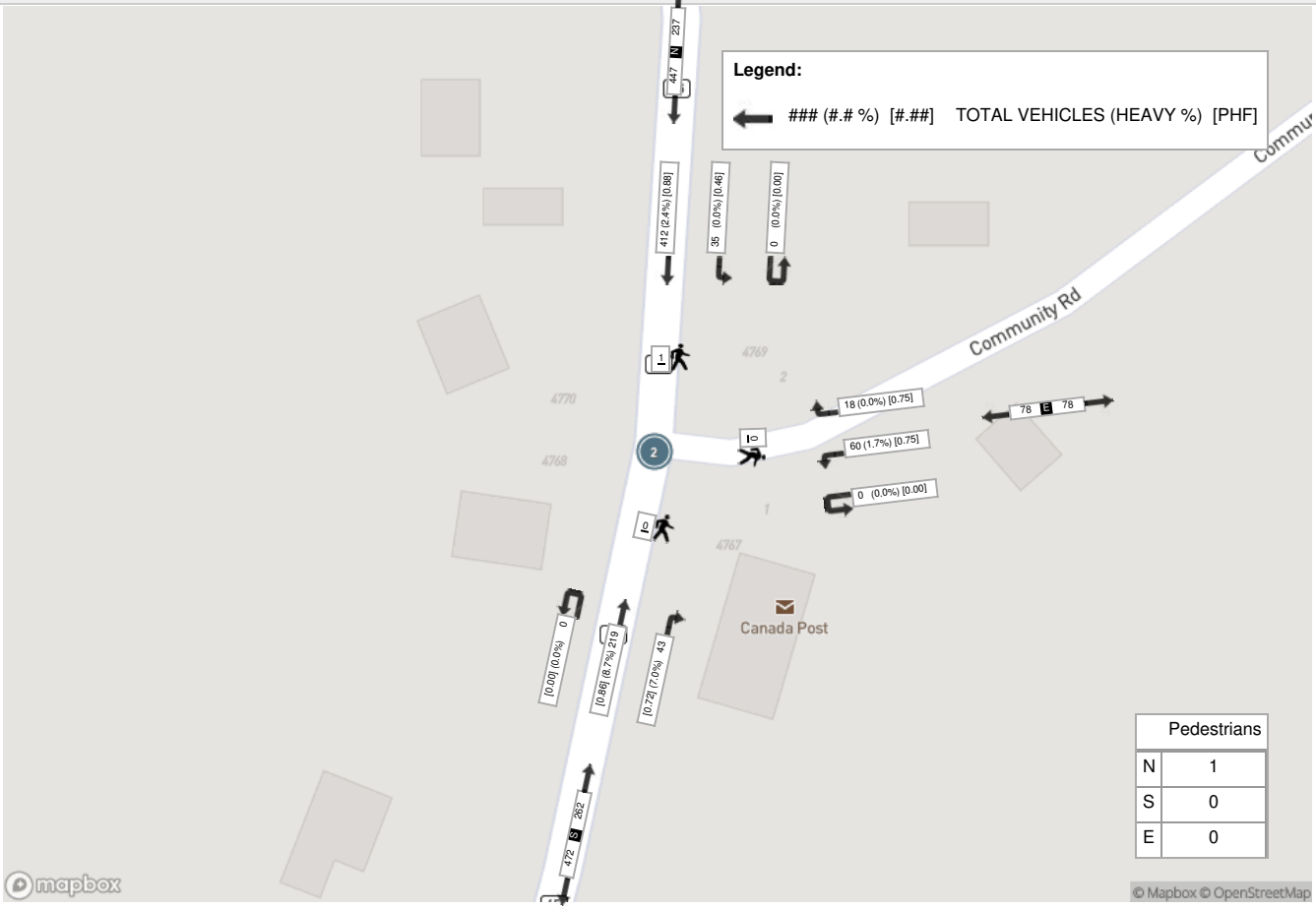
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (11.33 °C)

Start Time	Southbound COUNTY ROAD 45					Westbound COMMUNITY CENTRE ROAD					Northbound COUNTY ROAD 45					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
16:15:00	81	8	0	0	89	9	20	0	0	29	21	139	0	0	160	278
16:30:00	79	5	0	0	84	6	18	0	0	24	32	120	0	0	152	260
16:45:00	88	2	0	0	90	3	10	0	0	13	18	125	0	0	143	246
17:00:00	74	5	0	0	79	4	12	0	0	16	15	149	0	0	164	259
Grand Total	322	20	0	0	342	22	60	0	0	82	86	533	0	0	619	**1043**
Approach%	94.2%	5.8%	0%		-	26.8%	73.2%	0%		-	13.9%	86.1%	0%		-	**-**
Totals %	30.9%	1.9%	0%		32.8%	2.1%	5.8%	0%		7.9%	8.2%	51.1%	0%		59.3%	**-**
PHF	0.91	0.63	0		0.95	0.61	0.75	0		0.71	0.67	0.89	0		0.94	**-**
Heavy	16	0	0		16	0	0	0		0	0	8	0		8	**-**
Heavy %	5%	0%	0%		4.7%	0%	0%	0%		0%	0%	1.5%	0%		1.3%	**-**
Lights	306	20	0		326	22	60	0		82	86	525	0		611	**-**
Lights %	95%	100%	0%		95.3%	100%	100%	0%		100%	100%	98.5%	0%		98.7%	**-**
Single-Unit Trucks	9	0	0		9	0	0	0		0	0	4	0		4	**-**
Single-Unit Trucks %	2.8%	0%	0%		2.6%	0%	0%	0%		0%	0%	0.8%	0%		0.6%	**-**
Buses	6	0	0		6	0	0	0		0	0	1	0		1	**-**
Buses %	1.9%	0%	0%		1.8%	0%	0%	0%		0%	0%	0.2%	0%		0.2%	**-**
Articulated Trucks	1	0	0		1	0	0	0		0	0	3	0		3	**-**
Articulated Trucks %	0.3%	0%	0%		0.3%	0%	0%	0%		0%	0%	0.6%	0%		0.5%	**-**
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

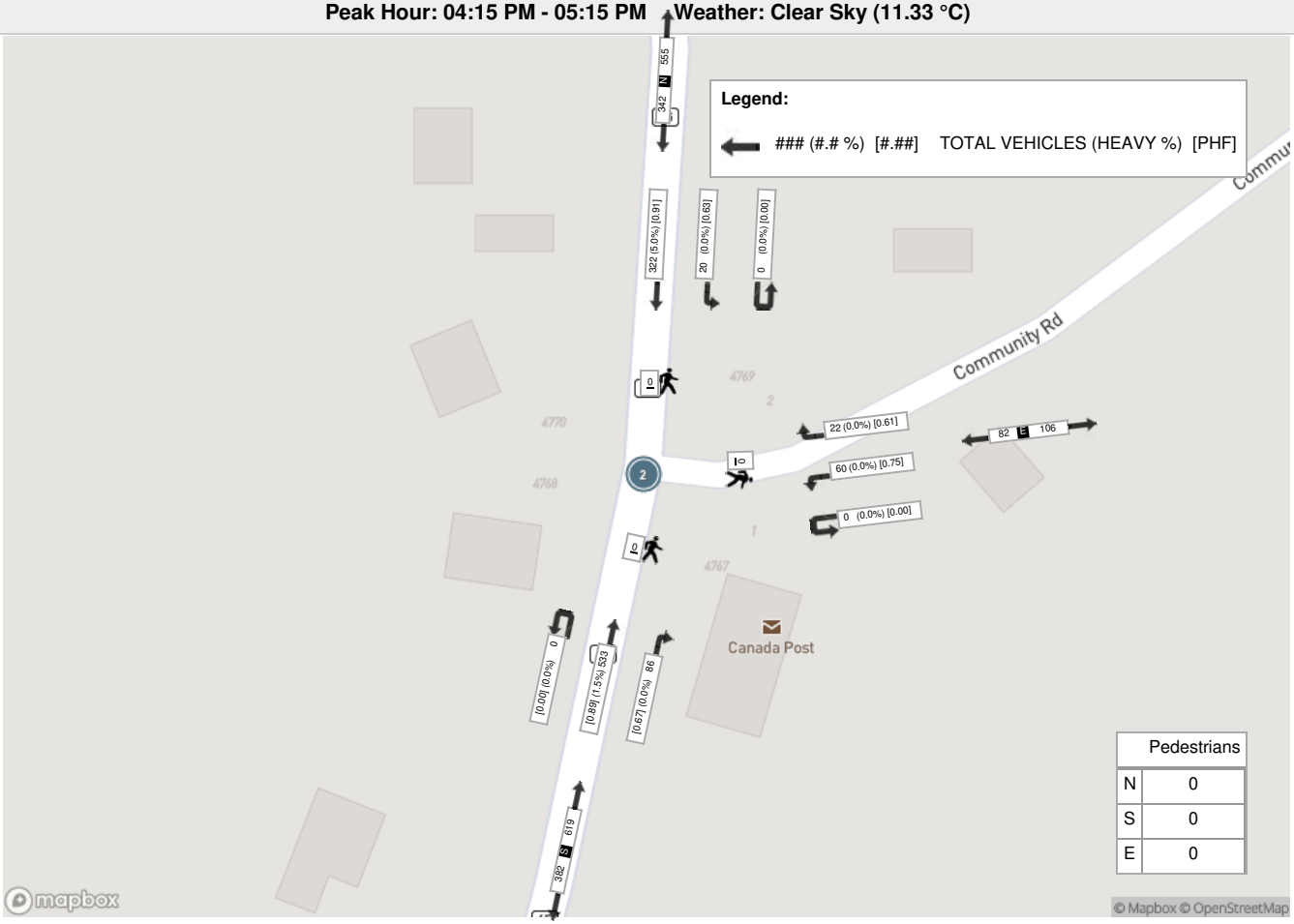
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:45 AM - 08:45 AM Weather: Clear Sky (2.33 °C)



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (11.33 °C)



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (3 . COUNTY ROAD 45 & GULLY ROAD)

Start Time	Southbound COUNTY ROAD 45					Westbound GULLY ROAD					Northbound COUNTY ROAD 45					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total		
07:00:00	69	0	0	0	69	0	1	0	0	1	0	36	0	0	36	106	
07:15:00	93	2	0	0	95	0	0	0	0	0	1	34	0	0	35	130	
07:30:00	128	0	0	0	128	0	0	0	0	0	3	49	0	0	52	180	
07:45:00	126	1	0	0	127	0	0	0	0	0	5	50	0	0	55	182	598
08:00:00	122	0	0	0	122	0	2	0	0	2	2	56	0	0	58	182	674
08:15:00	107	0	0	0	107	0	0	0	0	0	5	55	0	0	60	167	711
08:30:00	104	2	0	0	106	0	0	0	0	0	2	59	0	0	61	167	698
08:45:00	105	3	0	0	108	0	0	0	0	0	3	42	0	0	45	153	669
09:00:00	68	5	0	0	73	0	0	0	0	0	15	56	0	0	71	144	631
09:15:00	94	3	0	0	97	0	1	0	1	1	14	47	0	0	61	159	623
09:30:00	86	2	0	0	88	0	0	0	0	0	1	65	0	0	66	154	610
09:45:00	92	0	0	0	92	0	0	0	0	0	1	60	0	0	61	153	610
BREAK																	
16:00:00	87	1	0	0	88	0	0	0	0	0	0	126	0	0	126	214	
16:15:00	92	1	0	0	93	0	0	0	0	0	4	160	0	0	164	257	
16:30:00	88	2	0	0	90	0	0	0	0	0	3	135	0	0	138	228	
16:45:00	97	1	0	0	98	0	0	0	0	0	3	147	0	0	150	248	947
17:00:00	91	1	0	0	92	0	0	0	0	0	1	173	0	0	174	266	999
17:15:00	83	0	0	0	83	0	1	0	0	1	3	150	0	0	153	237	979
17:30:00	89	2	0	0	91	0	0	0	0	0	3	125	0	0	128	219	970
17:45:00	65	2	0	0	67	0	0	0	0	0	1	119	0	0	120	187	909
18:00:00	67	2	0	0	69	0	0	0	0	0	2	97	0	0	99	168	811
18:15:00	66	0	0	0	66	0	0	0	0	0	2	87	0	0	89	155	729
18:30:00	66	0	0	0	66	0	0	0	0	0	1	90	0	0	91	157	667
18:45:00	58	0	0	0	58	0	0	0	0	0	1	73	0	0	74	132	612
Grand Total	2143	30	0	0	2173	0	5	0	1	5	76	2091	0	0	2167	**4345**	-
Approach%	98.6%	1.4%	0%		-	0%	100%	0%		-	3.5%	96.5%	0%		-	**-**	-
Totals %	49.3%	0.7%	0%		50%	0%	0.1%	0%		0.1%	1.7%	48.1%	0%		49.9%	**-**	-
Heavy	79	1	0		-	0	0	0		-	1	72	0		-	**-**	-
Heavy %	3.7%	3.3%	0%		-	0%	0%	0%		-	1.3%	3.4%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Clear Sky (2.33 °C)

Start Time	Southbound COUNTY ROAD 45					Westbound GULLY ROAD					Northbound COUNTY ROAD 45					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
07:30:00	128	0	0	0	128	0	0	0	0	0	3	49	0	0	52	180
07:45:00	126	1	0	0	127	0	0	0	0	0	5	50	0	0	55	182
08:00:00	122	0	0	0	122	0	2	0	0	2	2	56	0	0	58	182
08:15:00	107	0	0	0	107	0	0	0	0	0	5	55	0	0	60	167
Grand Total	483	1	0	0	484	0	2	0	0	2	15	210	0	0	225	**711**
Approach%	99.8%	0.2%	0%		-	0%	100%	0%		-	6.7%	93.3%	0%		-	**-**
Totals %	67.9%	0.1%	0%		68.1%	0%	0.3%	0%		0.3%	2.1%	29.5%	0%		31.6%	**-**
PHF	0.94	0.25	0		0.95	0	0.25	0		0.25	0.75	0.94	0		0.94	**-**
Heavy	20	0	0		20	0	0	0		0	0	19	0		19	**-**
Heavy %	4.1%	0%	0%		4.1%	0%	0%	0%		0%	0%	9%	0%		8.4%	**-**
Lights	463	1	0		464	0	2	0		2	15	191	0		206	**-**
Lights %	95.9%	100%	0%		95.9%	0%	100%	0%		100%	100%	91%	0%		91.6%	**-**
Single-Unit Trucks	8	0	0		8	0	0	0		0	0	9	0		9	**-**
Single-Unit Trucks %	1.7%	0%	0%		1.7%	0%	0%	0%		0%	0%	4.3%	0%		4%	**-**
Buses	12	0	0		12	0	0	0		0	0	9	0		9	**-**
Buses %	2.5%	0%	0%		2.5%	0%	0%	0%		0%	0%	4.3%	0%		4%	**-**
Articulated Trucks	0	0	0		0	0	0	0		0	0	1	0		1	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.5%	0%		0.4%	**-**
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

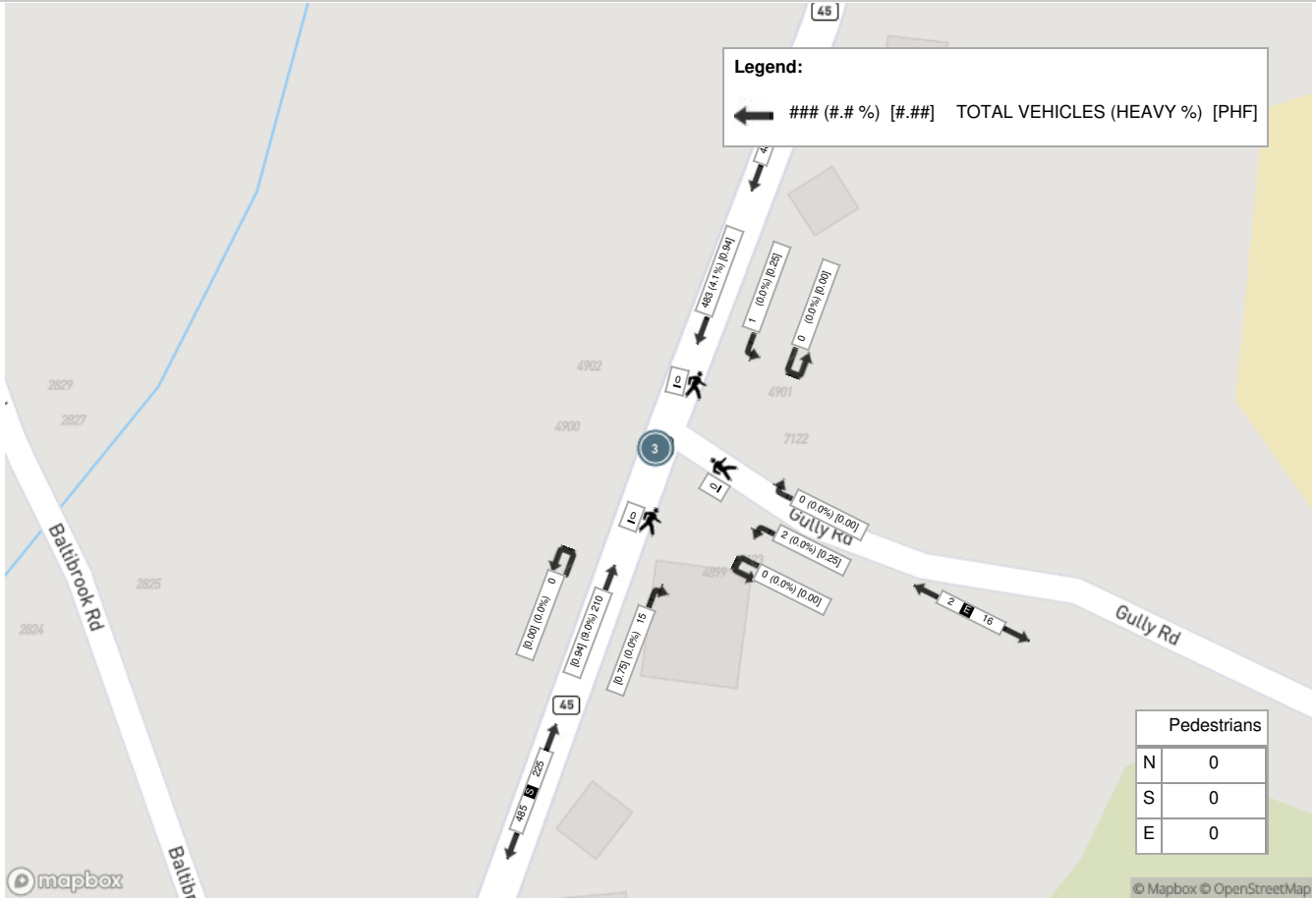
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (11.33 °C)

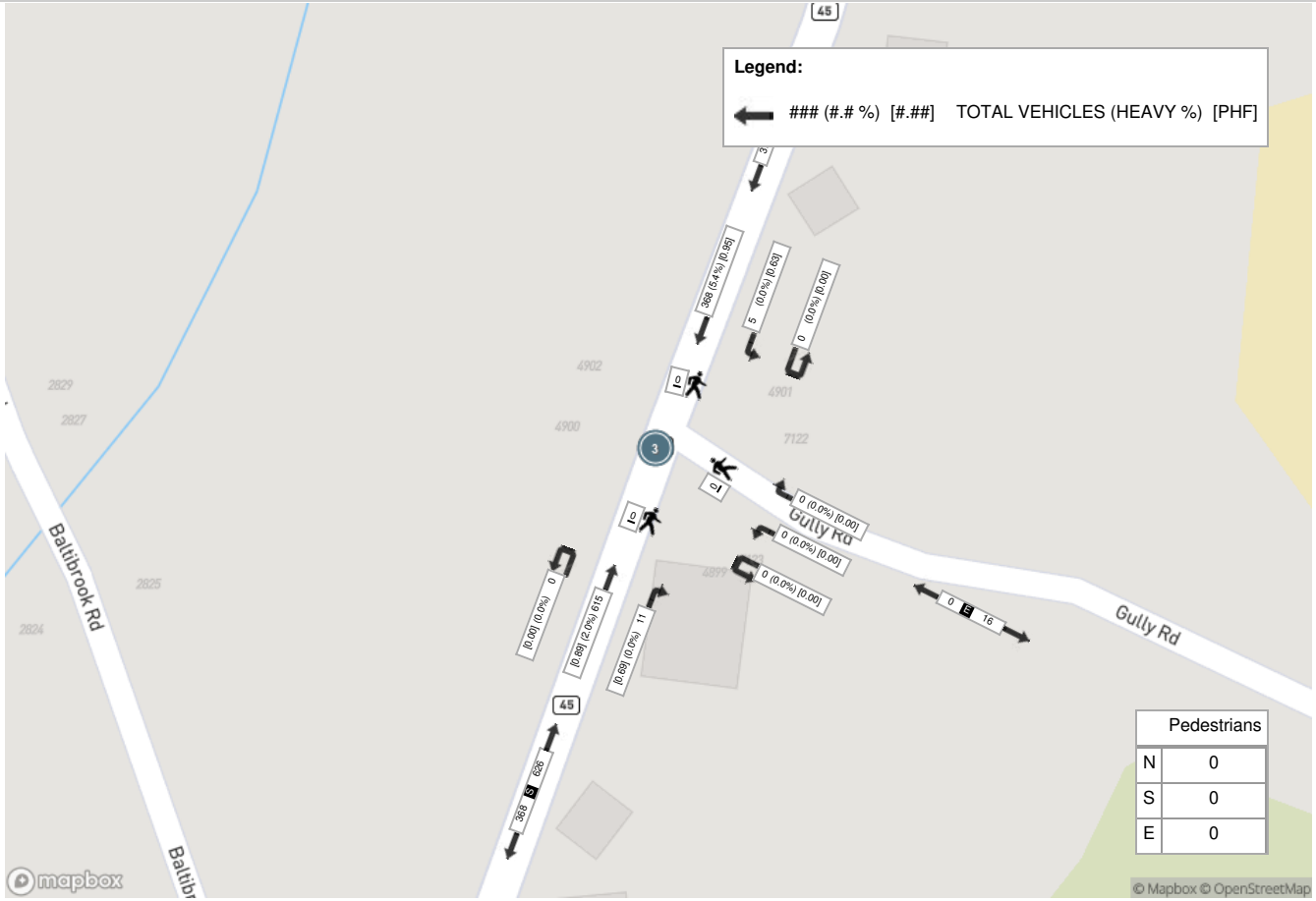
Start Time	Southbound COUNTY ROAD 45					Westbound GULLY ROAD					Northbound COUNTY ROAD 45					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
16:15:00	92	1	0	0	93	0	0	0	0	0	4	160	0	0	164	257
16:30:00	88	2	0	0	90	0	0	0	0	0	3	135	0	0	138	228
16:45:00	97	1	0	0	98	0	0	0	0	0	3	147	0	0	150	248
17:00:00	91	1	0	0	92	0	0	0	0	0	1	173	0	0	174	266
Grand Total	368	5	0	0	373	0	0	0	0	0	11	615	0	0	626	**999**
Approach%	98.7%	1.3%	0%		-	0%	0%	0%		-	1.8%	98.2%	0%		-	**-**
Totals %	36.8%	0.5%	0%		37.3%	0%	0%	0%		0%	1.1%	61.6%	0%		62.7%	**-**
PHF	0.95	0.63	0		0.95	0	0	0		0	0.69	0.89	0		0.9	**-**
Heavy	20	0	0		20	0	0	0		0	0	12	0		12	**-**
Heavy %	5.4%	0%	0%		5.4%	0%	0%	0%		0%	0%	2%	0%		1.9%	**-**
Lights	348	4	0		352	0	0	0		0	11	603	0		614	**-**
Lights %	94.6%	80%	0%		94.4%	0%	0%	0%		0%	100%	98%	0%		98.1%	**-**
Single-Unit Trucks	10	0	0		10	0	0	0		0	0	7	0		7	**-**
Single-Unit Trucks %	2.7%	0%	0%		2.7%	0%	0%	0%		0%	0%	1.1%	0%		1.1%	**-**
Buses	8	0	0		8	0	0	0		0	0	1	0		1	**-**
Buses %	2.2%	0%	0%		2.1%	0%	0%	0%		0%	0%	0.2%	0%		0.2%	**-**
Articulated Trucks	2	0	0		2	0	0	0		0	0	4	0		4	**-**
Articulated Trucks %	0.5%	0%	0%		0.5%	0%	0%	0%		0%	0%	0.7%	0%		0.6%	**-**
Bicycles on Road	0	1	0		1	0	0	0		0	0	0	0		0	**-**
Bicycles on Road %	0%	20%	0%		0.3%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Clear Sky (2.33 °C)



Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (11.33 °C)



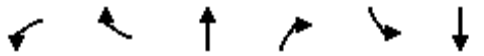
Appendix C – Capacity Analysis Results – Existing



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	60	18	219	43	35	412
Future Volume (Veh/h)	60	18	219	43	35	412
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	62	19	226	44	36	425
Pedestrians			4			
Lane Width (m)			3.7			
Walking Speed (m/s)			1.1			
Percent Blockage			0			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	727	226			270	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	727	226			270	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	98			97	
cM capacity (veh/h)	379	818			1305	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	81	226	44	461
Volume Left	62	0	0	36
Volume Right	19	0	44	0
cSH	433	1700	1700	1305
Volume to Capacity	0.19	0.13	0.03	0.03
Queue Length 95th (m)	5.2	0.0	0.0	0.6
Control Delay (s)	15.2	0.0	0.0	0.9
Lane LOS	C			A
Approach Delay (s)	15.2	0.0		0.9
Approach LOS	C			

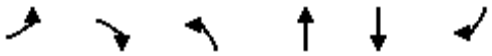
Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	0	210	15	1	483
Future Volume (Veh/h)	2	0	210	15	1	483
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	2	0	214	15	1	493
Pedestrians						1
Lane Width (m)						3.7
Walking Speed (m/s)						1.1
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	716	222			229	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	716	222			229	
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	100			100	
cM capacity (veh/h)	399	821			1351	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	2	229	494
Volume Left	2	0	1
Volume Right	0	15	0
cSH	399	1700	1351
Volume to Capacity	0.01	0.13	0.00
Queue Length 95th (m)	0.1	0.0	0.0
Control Delay (s)	14.1	0.0	0.0
Lane LOS	B		A
Approach Delay (s)	14.1	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	61	15	9	31	2
Future Volume (Veh/h)	5	61	15	9	31	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	7	90	22	13	46	3
Pedestrians	4				2	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	110	52	53			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	110	52	53			
tC, single (s)	6.4	6.3	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.4			
p0 queue free %	99	91	98			
cM capacity (veh/h)	873	990	1439			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	97	35	49
Volume Left	7	22	0
Volume Right	90	0	3
cSH	981	1439	1700
Volume to Capacity	0.10	0.02	0.03
Queue Length 95th (m)	2.5	0.4	0.0
Control Delay (s)	9.1	4.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	4.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	18.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	60	22	533	86	20	322
Future Volume (Veh/h)	60	22	533	86	20	322
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	64	23	567	91	21	343
Pedestrians			2			3
Lane Width (m)			3.7			3.7
Walking Speed (m/s)			1.1			1.1
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	954	570			658	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	954	570			658	
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	96			98	
cM capacity (veh/h)	282	523			939	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	87	567	91	364
Volume Left	64	0	0	21
Volume Right	23	0	91	0
cSH	322	1700	1700	939
Volume to Capacity	0.27	0.33	0.05	0.02
Queue Length 95th (m)	8.2	0.0	0.0	0.5
Control Delay (s)	20.3	0.0	0.0	0.8
Lane LOS	C			A
Approach Delay (s)	20.3	0.0		0.8
Approach LOS	C			

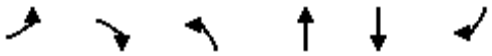
Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	615	11	5	368
Future Volume (Veh/h)	0	0	615	11	5	368
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	654	12	5	391
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	1061	660			666	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1061	660			666	
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	100			99	
cM capacity (veh/h)	249	467			933	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	666	396
Volume Left	0	0	5
Volume Right	0	12	0
cSH	1700	1700	933
Volume to Capacity	0.00	0.39	0.01
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.2
Lane LOS	A		A
Approach Delay (s)	0.0	0.0	0.2
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	21	8	44	21	1
Future Volume (Veh/h)	8	21	8	44	21	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	10	27	10	56	27	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	104	28	28			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	104	28	28			
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	97	99			
cM capacity (veh/h)	894	1054	1599			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	37	66	28
Volume Left	10	10	0
Volume Right	27	0	1
cSH	1005	1599	1700
Volume to Capacity	0.04	0.01	0.02
Queue Length 95th (m)	0.9	0.1	0.0
Control Delay (s)	8.7	1.1	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	1.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

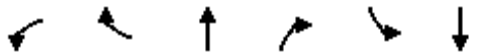
Appendix D – Capacity Analysis Results – 2032 Future Background



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	60	18	252	43	35	473
Future Volume (Veh/h)	60	18	252	43	35	473
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	62	19	260	44	36	488
Pedestrians			4			
Lane Width (m)			3.7			
Walking Speed (m/s)			1.1			
Percent Blockage			0			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	824	260			304	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	824	260			304	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	98			97	
cM capacity (veh/h)	332	784			1268	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	81	260	44	524
Volume Left	62	0	0	36
Volume Right	19	0	44	0
cSH	384	1700	1700	1268
Volume to Capacity	0.21	0.15	0.03	0.03
Queue Length 95th (m)	6.0	0.0	0.0	0.7
Control Delay (s)	16.9	0.0	0.0	0.8
Lane LOS	C			A
Approach Delay (s)	16.9	0.0		0.8
Approach LOS	C			

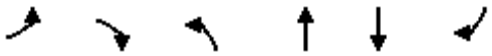
Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	0	241	15	1	555
Future Volume (Veh/h)	2	0	241	15	1	555
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	2	0	246	15	1	566
Pedestrians						1
Lane Width (m)						3.7
Walking Speed (m/s)						1.1
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	822	254			261	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	822	254			261	
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	100			100	
cM capacity (veh/h)	346	788			1315	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	2	261	567
Volume Left	2	0	1
Volume Right	0	15	0
cSH	346	1700	1315
Volume to Capacity	0.01	0.15	0.00
Queue Length 95th (m)	0.1	0.0	0.0
Control Delay (s)	15.5	0.0	0.0
Lane LOS	C		A
Approach Delay (s)	15.5	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	61	15	9	31	2
Future Volume (Veh/h)	5	61	15	9	31	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	7	90	22	13	46	3
Pedestrians	4				2	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	110	52	53			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	110	52	53			
tC, single (s)	6.4	6.3	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.4			
p0 queue free %	99	91	98			
cM capacity (veh/h)	873	990	1439			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	97	35	49
Volume Left	7	22	0
Volume Right	90	0	3
cSH	981	1439	1700
Volume to Capacity	0.10	0.02	0.03
Queue Length 95th (m)	2.5	0.4	0.0
Control Delay (s)	9.1	4.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	4.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	18.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	60	22	612	86	20	370
Future Volume (Veh/h)	60	22	612	86	20	370
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	64	23	651	91	21	394
Pedestrians			2			3
Lane Width (m)			3.7			3.7
Walking Speed (m/s)			1.1			1.1
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1089	654			742	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1089	654			742	
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	95			98	
cM capacity (veh/h)	234	469			874	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	87	651	91	415
Volume Left	64	0	0	21
Volume Right	23	0	91	0
cSH	270	1700	1700	874
Volume to Capacity	0.32	0.38	0.05	0.02
Queue Length 95th (m)	10.2	0.0	0.0	0.6
Control Delay (s)	24.5	0.0	0.0	0.7
Lane LOS	C			A
Approach Delay (s)	24.5	0.0		0.7
Approach LOS	C			

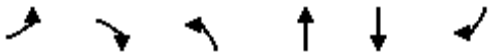
Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	706	11	5	423
Future Volume (Veh/h)	0	0	706	11	5	423
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	751	12	5	450
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	1217	757			763	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1217	757			763	
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	100			99	
cM capacity (veh/h)	200	411			859	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	763	455
Volume Left	0	0	5
Volume Right	0	12	0
cSH	1700	1700	859
Volume to Capacity	0.00	0.45	0.01
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.2
Lane LOS	A		A
Approach Delay (s)	0.0	0.0	0.2
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	21	8	44	21	1
Future Volume (Veh/h)	8	21	8	44	21	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	10	27	10	56	27	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	104	28	28			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	104	28	28			
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	97	99			
cM capacity (veh/h)	894	1054	1599			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	37	66	28
Volume Left	10	10	0
Volume Right	27	0	1
cSH	1005	1599	1700
Volume to Capacity	0.04	0.01	0.02
Queue Length 95th (m)	0.9	0.1	0.0
Control Delay (s)	8.7	1.1	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	1.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix E – Capacity Analysis Results – 2032 Future Total



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	116	35	252	55	45	473
Future Volume (Veh/h)	116	35	252	55	45	473
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	120	36	260	57	46	488
Pedestrians			4			
Lane Width (m)			3.7			
Walking Speed (m/s)			1.1			
Percent Blockage			0			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	844	260			317	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	844	260			317	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	63	95			96	
cM capacity (veh/h)	320	784			1255	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	156	260	57	534
Volume Left	120	0	0	46
Volume Right	36	0	57	0
cSH	371	1700	1700	1255
Volume to Capacity	0.42	0.15	0.03	0.04
Queue Length 95th (m)	15.4	0.0	0.0	0.9
Control Delay (s)	21.6	0.0	0.0	1.1
Lane LOS	C			A
Approach Delay (s)	21.6	0.0		1.1
Approach LOS	C			

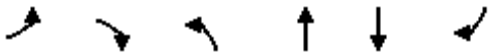
Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	0	258	15	1	565
Future Volume (Veh/h)	2	0	258	15	1	565
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	2	0	263	15	1	577
Pedestrians						1
Lane Width (m)						3.7
Walking Speed (m/s)						1.1
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	850	272			278	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	850	272			278	
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	100			100	
cM capacity (veh/h)	333	771			1296	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	2	278	578
Volume Left	2	0	1
Volume Right	0	15	0
cSH	333	1700	1296
Volume to Capacity	0.01	0.16	0.00
Queue Length 95th (m)	0.1	0.0	0.0
Control Delay (s)	15.9	0.0	0.0
Lane LOS	C		A
Approach Delay (s)	15.9	0.0	0.0
Approach LOS	C		

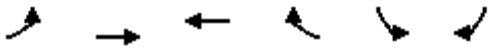
Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		40.9%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	97	26	1	1	0
Future Volume (Veh/h)	0	97	26	1	1	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	0	143	38	1	1	0
Pedestrians	4				2	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	84	5	5			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	84	5	5			
tC, single (s)	6.4	6.3	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.4			
p0 queue free %	100	86	97			
cM capacity (veh/h)	894	1051	1500			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	143	39	1
Volume Left	0	38	0
Volume Right	143	0	0
cSH	1051	1500	1700
Volume to Capacity	0.14	0.03	0.00
Queue Length 95th (m)	3.6	0.6	0.0
Control Delay (s)	9.0	7.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	7.3	0.0
Approach LOS	A		

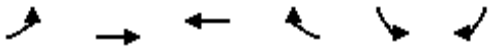
Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	20.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	66	17	16	43	0
Future Volume (Veh/h)	0	66	17	16	43	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	72	18	17	47	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	35				98	26
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	35				98	26
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				95	100
cM capacity (veh/h)	1589				905	1055

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	72	35	47
Volume Left	0	0	47
Volume Right	0	17	0
cSH	1589	1700	905
Volume to Capacity	0.00	0.02	0.05
Queue Length 95th (m)	0.0	0.0	1.2
Control Delay (s)	0.0	0.0	9.2
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	13.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	21	38	5	7	36
Future Volume (Veh/h)	11	21	38	5	7	36
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)	12	23	41	5	8	39
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	46				90	44
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	46				90	44
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	96
cM capacity (veh/h)	1575				908	1032

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	35	46	47
Volume Left	12	0	8
Volume Right	0	5	39
cSH	1575	1700	1009
Volume to Capacity	0.01	0.03	0.05
Queue Length 95th (m)	0.2	0.0	1.1
Control Delay (s)	2.5	0.0	8.7
Lane LOS	A		A
Approach Delay (s)	2.5	0.0	8.7
Approach LOS			A

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	18.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	86	31	612	152	35	370
Future Volume (Veh/h)	86	31	612	152	35	370
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	91	33	651	162	37	394
Pedestrians			2			3
Lane Width (m)			3.7			3.7
Walking Speed (m/s)			1.1			1.1
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1121	654			813	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1121	654			813	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	59	93			96	
cM capacity (veh/h)	219	469			823	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	124	651	162	431
Volume Left	91	0	0	37
Volume Right	33	0	162	0
cSH	256	1700	1700	823
Volume to Capacity	0.49	0.38	0.10	0.04
Queue Length 95th (m)	18.7	0.0	0.0	1.1
Control Delay (s)	31.7	0.0	0.0	1.3
Lane LOS	D			A
Approach Delay (s)	31.7	0.0		1.3
Approach LOS	D			

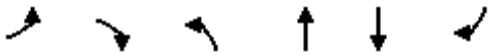
Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	716	11	5	438
Future Volume (Veh/h)	0	0	716	11	5	438
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	762	12	5	466
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	1244	768			774	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1244	768			774	
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	100			99	
cM capacity (veh/h)	193	405			851	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	774	471
Volume Left	0	0	5
Volume Right	0	12	0
cSH	1700	1700	851
Volume to Capacity	0.00	0.46	0.01
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.2
Lane LOS	A		A
Approach Delay (s)	0.0	0.0	0.2
Approach LOS	A		

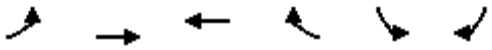
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	38	49	0	3	0
Future Volume (Veh/h)	0	38	49	0	3	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	0	49	63	0	4	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	130	4	4			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	130	4	4			
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	95	96			
cM capacity (veh/h)	835	1085	1631			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	49	63	4
Volume Left	0	63	0
Volume Right	49	0	0
cSH	1085	1631	1700
Volume to Capacity	0.05	0.04	0.00
Queue Length 95th (m)	1.1	0.9	0.0
Control Delay (s)	8.5	7.3	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	7.3	0.0
Approach LOS	A		

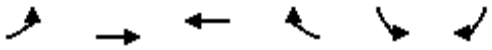
Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	29	9	49	29	0
Future Volume (Veh/h)	0	29	9	49	29	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	32	10	53	32	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	63				68	36
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	63				68	36
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				97	100
cM capacity (veh/h)	1553				941	1042

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	32	63	32
Volume Left	0	0	32
Volume Right	0	53	0
cSH	1553	1700	941
Volume to Capacity	0.00	0.04	0.03
Queue Length 95th (m)	0.0	0.0	0.8
Control Delay (s)	0.0	0.0	9.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	13.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	63	30	8	11	17
Future Volume (Veh/h)	41	63	30	8	11	17
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)	45	68	33	9	12	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	42				196	38
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42				196	38
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	98
cM capacity (veh/h)	1580				775	1040

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	113	42	30
Volume Left	45	0	12
Volume Right	0	9	18
cSH	1580	1700	915
Volume to Capacity	0.03	0.02	0.03
Queue Length 95th (m)	0.7	0.0	0.8
Control Delay (s)	3.1	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	3.1	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay		3.3	
Intersection Capacity Utilization		22.3%	ICU Level of Service A
Analysis Period (min)		15	