

Elm Road Developments Whitchurch-Stouffville Traffic Impact Brief Update

July 2, 2025

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AECOM: 2015-04-13

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Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
1	July 2, 2025	Updated Plan and comment on the first submission			

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1. Introduction

AECOM Canada Ltd. was retained by Madori Limited to prepare a Traffic Impact Brief for a proposed residential development in the Town of Whitchurch-Stouffville. The proposed development is located at the north-west corner of Elm Road and Ninth Line in Whitchurch-Stouffville, Ontario.

The terms of reference were discussed with York Region at the onset of the study specifically requirements for the assessment of traffic operations at the intersection of Elm Road and Ninth Line under existing traffic plus site traffic. Traffic surveys (turning movement counts) were conducted to collect turning movement data at the intersections of Ninth Line and Elm Road, as well as Elm Road and Fairview Ave by Ontario Traffic Inc. (OTI), on behalf of AECOM, on March 7, 2023. Turning movement data was collected for 8 hours, from 6AM to 10AM and from 3PM to 7PM.

The other requirement from York Region was the provision of a 10 by 10 metre daylight triangle in the north-west corner of Elm Road and Ninth Line. This requirement has been met, as shown on the site plan in the following section. This update also addresses comments provided by both the Town and the Region on the first submission.

Study Area and Development Description

The subject property is located in the north-west quadrant of the intersection of Ninth Line and Elm Road. The subject development site is illustrated in **Figure 1-1**. The proposed development will consist of two three-storey townhouse blocks, containing a total of 20 residential units. The density of the subject site is approximately 50 units per gross hectare.

The proposed site plan to construct 20 townhouse dwelling units is illustrated in **Figure 1-2**. A daylight sight triangle of 10 by 10 metre is provided at the north-west corner of Elm Road and Ninth Line to satisfy the requirement of York Region.

The townhomes are being served by a two-way municipal laneway connecting Ninth Line to Elm Road. There are two access points to the site. The proposed access point on Ninth Line is a right-in right-out only access. The Ninth Line access is located at the site's north boundary resulting in the farthest separation from the Elm Road intersection. The access point on Elm Road, which is aligned with Fairview Avenue, would accommodate all movements.

Ninth Line is a north-south roadway under the jurisdiction of York Region. Within the vicinity of the subject site, it provides one travel lane in each direction. Ninth Line has sidewalks on both sides of the road. The posted speed for the section of Ninth Line through the study area is 50 km/h. There are no cycling facilities on the studied section of Ninth Line under existing conditions. However, based on 2051 Regional Road Cycling Network Map included in York Region's 2022 TMP, cycling facility is recommended on Ninth Line and it is to be determined in consultation with Pedestrian and Cycling Planning and Design Guidelines. There is a bus stop on Ninth Line between the site access and Elm Road. Bus Route #9 from York Region Transit passes through Ninth Line and serves the area.

Elm Road is an east-west local residential roadway under the jurisdiction of the Town of Whitchurch-Stouffville. Within the vicinity of the subject site, it provides one travel lane in each direction. Elm Road has a sidewalk on the north side of the road. Elm Road provides a connection between Ninth Line and the residential houses on its west side. There is a speed limit of 40km/h within the study area. Bus Route from York Region Transit passes through Elm Road as shown in **Figure 1-3**.

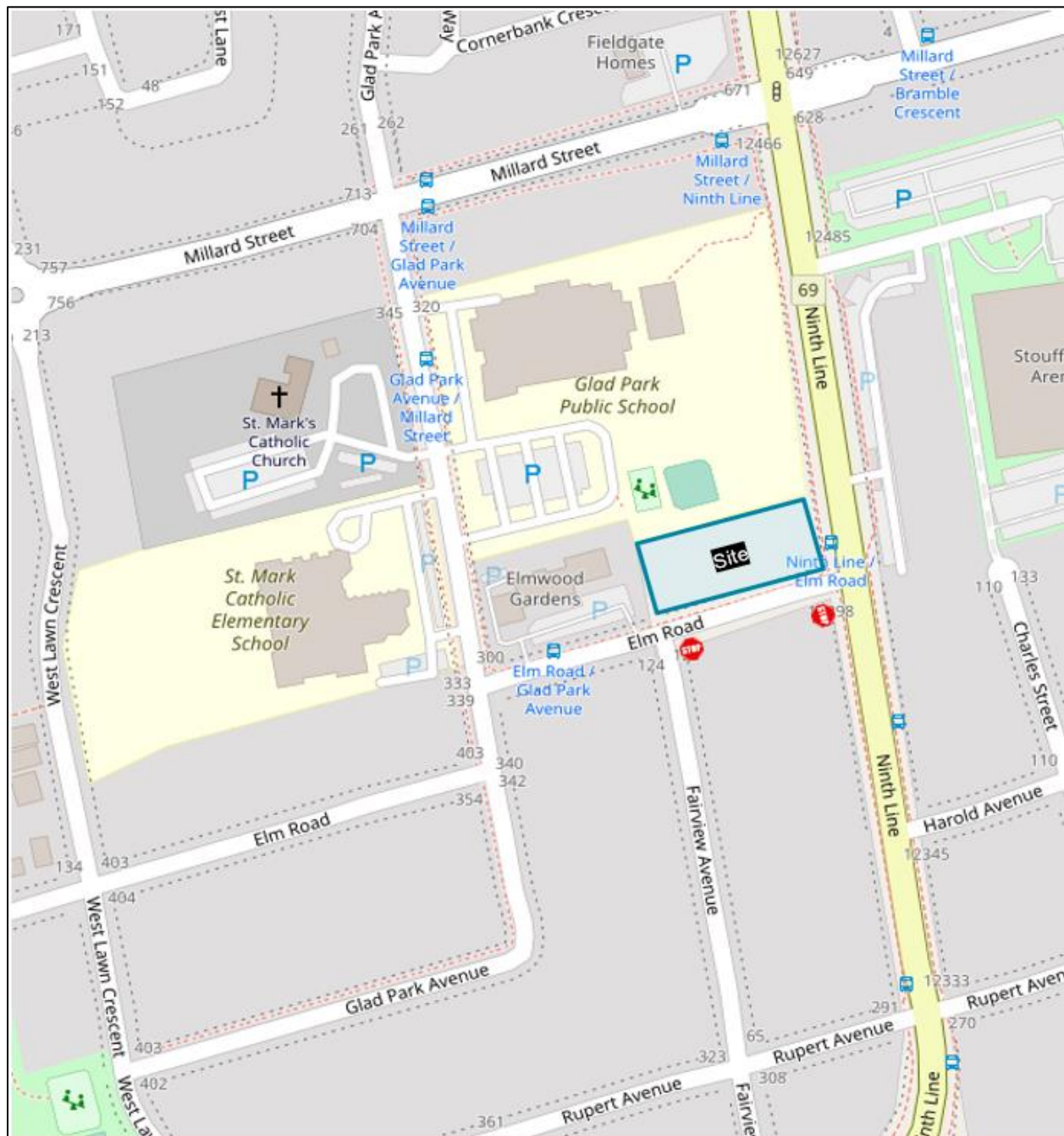


Figure 1-1: Site Location

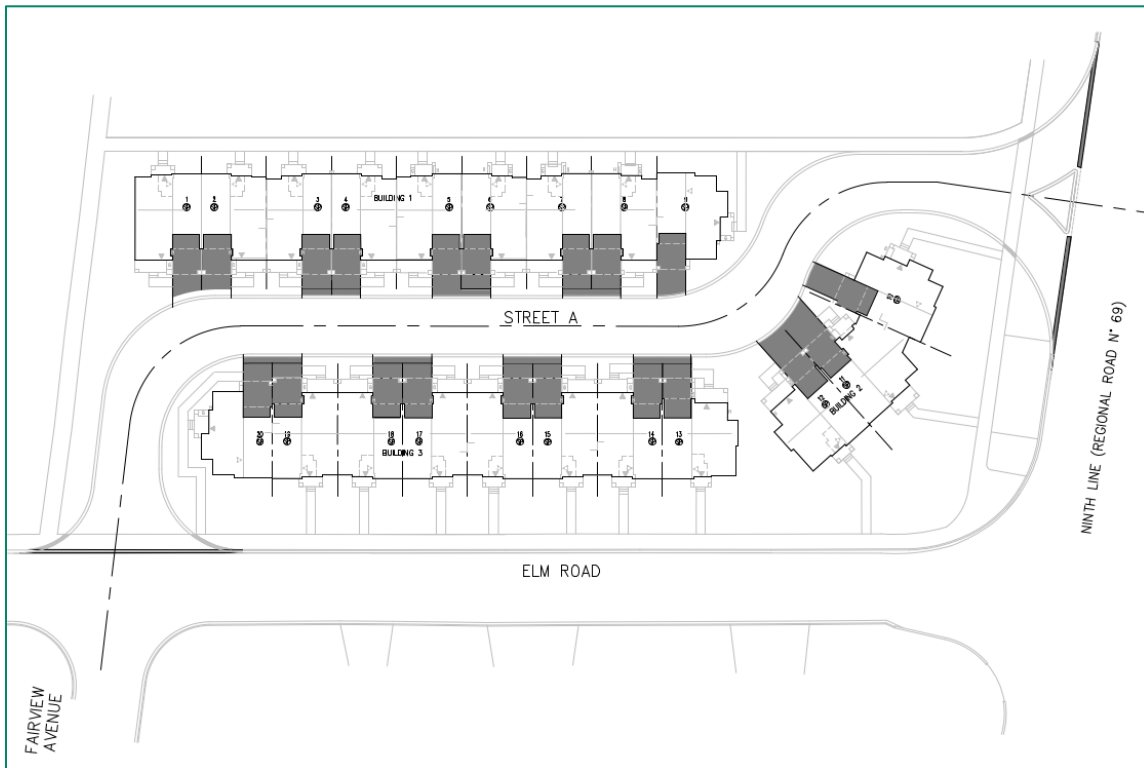


Figure 1-2: Site Plan

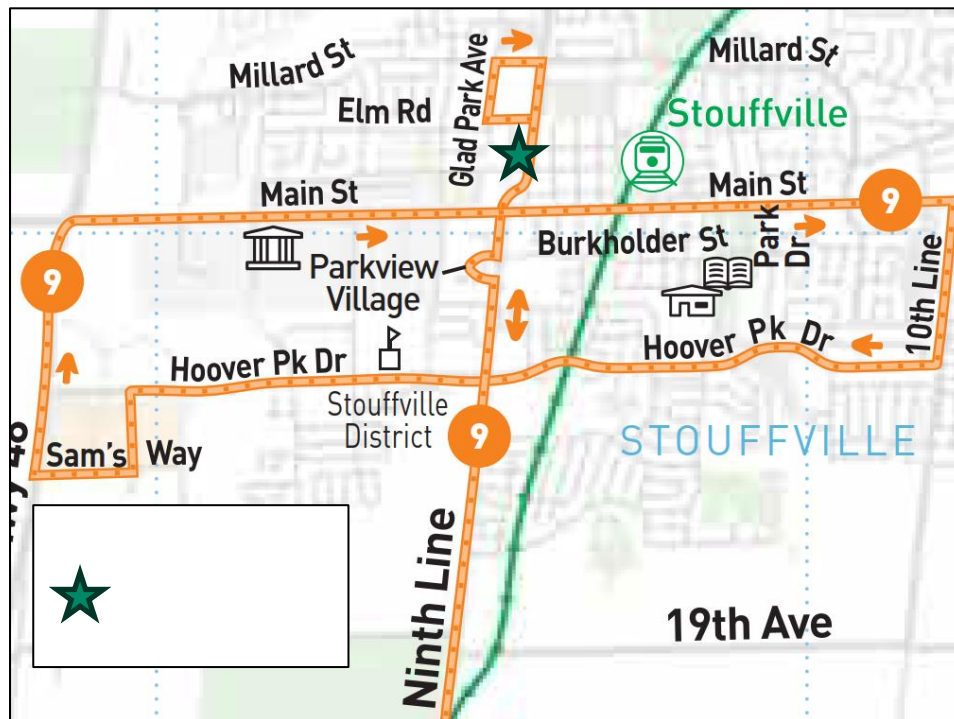


Figure 1-3: Bus Route #9 Servicing Ninth Line and Elm Road

2. Trip Generation

Automobile trip generation for the proposed development was determined based on rates from the *Trip Generation Manual, 11th Edition* published by the Institute of Transportation Engineers (ITE). The values

published in the *Trip Generation Manual* are based on historical data from similar land uses. A rate is given for land uses in the form of a fitted curve equation or as an average rate. For the purpose of this study, the number of trips generated by the project site was determined based on the number of dwelling units using the ITE's land-use type 215 (Single-Family Attached Housing).

LUC 215: Single-family attached housing includes any single-family housing unit that shares a wall with an adjoining dwelling unit, whether the walls are for living space, a vehicle garage, or storage space.

Table 2-1 presents the estimated site-generated traffic during the weekday AM and PM peak hours. As indicated by the development site plan, 20 units were considered to determine the number of trips to be generated. During the AM peak site will generate a total of 5 trips, with 1 inbound and 4 outbound trips. During the PM peak hour, the site will generate a total of 8 trips, with 5 inbound and 3 outbound trips.

Table 2-1: Site Generated Traffic during the AM and PM Peak Hours

Description/ITE Code	Dwelling Units	Trip Generation Rates & Distributions				Total Trips		Distribution of Generated Trips			
		AM In	AM Out	PM In	PM Out	AM Peak	PM Peak	AM In	AM Out	PM In	PM Out
Single Family Attached Housing (215)	20	25%	75%	59%	41%	5	8	1	4	5	3

3. Site Access

There are two proposed accesses for the site: one at each end of the municipal laneway that connects Ninth Line to Elm Road. One access to and from the site is provided on Ninth Line, which is limited to right-in/out only. This access would only accommodate traffic originating from the north or destined to the south. The other access to and from the site is provided on Elm Road. This access would mostly accommodate traffic originating from the south as well as those destined to the north and south. Two accesses provide favourable configuration for waste collection and snow ploughing services.

The centreline distance between the North Line access and Elm Road is approximately 45 metres. However, given the site frontage on Ninth Line (property boundaries of the subject site), the proposed right-in/out access is located as far from the Elm Road intersection as it can be. No operational concerns are anticipated especially considering that no northbound traffic can access the subject site via the right-in/out intersection, but rather using the Elm Road intersections (northbound left turn), which already has a dedicated left turn lane.

A desktop review of sight distances revealed that intersection turning sight distances are sufficient at both access points. The width of the municipal laneway varies between 6 and 8 metres and is going to operate with two-way traffic flow. The driveway corner radii meet the minimum requirements of 8 metre in the Region of York's Access Guidelines.

4. Vehicle Volumes

The turning movement count (TMC) data at the intersections of Ninth Line and Elm Road as well as Elm Road and Fairview Ave were collected on March 7, 2023. The traffic data were collected for an 8-hour period from 6AM to 10AM and from 3PM to 7PM. **Appendix A** provides raw data for the counts undertaken at these two intersections.

The AM and PM peak hours for Ninth Line and Elm Road were observed as 7:45 AM to 8:45 AM and 4:30 PM to 5:30 PM. Meanwhile, the peak hours for Elm Road and Fairview Ave were observed as 7:30 AM to 8:30 AM and 3:45 PM to 4:45 PM. The peak hour volumes for the existing traffic in the vicinity of the development site are shown in **Figure 4-1**.

The trip generated by the proposed development based on the ITE Trip Generation Manual, presented in Table 2-1, is distributed on the network, as shown in **Figure 4-2**.

Finally, for the future total scenario, the site trips were superimposed onto the existing trips. The future total scenario is shown in **Figure 4-3**.

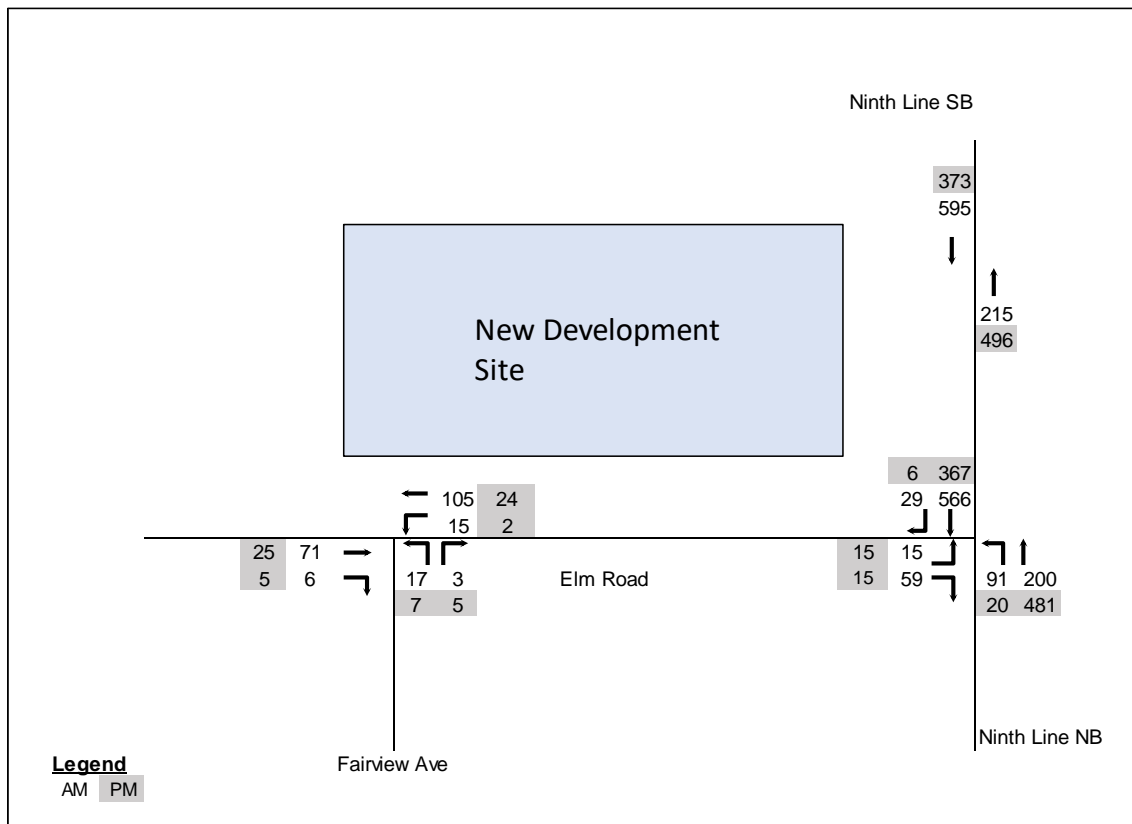


Figure 4-1: Existing Peak Hour Traffic

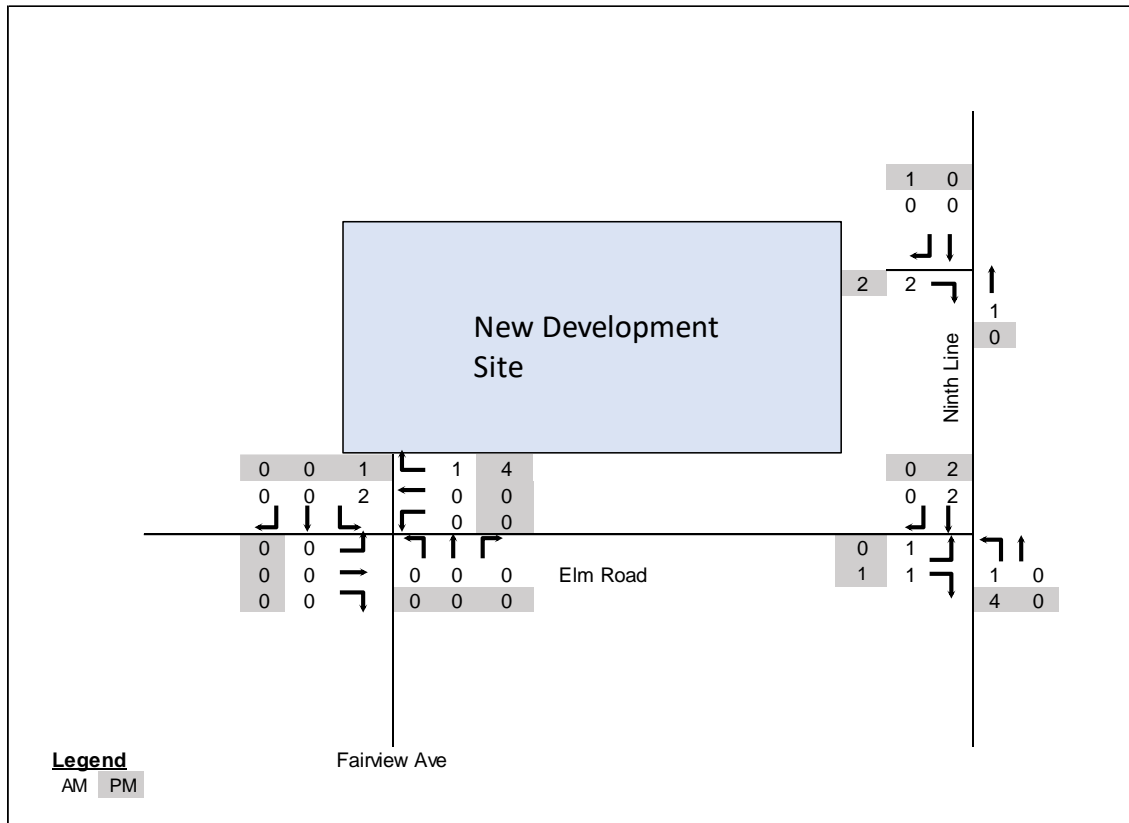


Figure 4-2: Development Generated Site Traffic

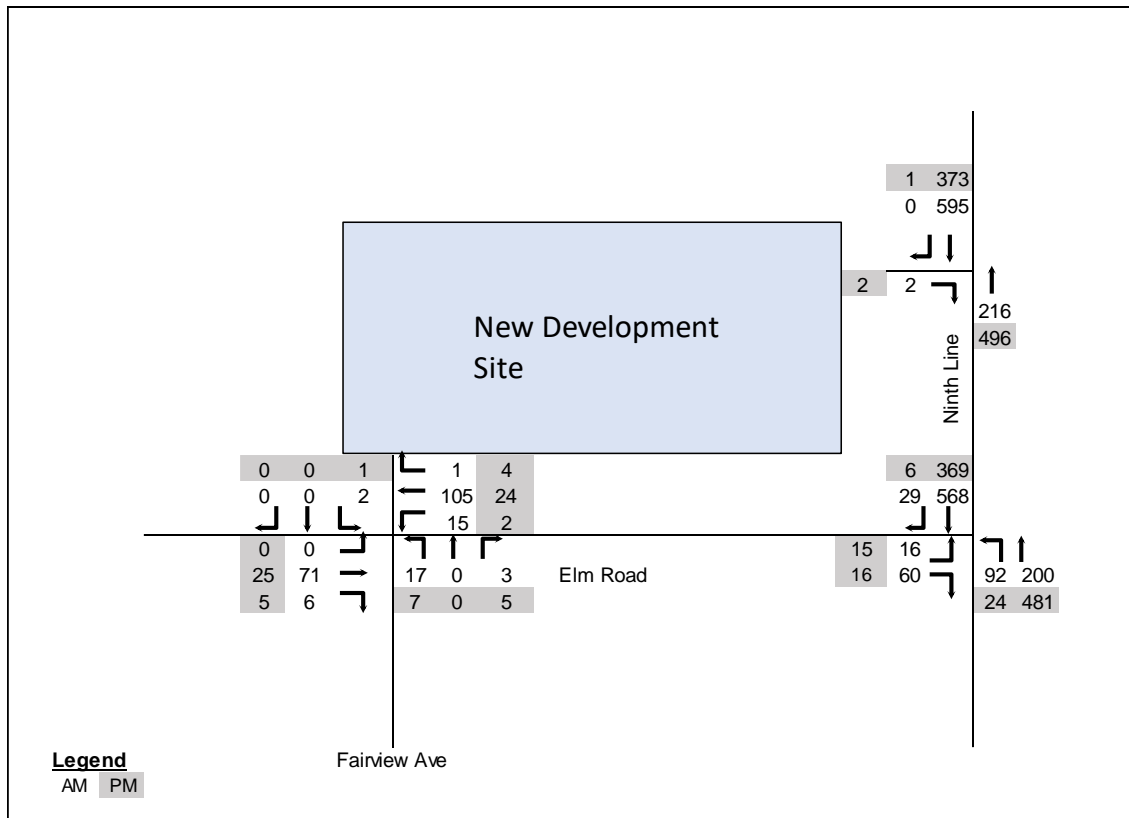


Figure 4-3: Future Total Scenario (Existing plus Development Traffic)

5. Traffic Operations Analysis

The existing conditions scenario was used as the base scenario in order to identify incremental impacts associated with the proposed development. The base scenario was then compared against the future total scenario, which has site traffic added to the existing traffic. **Table 5-1** shows the results for the existing scenario.

All the Synchro analysis reports are provided in **Appendix B**.

Table 5-1: Results of Traffic Operation Under Existing Scenario

Intersection	Movement	AM Peak				PM Peak			
		Delay (sec)	LOS	V/C	95% Queue Length (m)	Delay (sec)	LOS	V/C	95% Queue Length (m)
Elm Road and Fairview Ave	EBTR	0	A	0.05	0	0	A	0.02	0
	WBLTR	1	A	0.01	0.3	0.5	A	0	0
	NBLR	9.8	A	0.03	0.7	8.7	A	0.01	0.3
Ninth Line and Elm Road	EBLR	14.7	B	0.18	5.1	11.9	B	0.06	1.5
	NBL	9.5	A	0.11	2.9	8.2	A	0.02	0.5
	NBT	0	A	0.13	0	0	A	0.31	0
	SBTR	0	A	0.38	0	0	A	0.24	0

The unsignalized intersection of Ninth line and Elm Road currently operates well with all movements operating at LOS B or better during both peak hours. The unsignalized intersection of Elm Road and Fairview Avenue also operates at LOS B or better during both AM and PM peak hours.

The analysis results of the Future Total Scenario are shown in **Table 5-2** below:

Table 5-2: Future Total Scenario Analysis Results

Intersection	Movement	AM Peak				PM Peak			
		Delay (sec)	LOS	V/C	95% Queue Length (m)	Delay (sec)	LOS	V/C	95% Queue Length (m)
Elm Road and Fairview Ave	EBTR	0	A	0.05	0	0	A	0.02	0
	WBLTR	1	A	0.01	0.3	0.5	A	0	0
	NBLR	10	A	0.03	0.7	8.8	A	0.01	0.3
	SBL	10.1	B	0.01	0.1	8.9	A	0	0
Ninth Line and Elm Road	EBLR	14.8	B	0.19	5.4	12.2	B	0.06	1.6
	NBL	9.5	A	0.11	3	8.3	A	0.02	0.6
	NBT	0	A	0.13	0	0	A	0.31	0
	SBTR	0	A	0.38	0	0	A	0.24	0

The unsignalized intersection of Ninth Line and Elm Road will continue to operate well with all movements operating at LOS B or better during both peak hours. The unsignalized intersection of Elm Road and Fairview Avenue also will continue to operate at LOS B or better during both AM and PM peak hours in all movements.

The added site traffic is insignificant when compared to the total volumes on the adjacent roads. The analysis shows that traffic associated with the proposed site adds a very insignificant amount to vehicular delays and queue lengths at the two study area intersections.

6. AutoTURN Analysis

AECOM has completed swept path analyses on the site plan using AutoTURN software for a waste collection design vehicle and an emergency services design vehicle. **Figure 6-1** and

Figure 6-2 illustrate the resultant turning templates.

The analysis showed that both design vehicles can access and egress the site from both access point without issue, and the driveway widths and curb radii are adequate for accommodating the design vehicle.



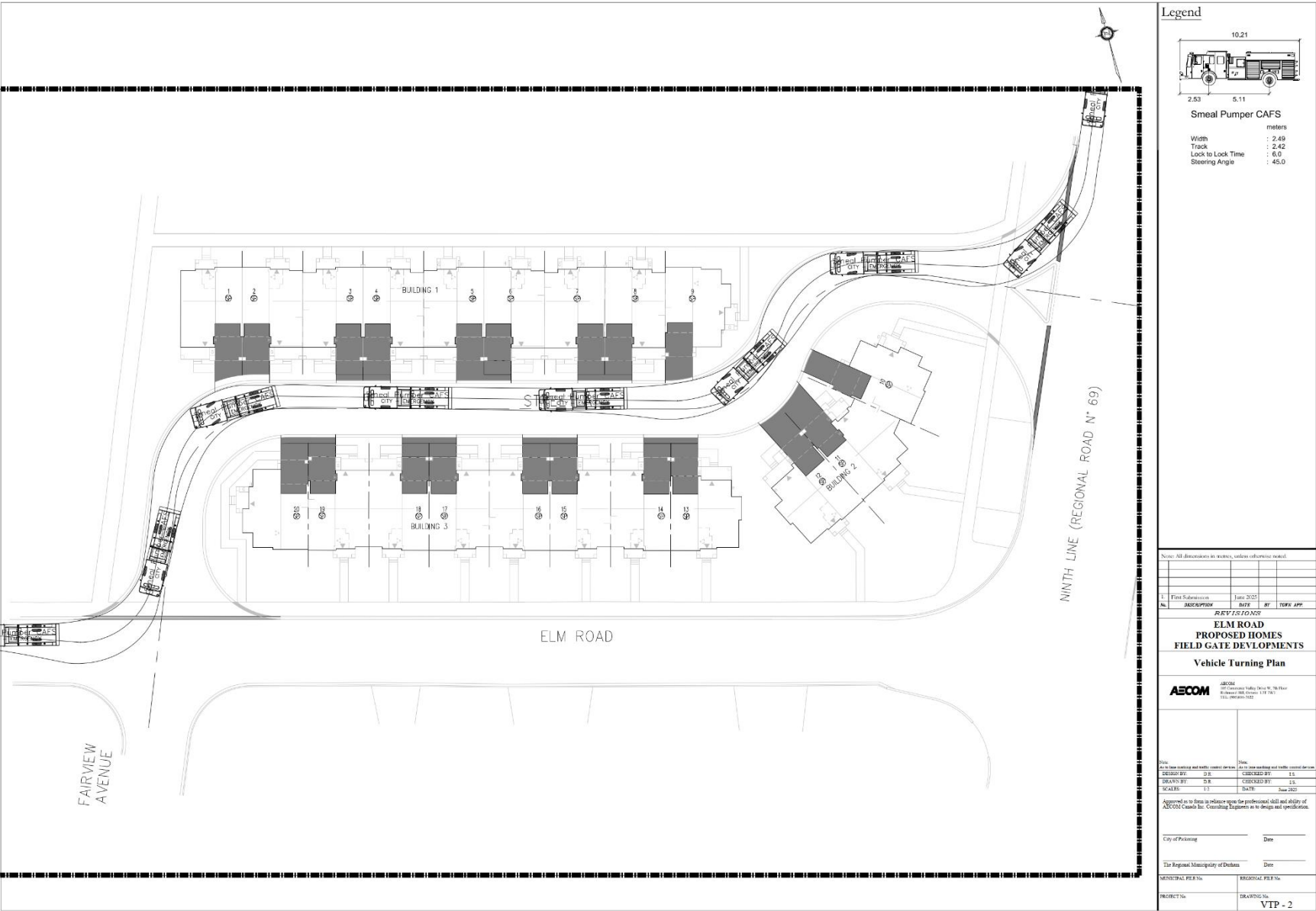


Figure 6-2: Fire Route Swept Path Analysis

7. Active Transportation

The existing sidewalk on both sides of Ninth Line as well as the sidewalk on the north side of Elm Road provides direct and safe active transportation connections between the proposed townhouses and other amenities in the area including the schools.

A pedestrian crossover was recently installed in November 2021 on Ninth Line as a part of active transportation improvements for pedestrians to cross the regional road safely and as consulted with York Region transportation department, there is no plans for any other improvements in their 10-year plan.

In addition, based on 2051 Regional Road Cycling Network Analysis of York Region's 2022 TMP, cycling facility is recommended on Ninth Line and it is to be determined in consultation with Pedestrian and Cycling Planning and Design Guidelines.

8. Transportation Demand Management Plan

Transportation Demand Management (TDM) refers to strategies that increase the efficiency of the transportation system by inducing changes to travel behaviour. TDM places an emphasis on the movement of people and goods rather than motor vehicles. Specifically, TDM initiatives discourage single-occupant vehicle travel and encourage sustainable non-auto modes of transportation to reduce congested conditions.

Given the size and nature of the proposed development (i.e., 20 townhouses), which is less than 50 Residential Units, the Region's Transportation Mobility Plan Guidelines do not require developing a transportation demand management plan.

9. Functional Plan

Functional Plan is illustrated in **Figure 9-1**.

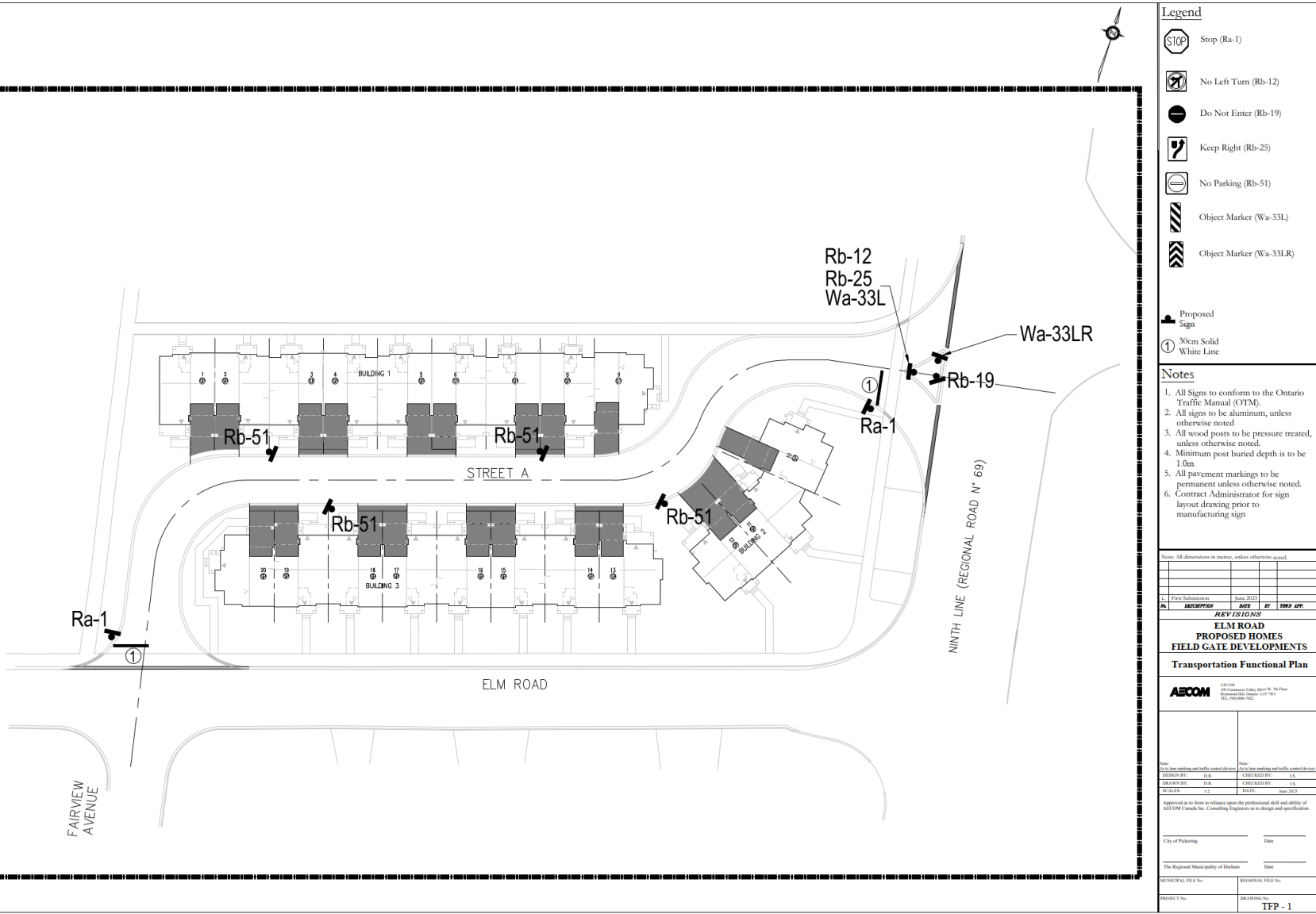


Figure 9-1: Functional Plan

Appendix A

TMC Volumes

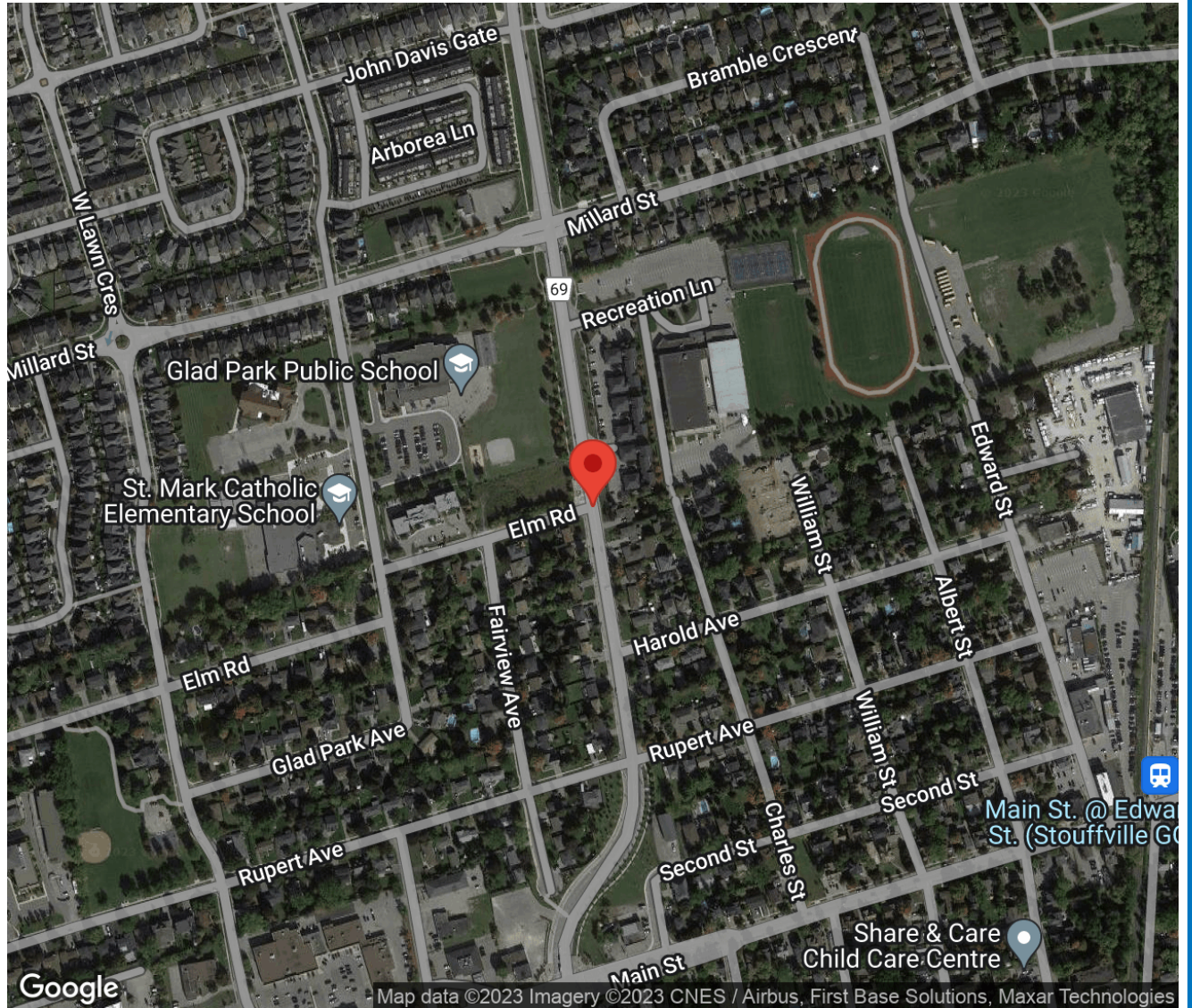
Project #23-053 - AECOM

Intersection Count Report

Intersection:	Ninth Line & Elm Rd
Municipality:	Stouffville
Count Date:	Tuesday, Mar 07, 2023
Site Code:	2305300001
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	06:00-10:00, 15:00-19:00
Weather:	Clear
Comments:	

Traffic Count Map

Intersection:	Ninth Line & Elm Rd
Site Code:	2305300001
Municipality:	Stouffville
Count Date:	Mar 07, 2023



Traffic Count Summary

Intersection: Ninth Line & Elm Rd
Site Code: 2305300001
Municipality: Stouffville
Count Date: Mar 07, 2023

Ninth Line - Traffic Summary

North Approach Totals							South Approach Totals						
Hour	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
06:00 - 07:00	0	200	2	0	202	0	10	87	0	0	97	0	299
07:00 - 08:00	0	397	9	0	406	5	45	121	0	0	166	0	572
08:00 - 09:00	0	574	24	0	598	18	63	204	0	0	267	0	865
09:00 - 10:00	0	357	2	0	359	8	16	255	0	0	271	0	630
BREAK													
15:00 - 16:00	0	355	3	0	358	1	17	406	0	0	423	0	781
16:00 - 17:00	0	329	6	0	335	0	23	464	0	0	487	1	822
17:00 - 18:00	0	360	7	0	367	0	17	452	0	0	469	0	836
18:00 - 19:00	0	297	1	0	298	0	11	413	0	0	424	0	722
GRAND TOTAL	0	2869	54	0	2923	32	202	2402	0	0	2604	1	5527

Traffic Count Summary

Intersection: Ninth Line & Elm Rd
Site Code: 2305300001
Municipality: Stouffville
Count Date: Mar 07, 2023

Elm Rd - Traffic Summary

East Approach Totals							West Approach Totals						
Hour	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
06:00 - 07:00	0	0	0	0	0	1	2	0	3	0	5	2	5
07:00 - 08:00	0	0	0	0	0	0	5	0	14	0	19	1	19
08:00 - 09:00	0	0	0	0	0	0	15	0	57	0	72	3	72
09:00 - 10:00	0	0	0	0	0	0	3	0	15	0	18	0	18
BREAK													
15:00 - 16:00	0	0	0	0	0	0	4	0	33	0	37	4	37
16:00 - 17:00	0	0	0	0	0	0	11	0	20	0	31	2	31
17:00 - 18:00	0	0	0	0	0	0	14	0	13	0	27	1	27
18:00 - 19:00	0	0	0	0	0	0	7	0	5	0	12	5	12
GRAND TOTAL	0	0	0	0	0	1	61	0	160	0	221	18	221

Traffic Count Data

Intersection: Ninth Line & Elm Rd
Site Code: 2305300001
Municipality: Stouffville
Count Date: Mar 07, 2023

North Approach - Ninth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
06:00	0	29	2	0	31	0	0	0	0	0	0	0	0	0	0	0
06:15	0	34	0	0	34	0	1	0	0	1	0	0	0	0	0	0
06:30	0	49	0	0	49	0	1	0	0	1	0	0	0	0	0	0
06:45	0	77	0	0	77	0	9	0	0	9	0	0	0	0	0	0
07:00	0	89	1	0	90	0	7	0	0	7	0	0	0	0	0	3
07:15	0	71	1	0	72	0	4	1	0	5	0	0	0	0	0	0
07:30	0	97	1	0	98	0	8	0	0	8	0	0	0	0	0	0
07:45	0	121	5	0	126	0	0	0	0	0	0	0	0	0	0	2
08:00	0	146	16	0	162	0	2	2	0	4	0	0	0	0	0	15
08:15	0	159	6	0	165	0	2	0	0	2	0	0	0	0	0	1
08:30	0	136	0	0	136	0	0	0	0	0	0	0	0	0	0	2
08:45	0	126	0	0	126	0	3	0	0	3	0	0	0	0	0	0
09:00	0	104	0	0	104	0	1	0	0	1	0	0	0	0	0	2
09:15	0	81	0	0	81	0	1	0	0	1	0	0	0	0	0	1
09:30	0	90	1	0	91	0	0	0	0	0	0	0	0	0	0	1
09:45	0	79	1	0	80	0	1	0	0	1	0	0	0	0	0	4
SUBTOTAL	0	1488	34	0	1522	0	40	3	0	43	0	0	0	0	0	31

Traffic Count Data

Intersection: Ninth Line & Elm Rd
Site Code: 2305300001
Municipality: Stouffville
Count Date: Mar 07, 2023

North Approach - Ninth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
15:00	0	91	0	0	91	0	6	0	0	6	0	0	0	0	0	0
15:15	0	102	0	0	102	0	3	0	0	3	0	0	0	0	0	1
15:30	0	80	1	0	81	0	3	0	0	3	0	0	0	0	0	0
15:45	0	70	2	0	72	0	0	0	0	0	0	0	0	0	0	0
16:00	0	78	1	0	79	0	0	0	0	0	0	0	0	0	0	0
16:15	0	83	4	0	87	0	3	0	0	3	0	0	0	0	0	0
16:30	0	78	0	0	78	0	1	0	0	1	0	0	0	0	0	0
16:45	0	85	1	0	86	0	1	0	0	1	0	0	0	0	0	0
17:00	0	102	2	0	104	0	2	0	0	2	0	0	0	0	0	0
17:15	0	98	2	0	100	0	0	0	0	0	0	0	0	0	0	0
17:30	0	87	3	0	90	0	2	0	0	2	0	0	0	0	0	0
17:45	0	68	0	0	68	0	1	0	0	1	0	0	0	0	0	0
18:00	0	56	1	0	57	0	1	0	0	1	0	0	0	0	0	0
18:15	0	88	0	0	88	0	0	0	0	0	0	0	0	0	0	0
18:30	0	80	0	0	80	0	0	0	0	0	0	0	0	0	0	0
18:45	0	72	0	0	72	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	1318	17	0	1335	0	23	0	0	23	0	0	0	0	0	1
GRAND TOTAL	0	2806	51	0	2857	0	63	3	0	66	0	0	0	0	0	32

Traffic Count Data

Intersection: Ninth Line & Elm Rd
Site Code: 2305300001
Municipality: Stouffville
Count Date: Mar 07, 2023

South Approach - Ninth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
06:00	0	10	0	0	10	0	0	0	0	0	0	0	0	0	0	0
06:15	0	24	0	0	24	1	0	0	0	1	0	0	0	0	0	0
06:30	2	24	0	0	26	0	0	0	0	0	0	0	0	0	0	0
06:45	6	27	0	0	33	1	2	0	0	3	0	0	0	0	0	0
07:00	2	17	0	0	19	0	1	0	0	1	0	0	0	0	0	0
07:15	3	31	0	0	34	0	1	0	0	1	0	0	0	0	0	0
07:30	3	23	0	0	26	2	2	0	0	4	0	0	0	0	0	0
07:45	34	46	0	0	80	1	0	0	0	1	0	0	0	0	0	0
08:00	40	43	0	0	83	4	0	0	0	4	0	0	0	0	0	0
08:15	7	49	0	0	56	0	1	0	0	1	0	0	0	0	0	0
08:30	5	60	0	0	65	0	1	0	0	1	0	0	0	0	0	0
08:45	6	47	0	0	53	1	3	0	0	4	0	0	0	0	0	0
09:00	2	69	0	0	71	0	1	0	0	1	0	0	0	0	0	0
09:15	4	59	0	0	63	1	0	0	0	1	0	0	0	0	0	0
09:30	4	62	0	0	66	0	2	0	0	2	0	0	0	0	0	0
09:45	4	58	0	0	62	1	4	0	0	5	0	0	0	0	0	0
SUBTOTAL	122	649	0	0	771	12	18	0	0	30	0	0	0	0	0	0

Traffic Count Data

Intersection: Ninth Line & Elm Rd
Site Code: 2305300001
Municipality: Stouffville
Count Date: Mar 07, 2023

South Approach - Ninth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	3	69	0	0	72	1	3	0	0	4	0	0	0	0	0	0
15:15	8	88	0	0	96	1	3	0	0	4	0	0	0	0	0	0
15:30	2	105	0	0	107	1	5	0	0	6	0	0	0	0	0	0
15:45	1	127	0	0	128	0	6	0	0	6	0	0	0	0	0	0
16:00	9	113	0	0	122	0	5	0	0	5	0	0	0	0	0	0
16:15	4	111	0	0	115	1	1	0	0	2	1	1	0	0	2	1
16:30	7	111	0	0	118	0	3	0	0	3	0	0	0	0	0	0
16:45	0	117	0	0	117	1	2	0	0	3	0	0	0	0	0	0
17:00	4	123	0	0	127	0	0	0	0	0	0	0	0	0	0	0
17:15	6	125	0	0	131	0	0	0	0	0	0	0	0	0	0	0
17:30	1	109	0	0	110	1	0	0	0	1	0	0	0	0	0	0
17:45	5	95	0	0	100	0	0	0	0	0	0	0	0	0	0	0
18:00	1	147	0	0	148	1	1	0	0	2	0	0	0	0	0	0
18:15	1	93	0	0	94	0	0	0	0	0	0	0	0	0	0	0
18:30	2	106	0	0	108	1	0	0	0	1	0	0	0	0	0	0
18:45	5	66	0	0	71	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	59	1705	0	0	1764	8	29	0	0	37	1	1	0	0	2	1
GRAND TOTAL	181	2354	0	0	2535	20	47	0	0	67	1	1	0	0	2	1

Traffic Count Data

Intersection: Ninth Line & Elm Rd
Site Code: 2305300001
Municipality: Stouffville
Count Date: Mar 07, 2023

West Approach - Elm Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
06:00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
06:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	1
07:00	2	0	2	0	4	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0
07:30	3	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	7	0	7	0	0	0	0	0	0	0	0	0	0	1
08:00	4	0	20	0	24	0	0	3	0	3	0	0	0	0	0	3
08:15	9	0	24	0	33	0	0	3	0	3	0	0	0	0	0	0
08:30	2	0	4	0	6	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0
09:30	1	0	3	0	4	0	0	0	0	0	0	0	0	0	0	0
09:45	2	0	3	0	5	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	25	0	83	0	108	0	0	6	0	6	0	0	0	0	0	6

Traffic Count Data

Intersection: Ninth Line & Elm Rd
Site Code: 2305300001
Municipality: Stouffville
Count Date: Mar 07, 2023

West Approach - Elm Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
15:00	1	0	7	0	8	0	0	0	0	0	0	0	0	0	0	1
15:15	0	0	10	0	10	0	0	0	0	0	0	0	0	0	0	0
15:30	2	0	5	0	7	0	0	0	0	0	0	0	0	0	0	0
15:45	1	0	11	0	12	0	0	0	0	0	0	0	0	0	0	3
16:00	2	0	4	0	6	0	0	0	0	0	0	0	0	0	0	0
16:15	4	0	5	0	9	0	0	0	0	0	0	0	0	0	0	0
16:30	3	0	7	0	10	0	0	0	0	0	0	0	0	0	0	2
16:45	2	0	4	0	6	0	0	0	0	0	0	0	0	0	0	0
17:00	5	0	2	0	7	0	0	0	0	0	0	0	0	0	0	0
17:15	5	0	2	0	7	0	0	0	0	0	0	0	0	0	0	0
17:30	3	0	4	0	7	0	0	0	0	0	0	0	0	0	0	1
17:45	1	0	5	0	6	0	0	0	0	0	0	0	0	0	0	0
18:00	2	0	2	0	4	0	0	0	0	0	0	0	0	0	0	0
18:15	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
18:30	2	0	2	0	4	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	5
SUBTOTAL	36	0	71	0	107	0	0	0	0	0	0	0	0	0	0	12
GRAND TOTAL	61	0	154	0	215	0	0	6	0	6	0	0	0	0	0	18

Peak Hour Diagram

Specified Period

From: 06:00:00
To: 10:00:00

One Hour Peak

From: 07:45:00
To: 08:45:00




Intersection: Ninth Line & Elm Rd
Site Code: 2305300001
Count Date: Mar 07, 2023

Weather conditions: Clear




**** Unsignalized Intersection ****

Major Road: Ninth Line runs N/S

North Approach




	Out	In	Total
	589	213	802
	6	2	8
	0	0	0
Totals	595	215	810

Ninth Line

	0	0	0
	2	4	0
	27	562	0
Totals	29	566	0

Peds: 20

Elm Rd

				Totals
	0	0	0	0
	0	0	15	15
	0	6	55	61




Peds: 4






Peds: 0

Peds: 0




West Approach

	Out	In	Total
	70	113	183
	6	7	13
	0	0	0
Totals	76	120	196

Totals	91	200	0
	86	198	0
	5	2	0
	0	0	0

Ninth Line

South Approach

	Out	In	Total
	284	617	901
	7	10	17
	0	0	0
Totals	291	627	918

 - Cars

 - Trucks

 - Bicycles

Comments

Peak Hour Summary

Intersection: Ninth Line & Elm Rd
Site Code: 2305300001
Count Date: Mar 07, 2023
Period: 06:00 - 10:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Ninth Line						South Approach Ninth Line						East Approach						West Approach Elm Rd						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
07:45		121	5	0	2	126	35	46		0	0	81					0		0		7	0	1	7	214
08:00		148	18	0	15	166	44	43		0	0	87					0		4		23	0	3	27	280
08:15		161	6	0	1	167	7	50		0	0	57					0		9		27	0	0	36	260
08:30		136	0	0	2	136	5	61		0	0	66					0		2		4	0	0	6	208
Grand Total		566	29	0	20	595	91	200		0	0	291					0	0	15		61	0	4	76	962
Approach %		95.1	4.9	0	-	-	31.3	68.7		0	-	-					-	-	19.7		80.3	0	-	-	
Totals %		58.8	3	0	61.9		9.5	20.8		0	30.2					0		1.6		6.3	0	7.9			
PHF		0.88	0.4	0	0.89		0.52	0.82		0	0.84					0		0.42		0.56	0	0.53		0.86	
Cars		562	27	0		589	86	198		0		284					0		15		55	0		70	943
% Cars		99.3	93.1	0		99	94.5	99		0		97.6					0		100		90.2	0		92.1	98
Trucks		4	2	0		6	5	2		0		7					0		0		6	0		6	19
% Trucks		0.7	6.9	0		1	5.5	1		0		2.4					0		0		9.8	0		7.9	2
Bicycles		0	0	0		0	0	0		0		0					0		0		0	0		0	0
% Bicycles		0	0	0		0	0	0		0		0					0		0		0	0		0	0
Peds					20	-					0	-					0	-					4	-	24
% Peds					83.3	-					0	-					0	-					16.7	-	

Peak Hour Diagram

Specified Period

From: 15:00:00
To: 19:00:00

One Hour Peak

From: 16:30:00
To: 17:30:00




Intersection: Ninth Line & Elm Rd
Site Code: 2305300001
Count Date: Mar 07, 2023

Weather conditions: Clear




**** Unsignalized Intersection ****

Major Road: Ninth Line runs N/S

North Approach




	Out	In	Total
	368	491	859
	4	5	9
	0	0	0
Totals	372	496	868

Ninth Line

	0	0	0
	0	4	0
	5	363	0
Totals	5	367	0

Peds: 0

Elm Rd

				Totals
	0	0	0	0
	0	0	15	15
	0	0	15	15




Peds: 2






Peds: 0

Peds: 0




West Approach

	Out	In	Total
	30	22	52
	0	1	1
	0	0	0
Totals	30	23	53


Totals	18	481	0
	17	476	0
	1	5	0
	0	0	0

Ninth Line

South Approach

	Out	In	Total
	493	378	871
	6	4	10
	0	0	0
Totals	499	382	881

 - Cars

 - Trucks

 - Bicycles

Comments

Peak Hour Summary

Intersection: Ninth Line & Elm Rd
Site Code: 2305300001
Count Date: Mar 07, 2023
Period: 15:00 - 19:00

Peak Hour Data (16:30 - 17:30)

Start Time	North Approach Ninth Line						South Approach Ninth Line						East Approach						West Approach Elm Rd						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
16:30		79	0	0	0	79	7	114		0	0	121					0		3		7	0	2	10	210
16:45		86	1	0	0	87	1	119		0	0	120					0		2		4	0	0	6	213
17:00		104	2	0	0	106	4	123		0	0	127					0		5		2	0	0	7	240
17:15		98	2	0	0	100	6	125		0	0	131					0		5		2	0	0	7	238
Grand Total		367	5	0	0	372	18	481		0	0	499					0	0	15		15	0	2	30	901
Approach %		98.7	1.3	0		-	3.6	96.4		0		-					-		50		50	0		-	
Totals %		40.7	0.6	0		41.3	2	53.4		0		55.4					0		1.7		1.7	0		3.3	
PHF		0.88	0.63	0		0.88	0.64	0.96		0		0.95					0		0.75		0.54	0		0.75	0.94
Cars		363	5	0		368	17	476		0		493					0		15		15	0		30	891
% Cars		98.9	100	0		98.9	94.4	99		0		98.8					0		100		100	0		100	98.9
Trucks		4	0	0		4	1	5		0		6					0		0		0	0		0	10
% Trucks		1.1	0	0		1.1	5.6	1		0		1.2					0		0		0	0		0	1.1
Bicycles		0	0	0		0	0	0		0		0					0		0		0	0		0	0
% Bicycles		0	0	0		0	0	0		0		0					0		0		0	0		0	0
Peds					0	-					0	-					0	-				2	-	2	
% Peds					0	-					0	-					0	-				100	-		

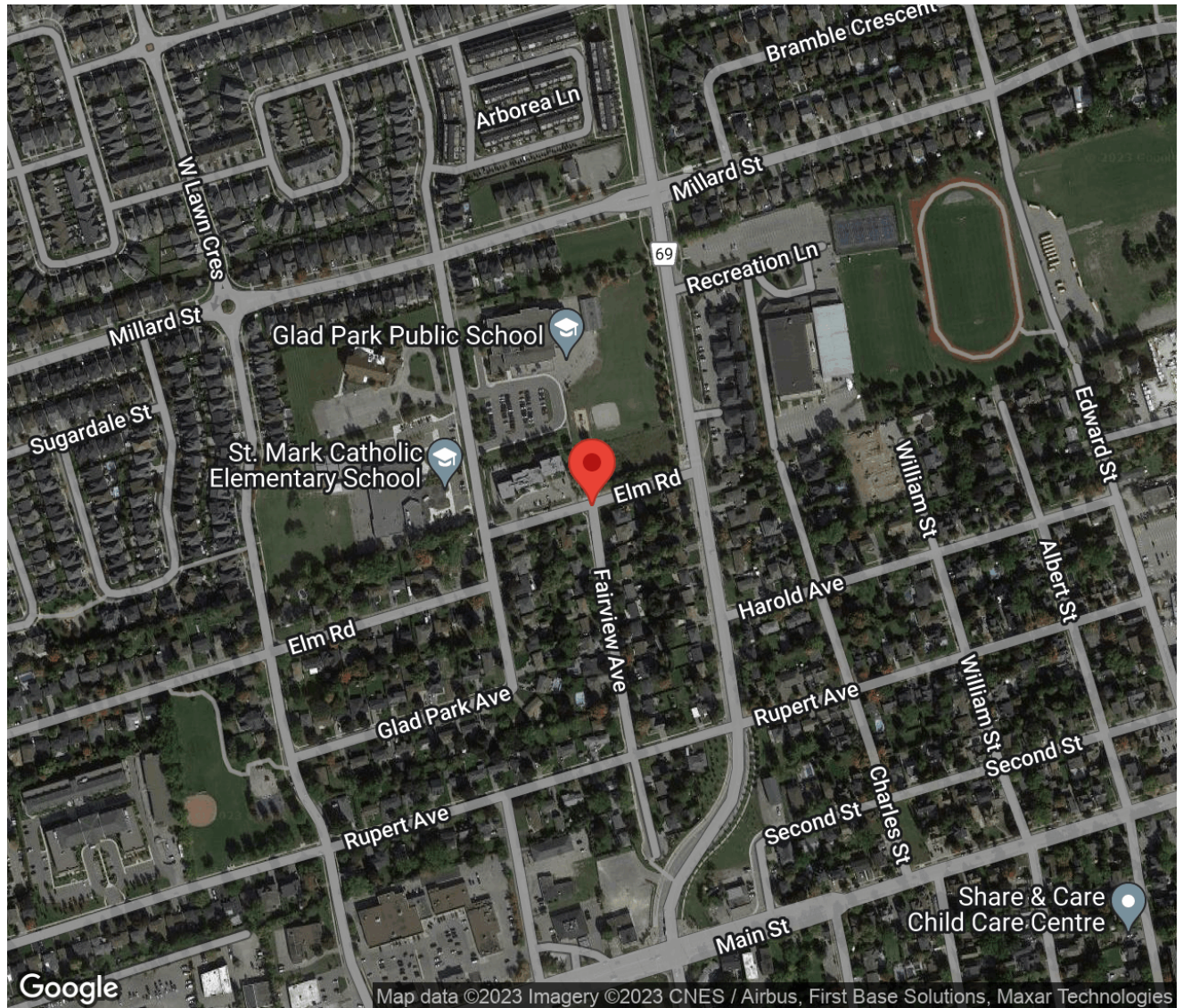
Project #23-053 - AECOM

Intersection Count Report

Intersection:	Elm Rd & Fairview Ave
Municipality:	Stouffville
Count Date:	Tuesday, Mar 07, 2023
Site Code:	2305100002
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	06:00-10:00, 15:00-19:00
Weather:	Clear
Comments:	

Traffic Count Map

Intersection:	Elm Rd & Fairview Ave
Site Code:	2305100002
Municipality:	Stouffville
Count Date:	Mar 07, 2023



Traffic Count Summary

Intersection: Elm Rd & Fairview Ave
Site Code: 2305100002
Municipality: Stouffville
Count Date: Mar 07, 2023

Fairview Ave - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
06:00 - 07:00	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 - 08:00	0	0	0	0	0	0	4	0	2	0	6	0	6
08:00 - 09:00	0	0	0	0	0	0	14	0	3	0	17	3	17
09:00 - 10:00	0	0	0	0	0	0	2	0	0	0	2	0	2
BREAK													
15:00 - 16:00	0	0	0	0	0	0	7	0	2	0	9	0	9
16:00 - 17:00	0	0	0	0	0	0	6	0	9	0	15	0	15
17:00 - 18:00	0	0	0	0	0	0	4	0	9	0	13	1	13
18:00 - 19:00	0	0	0	0	0	0	1	0	6	0	7	0	7
GRAND TOTAL	0	0	0	0	0	0	38	0	31	0	69	4	69

Traffic Count Summary

Intersection: Elm Rd & Fairview Ave
Site Code: 2305100002
Municipality: Stouffville
Count Date: Mar 07, 2023

Elm Rd - Traffic Summary

	East Approach Totals						West Approach Totals						
Hour	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
06:00 - 07:00	0	11	0	0	11	0	0	4	2	0	6	0	17
07:00 - 08:00	5	49	0	0	54	0	0	17	1	0	18	0	72
08:00 - 09:00	11	76	0	0	87	1	0	71	6	0	77	1	164
09:00 - 10:00	0	18	0	0	18	1	0	16	2	0	18	1	36
BREAK													
15:00 - 16:00	2	18	0	0	20	0	0	34	4	0	38	0	58
16:00 - 17:00	2	25	0	0	27	0	0	23	3	0	26	3	53
17:00 - 18:00	2	21	0	0	23	0	0	18	1	0	19	1	42
18:00 - 19:00	0	12	0	0	12	0	0	6	0	0	6	3	18
GRAND TOTAL	22	230	0	0	252	2	0	189	19	0	208	9	460

[illegible]

Traffic Count Data

Intersection: Elm Rd & Fairview Ave
Site Code: 2305100002
Municipality: Stouffville
Count Date: Mar 07, 2023

South Approach - Fairview Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
15:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
15:30	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0
15:45	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0
16:00	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	3	0	3	1	0	0	0	1	0	0	0	0	0	0
16:30	2	0	4	0	6	0	0	0	0	0	0	0	0	0	0	0
16:45	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0
17:00	2	0	4	0	6	0	0	0	0	0	0	0	0	0	0	1
17:15	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0
17:45	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0
18:45	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	17	0	26	0	43	1	0	0	0	1	0	0	0	0	0	1
GRAND TOTAL	37	0	31	0	68	1	0	0	0	1	0	0	0	0	0	4

Traffic Count Data

Intersection: Elm Rd & Fairview Ave
Site Code: 2305100002
Municipality: Stouffville
Count Date: Mar 07, 2023

East Approach - Elm Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
06:00	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
06:30	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
06:45	0	5	0	0	5	0	1	0	0	1	0	0	0	0	0	0
07:00	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
07:15	1	2	0	0	3	0	1	0	0	1	0	0	0	0	0	0
07:30	1	3	0	0	4	0	2	0	0	2	0	0	0	0	0	0
07:45	3	36	0	0	39	0	1	0	0	1	0	0	0	0	0	0
08:00	10	46	0	0	56	1	5	0	0	6	0	0	0	0	0	0
08:15	0	13	0	0	13	0	0	0	0	0	0	0	0	0	0	0
08:30	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
08:45	0	8	0	0	8	0	1	0	0	1	0	0	0	0	0	1
09:00	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
09:15	0	4	0	0	4	0	1	0	0	1	0	0	0	0	0	1
09:30	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
09:45	0	5	0	0	5	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	15	140	0	0	155	1	14	0	0	15	0	0	0	0	0	2

Traffic Count Data

Intersection: Elm Rd & Fairview Ave
Site Code: 2305100002
Municipality: Stouffville
Count Date: Mar 07, 2023

East Approach - Elm Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	2	1	0	0	3	0	1	0	0	1	0	0	0	0	0	0
15:15	0	8	0	0	8	0	1	0	0	1	0	0	0	0	0	0
15:30	0	3	0	0	3	0	1	0	0	1	0	0	0	0	0	0
15:45	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
16:00	1	9	0	0	10	0	0	0	0	0	0	0	0	0	0	0
16:15	1	6	0	0	7	0	1	0	0	1	0	0	0	0	0	0
16:30	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0
16:45	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0
17:00	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0
17:15	1	6	0	0	7	0	0	0	0	0	0	0	0	0	0	0
17:30	1	3	0	0	4	0	1	0	0	1	0	0	0	0	0	0
17:45	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
18:00	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0
18:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
18:30	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0
18:45	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	6	68	0	0	74	0	8	0	0	8	0	0	0	0	0	0
GRAND TOTAL	21	208	0	0	229	1	22	0	0	23	0	0	0	0	0	2

Traffic Count Data

Intersection: Elm Rd & Fairview Ave
Site Code: 2305100002
Municipality: Stouffville
Count Date: Mar 07, 2023

West Approach - Elm Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
06:30	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0	0
06:45	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
07:00	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
07:15	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
07:30	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
07:45	0	7	1	0	8	0	0	0	0	0	0	0	0	0	0	0
08:00	0	24	1	0	25	0	3	2	0	5	0	0	0	0	0	1
08:15	0	30	1	0	31	0	3	1	0	4	0	0	0	0	0	0
08:30	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0
08:45	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	0
09:00	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
09:15	0	3	1	0	4	0	0	0	0	0	0	0	0	0	0	1
09:30	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
09:45	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	102	8	0	110	0	6	3	0	9	0	0	0	0	0	2

Traffic Count Data

Intersection: Elm Rd & Fairview Ave
Site Code: 2305100002
Municipality: Stouffville
Count Date: Mar 07, 2023

West Approach - Elm Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
15:00	0	8	1	0	9	0	0	0	0	0	0	0	0	0	0	0
15:15	0	10	1	0	11	0	0	0	0	0	0	0	0	0	0	0
15:30	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
15:45	0	11	2	0	13	0	0	0	0	0	0	0	0	0	0	0
16:00	0	7	2	0	9	0	0	0	0	0	0	0	0	0	0	2
16:15	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
16:30	0	6	1	0	7	0	0	0	0	0	0	0	0	0	0	0
16:45	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	1
17:00	0	3	1	0	4	0	0	0	0	0	0	0	0	0	0	0
17:15	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
17:30	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	1
17:45	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
18:00	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1
18:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
18:30	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
18:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	81	8	0	89	0	0	0	0	0	0	0	0	0	0	7
GRAND TOTAL	0	183	16	0	199	0	6	3	0	9	0	0	0	0	0	9

Peak Hour Diagram

Specified Period

From: 06:00:00
To: 10:00:00

One Hour Peak

From: 07:30:00
To: 08:30:00




Intersection: Elm Rd & Fairview Ave
Site Code: 2305100002
Count Date: Mar 07, 2023

Weather conditions: Clear




**** Unsignalized Intersection ****

Major Road: Elm Rd runs E/W

East Approach

	Out	In	Total
	112	68	180
	9	6	15
	0	0	0
	121	74	195

Elm Rd

			Totals
0	0	0	0
0	6	65	71
0	3	3	6




Peds: 1

Peds: 0









Peds: 0

Elm Rd

Totals			
0	0	0	0
106	98	8	0
15	14	1	0




West Approach


	Out	In	Total
	68	115	183
	9	8	17
	0	0	0
	77	123	200


Totals	17	3	0
	17	3	0
	0	0	0
	0	0	0

Fairview Ave

South Approach

	Out	In	Total
	20	17	37
	0	4	4
	0	0	0
	20	21	41

 - Cars

 - Trucks

 - Bicycles

Comments

Peak Hour Summary

Intersection: Elm Rd & Fairview Ave
Site Code: 2305100002
Count Date: Mar 07, 2023
Period: 06:00 - 10:00

Peak Hour Data (07:30 - 08:30)

	North Approach						South Approach Fairview Ave						East Approach Elm Rd						West Approach Elm Rd						Total Vehicl es
Start Time	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
07:30					0		0		0	0	0	0	1	5		0	0	6		4	0	0	0	4	10
07:45					0		4		0	0	0	4	3	37		0	0	40		7	1	0	0	8	52
08:00					0		9		3	0	1	12	11	51		0	0	62		27	3	0	1	30	104
08:15					0		4		0	0	1	4	0	13		0	0	13		33	2	0	0	35	52
Grand Total					0	0	17		3	0	2	20	15	106		0	0	121		71	6	0	1	77	218
Approach %					-		85		15	0	-		12.4	87.6		0	-			92.2	7.8	0	-		
Totals %					0		7.8		1.4	0	9.2		6.9	48.6		0	55.5			32.6	2.8	0	35.3		
PHF					0		0.47		0.25	0	0.42		0.34	0.52		0	0.49			0.54	0.5	0	0.55	0.52	
Cars					0		17		3	0	20		14	98		0	112			65	3	0	68	200	
% Cars					0		100		100	0	100		93.3	92.5		0	92.6			91.5	50	0	88.3	91.7	
Trucks					0		0		0	0	0		1	8		0	9			6	3	0	9	18	
% Trucks					0		0		0	0	0		6.7	7.5		0	7.4			8.5	50	0	11.7	8.3	
Bicycles					0		0		0	0	0		0	0		0	0			0	0	0	0	0	
% Bicycles					0		0		0	0	0		0	0		0	0			0	0	0	0	0	
Peds					0	-					2	-					0	-					1	-	3
% Peds					0	-					66.7	-					0	-					33.3	-	

Peak Hour Diagram

Specified Period

From: 15:00:00
To: 19:00:00

One Hour Peak

From: 15:45:00
To: 16:45:00




Intersection: Elm Rd & Fairview Ave
Site Code: 2305100002
Count Date: Mar 07, 2023

Weather conditions: Clear




**** Unsignalized Intersection ****

Major Road: Elm Rd runs E/W

East Approach

	Out	In	Total
	27	37	64
	1	0	1
	0	0	0
	28	37	65

Elm Rd

			Totals
0	0	0	0
0	0	28	28
0	0	5	5




Peds: 2

Peds: 0












Peds: 0

Elm Rd

Totals			
0	0	0	0
26	25	1	0
2	2	0	0




West Approach

	Out	In	Total
	33	31	64
	0	2	2
	0	0	0
	33	33	66


Totals			
	6	9	0
	1	0	0
	0	0	0

Fairview Ave

South Approach

	Out	In	Total
	15	7	22
	1	0	1
	0	0	0
	16	7	23

 - Cars

 - Trucks

 - Bicycles

Comments

Peak Hour Summary

Intersection: Elm Rd & Fairview Ave
Site Code: 2305100002
Count Date: Mar 07, 2023
Period: 15:00 - 19:00

Peak Hour Data (15:45 - 16:45)

	North Approach						South Approach Fairview Ave						East Approach Elm Rd						West Approach Elm Rd						Total Vehicl es				
Start Time	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total					
15:45						0		2		1	0	0	3	0	3		0	0	3		11	2	0	0	13	19			
16:00						0		2		1	0	0	3	1	9		0	0	10		7	2	0	2	9	22			
16:15						0		1		3	0	0	4	1	7		0	0	8		4	0	0	0	4	16			
16:30						0		2		4	0	0	6	0	7		0	0	7		6	1	0	0	7	20			
Grand Total						0	0	7		9	0	0	16	2	26		0	0	28		28	5	0	2	33	77			
Approach %						-	43.8		56.3	0		-	7.1	92.9		0		-	84.8	15.2	0		-						
Totals %						0	9.1		11.7	0		20.8	2.6	33.8		0		36.4	36.4	6.5	0		42.9						
PHF						0	0.88		0.56	0		0.67	0.5	0.72		0		0.7	0.64	0.63	0		0.63	0.88					
Cars						0	6		9	0		15	2	25		0		27	28	5	0		33	75					
% Cars						0	85.7		100	0		93.8	100	96.2		0		96.4	100	100	0		100	97.4					
Trucks						0	1		0	0		1	0	1		0		1	0	0	0		0	2					
% Trucks						0	14.3		0	0		6.3	0	3.8		0		3.6	0	0	0		0	2.6					
Bicycles						0	0		0	0		0	0	0		0		0	0	0	0		0	0					
% Bicycles						0	0		0	0		0	0	0		0		0	0	0	0		0	0					
Peds						0	-						0	-						0	-						2	-	2
% Peds						0	-						0	-						0	-						100	-	











Appendix B

Synchro analysis results for Existing
and Future Total Scenarios

HCM Unsignalized Intersection Capacity Analysis

3: Ninth NB/Ninth SB & Elm Rd










Existing AM

												
Movement	EBL	EBR	NBL	NBT	SBT	SBR						
Lane Configurations												
Traffic Volume (veh/h)	15	59	91	200	566	29						
Future Volume (Veh/h)	15	59	91	200	566	29						
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)	16	64	99	217	615	32						
Pedestrians	20			4								
Lane Width (m)	3.6			3.6								
Walking Speed (m/s)	1.2			1.2								
Percent Blockage	2			0								
Right turn flare (veh)												
Median type				TWLT	TWLT							
Median storage (veh)				2	2							
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1070	651	667									
vC1, stage 1 conf vol	651											
vC2, stage 2 conf vol	419											
vCu, unblocked vol	1070	651	667									
tC, single (s)	6.4	6.2	4.1									
tC, 2 stage (s)	5.4											
tF (s)	3.5	3.3	2.2									
p0 queue free %	96	86	89									
cM capacity (veh/h)	423	461	907									
Direction, Lane #	EB 1	NB 1	NB 2	SB 1								
Volume Total	80	99	217	647								
Volume Left	16	99	0	0								
Volume Right	64	0	0	32								
cSH	453	907	1700	1700								
Volume to Capacity	0.18	0.11	0.13	0.38								
Queue Length 95th (m)	5.1	2.9	0.0	0.0								
Control Delay (s)	14.7	9.5	0.0	0.0								
Lane LOS	B	A										
Approach Delay (s)	14.7	3.0	0.0									
Approach LOS	B											
Intersection Summary												
Average Delay				2.0								
Intersection Capacity Utilization				51.2%	ICU Level of Service	A						
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

5: Fairview & Elm Rd











Existing AM

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	71	6	15	105	17	3
Future Volume (Veh/h)	71	6	15	105	17	3
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)	77	7	16	114	18	3
Pedestrians	2				1	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			85		230	82
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			85		230	82
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		98	100
cM capacity (veh/h)			1510		749	978
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	84	130	21			
Volume Left	0	16	18			
Volume Right	7	0	3			
cSH	1700	1510	775			
Volume to Capacity	0.05	0.01	0.03			
Queue Length 95th (m)	0.0	0.3	0.7			
Control Delay (s)	0.0	1.0	9.8			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.0	9.8			
Approach LOS			A			
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			23.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Ninth NB/Ninth SB & Elm Rd










Existing PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	15	20	481	367	6
Future Volume (Veh/h)	15	15	20	481	367	6
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)	16	16	22	523	399	7
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type				TWLT	TWLT	
Median storage (veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	972	402	406			
vC1, stage 1 conf vol	402					
vC2, stage 2 conf vol	569					
vCu, unblocked vol	972	402	406			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	98			
cM capacity (veh/h)	480	648	1153			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	32	22	523	406		
Volume Left	16	22	0	0		
Volume Right	16	0	0	7		
cSH	552	1153	1700	1700		
Volume to Capacity	0.06	0.02	0.31	0.24		
Queue Length 95th (m)	1.5	0.5	0.0	0.0		
Control Delay (s)	11.9	8.2	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	11.9	0.3		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			35.3%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

5: Fairview & Elm Rd











Existing PM

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	25	5	2	24	7	5
Future Volume (Veh/h)	25	5	2	24	7	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)	27	5	2	26	8	5
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			34		62	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			34		62	32
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	100
cM capacity (veh/h)			1575		942	1041
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	32	28	13			
Volume Left	0	2	8			
Volume Right	5	0	5			
cSH	1700	1575	978			
Volume to Capacity	0.02	0.00	0.01			
Queue Length 95th (m)	0.0	0.0	0.3			
Control Delay (s)	0.0	0.5	8.7			
Lane LOS		A	A			
Approach Delay (s)	0.0	0.5	8.7			
Approach LOS			A			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			14.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Ninth NB/Ninth SB & Elm Rd

















Total AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	62	93	200	570	29
Future Volume (Veh/h)	16	62	93	200	570	29
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)	17	67	101	217	620	32
Pedestrians	20				4	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	2				0	
Right turn flare (veh)						
Median type				TWLT	TWLT	
Median storage (veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1079	656	672			
vC1, stage 1 conf vol	656					
vC2, stage 2 conf vol	423					
vCu, unblocked vol	1079	656	672			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	85	89			
cM capacity (veh/h)	420	458	903			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	84	101	217	652		
Volume Left	17	101	0	0		
Volume Right	67	0	0	32		
cSH	450	903	1700	1700		
Volume to Capacity	0.19	0.11	0.13	0.38		
Queue Length 95th (m)	5.4	3.0	0.0	0.0		
Control Delay (s)	14.8	9.5	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	14.8	3.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay				2.1		
Intersection Capacity Utilization				51.7%	ICU Level of Service	A
Analysis Period (min)				15		

HCM Unsignalized Intersection Capacity Analysis

5: Fairview & Elm Rd

Total AM











																					
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR									
Lane Configurations																					
Traffic Volume (veh/h)	0	71	6	15	105	2	17	0	3	4	0	0									
Future Volume (Veh/h)	0	71	6	15	105	2	17	0	3	4	0	0									
Sign Control	Free			Free			Stop			Stop											
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)	0	77	7	16	114	2	18	0	3	4	0	0									
Pedestrians	2						1														
Lane Width (m)	3.6						3.6														
Walking Speed (m/s)	1.2						1.2														
Percent Blockage	0						0														
Right turn flare (veh)																					
Median type	None			None																	
Median storage (veh)																					
Upstream signal (m)																					
pX, platoon unblocked																					
vC, conflicting volume	116			85			230	230	82	230	232	117									
vC1, stage 1 conf vol																					
vC2, stage 2 conf vol																					
vCu, unblocked vol	116			85			230	230	82	230	232	117									
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2									
tC, 2 stage (s)																					
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3									
p0 queue free %	100			99			97	100	100	99	100	100									
cM capacity (veh/h)	1473			1510			716	663	978	716	660	934									
Direction, Lane #	EB 1	WB 1	NB 1	SB 1																	
Volume Total	84	132	21	4																	
Volume Left	0	16	18	4																	
Volume Right	7	2	3	0																	
cSH	1700	1510	745	716																	
Volume to Capacity	0.05	0.01	0.03	0.01																	
Queue Length 95th (m)	0.0	0.3	0.7	0.1																	
Control Delay (s)	0.0	1.0	10.0	10.1																	
Lane LOS	A		A	B																	
Approach Delay (s)	0.0	1.0	10.0	10.1																	
Approach LOS			A	B																	
Intersection Summary																					
Average Delay			1.6																		
Intersection Capacity Utilization			Err%	ICU Level of Service		H															
Analysis Period (min)			15																		

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis

3: Ninth NB/Ninth SB & Elm Rd

















Total PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	16	25	481	369	6
Future Volume (Veh/h)	15	16	25	481	369	6
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)	16	17	27	523	401	7
Pedestrians	20				4	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	2				0	
Right turn flare (veh)						
Median type				TWLT	TWLT	
Median storage (veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1006	424	428			
vC1, stage 1 conf vol	424					
vC2, stage 2 conf vol	581					
vCu, unblocked vol	1006	424	428			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	97	98			
cM capacity (veh/h)	464	619	1113			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	33	27	523	408		
Volume Left	16	27	0	0		
Volume Right	17	0	0	7		
cSH	533	1113	1700	1700		
Volume to Capacity	0.06	0.02	0.31	0.24		
Queue Length 95th (m)	1.6	0.6	0.0	0.0		
Control Delay (s)	12.2	8.3	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	12.2	0.4		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			35.3%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

5: Fairview & Elm Rd

Total PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	25	5	2	24	5	7	0	5	1	0	0
Future Volume (Veh/h)	0	25	5	2	24	5	7	0	5	1	0	0
Sign Control	Free				Free				Stop		Stop	
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)	0	27	5	2	26	5	8	0	5	1	0	0
Pedestrians	2								1			
Lane Width (m)	3.6								3.6			
Walking Speed (m/s)	1.2								1.2			
Percent Blockage	0								0			
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	31			33			65	66	30	67	66	30
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	31			33			65	66	30	67	66	30
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	100	100	100
cM capacity (veh/h)	1582			1578			925	823	1043	920	823	1042
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	32	33	13	1								
Volume Left	0	2	8	1								
Volume Right	5	5	5	0								
cSH	1700	1578	967	920								
Volume to Capacity	0.02	0.00	0.01	0.00								
Queue Length 95th (m)	0.0	0.0	0.3	0.0								
Control Delay (s)	0.0	0.5	8.8	8.9								
Lane LOS	A		A	A								
Approach Delay (s)	0.0	0.5	8.8	8.9								
Approach LOS			A	A								
Intersection Summary												
Average Delay			1.7									
Intersection Capacity Utilization			Err%	ICU Level of Service		H						
Analysis Period (min)			15									

Intersection Sign configuration not allowed in HCM analysis.

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