Traffic Impact Brief

1570 Niagara Stone Road

Niagara-on-the-Lake, Ontario

Prepared for: Hummel Properties Inc.

Prepared by: SLBC Inc.

2023-09-21

Executive Summary

SLBC Inc. has been retained by Hummel Properties Inc. to complete a Traffic Impact Brief for the proposed residential townhouse and apartment development at 1570 Niagara Stone Road, in the Town of Niagara-on-the-Lake.

The subject development lands are currently a portion of the parking lot and grassy area of the existing Cornerstone Community Church located at the same address. The church will remain in operation post build-out of the subject development. The development lands have road frontage on Elden Street, between Field Road and Penner Street. The primary arterial road through this area is Niagara Stone Road (Regional Road 55), which is oriented in a southwest-to-northeast alignment. There are a variety of land uses in the immediate area, including residential, institution, commercial, retail, and agricultural uses.

The proposed residential development will consist of 14 townhouse dwelling units with a dedicated driveway off Elden Street, and 24 apartment units in a single four-storey apartment building with a dedicated driveway off Elden Street as well**.** All parking will be on-site and at ground level.

Based on the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th edition), the proposed residential development is projected to generate approximately 11 two-way trips during the weekday a.m. peak hour (2 inbound and 9 outbound), and 14 two-way trips during the weekday p.m. peak hour (9 inbound and 5 outbound).

This level of estimated peak hour traffic generation by the proposed development is expected to be nominal. This added traffic is not expected to result in any operational or capacity concerns on the Town's or Region's road network and will not warrant the need for roadway infrastructure or traffic control improvements on the surrounding road network to maintain an acceptable level of service. The only two proposed roadway improvements required will be the introduction of the two new site driveways, which will not noticeably impact traffic operations on Elden Street.

There are no recommended improvements to the surrounding road network in response to the estimated traffic generation from the proposed development.

SLBC Inc.

Adam Mildenberger, BA, CET
Principal, Transportation Advisory Services

Table of Contents

1 Introduction

SLBC Inc. has been retained by Hummel Properties Inc. to complete a Traffic Impact Brief for the proposed residential townhouse and apartment development at 1570 Niagara Stone Road, in the Town of Niagara-on-the-Lake.

The primary objectives of the Traffic Impact Brief include:

- Review the study area and proposed development;
- Estimate trip generation from the proposed development;
- Provide an opinion on the anticipated traffic operational impacts of the proposed development, and whether improvements to the surrounding transportation network may be required to maintain an acceptable level of service.

2 Existing Road Network

Niagara Stone Road (Regional Road 55) is an arterial roadway under the jurisdiction of Niagara Region, with a two-lane urban cross-section and an assumed speed limit of 50km/h. In the vicinity of the site, there are no identifiable horizontal or vertical curves in the road's alignment requiring review. At its signalized intersection with Penner Street, there are auxiliary left-turn lanes for northbound and southbound traffic. At its signalized T-intersection with Field Road, there is an auxiliary left-turn lane for northbound traffic.

Penner Street is an east-west collector roadway under the jurisdiction of the Town of Niagara-on-the-Lake, with a two-lane urban cross-section and a posted speed limit of 40km/h. In the vicinity of the site, there are no identifiable horizontal or vertical curves in the road's alignment requiring review. At its all-way stop-controlled intersection with Elden Street it has no auxiliary turn lanes. At its signalized intersection with Niagara Stone Road, there are no auxiliary turn lanes.

Elden Street is a north-south local roadway under the jurisdiction of the Town of Niagara-on-the-Lake, with a two-lane urban cross-section and a posted speed limit of 40km/h. In the vicinity of the site, there are no identifiable horizontal or vertical curves in the road's alignment requiring review. It is stop controlled at both Penner Street to the north and Field Road to the south, with no auxiliary turn lanes.

Field Road is an east-west local roadway under the jurisdiction of the Town of Niagara-on-the-Lake, with a two-lane urban cross-section and a posted speed limit of 40km/h. In the vicinity of the site, there are no identifiable horizontal or vertical curves in the road's alignment requiring review. At its signalized T-intersection with Niagara Stone Road it has no auxiliary turn lanes.

3 Proposed Development

The subject development lands are currently a portion of the parking lot and grassy area of the existing Cornerstone Community Church located at the same address, as shown in **Figure 1**. The church will remain in operation post build-out of the subject development. The development lands have road frontage on Elden Street, between Field Road and Penner Street. The primary arterial road through this area is Niagara Stone Road (Regional Road 55), which is oriented in a southwest-to-northeast alignment. There are a variety of land uses in the immediate area, including residential, institution, commercial, retail, and agricultural uses.

The proposed residential development will consist of 14 townhouse dwelling units with a dedicated driveway off Elden Street, and 24 apartment units in a single four-storey apartment building with a dedicated driveway off Elden Street as well**.** All parking will be on-site and at ground level. A copy of the site plan is provided in **Appendix A**.

Figure 1: Study Area

4 Trip Generation

Automobile trip generation for the proposed development during the peak periods of the adjacent street traffic was estimated by using the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th edition) methodology for Single-family Attached Housing (ITE Land Use Code #215) for the townhomes and Multifamily Housing Mid-rise (ITE Land Use Code #221) for the apartments. Trip Generation datasheets are provided in **Appendix B**. As presented in **Table 1**, the proposed residential development is projected to generate approximately 11 two-way trips during the weekday a.m. peak hour (2 inbound and 9 outbound), and 14 two-way trips during the weekday p.m. peak hour (9 inbound and 5 outbound). As a conservative approach, the impacts of telecommuting or potentially elevated retirement levels of this community have not been considered in the trip generation estimates.

Table 1: Trip Generation Calculations

ITE Land Use	# of Units	Peak Hours	Total Site Trips	Directional Distribution		Directional Site Trips	
				In	Out	In	Out
Single-family Attached Housing (215)	14	AM	2	25%	75%	0	2
		PM	4	59%	41%	3	1
Multifamily Housing Mid-Rise (221)	24	AM	9	23%	77%	2	7
		PM	10	61%	39%	6	4
Total	38	AM	11	-	-	2	9
		PM	14	-	-	9	5

5 Trip Distribution and Trip Assignment

Given the majority of trips generated by the site during the weekday a.m. and p.m. peak hours will primarily be commuter trips and given the residential nature of the development, Transportation Tomorrow Survey (TTS) commuter data was reviewed to estimate the distribution of the site generated traffic to the surrounding road network. Based on the TTS data (provided in **Appendix C**), it is estimated approximately 50% of future employed residents of the subject site will commute within the Town Niagara-on-the-Lake area, and 50% will commute outside of the Town.

The site generated traffic has been assigned to individual turning movements at the study area intersections based on the aforementioned trip generation estimates and trip distribution assumptions, with approximately 50% travelling to/from the north and 50% to/from the south. The assignment of the estimated peak hour site generated traffic for the proposed residential development is shown in **Figure 2**.

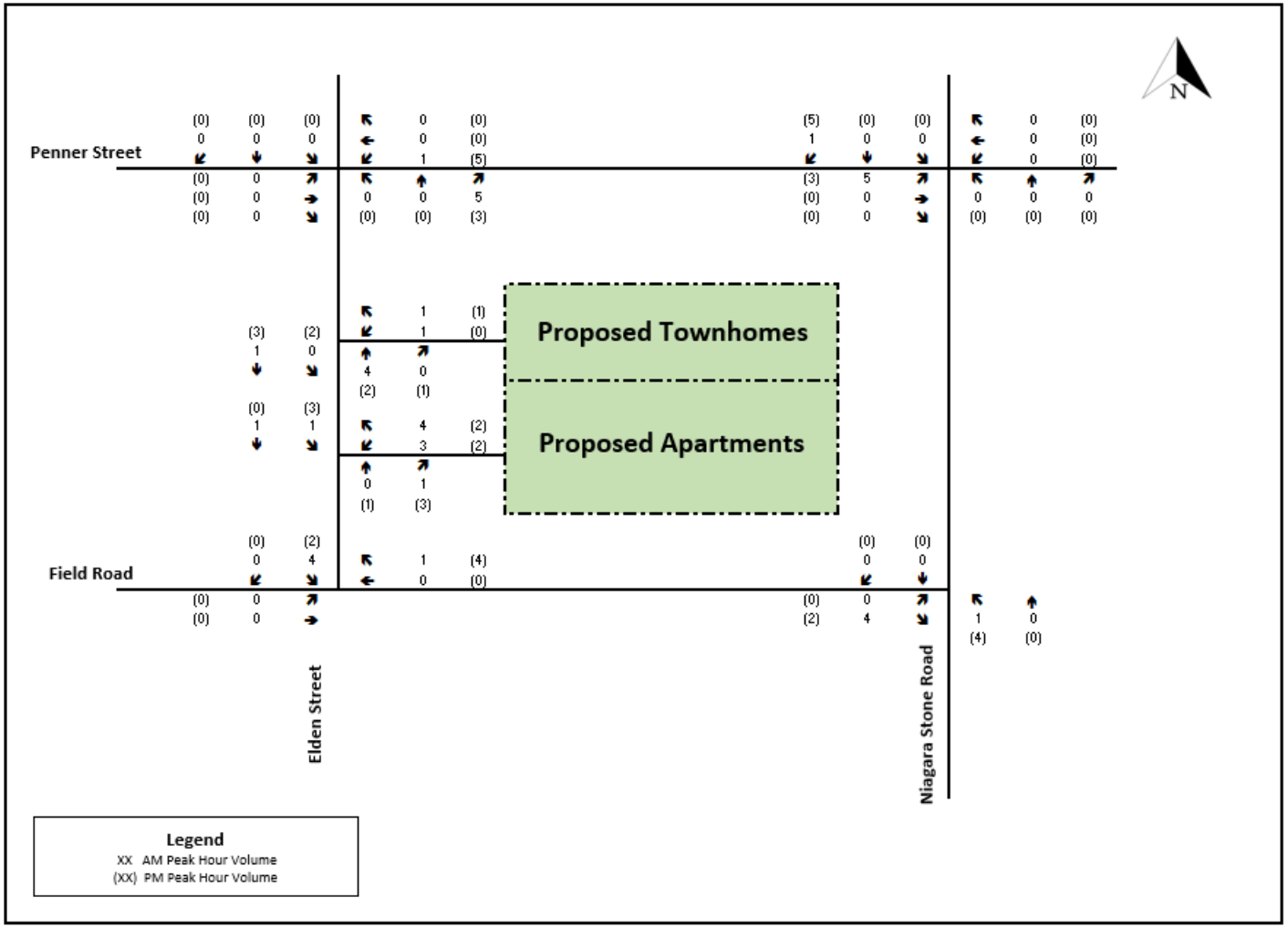

Figure 2: Trip Assignment

6 Anticipated Operational Impacts

This level of estimated peak hour traffic generation by the proposed development is expected to be nominal. This added traffic is not expected to result in any operational or capacity concerns on the Town's or Region's road network and will not warrant the need for roadway infrastructure or traffic control improvements on the surrounding road network to maintain an acceptable level of service. Both of the primary connection points to Niagara-Stone-Road (Penner Street and Field Road) are signalized intersections, which are expected to have sufficient capacity to accommodate the added traffic from the subject development, with auxiliary turn lanes already provided on Niagara-Stone-Road. As shown in the trip assignment estimates shown above, once the site generated traffic is distributed to individual turning movements at the surrounding intersections, the volume of added peak hour traffic is very low and may not be identifiable from a driver's perspective. This also represents worst-case (peak hour) conditions, with periods outside these two hours having notably less site generated traffic.

7 Summary of Findings and Recommendations

7.1 Summary of Findings

The findings of this traffic study can be summarized as follows:

- The proposed residential development will consist of 38 dwelling units (14 townhouse dwelling units and 24 apartment units)**;**
- The proposed residential development is projected to generate approximately 11 two-way trips during the weekday a.m. peak hour (2 inbound and 9 outbound), and 14 two-way trips during the weekday p.m. peak hour (9 inbound and 5 outbound);
- This level of estimated peak hour traffic generation by the proposed development is not expected to result in any operational or capacity concerns on the Town's or Region's road network and will not warrant the need for roadway infrastructure or traffic control improvements on the surrounding road network to maintain an acceptable level of service; and
- The only two proposed roadway improvements required will be the introduction of the two new site driveways, which will not noticeably impact traffic operations on Elden Street.

7.2 Recommendation

There are no recommended improvements to the surrounding road network in response to the estimated traffic generation from the proposed development. The only two proposed roadway improvements required will be the introduction of the two new site driveways, which will not noticeably impact traffic operations on Elden Street.

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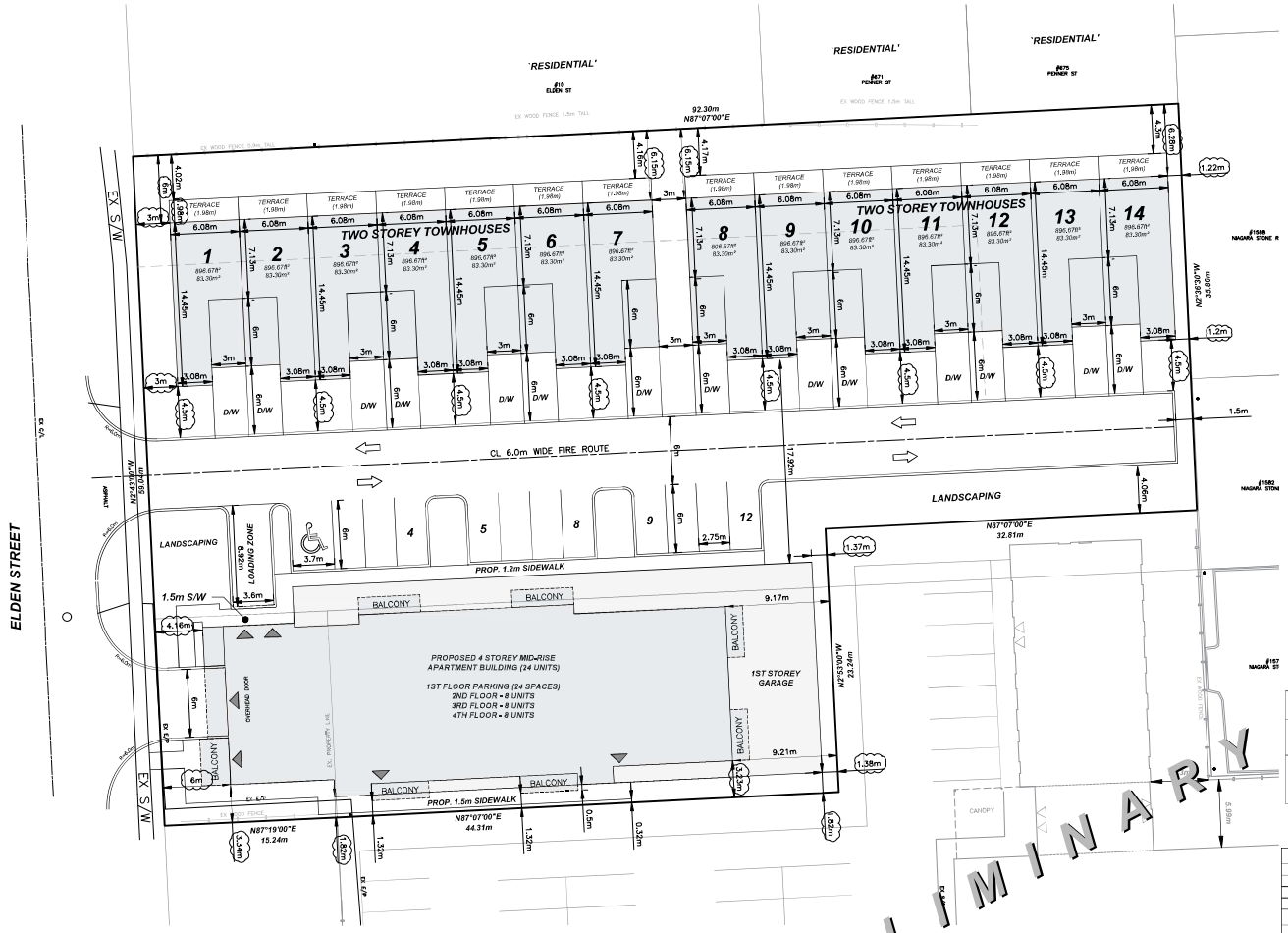
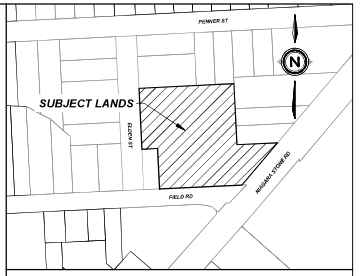
Principal, Transportation Advisory Services

Appendix A
Site Plan

1570 NIAGARA STONE ROAD
TOWN OF NIAGARA-ON-THE-LAKE





KEY PLAN
N.T.S.

ZONING BY-LAW

ZONING MATRIX (RM1) - RESIDENTIAL MULTIPLE		
PERMITTED USES	(a) accessory buildings and structures in accordance with Section 6.1. (b) bed and breakfast establishment in an existing detached dwelling in accordance with Section 6.5. (c) fourplex or quadraplex dwelling (d) existing single detached dwelling (e) group home in accordance with Section 6.20 (f) public use (g) townhouse dwelling (h) triplex dwelling	
PROPOSE USES	APARTMENT BUILDING AND BLOCK TOWNHOUSES	
PROVISION	REQUIRED	PROPOSED
Minimum lot frontage	30.0m (100 ft)	59.07m
Minimum lot area per unit	285m² (3067.81 ft²)	723.48m²
Maximum lot coverage	35%	45%
Minimum landscaped open space	30%	37%
Minimum front yard setback	7.5 m (24.6 ft)	3m TOWNHOUSE, 4.16m APARTMENT BUILDING
Minimum interior side yard setback	7.5 m (24.6 ft)	6.0m TOWNHOUSE, 1.82m APARTMENT BUILDING
Minimum exterior side yard setback	7.5 m (24.6 ft)	N/A
Minimum rear yard setback	7.5 m (24.6 ft)	1.0m TOWNHOUSE, 1.38m APARTMENT BUILDING
Minimum distance between buildings located on the same lot of 3.0 m (9.84 ft) between walls not containing windows to a habitable room, and 9.0 m (29.53 ft) between walls where one wall contains a window to a habitable room, and 15.0 m between walls where both walls contain a window to a habitable room.		17.92m
Minimum distance between any townhouse dwelling and a private roadway and parking area	6.0 m (19.69 ft)	4.5m/ 6.0m
Minimum dwelling unit area	80 m² (861.14 ft²)	84.40m²
Maximum building height	10.0 m (32.8 ft)	10.88m
Minimum accessory building yards setback	0.5 m (1.64 ft)	N/A
Minimum setback of uncovered, unenclosed or covered patio or deck form requires a side yard setback of 0.6 m (2 ft)		N/A
Minimum accessory building exterior side yard setback	7.5 m (24.6 ft)	N/A
Minimum interior side yard setback of 6.0 m (19.69 ft), except that where the interior lot line is adjacent to a Residential 1 (R1) Zone, Residential 2 (R2) Zone or Residential 3 (R3) Zone in the Virgil Community Zoning District, a minimum interior side yard equal to the building height is required, whichever is greater.		1.37m
Minimum rear yard setback of 7.5 m (24.6 ft), except that where the rear lot line is adjacent to a Residential 1 (R1) Zone, Residential 2 (R2) Zone or Residential 3 (R3) Zone in the Virgil Community Zoning District, a minimum rear yard equal to the building height is required, whichever is greater.		N/A
Minimum dwelling unit area: (i) Bachelor unit (ii) 1 bedroom unit (iii) 2 bedroom unit (iv) 3 bedroom unit	37 m 2 (398.28 ft 2) 41 m 2 (441.33 ft 2) 69 m 2 (742.73 ft 2) 80 m 2 (861.14 ft 2)	TBD

SEC. 6.44. PERMITTED YARD PROJECTIONS AND ENCROACHMENTS

STRUCTURE TYPE	YARDS (FRONT, REAR & SIDES)	MAXIMUM PROJECTION INTO REQUIRED YARD	PROPOSED
Unenclosed and uncovered porch, deck, balcony, patio or steps	Front or Rear Yard	1.5m (5ft)	2.65m TOWNHOUSE
	Side Yard	0.6m (2ft)	0.5m APARTMENT

LAND USE SCHEDULE

LAND USE	# OF UNITS	AREA(ha)	AREA(%)
TOWNHOUSES	12	0.118	25%
APARTMENT BUILDING	24	0.094	20%
ROADWAY/PARKING		0.082	17%
LANDSCAPE		0.175	38%
TOTAL	12	0.4712	100%

DEVELOPABLE AREA = 0.469ha
DEVELOPABLE DENSITY = 81.00 units/ha

MIN. PARKING REQUIRED (TOWNHOUSE) 2 PER UNIT = 24 SPACES
PROVIDED PARKING = 24 SPACES

MIN. PARKING REQUIRED (APARTMENT) 1 PER UNIT = 24 SPACES
PROVIDED PARKING = 24 SPACES

TOTAL PARKING REQUIRED = 48 SPACES
PROVIDED PARKING = 48 SPACES

#	REVISION	DATE	INIT
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.	.	.	.
0	ISSUED FOR REVIEW	2023-07-25	JO

UPPER CANADA CONSULTANTS
ENGINEERS / PLANNERS

DRAWING TITLE
CONCEPT PLAN

DRAFTING	JO
DATE	JULY 25, 2023
PRINTED	JULY 25, 2023
SCALE	1:200
DWG No.	22115-CP
REV	0

DRAWING FILE: F:\22115\Planning\22115_CP_2023_07_07.dwg PLOTTED: Jul 25, 2023 - 4:41pm PLOTTED BY: Jouellet

Appendix B
ITE Trip Generation

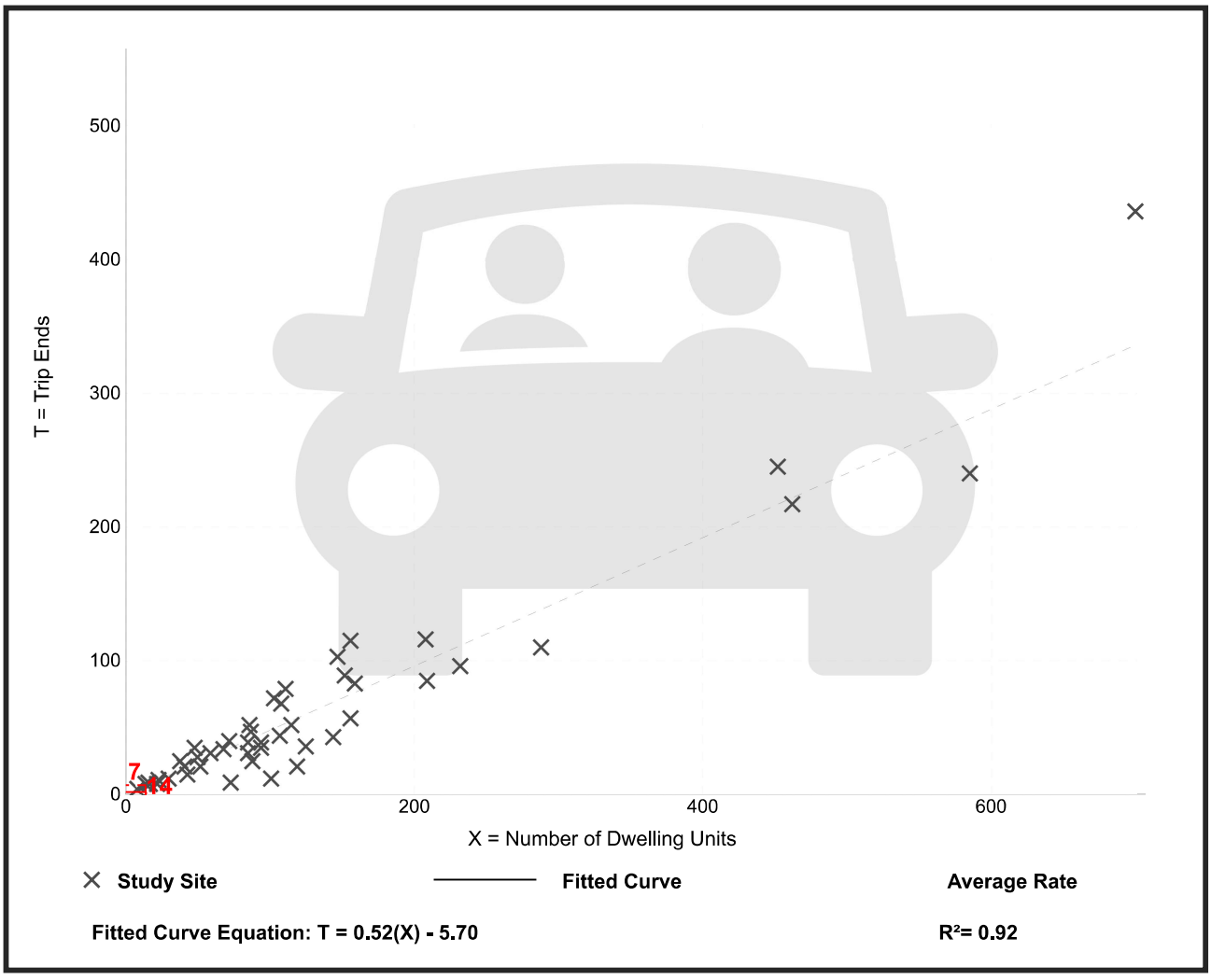
Single-Family Attached Housing
(215)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 46
Avg. Num. of Dwelling Units: 135
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.48	0.12 - 0.74	0.14

Data Plot and Equation



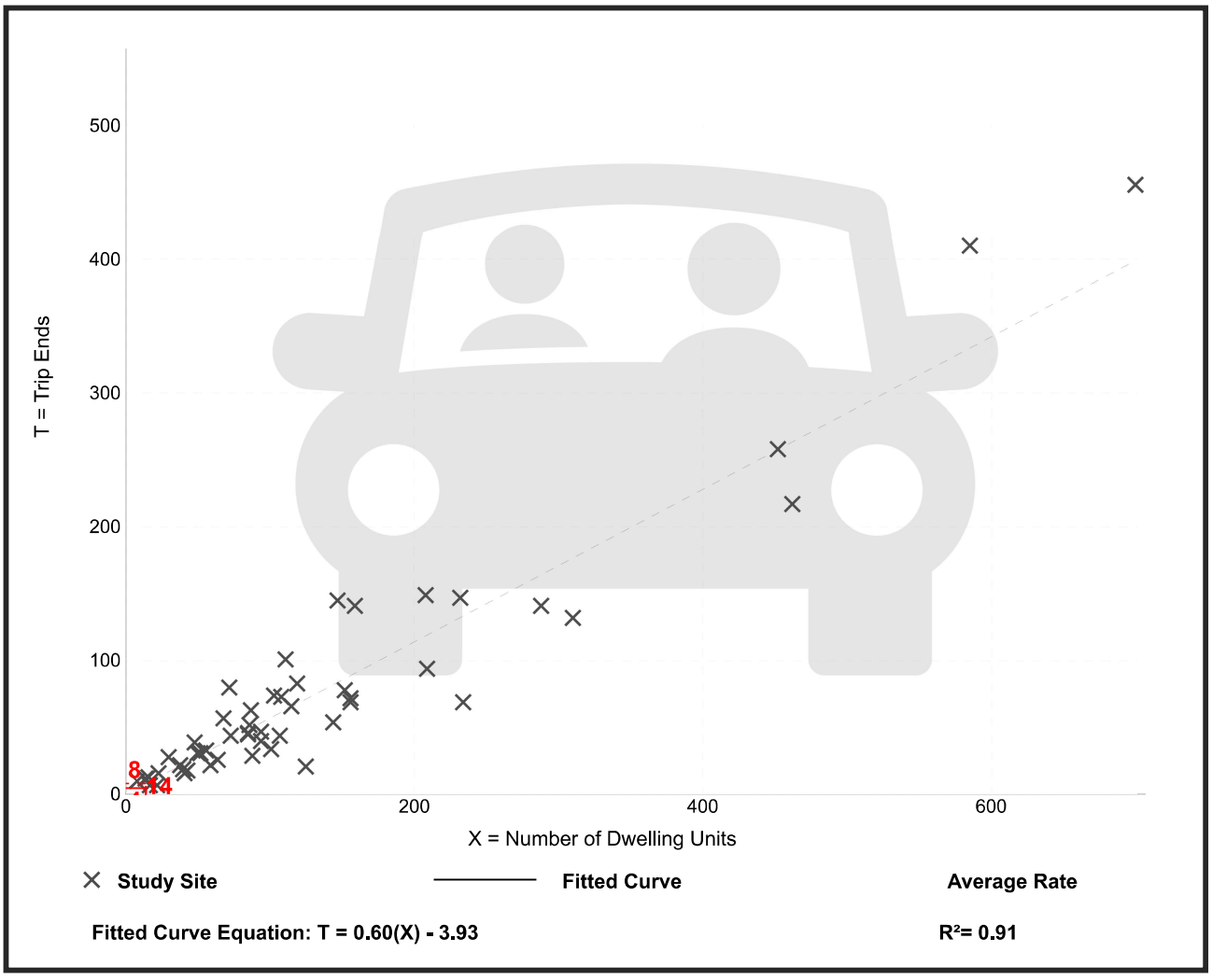
Single-Family Attached Housing
(215)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 51
Avg. Num. of Dwelling Units: 136
Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.17 - 1.25	0.18

Data Plot and Equation



Trip Gen Manual, 11th Edition • Institute of Transportation Engineers

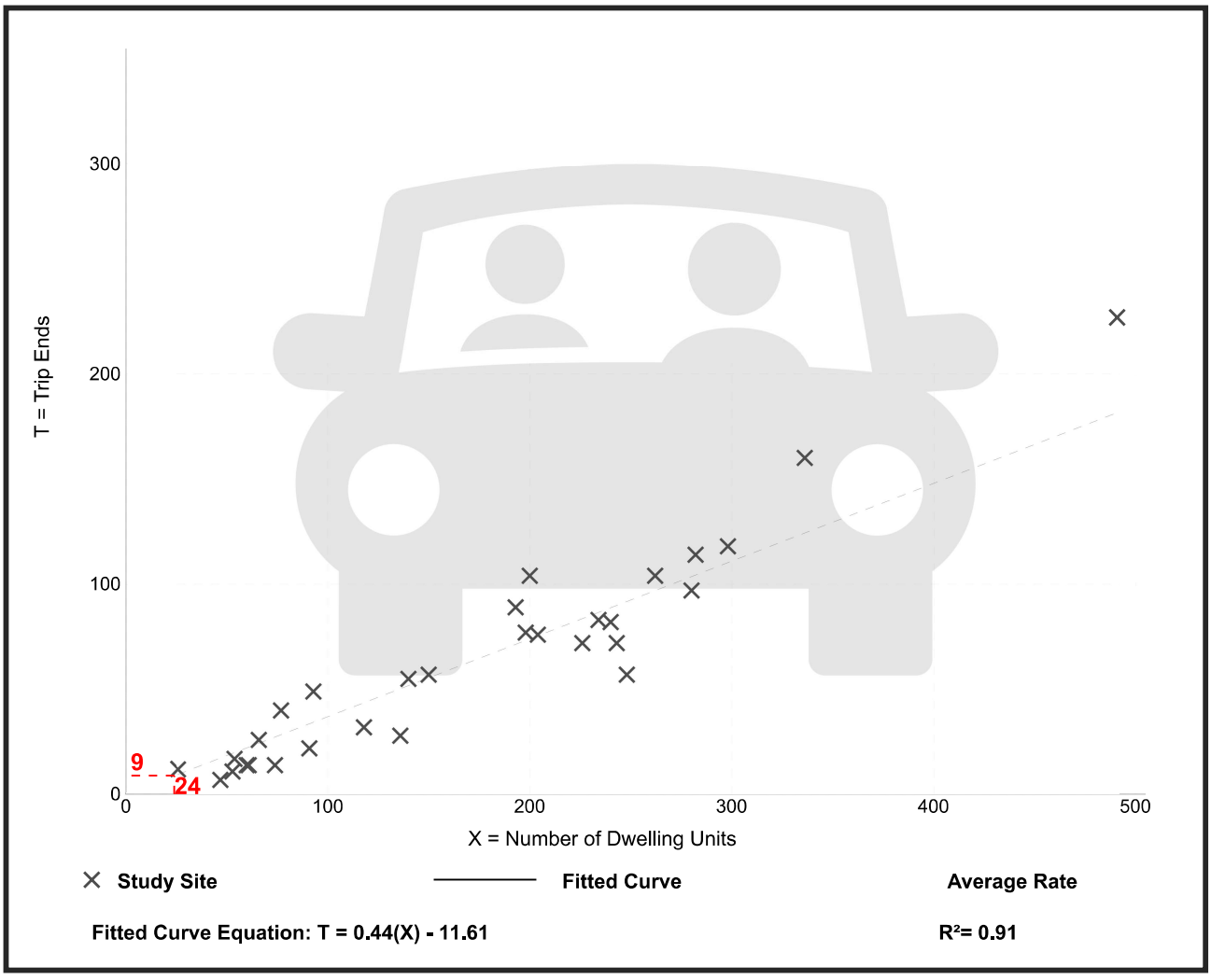
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	30
Avg. Num. of Dwelling Units:	173
Directional Distribution:	23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.37	0.15 - 0.53	0.09

Data Plot and Equation



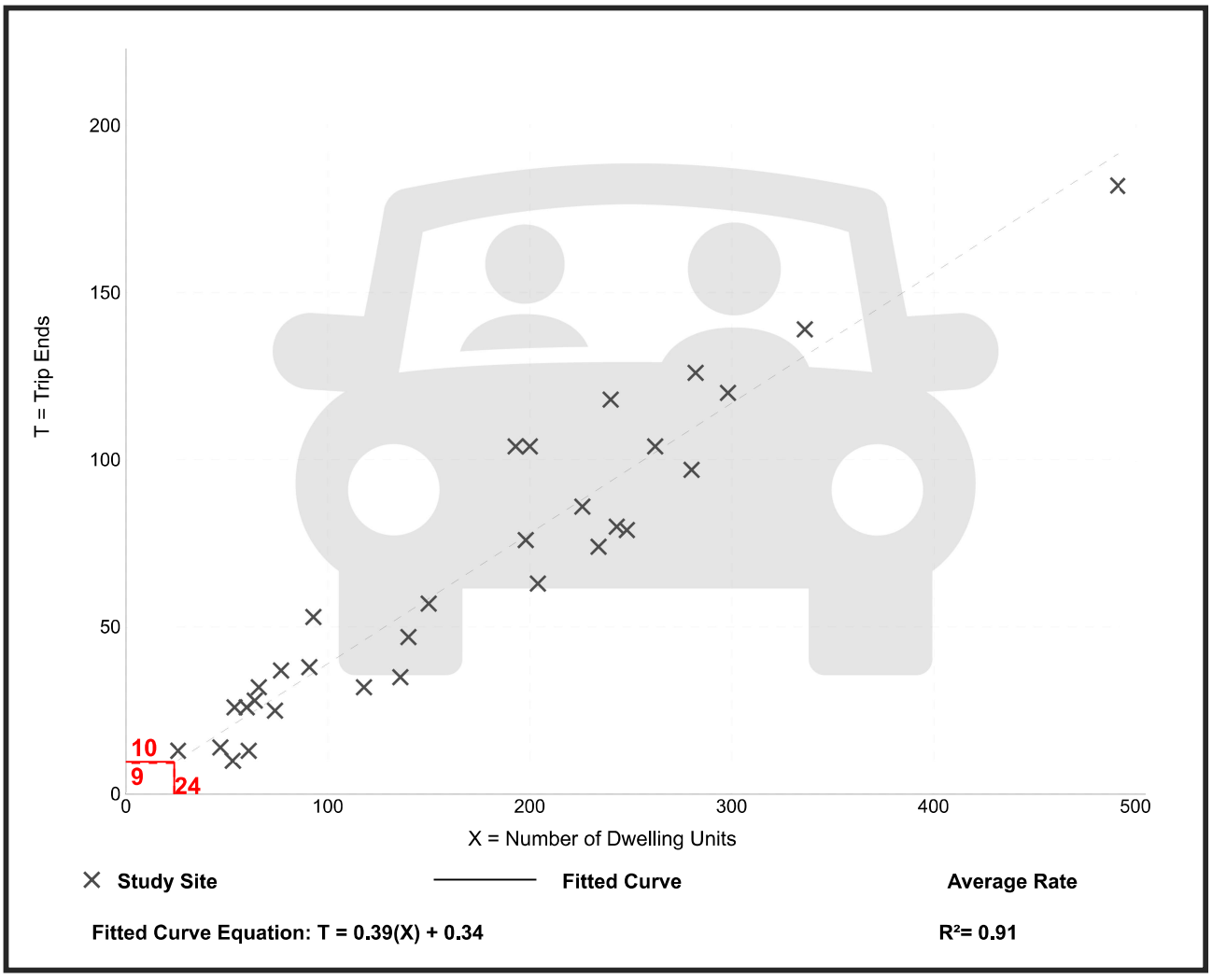
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 31
Avg. Num. of Dwelling Units: 169
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.19 - 0.57	0.08

Data Plot and Equation



Appendix C
Transportation Tomorrow Survey

Wed Aug 09 2023 09:56:58 GMT-0400 (Eastern Daylight Time) - Run Time: 1615ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd_orig

Column: Planning district of employment - pd_emp

RowG:(54)

ColG:

TblG:

Filters:

2006 GTA zone of household - gta06_hhld In 6047

Trip 2016

Table:

	Grimsby	Lincoln	Niagara-on	St. Catharii	Thorold	Niagara Fa	Welland	Kawartha Lakes	
1	13	177	829	348	26	158	13	44	1608
	1%	11%	52%	22%	2%	10%	1%	3%	100%

	IN(T)	OUT(T)	Total
AM	2	9	11
PM	9	5	14

Site Total

ROUTES		TRIP PROP.	AM IN	AM OUT	PM IN	PM OUT
A	Niagara Stone Rd N	52%	1	5	5	3
B	Niagara Stone Rd S	48%	1	4	4	2
	TOTAL	**100%**	**2**	**9**	**9**	**5**
		Check	**2**	**9**	**9**	**5**

	IN(T)	OUT(T)	Total
AM	0	2	2
PM	3	1	4

Townhouse (215)

ROUTES		TRIP PROP.	AM IN	AM OUT	PM IN	PM OUT
A	Niagara Stone Rd N	52%	0	1	2	1
B	Niagara Stone Rd S	48%	0	1	1	0
	TOTAL	**100%**	**0**	**2**	**3**	**1**
		Check	**0**	**2**	**3**	**1**

	IN(T)	OUT(T)	Total
AM	2	7	9
PM	6	4	10

Apartments (221)

ROUTES		TRIP PROP.	AM IN	AM OUT	PM IN	PM OUT
A	Niagara Stone Rd N	52%	1	4	3	2
B	Niagara Stone Rd S	48%	1	3	3	2
	TOTAL	**100%**	**2**	**7**	**6**	**4**
		Check	**2**	**7**	**6**	**4**