

May 30, 2022

174 Dinnick Crescent
Toronto Ontario M4N 1M3

Attention: Mr. Sam Arabi

**Re: Transportation Study
179-181 Toronto Street South
Proposed Townhouse development
Town of Uxbridge, Durham Region**

1.0 INTRODUCTION

CGE Transportation Consulting was retained by LARKIN+ land use planners inc. to prepare a Transportation Study for a proposed residential development, located at 179-181 Toronto Street South, in the Town of Uxbridge, Durham Region.

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

The proposed development comprises of two residential buildings each consisting of five 3-storey townhouses for a total of ten dwellings units. Vehicular access to the development will be accommodated via a full-movement laneway connection to Toronto Street South. The site plan shows a total parking supply of 25 spaces. Twenty spaces are located within the car garage or on the driveway. Five additional spaces are located on public driveway including one HC space.

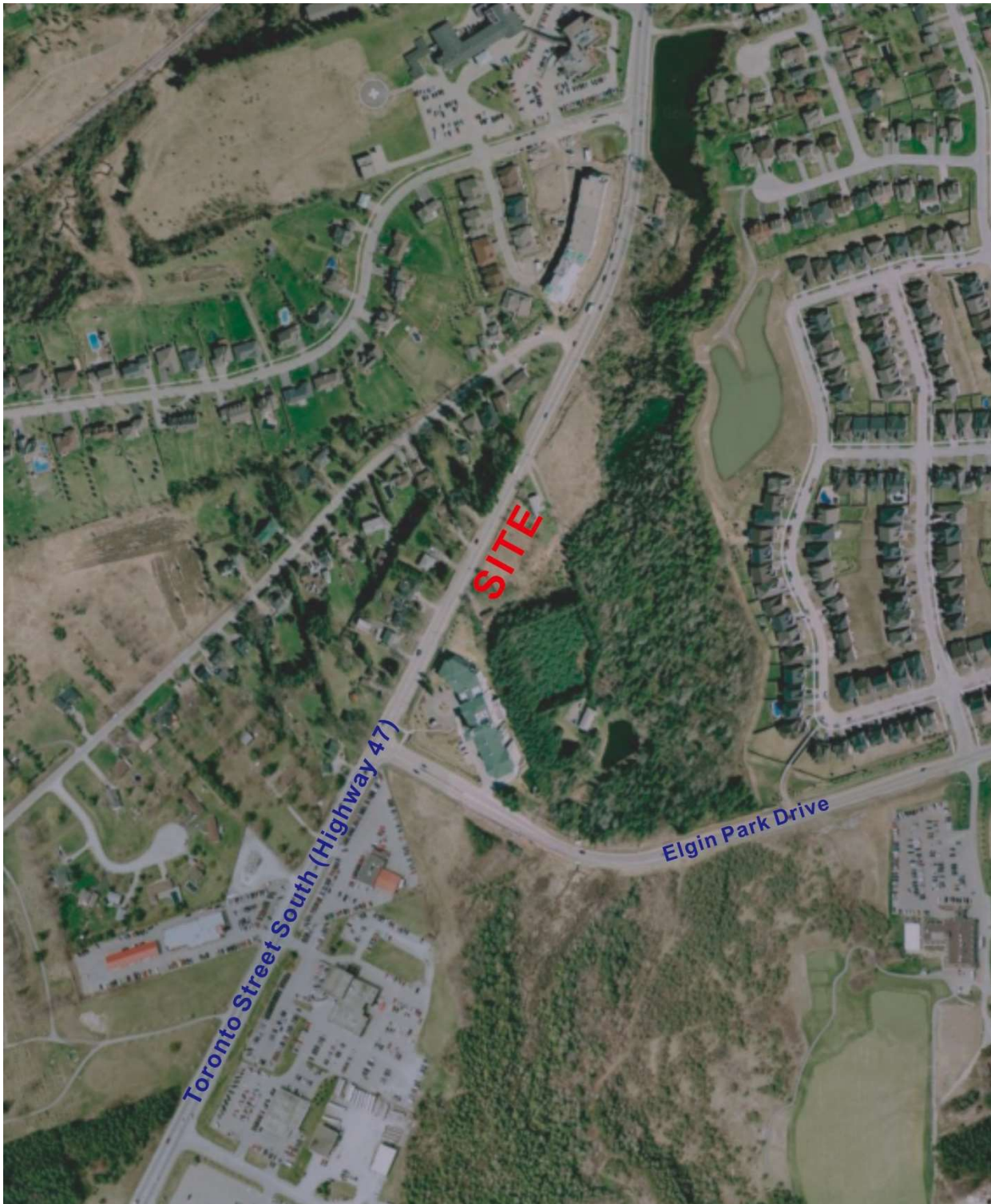
The proposed site plan is provided in **Figure 2**.

Toronto Street South (Highway 47) is a 'Type B' arterial road that is under the jurisdictional control of Durham Region. It has a posted speed limit of 60 km/hour and serves as one of the main corridors in Uxbridge. There is a center left lane on Toronto Street South, in the vicinity of the study area.

Due to the small development scale, it is not anticipated that traffic impact will be significant to the adjacent street. The proposed parking supply of 25 spaces also meet the Town's requirements.

The key focus of the transportation study will be on-site circulation and access review, as well as sight line distance review.

Figure 1 Site Location



Source: Google Maps

Figure 2 Site Plan



2.0 SITE TRAFFIC PROJECTION

2.1 ITE Trip Generation

The projection of new additional traffic volumes generated by the development proposal is estimated based on the *Trip Generation Manual, 10th Edition* published by the Institute of Transportation Engineers (ITE) for “Multi-Family (Low-Rise)” (LUC 220).

Table 1 summarizes the total site trip generation for the proposed development. The graph/calculations can be found in the appendices.

Table 1 Site Trip Generation

Land Use		Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
10 residential units	Trips	1	4	5	5	3	8

Based on the foregoing, the development proposal is anticipated to generate 5 two-way trips during the weekday morning peak hour and 8 two-way trips during the afternoon peak hour. There will be negligible impact to the surrounding streets. Additionally, the anticipated volumes do not meet the thresholds for a right-turn lane from Toronto Street South to service the proposed site.

The key focus of this transportation study will be to determine if there are adequate and efficient on-site circulation to accommodate passenger cars.

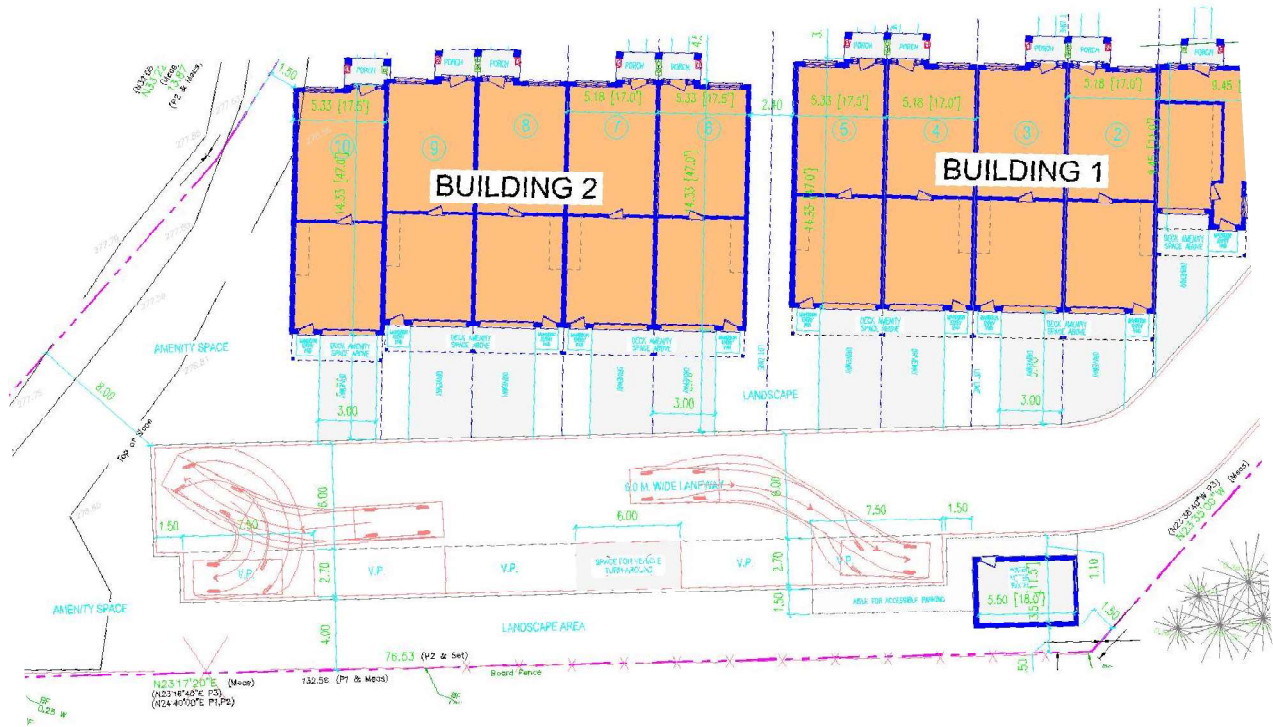
3.0 ON-SITE CIRCULATION & SITE ACCESS

A functional design review was completed using a typical SUV (5.1 meters in length) to ensure adequate maneuverability for the parallel visitor parking spaces. The swept path diagrams are shown in **Figure 3**.

Based on the swept path diagrams, typical passenger vehicles are able to effectively access, circulate and complete required activities on-site.

All garbage pick-up and fire truck activities will stay on Toronto Street.

Figure 3 Vehicular AutoTURN Path



The subject site will be serviced by a full movement access laneway connection to Toronto Street South. This access will have an inbound lane and an outbound lane. It is noted that the proposed access location is an existing access to the subject site.

As the site plan is conceptual and does not yet include detailed design of the proposed road, the following table reiterates the requirements necessary to meet Durham Region’s Design Specifications for Roads and Entranceways in urban areas as well as the Durham Region Official Plan.

Table 1 Site Access Design Requirements

Design Element	Required Design Criteria Dimensions	Proposed Dimensions
Entrance Width	Min: 3.5 m	Meets Requirements
	Max: 7.5 (2 lane)	
Curb Radii	1.0 m approaching and 1.5 departing flare in addition to entrance width	Not Shown
Minimum Spacing	Between driveways: 7.5 m	Meets Requirements
	Between private access/minor intersection: 80 m	Does not meet requirements

Toronto Steet South is designated as a Type B arterial which, according to the Durham Region Official Plan Schedule E – Table E7, requires a minimum of 80-metre spacing between private accesses / minor intersections in urban areas. The proposed access is less than 80 m from the adjacent minor intersection at Fred Barnard Way. However, it is noted that the driveway is currently existing at full build conditions, two-way peak hour trips at this access will not exceed 8 vehicles.

4.0 SIGHT LINE DISTANCES

There are two terminologies that we should consider for the sight distances: 1) Stopping Sight Distance and 2) Decision Sight Distance or Intersection Sight Distance.

In simple terms, the stopping sight distance is the minimum distance that a vehicle can stop safely should an incident occur and decision sight distances gives drivers extra reaction time to make a stop at a comfortable pace should something happens unexpectedly. Decision sight distance is always desirable but stopping sight distance is adequate for safe maneuvers.

The posted speed on Toronto Street South is 60 km/hour and the design speed is assumed to be 80 km/hour to be conservative.

The following table 9.9.4 from the Geometric Design Guide indicates that **the stopping sight distance for a 80km/hour design speed is 130 meters. The design intersection sight distance for passenger cars is 170 meters.**

Table 9.9.4: Design Intersection Sight Distance – Case B1, Left Turn From Stop

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance for Passenger Cars	
		Calculated (m)	Design (m)
20	20	41.7	45
30	35	62.6	65
40	50	83.4	85
50	65	104.3	105
60	85	125.1	130
70	105	146.0	150
80	130	166.8	170
90	160	187.7	190
100	185	208.5	210
110	220	229.4	230
120	250	250.2	255
130	285	271.1	275

Table 2 below summarized the minimum sightline requirements and the proposed sightline distance.

Table 2 Sightline Distance Review

Intersection	Speed		Required	Sightline	
	Posted	Design		Provided	
				North	South
Toronto St South & Site Access	60 km/h	80 km/h	130	250 m	>250 m

Toronto Street is flat vertically and generally flat horizontally for this section of the roadway. There is a slight curve to the north of the side, but it is approximately 230 meters away from the proposed site accesses.

To the south, the sight line meets the intersection of Toronto Street South and Elgin Park Drive at approximately 250 meters. This intersection is stop controlled. There are existing site accesses to properties that are located within closer proximity to the Toronto / Elgin Park intersection. It is determined that adequate sight distances are available in both northbound and southbound direction.

5.0 CONCLUSIONS

The key findings are summarized below:

- It is expected that the nominal traffic generated by the development proposal can be accommodated by the existing road network and no mitigation measure is required.
- Parking supply is adequate to support the expected parking demand generated by the development proposal and it meets the zoning by-law parking requirements.
- There are adequate sight line distances on Toronto Street South in both the northbound and southbound direction.
- The access spacing to the adjacent intersection at Fred Barnard Way does not meet the Region's minimum 80 m spacing requirements for Type-B arterial roads. However, this access is presently existing and at full build conditions, two-way peak hour trips at this access will not exceed 8 vehicles.

Should you have any questions regarding this study, please do not hesitate to contact the undersigned.

Yours truly,

CGE TRANSPORTATION CONSULTING



Casey Ge, P.Eng.
President

***Appendix A:
ITE Trip Generation Reports (Proposed Multi-Family: Low Rise Use)***

Query

Filter

DATA SOURCE:

Trip Generation Manual, 10th Ed

New data edition is available. [Click here to upgrade.](#)

SEARCH BY LAND USE CODE:

220

LAND USE GROUP:

(200-299) Residential

LAND USE :

220 - Multifamily Housing (Low-Rise)

LAND USE SUBCATEGORY:

All Sites

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Dwelling Units

TIME PERIOD:

Weekday, Peak Hour of Adjacent Street Traffic

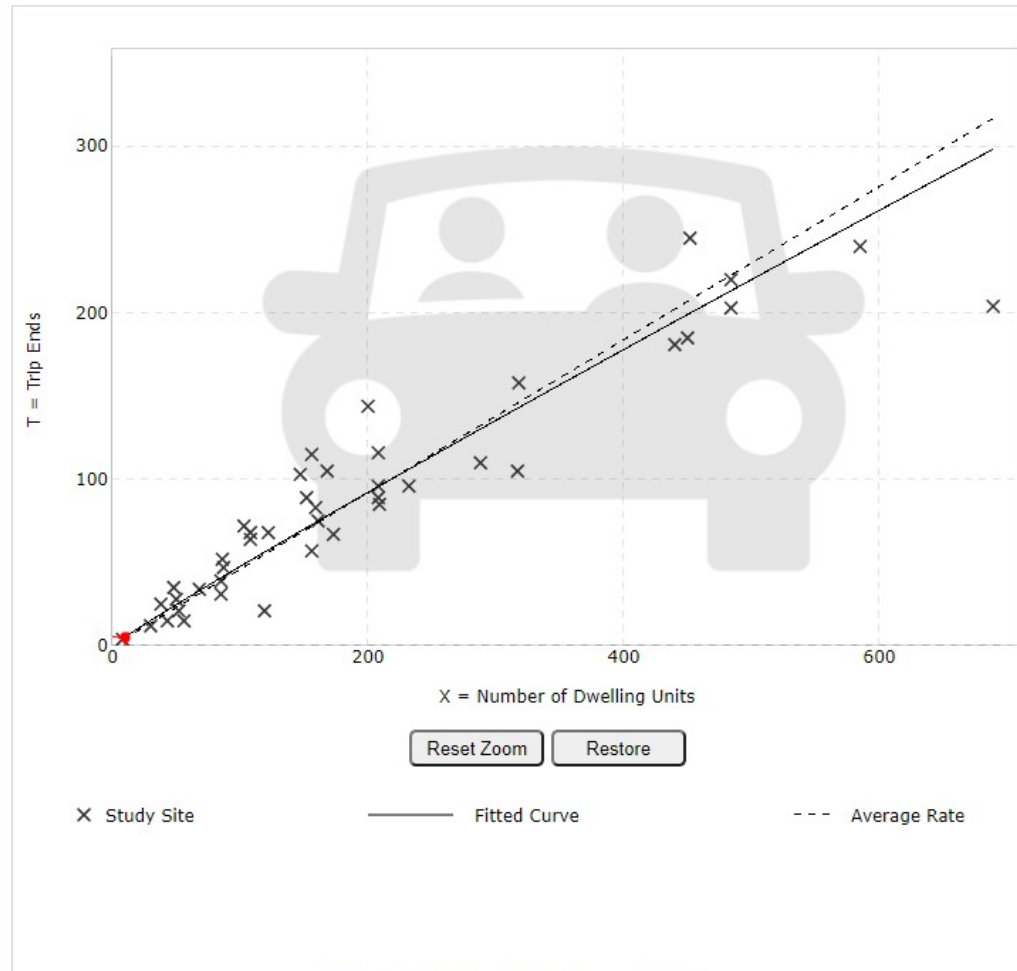
TRIP TYPE:

Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

10 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In. Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use: Multifamily Housing (Low-Rise) (220) [Click for Description and Data Plots](#)

Independent Variable: Dwelling Units

Time Period: Weekday Peak Hour of Adjacent Street Traffic One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Trip Type: Vehicle

Number of Studies: 42

Avg. Num. of Dwelling Units: 199

Average Rate: 0.46

Range of Rates: 0.18 - 0.74

Standard Deviation: 0.12

Fitted Curve Equation: $\ln(T) = 0.95 \ln(X) - 0.51$

R²: 0.90

Directional Distribution: 23% entering, 77% exiting

Calculated Trip Ends: Average Rate: 5 (Total), 1 (Entry), 4 (Exit) Fitted Curve: 5 (Total), 1 (Entry), 4 (Exit)

Query

Filter

DATA SOURCE:

Trip Generation Manual, 10th Ed

New data edition is available. [Click here to upgrade.](#)

SEARCH BY LAND USE CODE:

220



LAND USE GROUP:

(200-299) Residential

LAND USE:

220 - Multifamily Housing (Low-Rise)

LAND USE SUBCATEGORY:

All Sites

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Dwelling Units

TIME PERIOD:

Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:

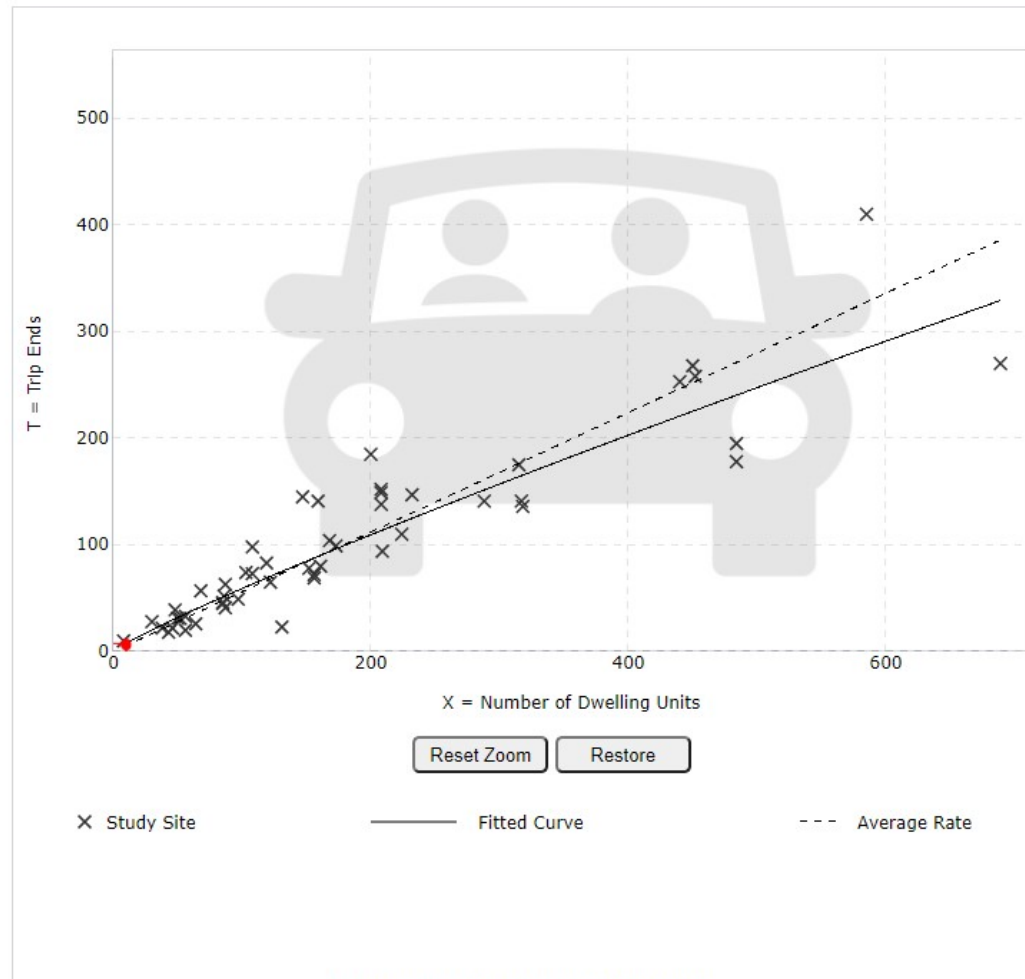
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

10

Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:

Multifamily Housing (Low-Rise) (220) [Click for Description and Data Plots](#)

Independent Variable:

Dwelling Units

Time Period:

Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

50

Avg. Num. of Dwelling Units:

187

Average Rate:

0.56

Range of Rates:

0.18 - 1.25

Standard Deviation:

0.16

Fitted Curve Equation:

$\ln(T) = 0.89 \ln(X) - 0.02$

R²:

0.86

Directional Distribution:

63% entering, 37% exiting

Calculated Trip Ends:

Average Rate: 6 (Total), 4 (Entry), 2 (Exit)

Fitted Curve: 8 (Total), 5 (Entry), 3 (Exit)