JULY 2, 2025

PROJECT NO: 2497-6768

SENT VIA: EMAIL
DAVID@DESIGNPLAN.CA

Noar Architects
7233 Bayview Avenue, Unit 203
Markham, ON L3T 5Z2

c/o David Igelman (Design Plan Services Inc.)

Attention: Shahram Rasvand

RE: TRANSPORTATION IMPACT BRIEF
752 PETERSON ROAD
MAYNOOTH, MUNICIPALITY OF HASTINGS HIGHLANDS

Dear Shahram,

In support of the Zoning By-Law Amendment related to the proposed development at 752 Peterson Road, in Maynooth, in the Municipality of Hastings Highlands, C.F. Crozier & Associates Inc. (Crozier) has prepared the following Transportation Impact Brief (TIB).

The purpose of this letter is to analyze the following aspects of the proposed development from a transportation operations perspective:

- The existing road network and record information relating to road jurisdiction, road classification, posted speed limit, lane configuration, cross-section elements.
- Forecast the trip generation characteristics of the proposed development using the Institute of Transportation Engineers Manual (11th edition).
- Evaluate the proposed site access from a sight distance perspective.

1.0 Introduction

C.F. Crozier & Associates Inc. (Crozier) was retained by Noar Architects to complete a TIB for a proposed development situated at 752 Peterson Road, in Maynooth, in the Municipality of Hastings Highlands (Municipality).

The purpose of this TIB is to explore the impact of the proposed development on the surrounding road network and review the proposed development from a transportation engineering perspective.

A Terms of Reference (ToR) encompassing the scope of the TIB was circulated to the Municipality of Hastings Highlands on March 11, 2024. Correspondence with the Municipality of Hastings Highlands is included in **Attachment A.**

1.1 Development Lands

The subject lands cover an area of approximately 5.19 ha and currently consist of a rural property primarily consisting of trees with a standalone cabin with driveway access to Peterson Road. The site, located in a rural area, is bounded by rural properties to the east and west, Peterson Road to the south, and forest lands to the north.

The location of the proposed development is attached in **Attachment B** as per the proposed development's concept plan prepared by the Noar Architects, dated June 2, 2025.

1.2 Development Proposal

Per the most recent concept plan prepared by Noar Architects, dated June 2, 2025, elements envisioned for the full buildout of this development include approximately:

- 17 cabins with trails to a common area and parking lot. Each cabin will contain one (1) bedroom with a living area.
- The common area will include a management building, a pool, a barrel sauna and a shed. There will also be a water well and onsite sewage system within the common area.
- 23 vehicle parking spaces
- Site access off Peterson Road

The most recent concept plan is included in **Attachment B.**

1.3 Study Roadways

Peterson Road is classified as a local road under the jurisdiction of Hastings County and runs east-west with an assumed speed limit of 60 km/h. Peterson Road has a two-lane rural cross-section with one lane in each direction. There are no designated bike lanes or sidewalks along the roadway. At the intersection of the Site Access and Peterson Road, the intersection will be stop-controlled on the minor approach. Additionally, each approach has a single shared lane in each direction for all the movements.

2.0 Site Generated Traffic

The proposed development will result in additional vehicles on the study road network that would otherwise not exist. The development will also result in additional movements at the intersection.

2.1 ITE Edition Trip Generation

The ITE Trip Generation Manual, 11th Edition, was used to forecast the site-generated traffic for the proposed development.

The applicable average rates for Land Use Category (LUC) 320 "Motel" was applied to the proposed cabin development, as confirmed by the Municipality in the Terms of Reference.

As outlined in the ITE Trip Generation Manual, 11th Edition, a Motel is defined as, "… a place of lodging that provides sleeping accommodations and provides little or no meeting space and few supporting facilities". Based on this definition, LUC 320 was deemed the most applicable to the proposed development.

Table 1: Site Generated Trips

Land Use	Units	Average Rate			Trip Generation					
					Weekday A.M.		Weekday P.M.		Saturday	
					Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
LUC 320 – Motel	17 Units	A.M.	P.M.	SAT	2	4	3	3	7	9
		0.35	0.36	0.96						
Total					**2**	**4**	**3**	**3**	**7**	**9**

As shown in **Table 1**, the proposed development is expected to generate six (6) two-way (2 inbound and 4 outbound) trips during the weekday a.m. peak hour, six (6) two-way (3 inbound and 3 outbound) trips during the weekday p.m. peak hour and 16 two-way trips (7 inbound and 9 outbound) trips during the Saturday peak hour. **Attachment C** provides excerpts from the ITE Trip Generation Manual, 11th Edition.

Due to the low volume of trips generated by this development, traffic operations on the study roadway are not expected to be impacted significantly. Therefore, it was determined that traffic operations on the study roadway does not need to be analyzed.

3.0 Parking Review

The purpose of this section is to evaluate the parking requirements associated with the proposed development and determine whether the proposed parking supply can meet the parking Zoning By-Law requirements.

3.1 Zoning By-Law Requirements

The Municipality of Hasting Highlands Comprehensive Zoning By-Law *2004-035 , Subsection 5.31.1 "Minimum Parking Space Requirements"* was used to determine the adequacy of the parking supply for the proposed development. As the common area is intended for use by guests and not by the public, the GFA of these buildings was not included. Per municipality comments, the parking requirements for the management building were included in the parking review.

Zoning By-Law excerpts can be found in **Attachment D**. **Table 2** outlines the parking requirements.

Table 2: Parking Requirements

Land Use	Units	Parking Rate	Total Parking Required	Total Proposed Parking	Surplus/ Deficit
Hotel/Motel/Resort	17 cabins	1 space for every guest room and 1 space for every 8 square metres (86.1 sq. ft) of gross floor area devoted to public use	17	23	+1
Business or Professional Office	117 m^2	One (1) space for every 23 square metres (247.6 sq. ft.) of gross floor area or where such use conflicts with the office of a doctor or dentist, there shall be a minimum of three (3) parking spaces provided on the same lot.	5		

The proposed parking supply is in accordance with the parking requirements outlined in the By-Law.

3.2 Barrier-Free Parking Requirements

The Municipality of Hasting Highlands Comprehensive Zoning By-Law *2004-035 , Subsection 5.31.3 "*Accessible Parking"* was used to determine the adequacy of the accessible parking supply for the proposed development.

Zoning By-Law excerpts can be found in **Attachment D**. **Table 3** outlines the parking requirements.

Table 3: Accessible Parking Requirements

Land Use	Parking Rate	Total Parking Required	Total Accessible Parking Required	Total Accessible Proposed Parking	Surplus/ Deficit
All Other Uses (Hotel/Motel/Resort & Business or Professional Office)	Accessible parking spaces are provided at a rate of 4% of the required parking spaces	22	1	2	+1

The development has proposed two (2) accessible parking spaces, one (1) Type A and one (1) Type B space. The parking supply is in accordance with the parking requirements outlined in the By-Law.

4.0 Site Access Review

The site reviewed the access for safety concerns for corner clearance and sightlines. These were checked using the standards set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR) (June 2017).

4.1 Corner Clearence

Corner Clearance is the distance between the site accesses and nearby intersections. The required spacing per Figure 8.8.2 in TAC GDGCR are summarized in **Table 4.** All TAC excerpts can be found in **Attachment E.**

Table 4: Corner Clearence

Feature	Corner Clearance Measurement
Minimum Spacing Requirement	15 m
Available Spacing	15 m+
Minimum Spacing Satisfied?	**Yes**

The spacing between the proposed access along Peterson Road and Highway 62 satisfy the requirements outlined in TAC.

4.2 Sight Distance Assessment

The sight distance at the proposed access along Peterson Road was assessed using TAC GDGCR methodology. All TAC excerpts can be found in **Attachment E.**

4.2.1 Stopping Sight Distance

Section 2.5 of the TAC GDGCR provides recommended stopping sight distances for various design speeds on level roadways. The speed limit at all the proposed access locations is assumed as 60 km/h. A design speed of 20 km/h above the posted speed limit was used per typical industry practices.

Based on Table 2.5.2 of the TAC GDGCR, a stopping sight distance of 105 metres is recommended for a design speed of 70 km/h.

4.2.2 Intersection Sight Distance

A review of the available sight distance at the proposed site accesses was undertaken based on TAC GDGCR. Sight distance was measured from the site access using the following assumptions:

- A standard driver eye height of 1.08 metres for a passenger car.
- A 4.4 metre setback from the approximate extension of the outer curb to represent a passenger vehicle waiting to exit the site.

Intersection sight distance is calculated using Equation 9.9.1 from the TAC GDGCR as outlined below:

$$ISD = 0.278 * V\ major * tg$$

Where:
ISD = Intersection Sight Distance
V major = design speed of roadway (km/h)
tg = assumed time gap for vehicles to turn from stop onto roadway (s)

Table 5 outlines the sight distance analysis for the proposed site accesses.

Table 5: Intersection Sight Distance

Feature	Site Access at Peterson Road
Access Type	Full-moves
Vehicles Expected	Passenger Car
Posted Speed Limit of Roadway	Assumed 60 km/h
Assumed Design Speed	80 km/h
Base Time Gap	Left Turn: 7.5 s Right Turn: 6.5 s
Grade of Roadway	Less than 3%
Horizontal Alignment of Roadway	Curved
Sight Distance Required	Left Turns: 170 m Right Turns: 145 m
Stopping Sight Distance Required	130 m
Measured Sight Distance	Left Turns: ~151 m Right Turns: 200 m+
Measured Stopping Sight Distance	130 m+
Minimum Sight Distance Satisfied?	Yes

The measured sight distances at the proposed access exceeds the TAC requirements for an assumed speed limit of 60 km/h and a design speed of 80 km/h.

It is important to note that the provided comments assume an operating speed of 60 km/h due to the absence of a posted speed limit. This would require a design speed of 80 km/h, which increases the sight distance requirements to 170 m for the left-turn and 145 m for the right-turn. Assuming a design speed of 80 km/h, the sight distance for the left-turn is insufficient as the required sight distance is 170 m and the measured sight distance is approximately 151 m.

Table 6: Sight Distance Conformance

Feature	Site Access at Peterson Road	
	Left-Turn	**Right-Turn**
Sight Distance Required	170 m	145 m
Measured Sight Distance	~151 m	200 m+
Minimum Sight Distance Satisfied?	No	Yes

Warning signs are recommended to be provided along Peterson Road to warn approaching vehicles of outgoing traffic. Furthermore, speed and hidden access warning signs are recommended along the roadway from the south approach to encourage drivers to lower their speed, providing vehicles exiting the site sufficient time to make the left-turn safely. Additionally, the posted speed is suggested to be defined using a posted speed limit sign.

Therefore, the proposed access location is acceptable from a sight distance perspective. The additionally recommended safety features should help drivers interact safely.

4.3 Vehicle Maneuvering Diagram

AutoTURN software was used to check the maneuvering of passenger vehicles and fire trucks based on information provided by the fire chief. These diagrams can be found in **Attachment F.** No conflicts were expected using these design vehicles.

5.0 Conclusion

This TIB has analyzed the potential traffic impact on the boundary road network in relation to the proposed development at 758 Peterson Road in the Municipality of Hasting Highlands. The findings from the analysis are summarized as the following:

- The proposed development is expected to generate six (6) new two-way inbound and outbound trips during each of the a.m. and p.m. peak hours, as well as 16 two-way trips during the Saturday peak hour.

- According to the Municipality of Hasting Highlands Zoning By-Law, the proposed development meets the minimum vehicle parking and accessible parking requirements.

- The site access review found the proposed site access exceeds TAC requirements outlined for corner clearance and stopping sight distance.

- Assuming a design speed of 80 km/h (per municipality comments), the sight distance for the left-turn is insufficient as the required sight distance is 170 m and the measured sight distance is approximately 151 m. Warning signs are recommended to be provided along Peterson Road to warn approaching vehicles of outgoing traffic. Furthermore, speed warning signs are recommended along the curve to encourage drivers to lower their speed, providing vehicles exiting the site sufficient time to make the left-turn safely. Additionally, the posted speed is suggested to be defined using a posted speed limit sign.

- The vehicle turning diagrams indicate no conflicts for passenger vehicles and firetrucks.

Should you have any questions or require any further information, please do not hesitate to contact the undersigned.

Sincerely,

C.F. CROZIER & ASSOCIATES INC.

Shaira Ahmed, EIT
Engineering Intern, Transportation

C.F. CROZIER & ASSOCIATES INC.

Ian Lindley, MASc., P.Eng,
Project Engineer, Transportation

il/SA/ak/ab

c.c.

Enclosure

Attachment A: Correspondence
Attachment B: Concept Plan
Attachment C: ITE Trip Generation 11th Edition Excerpts
Attachment D: Relevant Zoning By-Law Excerpts
Attachment E: Relevant TAC Excerpts
Attachment F: Truck Turning Diagram

J:\2400\2497 - Shahram Rashvand\6768 - 752-8 Peterson Road\Reports\Transportation\2025.06.11_752 Peterson Road TIB.docx

Attachment A

Agency Correspondence

From: John Jardine <jjardine@hastingshighlands.ca>
Sent: March 21, 2024 12:00 PM
To: Shaira Ahmed
Cc: Ian Lindley; Aaron Wignall; Denver Mayhew; Cathy Bujas
Subject: RE: 752-8 Peterson Road - Terms of Reference (CFCA#2497-6768)

Hi Shaira,

I reviewed the Terms of Reference with the Operations Manager, Denver (cc'd).

He confirmed the proposed Terms of Reference is acceptable. He did not request any additional details.

If you have any additional questions, feel free to contact Denver and myself.

Kind regards,

John Jardine
Municipal Planner
Planning Department
The Municipality of Hastings Highlands

Hastings Highlands
Beautiful By Nature

Health and Safety Excellence program Member wsib ONTARIO 2023

"Our vision is to be an enviable community, with progressive vision and financial stability, prepared for the future."

Phone: (613) 338-2811 x.244 | Fax: (613) 338-3292
W: www.hastingshighlands.ca | E: jjardine@hastingshighlands.ca

Please Note: That it is the Municipality's service target to respond to emails with an initial response within two (2) business days.

Submit a Customer Service Request

From: Shaira Ahmed <sahmed@cfcrozier.ca>
Sent: Thursday, March 21, 2024 11:08 AM

To: John Jardine <jjardine@hastingshighlands.ca>; garrettg@hastingscounty.com; Cathy Bujas <cbujas@hastingshighlands.ca>
Cc: Ian Lindley <ilindley@cfcrozier.ca>; Aaron Wignall <awignall@cfcrozier.ca>
Subject: RE: 752-8 Peterson Road - Terms of Reference (CFCA#2497-6768)

> You don't often get email from sahmed@cfcrozier.ca. Learn why this is important

Hi John,

I hope you are doing well.

We are looking to follow up on the terms of reference sent below for this project. If you have any questions or concerns, please let us know.

Regards,

Shaira Ahmed
Engineering Intern, Transportation
Office: 905.693.4706
Collingwood | Milton | Toronto | Bradford | Guelph

Read about how our story began 20 years ago **here.**

From: John Jardine <jjardine@hastingshighlands.ca>
Sent: Tuesday, March 19, 2024 11:23 AM
To: Shaira Ahmed <sahmed@cfcrozier.ca>; garrettg@hastingscounty.com; Cathy Bujas <cbujas@hastingshighlands.ca>
Cc: Ian Lindley <ilindley@cfcrozier.ca>; Aaron Wignall <awignall@cfcrozier.ca>
Subject: RE: 752-8 Peterson Road - Terms of Reference (CFCA#2497-6768)

Hi Shaira,

I have received and submitted to the Operations Department for their review and comments.

Kind regards,

John Jardine
Municipal Planner
Planning Department

The Municipality of Hastings Highlands

Hastings Highlands
Beautiful By Nature

Health and Safety Excellence program Member wsib ONTARIO 2023

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Phone: (613) 338-2811 x.244 | Fax: (613) 338-3292
W: www.hastingshighlands.ca | E: jjardine@hastingshighlands.ca

Please Note: That it is the Municipality's service target to respond to emails with an initial response within two (2) business days.

Submit a Customer Service Request

From: Shaira Ahmed <sahmed@cfcrozier.ca>
Sent: Monday, March 11, 2024 8:33 AM
To: garrettg@hastingscounty.com; John Jardine <jjardine@hastingshighlands.ca>; Cathy Bujas <cbujas@hastingshighlands.ca>
Cc: Ian Lindley <ilindley@cfcrozier.ca>; Aaron Wignall <awignall@cfcrozier.ca>
Subject: 752-8 Peterson Road - Terms of Reference (CFCA#2497-6768)

Hello,

C.F. Crozier and Associates (Crozier) has been retained by Noar Architects to prepare a Transportation Impact Brief (TIB) for a proposed development at 752 Peterson Road, in Maynooth, within the Municipality of Hastings Highlands in support of the Zoning By-Law Amendment (ZBA).

Based on the information provided, the elements envisioned for this development include:

- 16 cottages with trails to a common area and parking lot.
- A common area which will include a management building and pool. There will also be a water well and onsite sewage system within the common area.

This email and its attachment are intended to serve as the Terms of Reference (ToR) for the TIB to support the development application.

We are kindly requesting that you review the ToR and provide feedback regarding our scope of work and request for data. Should you not be the appropriate person for correspondence, it would be appreciated to be directed to the appropriate contact.

Study Methodology for the Transportation Impact Brief

The Transportation Impact Brief will primarily review the development's trip generation and Transportation Demand Management Plans. We have assumed that a review of the intersection operations and capacity analyses are not required. **Please confirm if this is acceptable.**

Trip Generation

Trip generation for the proposed development will be forecasted using the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition. **Please confirm if this is acceptable.**
We will be using ITE Land Use Code 320 "Motel" to determine the trip generation for this development. **Please confirm if this is acceptable.**

Site Access Review

The proposed site access will be examined from a sight distance perspective. The available sight distances at the access will be compared to the standards set out in the Transportation Association of Canada (TAC) geometric Design Guide for Canadian Roads (GDGCR), June 2017. **Please confirm if this is acceptable.**

Summary

We request the following information for inclusion in the study, along with any comments that arise with regards to the above Terms of Reference.

In summary, please provide:

- Confirmation that the trip generation method and relevant land use codes are acceptable.
- Any other details deemed to be relevant to a transportation impact brief for this development.

We hope the contents outlined in this email are acceptable. Again, if you are not the appropriate contact, we would appreciate being directed to the appropriate contact.

Should you have any questions or require any further information, please feel free to contact us.

Regards,

Shaira Ahmed
Engineering Intern, Transportation
Office: 905.693.4706
Collingwood | Milton | Toronto | Bradford | Guelph

Attachment B

Concept Plan

NOAR.CA
647.887.5000
SHAHRAM@NOAR.CA

PROJECT
752 PETERSON RD.,
MAYNOOTH, ONTARIO,
K0L 2S0

TITLE
SITE PLAN

DATE STARTED 23/05/01
SCALE 1 : 500

DWG NO.
A0.3

NO.	ISSUED	DATE
1	ZBA	24/09/19
2	CONSULTANTS	25/06/02

FILENAME: /Users/shahramrashvand/Documents/752 PETERSON ROAD/CAD/250414-752 PETERSON Rd-PLAN.dwg
PLOTDATE: Jun 02, 2025 - 4:45pm

Attachment C

ITE Trip Generation 11th Edition Excerpts

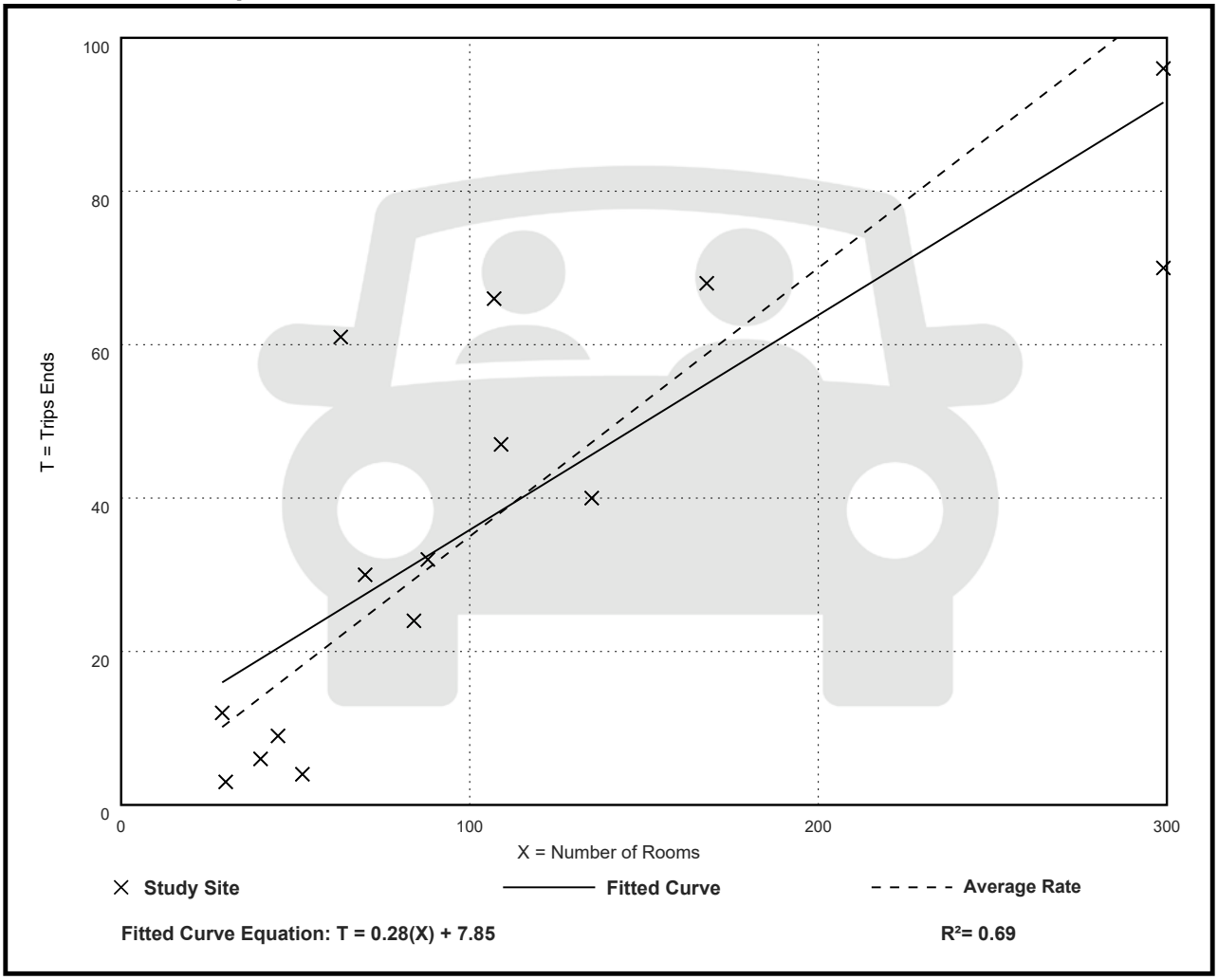
Motel
(320)

Vehicle Trip Ends vs: Rooms
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: 15
Avg. Num. of Rooms: 108
Directional Distribution: 37% entering, 63% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.35	0.08 - 0.97	0.18

Data Plot and Equation



Fitted Curve Equation: T = 0.28(X) + 7.85

R^2= 0.69

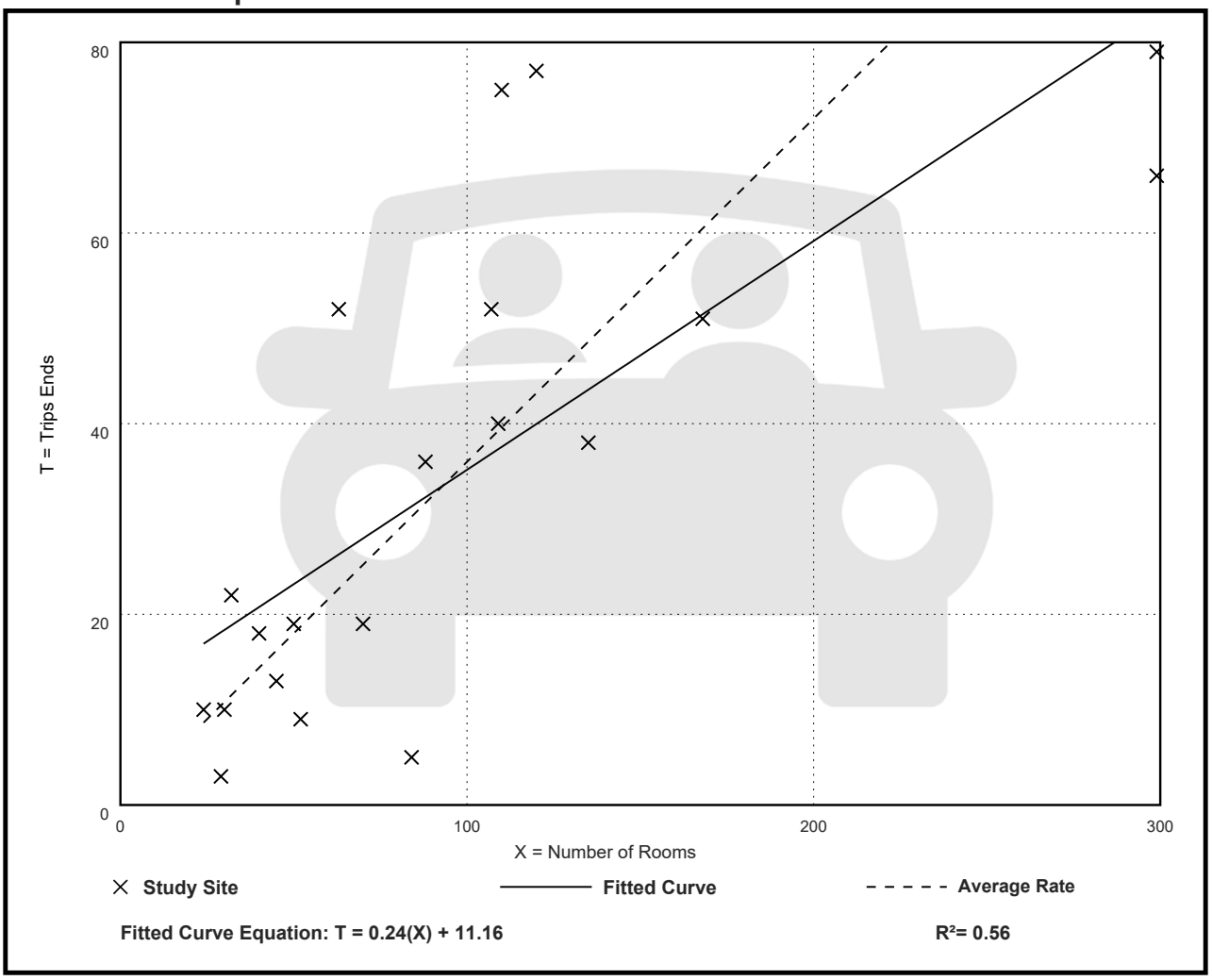
Motel
(320)

Vehicle Trip Ends vs: Rooms
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: 20
Avg. Num. of Rooms: 98
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.36	0.06 - 0.83	0.18

Data Plot and Equation



Motel
(320)

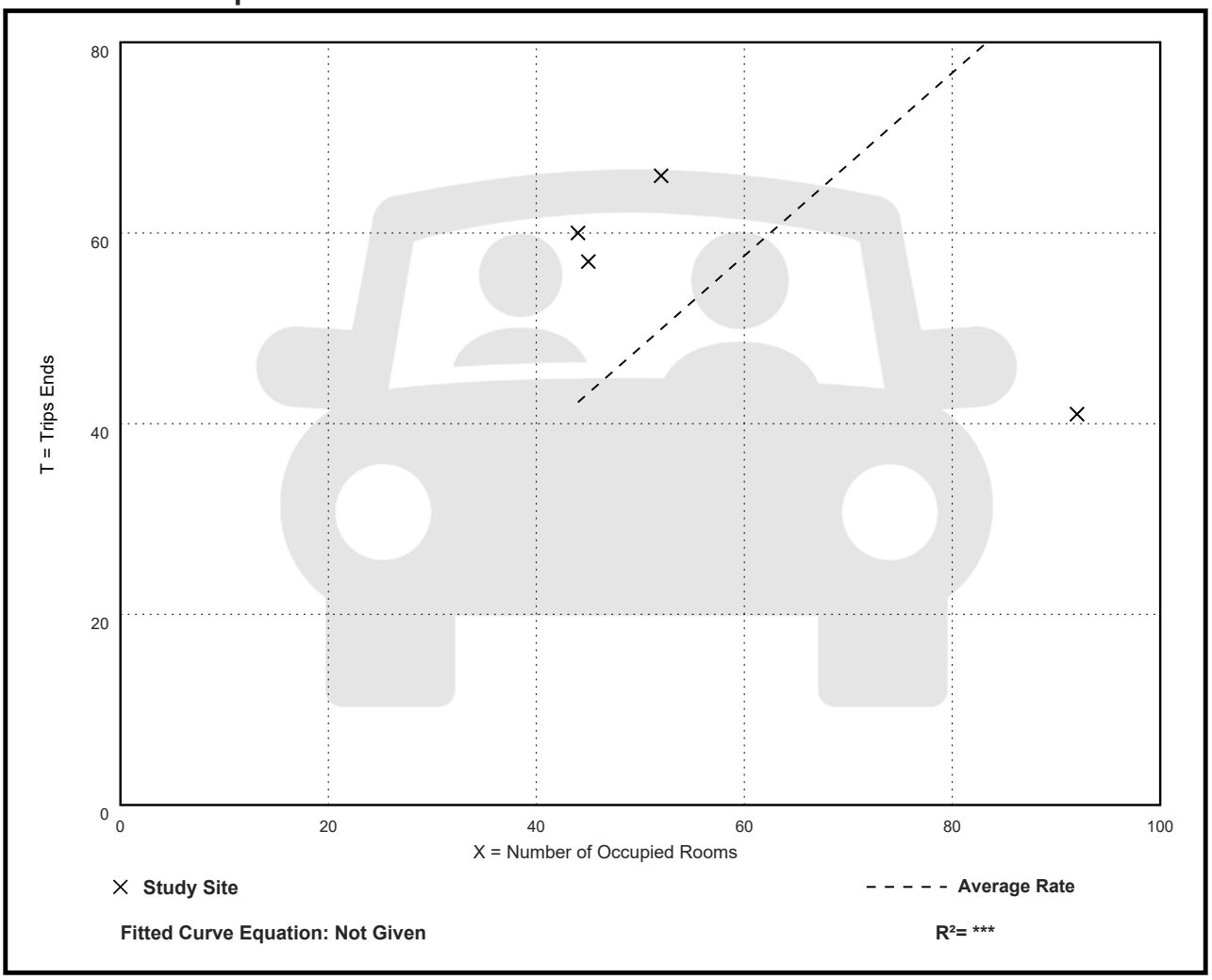
Vehicle Trip Ends vs: Occupied Rooms
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 4
Avg. Num. of Occupied Rooms: 58
Directional Distribution: 45% entering, 55% exiting

Vehicle Trip Generation per Occupied Room

Average Rate	Range of Rates	Standard Deviation
0.96	0.45 - 1.36	0.48

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= ***

Attachment D

Relevant Zoning By-Law Excerpts

percent of the number of dwelling units.

d) **Private or Public Hospital or Nursing Home** - One (1) space for every two (2) beds.

e) **Private or Commercial Club or Recreational Establishment** - One (1) space for every three (3) persons to be accommodated in the design capacity of the building.

f) **Funeral Home -** One (1) space for every three (3) chapel seating spaces for fraction thereof with a minimum of ten (10) spaces.

g) **Church or Place of Worship, Community Hall, Arena -** One (1) space for every three (3) persons to be accommodated according to maximum permitted capacity.

h) **Schools** - One (1) space per classroom, and one space for each ten (10) people of maximum design capacity of the assembly hall or auditorium.

i) **Government or Public Utility Building -** One (1) space for every 23 square metres (247.6 sq. ft.) of gross floor area.

j) **Business or Professional Office -** One (1) space for every 23 square metres (247.6 sq. ft.) of gross floor area or where such use conflicts with the office of a doctor or dentist, there shall be a minimum of three (3) parking spaces provided on the same lot.

k) **Hotel/Motel/Resort -** One (1) space for every guest room and one (1) space for every 8 square metres (86.1 sq. ft) of gross floor area devoted to public use.

l) **Boarding or Rooming House, Bed and Breakfast or Tourist Home** - One (1) space for each bedroom.

m) **Place of Assembly such as Halls, Fraternal Organizations, Labour Union Halls, Dance Halls, Community Centres, Theatres -** One (1) space for every three (3) persons of maximum design capacity.

n) **Bowling Lanes and Billiard Establishments -** One (1) space for every two (2) persons of design capacity. Design capacity shall mean six (6) persons per bowling lane and two (2) persons per billiard table.

o) **Drive-In Restaurant or Take-Out Restaurant -** One (1) space for very 2 square metres (21.5 sq. ft.) of gross floor area.

parking spaces or part thereof cannot be provided in accordance with the minimum requirements, then such required parking spaces or part thereof shall be subject to a cash-in-lieu contribution towards municipal parking facilities, the cost of which shall be established by the Council of the Municipality from time to time for the determined deficiency.

5.31.3 *Accessible Parking

i) ***In any zone, the required number of parking spaces shall include the provision of accessible parking spaces in the minimum quantity specified below:***

a) ***Residential: Accessible parking spaces are provided at a rate of 4% of the required parking spaces; Accessible parking is not required for single detached, semi-detached, duplexes, triplexes and row houses (townhouses) that do not have a shared parking arrangement;***

b) ***Commercial: Accessible parking spaces are provided at a rate of 4% of the required parking spaces;***

c) ***Industrial: Accessible parking spaces are provided at a rate of 4% for the first 200 required parking spaces and 3% for the additional required parking spaces, including a minimum of one Type A (Van accessible) required accessible space, rounded up to the nearest whole number. Equal numbers of Type A (Van accessible) and Type B are required. If an odd number is required, the additional space may be either type;***

d) ***Institutional: Accessible parking spaces are provided at a rate of 10% of the required parking spaces;***

e) ***All other uses: Accessible parking spaces are provided at a rate of 4% of the required parking spaces;***

f) ***When determining the required number of parking spaces in accordance with the above provisions, any fraction derived from the calculation shall be rounded up to the nearest whole number;***

g) ***Where an even number of parking spaces for the use of persons with disabilities are provided in accordance with the requirements of the zoning bylaw, an equal number of parking spaces that meet the requirements of Type A Parking space and Type B parking space must be provided; and***

h) ***Where an odd number of parking spaces for the use of persons with disabilities are provided in accordance with the zoning***

bylaw, the number of parking spaces must be divided equally between parking spaces that meet the requirements of a Type A parking space and a Type B parking space, but the additional parking space, the odd numbered space, may be a Type B parking space.

ii) ***The following regulations shall apply to accessible parking spaces:***

a) ***Type A (Van accessible) spaces shall have minimum rectangular dimensions of 3.4 metres width by 6.0 metres length and must have signage specifying that they are van-accessible;***

b) ***Type B spaces shall have minimum rectangular dimensions of 2.4 metres width by 6.0 metres length;***

c) ***An access aisle with a minimum rectangular dimensions of 1.5 metres in width and 6.0 metres in length and marked with a high tonal contrast diagonal lines is required adjacent to Type A and Type B accessible parking spaces. The access aisle may be shared between spaces;***

d) ***All accessible parking spaces shall be marked by an identifying marker on the pavement consisting of the international symbol of access as a 1.5 metre by 1.5 metre white border and a symbol with a blue background field colour centred on the parking stall;***

e) ***All accessible parking spaces shall be appropriately signed in accordance with provincial regulation;***

f) ***A minimum vertical clearance of 2.1 metres shall be provided at accessible parking spaces, passenger loading zones and along routes to accessible parking spaces;***

g) ***Maximum gradient for a barrier free vehicle parking space shall be five (5) percent;***

h) ***Accessible parking spaces shall be located and distributed in a manner that provides substantially equivalent or greater accessibility in terms of distance from an entrance or user convenience; and***

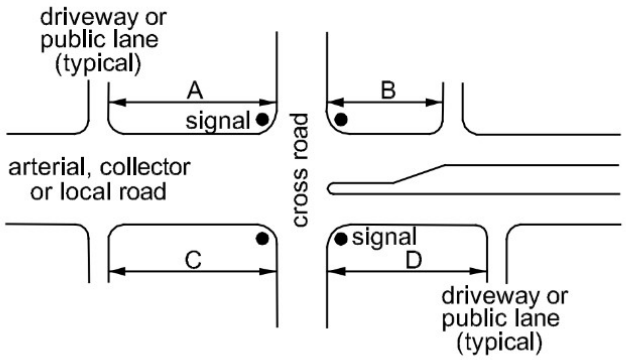
i) ***Curb ramps, where required shall be provided to permit access from the parking area to a sidewalk. (amended by Bylaw 2022-004)****

5.32 LOADING SPACE REQUIREMENTS

i) No person shall erect or use any building or structure in any zone for

Attachment E

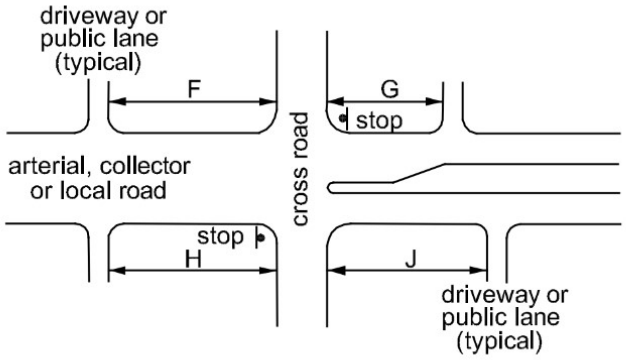
Relevant TAC Excerpts



item	min. clearance, m		
	arterial	collector [b]	local [d]
A	70 [c]	55	15
B	# [a]	25	15
C	70	55	15
D	70 [c]	55	15

Notes: a. Distance (#) positions driveway or public lane in advance of the left turn storage length (min.) plus bay taper (des.).
b. Lesser values reflect lower volumes and reduces level of service on collectors and locals.
c. Reduced distances feasible if auxiliary lane implemented, see Section 8.5
d. Values based on operating speed of 50km/h, higher values desirable for higher speeds or may be warranted by traffic conditions.

signals at the cross road



item	min. clearance, m		
	arterial	collector [b]	local [b]
F	35	20	15
G	# [a]	25	15
H	25	25	15
J	35	20	15

Notes: a. Distance (#) positions driveway or public lane in advance of the left turn storage length (min.) plus bay taper (des.).
b. Lesser values reflect lower volumes and reduces level of service on collectors and locals.

stop control at the cross road

Figure 8.8.2: Suggested Minimum Corner Clearances to Accesses or Public Lanes at Major Intersections

Inadequate corner clearance between accesses and signalized intersections along a major road, such as a major arterial, can create serious operational problems including:

Stopping sight distance is the sum of the distance travelled during the perception and reaction time and the braking distance.

$$SSD = 0.278Vt + 0.039 \frac{V^2}{a} \quad (2.5.2)$$

Where:

SSD = Stopping sight distance (m)
t = Brake reaction time, 2.5 s
V = Design speed (km/h)
a = Deceleration rate (m/s^2)

Table 2.5.2 gives the minimum stopping sight distances on level grade, on wet pavement, for a range of design speeds. These values are used for vertical curve design, intersection geometry and the placement of traffic control devices. The stopping sight distances quoted in **Table 2.5.2** may need to be increased for a variety of reasons related to grade and vehicle type as noted below.

Table 2.5.2: Stopping Sight Distance on level roadways for Automobiles[54]

Design speed (km/h)	Brake reaction distance (m)	Braking distance on level (m)	Stopping sight distance	
			Calculated (m)	Design (m)
20	13.9	4.6	18.5	20
30	20.9	10.3	31.2	35
40	27.8	18.4	46.2	50
50	34.8	28.7	63.5	65
60	41.7	41.3	83.0	85
70	48.7	56.2	104.9	105
80	55.6	73.4	129.0	130
90	62.6	92.9	155.5	160
100	69.5	114.7	184.2	185
110	76.5	138.8	215.3	220
120	83.4	165.2	248.6	250
130	90.4	193.8	284.2	285

Note: Brake reaction distance predicated on a time of 2.5 s; deceleration rate of 3.4 m/s^2 used to determine calculated sight distance.

Table 9.9.3: Time Gap for Case B1, Left Turn from Stop

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	7.5
Single-unit truck	9.5
Combination truck (WB 19 and WB 20)	11.5
Longer truck	To be established by road authority

Notes: Time gaps are for a stopped vehicle to turn left onto a two-lane highway with no median and with grades of 3% or less. The table values should be adjusted as follows:

- For multi-lane highways: For left turns onto two-lane highways with more than two lanes, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane, from the left, in excess of one, to be crossed by the turning vehicle.
- For minor approach grades: If the approach grade is an upgrade that exceeds 3%, add 0.2 s for each percent grade for left turns.
- Some road authorities use higher values for certain specialized vehicles (e.g., Alberta uses 22 s for very long log trucks).

The intersection sight distance along the major road (distance b in **Figure 9.9.2**) is determined by:

$$ISD = 0.278\ V_{major}\ t_g \qquad (9.9.1)$$

Where:

ISD = intersection sight distance (length of the leg of sight triangle along the major road) (m)
V_{major} = design speed of the major road (km/h)
t_g = time gap for minor road vehicle to enter the major road (s)

For example, a passenger car turning left onto a two-lane major road should be provided sight distance equivalent to a time gap of 7.5 s in major-road traffic. If the design speed of the major road is 100 km/h, this corresponds to a sight distance of 0.278(100)(7.5) = 208.5 or 210 m, rounded for design.

A passenger car turning left onto a four-lane undivided roadway will need to cross two near lanes, rather than one. This increases the recommended gap in major-road traffic from 7.5 to 8.0 s. The corresponding value of sight distance for this example would be 223 m. If the minor-road approach to such an intersection is located on a 4% upgrade, then the time gap selected for intersection sight distance design for left turns should be increased from 8.0 to 8.8 s, equivalent to an increase of 0.2 s for each percent grade.

The design values for intersection sight distance for passenger cars are shown in **Table 9.9.4**. **Figure 9.9.4** includes design values, based on the time gaps for the design vehicles included in **Table 9.9.3**.

No adjustment of the recommended sight distance values for the major-road grade is generally needed because both the major- and minor-road vehicle will be on the same grade when departing from the intersection. However, if the minor-road design vehicle is a heavy truck and the intersection is located near a sag vertical curve with grades over 3%, then an adjustment to extend the recommended sight distance based on the major-road grade should be considered.

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

Note: Intersection sight distance shown is for a stopped passenger car to turn left onto a two-lane highway with no median and grades 3% or less. For other conditions, the time gap should be adjusted and the sight distance recalculated.

Sight distance design for left turns at divided-highway intersections should consider multiple design vehicles and median width. If the design vehicle used to determine sight distance for a divided-highway intersection is larger than a passenger car, then sight distance for left turns will need to be checked for that selected design vehicle and for smaller design vehicles as well. If the divided-highway median is wide enough to store the design vehicle with a clearance to the through lanes of approximately 1 m at both ends of the vehicle, no separate analysis for the departure sight triangle for left turns is needed on the minor-road approach for the near roadway to the left. In most cases, the departure sight triangle for right turns (case B2) will provide sufficient sight distance for a passenger car to cross the near roadway to reach the median. Possible exceptions are addressed in the discussion of case B3.

The time gaps in **Table 9.9.3** can be decreased by 1.0 s for right-turn maneuvers without undue interference with major-road traffic. These adjusted time gaps for the right turn from the minor road are shown in **Table 9.9.5**. Design values based on these adjusted time gaps are shown in **Table 9.9.6** for passenger cars. **Figure 9.9.5** includes the design values for the design vehicles for each of the time gaps in **Table 9.9.5**.

Table 9.9.5: Time Gap for Case B2—Right Turn from Stop and Case B3—Crossing Maneuver

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	6.5
Single-unit truck	8.5
Combination truck (WB 19 and WB 20)	10.5

Note: Time gaps are for a stopped vehicle to turn left onto a two-lane highway with no median and with grades of 3% or less. The table values should be adjusted as follows:

- For multi-lane highways: For left turns onto two-lane highways with more than two lanes, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane, from the left, in excess of one, to be crossed by the turning vehicle.
- For minor approach grades: If the approach grade is an upgrade that exceeds 3%, add 0.1 s for each percent grade for left turns.

Table 9.9.6: Design Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance for Passenger Cars	
		Calculated (m)	Design (m)
20	20	36.1	40
30	35	54.2	55
40	50	72.3	75
50	65	90.4	95
60	85	108.4	110
70	105	126.5	130
80	130	144.6	145
90	160	162.6	165
100	185	180.7	185
110	220	198.8	200
120	250	216.8	220
130	285	234.9	235

Note: Intersection sight distance shown is for a stopped passenger car to turn right onto or to cross a two-lane highway with no median and with grades of 3% or less. For other conditions, the time gap should be adjusted and the sight distance recalculated.

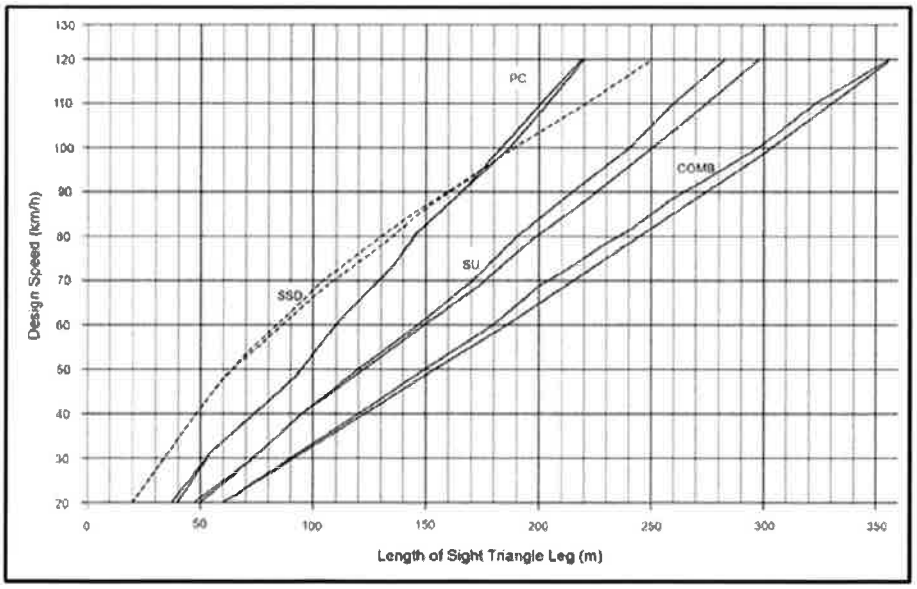


Figure 9.9.5: Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver (Calculated and Design Values Plotted)

Case F – Left Turns from the Major Road

All locations along a major highway from which vehicles are permitted to turn left across opposing traffic, including intersections and driveways, should have sufficient sight distance to accommodate the left-turn maneuver. Left-turning drivers need sufficient sight distance to decide when to turn left across the lane(s) used by opposing traffic. Sight distance design should be based on a left turn by a stopped vehicle, since a vehicle that turns left without stopping would need less sight distance. The sight distance along the major road to accommodate left turns is the distance traversed at the design speed of the major road in the travel time for the design vehicle given in **Table 9.9.11**.

Table 9.9.11: Time Gap for Case F, Left Turns from the Major Road

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	5.5
Single-unit truck	6.5
Combination truck (WB 19 and WB 20)	7.5

Note: Adjustment for multi-lane highways: For turning vehicles that cross more than one opposing lane, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane to be crossed.

The table also contains appropriate adjustment factors for the number of major-road lanes to be crossed by the turning vehicle. The unadjusted time gap in **Table 9.9.11** for passenger cars was used to develop the sight distances in **Table 9.9.12** and is illustrated in **Figure 9.9.8.**

Table 9.9.12: Intersection Sight Distance – Case F, Left Turn from the Major Road

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance	
		Passenger Cars	
		Calculated (m)	Design (m)
20	20	30.6	35
30	35	45.9	50
40	50	61.2	65
50	65	76.5	80
60	85	91.7	95
70	105	107.0	110
80	130	122.3	125
90	160	137.6	140
100	185	152.9	155
110	220	168.2	170
120	250	183.5	185
130	285	198.8	200

Note: Intersection sight distance shown is for a passenger car making a left turn from an undivided highway. For other conditions and design vehicles, the time gap should be adjusted and the sight distance recalculated.

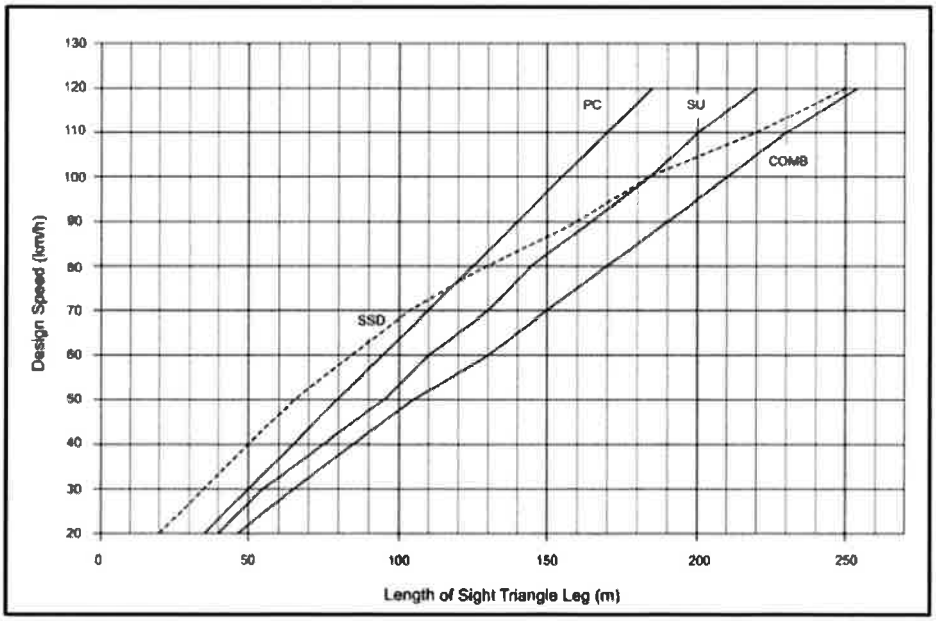
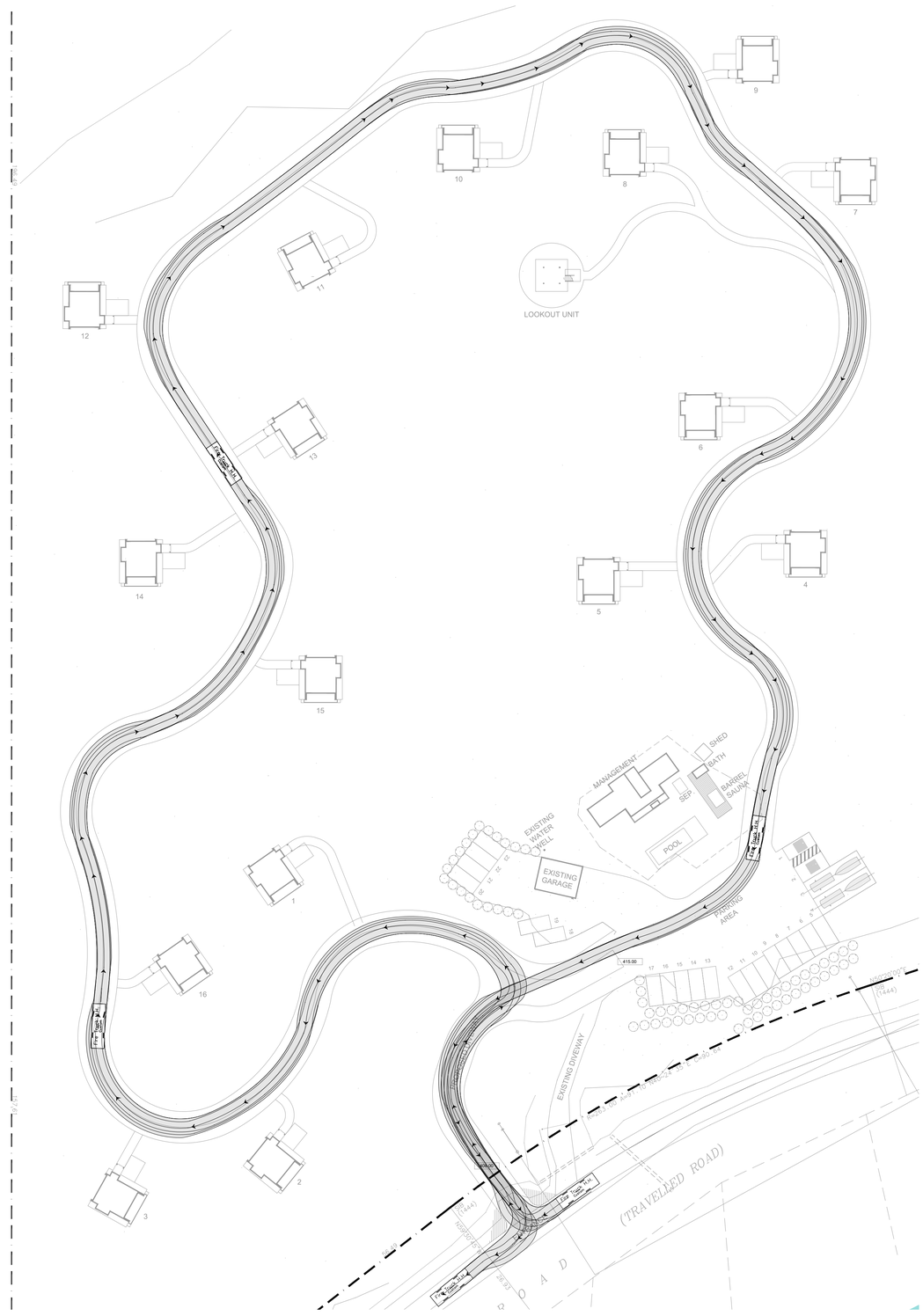


Figure 9.9.8: Intersection Sight Distance – Case F, Left Turn from the Major Road

Attachment F

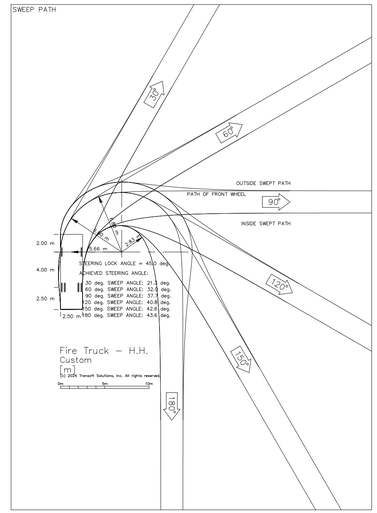
Truck Turning Diagram



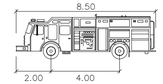
FOR REVIEW

NOT TO BE USED FOR CONSTRUCTION

SWEEP PATH



VEHICLE PROFILE



Fire Truck – H.H. meters

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Steering Angle	: 45.0

No.	ISSUE	DATE: MM/DD/YYYY
1	ISSUED FOR SUBMISSION	05/24/2024
2	ISSUED FOR SUBMISSION	05/13/2025

Project

752/8 PETERSON ROAD
MUNICIPALITY OF HASTINGS HIGHLANDS

Drawing

FIRE TRUCK
VEHICLE MANEUVERING ANALYSIS

CROZIER
CONSULTING ENGINEERS

Drawn By: M.P.	Design By: M.P.	Project: 2497-6768	
Check By: I.L.	Check By: I.L.	Scale: 1:500	Drawing: T300

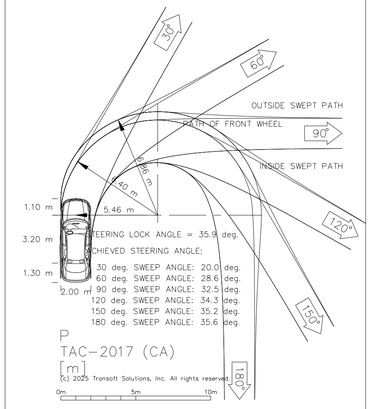
10 0m 10 20 30 40
SCALE: 1:500

N

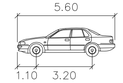
FOR REVIEW

NOT TO BE USED FOR CONSTRUCTION

SWEEP PATH



VEHICLE PROFILE



P

	meters
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Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

No.	ISSUE	DATE: MM/DD/YYYY
1	ISSUED FOR SUBMISSION	05/24/2024
2	ISSUED FOR SUBMISSION	05/13/2025

Project

752/8 PETERSON ROAD
MUNICIPALITY OF HASTINGS HIGHLANDS

Drawing

FIRE TRUCK
VEHICLE MANEUVERING ANALYSIS

CROZIER
CONSULTING ENGINEERS

Drawn By	M.P.	Design By	M.P.	Project	2497-6768
Check By	I.L.	Check By	I.L.	Scale 1:200	Drawing T301