

JUNE 4, 2024

PROJECT NO: 2227-6259

SENT VIA: E-MAIL

Town of Caledon
6311 Old Church Road
Caledon, ON L7C 1J6

**TOWN OF CALEDON
PLANNING
RECEIVED**
Oct. 22, 2024

**Attention: Emma Howlett, EIT
Transportation Coordinator
Engineering, Public Works & Transportation Department**

**RE: TRAFFIC OPINION LETTER FOR ENGINEERING SERVICES
PROPOSED SUBDIVISION DEVELOPMENT
15441 MOUNT PLEASANT ROAD
TOWN OF CALEDON, REGION OF PEEL**

Dear Emma,

C.F. Crozier and Associates (Crozier) has been retained by 2818963 Ontario Inc. to prepare a Traffic Opinion Letter (TOL) for a residential development located at 15441 Mount Pleasant Road in the Town of Caledon, Region of Peel, in support of the Plan of Subdivision application.

The purpose of the Transportation Opinion Letter is to evaluate the following aspects of the proposed development from a transportation operations perspective:

- 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 safety, operational feasibility and geometric design perspective.

1.0 Scope of Study

A Terms of Reference (ToR) was circulated to the Town of Caledon on September 15, 2023, which scoped the study. Correspondence from the Town of Caledon, including the response to these terms, is included in **Attachment A**.

According to the Concept Plan, the elements envisioned for this development include:

- Five (5) estate residential lots serviced by municipal water and private sewage systems
- Paved internal road network with access to Mount Pleasant Road

Please see the attached concept plan in **Attachment B**.

2.0 Base Conditions

The following section provides a description of the study area from a transportation context.

2.1 Development Lands

The site covers an area of approximately 22.9 ha and currently consists of trees, greenspaces, ponds, and landscaped/forested areas. The site is bounded by Mount Pleasant Road to the west, residential estate properties to the north and south, and wetlands to the east. The surrounding area consists mostly of rural residential lands.

The subject lands are currently zoned Environmental Policy Area 2 – Oak Ridges Moraine (ORM), Estate Residential – ORM, and Open Space – ORM as per Zoning By-law 2006-50 in the Town of Caledon.

2.2 Boundary Road Network

Mount Pleasant Road is a local north/south two-lane roadway. There are no sidewalks or dedicated cyclist facilities available on this roadway in the study area. The roadway has a posted speed limit of 60 km/h in the study area. Relevant road maps can be found in **Attachment C**.

3.0 Traffic Analysis

3.1 Trip Generation

Trip generation for the proposed development was forecasted using the ITE Trip Generation Manual, 11th Edition. Single-Family Detached Housing (Land Use Code 210) was used to calculate the trips.

Table 1: Trip Generation

| Land Use (Units/GFA) | Trip Type | AM | | | | PM | | | |
|--|------------------------|-------------------------------|-----------------|----------|----------|-------------------------------|-----------------|----------|----------|
| | | Equation/ Rate | Trips Generated | | | Equation/ Rate | Trips Generated | | |
| | | | Inbound | Outbound | Total | | Inbound | Outbound | Total |
| 210 - Single Family Detached Housing (5 units) | Total Trips | $\ln(T) = 0.91 \ln(X) + 0.12$ | 1 | 4 | 5 | $\ln(T) = 0.94 \ln(X) + 0.27$ | 4 | 2 | 6 |

Overall, the development is expected to generate 5 two-way trips (1 inbound and 4 outbound) during the weekday A.M. peak hour and 6 two-way trips (4 inbound and 2 outbound) during the weekday P.M. peak hour. As per the Terms of Reference response, 5 residential lots are proposed at the intersection of Mulloy Court and Mount Pleasant Road, which produces the same trip generation as the subject property. Due to the low volume of site generated trips, the proposed development is not expected to affect traffic operations at the downstream intersection of Mulloy Court and Mount Pleasant Road. Therefore, the traffic impacts are projected to be minor.

Relevant excerpts from the ITE Trip Generation Manual, 11th Edition have been included in **Attachment D**.

4.0 Site Access Review

The development proposal includes a site access at Mount Pleasant Road that will provide access/egress to and from the site. This section evaluates the suitability of the site access from a transportation safety perspective and recommends mitigation measures, if warranted. The safety review of the access includes an assessment of whether turning maneuvers can be made safely at the site access without issues related to sight lines and road geometry.

4.1 Proposed Internal Road Layout

The proposed internal road network includes a roadway (Street 'A') that connects to Mount Pleasant Road to the west, and Street 'B' internally. The internal road network is made up of the following components:

- Street 'A'
- Street 'B'

The roadways listed above have a two-lane local road cross-section and a 20 m right-of-way. The internal road network is illustrated in **Attachment B**.

4.2 Intersection Sight Distance

Section 9.9 of the TAC GDGCR provides intersection sight distance for different intersection control types. The calculated and design sight distances are further summarized in TAC GDGCR Tables 9.9.4, 9.9.6 and 9.9.12 for vehicles turning left from stop, turning right from stop, or turning left from the major road, respectively.

Case B1 (Left Turn from the Minor Road) and Case B2/B3 (Right Turn / Crossing Maneuver from the Minor Road) were used to evaluate sight line adequacy for the site access. **Table 2** outlines the sight distance requirements and compares them to the available sight distance, which was measured using Google Maps.

Table 2: Intersection Sight Distance Assessment

| Mount Pleasant Road and Site Access Posted Speed = 60 km/h Design Speed = 80 km/h | | |
|---|--|-------------------------|
| Formula | ISD = $0.278 * V_{\text{major}} * t_g$ | |
| Feature | Case B1 – Left Turn | Case B2/B3 – Right Turn |
| Time Gap ¹ | Left Turn: 7.5s | Right Turn: 6.5s |
| Required Sight Distance | 170m (looking north) | 145m (looking south) |
| Available Sight Distance | ~230m (looking north) | +300m (looking south) |

Note 1: To calculate Time Gap, base time gap is required. This default parameter is based on particular turning cases (such as Case B1 and Case B2/B3) and particular design vehicles. Roadways with more than one lane per direction require additions of 0.5s and 0.7s per addition lane for passenger car and truck design vehicles, respectively. For minor street approach upgrades that exceed 3%, additions of 0.2s and 0.1s for Case B1 and Case B2/B3, respectively, are required per percent grade. Refer to Section 9.9 of TAC-GDGCR for additional details.

The available sight distance for the site access along Mount Pleasant Road meets the minimum sight distance requirements for Case B1 (Left Turn from the Minor Road) and Case B2/B3 (Right Turn / Crossing Maneuver from the Minor Road). **Attachment E** contains relevant TAC GDGCR excerpts.

4.3 Access Alignment

The proposed site access is expected to form a four-legged intersection as it aligns with the private road located on the opposite (west) side of Mount Pleasant Road. According to Section 8.9.9 Spacing Considerations for Driveways on Opposite Sides of the Road, for low volume roadways including locals and most collectors, the spatial relationship between driveways on opposite sides of the road does not constitute a necessary design consideration. Furthermore, if at least one of the driveways are low volume, the distance between the driveways does not impact traffic operations. As Mount Pleasant Road is a local roadway, and the existing driveway and proposed site access are low volume, the alignment of the proposed site access is not expected to cause geometric or operational concerns.

4.4 Geometric Design

The following geometric design analysis is based on the design requirements for a local residential roadway, as the average daily traffic (ADT) is less than 1000 vehicles (due to the low volume of site-generated trips). Additionally, as Street 'A' is a low volume road that connects to a local road (Mount Pleasant Road), Street 'A' is classified as a local residential road. Likewise, as Street 'B' connects to Street 'A', it is also considered a local residential roadway for the purpose of this analysis.

4.4.1 Right-of-Way

The minimum requirements for a local residential road according to the Town of Caledon's Development Standards Manual (2019) and the right-of-way width of the proposed Street 'A' is tabulated in **Table 3**.

Table 3: Right-of-Way Width

| Town of Caledon Right-of-Way Width Minimum Requirement | Proposed Street 'A' Right-of-Way Width | Proposed Street 'B' Right-of-Way Width |
|--|--|--|
| 18 m | 20 m | 20 m |

According to Table 1.2 in the Town of Caledon's Development Standards Manual (2019), the minimum right-of-way width for local residential roads is 18 metres. The proposed right-of-way width for both Street 'A' and Street 'B' as shown in the concept plan is 20 metres. Thus, Street 'A' and Street 'B' meet the minimum requirements for the right-of-way width.

4.4.2 Cul-de-Sac

The minimum requirements for the bulb radius and end of curve radius for a cul-de-sac are outlined in the Town of Caledon's Standard Drawing No.216, Region of Peel Waste Collection Design Standards Manual (2020) Appendix 2: Cul-de-Sac Specifications, and the Ontario Building Code. The minimum requirements and proposed cul-de-sac dimensions are shown in **Table 4**.

Table 4: Minium Requirements for Cul-de-Sacs

| Dimension | Town of Caledon's Standard Drawing | Region of Peel Waste Collection Design Standards Manual (2020) ¹ | Ontario Building Code | Proposed Street 'A' Cul-de-Sac | Proposed Street 'B' Cul-de-Sac | Minimum Requirement Met ? |
|---------------------|------------------------------------|---|-----------------------|--------------------------------|--------------------------------|---------------------------|
| Bulb Radius | 18 m | 13 m | 12 m | 20 m | 20 m | Yes |
| End of Curve Radius | 15 m | 13 m | N/A | 15 m | 15 m | Yes |

1. Note: The Region of Peel Waste Collection Design Standards Manual (2020) only states requirement for radii to the edge of pavement. The concept plan illustrates radii to the property line.

It is important to note that the concept plan only illustrates distances to the property line. The bulb radius outlined in the Region of Peel Waste Collection Design Standards Manual (2020) shows the distance to the edge of pavement. However, as the proposed bulb radius for both cul-de-sacs (20 metres) is much larger than the radius in the standard (13 metres), the requirements are expected to be met in the detailed design stage.

As show in **Table 4**, the proposed bulb radii and end of curve radii for the cul-de-sacs on Street 'A' and Street 'B' exceed the minimum requirements according to the Town of Caledon's Standard Drawing, the Region of Peel Waste Collection Design Standards Manual (2020) and the Ontario Building Code. Thus, the proposed cul-de-sacs meet the minimum requirements for cul-de-sac radii.

4.4.3 Horizontal Curves

The minimum requirements according to the Town of Caledon's Development Standards Manual (2019) and the horizontal curve radii of the proposed Street 'A' and Street 'B' is tabulated in **Table 5**.

Table 5: Minimum Horizontal Curve Radius

| Town of Caledon Horizontal Curve Radius Minimum Requirement | Proposed Street 'A' Horizontal Curve Radius | Proposed Street 'B' Horizontal Curve Radius |
|---|---|---|
| 90 m | 90 m | 90 m |

According to Table 1.2 in the Town of Caledon's Development Standards Manual (2019), the minimum horizontal curve radius for local residential roads taken at the centerline is 90 metres. The horizontal curvature of the proposed Street 'A' and Street 'B' taken at the centerline as shown in the concept plan is 90 metres for both roadways. Thus, both Street 'A' and Street 'B' meet the minimum requirements for horizontal curve radius.

4.4.4 Sight Triangles

Requirements for sight triangles are outlined in the Town of Caledon Zoning By-Law 2006-50 Section 4.38: Sight Triangles. These requirements have been tabulated and compared to the proposed sight triangles in **Table 6**.

Table 6: Sight Triangle Requirement

| Corner | Sight Triangle Requirement | Proposed Sight Triangle | Requirement met? |
|--------------|----------------------------|-------------------------|------------------|
| North Corner | 9.0 m x 9.0 m | 9.0 m x 9.0 m | Yes |
| South Corner | 9.0 m x 9.0 m | 9.0 m x 9.2 m | Yes |

Per the concept plan, the proposed development meets the requirements for sight triangles in accordance with the Town of Caledon Zoning By-Law 2006-50.

4.4.5 Intersection Curve Radius

The minimum requirements according to the Town of Caledon's Development Standards Manual (2019) for the intersection curve radius for a local residential to local residential roadway (taken at the edge of pavement) is 10 metres. As the current concept plan only illustrates the distance to the property line, it is recommended to meet the minimum requirements of 10 metres for the intersection curve radius in the detailed design stage.

Attachment F contains the relevant excerpts for the geometric design standards.

5.0 Vehicle Maneuvering

As per the Terms of Reference response, AutoTURN analysis was undertaken to confirm that fire trucks, garbage trucks, and snowplows can safely maneuver throughout the site. The development is currently in the early stages of design and only the right of way is known currently. Estimated curbs were drawn to help identify any critical areas and we will work with the owner to ensure that the standards are met and there are no safety concerns. The vehicle maneuvering diagrams are presented in **Attachment G**.

6.0 Conclusion

This study has analyzed potential safety, operational and geometric design concerns on the boundary road network in relation to the proposed residential development at 15441 Mount Pleasant Road in the Town of Caledon. The findings of our analysis are summarized as the following:

- The development is expected to generate 5 two-way (1 inbound and 4 outbound) trips during the weekday A.M. peak hour and 6 two-way (4 inbound and 2 outbound) trips during the weekday P.M. peak hour. Due to the low volume of site generated trips, the proposed development is not expected to affect traffic operations at the downstream intersection of Mulloy Court and Mount Pleasant Road. Therefore, the traffic impacts are projected to be minor.
- The site access meets the relevant TAC GDGCR requirements for sightlines and access spacing for opposing driveways.
- According to Table 1.2 in the Town of Caledon's Development Standards Manual (2019), Street 'A' and Street 'B' meet the requirements for the minimum right-of-way width.
- According to the Town of Caledon's Standard Drawing No.216, the Region of Peel Waste Collection Design Standards Manual (2020) and the Ontario Building Code, the proposed cul-de-sacs meet the minimum requirements for cul-de-sac radii.
- According to Table 1.2 in the Town of Caledon's Development Standards Manual (2019), both Street 'A' and Street 'B' meet the minimum requirements for horizontal curve radius.
- The proposed development meets the requirements for sight triangles in accordance with the Town of Caledon Zoning By-Law 2006-50.
- It is recommended to meet the minimum requirements of 10 metres for the intersection curve radius in the detailed design stage.
- The vehicle maneuvering diagrams were shown with estimated curbs as only the right of way is known at this time. This helps to identify any critical areas and we will work with the owner to ensure that the standards are met and there are no safety concerns.

Based on the information presented in this report, the proposed development can be supported from a transportation safety and operations perspective.

Respectfully submitted,
C.F. CROZIER & ASSOCIATES INC.



Ian Lindley, M.A.Sc., P.Eng.
Project Engineer, Transportation
IL/ak

Enclosure

J:\2200\2227- 2818963 Ontario Inc\6259- 15441 Mount Pleasant Rd\Reports\2024.06.03_TOL.docx

ATTACHMENT A

Terms of Reference Correspondence

Aiman Khan

From: Ian Lindley
Sent: October 11, 2023 1:42 PM
To: Aiman Khan
Subject: FW: 15441 Mount Pleasant Road (PRE 23-55) Terms of Reference

Ian Lindley, M.A.Sc., P.Eng.
Project Engineer, Transportation
DID: 905.876.7119

From: Kavleen Younan <Kavleen.Younan@caledon.ca>
Sent: Wednesday, October 11, 2023 9:28 AM
To: Ian Lindley <ilindley@cfcrozier.ca>
Cc: Emma Howlett <Emma.Howlett@caledon.ca>
Subject: RE: 15441 Mount Pleasant Road (PRE 23-55) Terms of Reference

Hi Ian,

I hope this email finds you well. Thank you for seeking clarification regarding our requirements for the intersection of Molloy Court and Mount Hope Road. I appreciate your proactive approach in ensuring that we're aligned on this matter.

To address your query, we are not specifically looking for a Synchro analysis at this time. Instead, what we seek is a qualitative review to understand how the traffic generated by the proposed development might impact the Molloy Court and Mount Hope Road intersection. This review may encompass a brief assessment of the expected traffic distribution originating from the site, along with an analysis of how the assigned traffic might influence the existing conditions at the intersection.

We do not require a comprehensive study but rather a qualitative understanding of the potential effects. If, based on your ITE trip generation data and assessment, you conclude that the development's impacts will indeed be minor, and no further detailed analysis is warranted for this intersection, such a determination can be duly reflected in your Traffic study.

Should you need any additional information or have further questions regarding this request, please do not hesitate to reach out.

Regards,

Kavleen S. Younan, P.Eng.
Transportation Engineer
Engineering, Public Works & Transportation Department

Office: 905.584.2272 x 4416
Email: kavleen.younan@caledon.ca

Town of Caledon | www.caledon.ca | www.visitcaledon.ca | Follow us @TownofCaledon

From: Ian Lindley <ilindley@cfcrozier.ca>
Sent: Tuesday, October 10, 2023 9:49 AM
To: Emma Howlett <Emma.Howlett@caledon.ca>
Cc: Kavleen Younan <Kavleen.Younan@caledon.ca>
Subject: RE: 15441 Mount Pleasant Road (PRE 23-55) Terms of Reference

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the contents to be safe.

Good Morning Emma,

Can you confirm what is meant by “[expanding to include the anticipated impacts to the existing intersection of Molloy Court and Mount Hope Road.](#)”?

Is the town looking for Synchro analysis of this intersections operations? If so, please specify the horizon year. If the town is in agreement that, based on the ITE trip gen below, the development’s impacts will be minor and further analysis is not required for the intersection then that is also agreeable and we will state that in our Traffic study.

Regards,
Ian

Ian Lindley, M.A.Sc., P.Eng.
Project Engineer, Transportation
Office: 548.708.0022
Collingwood | Milton | Toronto | Bradford | Guelph

Learn all about our latest awards & recognition [here](#).

[LINKEDIN](#) | [INSTAGRAM](#) | [FACEBOOK](#) | [TWITTER](#)



From: Emma Howlett <Emma.Howlett@caledon.ca>
Sent: Friday, September 29, 2023 2:48 PM
To: Ian Lindley <ilindley@cfcrozier.ca>
Cc: Kavleen Younan <Kavleen.Younan@caledon.ca>
Subject: RE: 15441 Mount Pleasant Road (PRE 23-55) Terms of Reference

Hello Ian,

Thank you for submitting the terms of reference, Transportation Engineering Staff have reviewed and offer the following responses bellow in [blue](#) .

Hope you and the team are well,

Emma Howlett, E.I.T.

From: Ian Lindley <ilindley@cfcrozier.ca>
Sent: September 15, 2023 1:45 PM
To: Emma Howlett <Emma.Howlett@caledon.ca>
Subject: 15441 Mount Pleasant Road (PRE 23-55) Terms of Reference

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the contents to be safe.

Hello,

C.F. Crozier and Associates (Crozier) has been retained by Design Services Inc. to prepare a Traffic Opinion Letter (TOL) for a residential development located at 15441 Mount Pleasant Road in the Town of Caledon, in support of the Plan of Subdivision application.

Based on the expected trip generation for this development as seen in the table below, it is the opinion of Crozier that a TOL will be sufficient for this development.

According to the Concept Plan, the elements envisioned for this development include:

- Eight (8) estate residential lots
- Paved internal road network with access to Mount Pleasant Road

Please see the attached concept plan for more details.

This letter and its attachment are intended to serve as the Terms of Reference (ToR) for the TOL 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 Traffic Opinion Letter

Developments of this size (8 single-family detached homes) do not typically require a full Transportation Impact Study, as minor traffic impacts are assumed. Therefore, a smaller scale Traffic Opinion Letter will be sought. Should the Traffic Opinion Letter not be approved, we will provide an updated fee estimate for your consideration.

Trip Generation

Trip generation for the proposed development will be forecasted using the Trip Generation Manual, 11th Edition, prepared by the Institute of Transportation Engineers (ITE). Single-Family Detached Housing (Land Use Code 210) will be used to calculate the trips. Please confirm if this is acceptable.

| ITE Category | Units | Roadway Peak Hour | Rate/Equation Used | Number of Trips | | |
|------------------------|-------|-------------------|--|-----------------|----------|-------|
| | | | | Inbound | Outbound | Total |
| Single-Family Detached | 8 | Weekday A.M. | $\text{Ln}(T) = 0.91 \text{ Ln}(X) + 0.12$ | 2 | 5 | 7 |
| | | Weekday P.M. | $\text{Ln}(T) = 0.94 \text{ Ln}(X) + 0.27$ | 6 | 3 | 9 |

| ITE Category | Units | Roadway Peak Hour | Rate/Equation Used | Number of Trips | | |
|-------------------|-------|-------------------|--------------------|-----------------|----------|-------|
| | | | | Inbound | Outbound | Total |
| Housing (LUC 210) | | | | | | |

Overall, the development is expected to generate 7 two-way (2 inbound and 5 outbound) trips during the weekday A.M. peak hour and 9 two-way (6 inbound and 3 outbound) trips during the weekday P.M. peak hour. Therefore, the traffic impacts are projected to be minor.

Table above. Please confirm if this is acceptable.

The above qualitative assessment should be documented in the Transportation Study, expanding to include the anticipated impacts to the existing intersection of Molloy Court and Mount Hope Road.

Please note that Molloy Court has proposed to add 5 lots, it would be beneficial to note the anticipated qualitative background impacts to ensure a wholistic conclusion is documented.

Site Access Review

The proposed site access and Street A will be assessed with regards to sight distance availability and geometry and compare to the standards set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR).

Please confirm that it is possible to meet best practices and industry standards with respect to creating a 4-way intersection with the proposed development/Mulloy Court and Mount Pleasant Road. Please verify the feasibility of establishing sight triangles on the proposed development side of the intersection while considering any constraints.

Please include a safety review section which identifies the potential of safety or operational issues associated with the following, as applicable:

- Corner clearances;
- Vehicle-pedestrian conflicts;
- Access conflicts;
- Cyclist movements; and,
- Heavy truck movement conflicts

The Safety Review must include all modes of transportation that might access or travel through, and in the proximity of, the proposed development.

In addition, a detailed review of the roadway geometry related to MTO/TAC guidelines for:

- Sight distances at the intersections of Street A, Street B, and Street C. (stopping distance, intersection sight triangles, departure sight distance, decision sight distance) utilizing MTO guidelines for approach and departure sight distances for all roadways to be impacted directly by the development, accesses, entrances, new roadways, etc.;
- Roadway curves (vertical and horizontal) standards;
- Clear zones;
- Conflicting vehicle movements within and adjacent to the development; and,
- On-site vehicle swept path analysis (AutoTurn) utilizing the proper design vehicles (buses, fire trucks, garbage trucks, snowplows – see template attached, etc., as appropriate) Note that this is needed for Draft Plan of Subdivision.

A fire route plan should be provided and the following should be included:

- Driveway and drive aisle widths of 6m or more;

- Centerline radius of minimum 12m; and,
- Turnaround facilities for any dead-end portion of the access route more than 90m long.

Future Connections – Applicant to propose a future connection block to the north, Staff prefer a proposed future connection to support the proposal. It is understood that at the moment there is limited information, it is recommended that the Applicant/Consultant work with Town Staff as the application progresses to ensure future roadway and trail connections are protected as appropriate. Please note Transportation Staff find the TOR acceptable with the understanding that Staff will be engaged in discussions on future roadways and/or trails as the application progresses.

Summary

We request any comments that arise with regards to the above Terms of Reference.

I hope the contents outlined in this email are acceptable.

Should you have any questions or require any further information, please feel free to contact Aaron Wignall or Ian Lindley.

Regards,

Ian

Ian Lindley, M.A.Sc., P.Eng.

Project Engineer, Transportation

Office: 548.708.0022

Collingwood | Milton | Toronto | Bradford | Guelph

Explore our full line of service offerings [here](#).

[LINKEDIN](#) | [INSTAGRAM](#) | [FACEBOOK](#) | [TWITTER](#)



This email was sent on behalf of C.F. Crozier & Associates Inc. and may contain confidential and/or privileged information for the sole use of the intended recipient. If you have received this email in error, please contact the sender and delete all copies. Any review or distribution by anyone other than the intended recipient is strictly prohibited.

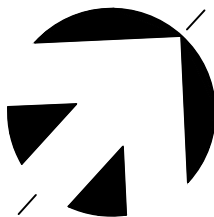
"This message (and any associated files) is intended only for the use of the individual or entity to which it is addressed. The content of the message is the property of the Corporation of the Town of Caledon. The message may contain information that is privileged, confidential, subject to copyright and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, you are notified that any dissemination, distribution, copying, or modification of this message is strictly prohibited. If you have received this message in error, please notify the sender immediately, advising of the error and delete this message without making a copy. (Information related to this email is automatically monitored and recorded and the content may be required to be disclosed by the Town to a third party in certain circumstances). Thank you."

"This message (and any associated files) is intended only for the use of the individual or entity to which it is addressed. The content of the message is the property of the Corporation of the Town of Caledon. The message may contain information that is privileged, confidential, subject to copyright and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, you are notified that any dissemination, distribution, copying, or modification of this message is strictly prohibited. If you have received this message in error, please notify the sender

immediately, advising of the error and delete this message without making a copy. (Information related to this email is automatically monitored and recorded and the content may be required to be disclosed by the Town to a third party in certain circumstances). Thank you.”

ATTACHMENT B

Concept Plan



MOUNT PLEASANT RD

KNOWN AS
(ROAD ALLOWANCE BETWEEN CONCESSIONS 8 AND 9)
KNOWN AS
(ROAD ALLOWANCE BETWEEN CONCESSIONS 8 AND 9)

PIN 14332-0049(LT)
PIN 14332-0049(LT)

MOUNT PLEASANT RD

EDGE OF ASPHALT
CENTRELINE OF ROAD
EDGE OF ASPHALT

PART 1, PLAN 43R-10101
PIN 14332-0031(LT)

PART 1, PLAN 43R-31877

PIN 14332-0034(LT)

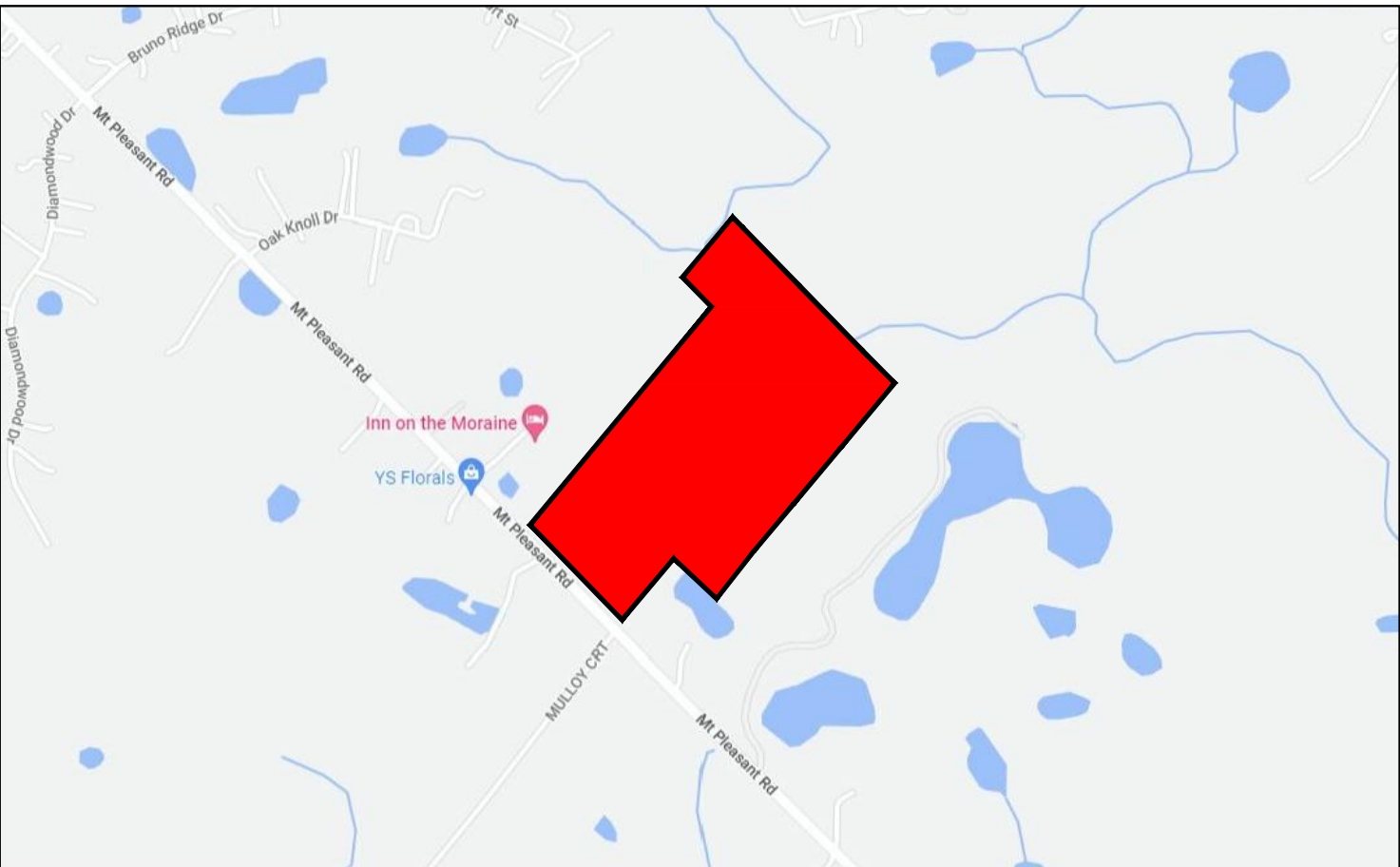
PART 4, PLAN 43R-31877

PART 1, PLAN 43R-20123
PIN 14332-0086(LT)

PART 26, PLAN 43R-21509
PIN 14332-0064(LT)
SUBJECT TO AN EASEMENT AS SET OUT IN INSTRUMENT No. L1764442

PART 23, PLAN 43R-15009
PIN 14332-0064(LT)
SUBJECT TO AN EASEMENT AS SET OUT IN INSTRUMENT No. L1764442

PIN 14332-0029(LT)
SUBJECT TO AN EASEMENT AS SET OUT IN INSTRUMENT No. R0470496



KEY PLAN

Subject Property

Building Envelope

Lot Lines

Structural Envelope

1:200 500 750 1000

metric scale

LEGEND

Subject Property

Building Envelope

Lot Lines

Structural Envelope

| LOT NUMBER | LOT AREA | STRUCTURAL ENVELOPE | BUILDING ENVELOPE | LOT AREA INCLUDING ENVIRONMENTAL FEATURES |
|------------|----------|---------------------|-------------------|---|
| Lot 1 | 0.51 ha | 0.51 ha | 0.036 ha | 2.58 ha |
| Lot 2 | 0.48 ha | 0.48 ha | 0.036 ha | 0.55 ha |
| Lot 3 | 0.51 ha | 0.51 ha | 0.036 ha | 1.37 ha |
| Lot 4 | 0.53 ha | 0.53 ha | 0.036 ha | 1.27 ha |
| Lot 5 | 0.47 ha | 0.47 ha | 0.036 ha | 16.05 ha |
| TOTAL | 2.50 ha | 2.50 ha | 0.18 ha | 21.82 ha |

AREA STATISTICS

Developable Area

Non-Developable Area

EZ1

EZ2

TOTAL

2.90

19.96

19.68

0.32

22.86

NOTES

- All measurements are in meters.
- Structural envelopes to generally be confined to areas with slopes of 10% or less (areas with 11-15% slope and above may be considered in certain instances). (Secondary Plan Policy 7.1.9.11)
- All elevations refer to Geodetic Datum.
- Candidate Environmental Zones 1 & 2 information referenced from Sumac Environmental Consultants Ltd. "Figure 3: Constraints to Develop" Map, Dated 04/06/2022.
- Base Survey information was referenced from Surveyor's Real Property Report - Part 1 - Plan Showing - PART 1 - Plan Showing PART 1 OF LOT 18 CONCESSION 9, Geographic Township of Albion, Town of Caledon - Regional Municipality of Peel from Guido Papa Surveying - A division of J.D. Barnes Limited, Dated May 13, 2022.
- On this plan, the lot area shown excludes any land that falls under the EZ 1 and EZ 2 environmental constraints.

PART 1 OF LOT 18
CONCESSION 9
GEOGRPAHC TOWNSHIP OF ALBION
NOW IN THE
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

DESIGN PLAN SERVICES INC.
Town Planning Consultants

D
P
S

900 The East Mall, Suite 300
Toronto, ON M9B 6K2
Telephone: 416.626.5445
www.designplan.ca

1:1200
Scale

April 12, 2024
Date

21303-16E
Drawing Number

JD
Rev.

JD
Drawn

DRAFT FOR DISCUSSION PURPOSES ONLY

ATTACHMENT C

Road Classification Maps



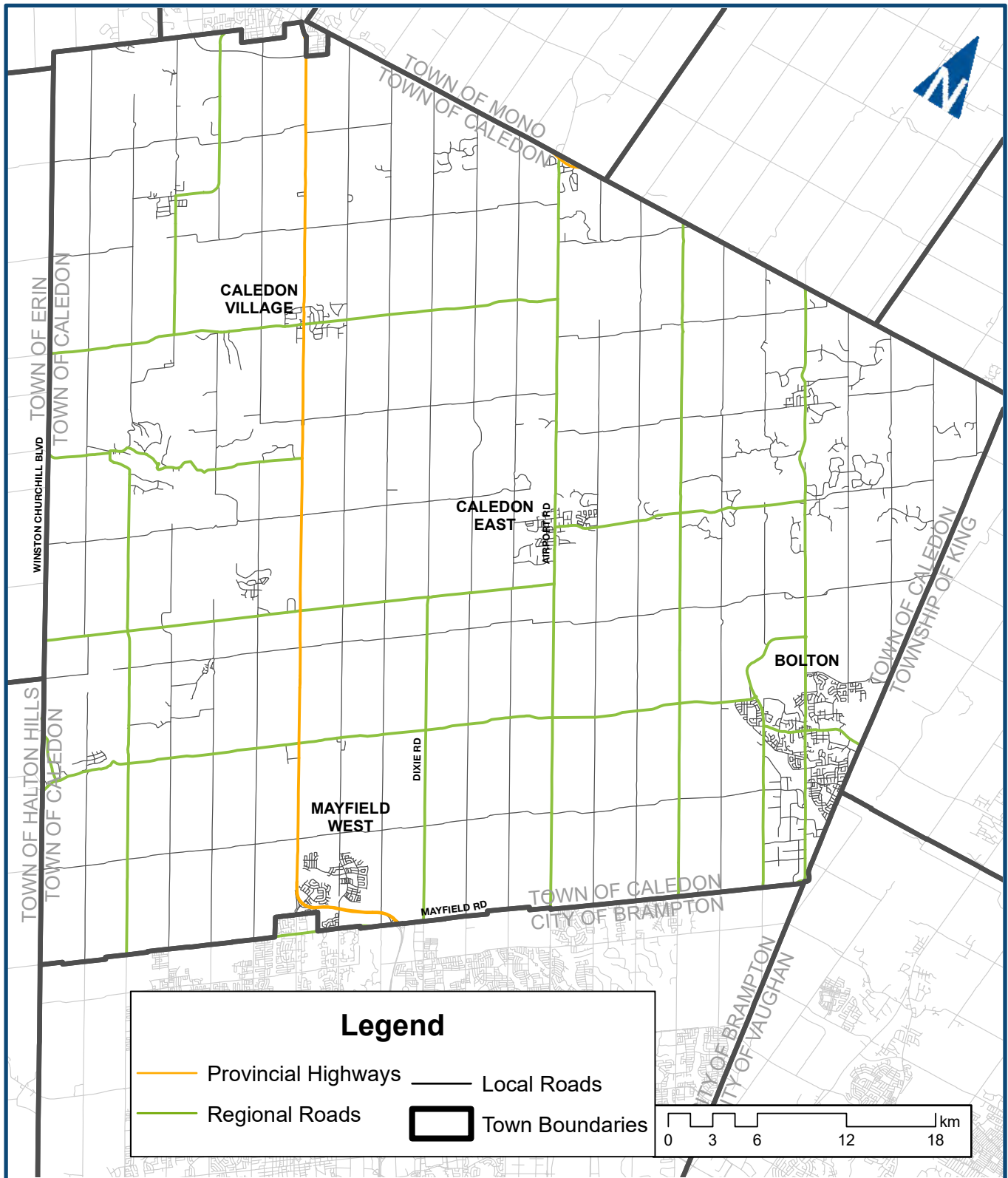
Transportation Master Plan

October 2017

Final Report



Since 1983



Transportation Master Plan Study Area



Caledon Transportation Master Plan

Figure 1.1

ATTACHMENT D

ITE Trip Generation Manual 11th Edition Excerpts

Land Use: 210

Single-Family Detached Housing

Description

A single-family detached housing site includes any single-family detached home on an individual lot. A typical site surveyed is a suburban subdivision.

Specialized Land Use

Data have been submitted for several single-family detached housing developments with homes that are commonly referred to as patio homes. A patio home is a detached housing unit that is located on a small lot with little (or no) front or back yard. In some subdivisions, communal maintenance of outside grounds is provided for the patio homes. The three patio home sites total 299 dwelling units with overall weighted average trip generation rates of 5.35 vehicle trips per dwelling unit for weekday, 0.26 for the AM adjacent street peak hour, and 0.47 for the PM adjacent street peak hour. These patio home rates based on a small sample of sites are lower than those for single-family detached housing (Land Use 210), lower than those for single-family attached housing (Land Use 251), and higher than those for senior adult housing -- single-family (Land Use 251). Further analysis of this housing type will be conducted in a future edition of *Trip Generation Manual*.

Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

For 30 of the study sites, data on the number of residents and number of household vehicles are available. The overall averages for the 30 sites are 3.6 residents per dwelling unit and 1.5 vehicles per dwelling unit.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Arizona, California, Connecticut, Delaware, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Minnesota, Montana, New Jersey, North Carolina, Ohio, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Vermont, Virginia, and West Virginia.

Source Numbers

100, 105, 114, 126, 157, 167, 177, 197, 207, 211, 217, 267, 275, 293, 300, 319, 320, 356, 357, 367, 384, 387, 407, 435, 522, 550, 552, 579, 598, 601, 603, 614, 637, 711, 716, 720, 728, 735, 868, 869, 903, 925, 936, 1005, 1007, 1008, 1010, 1033, 1066, 1077, 1078, 1079

Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 174

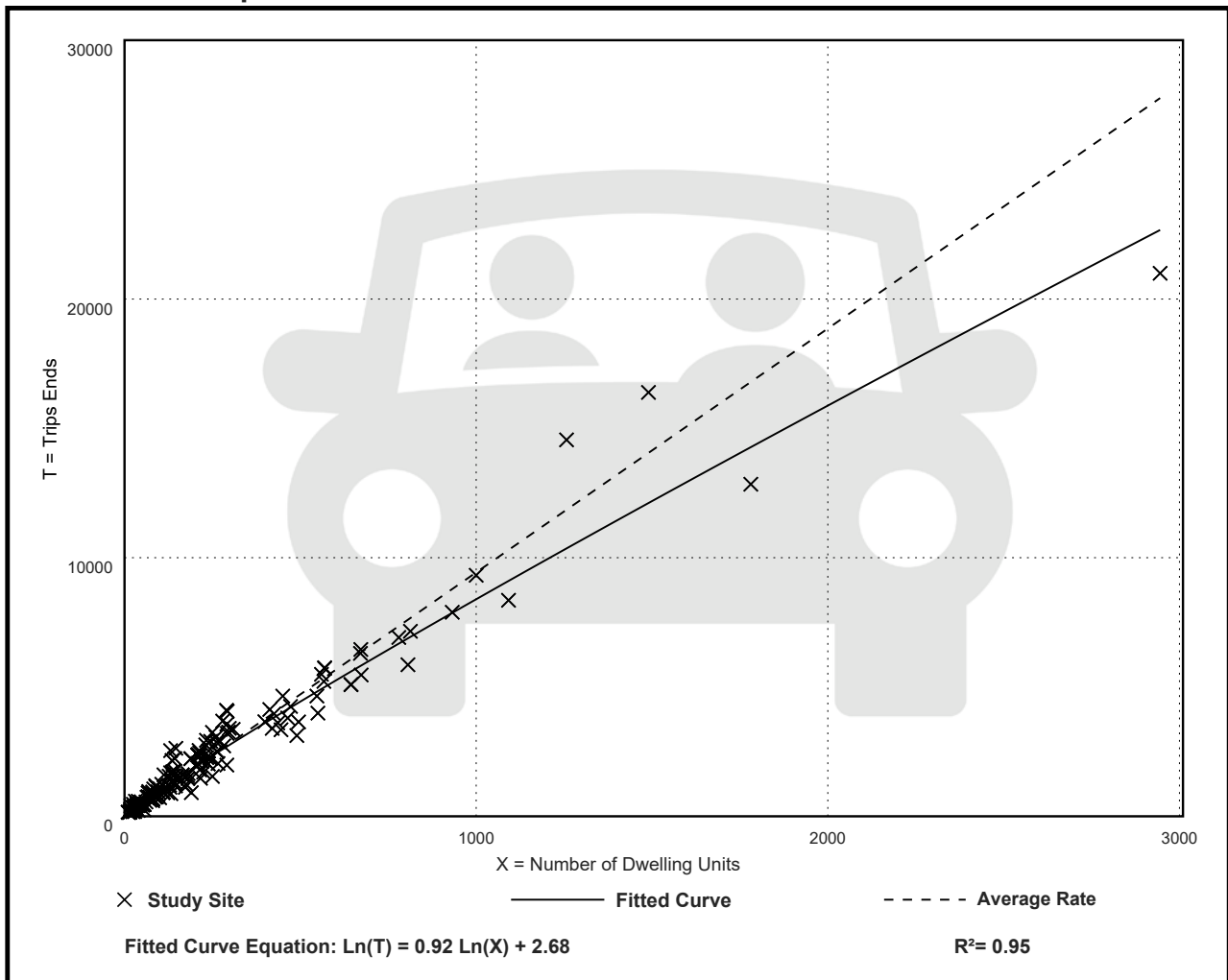
Avg. Num. of Dwelling Units: 246

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 9.43 | 4.45 - 22.61 | 2.13 |

Data Plot and Equation



Single-Family Detached Housing (210)

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: 192

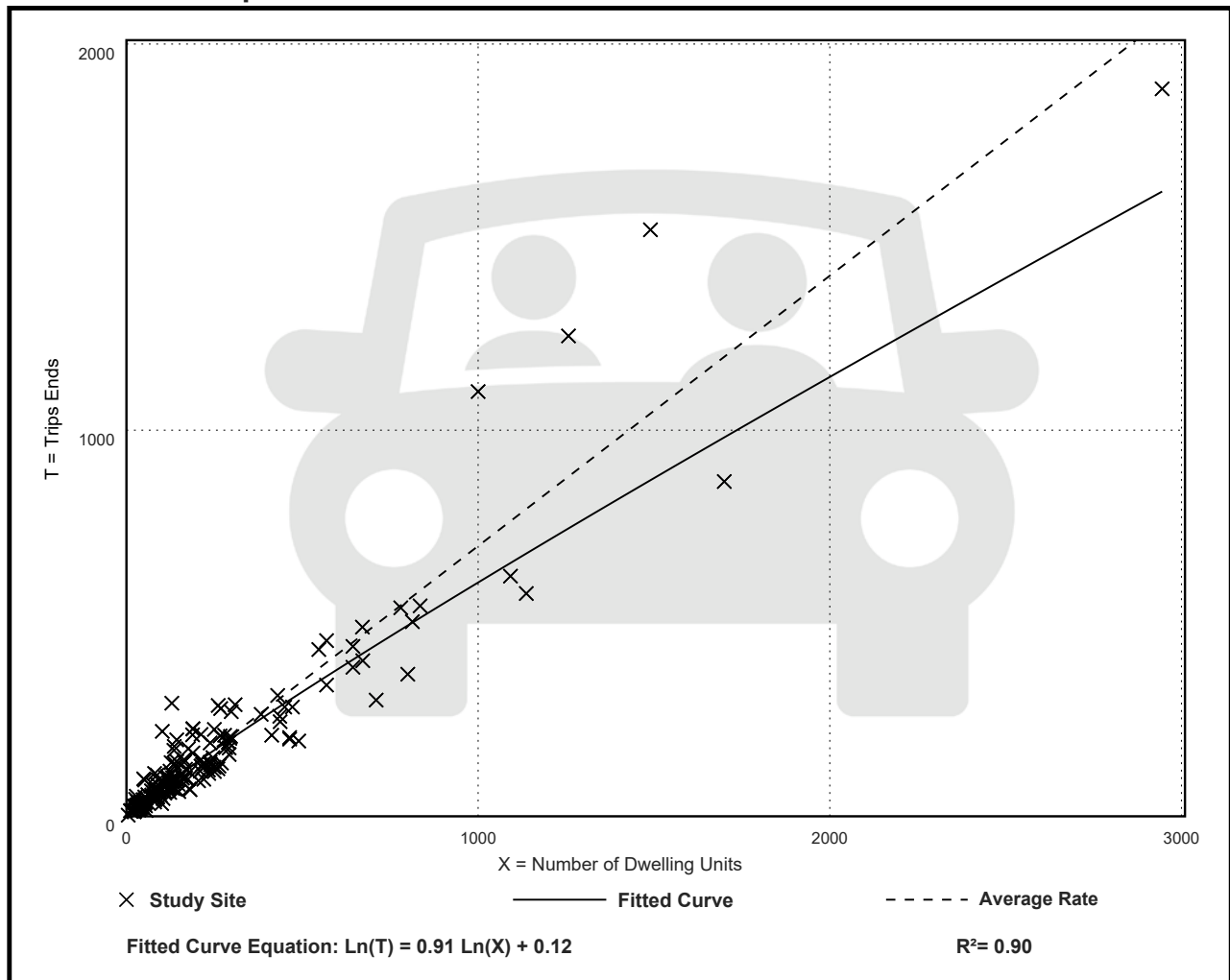
Avg. Num. of Dwelling Units: 226

Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.70 | 0.27 - 2.27 | 0.24 |

Data Plot and Equation



Single-Family Detached Housing (210)

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: 208

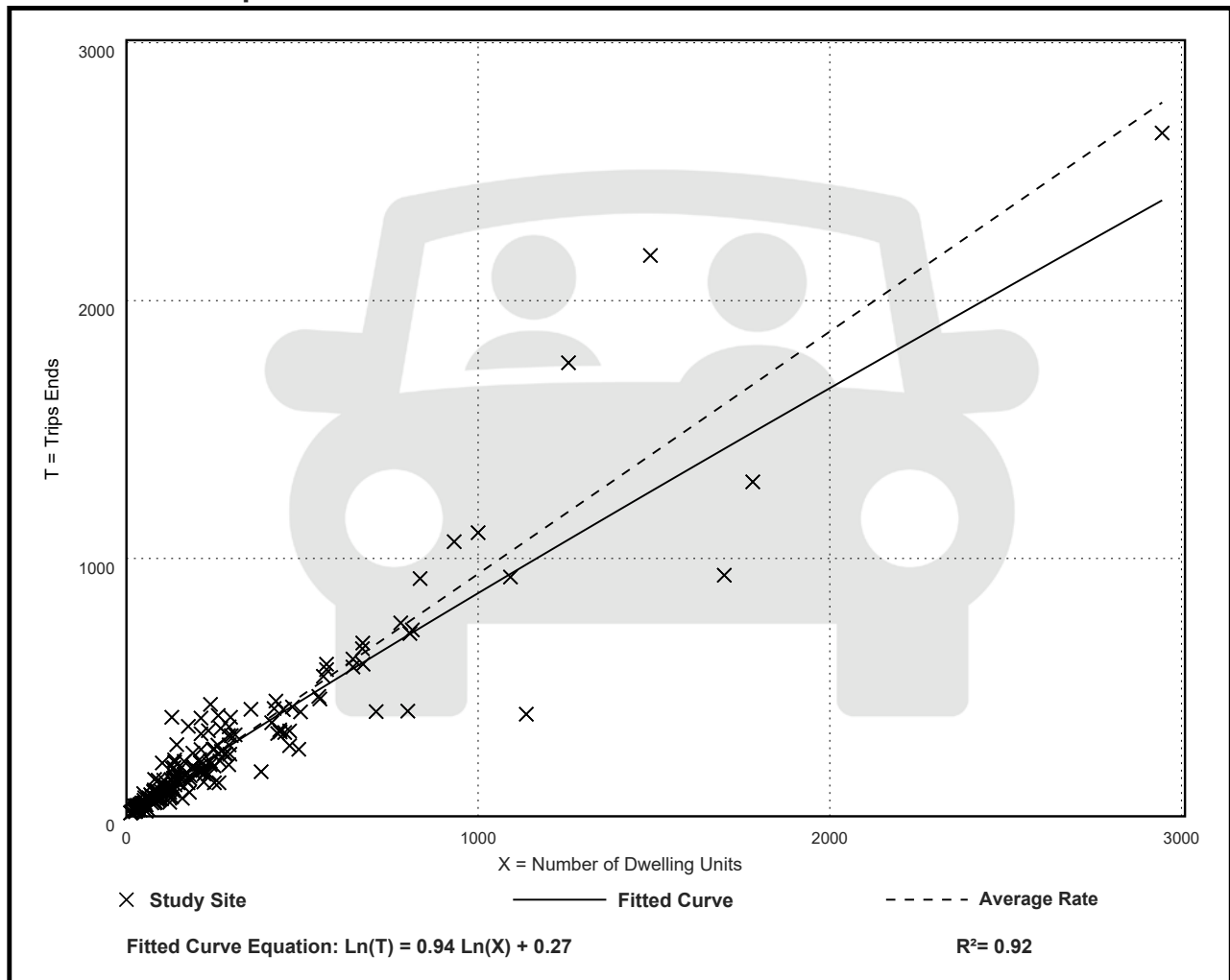
Avg. Num. of Dwelling Units: 248

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.94 | 0.35 - 2.98 | 0.31 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 169

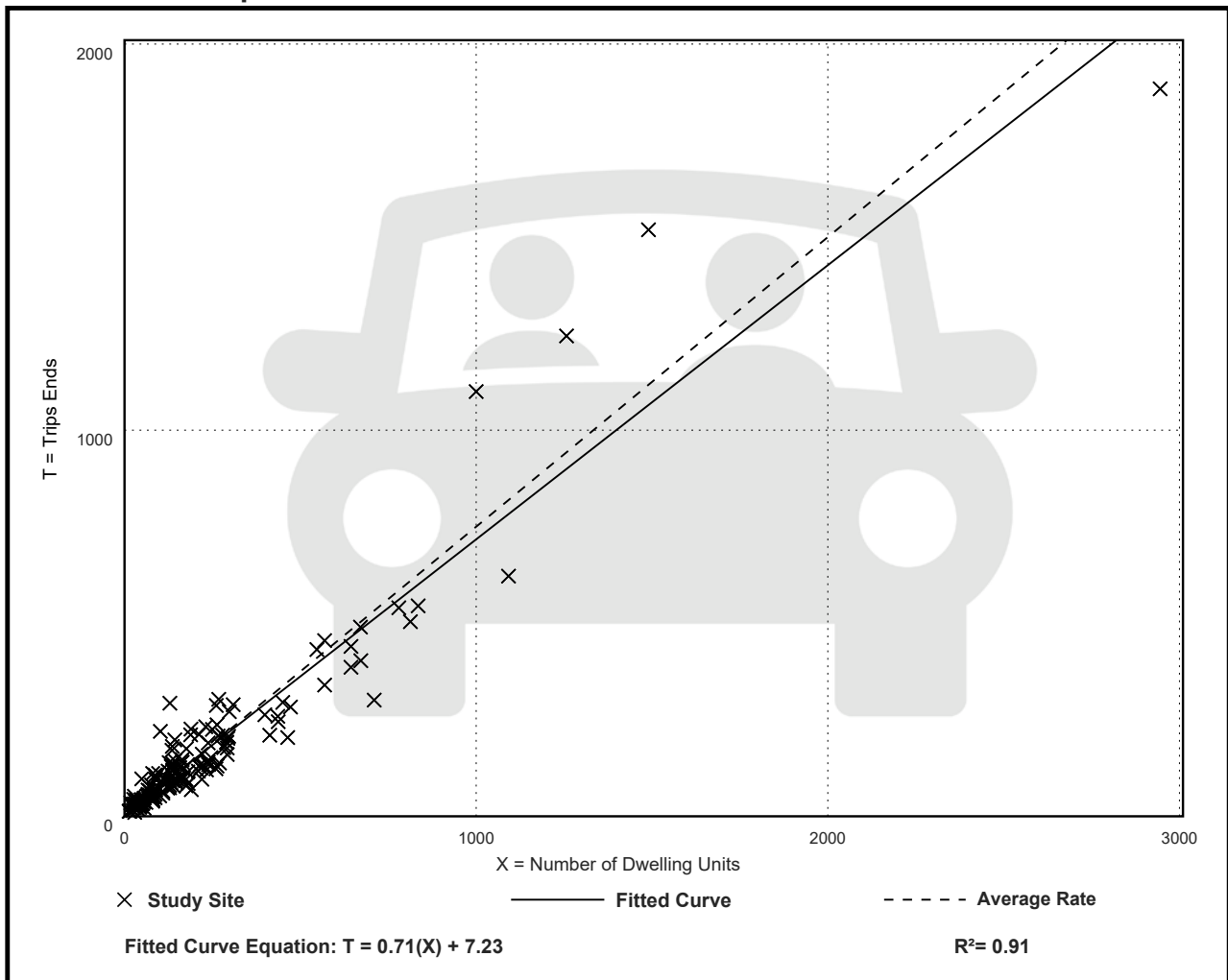
Avg. Num. of Dwelling Units: 217

Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.75 | 0.34 - 2.27 | 0.25 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 178

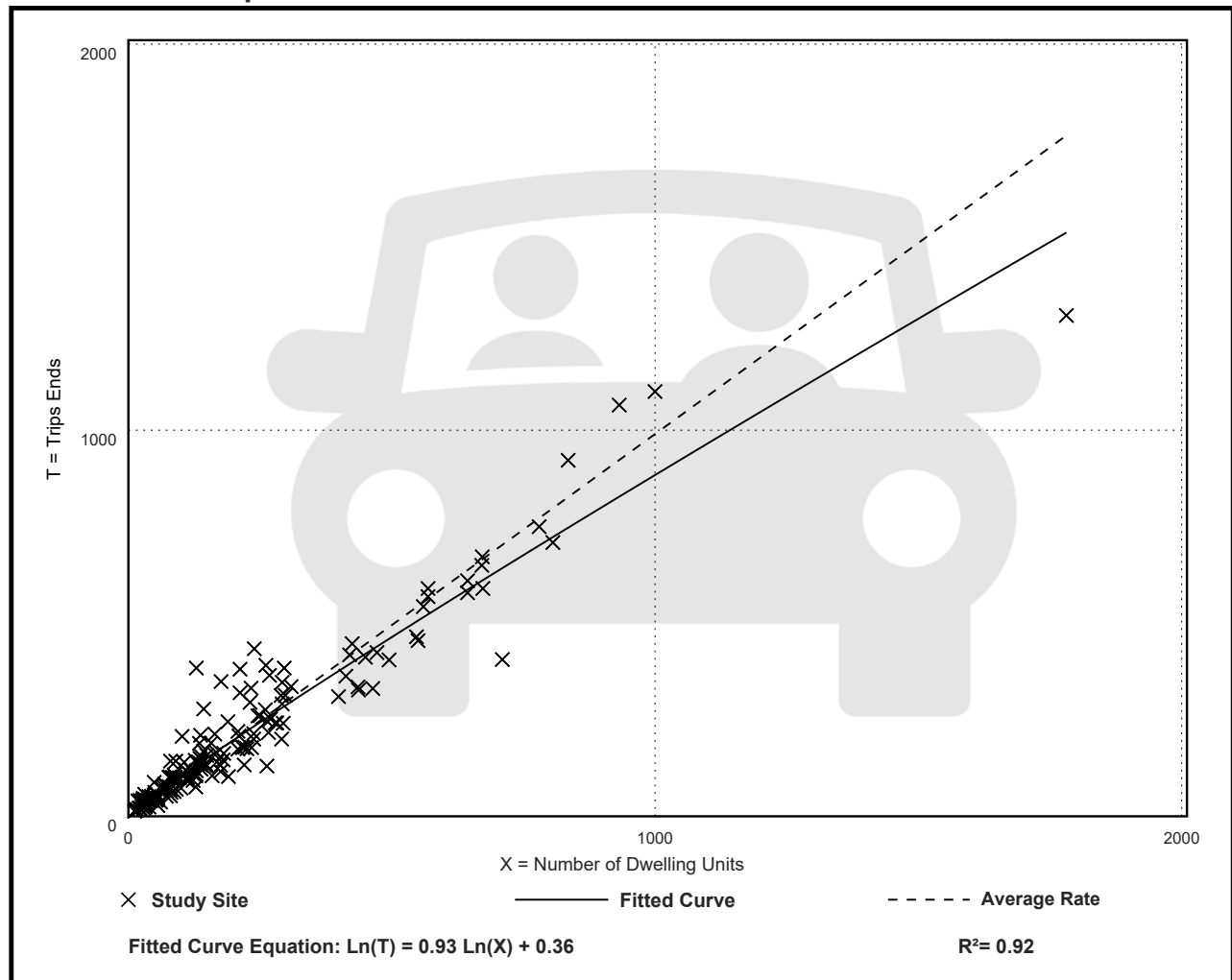
Avg. Num. of Dwelling Units: 203

Directional Distribution: 64% entering, 36% exiting

Vehicle Trip Generation per Dwelling Unit

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.99 | 0.49 - 2.98 | 0.28 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units
On a: Saturday

Setting/Location: General Urban/Suburban

Number of Studies: 63

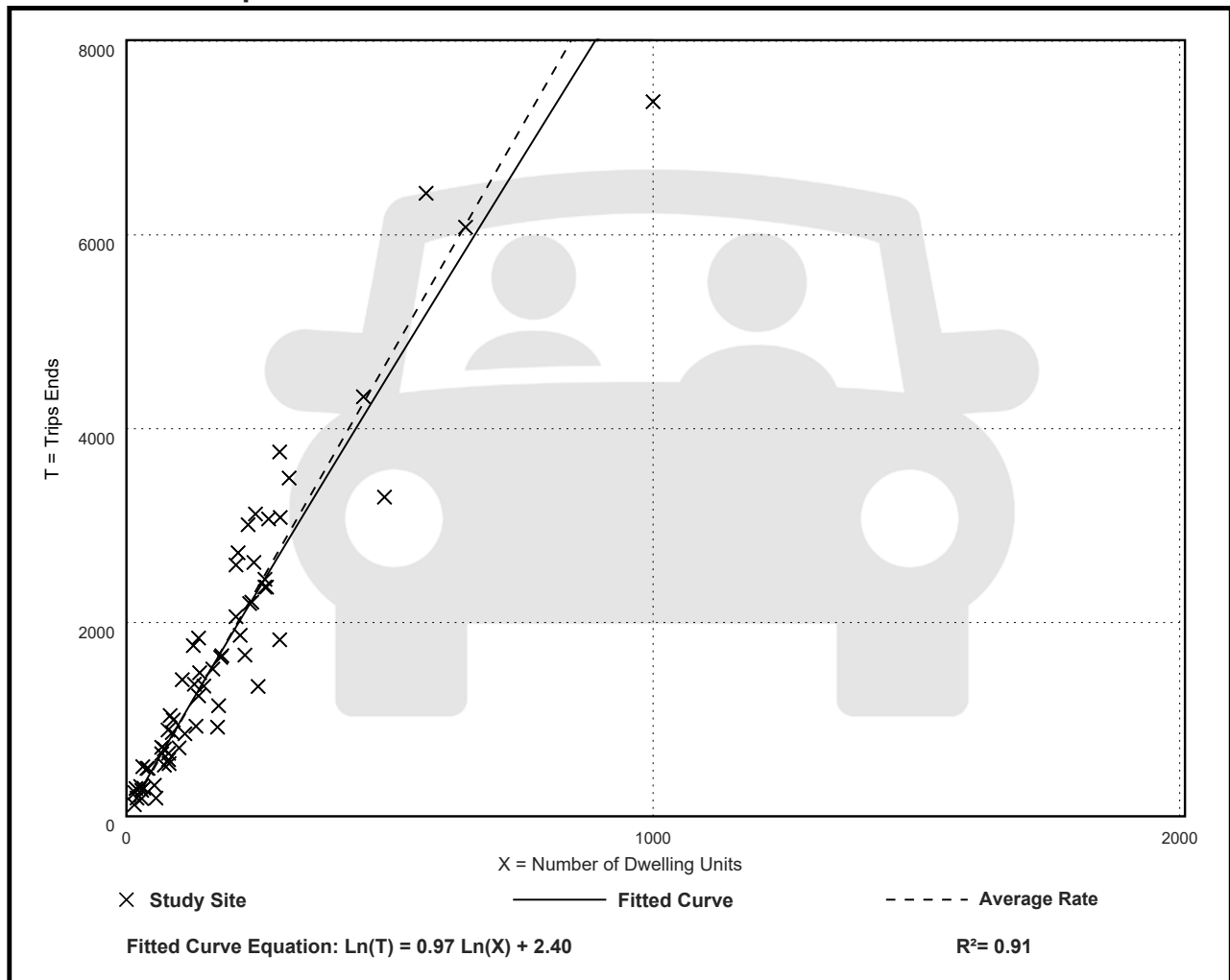
Avg. Num. of Dwelling Units: 179

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 9.48 | 3.36 - 16.52 | 2.26 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 42

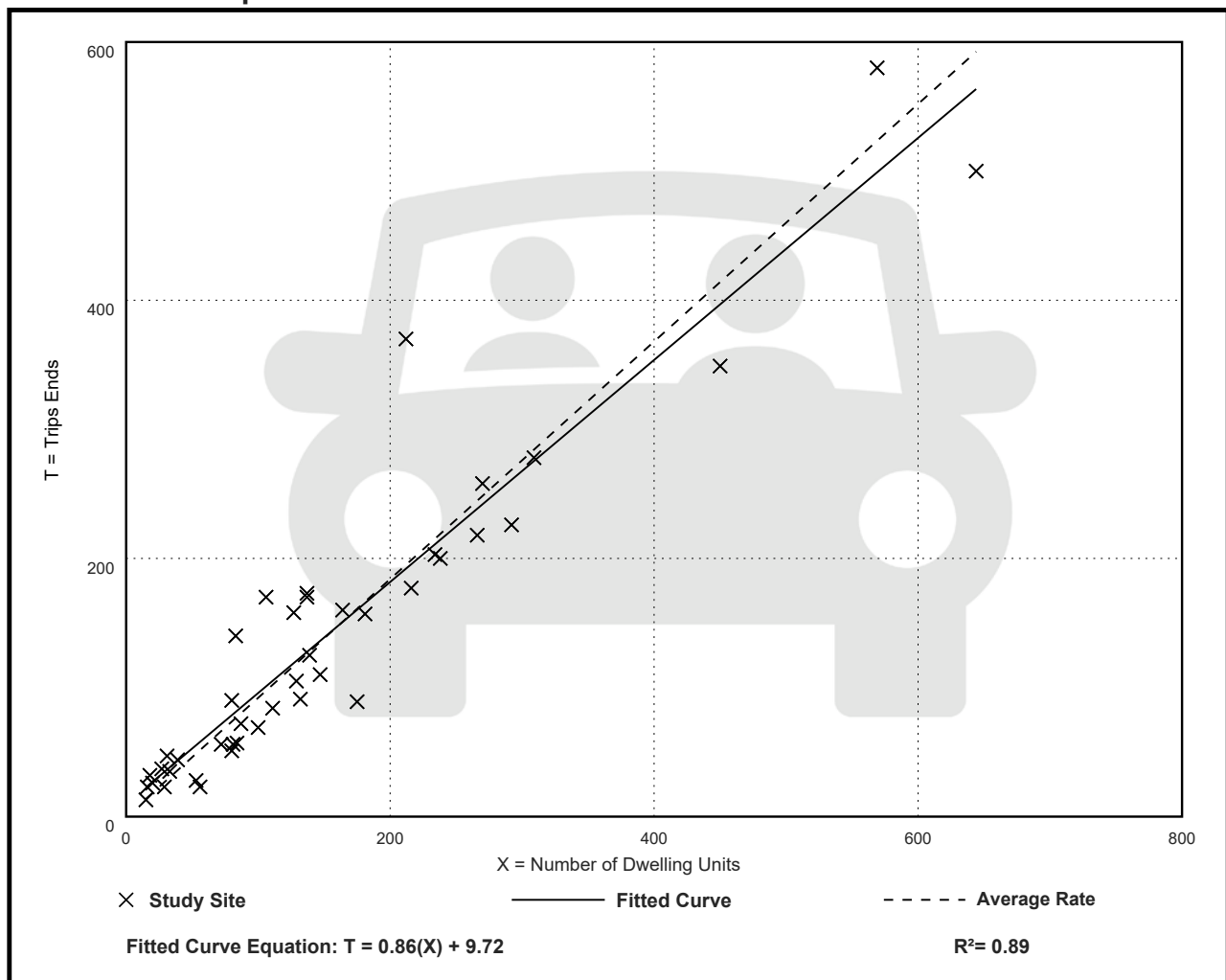
Avg. Num. of Dwelling Units: 152

Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per Dwelling Unit

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.92 | 0.41 - 1.78 | 0.27 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units
On a: Sunday

Setting/Location: General Urban/Suburban

Number of Studies: 60

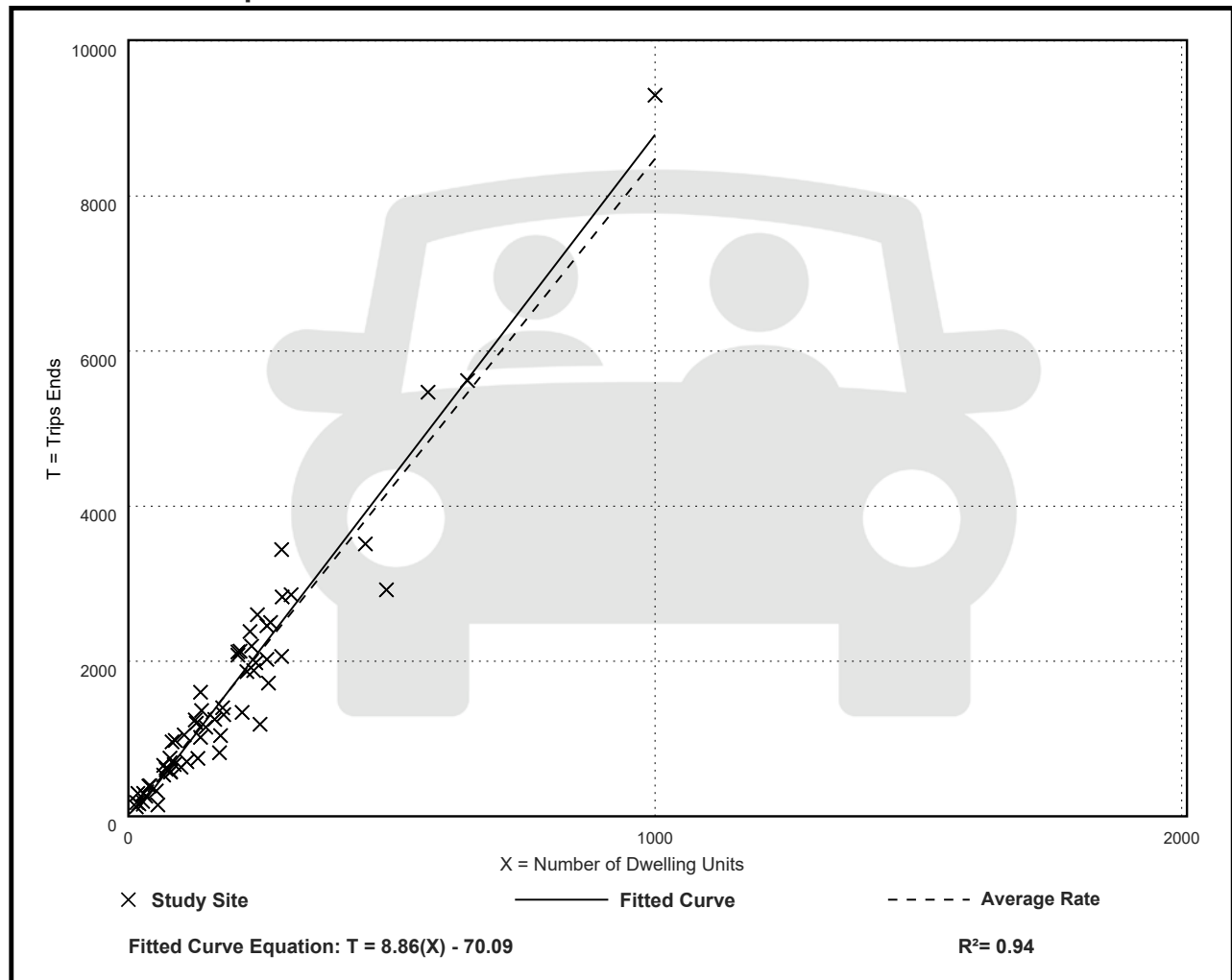
Avg. Num. of Dwelling Units: 186

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 8.48 | 2.61 - 16.44 | 1.74 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 40

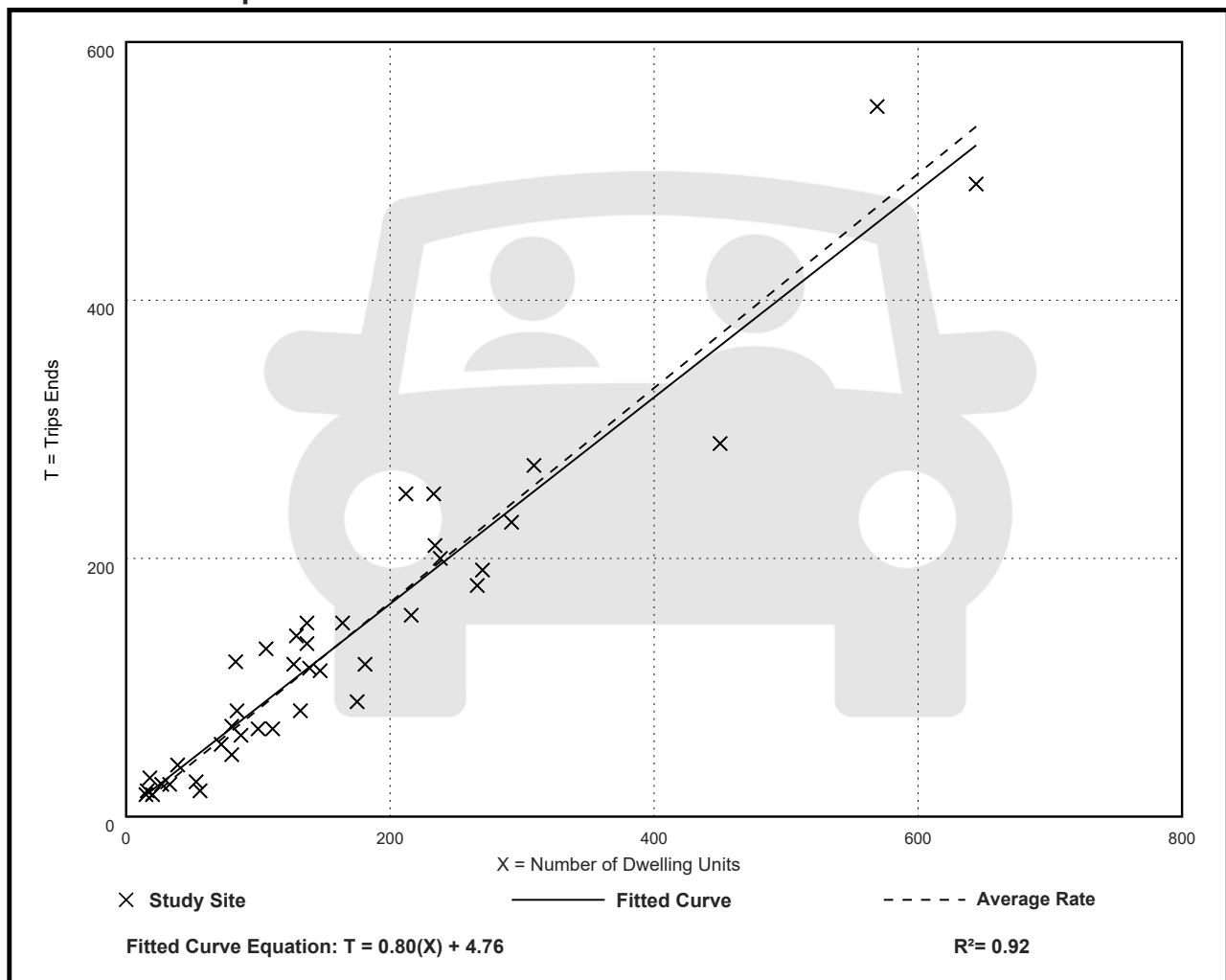
Avg. Num. of Dwelling Units: 162

Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per Dwelling Unit

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.83 | 0.36 - 1.67 | 0.19 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Residents

On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 30

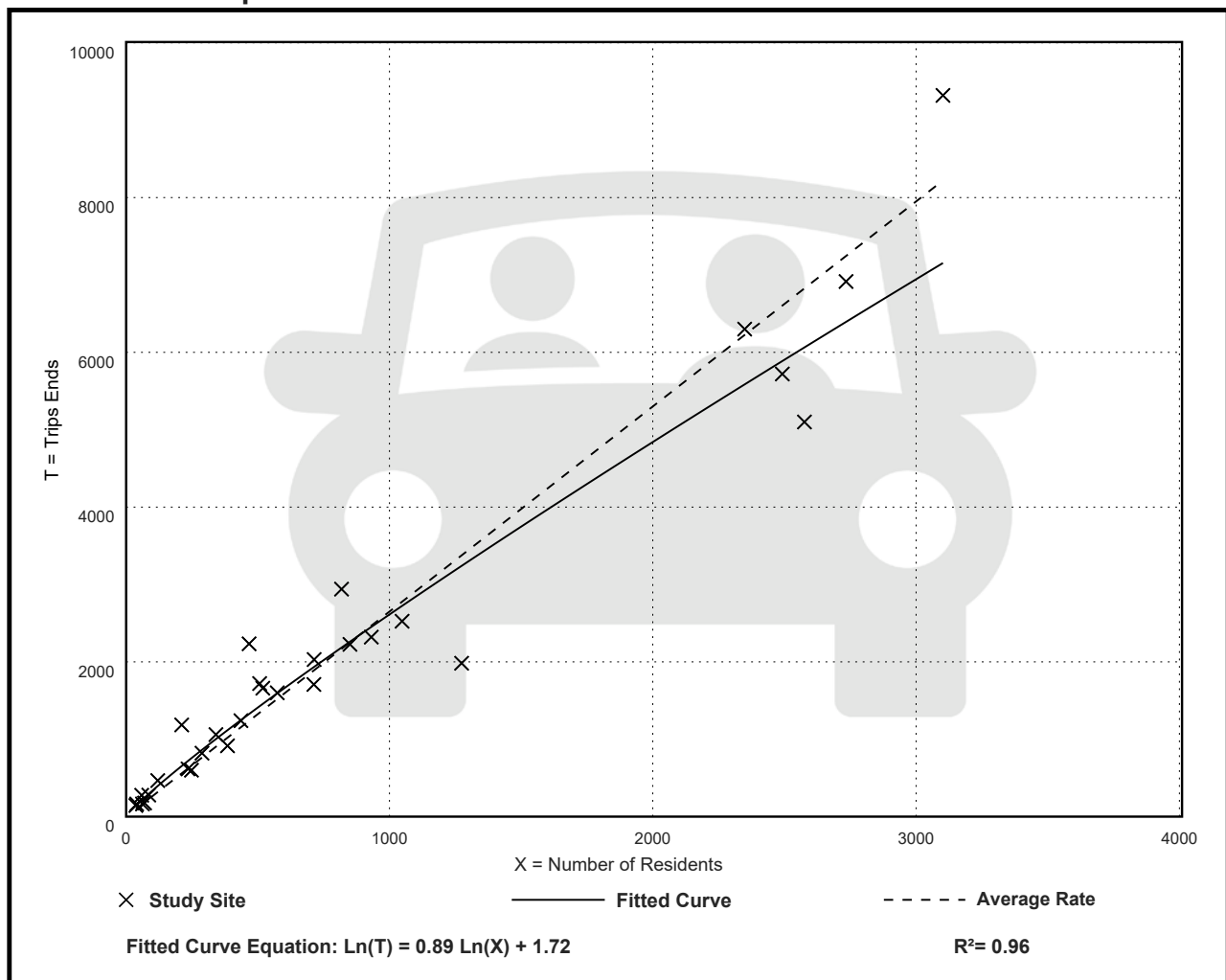
Avg. Num. of Residents: 810

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 2.65 | 1.56 - 5.62 | 0.64 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Residents

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: 21

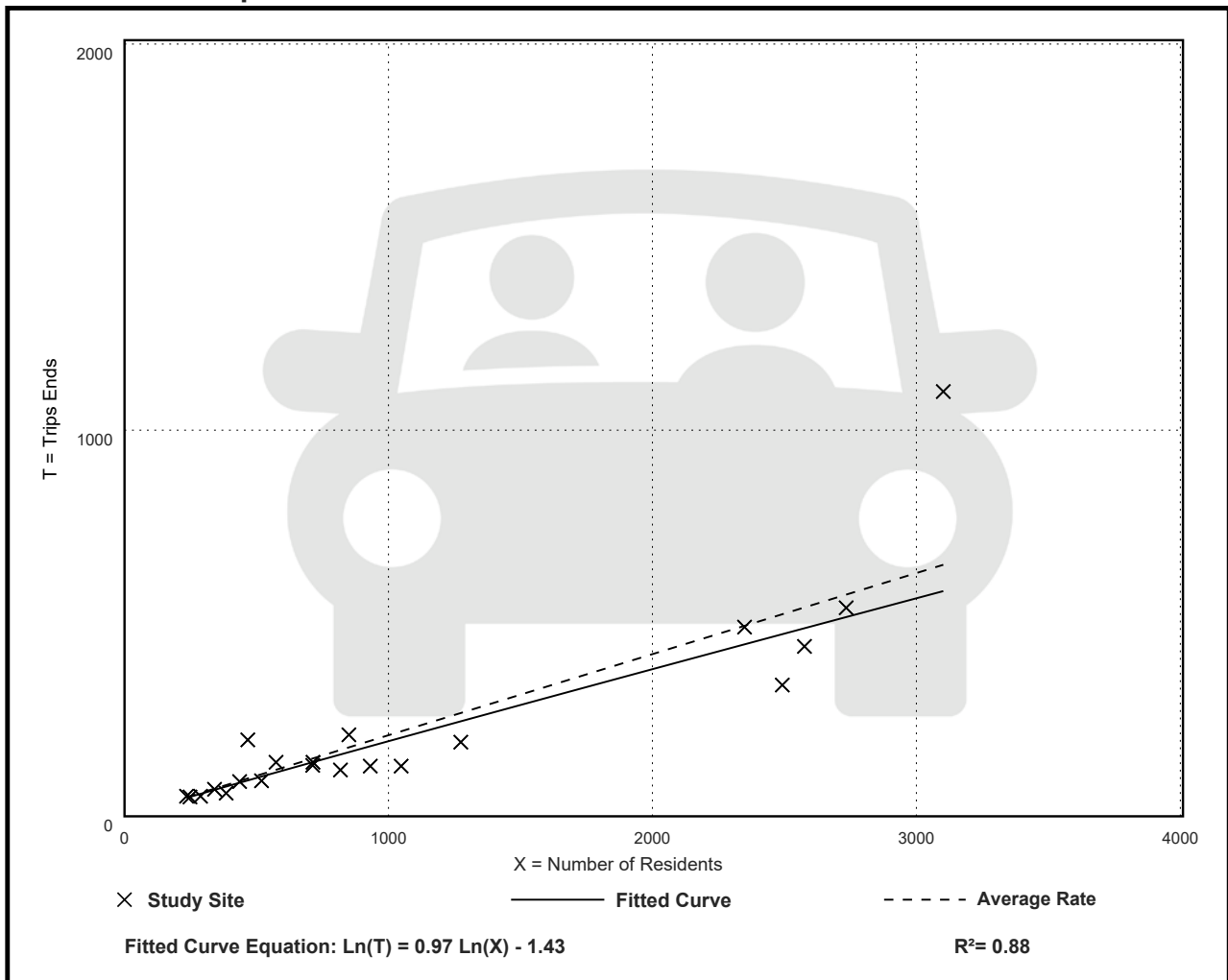
Avg. Num. of Residents: 1100

Directional Distribution: 31% entering, 69% exiting

Vehicle Trip Generation per Resident

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.21 | 0.12 - 0.42 | 0.08 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Residents

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: 21

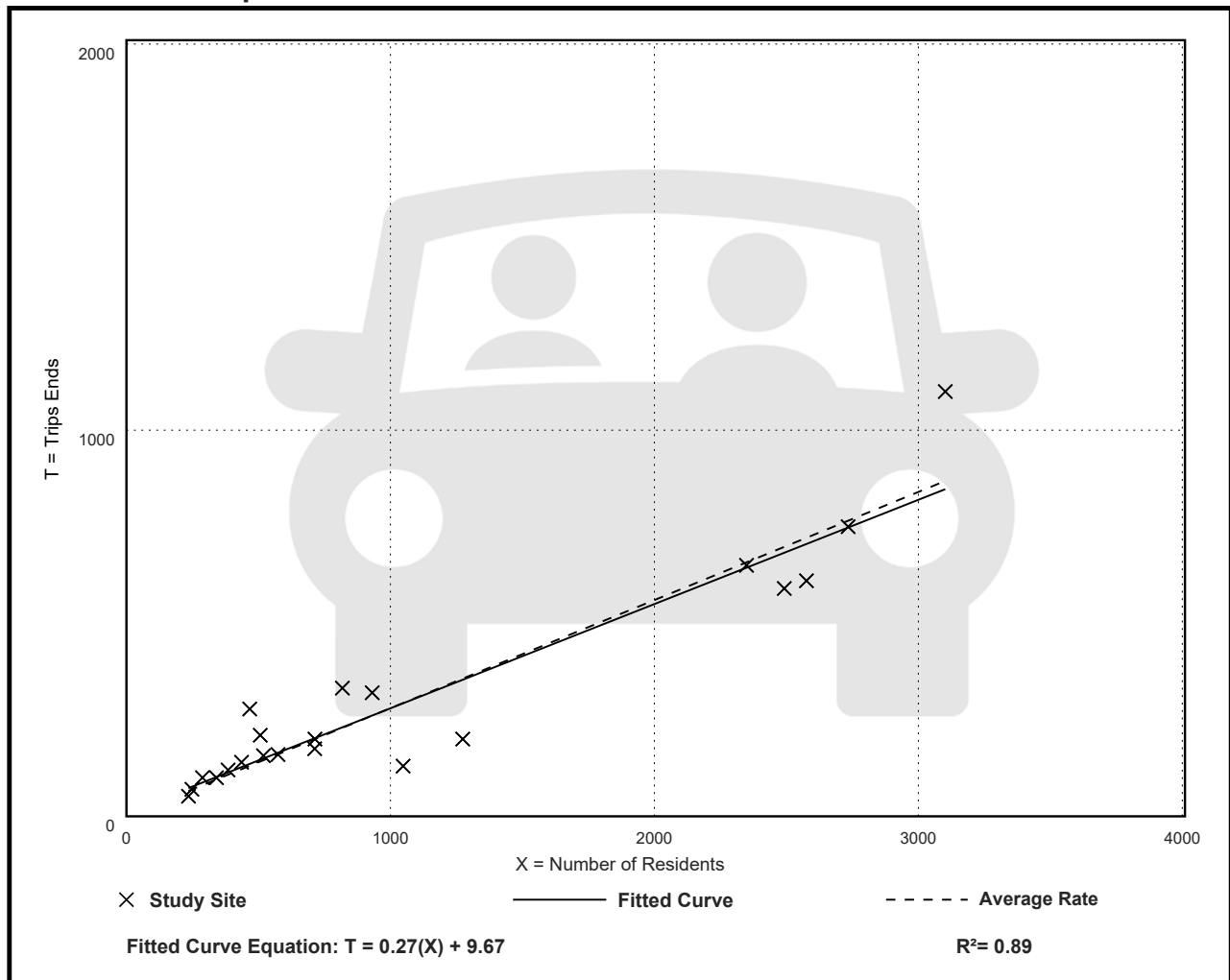
Avg. Num. of Residents: 1083

Directional Distribution: 66% entering, 34% exiting

Vehicle Trip Generation per Resident

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.28 | 0.12 - 0.60 | 0.08 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Residents

On a: Weekday,

AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 22

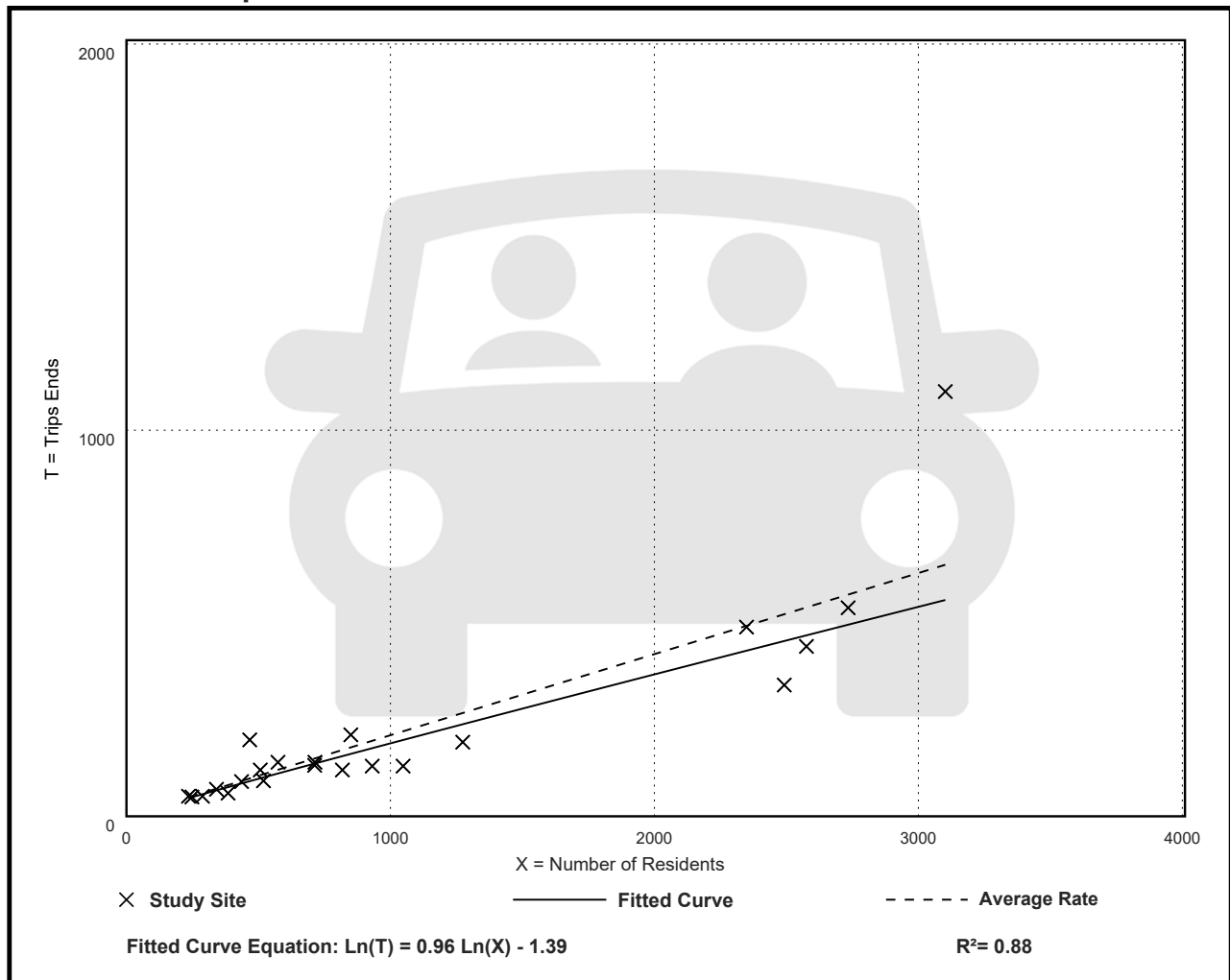
Avg. Num. of Residents: 1073

Directional Distribution: 30% entering, 70% exiting

Vehicle Trip Generation per Resident

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.21 | 0.12 - 0.42 | 0.08 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Residents

On a: Weekday,

PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 21

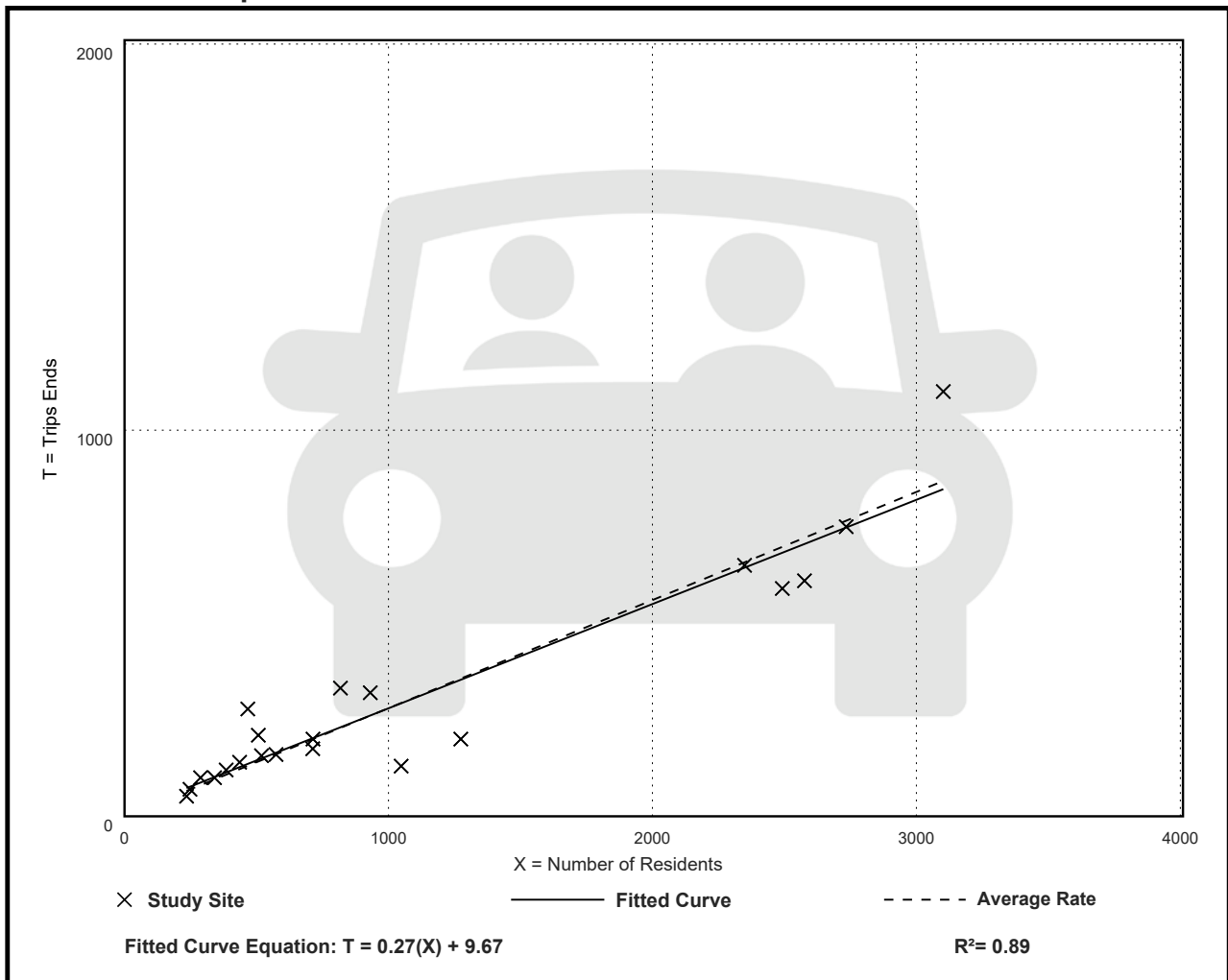
Avg. Num. of Residents: 1083

Directional Distribution: 66% entering, 34% exiting

Vehicle Trip Generation per Resident

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.28 | 0.12 - 0.60 | 0.08 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Residents

On a: Saturday

Setting/Location: General Urban/Suburban

Number of Studies: 14

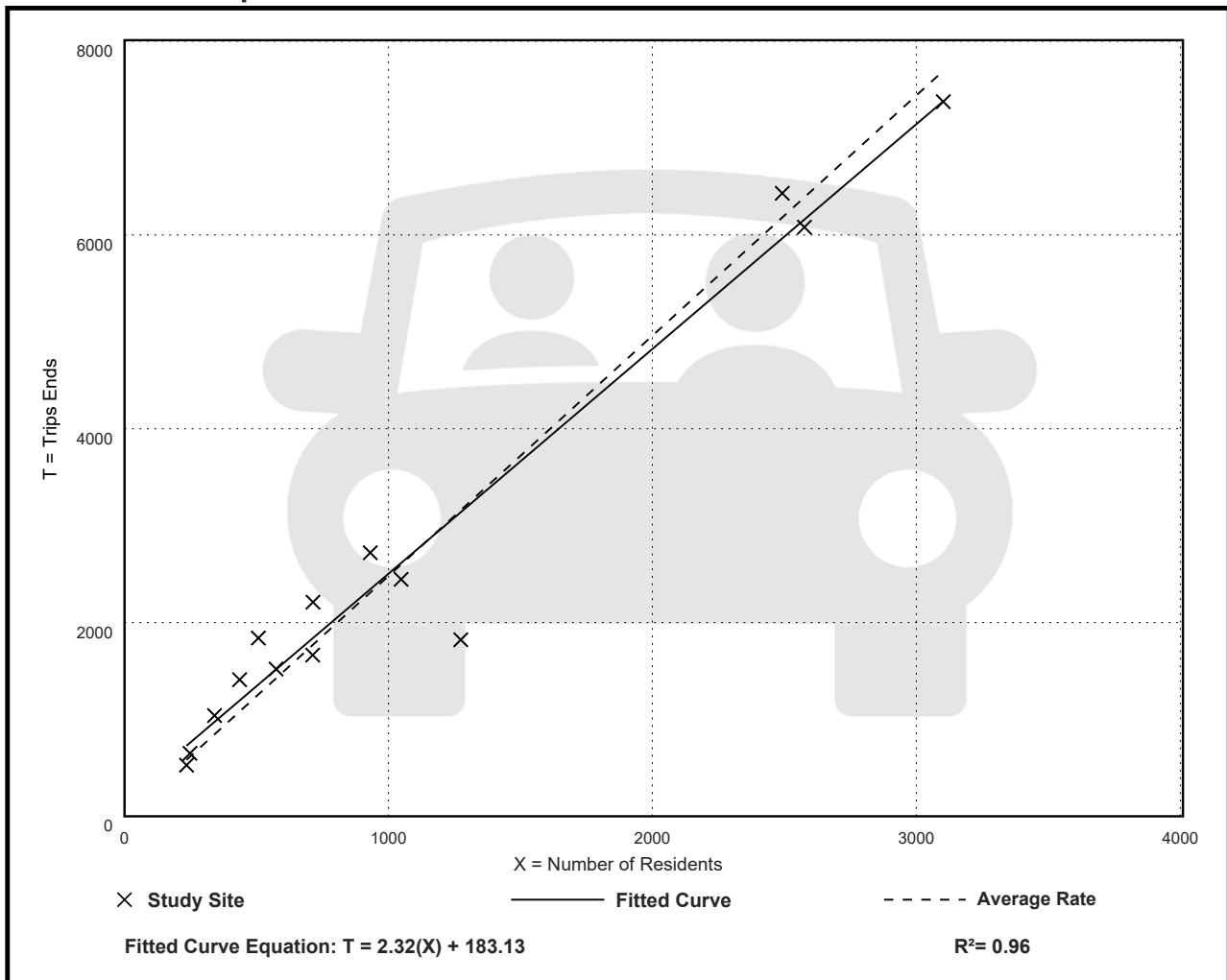
Avg. Num. of Residents: 1085

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 2.48 | 1.43 - 3.63 | 0.46 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Residents

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 11

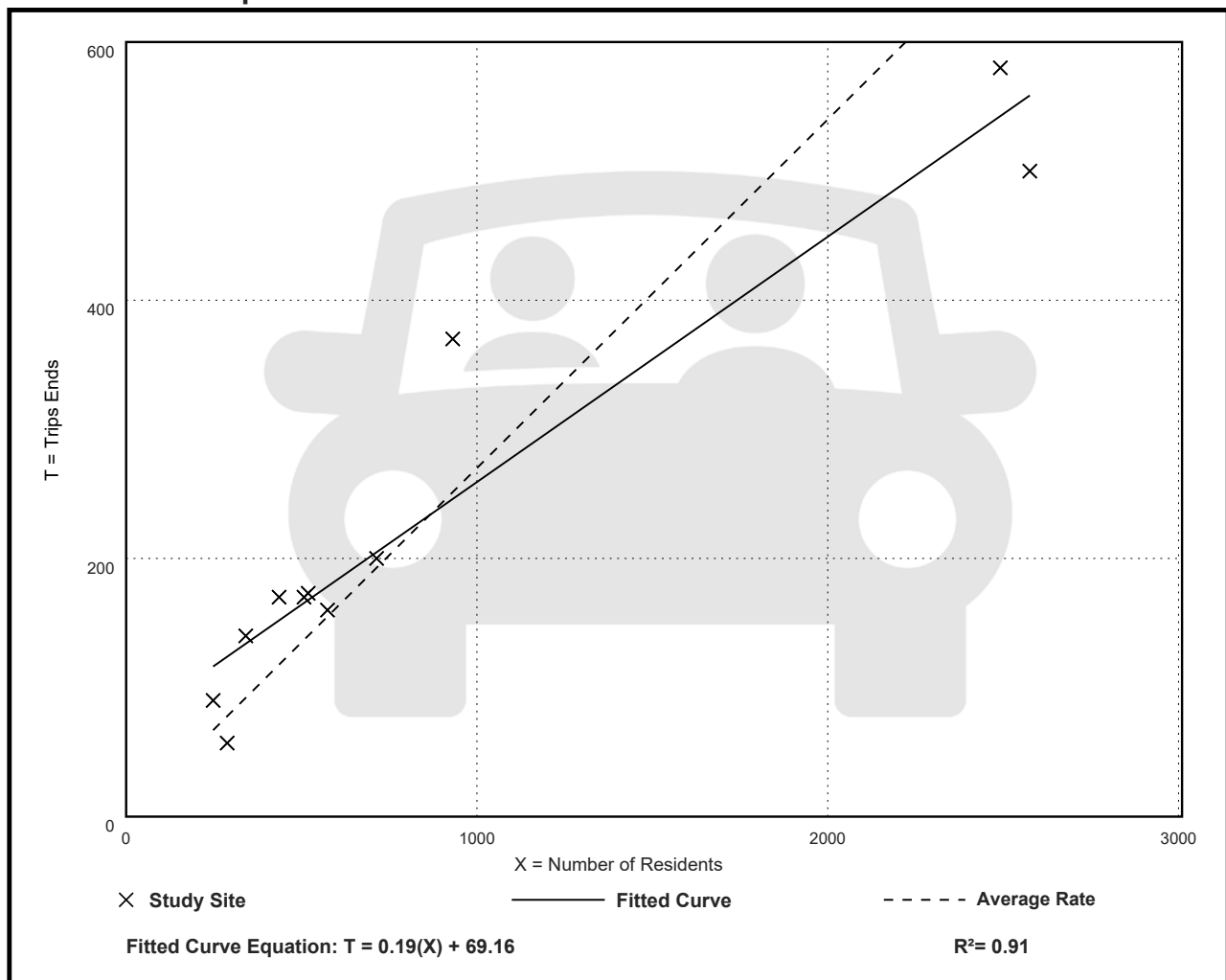
Avg. Num. of Residents: 875

Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per Resident

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.27 | 0.19 - 0.41 | 0.08 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Residents

On a: Sunday

Setting/Location: General Urban/Suburban

Number of Studies: 14

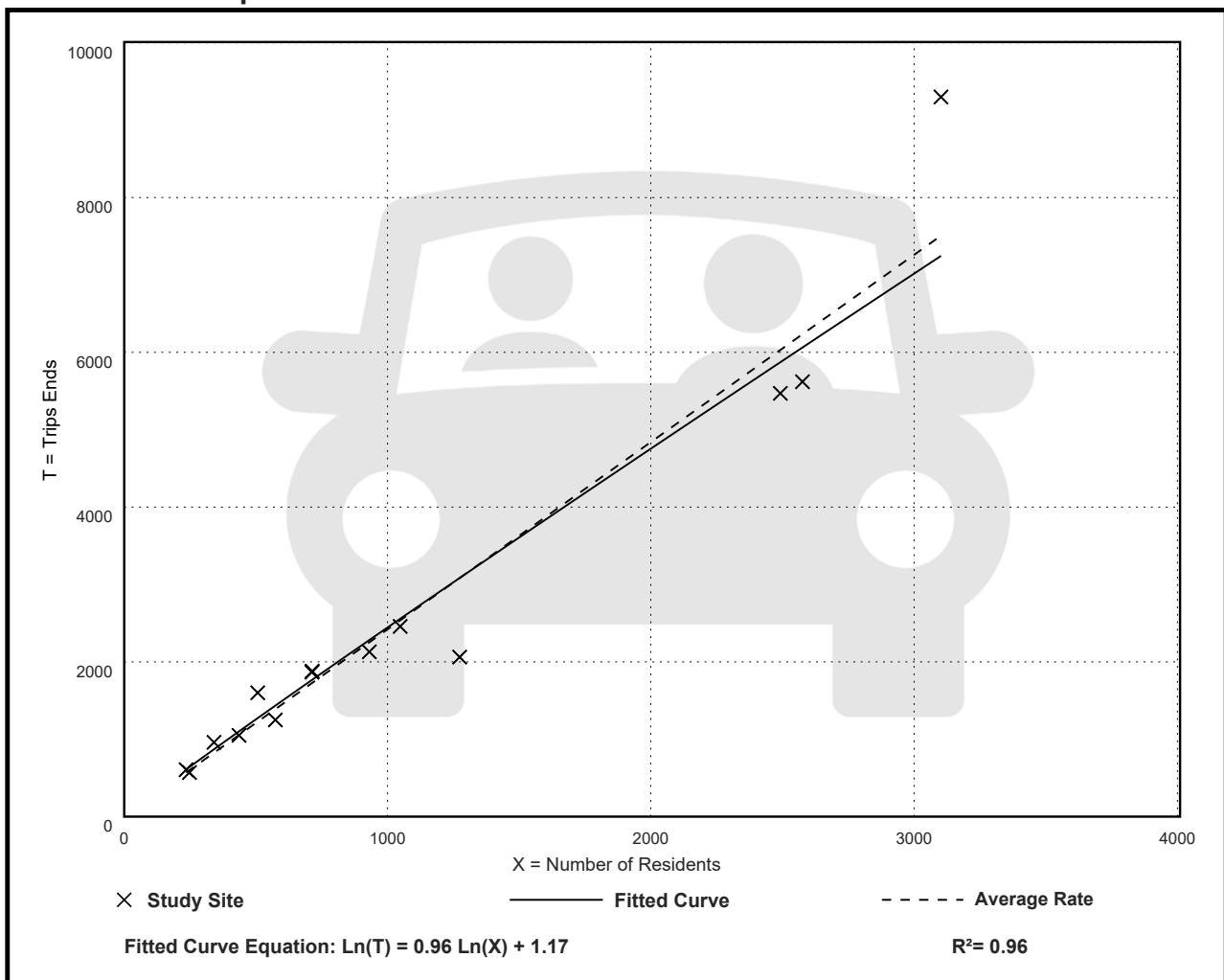
Avg. Num. of Residents: 1085

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 2.42 | 1.62 - 3.16 | 0.43 |

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Residents

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 12

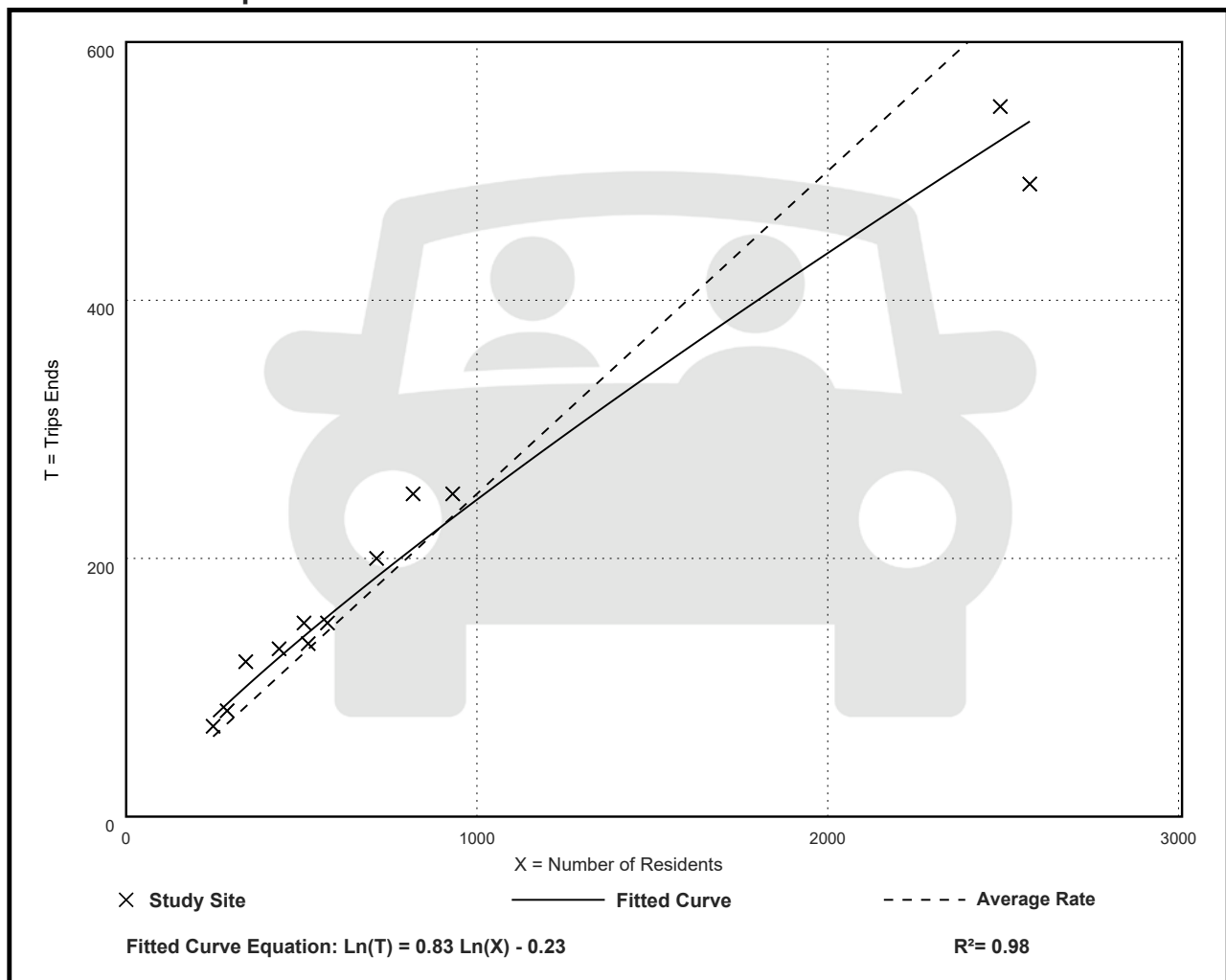
Avg. Num. of Residents: 870

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.25 | 0.19 - 0.35 | 0.05 |

Data Plot and Equation



ATTACHMENT E

TAC Excerpts

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/s²)

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 Automobiles⁵⁴

| 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/s² 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:

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

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.

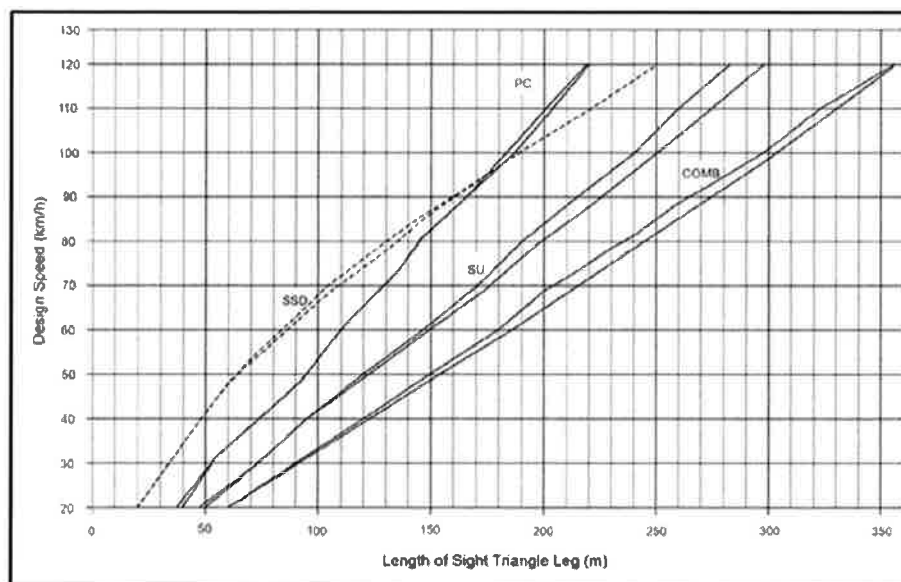


Figure 9.9.5: Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver (Calculated and Design Values Plotted)

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.

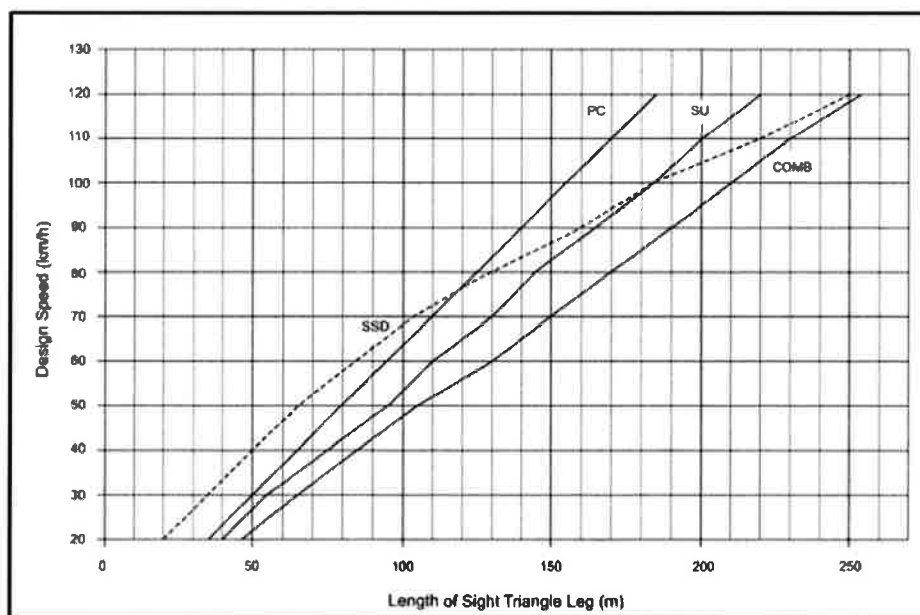


Figure 9.9.8: Intersection Sight Distance – Case F, Left Turn from the Major Road

ATTACHMENT F

Geometric Design Standards

DEVELOPMENT STANDARDS MANUAL

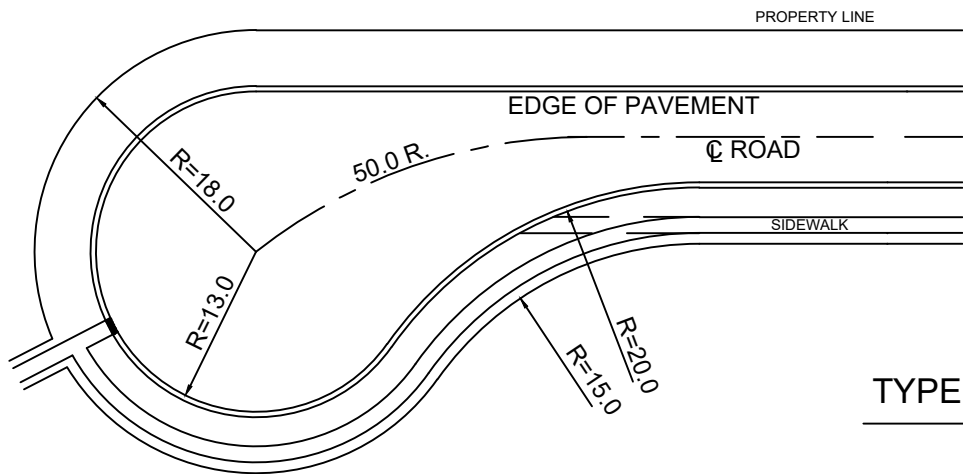
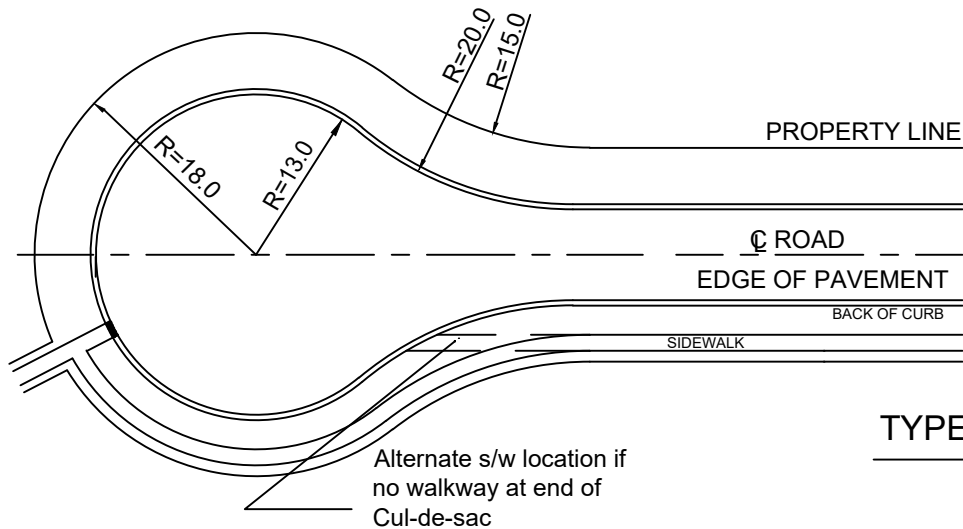


***Version 5.0
2019***

**TABLE 1.2
TOWN OF CALEDON
GEOMETRIC ROAD DESIGN STANDARDS**

| | ADT | Posted Speed (km/h) | Hor. Curve Rad. (m) | Vert. Curve (Min. k) | | Road Grade | | Grade at Intersections | | R.O.W Width (m) | Pav't Width (m) | Inter-section Angle | Cul-de-sac | |
|-----------------------|--------------|---------------------|---------------------|----------------------|-------|------------|----------|------------------------|---------|-----------------|-----------------|---------------------|----------------|-----------|
| | | | | Sag | Crest | Max. (%) | Min. (%) | Stop | Through | | | | Radius Pav (m) | Max Grade |
| Local Residential | <1000 | 50 | 90 | 12 | 8 | 6.0% | 0.75% | 2.0% | 3.0% | 18 | 7.9 | 85->95 | 15 | 3.0% |
| Local Industrial | <1000 | 50 | 115 | 18 | 15 | 4.0% | 0.75% | 2.0% | 3.0% | 22.5 | 10.4 | 85->95 | 20 | 3.0% |
| Residential Collector | 1000 to 3000 | 60 | 130 | 18 | 15 | 6.0% | 0.75% | 2.0% | 3.0% | 20 | 8.9 | 85->95 | N/A | N/A |
| Industrial Collector | 1000 to 3000 | 70 | 190 | 25 | 25 | 6.0% | 0.75% | 2.0% | 3.0% | 26 | 13.9 | 85->95 | N/A | N/A |
| Arterial | > 6000 | 80 | 250 | 30 | 35 | 6.0% | 0.75% | 2.0% | 3.0% | 30 | 7.0-15.0 | 85->95 | N/A | N/A |

| | |
|---|---|
| 1. Climb Lane | Add where grade is more than 4% |
| 2. Widen R.O.W. | Through Intersection as Required |
| 3. Hor. Curve Radii | Given at Centerline |
| 4. Max. Cul-de-sac | 150m Without Emergency Access |
| 5. Dual Carriageway | Where 2nd. Access Not Available |
| 6. Min. Fire Route | 6.1m for One Way Traffic 9.0m for Two Way Traffic |
| 7. Min. Lane Width | 3.8m for Through of Right Turn 3.25m for Left Turn 2.5m for Curb Side Parking |
| 8. Min. Sight Distance | 30.0m for industrial driveway setback |
| 9. Corner Lot Rad. | 5.0m Min. Property Radius |
| 10. Cul de Sac | Min. 0.75% Grade at Gutter |
| 11. Driveway Grade | 2.0% Min. 6.0% Max. 4.0% Preferred |
| 12. Vertical Curves | When there are grade changes in excess of 1.5% |
| 13. Minimum Intersection Curve Radii (measured at Edge of Pavement) | |
| • Arterial to Residential Collector | 12.0m |
| • Arterial to Industrial Collector | 15.0m |
| • Industrial Collector to Residential Collector | 15.0m |
| • Industrial Collector to Local Industrial | 15.0m |
| • Local Industrial to Local Industrial | 15.0m |
| • Residential Collector to Local Residential | 10.0m |
| • Local Residential to Local Residential | 10.0m |
| • Residential Road to Laneway | 10.0m |



NOTES:

1. MAXIMUM 40 UNITS ON CUL-DE-SAC OR MAXIMUM 150m IN LENGTH.
2. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.
3. MINIMUM GUTTER GRADE 0.75%
4. TREE PLANTING AS PER APPROVED LANDSCAPE PLANS.

| NO. | REVISION | APR'D | DATE |
|-----|--|-------|----------|
| 4 | | | |
| 3 | STANDARD No. 251 NOW 216 | | JUNE 08 |
| 2 | REMOVAL OF ISLAND AND ROADWAY DIMENSIONING, RADII DIMENSIONING CORRECTED, NOTES EDIT | | MARCH 08 |
| 1 | ISLAND CURB STANDARD 600.060 ADDED | C.C. | 01/03 |

| | | | |
|------------------------|--|-----------------|----------------|
| TOWN OF CALEDON | | APR'D: C.C. | DATE: 26/06/19 |
| RESIDENTIAL CUL-DE-SAC | | DRAWN: | SCALE: N.T.S. |
| | | STANDARD No.216 | |

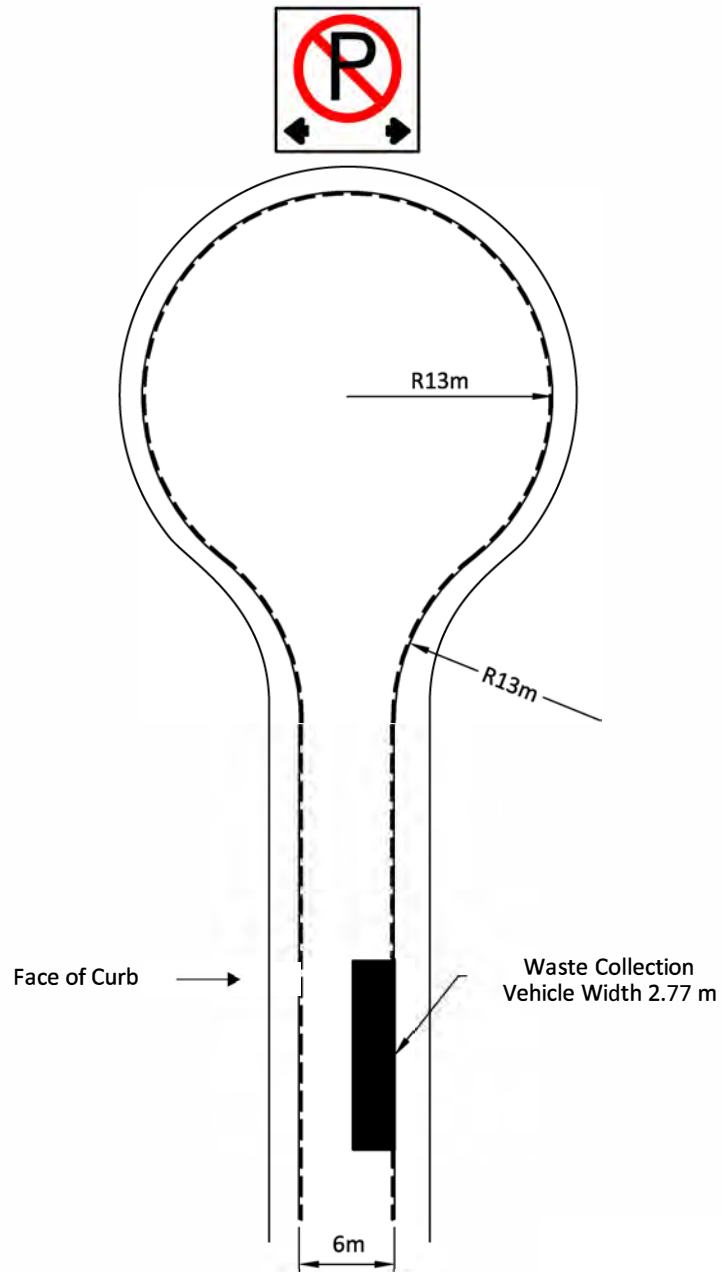
Waste Collection Design Standards Manual

2020



APPENDIX 2: CUL-DE-SAC SPECIFICATIONS

Minimum Requirement for Region's Waste Collection Vehicles



Note:
Drawing not to scale.

HOME » 3.2.5.6. ACCESS ROUTE DESIGN

THE ONTARIO BUILDING CODE | ACCESS ROUTE DESIGN

NAVIGATE

» Section 1

» Section 3

» Section 4

» Section 5

» Section 6

» Section 7

» Section 8

» Section 9

» Section 10

» Section 11

» Section 12

THE ONTARIO BUILDING CODE | ACCESS ROUTE DESIGN

3.2.5.6. Access Route design

(1) A portion of a roadway or yard provided as a required access route for fire department use shall,

(a) have a clear width not less than 6 m, unless it can be shown that lesser widths are satisfactory,

(b) have a centreline radius not less than 12 m,

(c) have an overhead clearance not less than 5 m,

(d) have a change of gradient not more than 1 in 12.5 over a minimum distance of 15 m,

(e) be **designed** to **support** the expected loads imposed by firefighting equipment and be **surfaced** with concrete, **asphalt** or other material **designed** to permit accessibility under all climatic conditions,

(f) have turnaround facilities for any dead-end portion of the access route more than 90 m long, and

(g) be connected with a public thoroughfare.

(2) A **building** within the scope of Article 3.2.2.43A. or 3.2.2.50A. shall have no portion of the required access route more than 20 m below the **floor** level of the uppermost *storey* or *mezzanine* that is not a rooftop enclosure provided for elevator machinery, a stairway or a **service room** used for no purpose other than for **service** to the *building*.

The Ontario Building Code Online

This material is COPYRIGHT © QUEEN'S PRINTER FOR ONTARIO, 2008-2018
This site is not an official copy or maintained by the Government of Ontario.

Buildingcode.Online

SECTION 4
GENERAL PROVISIONS

4.0 GENERAL PROVISIONS

4.1 ACCESSORY OPEN STORAGE & OUTSIDE DISPLAY OR SALES AREA

| | |
|-------------------|-----|
| REGULATIONS | 4-3 |
|-------------------|-----|

| | |
|---------------------------------|------------|
| 4.2 ACCESSORY USES | 4-3 |
|---------------------------------|------------|

| | |
|-------------------------------------|------------|
| 4.3 ACCESS REGULATIONS | 4-5 |
|-------------------------------------|------------|

| | |
|---|------------|
| 4.4 ADDITIONAL RESIDENTIAL UNITS OVERLAY ZONE..... | 4-5 |
|---|------------|

| | |
|---|------------|
| 4.5 AIR CONDITIONERS AND HEAT PUMPS..... | 4-9 |
|---|------------|

| | |
|--|------------|
| 4.6 BED & BREAKFAST ESTABLISHMENTS AND COUNTRY INNS | 4-9 |
|--|------------|

| | |
|--|-------------|
| 4.7 BOLTON CORE OVERLAY ZONE..... | 4-10 |
|--|-------------|

| | |
|--|-------------|
| 4.8 CANNABIS OR INDUSTRIAL HEMP USES..... | 4-13 |
|--|-------------|

| | |
|-----------------------------------|-------------|
| 4.9 CONSTRUCTION USES..... | 4-15 |
|-----------------------------------|-------------|

| | |
|---|-------------|
| 4.10 DRIVE-THROUGH SERVICE FACILITIES..... | 4-15 |
|---|-------------|

| | |
|-------------------------------------|-------------|
| 4.11 DWELLINGS PER LOT | 4-17 |
|-------------------------------------|-------------|

| | |
|---|-------------|
| 4.12 ESTABLISHED BUILDING LINE | 4-17 |
|---|-------------|

| | |
|--------------------------|-------------|
| 4.13 FENCES | 4-17 |
|--------------------------|-------------|

| | |
|---|-------------|
| 4.14 GARBAGE ENCLOSURES, PRIVATE | 4-18 |
|---|-------------|

| | |
|---------------------------------|-------------|
| 4.15 GARDEN SUITES | 4-18 |
|---------------------------------|-------------|

| | |
|------------------------------------|-------------|
| 4.16 HEIGHT EXCEPTIONS..... | 4-18 |
|------------------------------------|-------------|

| | |
|---|-------------|
| 4.17 HOME INDUSTRIES (ORM) | 4-19 |
|---|-------------|

| | |
|------------------------------------|-------------|
| 4.18 HOME OCCUPATIONS | 4-20 |
|------------------------------------|-------------|

| | |
|-----------------------------------|-------------|
| 4.19 HOUSEHOLD SALES | 4-20 |
|-----------------------------------|-------------|

| | |
|----------------------------------|-------------|
| 4.20 INFRASTRUCTURE | 4-20 |
|----------------------------------|-------------|

| | | |
|------|---|------|
| 4.21 | LOTS CONTAINING MORE THAN ONE USE | 4-21 |
| 4.22 | LOTS DIVIDED INTO MORE THAN ONE ZONE | 4-21 |
| 4.23 | MINOR VARIANCE APPROVALS..... | 4-21 |
| 4.24 | MODEL HOMES AND TEMPORARY SALES STRUCTURES | 4-21 |
| 4.25 | NON-COMPLYING BUILDINGS, STRUCTURES AND LOTS | 4-22 |
| 4.26 | NON-CONFORMING BUILDINGS AND STRUCTURES | 4-24 |
| 4.27 | OAK RIDGES MORaine PROVISIONS | 4-24 |
| 4.28 | ON-FARM-BASED ALCOHOL PRODUCTION FACILITIES AND AGRI-TOURISM USES..... | 4-28 |
| 4.29 | PERMITTED ENCROACHMENTS..... | 4-29 |
| 4.30 | PLANTING STRIPS | 4-29 |
| 4.31 | PRIVACY YARDS | 4-29 |
| 4.32 | PROHIBITED USES..... | 4-30 |
| 4.33 | PUBLIC USES | 4-32 |
| 4.34 | REFERENCES TO LEGISLATION..... | 4-33 |
| 4.35 | SATELLITE DISHES | 4-33 |
| 4.36 | SEPARATION DISTANCES | 4-34 |
| 4.37 | SETBACK FROM RAILROAD | 4-34 |
| 4.38 | SIGHT TRIANGLES | 4-34 |
| 4.39 | SPECIAL SETBACKS | 4-35 |
| 4.40 | STORAGE OF SPECIAL VEHICLES | 4-35 |
| 4.41 | TOURIST TRAILERS AND MOBILE HOMES | 4-36 |
| 4.42 | WAYSIDE PITS AND PORTABLE ASPHALT PLANTS..... | 4-36 |
| 4.43 | WELLHEAD PROTECTION AREA..... | 4-37 |

Table 4.3

| Use | Minimum Separation Distance from a Residential Zone |
|--------------------------------|--|
| Adult Video Store | 100m (1) |
| <i>Reserved for Future Use</i> | |
| <i>Reserved for Future Use</i> | |
| <i>Reserved for Future Use</i> | |
| <i>Reserved for Future Use</i> | |
| <i>Reserved for Future Use</i> | |
| <i>Reserved for Future Use</i> | |
| <i>Reserved for Future Use</i> | |

Notes to Table 4.3:

(1) A minimum separation distance of 100 metres shall be required from Regional Road 50 and Coleraine Drive.

4.37 SETBACK FROM RAILROAD

No part of any *dwelling unit* shall be located within 50 metres of a railroad right-of-way.

4.38 SIGHT TRIANGLES

Notwithstanding any other provisions of this By-law, on a *corner lot*, within the *sight triangle*, the following provisions shall apply:

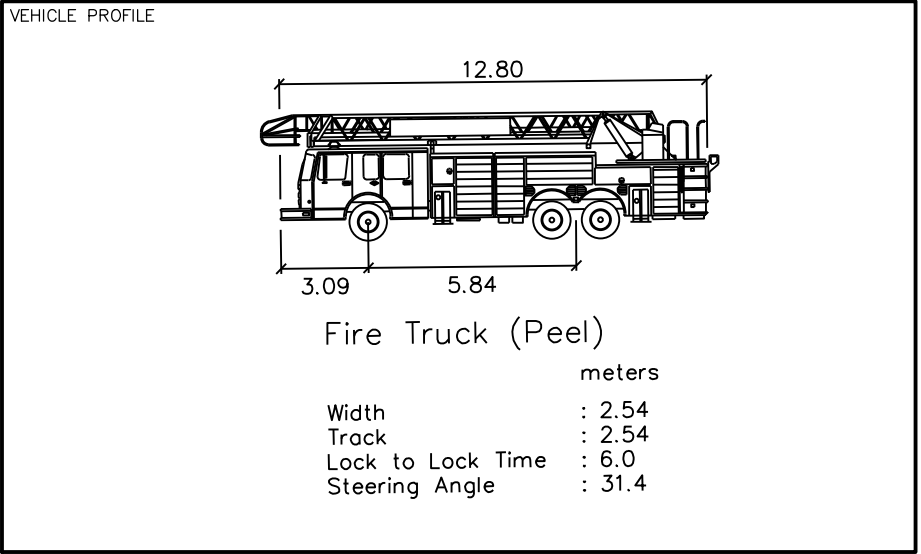
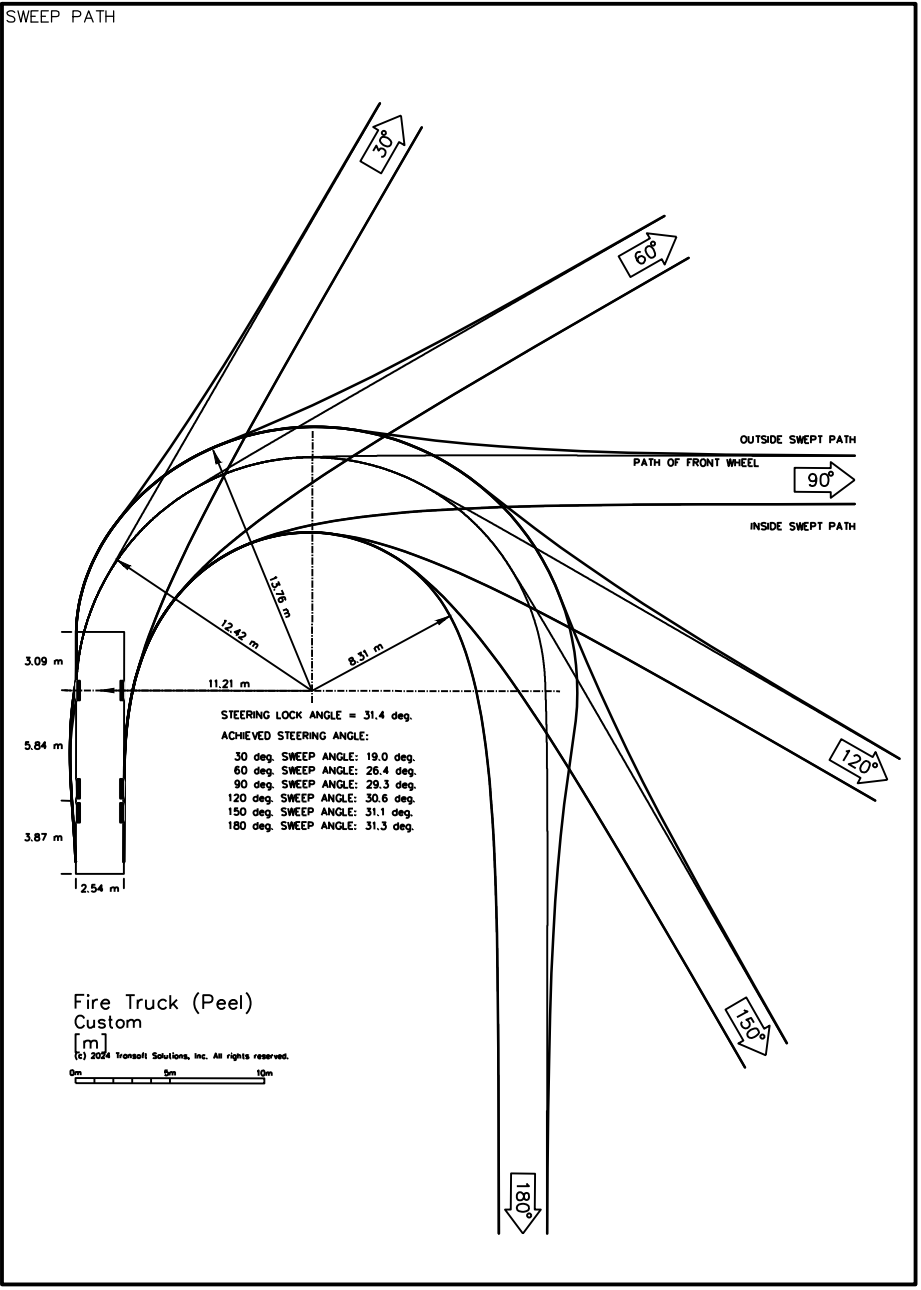
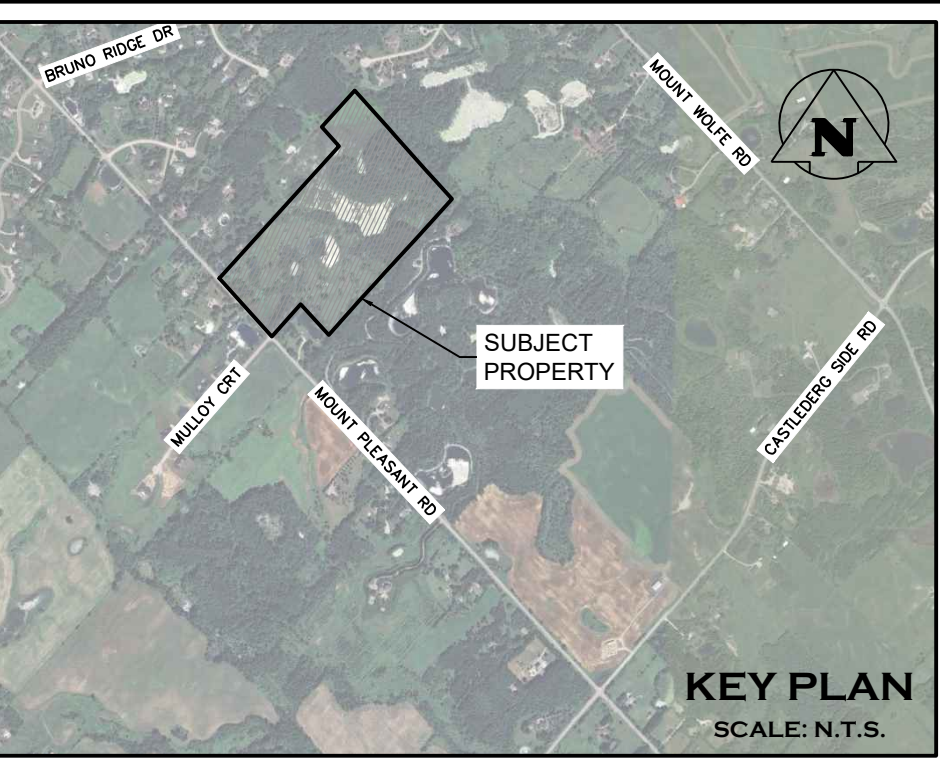
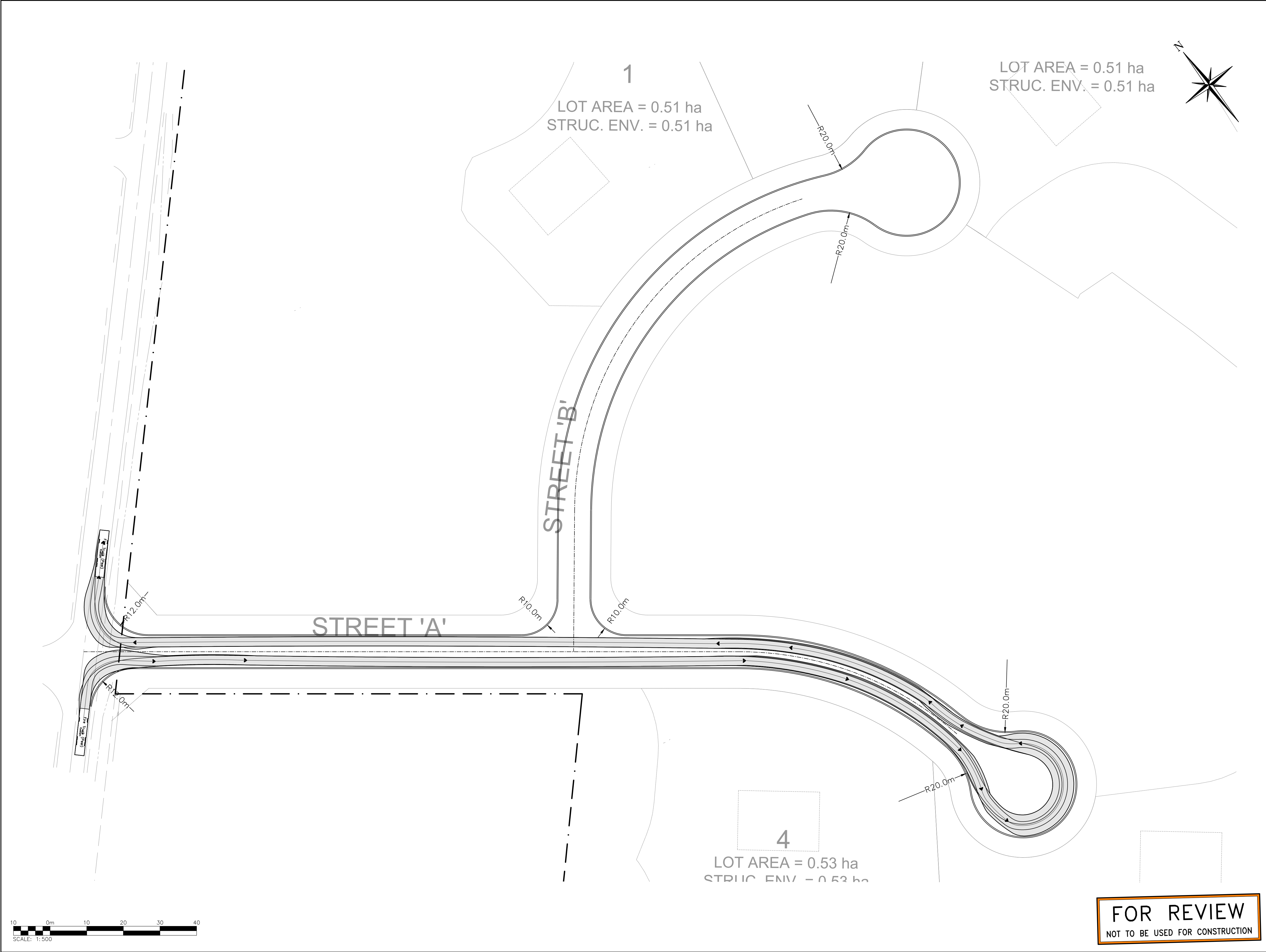
4.38.1 The distance from the point of intersection of the *street lines* and forming the *sight triangle* shall be 9 metres, except where one of the *street lines* is a Regional Road, where the distance shall be 15 metres.

4.38.2 Within any area defined as a *sight triangle*, the following uses shall be prohibited:

- a) a *building, structure* or *use* which would obstruct the vision of drivers of vehicles;
- b) a fence, tree, hedge, bush or other vegetation, the top of which exceeds 1 metre in height above the elevation of the *street*;
- c) any portion of a *parking space*;

ATTACHMENT G

Vehicle Maneuvering Diagrams



| No. | ISSUE | DATE: MM/DD/YYYY |
|-----|-------------------------|------------------|
| 1 | ISSUED FOR COORDINATION | 2024/06/04 |
| | | |
| | | |
| | | |
| | | |
| | | |

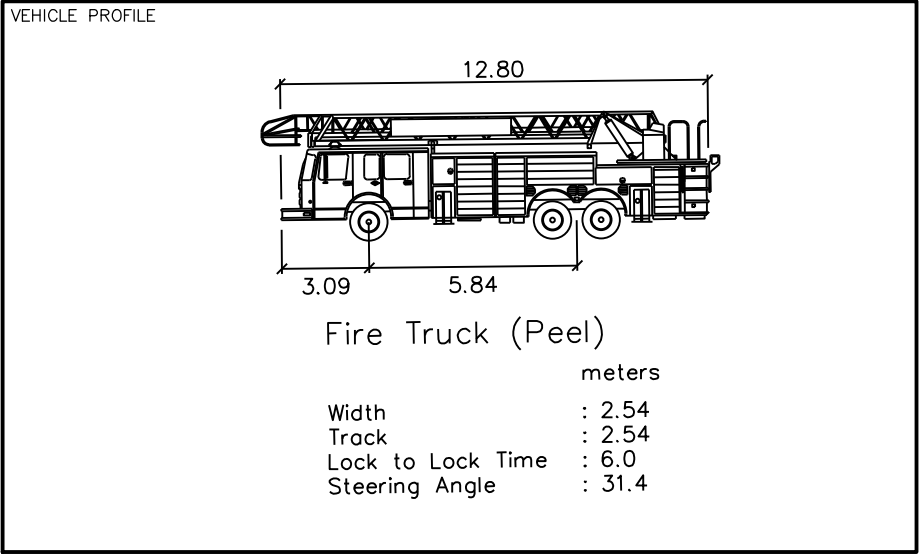
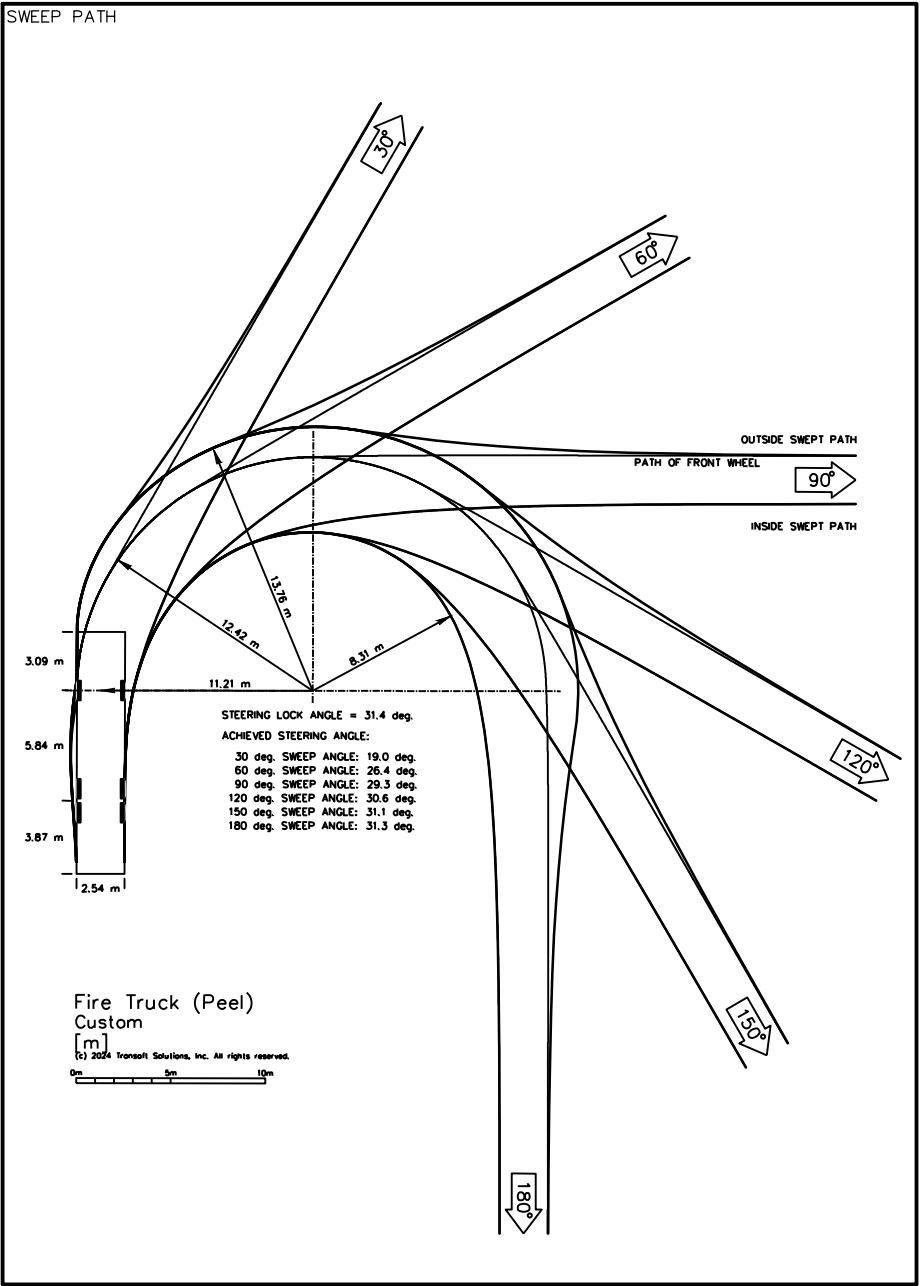
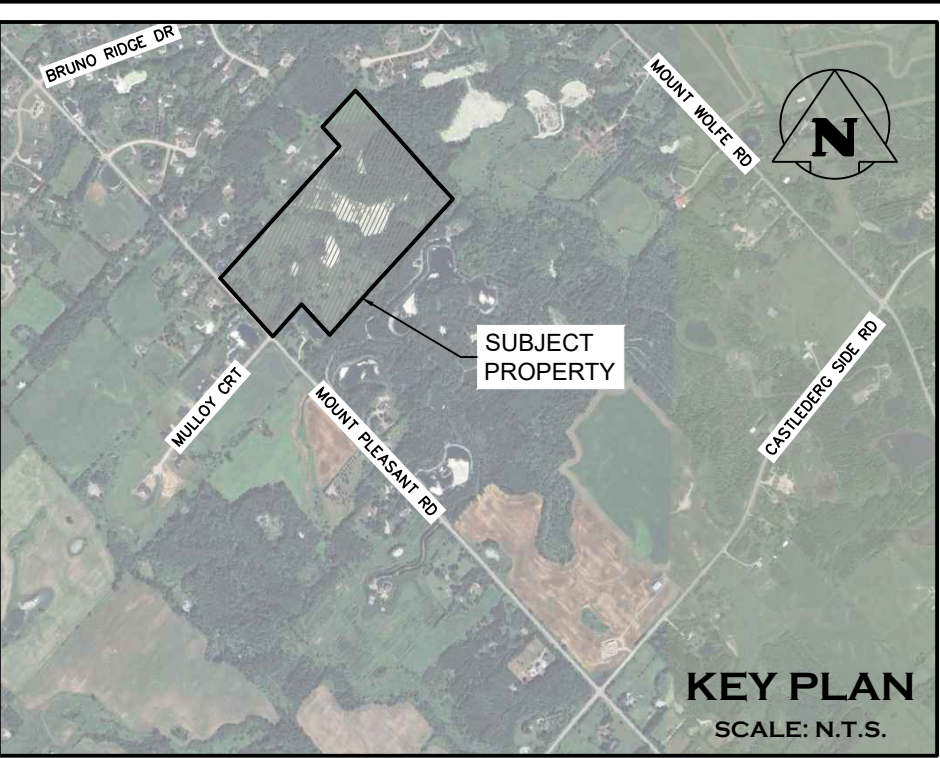
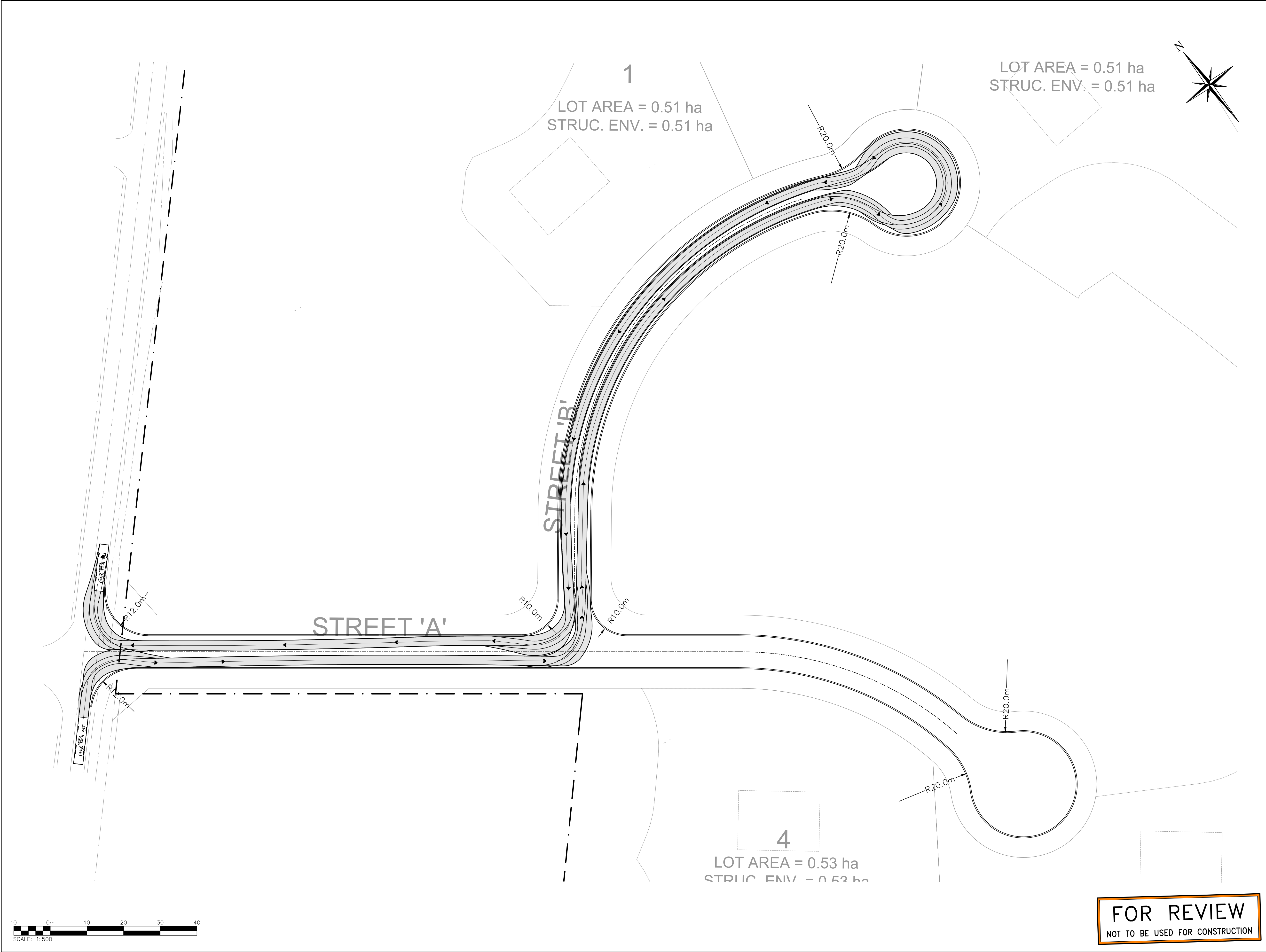
Project
15441 MOUNT PLEASANT ROAD
TOWN OF CALEDON

Drawing
VEHICLE MANEUVERING
FIRE TRUCK

| | | | | | |
|----------|-----------|-----------|--|---------|-----------|
| Drawn By | I.M. | Design By | | Project | 2227-6259 |
| Check By | I.L./A.K. | Check By | | Scale | 1:500 |
| | | | | Drawing | T301 |

FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION





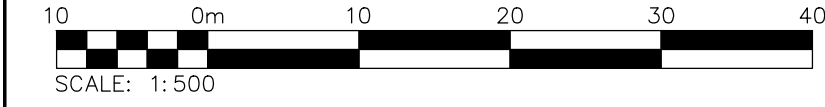
| No. | ISSUE | DATE: MM/DD/YYYY |
|-----|-------------------------|------------------|
| 1 | ISSUED FOR COORDINATION | 2024/06/04 |
| | | |
| | | |
| | | |
| | | |
| | | |

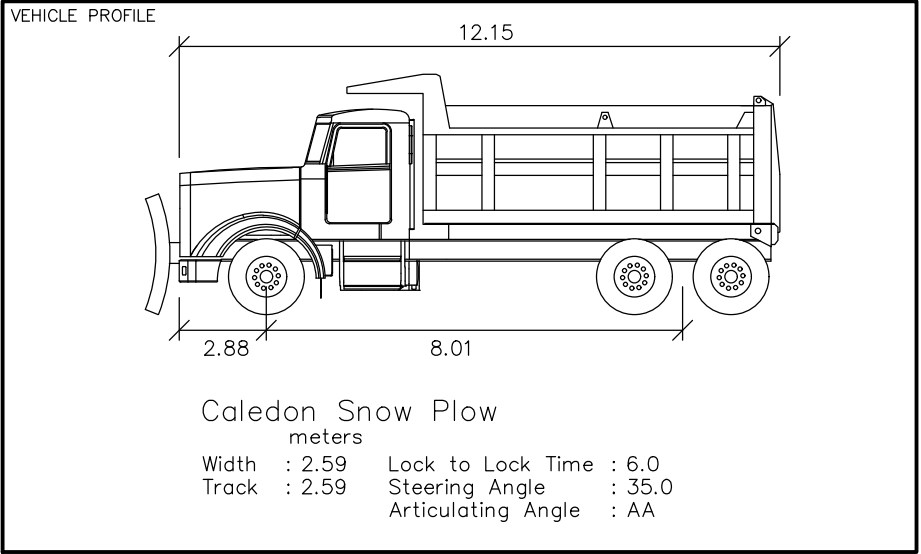
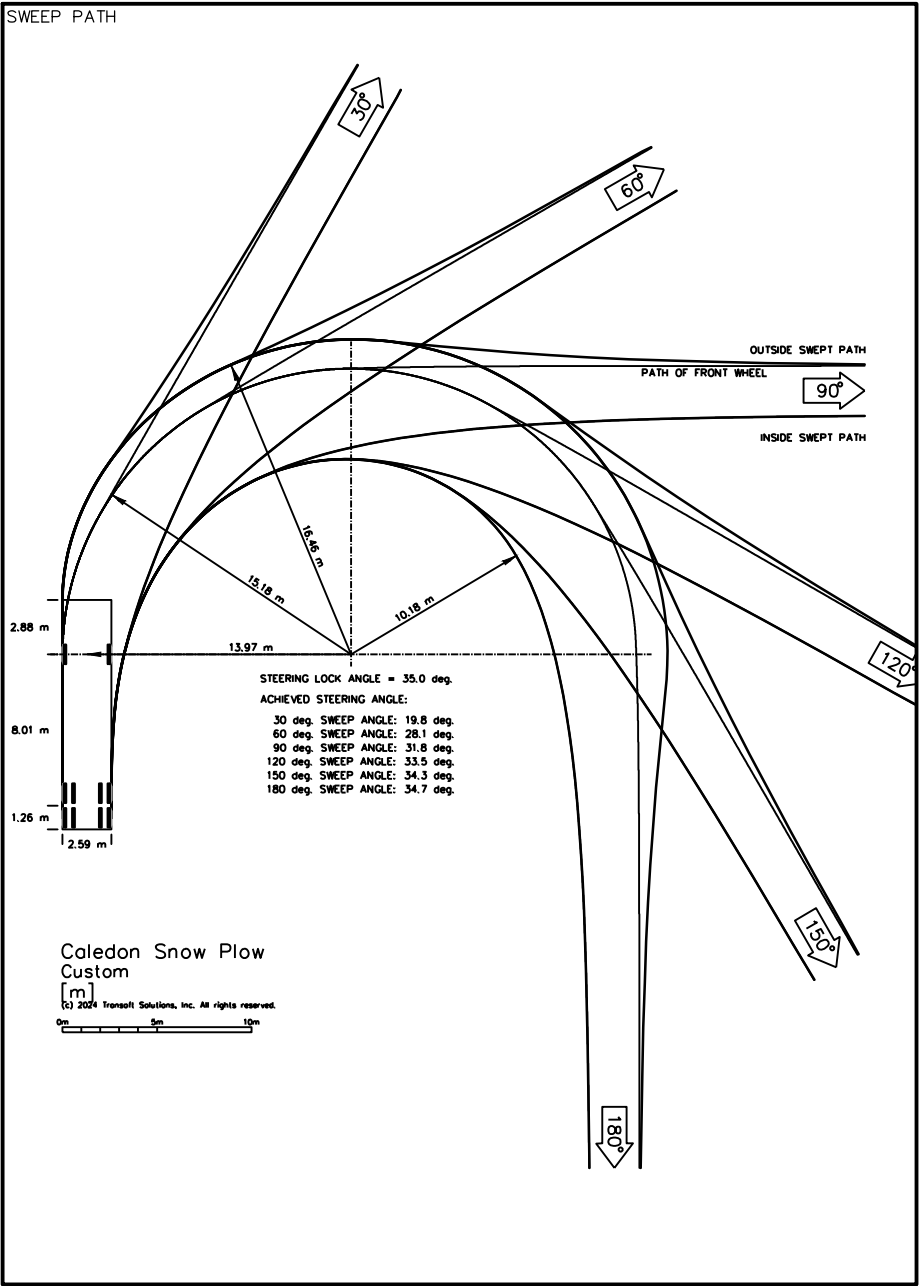
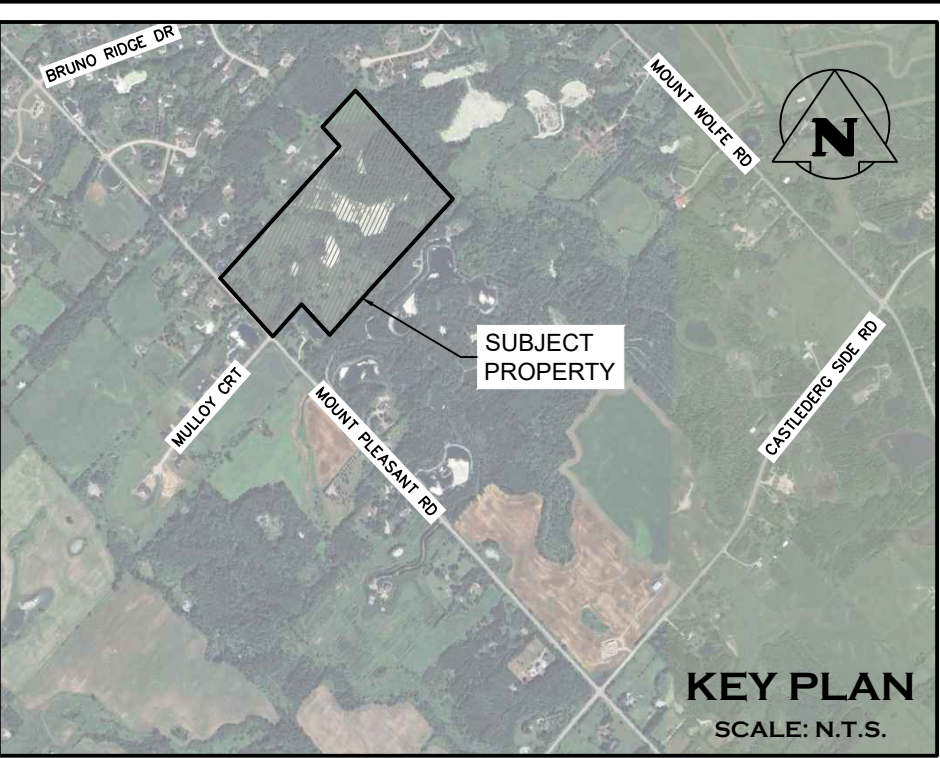
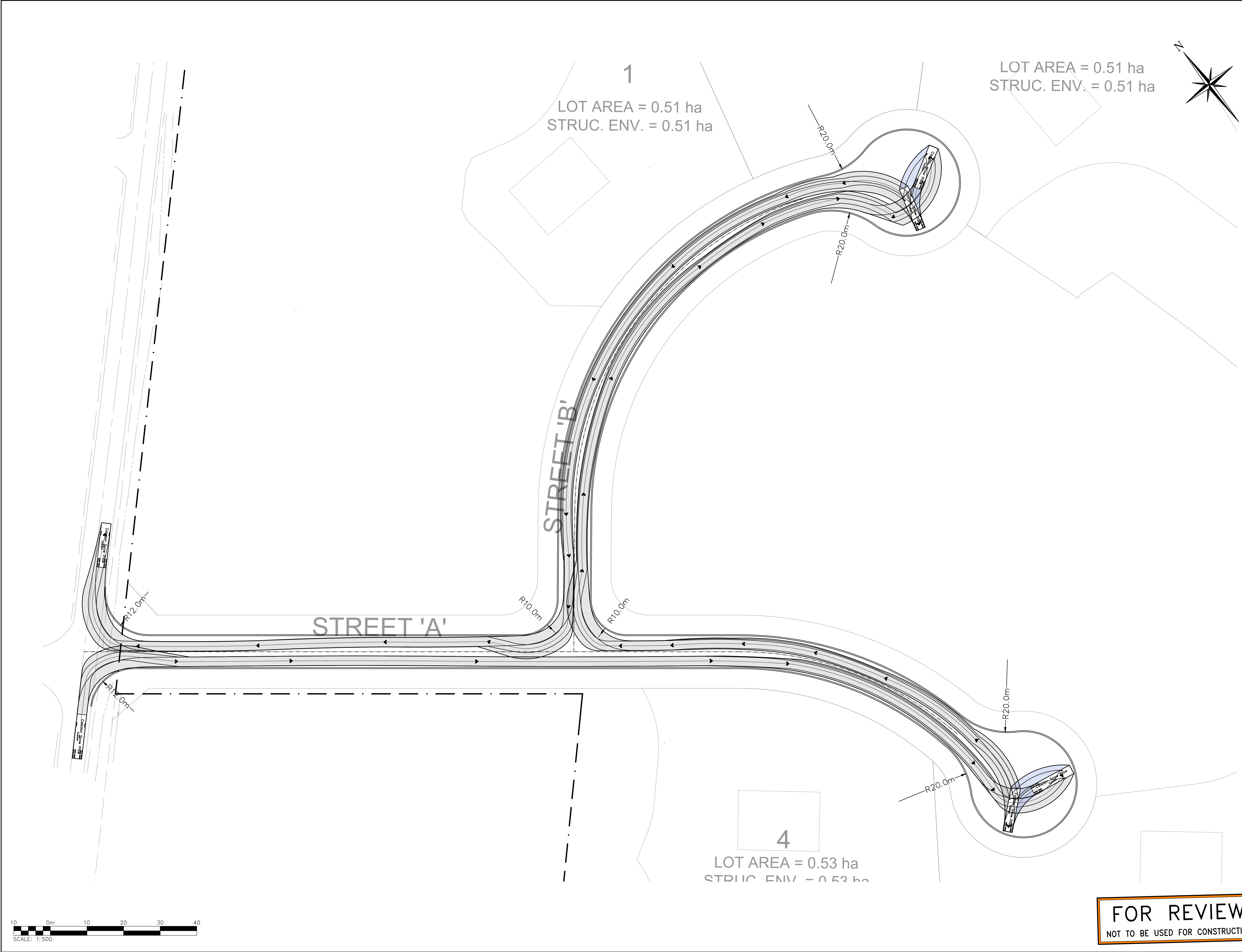
Project
15441 MOUNT PLEASANT ROAD
TOWN OF CALEDON

Drawing
VEHICLE MANEUVERING
FIRE TRUCK

| | | |
|-----------------------|------------------------|----------------------|
| Drawn By I.M. | Design By I.L./A.K. | Project 2227-6259 |
| Check By I.L./A.K. | Check By | Scale 1:500 |
| | | Drawing T302 |

FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION





| No. | ISSUE | DATE: MM/DD/YYYY |
|-----|-------------------------|------------------|
| 1 | ISSUED FOR COORDINATION | 2024/06/04 |
| | | |
| | | |
| | | |
| | | |
| | | |

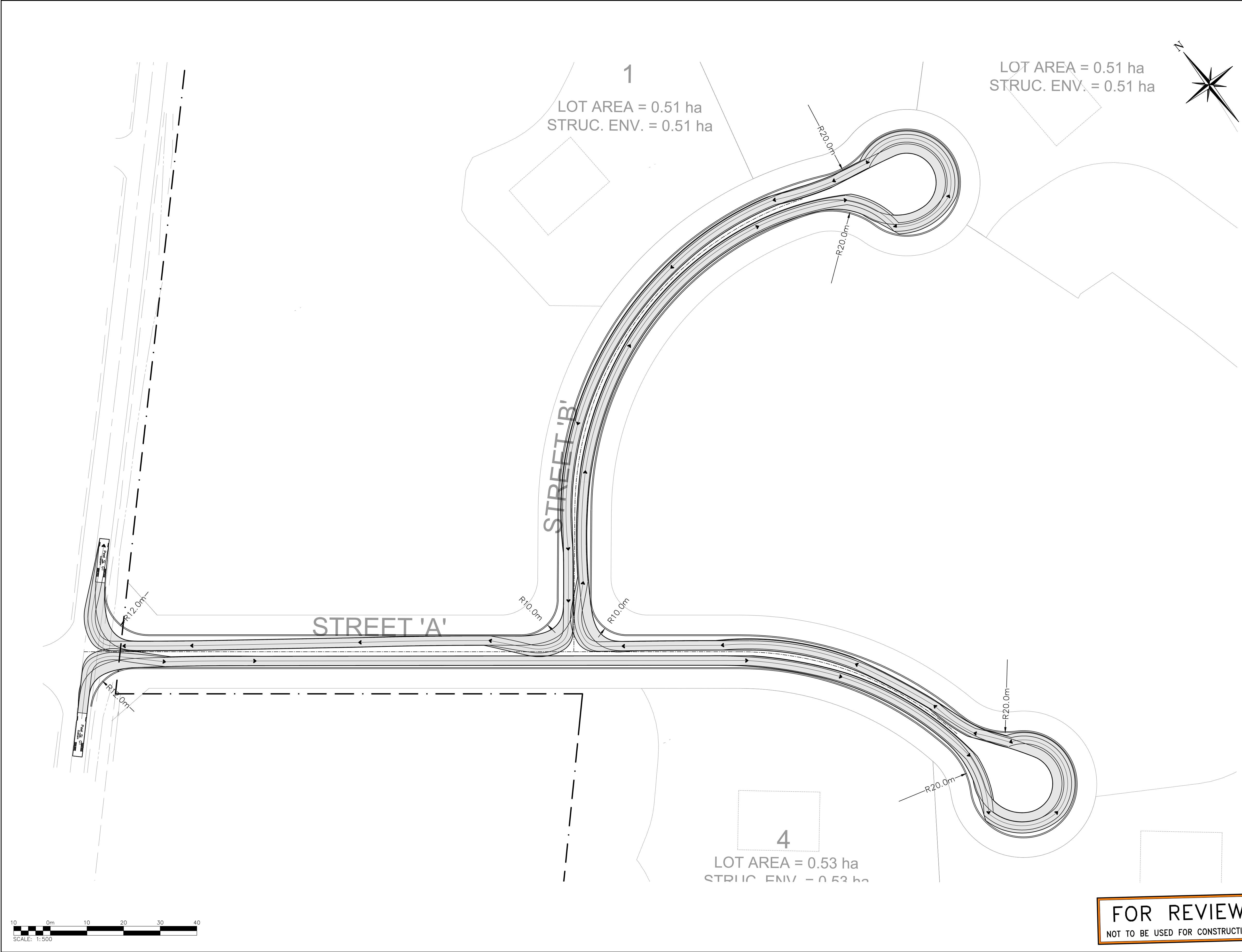
Project
15441 MOUNT PLEASANT ROAD
TOWN OF CALEDON

Drawing
VEHICLE MANEUVERING
CALEDON SNOW PLOW

| | | | | | |
|----------|-----------|-----------|--|---------|-----------|
| Drawn By | I.M. | Design By | | Project | 2227-6259 |
| Check By | I.L./A.K. | Check By | | Scale | 1:500 |
| | | | | Drawing | T303 |

FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION



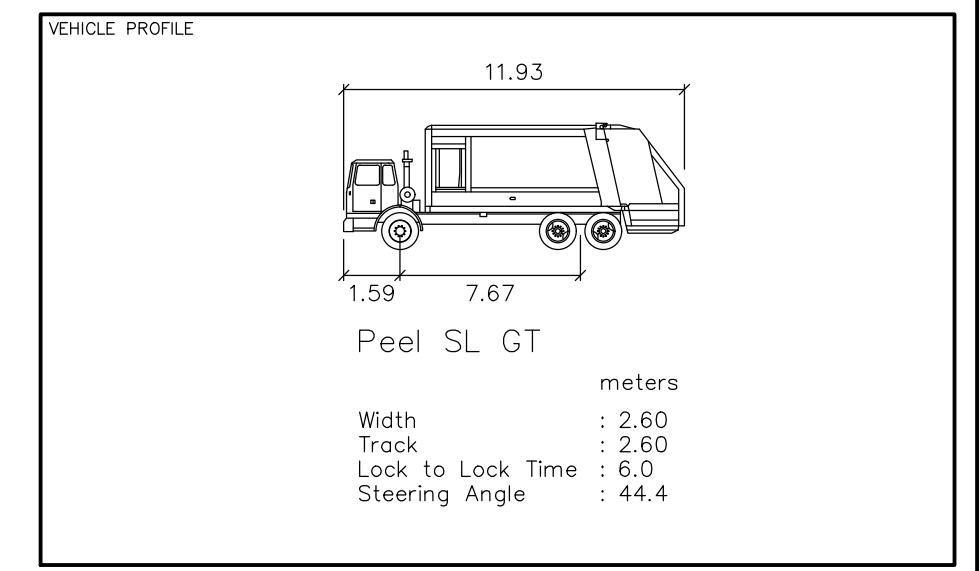
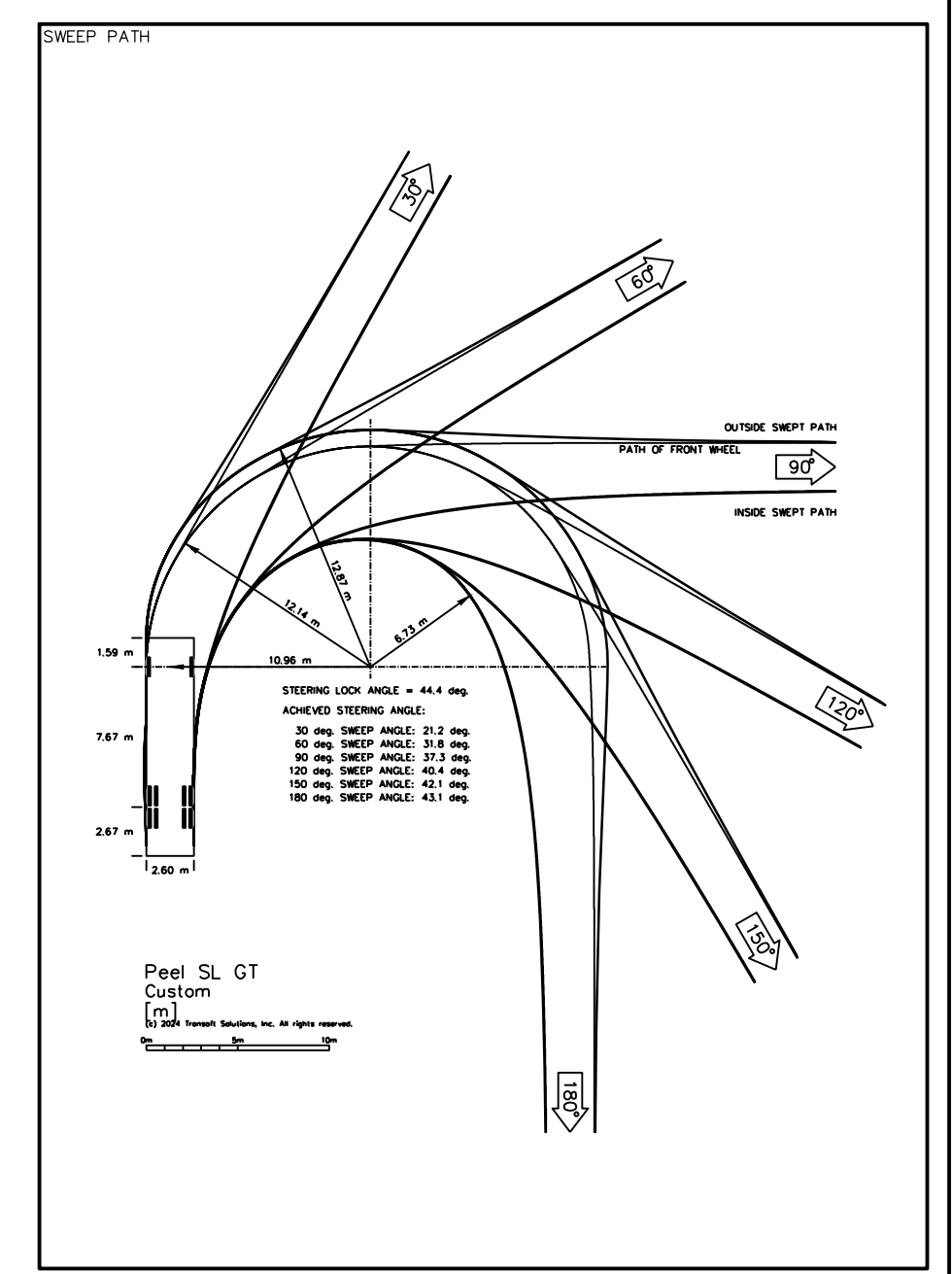
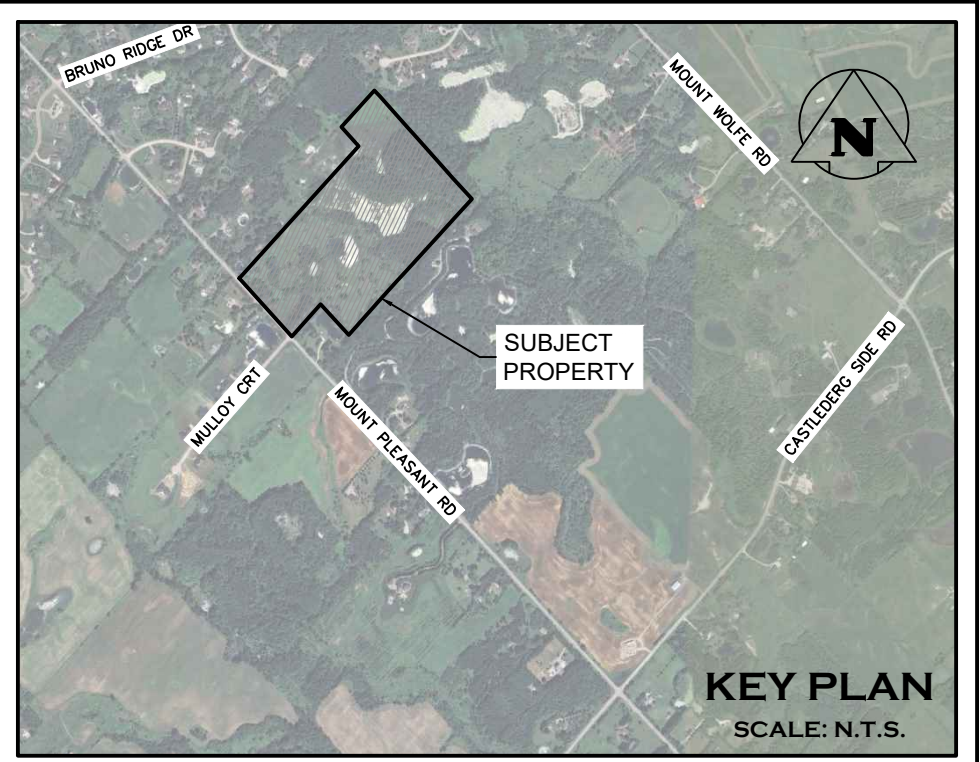


LOT AREA = 0.51 ha
STRUC. ENV. = 0.51 ha

LOT AREA = 0.51 ha
STRUC. ENV. = 0.51 ha

LOT AREA = 0.53 ha
STRUC. ENV. = 0.53 ha

FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION



| No. | ISSUE | DATE: MM/DD/YYYY |
|-----|-------------------------|------------------|
| 1 | ISSUED FOR COORDINATION | 2024/06/04 |
| | | |
| | | |
| | | |
| | | |
| | | |

Project
**15441 MOUNT PLEASANT ROAD
TOWN OF CALEDON**

Drawing
**VEHICLE MANEUVERING
PEEL REGION SIDE-LOAD
GARBAGE TRUCK**

| | | | | | |
|----------|-----------|-----------|---------|------------------|-------------|
| Drawn By | I.M. | Design By | Project | 2227-6259 | |
| Check By | I.L./A.K. | Check By | Scale | 1:500 | |
| | | | | Drawing | T304 |