

MEMO

DATE 2022.06.06 **PROJECT NO.** 1923-5641
RE Traffic Opinion Letter Addendum - 425 Union- 1st Submission Comments

TO Margaret Potter – Planner - Municipality of Meaford
FROM Madeleine Ferguson - C.F. Crozier and Associates Inc.
CC Denise McCarl – Manager of Planning – Municipality of Meaford
Colin Travis – Owner – Travis & Associates Inc.

C.F. Crozier and Associates Inc. (Crozier) has prepared this Addendum to the Traffic Opinion Letter (May 26, 2021) to address comments on the first submission for the proposed residential development at 425 Union Street in the Municipality of Meaford, County of Grey.

In May 2021 Crozier prepared the Traffic Opinion Letter (TOL) to review the access and safety aspects of the proposed development and the expected trip generation of the residential units. This letter addresses comments provided by the Municipality's peer reviewer R. J. Burnside (November 19, 2021), as well as supplementary comments received by email on May 5, 2022 from the Municipality. Key comments include identifying County Road 7 as an arterial road and primary connection to the new Georgian Bay Community School, summarizing the recommendations of the recently published Meaford Transportation Masterplan, acknowledge and address public safety concerns, and summarize the role of Development Charges.

We have divided this letter into the following sections:

- County Road 7
- Transportation Master Plan
- Public Meeting Comments
- Development Charges
- Conclusions

Attachment A contains the original Traffic Opinion Letter (May 26, 2021) and **Attachment B** contains the most recent Draft Plan (Travis & Associates, May 12, 2022).

County Road 7

County Road 7 is a north-south arterial roadway under the jurisdiction of Grey County. The road is approximately 680 m east of Union Street and can be accessed via Muir Street. County Road 7 has a posted speed limit of 50 km/h within the urban bounds of Meaford, and 80 km/h south of Knox Presbyterian Church and Muir Street.

Pedestrian facilities are provided on the east and west side of County Road 7 north of the Georgian Bay Community School, connecting to the sidewalks on Highway 26 (Sykes Street).

The material in this memo reflects best judgment in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. C.F. Crozier & Associates Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

County Road 7 intersects Muir Street at a two-way stop-controlled intersection with Muir Street forming the minor stop-controlled approaches. County Road 7 intersects Highway 26 at a 5-legged signalized intersection. The northbound right-turn movement from County Road 7 to Highway 26 is channelized, with right-turning vehicles yielding to eastbound through vehicles on Highway 26.

Georgian Bay Community School is approximately 520 m north of Muir Street on the east side of County Road 7. It is expected that vehicles travelling from the site to the school would utilize Union Street or Centre Street to travel south to Muir Street, east to County Road 7 and then north towards the school.

Transportation Master Plan

The Municipality of Meaford's Transportation Master Plan (TMP) was published by IBI in July 2021, after the completion of the original Union Street Traffic Opinion Letter. The TMP has several findings and recommendations that the Municipality should explore further which relate to the study area. Key findings with relevance to the study area include sidewalk recommendations, corridor studies, and traffic operations improvement measures. The recommendations, as obtained from the TMP, are as follows:

- Complete a corridor study of Sykes Street to optimize traffic flow to ensure the corridor can absorb future growth.
- Work with Grey County to improve safety and traffic operations at Sykes Street South and St. Vincent Street intersection.
- Adopt a traffic calming process that is data driven to determine locations that require soft and physical traffic calming measures.
 - The TMP recommends volume and speed warrants for urban and rural traffic calming applications.
- Consider a reduced 40 km/h default speed limit within the urban area. This would require a separate process to update the By-law and bring the change through Council.
 - A reduced default speed limit would be illustrated through 'blanket' speed limit signage on entry to Meaford and at strategic locations.
- Construct the priority sidewalk corridor segments identified in the TMP document in the next 10 years. Continue expanding the sidewalk network following the completion of the priority sidewalk corridors. Priority sidewalks, near the site, to provide connections to nearby trails and existing sidewalks locations are as follows:
 - Farrar Street/Burton Street
 - Segments of Union Street and James Crescent
- Construct cycling facilities along several key corridors.

Exhibit 5.11 of the TMP illustrates the priority sidewalk corridor locations in Meaford. Farrar Street/Burton Street (as well as segments of Union Street and James Crescent) have been identified as a priority sidewalk corridor. These segments provide connection to recent sidewalks installed on Edwin Street as well as nearby parks and trails. The TMP notes that the area to the south, which encompasses the proposed development, is a future (long-term) growth area and suggests that sidewalks should be built along with development to connect to these segments.

The TMP recommends that corridors within the urban area without sidewalks that are not identified as priorities should continue to be considered for sidewalks if opportunities are presented through new developments, road re-construction or other required capital projects.

Exhibit 5.15 of the Transportation Master Plan illustrates the proposed cycling and trails network. Grey Road 7 is proposed to have paved shoulder from its southern limits to just north of Muir Street. Beyond that, Grey Road 7 would be a signed cycling route.

Public Meeting Comments

Members of the public and council provided comments on the proposed development in a public meeting in October 2021. The primary comments were as follows:

- Increased traffic volumes and vehicle speeds
 - Concerns regarding traffic speed, thereby increasing the need for sidewalk
- Safety for pedestrians and cyclists
 - Concerns regarding cyclist and pedestrian safety on existing roadways
 - Inquiry into how the development will improve walkability
 - Inquiry regarding if the proponent would consider urban road design such as pinch points

Regarding traffic volume concerns, it is acknowledged that this development will result in additional traffic volumes on the boundary road network. Specifically, it is anticipated that the site will result in 58 and 75 two-way trips in the weekday a.m. and p.m. peak hour. However, given the diffusion of traffic through multiple routes within and beyond the Municipality, traffic operational issues at any given intersection are not expected.

Regarding concerns of high vehicular speeds, this is an existing issue and not a result of the proposed development. The addition of vehicles, from the proposed development to the boundary road network and at nearby intersections would increase the friction of vehicles on the roadway which typically results in reduced speeds. Therefore, the proposed development would be likely to have a neutral impact or slightly reduce vehicle speeds on Union and Centre Street. Regardless, it is acknowledged that Union Street and Centre Street are relatively flat and straight, which can cause increased operating speeds. Should these concerns continue to be raised, the Municipality may wish to implement traffic calming measures or construct pedestrian walkways through the collection of development charges.

As discussed later in this Addendum, development charges contributed to by the developer are used to address future infrastructure improvements on existing roadways. Examples of traffic calming measures which could be considered by the Municipality include speed humps, stop-controlled intersections, increased enforcement and dynamic speed signs. As noted previously, the TMP also recommends that the Municipality adopt a traffic calming process that is data driven to determine locations that require soft and physical traffic calming measures. The TMP recommends volume and speed warrants for urban and rural traffic calming applications.

Internal to the site, Street A has been designed with slight curvature which will assist with reducing driver speeds. Street A will be designed in accordance with the Municipality's typical 20 m right-of-way cross-section. This cross-section permits on-street parking and provides a 1.5 m concrete sidewalk. The provision of on-street parking would also reduce speeds and the proposed sidewalk would provide for future connections to the external network as it is implemented. The proposed internal private roads (Blocks 71 and 72 on the Draft Plan) have shorter segments (less than 100 m) and 90 degree bends which encourage reduced speeds. The private roads are proposed to have a narrower pavement width of 6.5 m. While this would limit on-street parking to one side of the roadway, the narrower pavement width combined with on-street parking would further encourage reduced speeds.

Development Charges

The Development Charges Act permits municipalities to enact by-laws that impose Development Charges on developers to fund the procurement and upgrades of infrastructure required to facilitate growth caused by new development. The Act requires that municipalities review and update their Development Charges every five years to ensure that the Development Charges align with current growth projects and development-related capital plans in a municipality.

In December 2020, the Municipality of Meaford released their Interim Development Charges Background Study, and on February 22, 2021, the Municipality passed By-law 2021-13 which applies to all new developments, both residential and non-residential. While the specific infrastructure projects included in the Development Charges are not available online, senior staff from the Municipality have confirmed that both Union Street and Centre Street are included as Development Charge projects.

Accordingly, the developer will be contributing to planned road upgrades on Centre Street and Union Street through the collection of Development Charges, which will be outlined further upon the completion of the full DC Background Study.

Conclusions

This Traffic Opinion Letter Addendum includes additional information to address comments received from R. J. Burnside and the Municipality. Specifically, it is acknowledged that County Road 7 is an arterial roadway within the study area and provides connectivity to the newly constructed Georgian Bay Community School.

The Municipality of Meaford's Transportation Master Plan was published in July 2021, shortly after the completion of the original Traffic Opinion Letter. The Transportation Master Plan highlighted key findings and recommendations for the Municipality to consider and implement moving forward. These include a corridor study of Highway 26, intersection improvements at Highway 26 and St. Vincent Street, priority sidewalk corridors, and proposed cycling networks.

In October 2021, a public meeting was held where members of the public and council were given the opportunity to provide comments on the development. Key areas of concern related to transportation included increased traffic volumes through in the area, vehicles speeding on Centre Street and Union Street, and pedestrian and cyclist safety.

It is acknowledged that the proposed development will add new vehicles to the boundary road network, which may result in increased complaints from nearby residents. It is noted that trips generated by the development will be diffused across the road network, minimizing operational impacts. Additionally, increased turns at intersections will add friction on the road network which is anticipated to reduce roadway operating speeds.

Per discussions with senior staff from the Municipality, Union Street and Centre Street are identified as roads requiring improvements in the DC Background Study. Therefore, through payment of Development Charges, the developer will contribute to road improvements as deemed necessary by the Municipality.

We trust that this Traffic Opinion Letter Addendum addresses the Municipality's concerns. Should you have any questions or require any further information, please do not hesitate to contact the undersigned.

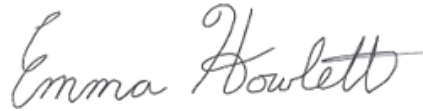
Sincerely,

C.F. CROZIER & ASSOCIATES INC.



Madeleine Ferguson, P.Eng.
Manager of Transportation
MF/eh/la

C.F. CROZIER & ASSOCIATES INC.



Emma Howlett, E.I.T.
Engineering Intern, Transportation

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Encl.

Attachment A – Traffic Opinion Letter (May 26, 2021)

Attachment B – Draft Plan (Travis & Associates, May 12, 2022)

Attachment A

Traffic Opinion Letter

(May 26, 2021)

MAY 26, 2021

REFER TO FILE: 1923 - 5641

Municipality of Meaford
21 Trowbridge Street West
Meaford, ON N4L 1N2

Attention: Liz Buckton
Manager of Development Services

RE: 425 UNION STREET
TRAFFIC OPINION LETTER
MUNICIPALITY OF MEAFORD, COUNTY OF GREY

Dear Liz,

This letter has been prepared to support the Draft Plan Application for the proposed residential development at 425 Union Street in the Municipality of Meaford ('Meaford'). This letter assesses the expected trip generation of the residential units and reviews the access and safety aspects of the proposed development.

1. Existing Conditions

The site is approximately 5.2 hectares in size and is located to the south of Russet Drive. The site is bound by vacant lands to the north and south, residential dwellings and Union Street to the east, and residential dwellings and Centre Street to the west. Currently the site consists of vacant residential lands with mixed tree and grass cover.

2. Development Proposal

The proposed development consists of 48 single-detached dwelling units and 38 semi-detached dwelling units, totalling 86 dwelling units. Access to the site will be provided by a single east-west urban road "Street A", which will bisect the site and provide access to Union Street and Centre Street. Within the development itself, private roads will connect to "Street A" in crescents on both the north and south sides of "Street A" to provide access to the interior dwelling units. The proposed Draft Plan prepared by Travis and Associates dated May 20th, 2021 has been included as **Attachment A**.

3. Boundary Road Network

As noted, the site will provide access to both Centre Street and Union Street. While not posted, the speed limits for both Centre Street and Union Street were identified as 40 km/h on the Grey County GIS. Centre Street and Union Street are north-south local roadways under the jurisdiction of Meaford. The roadways have a rural cross-section and are paved with two lanes; however, neither roadway has pavement markings. Pedestrian and cycling facilities are not provided on either road.

4. Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition was used to forecast the trips generated by the proposed residential development. Land Use Category (LUC) 210 "Single-Family Detached Housing" and Land Use Category (LUC) 220 "Multifamily Housing (Low-Rise)" were utilized.

Table 1 outlines the peak hour trips expected to be generated by the proposed development. Relevant excerpts from the ITE Trip Generation Manual, 10th Edition have been included as **Attachment B**.

Table 1: ITE Trip Generation

Land Use Code	Units	Peak Hour	In	Out	Total
210	48	A.M.	10	29	39
		P.M.	31	19	50
220	38	A.M.	4	15	19
		P.M.	16	9	25
Totals		A.M.	14	44	58
		P.M.	47	28	75

5. Impacts

Based on the location of the development, most employment/commercial areas within Meaford are located to the north of the site. Vehicles travelling into downtown Meaford would likely travel north on Centre Street or Union Street towards Paul Street which provides a connection to Sykes Street (Highway 26).

Outside of Meaford, nearby employment and retail generators include the City of Owen Sound, located west of the development, and the Town of Collingwood and the Town of the Blue Mountains which are located to the east of the development.

Vehicles destined for Owen Sound could utilize the Paul Street and Sykes Street intersection. Alternatively, to by-pass the downtown corridor, vehicles could utilize Miller Street (County Road 12) and 7th Line to access Highway 26. Vehicles destined towards the south/east are expected to travel south on Centre Street and Union Street towards Muir Street (Side Road 13) to access Highway 26.

Given the diffusion of traffic through multiple routes within and beyond Meaford, traffic operational issues at any given intersection are not expected.

6. Sight Distance

A sight distance assessment was completed to demonstrate that the proposed accesses provide sufficient stopping and intersection sight distances on Centre Street and Union Street. The minimum stopping sight distance requirements are outlined in Meaford's Engineering Standards, and the minimum intersection sight distance requirements were obtained from the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR).

As noted previously, the Grey County GIS indicates that Centre Street and Union Street have speed limits of 40 km/h. Per Meaford's Engineering Standards, urban roadways should have a design speed of 60 km/h. While Centre Street and Union Street have rural cross-sections, they are local roadways

and are within the urban boundary of Meaford, therefore a design speed of 60 km/h is considered appropriate.

Table 2 outlines the minimum stopping and intersection sight distance requirements per the Engineering Standards and TAC, along with the available sight distance at the accesses. Per the Engineering Standards, urban roadways should have a minimum stopping sight distance of 45 metres. Relevant excerpts from the Engineering Standards have been included in **Attachment C**.

Section 9.9 of the TAC GDGCR provides intersection sight distance for different intersection control types. For these accesses, the applicable cases include "Case B1 – Left turns from the minor road", and "Case B2 – Right turns from the minor road". Comparing these cases, Case B1 has the greatest sight distance requirement of 130 metres for 60 km/h design speed roads. The required intersection sight distance was taken from "Table 9.9.4" as outlined in **Attachment D**.

Table 2: Sight Distance

Access	Oncoming Traffic	Stopping Sight Distance		Intersection Sight Distance	
		Minimum Standard	Available Distance	Minimum Standard	Available Distance
Union Street	Northbound	45 m	>200m	130 m	>200m
	Southbound	45 m	>500m	130 m	>500m
Centre Street	Northbound	45 m	>200m	130 m	>200m
	Southbound	45 m	>500m	130 m	>500m

As summarized above, the available sight distance exceeds the minimum sight distance requirements. To the south, there is available sight distance to the t-intersections at Muir Street. To the north, sight distance is available past Russett Drive. Accordingly, the proposed development can be supported from a sight distance perspective.

7. Geometric Standards

At this point in the development application process, detailed design of the site including the internal roadways has not been completed. The geometry of the roadways will be confirmed through detailed design. Generally, the key standards outlined in Meaford's Engineering Standards are as follows:

- Urban roads should have a minimum pavement width of 8.5 metres,
- The minimum edge of pavement radius at intersections should be 9.0 metres
- The minimum centerline curve radius of the roadway should be 55 metres
- The minimum daylighting triangles at all intersections should be 5mx5m
- STD DWG No. 1 – Typical Road Cross-Section and Service Locations (20m ROW)

The above standards are included in **Attachment C**

8. Conclusions

The proposed development is forecasted to generate 58 and 75 two-way trips in the weekday a.m. and p.m. peak hour. Trips are expected to travel towards downtown Meaford, west to Owen Sound or east towards the Town of Collingwood and Town of the Blue Mountains.

Given the diffusion of traffic through multiple routes within and beyond Meaford, traffic operational issues at any given intersection are not expected.

The available intersection and stopping sight distance to the north and south on Union Street and Centre Street exceed the minimum requirements outlined in Meaford's Engineering Standards and the TAC GDGCR. Accordingly, the proposed development can be supported from a sight distance perspective.

Based on the above, the proposed development can be supported from a transportation perspective. Any minor changes to the plan will not affect the conclusions in this letter. Should you have any questions or require any further information, please do not hesitate to contact the undersigned.

Yours truly,

C.F. CROZIER & ASSOCIATES INC.



Madeleine Ferguson, P.Eng.
Project Engineer, Transportation

C.F. CROZIER & ASSOCIATES INC.



Emma Howlett, EIT
Engineering Intern, Transportation

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Encl.

Attachment A: Draft Plan (May 20th, 2021)

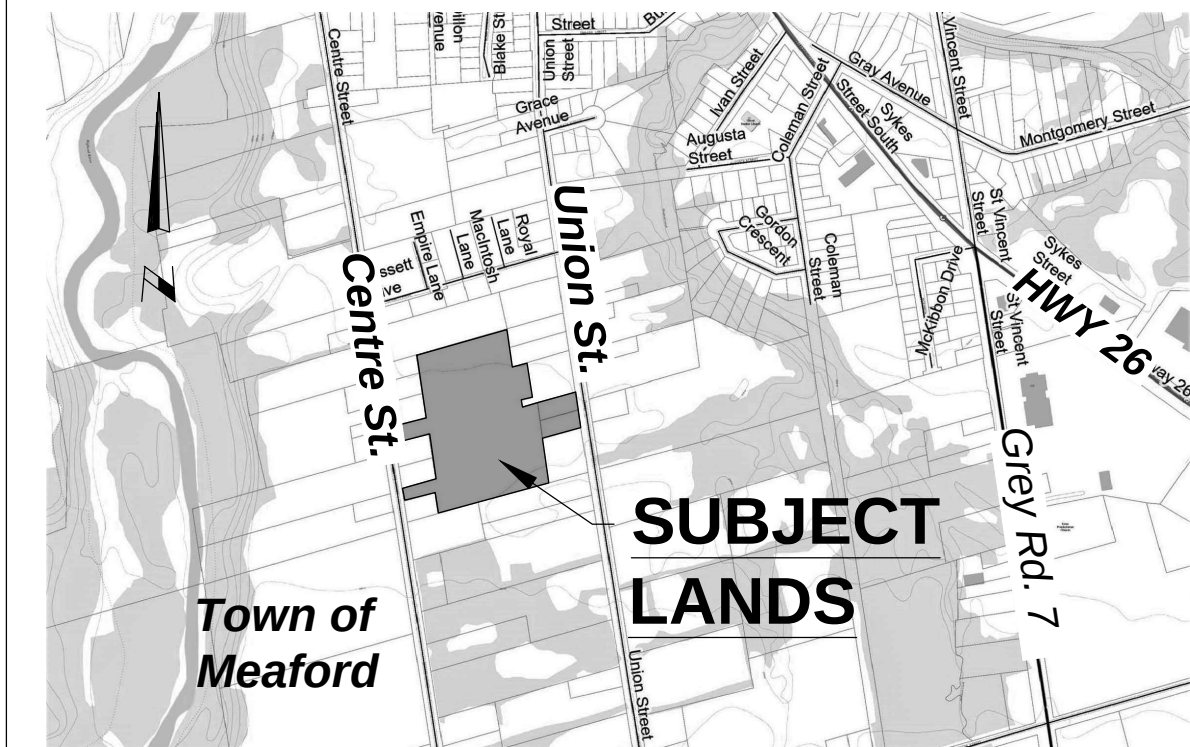
Attachment B: ITE Trip Generation Manual Excerpts

Attachment C: Municipality of Meaford's Engineering Standards Excerpts

Attachment D: TAC Excerpts

Attachment A

Draft Plan (May 20th, 2021)



KEY MAP n.t.s

**DRAFT PLAN OF SUBDIVISION OF
PART OF LOTS
421, 422, 423, 424 AND 425
REGISTERED PLAN 309
(FORMERLY TOWN OF MEAFORD)
MUNICIPALITY OF MEAFORD
COUNTY OF GREY**

SURVEYOR CERTIFICATE:

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATION TO THE ADJACENT LANDS ARE ACCURATELY SHOWN ON THIS PLAN.

DATED THE ____DAY OF _____, 2021.
NAME: _____
ONTARIO LAND SURVEYOR

OWNER CERTIFICATE:

AS OF THE DATE ON THIS PLAN THE UNDERSIGNED BEING THE REGISTERED OWNERS OF THE SUBJECT LANDS HEREBY AUTHORIZE _____ TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION AND TO MAKE APPLICATION TO THE GREY COUNTY PLANNING DEPARTMENT FOR APPROVAL THEREOF.

DATED THE ____DAY OF _____, 2021.
NAME: _____
I HAVE THE AUTHORITY TO
BIND THE CORPORATION

PLANNING ACT, SECTION 51(17)

- (a) As shown on draft plan
(b) As shown on draft plan
(c) As shown on draft plan
(d) See schedule of land use
(e) As shown on draft plan
(f) As shown on draft plan
(g) As shown on draft plan
(h) Piped municipal treated water
(i) Clayey sandy silt
(j) As shown on draft plan
(k) Municipal sanitary sewer
(l) None

Revision#. Date D/M/Y	Description / Notes
1. 27/04/2021	DRAFT PLAN FOR SUBMISSION
2. 20/05/2021	REVISED DRAFT PLAN FOR SUBMISSION

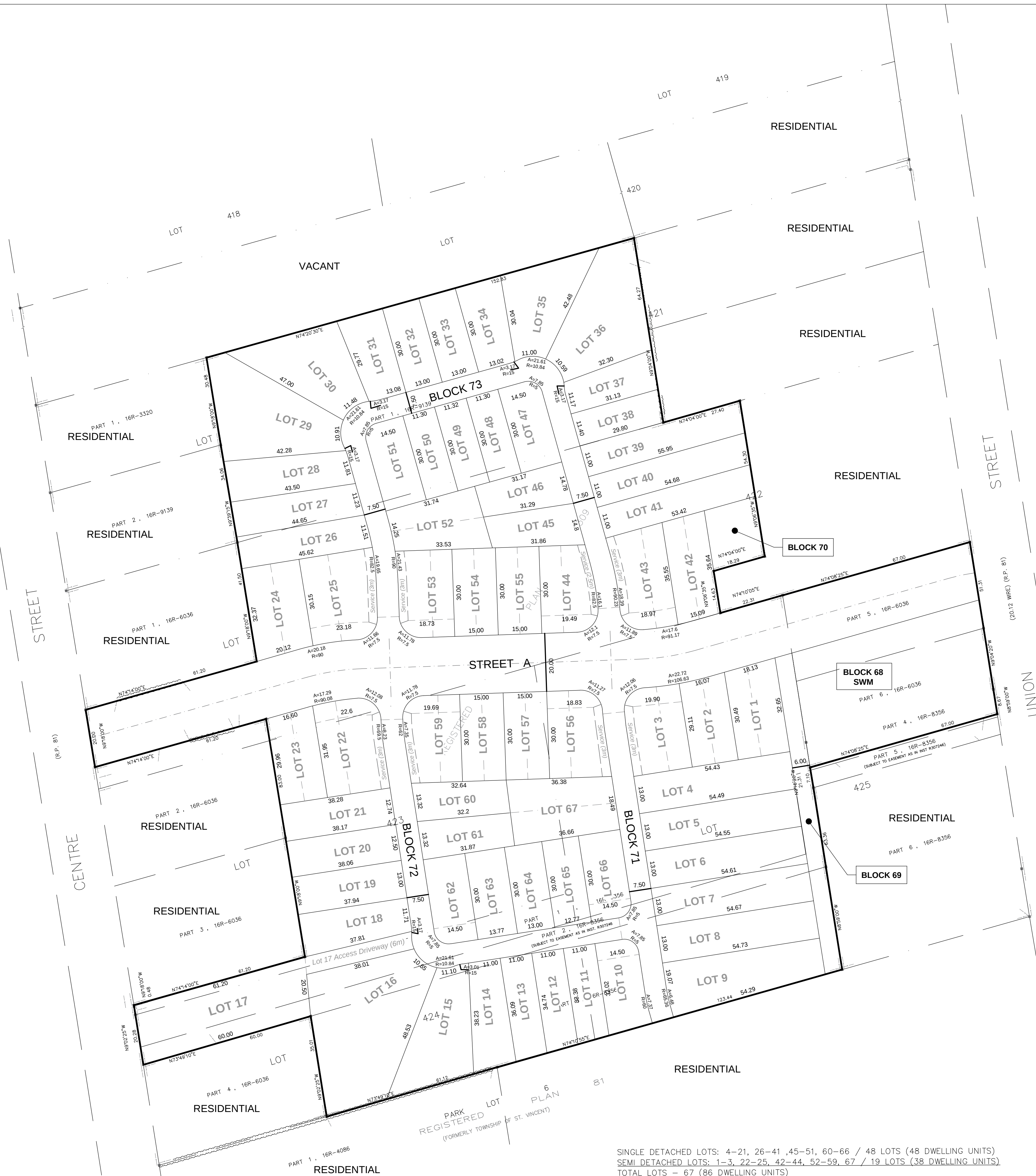
SCALE / METRIC
0 5 10 20 30 50 m
1:750

ZUBEK, EMO
PATTEN & THOMSEN
LIMITED
ONTARIO LAND SURVEYORS
200 MOUNTAIN ROAD
UNIT 4
COLLINGWOOD, ONTARIO L9Y 4V5
PHONE: (705) 445-4910

travis
travis & associates
planning consultants
approvals facilitators
development managers
7 - 275 first street collingwood
ontario canada L9Y 1A8
v 705 446 9917 f 446 9918
travisinc.ca

File/CAD: TA-MEAFORD-DRAFT.dwg
Date: 20-05-2021
Drafted by: D.C.
Checked by: C.T.

D-1



SINGLE DETACHED LOTS: 4-21, 26-41, 45-51, 60-66 / 48 LOTS (48 DWELLING UNITS)
SEMI-DETACHED LOTS: 1-3, 22-25, 42-44, 52-59, 67 / 19 LOTS (38 DWELLING UNITS)
TOTAL LOTS - 67 (86 DWELLING UNITS)

TOTAL SITE AREA(m²) - 52065.93
TOTAL NET DEVELOPMENT AREA(m²) - 39186
(TOTAL SITE AREA LESS ROAD SYSTEM AND SWM BLOCK)
DENSITY - 21.9 DWELLING UNITS/HA
(TOTAL NUMBER OF DWELLING UNITS PER TOTAL NET DEVELOPMENT AREA)

SCHEDULE OF LAND USE
LOTS - USE - AREA(m²)

LOT 1-LOT 3 - SEMI-DETACHED LOTS - 1626.29
LOT 4-LOT 9 - SINGLE DETACHED LOTS - 4411.67
LOT 10-LOT 21 - SINGLE DETACHED LOTS - 7967.05
LOT 22-LOT 23 - SEMI-DETACHED LOTS - 1212.44
LOT 24-LOT 25 - SEMI-DETACHED LOTS - 1359.4
LOT 26-LOT 41 - SINGLE DETACHED LOTS - 9492.61
LOT 42-LOT 43 - SEMI-DETACHED LOTS - 1177.15
LOT 45-LOT 51 - SINGLE DETACHED LOTS - 2678.84
LOT 52-LOT 55, LOT 44 - SEMI-DETACHED LOTS - 2582.31
LOT 56-LOT 59, LOT 67 - SEMI-DETACHED LOTS - 2795.95
LOT 60-LOT 66 - SINGLE DETACHED LOTS - 2840.03
LOTS 1-67 TOTAL AREA(m²) - 38143.74

OPEN SPACE BLOCKS
BLOCK 68 - STORM WATER MANAGEMENT (SWM) - 2649.02
BLOCK 69 - OPEN SPACE-WALKWAY SERVICE CONNECTION - 663.24
BLOCK 70 - FUTURE DEVELOPMENT - 379.58
OPEN SPACE TOTAL AREA(m²) - 3691.84

ROAD SYSTEM
STREET A - 6562.2
BLOCK 71 - CONDOMINIUM ROAD - 854.88
BLOCK 72 - CONDOMINIUM ROAD - 1123.34
BLOCK 73 - CONDOMINIUM ROAD - 1689.94
ROAD SYSTEM TOTAL AREA(m²) - 10230.36

Attachment B

ITE Trip Generation Manual, 10th Edition Excerpts

Land Use: 210

Single-Family Detached Housing

Description

Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.

Additional Data

The number of vehicles and residents had a high correlation with average weekday vehicle trip ends. The use of these variables was limited, however, because the number of vehicles and residents was often difficult to obtain or predict. The number of dwelling units was generally used as the independent variable of choice because it was usually readily available, easy to project, and had a high correlation with average weekday vehicle trip ends.

This land use included data from a wide variety of units with different sizes, price ranges, locations, and ages. Consequently, there was a wide variation in trips generated within this category. Other factors, such as geographic location and type of adjacent and nearby development, may also have had an effect on the site trip generation.

Single-family detached units had the highest trip generation rate per dwelling unit of all residential uses because they were the largest units in size and had more residents and more vehicles per unit than other residential land uses; they were generally located farther away from shopping centers, employment areas, and other trip attractors than other residential land uses; and they generally had fewer alternative modes of transportation available because they were typically not as concentrated as other residential land uses.

Time-of-day distribution data for this land use are presented in Appendix A. For the six general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:15 and 8:15 a.m. and 4:00 and 5:00 p.m., respectively. For the two sites with Saturday data, the overall highest vehicle volume was counted between 3:00 and 4:00 p.m. For the one site with Sunday data, the overall highest vehicle volume was counted between 10:15 and 11:15 a.m.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in California, Connecticut, Delaware, Illinois, Indiana, Maryland, Minnesota, Montana, New Jersey, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Vermont, and 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, 903, 925, 936

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: 173

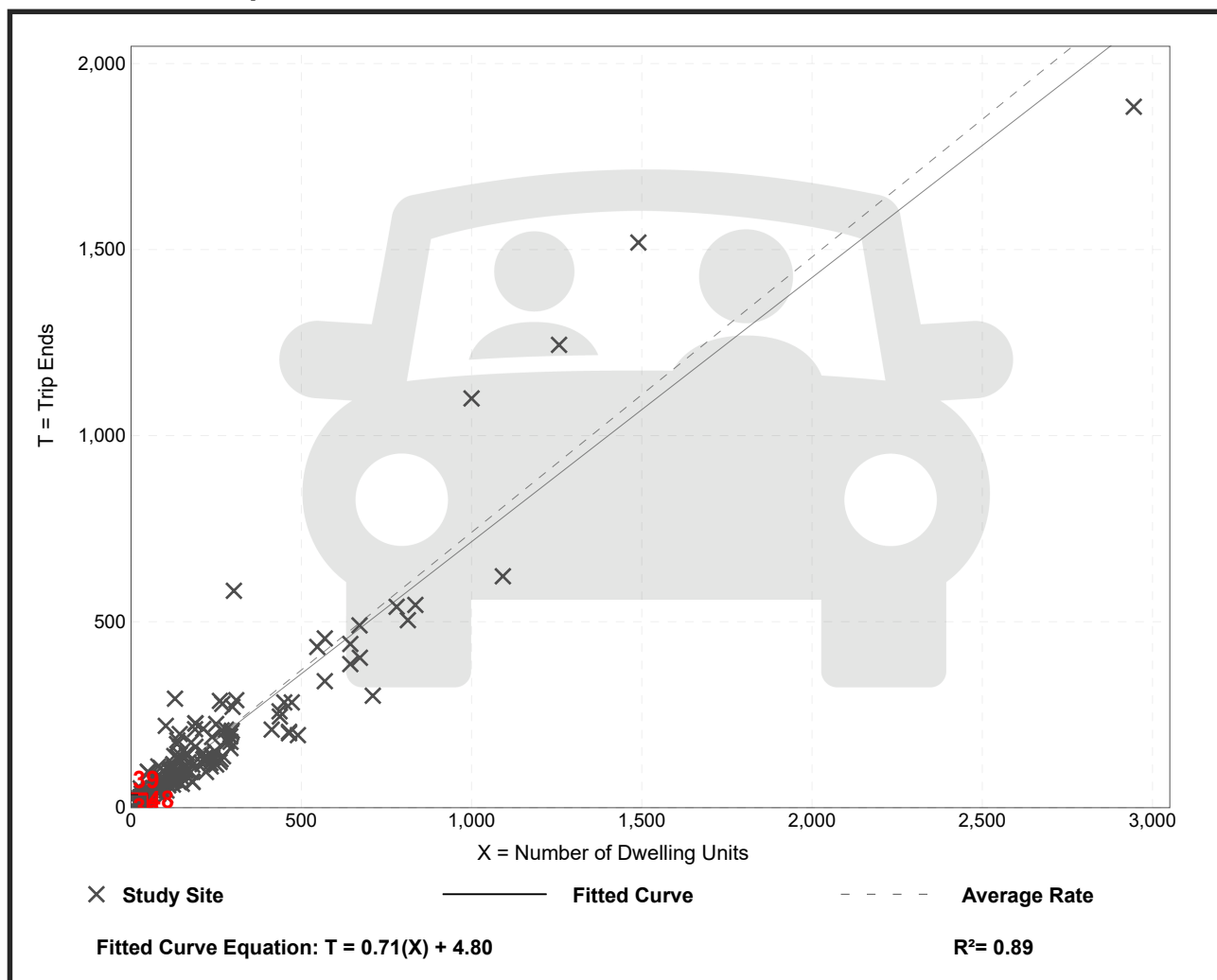
Avg. Num. of Dwelling Units: 219

Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

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: 190

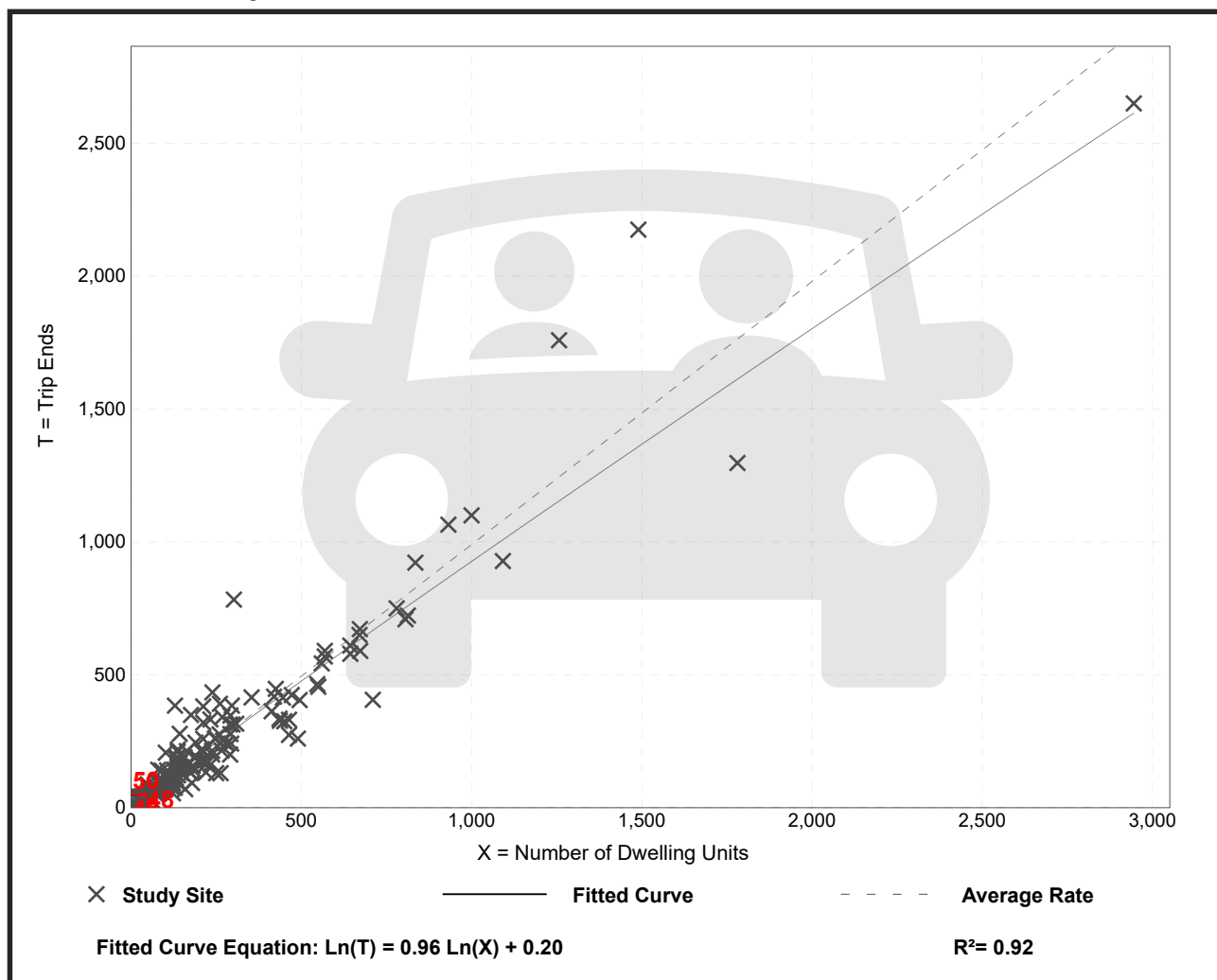
Avg. Num. of Dwelling Units: 242

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

Data Plot and Equation



Land Use: 220

Multifamily Housing (Low-Rise)

Description

Low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have one or two levels (floors). Multifamily housing (mid-rise) (Land Use 221), multifamily housing (high-rise) (Land Use 222), and off-campus student apartment (Land Use 225) are related land uses.

Additional Data

In prior editions of *Trip Generation Manual*, the low-rise multifamily housing sites were further divided into rental and condominium categories. An investigation of vehicle trip data found no clear differences in trip making patterns between the rental and condominium sites within the ITE database. As more data are compiled for future editions, this land use classification can be reinvestigated.

For the three sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.72 residents per occupied dwelling unit.

For the two sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 96.2 percent of the total dwelling units were occupied.

This land use included data from a wide variety of units with different sizes, price ranges, locations, and ages. Consequently, there was a wide variation in trips generated within this category. Other factors, such as geographic location and type of adjacent and nearby development, may also have had an effect on the site trip generation.

Time-of-day distribution data for this land use are presented in Appendix A. For the 10 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:15 and 8:15 a.m. and 4:45 and 5:45 p.m., respectively. For the one site with Saturday data, the overall highest vehicle volume was counted between 9:45 and 10:45 a.m. For the one site with Sunday data, the overall highest vehicle volume was counted between 11:45 a.m. and 12:45 p.m.

For the one dense multi-use urban site with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:00 and 8:00 a.m. and 6:15 and 7:15 p.m., respectively.

For the three sites for which data were provided for both occupied dwelling units and residents, there was an average of 2.72 residents per occupied dwelling unit.

The average numbers of person trips per vehicle trip at the five general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.13 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.21 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in British Columbia (CAN), California, District of Columbia, Florida, Georgia, Illinois, Indiana, Maine, Maryland, Minnesota, New Jersey, New York, Ontario, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, and Washington.

It is expected that the number of bedrooms and number of residents are likely correlated to the number of trips generated by a residential site. Many of the studies included in this land use did not indicate the total number of bedrooms. To assist in the future analysis of this land use, it is important that this information be collected and included in trip generation data submissions.

Source Numbers

168, 187, 188, 204, 211, 300, 305, 306, 319, 320, 321, 357, 390, 412, 418, 525, 530, 571, 579, 583, 864, 868, 869, 870, 896, 903, 918, 946, 947, 948, 951

Multifamily Housing (Low-Rise) (220)

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: 42

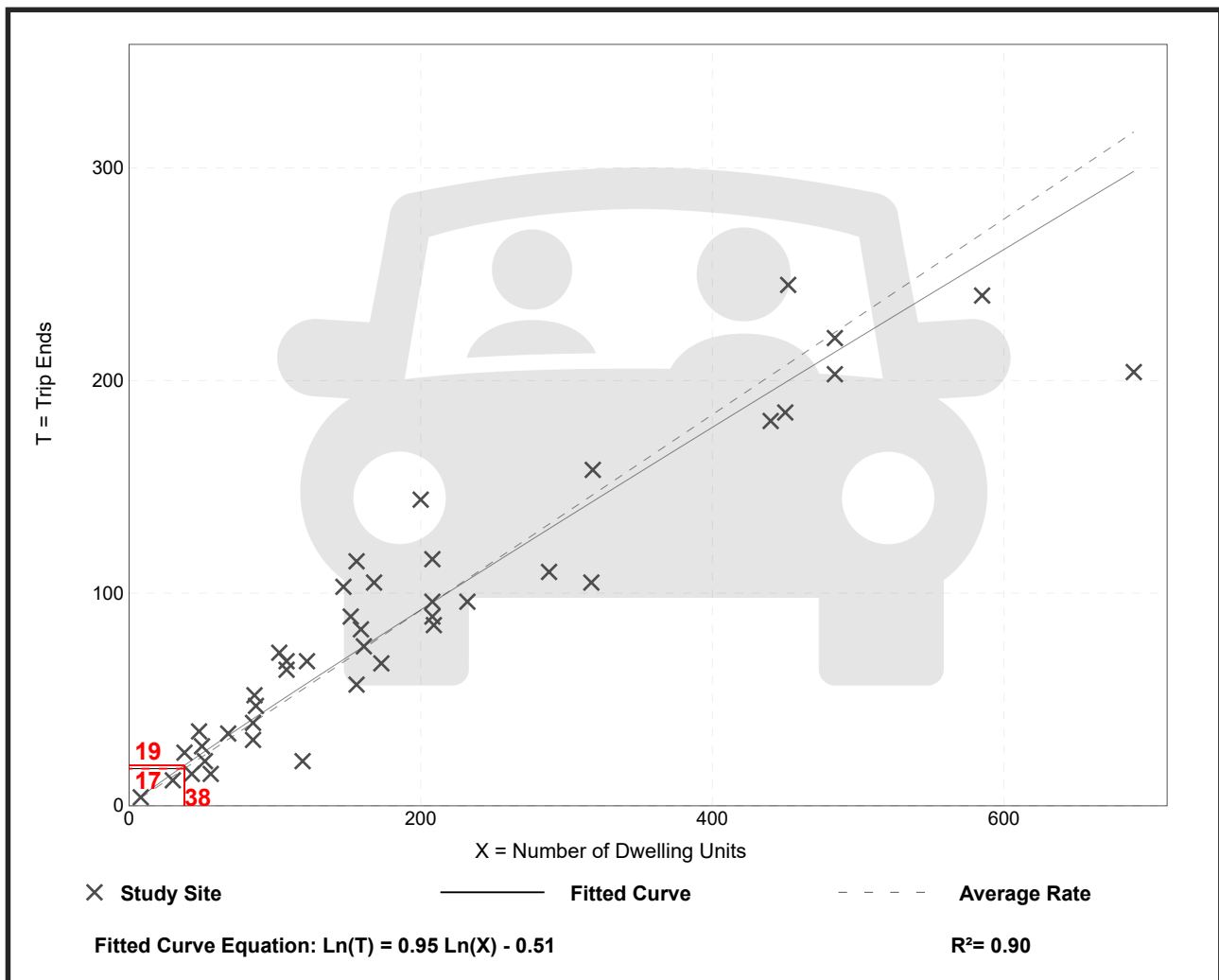
Avg. Num. of Dwelling Units: 199

Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

Data Plot and Equation



Multifamily Housing (Low-Rise) (220)

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: 50

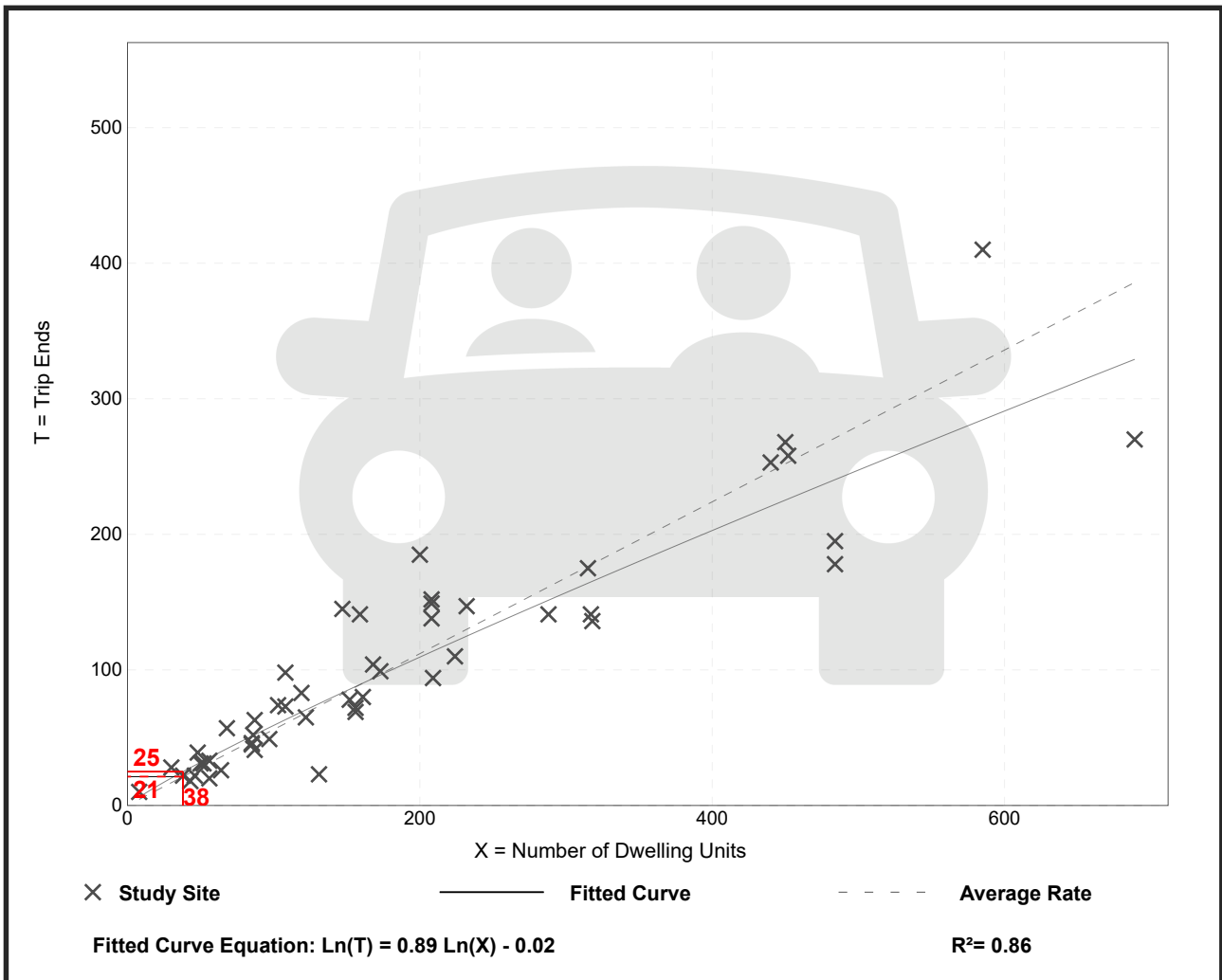
Avg. Num. of Dwelling Units: 187

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

Data Plot and Equation



Attachment C

Municipality of Meaford's Engineering Standards Excerpts



ENGINEERING STANDARDS

The Developer will be responsible for clearing all mud tracked onto municipal property and/or adjacent properties to the satisfaction of the Municipality.

The Erosion & Sediment Control Plan (ref. Section 1.2) shall include the minimum control measures required to address erosion and sediment control resulting from mud tracking onto municipal streets, windblown dust and waterborne sediments.

The following are general requirements for the design of urban roads and rights-of-way:

- Design speed, 60 km/hr min; /urban/ 90km/hr min; /rural/
- Minimum centerline curve radius, 55 m;
- Horizontal and vertical stopping sight distance, 45 m min. (urban) and 85 m min. (rural);
- Street allowance 20 m min;
- Pavement width (not including gutters) – 8.5 m (urban), 6.5 m (rural);
- The use of cul-de-sac is discouraged, however, where necessary cul-de-sac street allowance, 22.8 m R. min;
- Edge of pavement in cul-de-sac, 16.0 m R. min;
- Edge of pavement at intersection, 9.0 m R min;
- Road grades, 0.3% min., 6.0% max. and 8% max. with curb and gutter;
- Daylighting at all intersections and changes in alignment where the deflection angle is greater than 45° shall be a minimum of 5 m x 5 m;
- Roads shall be classified in accordance with the Municipal Official Plan; and
- Provisions shall be included in the road design for communal mailboxes. The Developer shall be responsible for providing parking areas, structural concrete foundations, etc. all as required by the Municipality and/or Canada Post for communal mailboxes in locations designated by the Municipality and/or Canada Post.

3.3 Clearing and Grubbing

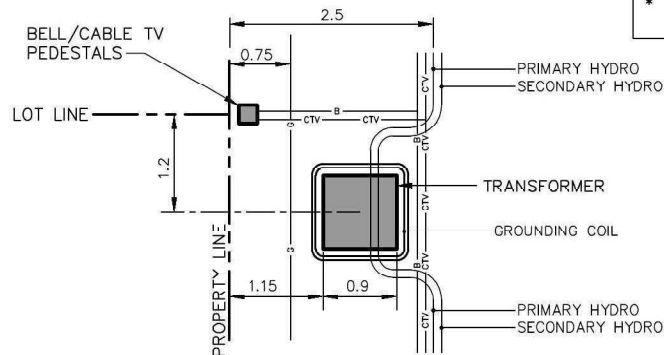
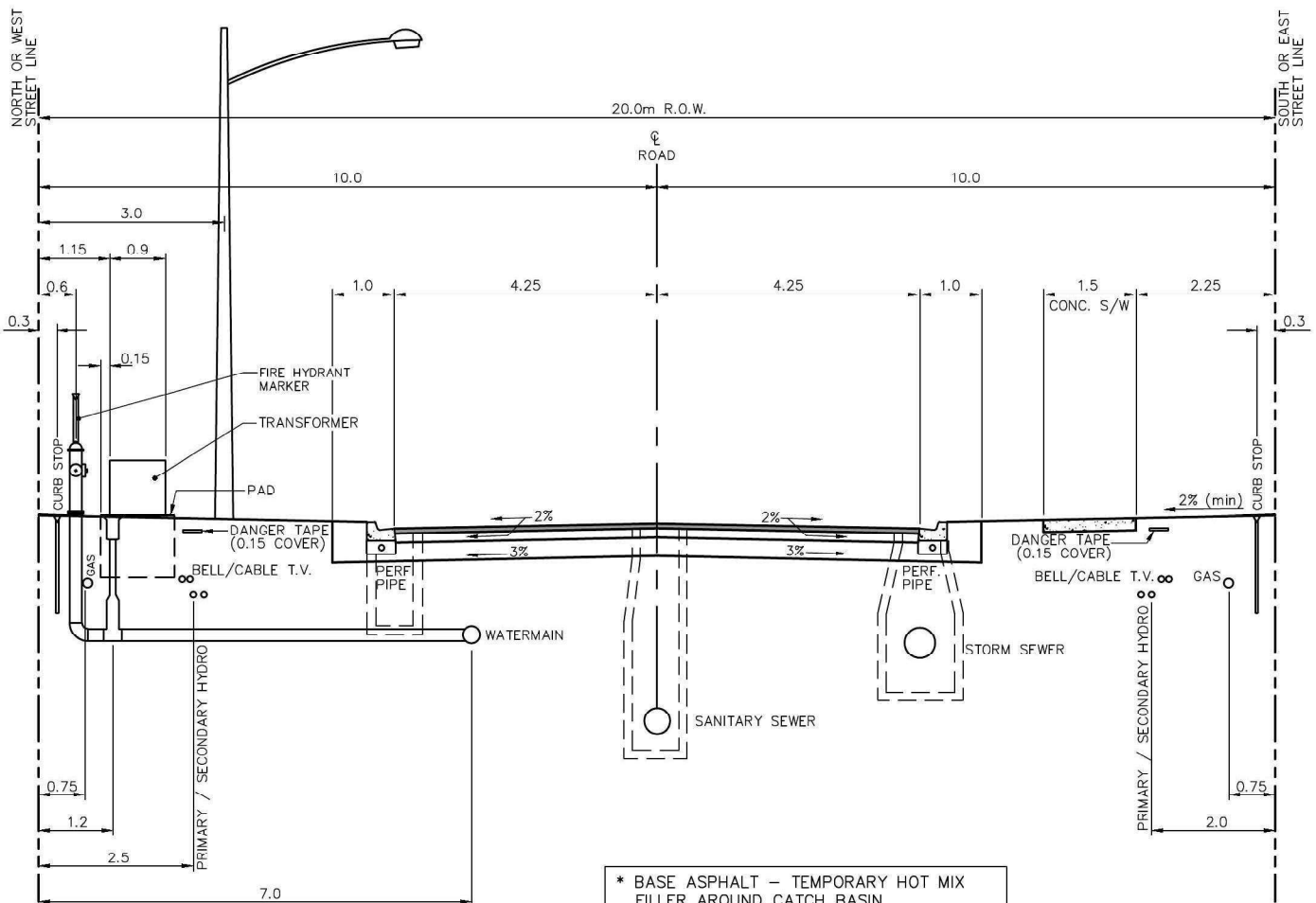
Trees shall be removed so that the specifications for sight distances, grading, ditching, etc. may be met. All stumps, logs, brush, boulders, debris, etc. shall be removed from the entire street allowance and deposited off the site of the subdivision to a disposal area approved by the Developer's Engineer.

Unless noted otherwise, all healthy trees behind the back slope of ditches and not obstructing visibility or installation of services shall be preserved. The Municipality may give special permission to leave trees on the street allowance.

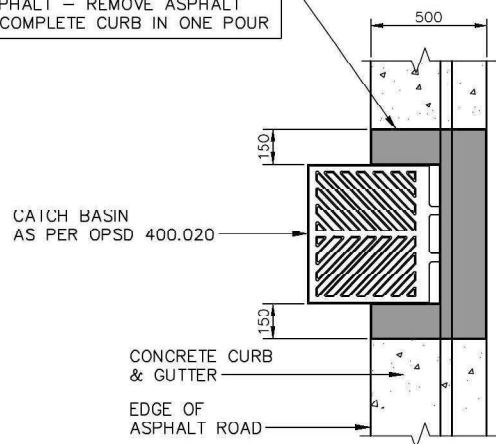
The Developer is responsible to coordinate the delineation of tree clearing to the satisfaction of the Municipality prior to mobilization, including legal survey of the property to ensure that tree clearing does not encroach onto neighboring properties or into adjacent vegetated buffers.

3.4 Grading

The boulevard area behind the curb shall be graded at 2% towards the curb.



PLAN
(AT PAD MOUNT TRANSFORMER)



PLAN
(AT CURB WITH CATCH BASIN)

NOTES:

1. TOPSOIL TO BE REMOVED TO ITS FULL DEPTH ALONG ENTIRE WIDTH OF RIGHT-OF-WAY
2. ORGANIC MATERIAL WITHIN 1.2m OF TOP OF PAVEMENT TO BE REMOVED.
3. BOULEVARDS TO BE FULLY SODDED AS SPECIFIED (100mm TOPSOIL AND SOD).
4. ROAD BASE:
 - 40mm HL3 ASPHALT SURFACE COURSE
 - 50mm HL4 ASPHALT BASE COURSE
 - 150mm GRANULAR 'A'
 - 300mm GRANULAR 'B'
5. CONCRETE CURB AND GUTTER PER OPSD 600.040 AND 600.070 IN NEW DEVELOPMENT
6. CONCRETE SIDEWALK PER OPSD 310.010
7. MINIMUM DEPTH OF COVER :
 - SANITARY SEWER - 2.75m
 - STORM SEWER - 1.5m
 - WATERMAIN - 1.7m
 - HYDRO - 1.2m
 - CABLE - 0.9m
 - BELL - 0.9m
 - GAS - 0.6m
 - GAS AT CROSSING ROAD - 1.0m

MUNICIPALITY OF MEAFORD

**TYPICAL
ROAD CROSS-SECTION
AND SERVICE LOCATIONS**

DRAWN: J.M.M.	SCALE: N.T.S.	
DESIGN: P.M.K.	PLOT: 1=1	
CHECKED: R.C.J.	DATE: NOV. 2015	STD.DWG.No.1

Attachment D

TAC Excerpts

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.

Attachment B

Draft Plan (Travis & Associates, May 12, 2022)



- NOTES
- DENOTES AERIAL UTILITY LINE
 - DENOTES HYDRO POLE
 - DENOTES SANITARY MANHOLE
 - DENOTES FIRE HYDRANT
 - DENOTES CORRUGATED STEEL PIPE AND DIAMETER
 - DENOTES GAS VALVE
 - DENOTES CABLE TV PREDESTAL
 - DENOTES CROWNLINE
 - DENOTES CONIFEROUS TREE

SINGLE DETACHED LOTS: 4-21, 26-42, 45-51, 60-66 / 49 LOTS (49 DWELLING UNITS)
SEMI-DETACHED LOTS: 1-3, 22-25, 43-44, 52-59, 67 / 18 LOTS (36 DWELLING UNITS)
TOTAL LOTS = 67 (85 DWELLING UNITS)

TOTAL SITE AREA(m²) = 52062.67
TOTAL NET DEVELOPMENT AREA(m²) = 38767.98
(TOTAL SITE AREA LESS ROAD SYSTEM AND SWM BLOCK)
DENSITY = 21.9 DWELLING UNITS/HA
(TOTAL NUMBER OF DWELLING UNITS PER TOTAL NET DEVELOPMENT AREA)

SCHEDULE OF LAND USE
LOTS - USE - AREA(m²)

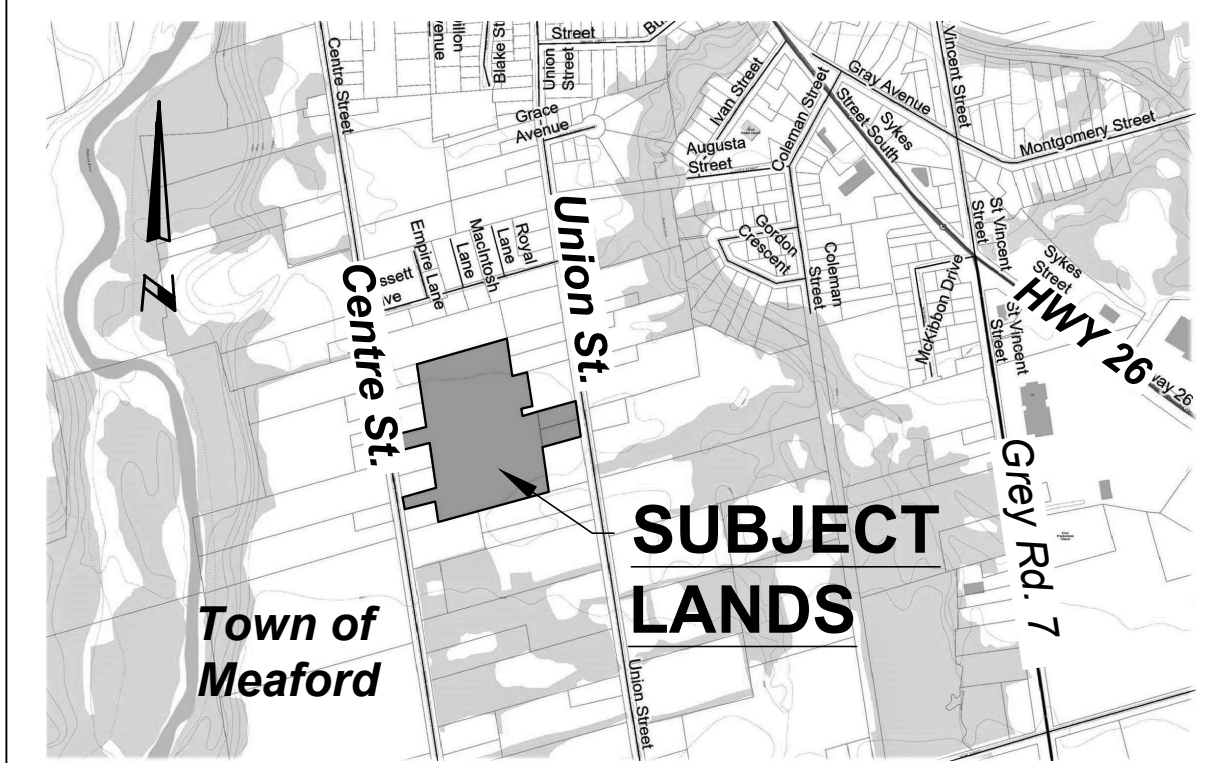
LOT 1-LOT 3 - SEMI-DETACHED LOTS - 1626.29
LOT 4-LOT 21 - SINGLE DETACHED LOTS - 12313.35
LOT 22-LOT 23 - SEMI-DETACHED LOTS - 1212.44
LOT 24-LOT 25 - SEMI-DETACHED LOTS - 1359.4
LOT 26-LOT 42 - SINGLE DETACHED LOTS - 10073.49
LOT 43-LOT 44 - SEMI-DETACHED LOT - 1340.48
LOT 45-LOT 51 - SINGLE DETACHED LOTS - 2678.84
LOT 52-LOT 55 - SEMI-DETACHED LOTS - 2037.98
LOT 56-LOT 59, LOT 67 - SEMI-DETACHED LOTS - 2795.95
LOT 60- LOT 66 - SINGLE DETACHED LOTS - 2840.03
LOTS 1-67 TOTAL AREA(m²) = 38278.25

OPEN SPACE BLOCKS

BLOCK 68 - STORM WATER MANAGEMENT (SWM) - 2649.02
BLOCK 69 - OPEN SPACE-WALKWAY SERVICE CONNECTION - 973.27
BLOCK 70 - OPEN SPACE - 179.71
OPEN SPACE TOTAL AREA(m²) = 3802

ROAD SYSTEM

STREET A = 6227.43
BLOCK 71 - CONDOMINIUM ROAD - 1902.43
BLOCK 72 - CONDOMINIUM ROAD - 1852.57
ROAD SYSTEM TOTAL AREA(m²) = 9982.43



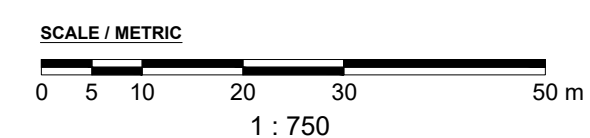
DRAFT PLAN OF SUBDIVISION OF
PART OF LOTS
421, 422, 423, 424 AND 425
REGISTERED PLAN 309
(FORMERLY TOWN OF MEAFORD)
MUNICIPALITY OF MEAFORD
COUNTY OF GREY

SURVEYOR CERTIFICATE:
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATION TO THE ADJACENT LANDS ARE ACCURATELY SHOWN ON THIS PLAN.
DATED THE ____ DAY OF _____ 2022
NAME: PAUL R. THOMSEN
ONTARIO LAND SURVEYOR

OWNER CERTIFICATE:
AS OF THE DATE ON THIS PLAN THE UNDERSIGNED BEING THE REGISTERED OWNERS OF THE SUBJECT LANDS HEREBY AUTHORIZE _____ TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION AND TO MAKE APPLICATION TO THE GREY COUNTY PLANNING DEPARTMENT FOR APPROVAL THEREOF.
DATED THE ____ DAY OF _____ 2022
NAME: _____
I HAVE THE AUTHORITY TO BIND THE CORPORATION

PLANNING ACT, SECTION 51(17)
(a) As shown on draft plan
(b) As shown on draft plan
(c) As shown on draft plan
(d) See schedule of land use
(e) As shown on draft plan
(f) As shown on draft plan
(g) Piped municipal treated water
(h) Clayey sandy silt
(i) As shown on draft plan
(j) Municipal sanitary sewer
(k) None

Revision#.	Date D/M/Y	Description / Notes
1.	27/04/2021	DRAFT PLAN FOR SUBMISSION
2.	20/05/2021	REVISED DRAFT PLAN FOR SUBMISSION
3.	31/05/2021	REVISED DRAFT PLAN FOR SUBMISSION
4.	13/01/2022	REVISED DRAFT PLAN FOR SUBMISSION
5.	05/05/2022	REVISED DRAFT PLAN FOR SUBMISSION
6.	12/05/2022	REVISED DRAFT PLAN FOR SUBMISSION



ZUBEK, E.M.O.
PATTEN & THOMSEN
LIMITED
ONTARIO LAND SURVEYORS
200 MOUNTAIN ROAD
UNIT 4
COLLINGWOOD, ONTARIO L9Y 4V5
PHONE: (705) 445-4910

travis
travis & associates
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approvals facilitators
development managers
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travisinc.ca

File/CAD: TA-MEAFORD-DRAFT.dwg
Date(d/m/y): 12/05/2022
Drafted by: D.C.
Checked by: C.T.

D-1