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2024-08-29
Project: (240247)

Nicholas Dell
Harper Dell & Associates Inc.
c/o 786 Group Inc.
1474 Laurier Avenue
Milton, ON L9T 8T4

Dear Mr. Dell:

**RE: TEMPORARY ZONING BY-LAW AMENDMENT FOR TRANSPORT TRUCK
PARKING, 265 WOOLWICH STREET SOUTH, TOWNSHIP OF WATERLOO,
WATERLOO REGION, TRANSPORTATION IMPACT BRIEF**

Introduction

Harper Dell & Associates Inc., on behalf of 786 Group Inc., retained Paradigm Transportation Solutions Limited (Paradigm) to prepare this Transportation Impact Brief for a proposed Temporary Zoning By-law Amendment for transport truck parking at 265 Woolwich Street South, in the Township of Woolwich. **Figure 1** (attached) illustrates the site location on the east side of Woolwich Street South, south of Shallow Creek Road.

The purpose of this letter is to estimate the high-level transportation impacts of the proposed land use. This letter includes:

- ▶ A description of the proposed site concept;
- ▶ A description of existing transportation network;
- ▶ An estimate of the site's trip generation;
- ▶ An analysis of on-site vehicle circulation; and
- ▶ An assessment of the available sight distance at the proposed driveway location.

Paradigm confirmed the scope of work for this study with Township of Woolwich staff via email in August 2024. This study has been carried out in general accordance with the Region of Waterloo *Transportation Impact Study Guidelines*.¹ **Appendix A** contains the pre-study correspondence, and comments received from the Township.

¹ Region of Waterloo, *Transportation Impact Study Guidelines*, (Waterloo: Region of Waterloo, 2014).

Site Description and Development Concept

The subject lands are on the east side of Woolwich Street South, approximately 100 metres south of Shallow Creek Road and are vacant. The surrounding land uses are primarily industrial, with several manufacturing, industrial, and warehousing developments on both sides of Woolwich Street South, between Fountain Street and Menno Street. Lands further north of Menno Street are predominantly residential.

The property owner proposes to develop the site into a transport truck parking lot, with 100 parking spaces for the parking of logistic vehicles. Vehicle access is proposed via one all-moves driveway connection to Woolwich Street South. **Figure 2** (attached) illustrates the proposed concept plans.

Existing Transportation Network

Woolwich Street South is a north-south collector road with a two-lane rural cross-section and a posted speed limit of 40 km/h.² The road does not include sidewalks or dedicated cycling facilities requiring all road users to share the available road space. North of Shallow Creek Road, the road is designated as a Community Safety Zone (CSZ).

Truck restrictions are posted at Victoria Street North and Fountain Street North to discourage the use of Woolwich Street South as a truck route between Victoria Street North and Fountain Street North. These restrictions do not apply to truck traffic destined to properties on Woolwich Street South.

Estimated Trip Generation

Trip generation estimates are typically derived using industry publications such as the Institute of Transportation Engineers (ITE) *Trip Generation Manual*³ which contains trip generation characteristics observed and collected for various land uses in the United States and Canada.

ITE does not publish trip generation data for truck parking lots, since the data in the *Trip Generation Manual* generally associate trip generation activity to an independent variable (for example, the gross floor area of a building on a property, or the number of employees). The underlying assumption is that parking spaces on their own do not generate trips.

Because the site does not propose any building area or employees, and is intended only for the periodic parking of logistic vehicles it is assumed to be a low trip generator. It would not be expected to significantly affect traffic operations on Woolwich Street South.

² Township of Woolwich, *Official Plan Map 15.1 Township of Woolwich Road Hierarchy*, (Elmira: Township of Woolwich, 2022).

³ Institute of Transportation Engineers, *Trip Generation Manual*, 11th ed., (Washington, DC: ITE, 2021).



Access and Circulation Review

Sight Distance Assessment

The Transportation Association of Canada (TAC) *Geometric Design Guide for Canadian Roads*⁴ (most recently published in 2017) publishes minimum sight distance criteria based on the design speed of a road; generally, 10 km/h above the posted speed limit. TAC defines the following parameters for the assessment of sight distance:

- ▶ Object Height (Vehicle tail or brake light) – 0.60 metres;
- ▶ Driver Eye Height – 1.08 metres; and
- ▶ Top of Car – 1.30 metres.

The sight distance assessment completed for this study reflects a design speed of 50 km/h, which is 10 km/h above the posted speed limit on Woolwich Street South. **Table 1** summarizes the minimum sight distances defined by TAC at a design speed of 50 km/h

TABLE 1: SIGHT DISTANCES – TAC

Sight Distance Measurement	Sight Distance (50 km/h Design Speed)
Minimum Stopping Sight Distance	65 metres
Intersection Sight Distance (Left Turn from Stop) ¹	160 metres
Intersection Sight Distance (Right Turn from Stop) ²	150 metres
Intersection Sight Distance (Left Turn from Major Road)	105 metres

Notes:

1. Intersection sight distance for the left-turn from stop condition represents the distance for a motorist on the minor road facing in either direction.
2. Intersection sight distance for the right-turn from stop condition represents the distance for a motorist on the minor road facing to the left.

It is noted that the driver eye height used in the assessment reflects a typical passenger vehicle driver height, whereas a typical driver eye height for large trucks and tractor trailer combinations is 2.3 metres.⁵ TAC notes that “in general trucks need longer stopping sight distances for a given speed; however, one balancing factor is that a truck driver can generally

⁴ TAC, “Intersections,” Chap. 9 in *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017).

⁵ TAC, “Design Controls, Classifications and Consistency,” Chap. 2 in *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017), 32.



see further than a passenger car due to an eye height advantage.”⁶ As a result, “a separate stopping sight distance[s] for trucks are generally not used in highway design.”⁷ Intersection sight distance reflects a larger time gap than that for passenger vehicles, therefore, the intersections sight distances shown in **Table 1** have been adjusted for combination trucks.

Paradigm staff conducted a site visit in July 2024 to document existing conditions near the subject site and estimate the available sight distance at the proposed driveway. The measurements for intersection sight distance were taken from a point 4.4 metres from the existing edge of pavement, representing the position of a driver performing a turning movement from the subject site. The measurements for stopping sight distance were taken from the centre of the respective northbound and southbound travel lanes on Woolwich Street South. **Table 2** summarizes the measurements at the proposed driveway and indicate the driveway location meets the minimum sight distances defined by TAC.

TABLE 2: ESTIMATED (OBSERVED) SIGHT DISTANCES – DRIVEWAY B

Sight Distance Measurement	Estimated Sight Distance	Meets Sight Distance Guidance (60 km/h Design Speed)
Minimum Stopping Sight Distance (Northbound)	>65 metres	Yes
Minimum Stopping Sight Distance (Southbound)	>65 metres	Yes
Intersection Sight Distance (Left Turn from Stop) ¹	>160 metres (facing left)	Yes
	>160 metres (facing right)	Yes
Intersection Sight Distance (Right Turn from Stop) ²	>150 metres (facing left)	Yes
Intersection Sight Distance (Left Turn from Major Road)	>105 metres	Yes

Notes:

1. Intersection sight distance for the left-turn from stop condition represents the distance for a motorist on the minor road facing in either direction.
2. Intersection sight distance for the right-turn from stop condition represents the distance for a motorist on the minor road facing to the left.

⁶ TAC, “Design Controls, Classifications and Consistency,” Chap. 2 in *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017), 38.

⁷ TAC, “Design Controls, Classifications and Consistency,” Chap. 2 in *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017), 38.

On-Site Vehicle Circulation

Appendix B contains the detailed site circulation assessment drawings developed using Autodesk AutoTURN swept path analysis software. The analysis reflects a TAC WB-20 design vehicle representative of a tractor-semitrailer with a standard 53-foot trailer. The site circulation assessment indicates the design vehicle can navigate the site without conflict assuming the vehicle cab is not permanently parked with the trailer. The driveway width (as designed) is slightly insufficient and should be widened to accommodate ingress and egress movements. These conflicts are assumed to be mitigatable through site design refinement.

Findings and Conclusions

The findings of this Transportation Impact Brief are as follows:

- ▶ The site is intended solely for the periodic parking of logistics vehicles and is assumed to be a low trip generator.
- ▶ The location of the site driveway satisfies the minimum stopping sight and intersection sight distances published by the Transportation Association of Canada (TAC).
- ▶ A TAC WB-20 (tractor-semitrailer with a standard 53-foot trailer) can navigate the site without conflict, assuming the vehicle cab is not parked with the trailer. Minor conflicts exist at the site driveway which are assumed to be mitigatable through further site design refinement.

Based on the findings of this study, it is concluded that:

- ▶ the site is forecast to have a negligible impact on traffic operations on Woolwich Street South; and
- ▶ the location of the site driveway satisfies the minimum stopping sight distances and intersection sight distances published by the Transportation Association of Canada (TAC) for combination trucks.

Based on the conclusions of this study it is recommended the site be considered for approval with no requirement for off-site transportation improvements. Minor site redesign, including widening of the site driveway, is needed to sufficiently accommodate a typical 53-foot tractor trailer design vehicle.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED



Andrew Steinsky
P.Eng., PTP
Project Manager, Associate



Jim Mallett
M.A.Sc., P.Eng., PTOE
President and CEO, Principal



Attachments



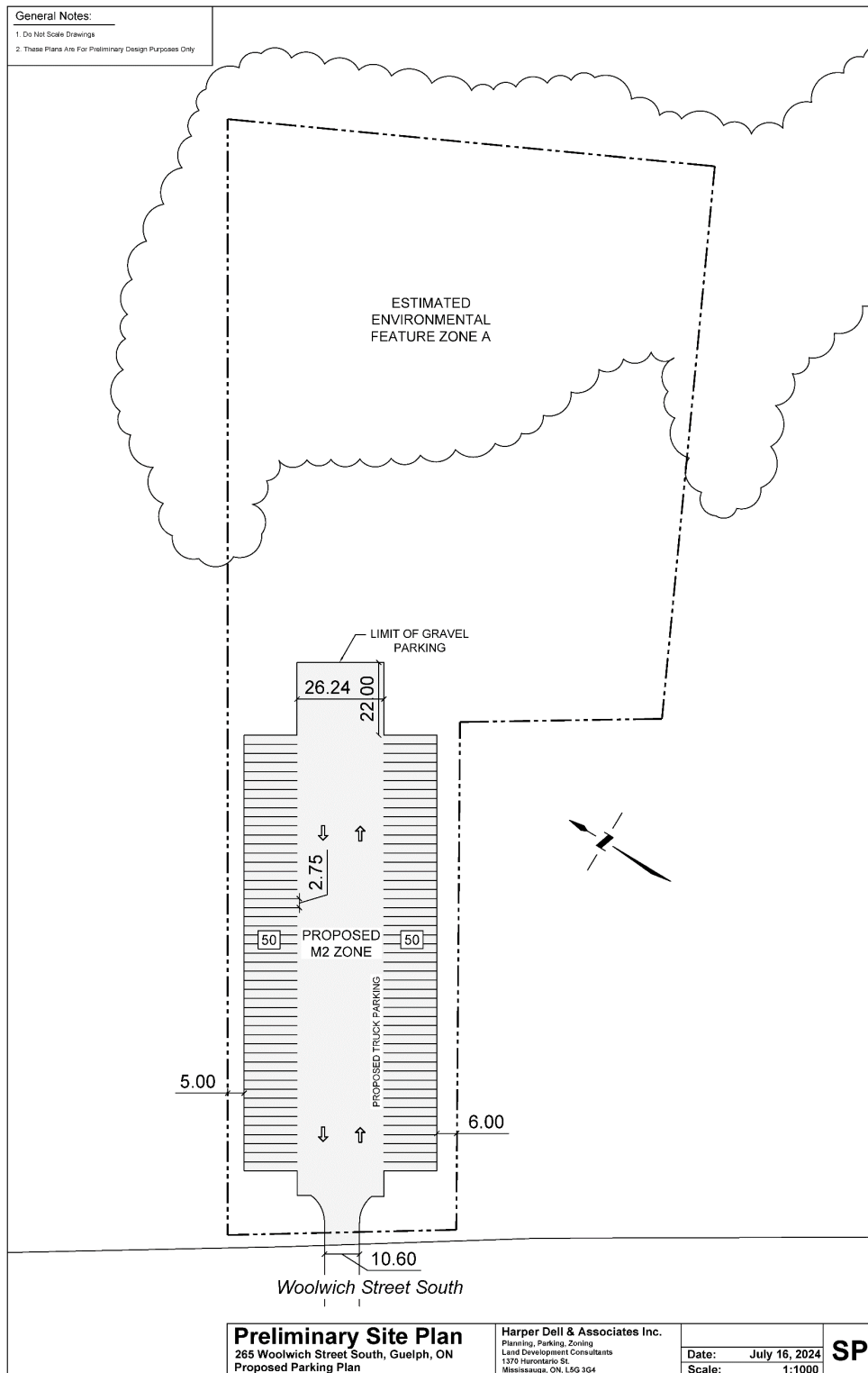


Image Source: SnazzyMaps, licensed under creative commons (<https://snazzymaps.com/>)

*Approximate subject site boundaries



Location of Subject Site



Preliminary Site Plan

Appendix A

Pre-Study Consultation Notes



Andrew Steinsky

From: Andrew Steinsky
Sent: August 8, 2024 8:56 AM
To: 'Stephen Dykstra'
Cc: Bryan Bishop
Subject: RE: [EXT] RE: (240247) - 265 Woolwich Street South Traffic Brief and ACR

Hi Stephen,

Thanks for letting us know. Much appreciated.

We did not plan to collect traffic data, especially given the summer months which would not capture traffic volumes while schools are in session.

Andrew Steinsky, P.Eng., PTP

Project Manager, Associate
(he/him)



5A-150 Pinebush Road, Cambridge ON N1R 8J8
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Upcoming Vacation Alert: I will be out of the office from Monday August 12, 2024 to Friday August 16, 2024 and will not be responding to emails during this time.

Office Hours: 07:30 – 17:30 Eastern Daylight Time (EDT) Monday to Thursday. Paradigm's offices are closed on Fridays.

From: Stephen Dykstra <sdykstra@woolwich.ca>
Sent: Thursday, August 1, 2024 2:38 PM
To: Andrew Steinsky <asteinsky@ptsl.com>
Cc: Bryan Bishop <BBishop@woolwich.ca>
Subject: RE: [EXT] RE: (240247) - 265 Woolwich Street South Traffic Brief and ACR

Andrew,

Yes technique works fine. Can you please let me know if the traffic brief will be providing any information regarding traffic counts on Woolwich and/or Fountain Street.

Bryan – do you have any other concerns with this approach?

Regards,

Stephen Dykstra MCIP, RPP
Senior Planner
Township of Woolwich

Please note that I will be away from the office August 5 to 9 and will return messages upon my return

From: Andrew Steinsky <asteinsky@ptsl.com>
Sent: Thursday, August 1, 2024 2:14 PM
To: Stephen Dykstra <sdykstra@woolwich.ca>
Subject: [EXT] RE: (240247) - 265 Woolwich Street South Traffic Brief and ACR

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Stephen,

Following up on the email below from late May. Can you please confirm if the proposed work plan is acceptable to the Township?

I'll add that we are also conducting a sight distance assessment at the proposed driveway location as part of the Access and Circulation Review.

Thanks,

Andrew Steinsky, P.Eng., PTP
Project Manager, Associate
(he/him)



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Office Hours: 07:30 – 17:30 Eastern Daylight Time (EDT) Monday to Thursday. Paradigm's offices are closed on Fridays.

From: Andrew Steinsky
Sent: Thursday, May 23, 2024 4:46 PM
To: sdykstra@woolwich.ca
Subject: (240247) - 265 Woolwich Street South Traffic Brief and ACR

Hi Stephen,

We've been retained to prepare a Traffic Impact Brief and Access and Circulation Review for a Temporary Zoning By-law Amendment to permit a transport truck parking lot at 265 Woolwich Street South in Breslau. The site is on the east side of Woolwich Street South, south of Shallow Creek Road and is vacant. The conceptual site plan illustrates a parking lot with 110 transport truck parking spaces. Vehicle access is proposed via an all-moves driveway connection to Woolwich Street South.

Based on the Pre-Consultation Comment Report dated February 12, 2024, we're proposing the following work plan for the Traffic Impact Brief. Can Township staff please review the work plan below and confirm if it is satisfactory for the Township.

- **Trip Generation Review:** We will estimate the vehicle trips generated by the proposed development in the weekday AM peak hour and PM peak hour. We will provide a qualitative assessment on the net impact of the trip generation on Woolwich Street South.
- **Access and Circulation Review:** We will review the site access and circulation design to ensure compliance with review agency requirements and applicable industry guidelines. The analysis will be completed using AutoTURN and include assessments of vehicle access and egress, clearance and swept path manoeuvres within the site based on a suitable design vehicle(s) (e.g., WB-20 transport truck) to identify potential conflicts with the site driveways, circulation aisles, and/or parking layout (i.e., no "dead end" spaces).

Please let us know if the Township has any comments on the above work plan.

Thanks,

Andrew Steinsky, P.Eng., PTP

Project Manager, Associate
(he/him)



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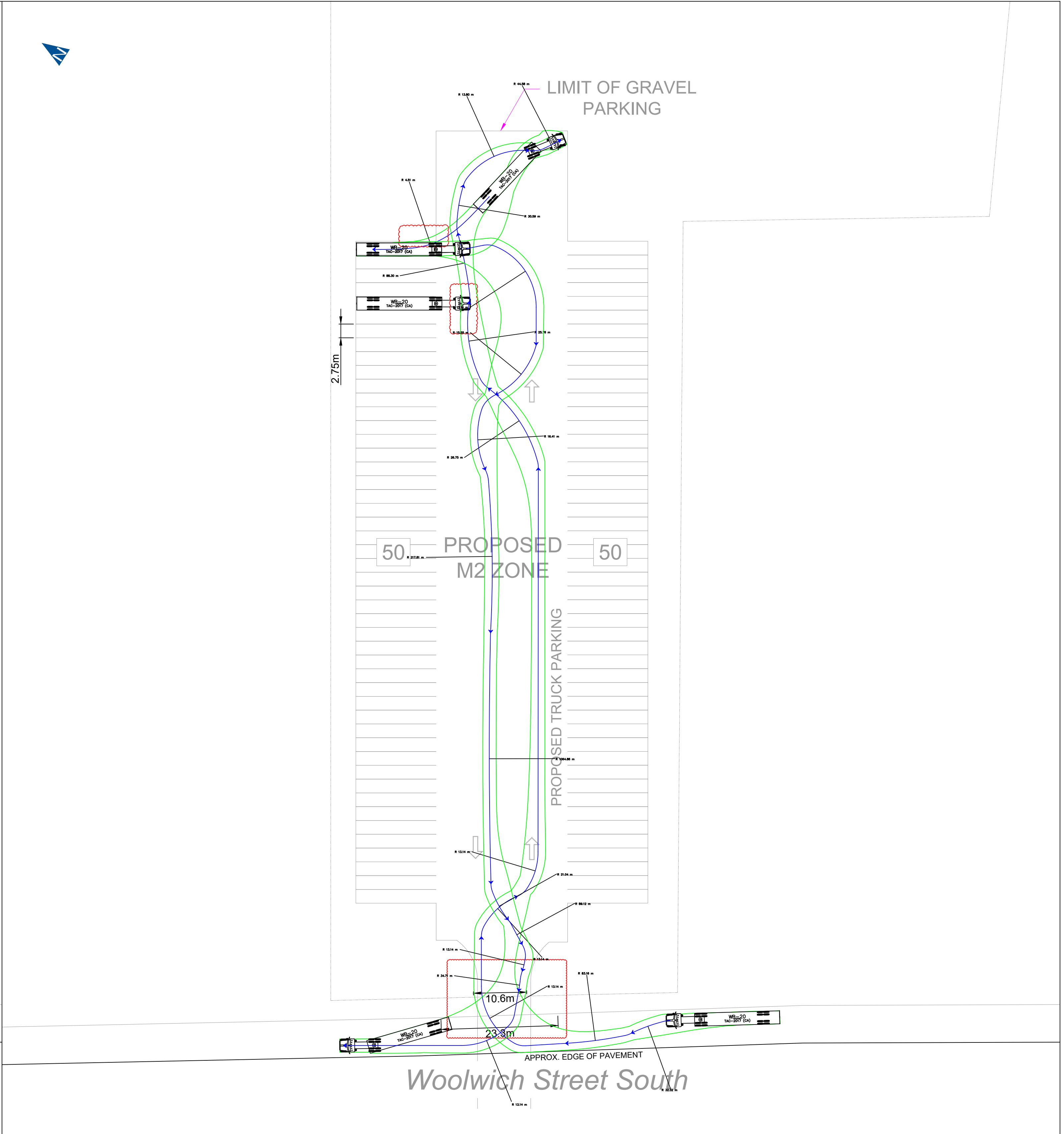
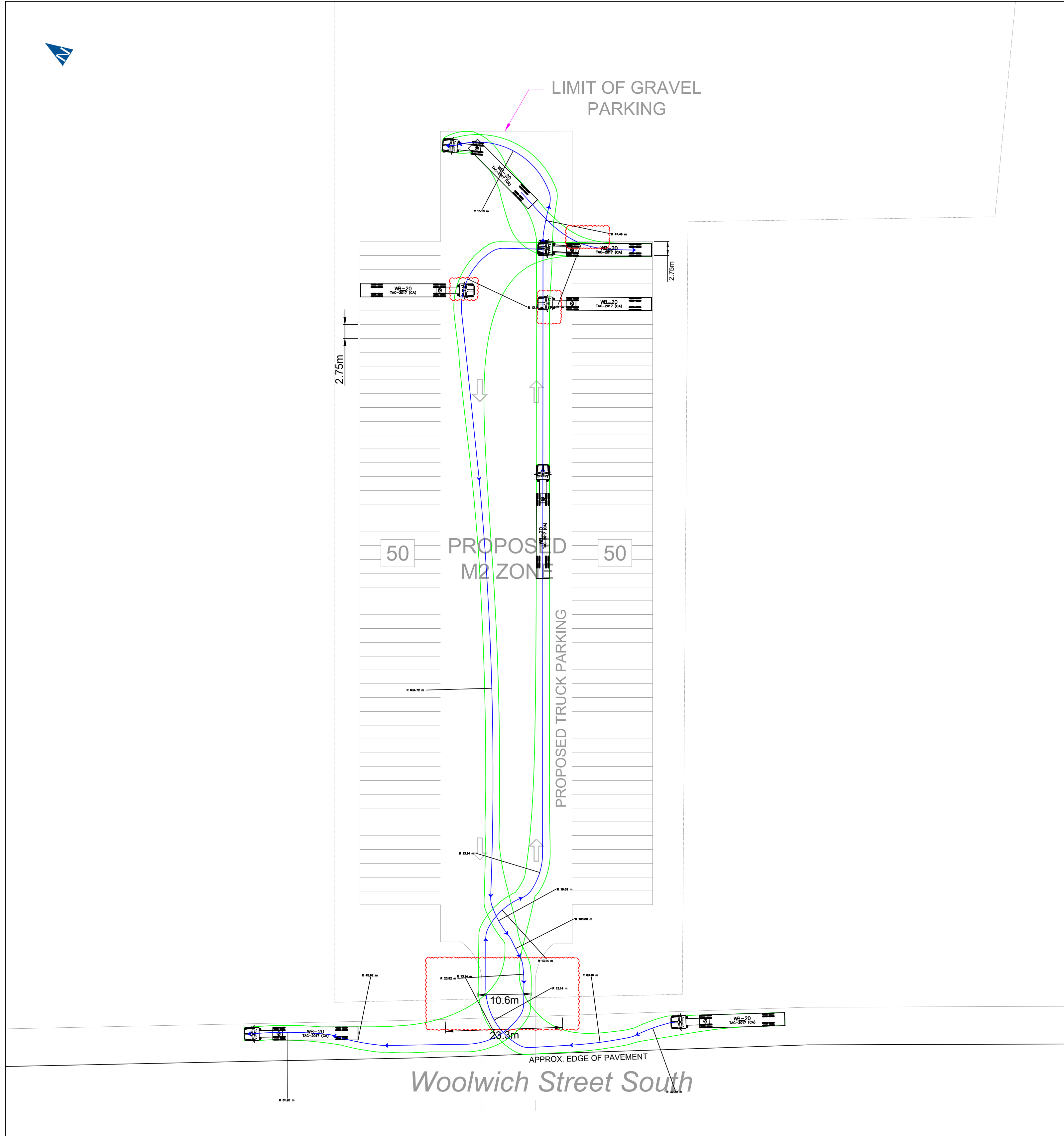
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Appendix B

AutoTURN Sight Circulation Assessment Drawings





NOTES

1. THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

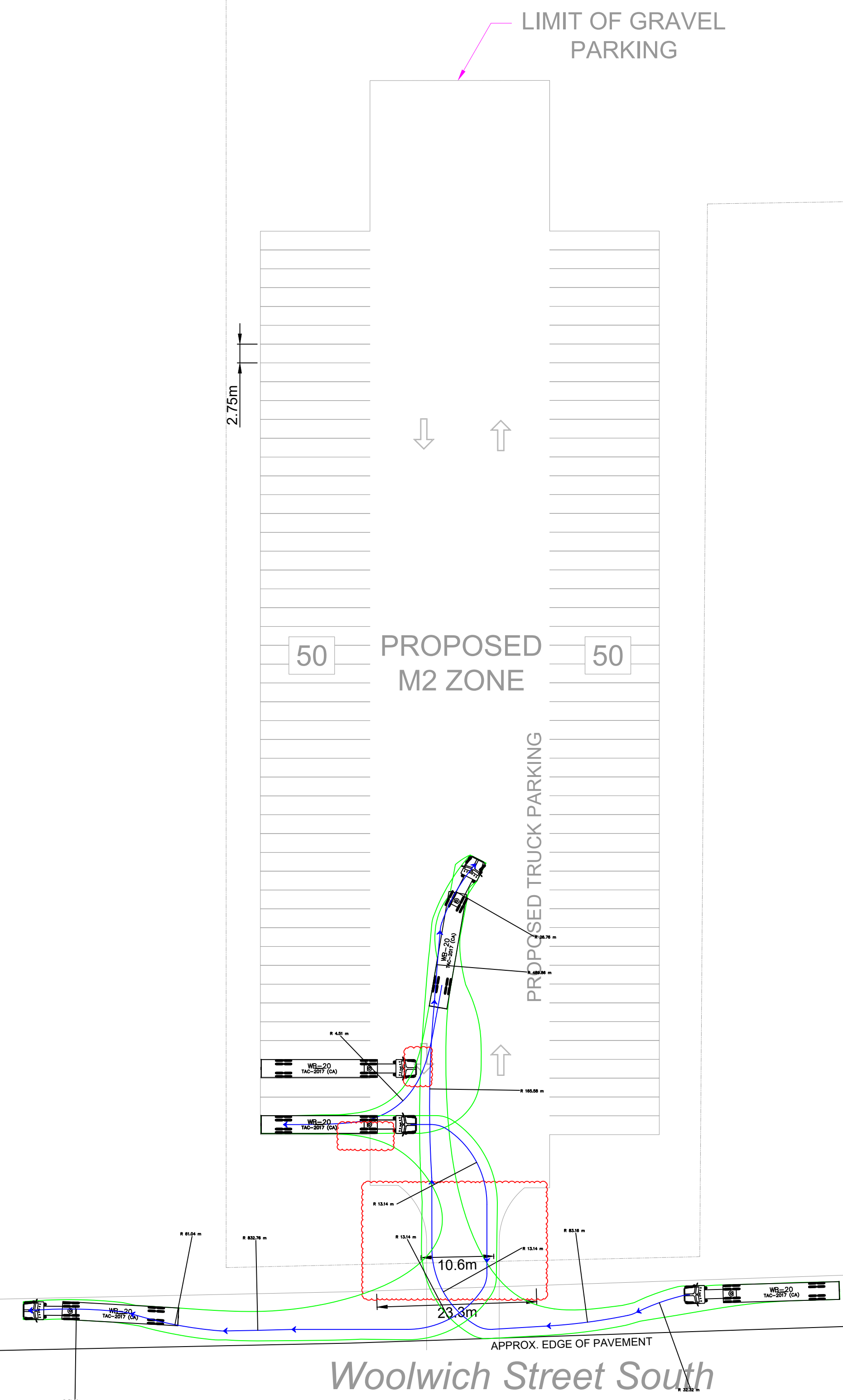
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NO.	DATE	INITIAL	REVISION DETAIL
DRAWING STATUS			
ISSUED FOR REVIEW			
APPROVED		DATE: _____	
SIGNATURE _____			

DESIGN VEHICLE:

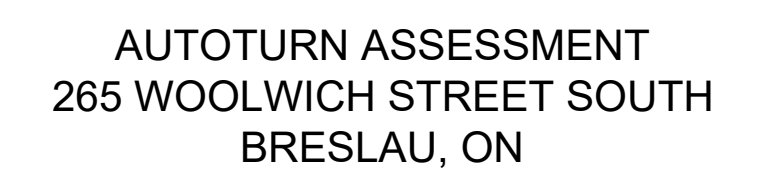
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Trailer Axle Spacing	2.00	Trailer Overhang	2.00
Trailer Overhang	2.00	Trailer Overhang	2.00

AUTOTURN ASSESSMENT
265 WOOLWICH STREET SOUTH
BRESLAU, ON

PROJECT NO.: 240247	DATE: MAY 2024	SCALE: 1:500	DRAWING NO.:
DRAWN: LC	DESIGN: LC	CHECK: AS	01



1	2024-06-19	LC	UPDATED SITE PLAN
NO.	DATE	INITIAL	REVISION DETAIL
DRAWING STATUS			
ISSUED FOR REVIEW			
APPROVED		DATE: _____	
SIGNATURE _____			



02