

2025-07-28
Project: (240204)

Moksh Developments Ltd.
8383 Mississauga Road
Brampton Ontario

RE: 263 CONCESSION 6, NIAGARA-ON-THE-LAKE) TRANSPORTATION IMPACT STUDY – TRIP GENERATION AND PARKING JUSTIFICATION ADDENDUM

In December 2024, Paradigm Transportation Solutions Limited (Paradigm) prepared a Transportation Impact Study¹ for the proposed development of 263 Concession 6 in the Town Niagara-on-the-Lake (December 2024 TIS).

The concept plan depicted severing the lot and developing the south end with four building pads with a combined Gross Floor Area (GFA) of 4,460 m² (48,000 sq.ft.) plus 1,394 m² (15,000 sq.ft.) of seasonal farming area. The existing single family residential use and the existing driveway serving that use will remain in its current location.

Of the total building area, about 186 m² (2,000 sq.ft.) is dedicated to fruit market land use, while 1,858 m² (20,000 sq.ft.) was dedicated to agricultural farm equipment storage. Approximately 2,415 m² (26,000 sq.ft.) GFA was proposed as an agricultural temperature-controlled storage facility and an agricultural farm office building.

Vehicle access to the new lot was proposed via a new driveway connection to Concession 6 Road and the existing driveway connection to York Road.

Since the submission of the December 2024 report, the site plan has been adjusted to address Town and Region comments.

This addendum outlines the changes to the site's trip generation with the updated development concept and provides justification for the proposed parking rates.

Updated Development Concept

The concept plan shows four building pads with a combined Gross Floor Area (GFA) of 3,995 m² (43,000 sq.ft.) plus seasonal farming area. The existing single family residential use and

¹ Paradigm Transportation Solutions Ltd., 804-816 King Street West, Hamilton ON – Transportation Impact and Parking Study, November 2019

the existing driveway serving that use will remain in its current location. **Figure 1** (attached) illustrates the site concept plan.

The total building area has decreased and has the following breakdown:

- ▶ 186 m² (2,000 sq.ft.) is dedicated to fruit market land use;
- ▶ 1,951 m² (21,000 sq.ft.) is dedicated to agricultural farm equipment storage; and
- ▶ 1,858 m² (20,000 sq.ft.) GFA is proposed as farm produce storage facility.

Vehicle access to the new lot is proposed only via a new driveway connection to Concession 6 Road; the existing driveway connection to York Road will be closed.

Trip Generation

Trip generation for the site following the same methodology as outlined in the December 2024 TIS. Trip generation rates are estimated based on proxy counts from a local agricultural market, agricultural supply store and Institute of Transportation Engineers (ITE) Trip Generation² Land Use Code (LUC) 150—Warehouse. **Table 1** summarizes the estimated trip generation.

The updated trip generation is estimated to be 60 weekday AM peak hour trips, 63 weekday PM peak hour trips, and 57 Saturday peak hour trips.

TABLE 1: ESTIMATED TRIP GENERATION

LUC	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
	In	Out	Sum	In	Out	Sum	In	Out	Sum
Fruit Market – 186 m ² (2,000 sq.ft.)	1	0	1	3	4	7	8	7	15
Agriculture Farm Equipment Storage - 1,858 m ² (20,000 sq.ft.)	12	16	28	10	17	27	7	6	13
ITE 150 - Warehouse - 1,951 m ² (21,000 sq.ft.)	24	7	31	8	21	29	8	21	29
Total	37	23	60	21	42	63	23	34	57

Fruit Market trip rate per 1,000m² AM: 4.55 | PM: 32.73 | Sat: 80.00

Agriculture Supply Store trip rate per 1,000m² GFA AM: 15.00 | PM: 14.17 | Sat: 6.67

LUC 150 eqn per 1,000 sq.ft. GFA AM: $T = 0.12(X) + 23.62$ | PM: $T = 0.12(X) + 26.48$

² Institute of Transportation Engineers, *Trip Generation Manual*, 11th ed., (Washington DC: ITE, 2021).



The previous development concept's trip generation was estimated to be 61 weekday AM peak hour trips, 64 weekday PM peak hour trips, and 58 Saturday peak hour trips.

With the updated floor areas, the trip generation decreases by one trip for the peak hours. Overall, the change in trip generation does not change the results of the December 2024 TIS.

Single Access Operation

The existing access to York Road is proposed to be closed. The December 2024 TIS analyzed a sensitivity test with a single access to Concession 6. As the trip generation for the site remains relatively unchanged, the sensitivity results are still valid.

The site traffic is forecast to add less than five seconds of delay to intersection movements. No critical movements are forecast.

The single site access is forecast to operate with delays in the LOS A range, with delays not exceeding 15 seconds during peak hours.

Heavy Vehicle Circulation

The heavy vehicle site circulation has been assessed using AutoTURN swept path analysis software and the following design vehicles:

- ▶ Transportation Association of Canada³ (TAC) Heavy Single Unit (HSU);
- ▶ TAC WB-20 Tractor Trailer
- ▶ Pick-up truck with trailer; and
- ▶ Fire Truck.

No conflicts with the on-site geometry are noted. The vehicle-swept path analysis is contained in **Appendix A**.

Parking Justification

Proposed parking supply is 50 spaces. As the land uses of Farm Produce Storage and Agricultural Equipment Storage are niche land uses and not clearly outlined in the Zoning By-Law, a parking justification has been provided to outline the proposed parking supply.

Parking Demand

Agricultural Market meets the minimum parking requirements of 1 space per 18.5 m² as outlined in By-Law 500A-74. Applying this parking rate, 11 parking spaces are proposed for the market land use.

³ Transportation Association of Canada. Geometric Design Guide for Canadian Roads (2017).



The Farm Produce Storage building is anticipated to have up to 10 employees and is not expected to have any visitors. Assuming one vehicle for each employee, the Farm Produce Storage building is expected to require up to 10 parking spaces.

The Agricultural Equipment Storage buildings are anticipated to have up to 10 employees and are expected to have up to five visitors at a given time. Assuming one vehicle for each employee/visitor, up to 15 parking spaces.

As a conservative approach, a parking rate for the Agricultural Equipment Storage use is calculated from the inbound/outbound vehicles at a proxy site (Lakeview Vineyard Equipment Inc. 40 Lakeshore Road, Niagara-on-the-Lake). Based on the weekday and Saturday data, a parking rate of 1 space per 63 m² is estimated. Applying this rate to the Agricultural Equipment Storage use results in a demand of 31 parking spaces.

Considering the conservative parking rates, the subject site would require up to 52 parking spaces. However, this estimate does not consider the varying peak demand times of the various uses.

Time of Day Adjustments

The peak parking demand for the Agricultural Market, Farm Produce Storage, and Agricultural Equipment Storage buildings are not anticipated to overlap. Based on the proxy survey data, Agricultural Market peak parking demand is on Saturday afternoon (2:00 PM – 4:30 PM) while the Agricultural Equipment Storage building is expected to have peak parking demand weekdays around 9:00 AM and 3:00 PM. As site has shared parking across all uses, unused parking spaces for one use can be utilized by the other. During the weekdays when parking demand for the Agricultural Market is lower, the unused parking supply can support the Agricultural Equipment Storage building.

Considering the time-of-day utilization of parking observed from the proxy sites and assuming the Farm Produce Storage has 100% parking utilization throughout the day, the subject site is estimated to have weekday and Saturday peak parking demands of 45 spaces and 23 spaces, respectively. **Table 2** summarizes the peak parking demand considering time-of-day utilization. The parking utilization calculations can be found in **Appendix B**.

TABLE 2: PARKING DEMAND – TIME-OF-DAY ADJUSTED

Land Use	Parking	Peak Utilization		Peak Demand	
		Weekday	Saturday	Weekday	Saturday
Fruit Market	11	43%	96%	5	11
Farm Produce Storage	10	100%	100%	10	10
Agriculture Equipment Storage	31	95%	5%	30	2
Total	52	--	--	45	23



If additional parking space is required, the turnaround/loading area between the Farm Produce Storage and Agricultural Equipment Storage buildings could be used for overflow parking space. As deliveries with the WB-20 tractor trailers are generally scheduled, utilizing this parking space for employees during peak demand times can be arranged.

Overall, the proposed parking supply of 50 spaces is appropriate for the subject site to accommodate the anticipated seasonal parking demand on-site and avoid any potential spillage of parking onto the surrounding road network.

Feel free to contact the undersigned with any questions or to discuss further.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED



Greg Lue
M.A.Sc., P.Eng.
Project Manager



Attachments





NTS



Site Concept Plan

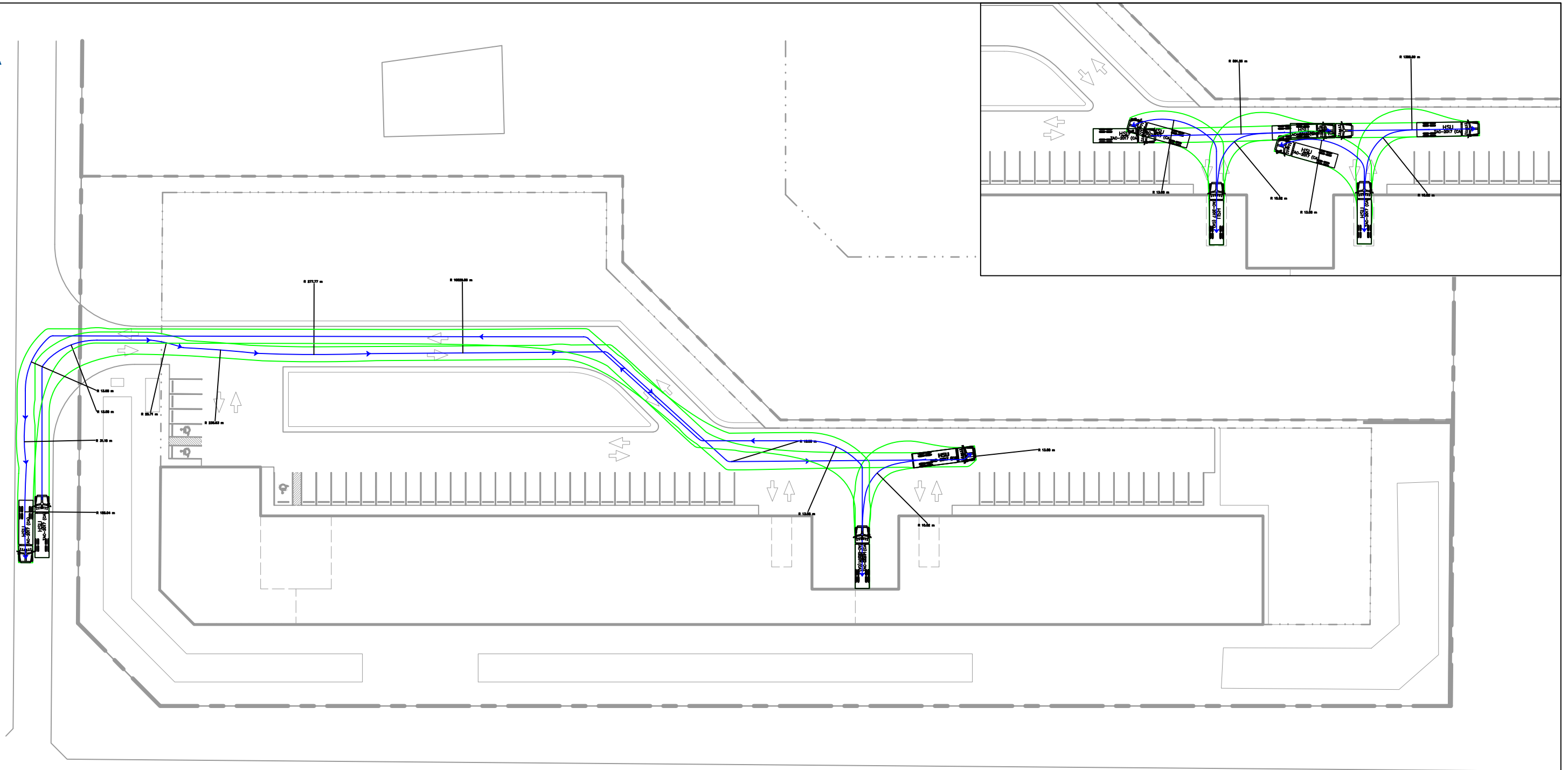
263 Concession 6, NOTL
240204

Figure 1

Appendix A

AutoTURN Drawings

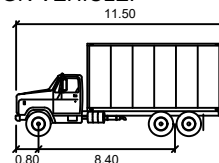




THIS AUTOTURN SWEEP PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

4	2025-07-24	DC	UPDATED SITE PLAN
3	2024-09-19	LC	UPDATED SITE PLAN
2	2024-09-10	LC	UPDATED SITE PLAN
1	2024-09-09	LC	UPDATED SITE PLAN
NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



HSU

meters
 Width : 2.60
 Track : 2.60
 Lock to Lock Time : 6.0
 Steering Angle : 40.0

AUTOTURN ASSESSMENT 263 CONCESSION ROAD 6 NIAGARA-ON-THE-LAKE, ON



PROJECT NO.: 240204

DATE: SEPTEMBER 2024

SCALE: 1:750

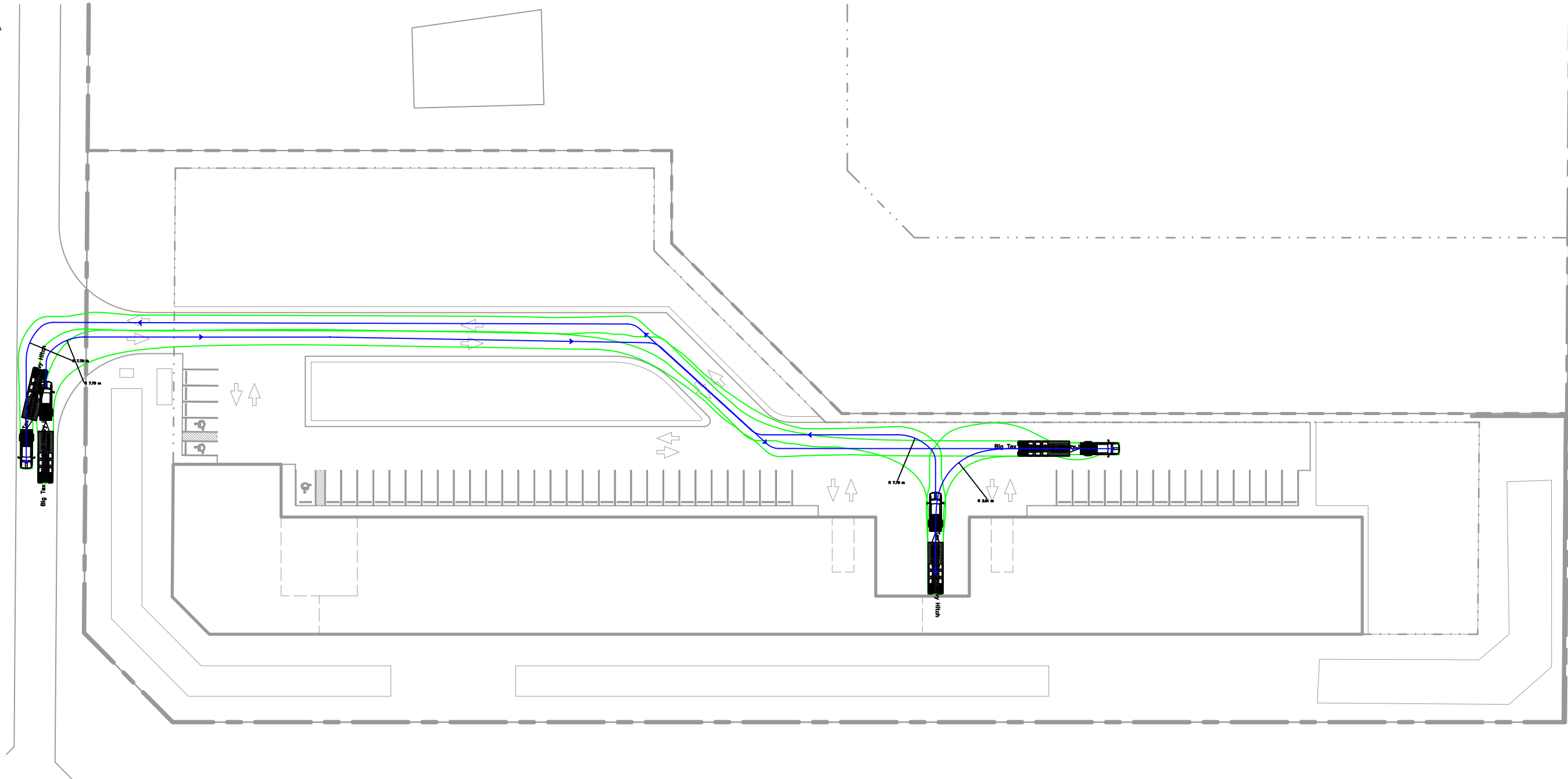
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DRAWN: LC

DESIGN: LC

CHECK: GL

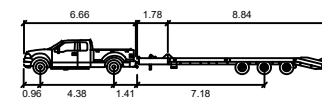
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NO.	DATE	INITIAL	REVISION DETAIL
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1	2024-09-09	LC	UPDATED SITE PLAN

DESIGN VEHICLE:



Big Tex 5XPH-24+5 Heavy Hitch

	meters
Car Width	: 2.03
Trailer Width	: 2.59
Car Track	: 2.41
Trailer Track	: 2.59
Lock to Lock Time	: 6.0
Steering Angle	: 34.2
Articulating Angle	: 70.0

AUTOTURN ASSESSMENT
263 CONCESSION ROAD 6
NIAGARA-ON-THE-LAKE, ON



PROJECT NO.: 240204

DATE: SEPTEMBER 2024

SCALE: 1:750

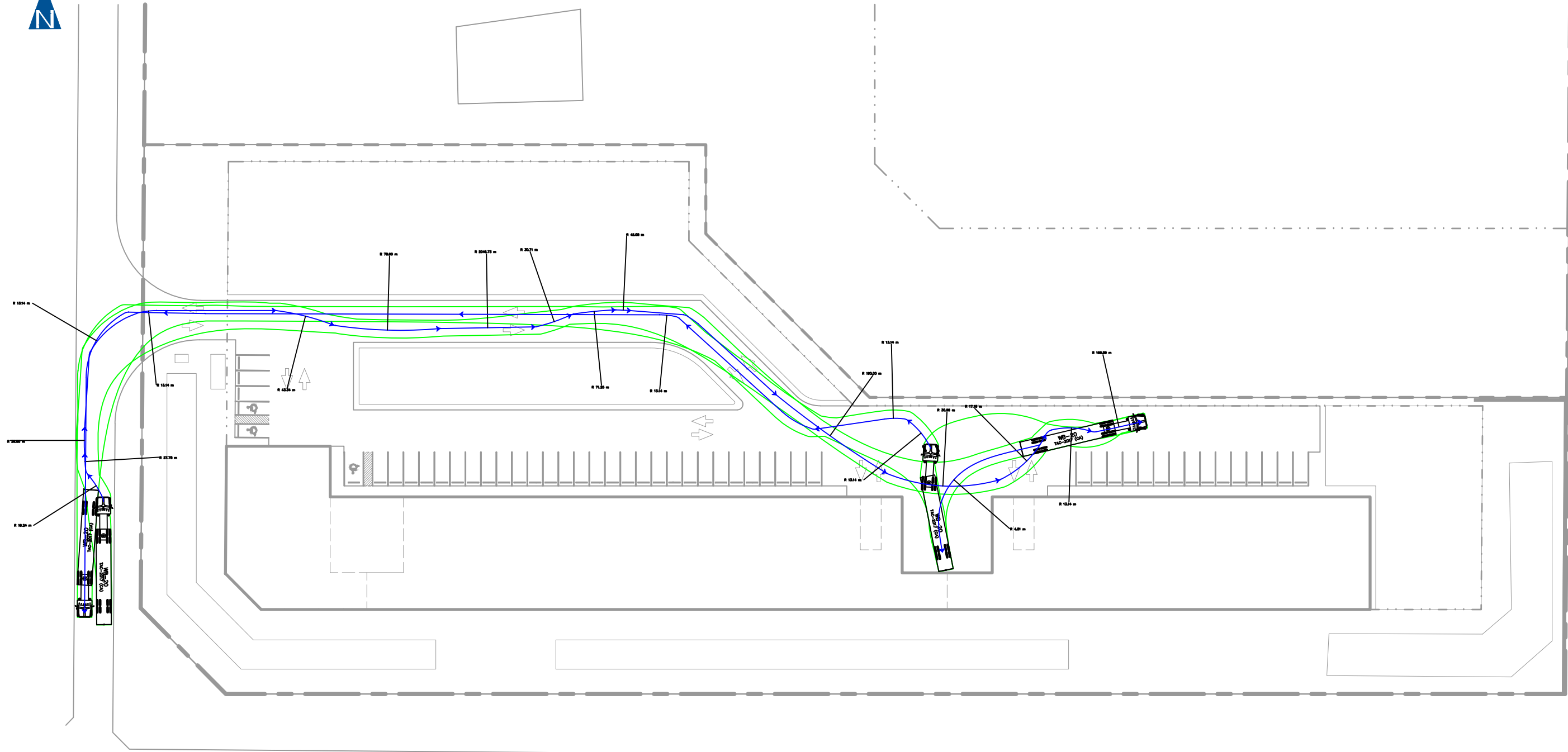
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DRAWN: LC

DESIGN: LC

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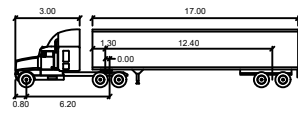
02



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.

4	2025-07-24	DC	UPDATED SITE PLAN
3	2024-09-19	LC	UPDATED SITE PLAN
2	2024-09-10	LC	UPDATED SITE PLAN
1	2024-09-09	LC	UPDATED SITE PLAN
NO.	DATE	INITIAL	REVISION DETAIL

DESIGN VEHICLE:



WB-20	Tractor Width	: 3.00	Lock to Lock Time	: 6.0
	Trailer Width	: 12.40	Steering Angle	: 28.2
	Tractor Track	: 2.60	Articulating Angle	: 70.0
	Trailer Track	: 2.60		

AUTOTURN ASSESSMENT
263 CONCESSION ROAD 6
NIAGARA-ON-THE-LAKE, ON



PROJECT NO.: 240204

DATE: SEPTEMBER 2024

SCALE: 1:750

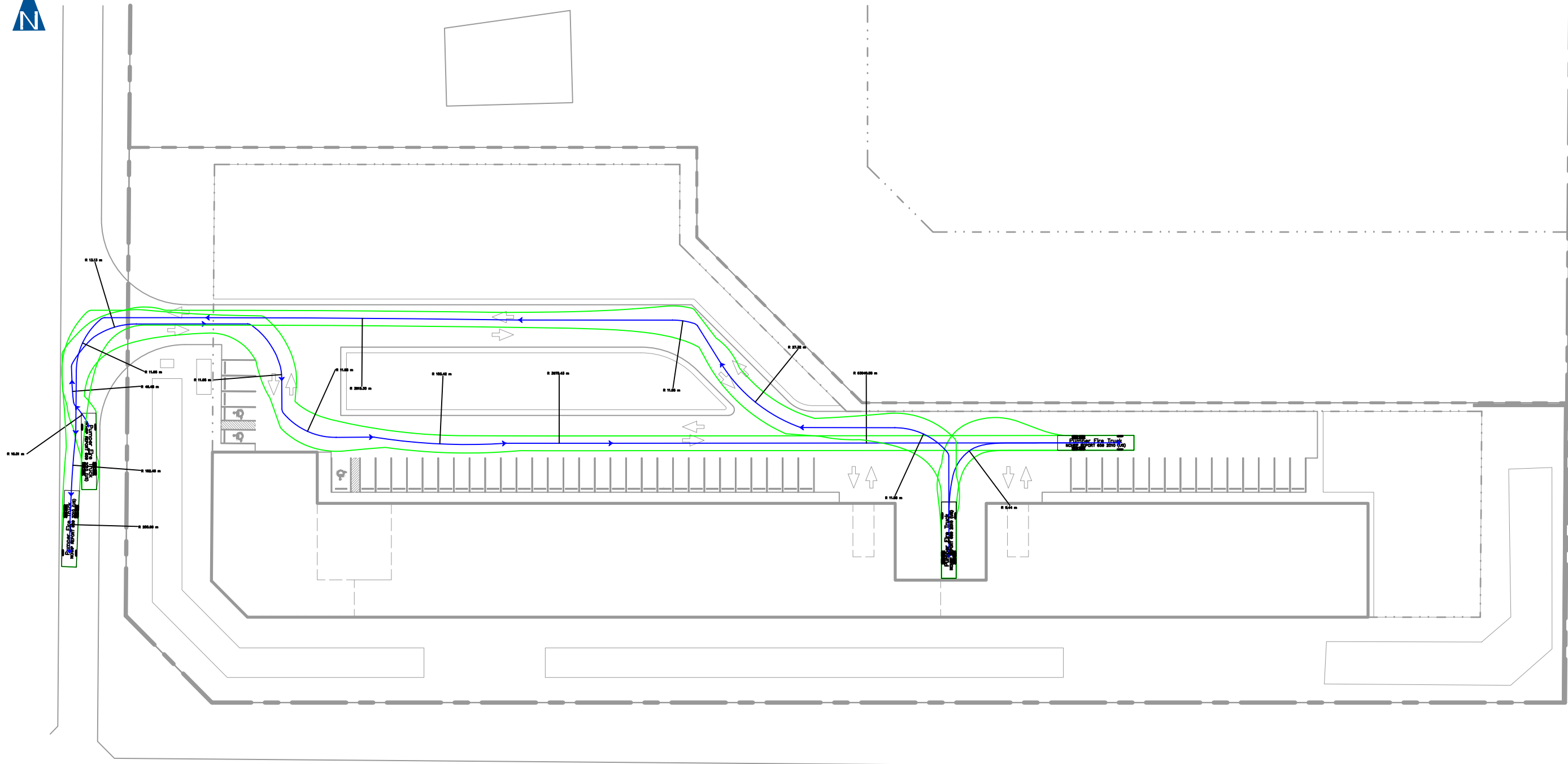
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DRAWN: LC

DESIGN: LC

CHECK: GL

03



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NO.	DATE	INITIAL	REVISION DETAIL
4	2025-07-24	DC	UPDATED SITE PLAN
3	2024-09-19	LC	UPDATED SITE PLAN
2	2024-09-10	LC	UPDATED SITE PLAN
1	2024-09-09	LC	UPDATED SITE PLAN

DESIGN VEHICLE:

Pumper Fire Truck

meters

Width : 2.59
Track : 2.59
Lock to Lock Time : 6.0
Steering Angle : 37.8

AUTOTURN ASSESSMENT 263 CONCESSION ROAD 6 NIAGARA-ON-THE-LAKE, ON



PROJECT NO.: 240204	DATE: SEPTEMBER 2024	SCALE: 1:750	DRAWING NO.: 04
DRAWN: LC	DESIGN: LC	CHECK: GL	

Appendix B

Time of Day Parking Utilization



Weekday

	Fruit Market		Farm Produce Storage		Agriculture Equipment Storage		Total
Spaces	11		10		31		52
Time of Day	Utilization	Demand	Utilization	Demand	Utilization	Demand	Demand
7:00 AM	13%	2	100%	10	5%	2	14
7:15 AM	13%	2	100%	10	11%	4	16
7:30 AM	13%	2	100%	10	32%	10	22
7:45 AM	13%	2	100%	10	79%	25	37
8:00 AM	13%	2	100%	10	84%	27	39
8:15 AM	13%	2	100%	10	84%	27	39
8:30 AM	13%	2	100%	10	84%	27	39
8:45 AM	22%	3	100%	10	84%	27	40
9:00 AM	22%	3	100%	10	95%	30	43
9:15 AM	26%	3	100%	10	74%	23	36
9:30 AM	26%	3	100%	10	79%	25	38
9:45 AM	43%	5	100%	10	79%	25	40
10:00 AM	35%	4	100%	10	95%	30	44
10:15 AM	35%	4	100%	10	84%	27	41
10:30 AM	35%	4	100%	10	79%	25	39
10:45 AM	43%	5	100%	10	89%	28	43
11:00 AM	30%	4	100%	10	89%	28	42
11:15 AM	43%	5	100%	10	95%	30	45
11:30 AM	35%	4	100%	10	79%	25	39
11:45 AM	30%	4	100%	10	74%	23	37
12:00 PM	39%	5	100%	10	63%	20	35
12:15 PM	35%	4	100%	10	63%	20	34
12:30 PM	26%	3	100%	10	68%	22	35
12:45 PM	22%	3	100%	10	68%	22	35
1:00 PM	43%	5	100%	10	68%	22	37
1:15 PM	43%	5	100%	10	63%	20	35
1:30 PM	30%	4	100%	10	68%	22	36
1:45 PM	43%	5	100%	10	68%	22	37
2:00 PM	35%	4	100%	10	74%	23	37
2:15 PM	26%	3	100%	10	89%	28	41
2:30 PM	35%	4	100%	10	84%	27	41
2:45 PM	26%	3	100%	10	84%	27	40
3:00 PM	26%	3	100%	10	100%	31	44
3:15 PM	26%	3	100%	10	100%	31	44
3:30 PM	22%	3	100%	10	95%	30	43
3:45 PM	17%	2	100%	10	95%	30	42
4:00 PM	13%	2	100%	10	95%	30	42
4:15 PM	9%	1	100%	10	79%	25	36
4:30 PM	9%	1	100%	10	74%	23	34
4:45 PM	13%	2	100%	10	68%	22	34
5:00 PM	4%	1	100%	10	58%	18	29
5:15 PM	13%	2	100%	10	53%	17	29
5:30 PM	0%	0	100%	10	26%	9	19
5:45 PM	4%	1	100%	10	26%	9	20

Saturday

	Fruit Market		Farm Produce Storage		Agriculture Equipment Storage		Total
Spaces	11		10		31		52
Time of Day	Utilization	Demand	Utilization	Demand	Utilization	Demand	Demand
9:00 AM	4%	1	100%	10	47%	15	26
9:15 AM	4%	1	100%	10	47%	15	26
9:30 AM	4%	1	100%	10	53%	17	28
9:45 AM	13%	2	100%	10	53%	17	29
10:00 AM	17%	2	100%	10	53%	17	29
10:15 AM	17%	2	100%	10	47%	15	27
10:30 AM	13%	2	100%	10	47%	15	27
10:45 AM	17%	2	100%	10	47%	15	27

11:00 AM	22%	3	100%	10	53%	17	30
11:15 AM	0%	0	100%	10	47%	15	25
11:30 AM	9%	1	100%	10	47%	15	26
11:45 AM	9%	1	100%	10	47%	15	26
12:00 PM	0%	0	100%	10	42%	14	24
12:15 PM	4%	1	100%	10	42%	14	25
12:30 PM	30%	4	100%	10	11%	4	18
12:45 PM	65%	8	100%	10	11%	4	22
1:00 PM	30%	4	100%	10	11%	4	18
1:15 PM	48%	6	100%	10	0%	0	16
1:30 PM	30%	4	100%	10	0%	0	14
1:45 PM	43%	5	100%	10	0%	0	15
2:00 PM	78%	9	100%	10	0%	0	19
2:15 PM	87%	10	100%	10	0%	0	20
2:30 PM	87%	10	100%	10	0%	0	20
2:45 PM	70%	8	100%	10	0%	0	18
3:00 PM	83%	10	100%	10	0%	0	20
3:15 PM	96%	11	100%	10	5%	2	23
3:30 PM	83%	10	100%	10	5%	2	22
3:45 PM	96%	11	100%	10	5%	2	23
4:00 PM	91%	11	100%	10	0%	0	21
4:15 PM	100%	11	100%	10	0%	0	21
4:30 PM	65%	8	100%	10	0%	0	18
4:45 PM	78%	9	100%	10	0%	0	19
5:00 PM	74%	9	100%	10	0%	0	19
5:15 PM	74%	9	100%	10	0%	0	19
5:30 PM	78%	9	100%	10	0%	0	19
5:45 PM	83%	10	100%	10	0%	0	20
4:00 PM	0%	0	100%	10	0%	0	10
4:15 PM	0%	0	100%	10	53%	17	27
4:30 PM	0%	0	100%	10	0%	0	10
4:45 PM	0%	0	100%	10	0%	0	10
5:00 PM	0%	0	100%	10	0%	0	10
5:15 PM	0%	0	100%	10	0%	0	10
5:30 PM	0%	0	100%	10	0%	0	10
5:45 PM	0%	0	100%	10	0%	0	10