



September 26, 2025

Molly Westman
City of Mankato
10 Civic Center Plaza
Mankato, MN 56001
(507) 720-2559
mwestman@mankatomn.gov

Reference: Endless Adventures
Mankato, Minnesota

Subject: Traffic Memorandum

Dear Ms. Westman:

The following is a Traffic Memorandum for the proposed Endless Adventures development to be located along Premier Drive, south of Augusta Drive in Mankato, Minnesota. This memorandum has been prepared to provide a turn lane warrant analysis at the proposed driveways and determine if the capacity along the surrounding roadways is sufficient to handle the additional traffic generated by the proposed development.

Turn Lane Warrant Analysis

Site access to the development is proposed via two (2) full movement driveways along Premier Drive. The potential need for a southbound right-turn lane and a northbound left-turn lane into the proposed development was evaluated based on guidance from federal research (NCHRP Report 457) and the MnDOT *Access Management Manual* assuming a 30 mile per hour (mph) speed limit on Premier Drive. Neither a southbound right-turn lane, nor a northbound left-turn lane are recommended due to low-volume driveways and traffic volumes below recommended NCHRP 457 thresholds for turn lane implementation. More detailed information related to the turn lane warrant calculations is provided in **Tables 1-3**.

Roadway Capacity Analysis

The capacity of the surrounding roadway network was analyzed to determine if roadway capacity is sufficient to accommodate the additional traffic generated by the proposed development. **Table 4** provides a comparison of 2024 MnDOT AADTs along Premier Drive, Augusta Drive, and Trunk Highway (TH) 22 to the future AADT with the addition of daily trips generated by the proposed development. Metro Council's *Imagine 2050* transportation policy plan and FHWA's *Highway Functional Classification Concepts, Criteria and Procedures 2023 Edition* were utilized to determine typical AADT ranges based on roadway classification. Based on these guidelines, Augusta Drive and TH 22 are expected to have sufficient capacity to accommodate the additional traffic generated by the proposed development.

It should be noted that based on MnDOT's 2024 AADTs, Premier Drive currently operates with an AADT that exceeds the typical ADT for urban local roads according to the Metro Council's *Imagine 2050* transportation policy plan and FHWA's *Highway Functional Classification Concepts, Criteria and*

Procedures 2023 Edition. The proposed development is anticipated to increase this AADT by only 3.5%, which is expected to account for minimal impact to the roadway. Premier Drive serves multiple commercial developments that may have varying peak hours that spread the projected AADT across multiple hours of the day.

Conclusion

Based on the analysis provided in this memorandum, it was determined that no exclusive turn lanes are warranted at the proposed site driveway locations due to low traffic volumes and a lower speed limit along Premier Drive. Additionally, based on the Metro Council's *Imagine 2050* transportation policy plan and FHWA's *Highway Functional Classification Concepts, Criteria and Procedures 2023 Edition*, it was concluded that the proposed development is expected to have minimal impact on the surrounding roadway network.

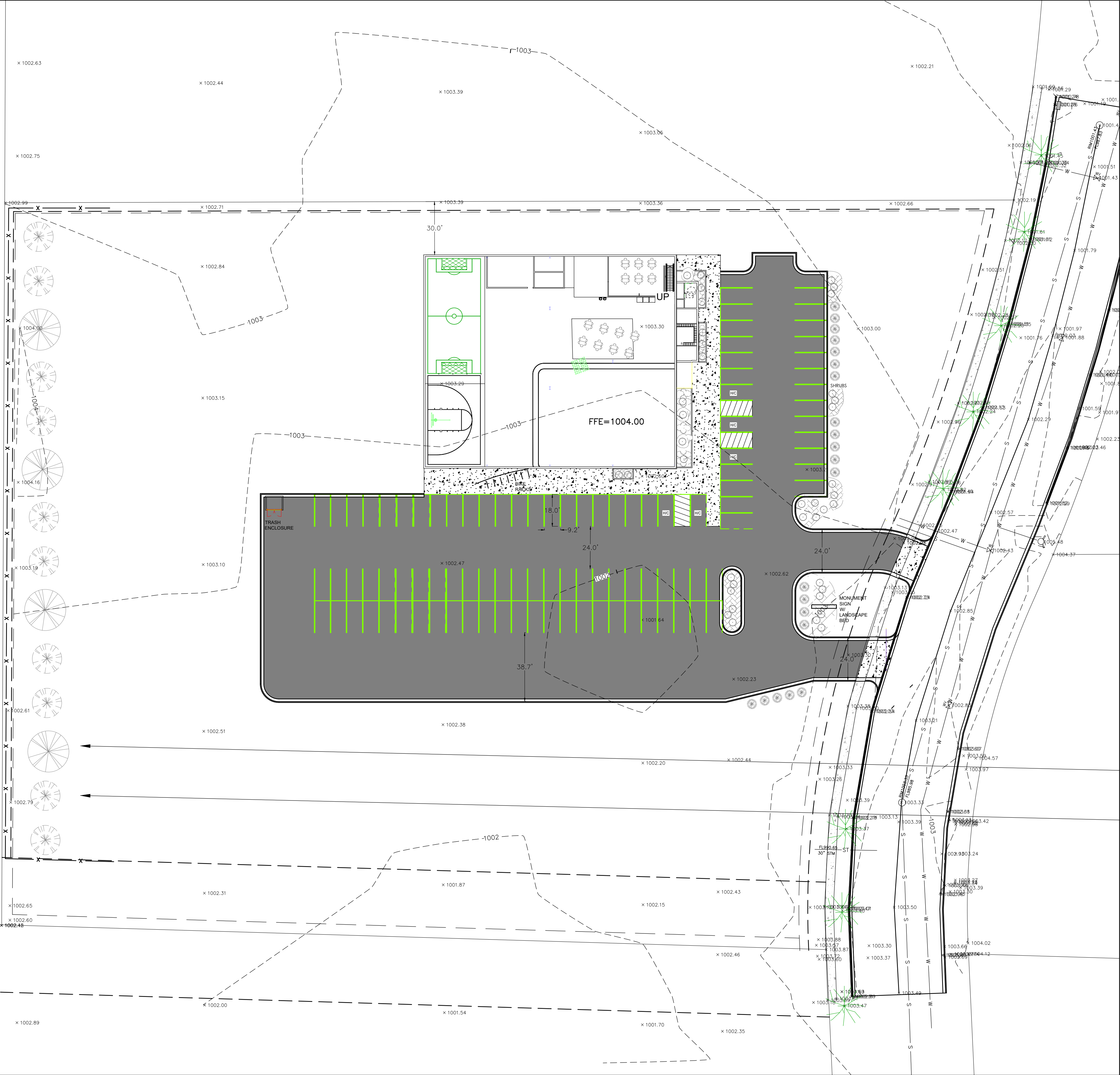
If you have any questions or concerns, please do not hesitate to contact me. I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Sincerely,
Bolton & Menk, Inc.

A handwritten signature in cursive script, appearing to read 'Danielle Troutman'.

Danielle Troutman, PE
Transportation Project Engineer
License No. 63168

Attachments: Preliminary Site Plan
Calculation Tables



LANDSCAPING NOTES

B-3 COMMERCIAL DISTRICT
SUBD.3. HIGHWAY GATEWAY OVERLAY DISTRICT

Sec. 10-1740 PERIMETER OFF STREET PARKING LOT
(1) SHADE TREE/ 50 LF OF FRONTAGE
(1) EVERGREEN TREE/ 25 LF OF FRONTAGE
80% OPAQUE ALONG ALL PARKING FRONTING STREET

PLANTING BEDS SHALL BE MULCHED WITH BARK CHIPS,
ROCK MULCH, FEATHER ROCKS OR SIMILAR MATERIAL.

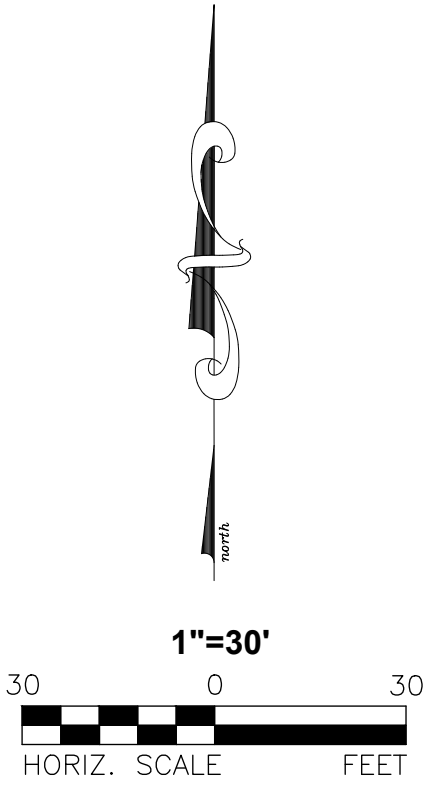
PERIMETER LANDSCAPING & TRANSITIONAL YARDS SHALL
CONSIST OF A COMBINATION OF GROUND COVER, SHADE
TREES OR EVERGREEN TREES, SHRUBS AND APPROPRIATE
SCREENING DEVICES SUCH AS DECORATIVE WALLS, FENCES OR
BERMS.

LANDSCAPING LEGEND

- =DENOTES SHADE TREE
- =EVERGREEN TREE
- =DENOTES SHRUB
- =DENOTES ARBOVITAE HEDGE (4' MIN. – 8' MAX)
(80% OPAQUE ALONG ALL PARKING FRONTING PREMIER DR.)
- =DENOTES EXISTING BOULEVARD TREE
- =DENOTES PLANTING BED W/ MULCH
- =DENOTES 6' HIGH VINYL FENCE

WEST 20' OF SITE TO BE TRANSITIONAL YARD LANDSCAPING (ABUTS RESIDENTIAL)

F&I 520LF 6' HIGH VINYL FENCING



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Brian J. Johnson
Reg. No. 42144
Date: 9/1/25

Consultant:
JONES HAUGH SMITH
Engineers & Surveyors
515 South Washington Ave. Albert Lea, MN 56737-4876

ENDLESS
ADVENTURES

Project: _____

Revision: _____

No.:	Date: 9/1/25
Drawn: bji	Checked:
Project Manager:	
Project Status: CD	
Sheet Title: LANDSCAPE PLAN	
Sheet No.: C4	

Table 1a - Projected Turning Movement Counts

Premier Drive - Turning Movement Counts								
	SBT	WBL	EBR	NBL	NBT	NBR	Hourly Total	MnDOT AADT
Collected 2022 TMCs	52	45	17	10	24	42	190	3042
% of Hourly Total	27%	24%	9%	5%	13%	22%		
Projected 2024 TMCs	39	33	13	7	18	31	141	2261

Table 1b - Anticipated Site Distribution & Assignment

Proposed Daily Traffic (Veh/d)*	80	
	% from North	% from South
Anticipated Distribution	30%	70%
Calculated Assignment	24	56

**Daily traffic utilized for turn lane warrant analysis to provide conservative analysis*

Table 1c - NCHRP 457 Input Calculations

NB Left-Turn			SB Right-Turn	
V_A	V_O	LT % of V_A	Major Road Volume (One-Direction)	Right-Turn Volume
112	109	50%	112	24

Table 2 - Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

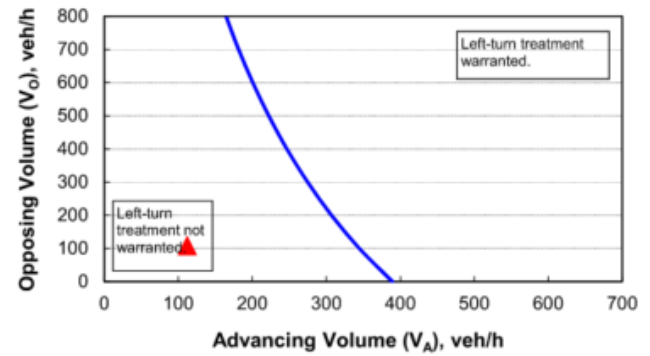
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	50%
Advancing volume (V_A), veh/h:	112
Opposing volume (V_O), veh/h:	109

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	341
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Table 3 - Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	112
Right-turn volume, veh/h:	24

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	745993
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

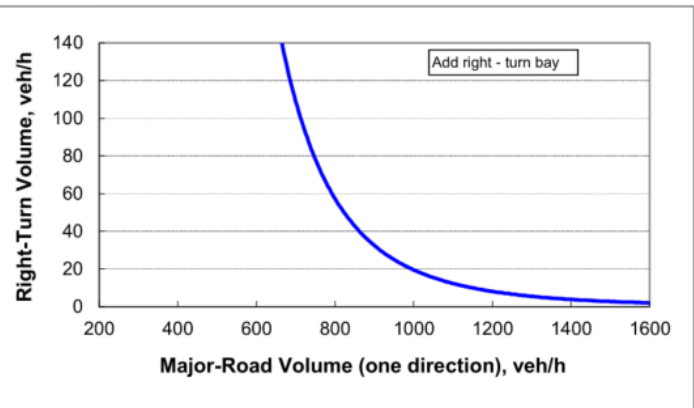


Table 4 - AADT Comparison (vehicles/day)

Roadway	Roadway Classification	2024 MnDOT AADT	Anticipated Distribution	Added Daily Traffic	2024 MnDOT AADT + Added Daily Traffic	Imagine 2050 Typical ADT	FHWA Typical ADT	Sufficient Capacity Available?
Premier Drive	Urban Local	2261	100%	80	2341	<1,000	80-700	No
Augusta Drive	Urban Minor Collector	3589	30%	24	3613	50-10,000+	1,000-6,300	Yes
TH 22	Urban Principal Arterial	14105	45%	36	14141	5,000-60,000+	7,000-27,000	Yes