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MEMORANDUM

Date: March 23, 2018

To: City of Apple Valley, MN

From: Bryan T. Nemeth, P.E., PTOE
Michael Boex, P.E.

Subject: Traffic Impact Study Review – Supplemental Traffic Forecast
Menards Development

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

Bryan T. Nemeth, P.E., PTOE — 43354 Reg. No. — March 23, 2018 Date

Introduction

The Supplemental Traffic Forecast Information for the Menards Development in Apple Valley, MN, dated March 16, 2018 was reviewed to determine if and how the development and site layout revisions impacts the traveling public. Overall, the TIS appears to be accurate and the site size changes are not anticipated to be of concern as compared to the previous Traffic Impact Study submitted on November 17, 2017. However, the site design has been modified and there are some design and access considerations that will need to be rectified.

Forecasts

The proposed changes in the size of both the Menards building and the surrounding developments requires the recalculation of trip generation due for the site. The TIS forecasts are lower than the previous forecasts provided in the November 17, 2017 Traffic Impact Study for the site.

Public Roadway System Impacts and Operations

It is anticipated that the development traffic would be effectively dispersed throughout the public roadway system as defined in the November 17, 2017 Traffic Impact Study and evaluated in the December 22, 2017 Review. The traffic decrease is anticipated to provide more effective operations and a rerun of analysis is not anticipated to be needed.

147th Street Access

The new street access to 147th Street is indicated in the site plan as full access. This proposed access is moved further east than the previous submittal but is properly spaced from the other existing accesses along 147th Street (minimum 330' access to access). The new alignment does allow for the parcel to the east to have a full access onto 147th Street. Based on the previous traffic analysis, the east parcel full access would need to be aligned with the western Abdallah access to ensure that left turn conflicts do not

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occur and the adequate spacing from Johnny Cake Ridge Road and the eastern Abdallah access is provided.

As consistent with previous comments, the traffic volumes will require an eastbound right turn lane. This will have to be shorter than previously identified due to the revised access location and would be deemed acceptable based on the lower traffic volumes for the site. The existing three lane section of 147th Street allows for westbound left turning vehicles. The following recommendations for the 147th Street access is:

- Construct a 240' eastbound right turn lane. This includes 180' full width turn lane with a 60' taper (taper at 5:1)

The future access to the east was determined through a previous study and has the following recommendation on the turn lane need.

- Construct a 235' eastbound right turn lane. This includes 175' full width turn lane with a 60' taper (taper at 5:1)

Johnny Cake Ridge Road

The previous work and review of the site provides for adequate access and operations at the accesses and no changes are anticipated to be needed. Additionally, review of the 147th Street and CSAH 42/150th Street intersections was also previously completed.

150th Street/County Road 42 Access

Two access points are proposed along 150th Street west of Johnny Cake Ridge Road. This is different than the previous plan submitted in November 2017 which showed only one access point onto 150th St. The roadway is currently under the jurisdictional authority of Dakota County and is functionally classified as a Principal Arterial. A review of Dakota County Access Guidelines indicates that partial movement intersections would be allowed at ¼ mile spacing. Partial movement intersections include ¾ access configurations. Additionally, a right-in/right-out access may be permitted at ⅛ mile spacing if the County determines the access improves the overall safety and/or efficiency of the transportation system.

The proposed ¾ access is just under ¼ mile (1,320 ft.) at 1,260 feet. This would likely meet the County's access spacing requirement.

The proposed right-in/right-out access is under ⅛ mile (660 ft.) at 440 feet. While the distance for stopping sight distance is met, the County's access spacing requirement is not met. The right-in/right-out access should be moved approximately 150 to 200 feet west of its currently proposed location.

The roadway system for the site should also match into all proposed accesses on CSAH 42 to help justify the need. As shown, the ¾ access is primarily for access to one business. It is highly likely that Dakota County would not approve of an access on CSAH 42 to primarily serve one business. Additionally, it is likely that Dakota County would approve of only one access to CSAH 42, as has been proposed previously.

The following recommendations for the 150th Street turn lanes at the ¾ access are:

- Construct a 480' westbound right turn lane. This includes 300' full width turn lane with a 180' taper (taper at 15:1). This matches the design of the ¾ access to the west but could potentially be reduced to a total of 390' based on Design of Turn Lane Guidelines.
- Construct a 480' eastbound left turn lane. This includes 300' full width turn lane with a 180' taper (taper at 15:1). This matches the design of the ¾ access to the west.

The following recommendations for the 150th Street turn lanes at the right-in/right-out access are:

- Construct a 390' westbound right turn lane. This includes 210' full width turn lane with a 180' taper (taper at 15:1).

Internal Site Circulation

Review of the internal site circulation was conducted to determine if the circulation patterns would have any effect on the public roadway system or have any design concerns.

The internal north-south roadway has a number of horizontal curves. As indicated on the attached figure, the radii of the curves are 210' indicating a design speed of 25 mph assuming normal 2% crown on the roadway. This is a concern as the roadway needs to be designed for 30 mph. The 200' radius on 148th Street is also a concern but is at the start of the stopping sight distance from the new N-S street and may be acceptable. A 30 mph roadway will require a minimum radius of 333 feet.

The minimum driveway setback shall be in accordance with City Code. The setback from Johnny Cake Ridge Road is appropriate as shown. The setback from CSAH 42 is not appropriate with its designation as a Principal Arterial. The minimum setback should be 300 feet.

With a 30 mph speed on the roadways, the minimum spacing between driveways (centerline to centerline) is 200 feet to accommodate stopping sight distance. The driveway shown on the north end should be moved at least 200 feet from the proposed driveway for the adjacent parcel. All other proposed driveways do meet this distance.

Conclusions and Recommendations

The primary review conclusions and recommendations are provided below.

Right-in/Right-out Access on CSAH 42

- Inadequate spacing from the intersection of Johnny Cake Ridge Road/CSAH 42 (150th Street) based on Dakota County Access Guidelines.
    - Move the right-in/right-out access approximately 200' west.
- Provide a right turn lane into the right-in/right-out access.

¾ Access on CSAH 42

- Adequate spacing is provided from the intersection of Johnny Cake Ridge Road/CSAH 42 (150th Street) based on Dakota County Access Management Guidelines.
- Provide a right turn lane and left turn lane into the ¾ access.
- Connect the public roadway system onsite to both accesses proposed on CSAH 42.

CSAH 42 Accesses

- Based on Dakota County Access Guidelines, a restricted access would be allowed at ¼ mile spacing. While it is believed that an additional access to CSAH 42 would improve the efficiency of the transportation system it is not an approved conclusion that Dakota County would grant the right-in/right-out access in addition to the ¾ access. It is advised that the ¾ access be set up as the primary access from CSAH 42 for the site. The right-in/right-out access should be designed at an appropriate location as mentioned above and be designed for the possibility of the access not being approved by Dakota County if they do not agree that it would improve the efficiency of the transportation system.

147th Street Access

- Adequately located and spaced based on city guidance.
- Provides for adequate spacing to a future full access for the parcel to the east.
- Provide an eastbound right turn lane into the access.

Johnny Cake Ridge Road Access

- Acceptable. No change from previous plans.

Internal Roadways

- Inadequate horizontal curves rated at 25 mph. A 30 mph design is required.
- Revise with a minimum radius of 333 feet.
- Connect the public roadway system onsite to both accesses proposed on CSAH 42.
- Provide 300' setback to the first driveway from all accesses connecting to CSAH 42.
- Driveways need to be separated by at least 200' to account for stopping sight distance.

LEGEND
ROADWAY
CURB/MEDIAN
TRAIL
LANDSCAPE
TRAFFIC SIGNAL
UTILITY POLE
EXISTING ROW
PROPOSED ROW
UTILITY EASEMENT
TRAIL CLEAR ZONE
200
SCALE IN FEET
PUBLIC ROADWAY IMPROVEMENTS
MENARDS TRAFFIC IMPACT STUDY
JOHNNY CAKE RIDGE ROAD
147th St. W
148th St. W
149th St. W
FULL
R-OUT
Not Included with the Menard, Inc. Development Concept
FUTURE ACCESS
200' MINIMUM SEPARATION NEEDED
District Stormwater Treatment Pond 4.00 Acres
New Street
MOVE DRIVEWAY SOUTH
Office / Medical Office [Future Development Site] 3.25 Acres
Office / Medical Office [Future Development Site] 3.75 Acres
Office / Medical Office [Future Development Site] 3.00 Acres
Office / Medical Office [Future Development Site] 2.75 Acres
Office / Medical Office [Future Development Site] 4.00 Acres
R = 210' V = 25 MPH
R = 200' V = 25 MPH
Warehouse
Building Materials Yard
Controlled Access
One Level Store +/- 210,000 SF +/- 420 Parking Spaces 20.00 Acres
MENARDS
Garden Center
Parking
PROPOSED ACCESS LOCATION
300' MINIMUM SETBACK NEEDED
480' LEFT TURN LANE W/ 15:1 TAPER
30' Trail Easement
Additional 25' R.O.W.
County Rd. 42
NOTE: HORIZONTAL CURVE DESIGN SPEEDS CALCULATED ASSUMING NORMAL 2% CROWN CROSS SECTION