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MEMORANDUM

Date: July 1, 2021
To: David Bennett, P.E.
Public Works Director/City Engineer, City of Northfield
From: Bryan Nemeth, P.E.
Subject: Paulson Development (600 Greenvale Avenue Residential) Traffic Review
City of Northfield
Project No.: OT4.124964

The memorandum provides a review of the proposed site plan for the Paulson Development and the associated traffic impact study dated February 19, 2021, and the updated information dated June 2, 2021.

Site Plan Review

A total of four accesses are provided to the site, connecting to four different public streets including Lincoln Parkway, Juniper Avenue, Highland Avenue, and Greenvale Avenue. The primary accesses will be the ones leading to Lincoln Avenue, Juniper Avenue, and Greenvale Avenue, given their connections to the overall transportation network and destinations including the schools, downtown Northfield, and I-35.

The Lincoln Parkway access is provided to the east of the existing and new Greenvale Park Elementary School accesses. The preferred location of the site access would be directly across from the eastern school access, but relocation of the access directly to the school may encourage pass-through trips on the connecting roadway. The proposed location is acceptable from a left turn movement traffic perspective since the mainline (Lincoln Pkwy) left turns do not cross paths. Weighing this information, the access should stay where currently located. The Juniper Avenue and Highland Avenue accesses connect directly into the roadway and are deemed to be acceptable.

The Greenvale Avenue access is located between the intersections of Plum Street and Orchard Street. Due to the short distance between the blocks, the preferred location of the access would be directly across from Plum Street, but it is recognized that the location would not currently be possible due to the parcels. The current location is directly across from a house and should be avoided due to adverse impacts of headlights into local residences. Due to the spacing of streets, the recommended location of the access is along the lot line on the south side of the street, half-way between Plum Street and Orchard Street.

Traffic Impact Study

The traffic study included data collection, trip generation, trip distribution, and operational analysis of the proposed development and its impact to the surrounding transportation system. The data collection included traffic counts and an adjustment factor for counts during the COVID-19 pandemic. While the adjustment may be reasonable, it does appear to be low based on the counts completed in 2019 for the new elementary school (study attached). Specifically, the AM peak appears to be drastically low on Lincoln Parkway. In addition, the traffic coming into and out of the school in the AM and PM also appears to be low. The traffic projection on Greenvale Avenue is also low, but not as drastically as

Lincoln Parkway. The counts collected for the study and the adjustment factor does not appear to appropriate due to the check with the previous counts.

The correct ITE Trip Generation analysis is appropriate and results in few trips to impact the local transportation network. The update on the development size and makeup is less than the original study and is deemed appropriate. Additional traffic analysis with the higher existing volumes on Lincoln Parkway and Greenvale Avenue should be analyzed. Again, the information from 2019 is attached. Additionally, it is recommended that the study use 7:30-8:30 AM as the AM peak as that is the peak hour for the roadway based on the previous (non-COVID 19 impacted) volumes.

The trip distribution does orient all apartment trips to accessing Lincoln Parkway which may be high since the primary access point to get to TH 19 is Greenvale Avenue and the primary access point to get to downtown and points southeast is likely Greenvale Avenue. Additionally, with the high volume of traffic on Lincoln Parkway in the AM peak, many of the AM peak trips may likely use alternate routes other than getting mixed in with the peak school traffic directly in front of the school. Given the small number of trips, these changes may not be anticipated to significantly alter the operational analysis results but would change the added number of trips to the roadways.

To understand the potential impacts and the roadways that should be evaluated the daily traffic is compared to the anticipated traffic increase from the development. Based on the knowledge of the area, a proposed daily trip distribution is as follows:

- 20% to the northwest (including Greenvale Park Elementary) – assume all use the north access
- 10% to the northeast – assume all use the north access
- 35% to the southeast, Downtown, Carlton College, Middle and High Schools – assume 50% use the north access and 50% use the south access
- 35% to the southwest, St Olaf, and TH 19/I-35 – assume all use the south access

Actual distribution may be different, but this gives a general traffic increase that may be expected on the roadway network.

The following table presents the routes that may need to be studied. Routes where the new trips are more than a 5% increase over the existing trips should be studied through the traffic impact study analysis as the new traffic may negatively impact the current operations. This includes the intersections on each end of the corridor in question, and other collector intersections between, if necessary.

Roadway	Existing Trips*	Site Trips	Total Trips	% Change
Lincoln Pkwy, E. of development	4160	160	4320	3.8%
Lincoln Pkwy, W. of development	3640	220	3860	6.0%
Greenvale Ave, W. of development	1900	280	2180	14.7%
Greenvale Ave, E. of development	1900	140	2040	7.4%
Greenvale Ave, E. of Spring St	7150	280	7430	3.9%
Spring St, S. of Lincoln Pkwy	5000	140	5140	2.8%
Lincoln St, S. of Greenvale Ave	5150	280	5430	5.4%
Cannon Valley Dr, N. of Lincoln Pkwy	3700	160	3860	4.3%

*Existing trips estimated using 2012 daily counts and a growth factor of 1.3 based on nearby traffic increases and nearby 2019 counts.

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Based on the above, the analysis of the accesses to Lincoln Parkway and Greenvale Avenue are deemed appropriate along with the surrounding major intersections, except that the intersection of Lincoln Street and St Olaf Avenue should also be included for study. Additional information from a study at that location is attached for the PM peak hour. AM peak hour can be estimated by using reverse directionality from the AM and assuming it is 80% of the PM peak and adjusting based on the counts to the north.

The analysis will need to be updated to understand potential queues/backups and the delay that is likely to be experienced by motorists. As a note, the City of Northfield generally identifies an acceptable service level of C or better to be appropriate for the city. It is likely that LOS C or better can be maintained at the intersections in question but should be affirmed through the analysis.

Pedestrian Considerations

The proposed location of the crosswalk across Lincoln Parkway is currently shown on the east side of the new access location. The location of this crossing does line up with the crossings through the parking lot but would require students to not only cross the traffic on Lincoln Parkway, but also any entering, parking, and exiting school traffic at three separate locations on school property. It is recommended that the location be relocated to the east side of the bus access lot. This would align students to the sidewalk to leads directly to the school access on the southwest side of the building where bussed students also enter and exit the school. Final location will need to be coordinated with the school district, the school, and the City of Northfield.

Conclusions

The following adjustments are recommended to be made to the site plan:

- Realign the southern access to Greenvale Avenue half-way between Plum Street and Orchard Street.
- Move the pedestrian crossing across Lincoln Parkway to the east side of the bus access driveway. Final location will need to be verified with the school, school district, and city.

The following adjustments are recommended to be made to the traffic study.

- Use the new traffic distributions provided above.
- Use the school build condition traffic volumes as the existing volumes (see attached study).
- Add the intersection of Lincoln Street and St Olaf Avenue to the analysis.
- Use LOS C as the acceptable LOS threshold in Northfield.

This will help to understand the potential traffic impacts of the development to the surrounding transportation network.