



MEMORANDUM

SRF Project No. 19777

To: Craig Britton, PE, Office Manager, VP
Justin Sebens, PE, Senior Project Manager
From: Ashley Stueve, PE, Engineer III
Date: January 26, 2026
Subject: School Sisters of Notre Dame Traffic Study Update; Mankato, Minnesota

Introduction

SRF has completed a traffic study update for the proposed School Sisters of Notre Dame residential development in the City of Mankato, Minnesota. The proposed development is generally located east of 4th Street and north of Thompson Ravine Road (see Figure 1) and was originally analyzed as part of the *School Sisters of Notre Dame Proposed Residential Development Traffic Impact Study* completed by Bolton & Menk in November 2023. Since completion of the 2023 study, development assumptions and site access conditions have changed, therefore, an updated traffic study is required. The main objectives of the study are to evaluate existing operations within the study area, identify any transportation impacts associated with the proposed development, and recommend improvements to address any issues, if necessary. The following information provides the assumptions, analysis, and study recommendations offered for consideration.

Previous Study

The *School Sisters of Notre Dame Proposed Residential Development Traffic Impact Study* was prepared by Bolton & Menk in November 2023 (hereafter referred to as the *School Sisters 2023 Study*). The study evaluated a proposed development consisting of 18 senior adult housing units, 10 single-family detached housing units, 250 multifamily housing units, and an event center. The primary objectives of the study were to collect new traffic data at nine (9) study intersections, evaluate opening-year (2028) traffic operations, and identify any potential transportation infrastructure improvements. For the purpose of this study, Thompson Ravine Road access is expected to be used primarily for emergency purposes due to several geometric and safety constraints. These constraints include steep roadway grades exceeding 10 percent in some locations, a narrow access roadway approximately 22 feet wide, limited sight distance, insufficient vehicle stacking distance at the intersection, inadequate curb radii, and steep side slopes. Based on discussions with Widseth (Civil and Site Design Engineer), improvements necessary to address these constraints are considered infeasible. Therefore, public access from Thompson Ravine Road was not assumed in this study update.



Project Location

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Figure 1

Existing Conditions

Existing conditions were reviewed to establish a baseline to identify any future impacts associated with the proposed development. The evaluation of existing conditions includes a review of traffic volumes, roadway characteristics, and an intersection capacity analysis, which are summarized in the following sections.

Data Collection

Weekday a.m. and p.m. peak-period vehicular turning movement data collected by Bolton & Menk in April 2023 were utilized in this study at the following study intersections:

- Victory Drive and Thompson Ravine Road
- 4th Street and Mabel Street
- May Street and 5th Street
- Broad Street and Mabel Street
- May Street and Broad Street
- North Riverfront Drive and Good Counsel Drive
- May Street and 2nd Street
- 4th Street and Good Counsel Drive

It should be noted that the Bolton & Menk traffic counts were collected while area schools were in session. Intersections along Good Counsel Road, which is the primary roadway providing access to and from Loyola Catholic School, were analyzed using the school dismissal peak hour (2:30 p.m. to 3:30 p.m.), while the remaining study intersections were analyzed using the p.m. peak hour (4:30 p.m. to 5:30 p.m.). Existing year 2026 peak-period volumes were developed using turning movement data from the *School Sisters 2023 Study*, along with background traffic growth in the study area and additional enrollment-related traffic at the adjacent Loyola Catholic School between the 2022–2023 and 2025–2026 school years, which were added and distributed throughout the study area.

Roadway Characteristics

A field assessment was completed to identify various roadway characteristics within the transportation system study area, such as functional classification, general configuration, and posted speed limit. A summary of these roadway characteristics are shown in Table 1. Note that these are general characteristics and that there are some deviations within the area or segments of the roadways. For example, Good Counsel Drive transitions from an unposted speed limit roadway to a posted 20 mph speed limit upon entering the school campus.

Table 1: Existing Roadway Characteristics

Roadway	Functional Classification ¹	General Configuration	Posted Speed Limit (mph)
Victory Drive	Minor Arterial	4-lane divided roadway	40
Thompson Ravine Road	Minor Collector	2-lane undivided roadway	Unposted ²
May Street	Local Roadway	2-lane undivided	Unposted ²
5th Street	Local Roadway	2-lane undivided	Unposted ²
Broad Street	Local Roadway	2-lane divided	Unposted ²
2nd Street	Local Roadway	2-lane undivided	Unposted ²
4th Street	Local Roadway	2-lane (one way) undivided roadway	30
Mable Street	Local Roadway	2-lane undivided	Unposted ²
North Riverfront Drive	Minor Arterial	4-lane divided/ 4-lane undivided ³	30/ 35 ⁴
Good Counsel Drive	Local Roadway	2-lane undivided	Unposted ² / 20 ⁵

From a traffic control perspective, the Victory Drive and Thompson Ravine Road/Raintree Road intersection is signalized. All other study intersections are unsignalized with side-street stop control. Existing geometrics, traffic control, and traffic volumes in the study area are shown in Figure 2.

Intersection Capacity Analysis

An intersection capacity analysis was completed using Synchro/SimTraffic software to establish a baseline condition to which future traffic operations could be compared. Capacity analysis results identify a Level of Service (LOS) which indicates how well an intersection is operating. Intersections are graded from LOS A through LOS F. The LOS results are based on average delay per vehicle, which corresponds to the delay threshold values shown in Table 2. LOS A indicates the best traffic operation, while LOS F indicates an intersection where demand exceeds capacity. Overall intersection LOS A through LOS D is generally considered acceptable based on MnDOT guidelines.

¹ Functional Classification based on *MNDOT's Transportation Management System*.

² Speed Limit Assumed to be 30-mph.

³ North Riverfront Drive transitions from a 4-lane divided roadway to a 4-lane undivided roadway south of Ruby Street.

⁴ North Riverfront Drive transitions from a 35-mph speed limit to a 30-mph speed limit south of May Street.

⁵ Good Counsel Drive transitions from an unposted speed limit to a 20-mph speed limit upon entering the school campus.



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Figure 2

Table 2: Level of Service Criteria for Signalized and Unsignalized Intersections

LOS Designation	Signalized Intersection Average Delay/Vehicle (seconds)	Unsignalized Intersection Average Delay/Vehicle (seconds)
A	≤ 10	≤ 10
B	> 10 - 20	> 10 - 15
C	> 20 - 35	> 15 - 25
D	> 35 - 55	> 25 - 35
E	> 55 - 80	> 35 - 50
F	> 80	> 50

For signalized, all-way stop, and roundabout controlled intersections, the overall intersection control delay dictates the LOS. At side-street stop-controlled intersections, the LOS is determined based on the worst side-street movement (or shared movement) or major-street left-turn delay and no overall LOS is provided.

Results of the existing capacity analysis summary, shown in Table 3, indicate that all study intersections currently operate at an acceptable overall LOS C or better during the weekday a.m., and p.m. peak hours with the existing traffic control and geometric layout. No significant side-street stop delay or queuing issues were observed.

Table 3: Existing Intersection Capacity Analysis Summary

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay
North Riverfront Drive & Good Counsel Drive ⁶	C	22 sec.	C	16 sec.
4th Street & Good Counsel Drive ⁷	A	3 sec.	A	1 sec.
Broad Street & Mabel Street ⁶	A	2 sec.	A	4 sec.
4th Street & Mabel Street ⁶	A	4 sec.	A	4 sec.
2nd Street & May Street ⁷	A	2 sec.	A	2 sec.
Broad Street & May Street ⁶	A	6 sec.	A	6 sec.
5th Street & Mabel Street ⁶	A	3 sec.	A	3 sec.
Thompson Ravine Road & Emergency Access ⁸	A	1 sec.	A	1 sec.
Victory Drive & Thompson Ravine Road/Raintree Road ⁹	A	8 sec.	B	13 sec.

⁶ Indicates an unsignalized intersection with a side-street stop control, where the worst side-street movement LOS and delay are shown.

⁷ Indicates an unsignalized intersection with a yield control, where the worst side-street movement LOS and delay are shown.

⁸ Indicates an uncontrolled intersection, where the worst side-street movement LOS and delay are shown.

⁹ Indicates a signalized controlled intersection, where the overall LOS and delay are shown.

Traffic Forecasts

The year 2030 build traffic forecasts account for general background growth, increased enrollment at Loyola Catholic School, and traffic generated by the proposed development. The following sections outline the traffic forecast development process and assumptions, as well as the proposed development trip generation.

Background Traffic Growth

To account for general background growth in the area, an annual growth rate of one (1) percent was applied to the existing peak hour mainline through movements along North Riverfront Drive and Victory Drive to develop future background forecasts. This growth rate was developed using a combination of historical average daily traffic (ADT) volumes from surrounding roadways as published by MnDOT, traffic forecasts from the *MAPO 2050 Metropolitan Transportation Plan*, and engineering judgment. Note that no background growth was applied to the remaining intersections/movements due to limited availability for future development.

Loyola Catholic High School

Loyola Catholic School is a private school serving students from preschool through grade 12 and is located immediately east of the proposed development. Based on enrollment data provided by the school, 541 students were enrolled during the 2022–2023 school year, which corresponds to the period when traffic counts were collected as part of the *School Sisters 2023 Study*. Trips associated with this enrollment level were already using the adjacent roadway network at the time of data collection and were therefore not included in the trip generation estimates. For the 2025–2026 school year, enrollment has increased to 585 students. The increase in enrollment between the 2022–2023 count year and the 2025–2026 school year was accounted for and included in the existing conditions analysis. Additionally, the school is projecting approximately 600 students by the 2030 build year. To account for additional trips associated with the increase in enrollment to the 2030 build year, trip generation estimates were developed using the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 12th Edition, and distributed to the adjacent roadway network. Results of the trip generation analysis indicate that the increased school enrollment trips are expected to generate approximately 45 a.m. peak-hour trips, 30 p.m. peak-hour trips, and 103 daily trips between the 2022–2023 and 2029–2030 school years.

Proposed Development

As previously noted, the proposed development is generally located east of 4th Street and north of Thompson Ravine Road in Mankato, Minnesota. The proposed development consists of 118 multifamily housing units, 51 assisted living beds, 20,000 square feet of office space, a 3,850-square-foot karate/dance studio, a chapel and gym with a capacity of up to 350 people, and a 4,210-square-foot conference room available for outside rental. The development is anticipated to be fully constructed and operational by 2030. A preliminary site plan, shown in Figure 3, was used as the basis for the traffic analysis. Primary access to the site will be provided via Good Counsel Road, with emergency access provided from Thompson Ravine Road.

Proposed Development Trip Generation

To account for traffic impacts associated with the proposed development, a trip generation estimate was developed for the weekday a.m. and p.m. peak hours and on a daily basis. The estimates, shown in Table 4, were developed using the *ITE Trip Generation Manual, 12th Edition*.

Table 4: Proposed Development Trip Generation Estimate

Land Use Type (ITE Code)	Size	A.M. Peak Hour		P.M. Peak Hour		Daily Trips
		In	Out	In	Out	
221 - Multifamily Housing (Mid-Rise)	118 DU	10	35	29	16	526
254 – Assisted Living	51 Beds	6	4	5	7	211
712 – Small Office Building	20,000 SF	27	6	15	28	288
494 – Boutique Fitness Studio	3,850 SF	23	22	25	6	158
Total		66	67	74	57	1,183

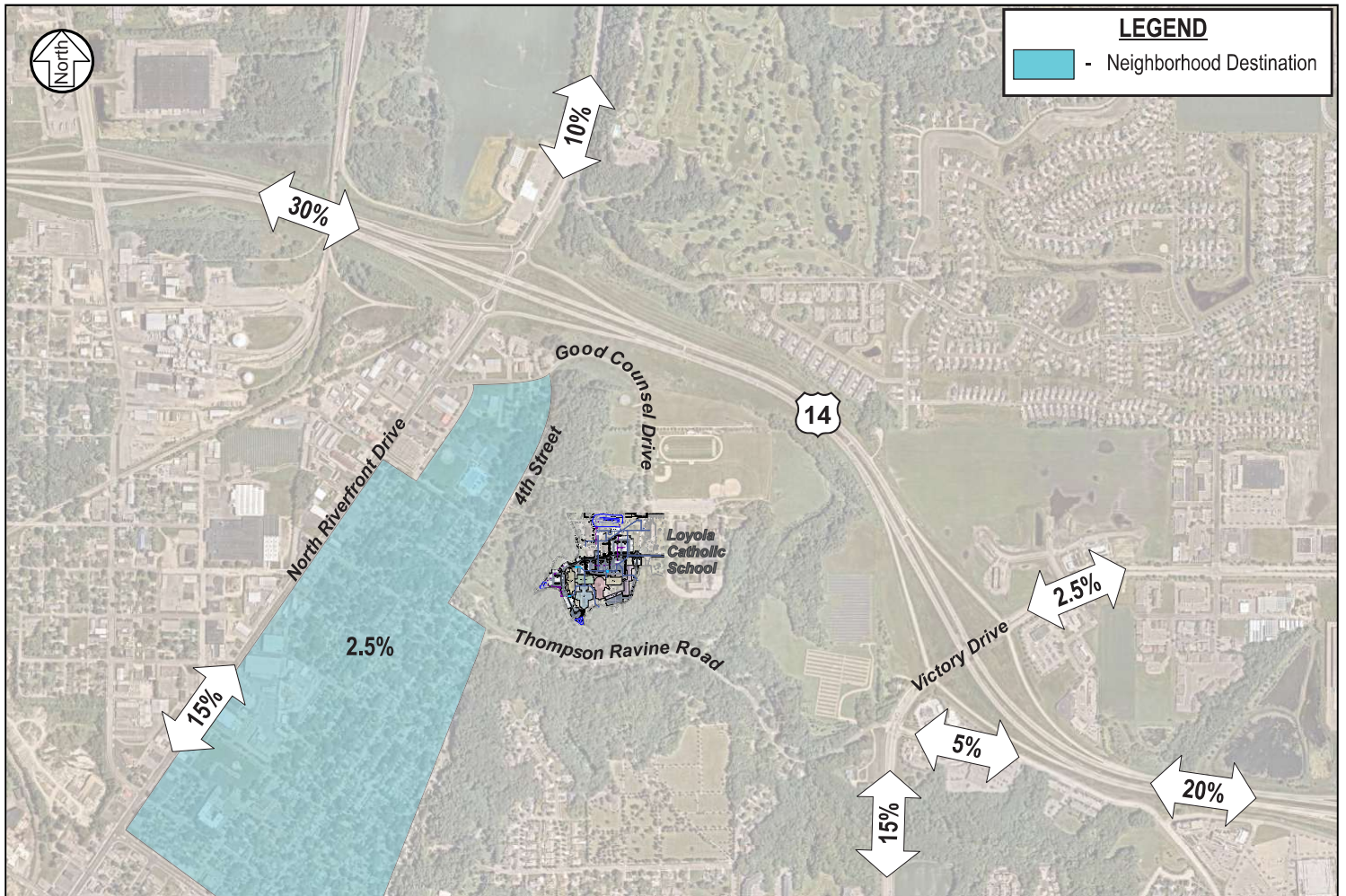
Results of the trip generation estimate indicate that the proposed development is expected to generate approximately 133 a.m. peak hour, 131 p.m. peak hour, and 1,183 daily trips. The trips generated were distributed throughout the area based on the directional distribution shown in Figure 4, which was developed based on existing travel patterns and engineering judgement.

Special Event Consideration

The proposed development includes a chapel and gym with a 350-person capacity, expected to host approximately 10 events per year, and a 4,210-square-foot conference room available for outside rental. Given the limited number of events and the likelihood that they will occur outside peak traffic hours, trips associated with these uses were not included in the trip generation estimates.

Traffic Forecast Summary

Based on the traffic forecast approach described in this study, peak-hour traffic forecasts were developed for the year 2030 build conditions. The forecasts include general area background growth, increased school enrollment trips, and traffic generated by the proposed development, which is shown in Figure 5.

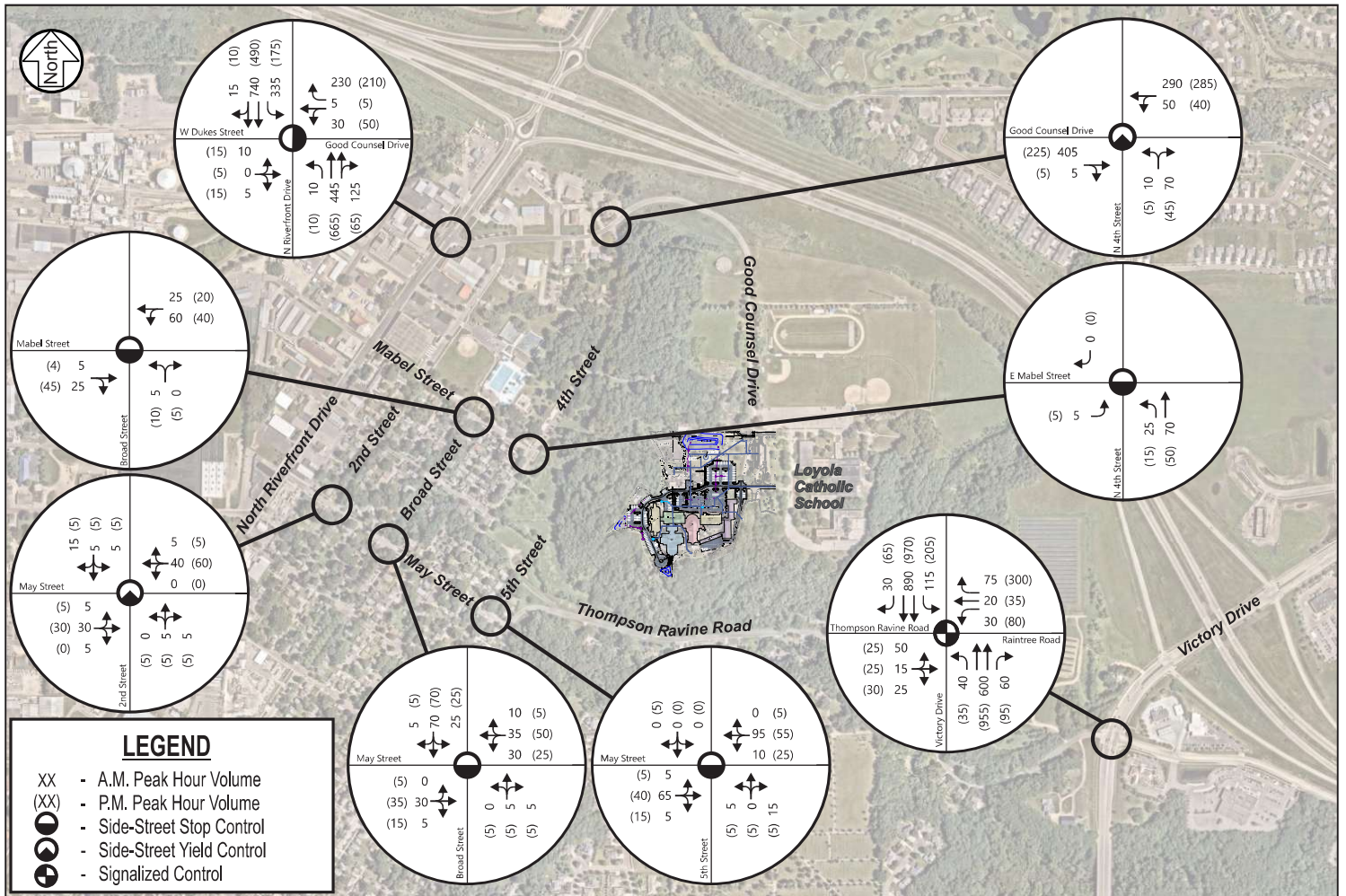


Directional Distribution

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Figure 4



Year 2030 Build Conditions

To determine how the study intersections and site access locations will operate under year 2030 build conditions, an intersection capacity analysis was completed using Synchro/SimTraffic software. The analysis assumes the expected increase enrollment at the Loyola Catholic School and the completion of the proposed development. Results of the analysis, summarized in Table 5, indicate that the North Riverfront Drive and Good Counsel Drive intersection is expected to operate at an overall LOS D and E during the weekday a.m. and p.m. peak hours, respectively. All remaining study intersections are expected to operate at an overall LOS B or better during the weekday a.m. and p.m. peak hours. Delays and queueing are expected to worsen compared to existing conditions as area development occurs (i.e. from background growth, adjacent school, and the proposed development).

Table 5: Year 2030 Build Intersection Capacity Analysis Summary

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay
North Riverfront Drive & Good Counsel Drive ¹⁰	D	31 sec.	E	40 sec.
4th Street & Good Counsel Drive ¹¹	A	3 sec	A	2 sec.
Broad Street & Mabel Street ¹⁰	A	2 sec.	A	4 sec.
4th Street & Mabel Street ¹⁰	A	4 sec.	A	4 sec.
2nd Street & May Street ¹¹	A	2 sec.	A	2 sec.
Broad Street & May Street ¹⁰	A	6 sec.	A	6 sec.
5th Street & Mabel Street ¹⁰	A	1 sec.	A	3 sec.
Thompson Ravine Road & Emergency Access ¹²	A	1 sec.	A	1 sec.
Victory Drive & Thompson Ravine Road/Raintree Road ¹³	A	9 sec.	B	14 sec.

¹⁰ Indicates an unsignalized intersection with a side-street stop control, where the worst side-street movement LOS and delay are shown.

¹¹ Indicates an unsignalized intersection with a yield control, where the worst side-street movement LOS and delay are shown.

¹² Indicates an uncontrolled intersection, where the worst side-street movement LOS and delay are shown.

¹³ Indicates a signalized controlled intersection, where the overall LOS and delay are shown.

The following information summarizes the operational and/or safety issues that warrant consideration as traffic volumes increase:

North Riverfront Drive and Good Counsel Drive

- Under 2030 build conditions, the North Riverfront Drive and Good Counsel Drive intersection is expected to operate at a LOS E during the p.m. peak hour, with an average delay of approximately 40 seconds for the westbound left-turn/through movement. Despite delays reaching 40 seconds, 95th-percentile queues are not expected to exceed five (5) vehicles and are not anticipated to extend to adjacent neighborhood intersections or block the right-turn lane.
- Based on a cursory review of available volumes, the intersection is not expected to meet peak-hour warrants under 2030 build conditions for a traffic signal. A full signal warrant analysis was not completed as part of this study; however, it is unlikely that the intersection would meet any traffic signal warrants.

Potential Alternatives for Consideration:

Three (3) alternatives were identified for consideration at the North Riverfront Drive and Good Counsel Drive intersection: maintaining the existing geometry and traffic control, implementing a three-quarter access, and constructing a roundabout.

Maintaining Existing Geometry/Traffic Control (i.e. No Build) – Preferred Alternative

- While changes to access or traffic control could improve safety and operations, they could also result in significant costs and unwanted trip rerouting. It should be noted that the anticipated LOS E condition during the p.m. peak hour is expected to occur only for a brief period.
 - **Advantages:** While the westbound left-turn/through lane is projected to operate at a LOS E during the p.m. peak, all other movements are expected to operate at acceptable levels under the year 2030 build conditions. Delays are anticipated to affect approximately 30 to 50 westbound left-turn and through vehicles during the peak hours. Additionally, queues are expected to be minimal and not impact the right-turn lane, which carries the highest volume of movements on the westbound leg of the intersection.
 - **Disadvantages:** The westbound left-turn/through lane is projected to operate at a LOS E during the p.m. peak hour and maintaining the existing geometry and traffic control would not improve this condition. If the delay for this movement becomes excessive, drivers may make more aggressive movements during unsafe gaps or choose to reroute to alternative intersections or residential streets, potentially degrading safety and operations elsewhere.

Three-Quarter Access

- If the North Riverfront Drive and Good Counsel Drive intersection were restricted to three-quarter access, which would prohibit eastbound and westbound left-turn and through movements, approximately 30 to 50 westbound left-turn and through movements are expected to reroute to adjacent intersections in the 2030 build conditions.
 - **Advantages:** While a three-quarter access configuration would result in a less direct route for some users, it would reduce conflict points and improve overall safety and operations at the North Riverfront Drive and Good Counsel Drive intersection. With the reduced number of conflicting movements, the intersection is expected to operate at acceptable levels of service.
 - **Disadvantages:** The three-quarter access configuration would restrict certain movements and require those movements to use alternative routes, which may shift operational and safety issues to adjacent intersections and/or result in additional trips using nearby residential streets as alternative routes.

Roundabout

- A hybrid (two-lane northbound/southbound and one-lane eastbound/westbound) multilane roundabout could be considered at the North Riverfront Drive and Good Counsel Drive intersection to improve safety and operations.
 - **Advantages:** Installing a roundabout would provide acceptable operations and improve safety at the intersection by reducing conflict points and lowering the potential for severe crashes. It would also improve traffic flow by allowing continuous movement through the intersection and reduce the delay for all approaches. Additionally, it is not expected to reroute any additional trips through residential streets.
 - **Disadvantages:** Constructing a hybrid roundabout would be a high-cost improvement that may not be feasible in the area. Because of the multilane north and south approaches, RRFB crossings would be required, further increasing costs. Roundabouts may also require additional right-of-way and modifications to nearby driveways.

Site Plan Review

A review of the proposed site plan was completed to identify any issues and recommend potential improvements with regard to internal roadways, access, traffic controls, sight distance, and circulation. The following information should be considered when designing internal traffic controls and access roadways:

- Incorporate traffic controls, signing, and striping based on guidelines established in the Manual on Uniform Traffic Control Devices (MUTCD).
- Special consideration should be made to limit any sight distance impacts from future structures, landscaping, and signing.

In general, all internal intersections are expected to operate adequately with side-street stop control. As development occurs, internal intersections should be reviewed to determine if a higher level of traffic control (i.e. an all-way stop) should be considered. In addition, special consideration should be made to limit any sight distance impacts from future landscaping and signing at all internal and external intersections within the study area.

Neighborhood Traffic Impacts

As mentioned previously, the primary access to the development is via Good Counsel Drive. Depending on users' origins and destinations, a minimal amount of trips are expected to utilize residential streets in the neighborhood immediately west of the proposed development. Based on current development assumptions and anticipated routing, approximately 120 additional daily trips (from the proposed development) are expected to travel along 4th Street under 2030 conditions. This equates to approximately 10 to 15 vehicles during the peak hours (i.e., approximately 1 vehicle every 4 to 6 minutes), in addition to the existing traffic volumes of approximately 110 and 80 vehicles in the a.m. and p.m. peak hour, respectively, on 4th Street.



While these trips are minimal and are not expected to significantly affect traffic conditions within the residential neighborhood, mitigation measures could be considered if safety or operational issues arise. Mitigation measures include signage (e.g., "No Through Traffic") and/or restricting the westbound left-turn movement to limit use of the residential streets. Note that if trips are diverted from 4th Street, they would likely use the North Riverfront Drive and Good Counsel Drive intersection. Although the additional trips are minor, approximately 10 to 15 vehicles per peak hour, the intersection is already expected to operate at LOS E during the p.m. peak hour under 2030 build conditions, so these trips may contribute to increased delay or result in rerouting to nearby intersections.

Summary and Conclusion

SRF completed an updated transportation study for the proposed School Sisters of Notre Dame residential development, generally located east of 4th Street and north of Thompson Ravine Road in Mankato, Minnesota. The proposed development consists of 118 multifamily housing units, 51 assisted living beds, 20,000 square feet of office space, a 3,850-square-foot fitness studio, a chapel and gym with a capacity of up to 350 people, and a 4,210-square-foot conference room available for outside rental. The development is anticipated to be fully constructed and operational by 2030. The purpose of this study was to evaluate existing and future traffic conditions, assess operational and safety impacts associated with the proposed development, and identify potential improvements needed to maintain acceptable operations within the study area. Key findings of the study are summarized below.

1. Existing Conditions

- a. All study intersections currently operate at an acceptable overall LOS C or better during the a.m. and p.m. peak hours and, no significant operational or queueing issues were observed.

2. Traffic Forecasts

- a. **Background Growth:** An annual growth rate of 1 percent was applied to peak hour through traffic volumes along North Riverfront Drive and Victory Drive to account for general background growth in the area. No background growth was applied to other intersections due to limited potential for additional development.
- b. **Loyola Catholic School Enrollment:** Based on data provided from the school, enrollment is projected to increase from 541 students in 2022–2023 to approximately 600 students by 2030. This increase was included in the traffic forecast and is expected to generate an additional 45 a.m. peak-hour trips, 30 p.m. peak-hour trips, and 103 daily trips by year 2030.
- c. **Proposed Development:** The proposed development is expected to generate approximately 133 a.m. peak-hour trips, 131 p.m. peak-hour trips, and 1,183 daily trips.

3. Year 2030 Build Conditions

- a. With background growth, increased enrollment at the Loyola Catholic School and the completion of the proposed development, the North Riverfront Drive and Good Counsel Drive intersection is projected to operate at a LOS E during the p.m. peak hour, while all remaining study intersections are expected to continue operating at an overall LOS B or better during the weekday a.m. and p.m. peak hours.

4. Alternative of Consideration at the North Riverfront Drive and Counsel Drive Intersection

a. Maintaining Existing Geometry and Traffic Control (Preferred Alternative)

- i. **Advantages:** All lanes except the westbound left-turn/through lane are expected to operate at acceptable levels. Delays affect approximately 30–50 vehicles during the peak hours, and queues are minimal.
- ii. **Disadvantages:** The westbound left-turn/through lane is projected to operate at a LOS E during the p.m. peak hour. Drivers may make aggressive movements or reroute to residential streets, potentially increasing safety and operational concerns.

b. Three-Quarter Access

- i. **Advantages:** Restricting eastbound and westbound left-turn/through movements reduces conflict points and improves safety. The intersection is expected to operate at acceptable levels of service.
- ii. **Disadvantages:** Restricted movements may shift operational and safety issues to adjacent intersections and/or result in additional trips using residential streets.

c. Roundabout

- i. **Advantages:** A hybrid (2x1) roundabout would provide acceptable operations, reduce conflict points, lower potential for severe crashes, improve continuous traffic flow, and is not expected to reroute trips through residential streets.
- ii. **Disadvantages:** Constructing a multilane roundabout would be a high-cost improvement. RRFB crossings would be required on the north and south legs, and additional right-of-way and driveway modifications may be necessary.

5. Neighborhood Traffic Impacts

- a. Development-related trips using residential streets are expected to be minimal, approximately 120 daily trips along 4th Street (10 to 15 vehicles per peak hour). While minor, these trips could be mitigated by signage or restricting westbound left-turn movements if operational or safety issues arise.