MnDOT - District 3 (Thomas Cruikshank)

Thank you for the opportunity to provide comments on the Scoping Environmental Assessment Worksheet (SEAW) for the Elk River Landfill expansion project. MnDOT recognizes and understands the importance of US Highway 169 to provide transportation access to the Landfill and related aggregate mining operations. The continued operations of the landfill and related services is something that MnDOT does monitor and analyzed in a recently completed Road Safety Audit for US Highway 169 from Elk River to Princeton.
https://talk.dot.state.mn.us/us-169-road-safety-audit-in-sherburne-county The RSA identifies several safety and operations issues related to the intersections on US 169 that are used to access the Landfill. Section 3.1.5 of the RSA describe those issues and comments. The RSA also includes several recommended improvements to the highway that may improve operations and provide increased safety operations that include access management tactics and J-Turns and other geometric improvements. MnDOT intends to continue to monitor traffic impacts related to the Landfill and related operations, including implementation of strategies for safety and operations improvements for US 169.

DEPARTMENT OF TRANSPORTATION

US Route 169 – ROAD SAFETY AUDIT

Sherburne County, Minnesota

FINAL REPORT

Prepared for:

Minnesota Department of Transportation

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June 25, 2025

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Appendices
Appendix A. US 169 – Briefing Book

EXECUTIVE SUMMARY

Michael Baker International (Michael Baker) is under contract with the Minnesota Department of Transportation (MnDOT) to conduct a Road Safety Audit (RSA) for US 169 in Sherburne County, Minnesota. The study corridor extends from the County Road 33 Interchange in Elk River, Minnesota, to the County Road 29 Interchange in Princeton, Minnesota.

The primary goal of the RSA is to identify traffic safety issues and propose strategies to improve safety performance for all road users. This executive summary provides a comprehensive overview of the key findings, recommendations, and overarching themes that emerged from the RSA process.

Existing Traffic Conditions

The RSA team conducted analyses of traffic volumes and patterns along the US 169 corridor. Traffic data was collected at three strategic locations on US 169: south of 217th Avenue NW, north of Oak Street (Zimmerman), and south of 313th Avenue (Princeton). The data collection efforts included both traffic volumes and speed data, providing a comprehensive snapshot of traffic conditions over a one-week period from Thursday, December 5, 2024, to Wednesday, December 11, 2024. Additionally, StreetLight probe data was utilized to assess seasonal variability in traffic volumes. The analysis revealed that the highest traffic volumes occurred during the month of August, while the lowest volumes were observed in January. Understanding these seasonal variations is essential for assessing their impact on traffic flow and safety.

Crash Data Analysis

The RSA team conducted a review of crash data to identify crash clusters and common types of crashes along the study corridor. The analysis period for fatal and serious injury crashes extended from January 1, 2015, to December 31, 2024, revealing a total of 12 fatal crashes and 18 serious injury crashes over the past decade. This analysis highlighted the need for targeted safety interventions, especially considering the occurrence of five fatal crashes in 2023.

For the analysis of traffic crash trends and contributing factors, the data from the most recent five years, spanning January 1, 2020, to December 31, 2024, was utilized. This crash data helped identify patterns in crash type and severity, with a notable prevalence of intersection-related and run-off-road incidents, especially during adverse weather conditions.

Community Feedback

Community feedback also played a crucial role in shaping the RSA's findings and recommendations. The RSA team collected and analyzed feedback from the community to understand local safety concerns and local user experiences. This feedback highlighted several recurring themes, including perceived issues regarding lighting, signing, and roadway conditions. Community members also expressed concerns about the lack of acceleration and turn lanes, poor visibility due to lighting, and the need for guardrails along curves. The RSA team meticulously reviewed the community's feedback when selecting locations for on-site inspections and formulating recommendations for safety improvements. The feedback was integral in prioritizing the specific safety enhancements proposed by the RSA team, ensuring that the recommendations were aligned with the actual needs and experiences of the road users.

By integrating community feedback into the RSA process, the recommendations aimed to address the practical and perceived safety issues, thereby enhancing the overall effectiveness of the proposed safety measures.

Field Observations

Field observations conducted as part of the RSA process involved detailed on-site inspections of the study corridor by a multidisciplinary team. The primary purpose of these observations was to identify roadway conditions, potential road safety hazards and driver behaviors. The RSA team paid close attention to various factors, such as road geometry, signage, lighting,

and surface conditions, which could potentially contribute to traffic safety issues. These firsthand observations were crucial in formulating effective strategies to address the identified safety concerns.

The RSA team conducted field reviews at 17 locations along the US 169 corridor, chosen based on the analysis of collected traffic volumes, speed, crash data and feedback from the community. During these field reviews, the team examined roadway conditions, visibility issues, signage clarity, overall traffic flow, and maintenance concerns. Several critical safety issues were noted, including poor visibility, signage, challenging roadway geometries, and high crash frequencies at certain intersections.

As an example, the team identified safety concerns at the horizontal curve South of 211th Ave NW, which experienced a high frequency of run-off-road crashes, particularly during slippery pavement conditions. The edge line rumble strips of the northbound lane in this area were found to have faded and needed to be reinstalled. Additionally, the curve appeared to have a "flat" super-elevation, which required further examination with a ball bank indicator to determine if a change in superelevation was needed.

Similarly, at the intersection of 213th Ave, visibility issues were prevalent, posing a potential risk to road users. The limited sight distance when looking north from the median crossover impacts traffic wanting to turn left towards southbound traffic or travel westbound. The intersection also lacked a stop sign for the westbound approach intersecting with US 169, which can contribute to confusion and unsafe conditions for drivers.

These observations highlighted the necessity for targeted safety interventions to mitigate the potential risks and enhance overall safety performance along the corridor. The RSA team recommended several countermeasures, such as applying High Friction Surface Treatment (HFST) to improve surface traction, installing chevrons with retroreflective sheeting to enhance visibility, and improving lighting along the corridor to address nighttime visibility issues identified during community feedback. Additionally, the team suggested converting certain intersections to J-turn configurations to enhance safety and traffic flow by restricting crossing maneuvers and directing drivers to historically safer median U-turns.

In conclusion, the field observations conducted as part of the RSA were instrumental in identifying specific safety challenges and potential risk factors along the US 169 corridor. By examining roadway conditions, visibility issues, signage clarity, and overall traffic flow, the RSA team was able to formulate effective strategies to address the identified safety concerns.

Recommended Strategies for Safety Performance Improvements

Based on the analyses of existing traffic volume, speeds, crash data, community feedback, and field observations, the RSA team developed a set of recommended strategies to enhance safety performance along the US 169 corridor. These strategies focused on several key areas:

- Improving intersection safety through the installation of advanced traffic control devices and enhanced signage.
- Implementing measures to reduce run-off-road incidents, such as improved road shoulders and refreshing lane markings.
- Enhancing road surface conditions to prevent run-off-road crashes during adverse weather conditions.

The recommendations are categorized into short-term, medium-term, and long-term solutions and can be found in **Section 4** of the report.

1 INTRODUCTION

The Minnesota Department of Transportation (MnDOT) is committed to enhancing the overall safety performance of roadways under its jurisdiction. One of the tools MnDOT uses to identify improvements to reduce the number of fatalities and serious injuries on its roadways is the use of Road Safety Audits (RSA).

An RSA is a formal safety evaluation of planned or existing roadways conducted by an independent, multi-disciplinary audit team. The RSA team examines potential safety hazards that may affect the road user and suggest countermeasures to mitigate those safety issues. The RSA team is composed of transportation professionals and individuals with special skills in traffic safety, traffic operations, geometric design, maintenance crews, and law enforcement, from federal, state, and local transportation agencies. The RSA Team conducts field reviews and prepares an audit report. The RSA is performed in accordance with the Federal Highway Administration's (FHWA) Road Safety Audit Guidelines (Publication NO. FHWA-SA-06-06).

Michael Baker International (Michael Baker) is under contract with MnDOT to conduct the RSA for US 169 in Sherburne County, Minnesota. The study corridor extends from the County Road 33 (County Rd 33) Interchange in Elk River, Minnesota to the County Rd 29 Interchange in Princeton, Minnesota, as shown in **Exhibit 1-1**. The primary goal of the RSA is to identify potential traffic safety risks and propose strategies to improve safety performance for all road users. The scope of services includes:

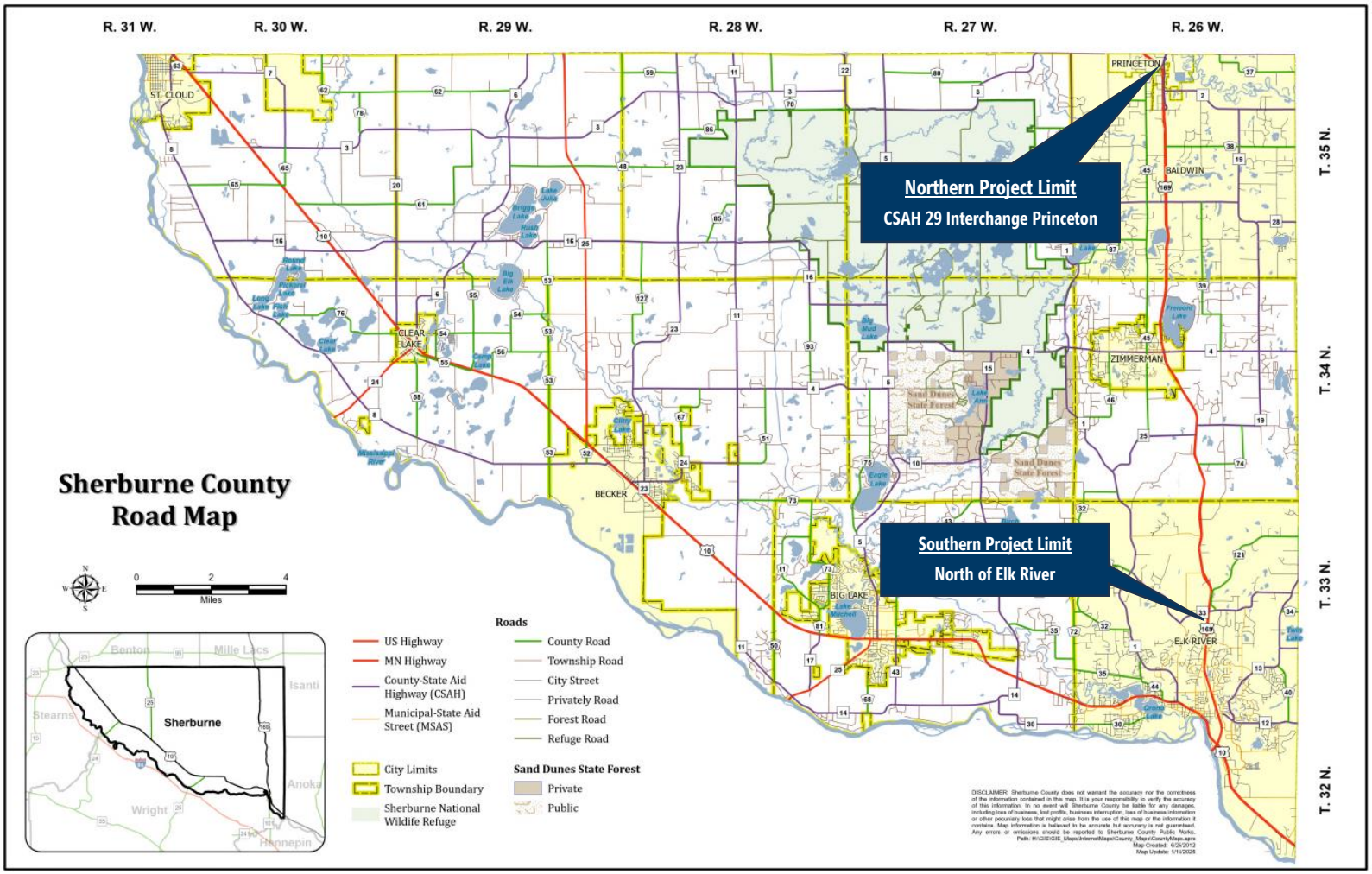
- Desktop review and field data collection
- Traffic analysis
- Safety analysis
- Community feedback analysis
- Field review of the study corridor (Audit)
- Recommend improvement strategies

MnDOT initiated this RSA in response to concerns about safety performance along US 169 and the potential for increased development and traffic volumes in the area. The RSA is conducted in several phases to ensure a thorough examination of safety issues and the development of effective strategies to enhance the safety performance of US 169 in Sherburne County, Minnesota:

- **Phase 1**: Assessing current conditions and analyzing crash data.
- **Phase 2**: Gathering public input and conducting field reviews to identify safety risks.
- **Phase 3**: Develop and evaluate improvement ideas based on the information gathered.
- **Phase 4**: Propose short-, medium-, and long-term safety enhancements.
- **Phase 5**: Prepare a comprehensive report to guide future projects along US 169.

This structured approach ensures that the RSA team can systematically address the safety concerns along US 169, providing MnDOT with actionable recommendations to improve road safety for all users. By leveraging the expertise of the RSA team and engaging with the community, MnDOT aims to create a safer and more efficient transportation corridor that meets the needs of its growing population.

Exhibit 1-1. Study Corridor



Source: https://www.co.sherburne.mn.us/DocumentCenter/View/5264/

1.1 Road Safety Audit Review Team

An RSA review team was comprised of members from MnDOT, Sherburne County, the Federal Highway Administration (FHWA), and Michael Baker International. The team consisted of professionals with diverse expertise in areas such as traffic engineering, roadway design, safety analysis as well as field operations and maintenance. Their collective objective was to conduct a comprehensive field examination of the US 169 corridor to identify existing safety performance issues and potential risk factors.

Members of the RSA review team include:

Name	Title
Derek Leuer	State Traffic Safety Engineer, MnDOT
Maxwell Moreland	Traffic Safety Crash Data Engineer, MnDOT
Tom Cruikshank	Principal Planner, MnDOT D3
Griffin Enyart	Assistant District Traffic Engineer, MnDOT D3
Josh Fleck	Senior Geometric Advisor, MnDOT GDSU
Daniel Whebbe	Transportation Operations Supervisor, MnDOT Maintenance
Andrew Witter	Public Works Director, Sherburne County
David Roedel	Asst. Public Works Director, Sherburne County
Kristi Sebastian	FHWA Safety/Operations Engineer
Jon Schelkoph	Senior Transportation Engineer, Michael Baker International
Sajid Raza	Traffic Engineer, Michael Baker International
Kelly Kostecki	Project Manager, Michael Baker International

This multidisciplinary team aimed to develop practical and evidence-based recommendations for improving safety. The insights gathered during field reviews, coupled with data analyses, were crucial in shaping the proposed enhancement recommendations to US 169. The team emphasized a holistic approach to ensure that short-term, medium-term, and long-term solutions were both feasible and effective.

1.2 Report Purpose

This Final Report documents the Road Safety Audit (RSA) conducted for US 169 in Sherburne County, Minnesota. Prior to this Final Report, a Briefing Book was developed as part of the RSA process. The Briefing Book, which is included in **Appendix A**, provides detailed analyses and findings on the following aspects:

- **Traffic Volume Analysis**: Review of traffic volumes and patterns including day of the week and month of the year.
- **Crash Data Analysis**: Review of crash data to identify crash clusters and patterns.
- **Community Feedback Analysis**: Collection and analysis of feedback from the community to understand local safety concerns and experiences.

- **Recommended Locations for Field Review**: Identification of specific locations for field reviews based on preliminary findings.

This Final Report provides a comprehensive summary of the analyses conducted during the Pre-Audit Phase, as detailed within the Briefing Book. It also presents the observations and insights gained by the field review team at various identified locations during their site visits. Based on these observations, the report offers key recommendations aimed at enhancing traffic safety performance along the US 169 corridor. These recommendations are designed to improve roadway conditions, ensuring a safer environment for all road users.

1.3 PROJECT SCHEDULE

The RSA project of US 169 in Sherburne County, Minnesota has the following schedule.

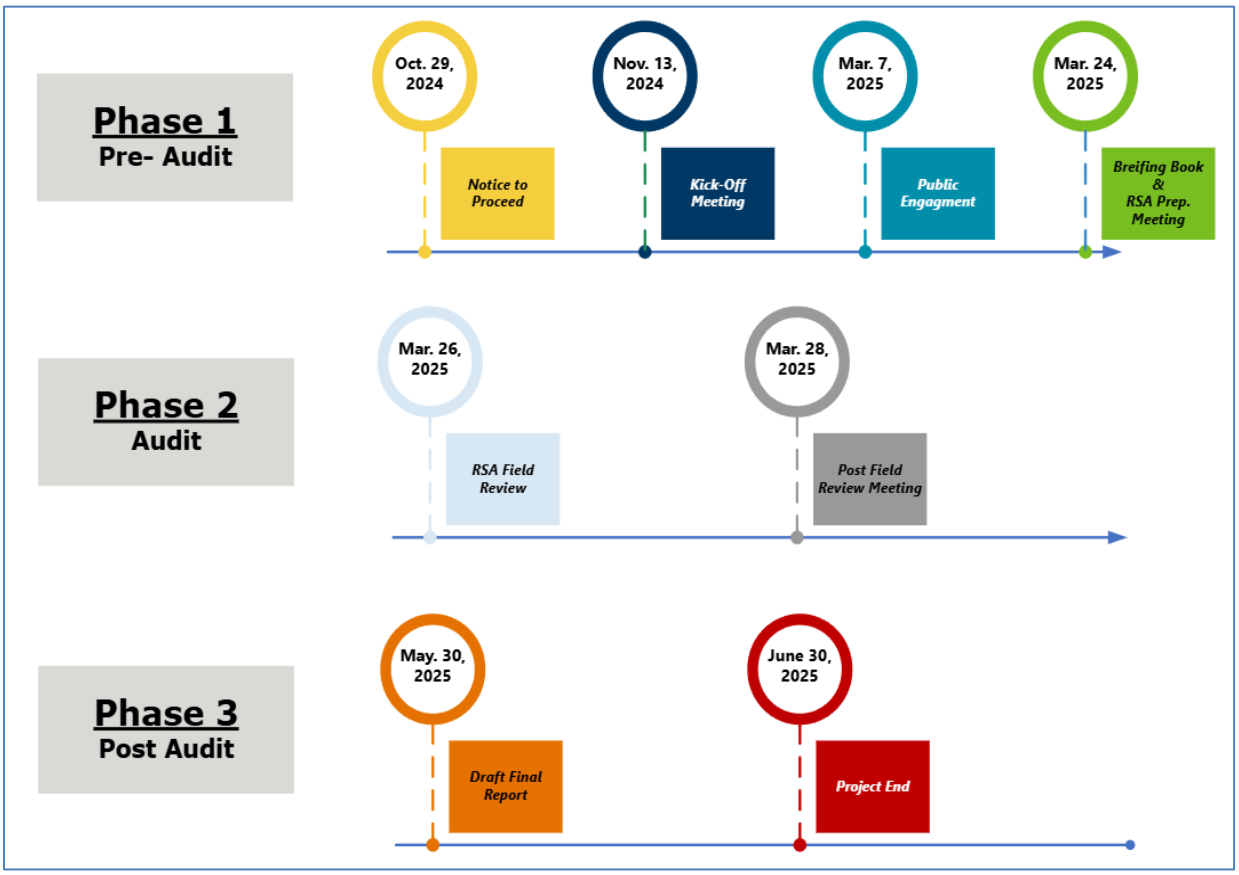


Exhibit 1-2. Project Schedule

2 PRE-AUDIT

During the pre-audit phase, extensive analysis was conducted to evaluate the existing traffic and safety performance of the US 169 corridor. This section provides an overview of these evaluations, which include traffic data, crash data, and community feedback. For an in-depth examination, please refer to the Briefing Book included in **Appendix A**.

2.1 TRAFFIC OPERATIONAL ANALYSIS – KEY FINDINGS

Traffic data was collected at three locations along US 169. This data collection effort included both traffic volume and speed data, providing a comprehensive snapshot of traffic conditions over a one-week period from December 5, 2024, to December 11, 2024. The data was collected under clear weather and dry pavement surface conditions. In addition, StreetLight probe data was utilized to assess seasonal variations in traffic volumes.

The three data collection sites, as shown in **Exhibit 2-1**, are:

- Location I: South of 217th Ave NW
- Location II: North of Oak St (Zimmerman)
- Location III: South of 313th Ave (Princeton)

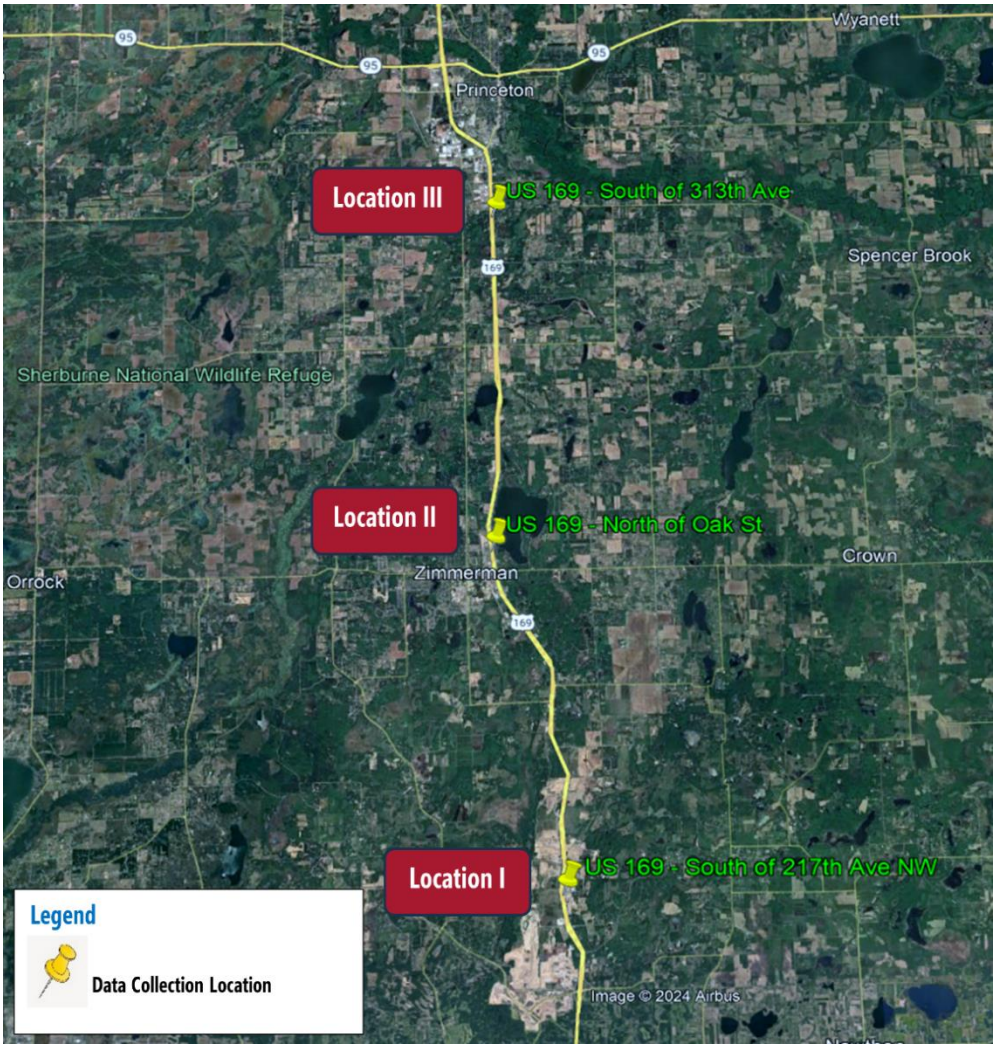


Exhibit 2-1. Locations of Traffic Data Collection

2.1.1 Traffic Volume

Traffic volume trend plots illustrate the average hourly weekday volume at each of the three locations and provide the following insights:

- **Northbound Traffic**: The peak hour for northbound traffic occurs during the afternoon (4:00 PM), with hourly volumes exceeding 2,200 vehicles per hour at Location I, 1,300 vehicles per hour at Location II, and approximately 1,100 vehicles per hour at Location III.
- Volume Trends: The PM peak suggests a significant flow of vehicles heading northbound during the evening commute, likely due to residents returning home from work or other activities. Traffic volumes at Location I are significantly higher compared to the second and third data collection locations. This is likely due to the majority of traffic being concentrated between Zimmerman and Elk River. This data collection location is situated between Elk River and Zimmerman. The other two locations are north of Zimmerman.

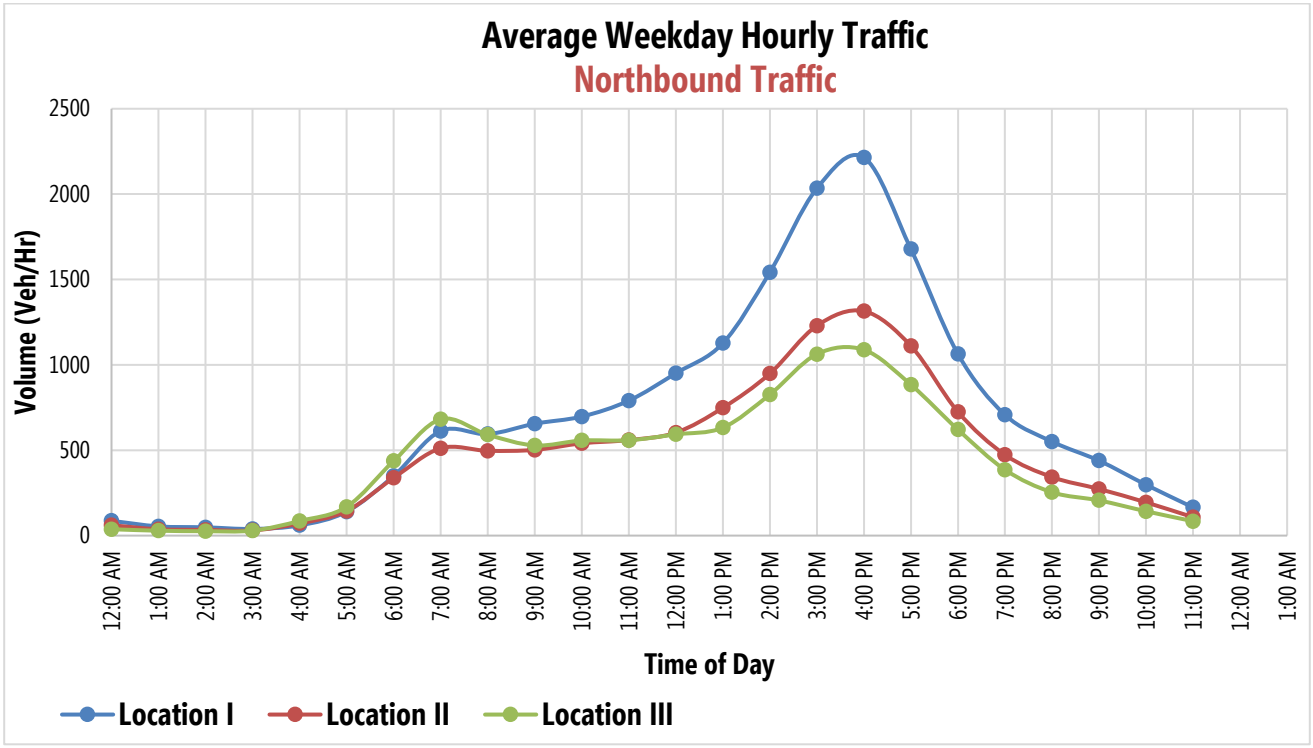


Exhibit 2-2. Northbound Traffic Volume

- **Southbound Traffic**: Contrary to the northbound traffic, the peak hour for southbound traffic is observed during the morning (7:00 AM), with hourly volumes exceeding 1,600 vehicles per hour at Location I, 950 vehicles per hour at Location II, and approximately 750 vehicles per hour at Location III.
- Volume Trends: The morning peak suggests a high volume of vehicles heading southbound, likely due to residents traveling to work or school. Traffic volumes at Location I are notably higher compared to the second and third data collection locations. This is likely due to the concentration of traffic between Zimmerman and Elk River, as Location I is situated between these two areas.

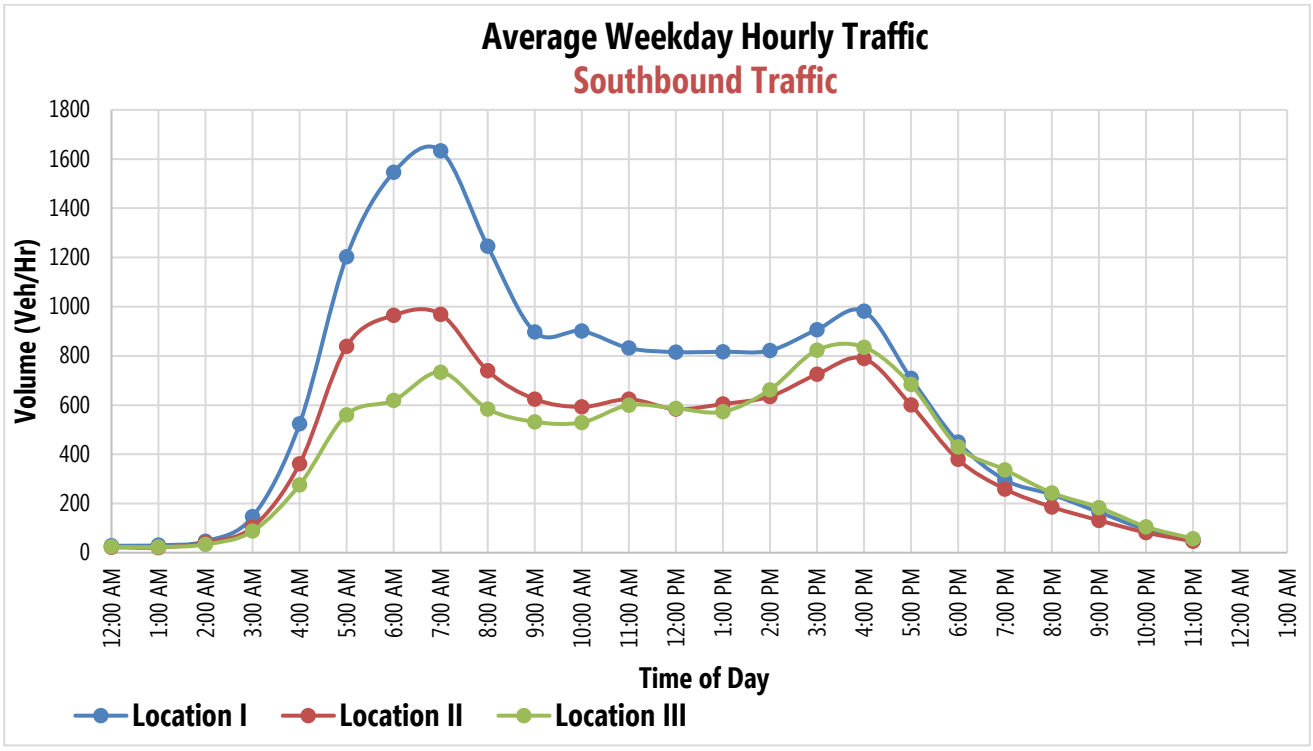


Exhibit 2-3. Southbound Traffic Volume

Seasonal Traffic Volume Analysis

To identify seasonal trends in traffic volumes, Michael Baker utilized StreetLight probe data to examine the Monthly Average Daily Traffic (MADT) for Year 2024 along with Average Daily Traffic (ADT) for one-week data collected in December 2024. **Exhibit 2-4** presents the MADT for all three data collection locations.

The analysis revealed that historically, the lowest traffic volumes occurred in January and the highest volumes occurred in August. This comparison provided valuable insights into the variation in traffic volumes between winter and summer months. Understanding these seasonal impacts is crucial as it affects traffic flow and safety.

Refer to **Appendix A** for a detailed analysis of traffic volumes, including daily variation, monthly variation, and Annual Average Daily Traffic (AADT) along the study corridor.

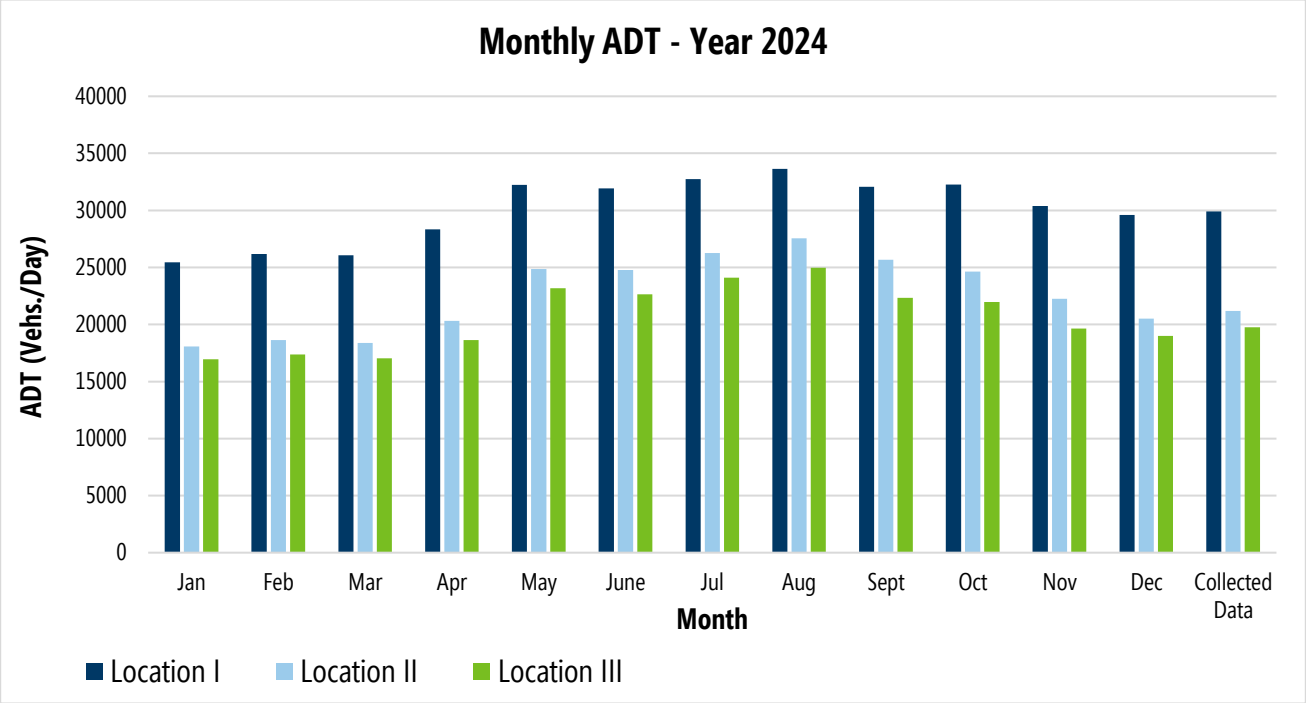


Exhibit 2-4. Monthly Average Daily Traffic (StreetLight Data)

Note: *"Collected Data" represents traffic data collected over one week in December 2024.*

Heavy Vehicle Traffic

The data collection effort included vehicle classification based on the FHWA Vehicle Classification system, which categorizes vehicles into 13 distinct classes. For the purposes of this project, vehicle Classes 6 through 13 have been designated as heavy vehicles. At the three data collection locations along the US 169 corridor, heavy vehicles accounted for 3.3%, 3.5%, and 3.7% of total traffic in both directions, respectively.

2.1.2 Traffic Speeds

The speed data analysis is crucial for understanding the compliance of drivers with posted speed limits and for improving road safety. This section presents the findings of speed data collected from three selected locations along the study corridor.

Speed data was gathered from a statistically valid sample of vehicles on weekdays. The posted speed limit along the study corridor is 65 mph. **Exhibit 2-6** summarizes the 50th and 85th percentile speeds observed at the three data collection locations. The 50th percentile speed (the speed at which 50% of vehicles travel at or below) consistently exceeded the posted speed limits by an average of 5 mph. Similarly, the 85th percentile speed (the speed at which 85% of vehicles travel at or below) surpassed the posted limit by an average of 10 mph.

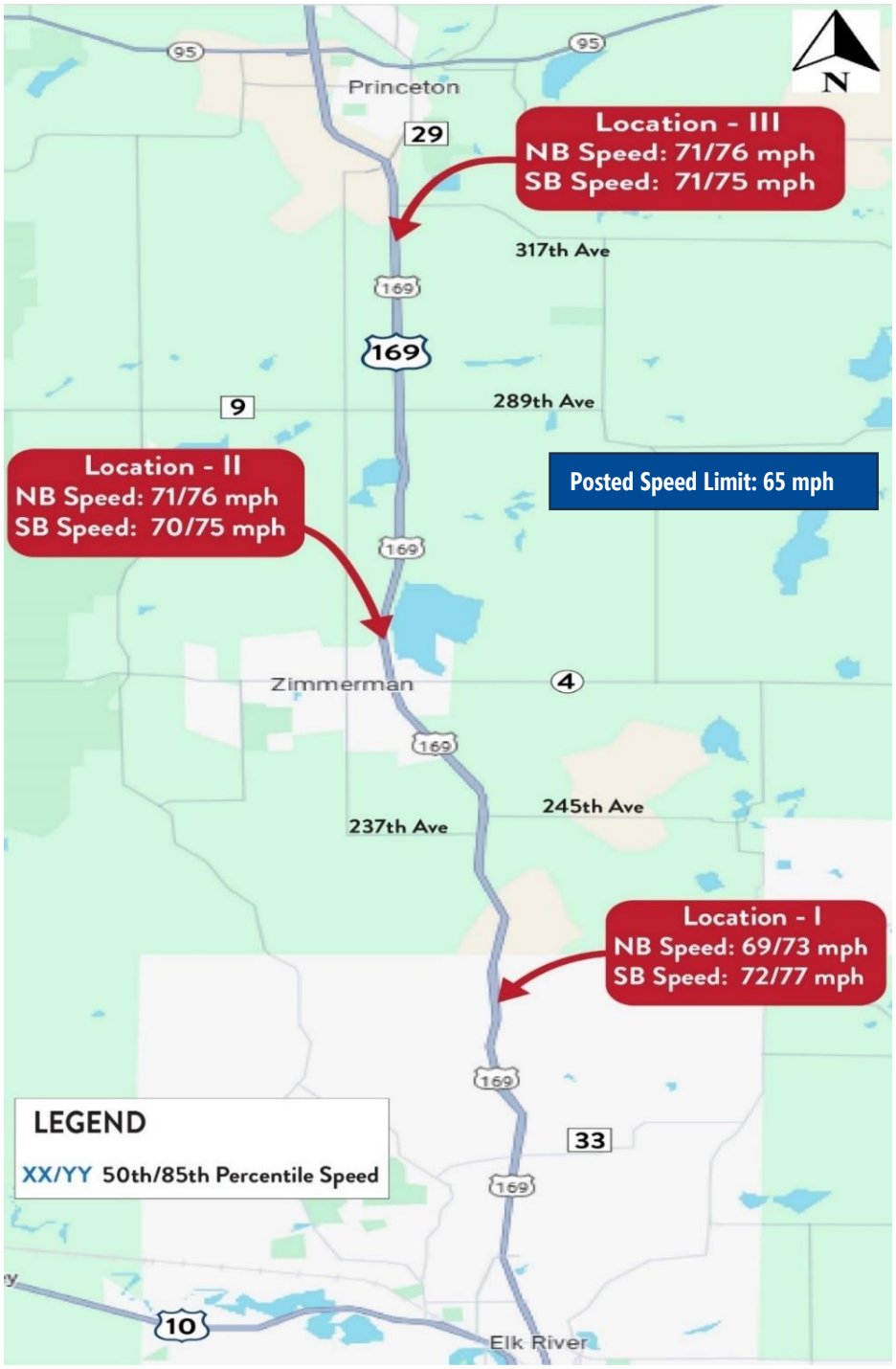


Exhibit 2-5. 50th and 85th Percentile Speeds at the Three Locations

2.2 Traffic Crash Data Analysis – Key Findings

This section provides an overview of the crash data analysis along the US 169 study corridor. The detailed crash data analysis has been documented in the Briefing Book included as an appendix to this report. A summary of key findings and trends of crash data over different periods is summarized below.

2.2.1 Fatal and Serious Injury (KA) Crash Analysis (Year 2015 – Year 2024)

The severe crash (KA) analysis includes fatal crashes (K) and serious (or incapacitating) injury crashes (A). The Michael Baker team has examined 10 years of data from January 1, 2015, to December 31, 2024, for severe crash analysis. Over the past decade, the study corridor has witnessed a total of 12 fatal crashes and 17 serious injury crashes. The following plot illustrates the yearly trends in severe crashes.

Additionally, a map displaying the locations of KA crashes along the study corridor has been provided to visually represent the spatial distribution of these incidents.

Fatal Crashes

- Among the fatal crashes, three involved motorcycles overturning or rolling over, one involved a pedestrian and a passenger car, one was a sideswipe collision involving a passenger car, four were angle collisions, and one was a rear-end collision involving a medium/heavy truck.

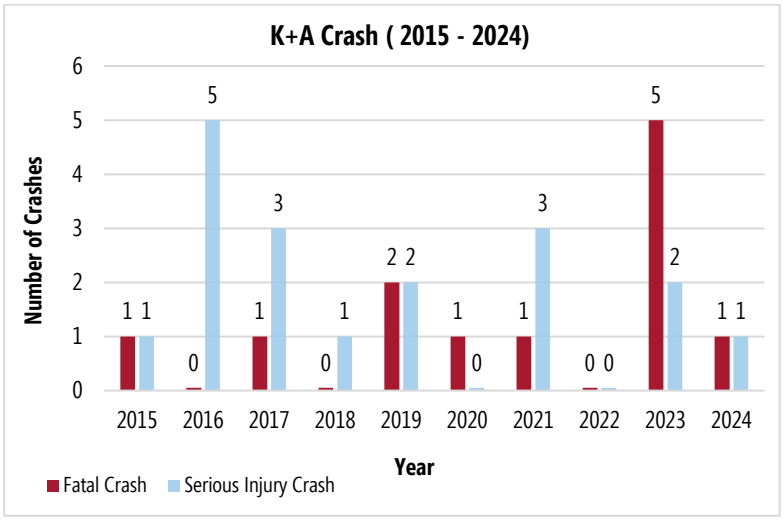


Exhibit 2-6. Trend of Severe Crashes

Serious Injury Crashes

- Among the serious injury crashes, five involved motorcycles overturning or rolling over, six were angle collisions, one was a head-on collision, and four were rear-end collisions.

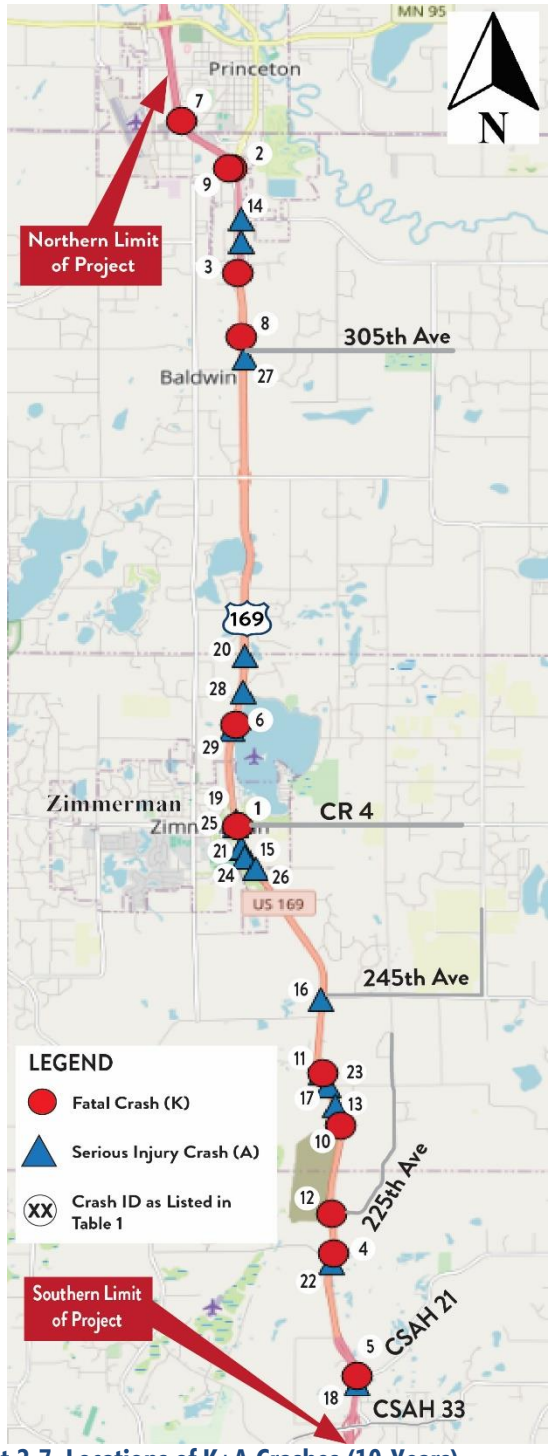


Exhibit 2-7. Locations of K+A Crashes (10-Years)

A summary of fatal and serious injury crashes is provided in the following table.

Table 1. Summary of Severe Crash (2015 – 2024)

ID	Crash Severity	Year	Month	Time of Day	Travel Direction	Manner of Collision	Vehicle Type
1	Fatal	2015	10	9:45 AM	Eastbound	Angle	Passenger Car
2	Fatal	2017	10	9:30 PM	Southbound	Overturn/Rollover	Pickup
3	Fatal	2019	11	6:49 PM	Southbound	Overturn/Rollover	Sport Utility Vehicle
4	Fatal	2019	2	5:30 PM	Northbound	Angle	Sport Utility Vehicle
5	Fatal	2020	11	7:58 AM	Southbound	Overturn/Rollover	Motorcycle
6	Fatal	2021	6	1:12 AM	Northbound	Pedestrian	Passenger Car
7	Fatal	2023	5	7:37 PM	Northbound	Overturn/Rollover	Motorcycle
8	Fatal	2023	6	1:07 PM	Southbound	Sideswipe	Passenger Car
9	Fatal	2023	7	12:06 PM	Southbound	Angle	Passenger Van
10	Fatal	2023	8	6:43 PM	Southbound	Overturn/Rollover	Motorcycle
11	Fatal	2023	11	7:15 AM	Northbound	Front to Rear	Medium/Heavy Truck
12	Fatal	2024	2	8:09 AM	Northbound	Angle	Passenger Car
13	Serious Injury	2015	8	2:27 PM	Southbound	Ran-off-Road	Motorcycle
14	Serious Injury	2016	4	8:48 PM	Northbound	Front to Front	Passenger Car
15	Serious Injury	2016	7	9:19 AM	Eastbound	Angle	Passenger Car
16	Serious Injury	2016	9	5:03 AM	Southbound	Front to Rear	Medium/Heavy Truck
17	Serious Injury	2016	10	7:05 PM	Westbound	Angle	Passenger Car
18	Serious Injury	2017	5	8:59 AM	Southbound	Ran-off-Road	Motorcycle
19	Serious Injury	2017	5	1:23 PM	Northbound	Angle	Sport Utility Vehicle
20	Serious Injury	2017	6	12:00 PM	Southbound	Front to Rear	Sport Utility Vehicle
21	Serious Injury	2018	1	5:59 AM	Southbound	Ran-off-Road	Sport Utility Vehicle
22	Serious Injury	2019	5	2:55 PM	Southbound	Ran-off-Road	Sport Utility Vehicle
23	Serious Injury	2019	10	5:49 PM	Southbound	Ran-off-Road	Passenger Car
24	Serious Injury	2021	6	9:22 AM	Southbound	Angle	Sport Utility Vehicle
25	Serious Injury	2021	7	2:42 PM	Southbound	Angle	Passenger Car
26	Serious Injury	2021	9	1:08 PM	Northbound	Angle	Motorcycle
27	Serious Injury	2023	7	10:47 PM	Northbound	Overturn/Rollover	Motorcycle
28	Serious Injury	2023	7	5:54 PM	Northbound	Front to Rear	Pickup
29	Serious Injury	2024	8	7:26 PM	Southbound	Overturn/Rollover	Motorcycle

= Fatal crashes in the Year 2023. = Crashes involving motorcycles.

2.2.2 Crash Trends (Year 2020 – Year 2024)

This subsection provides an overview of crash data analysis along the US 169 corridor over a five-year period, from January 1, 2020, to December 31, 2024. Five (5) years is the traditional duration used to evaluate crash history and aims to identify trends, patterns, and contributing factors to crashes.

Annual Crashes

Exhibit 2-8 illustrates the number of crashes each year within the recent five-year timeframe. The highest number of crashes was recorded in the year 2023, whereas the year 2024 saw the lowest number of crashes. This variation reflects changes in traffic patterns, road conditions, and potential improvements in road safety measures implemented during these years.

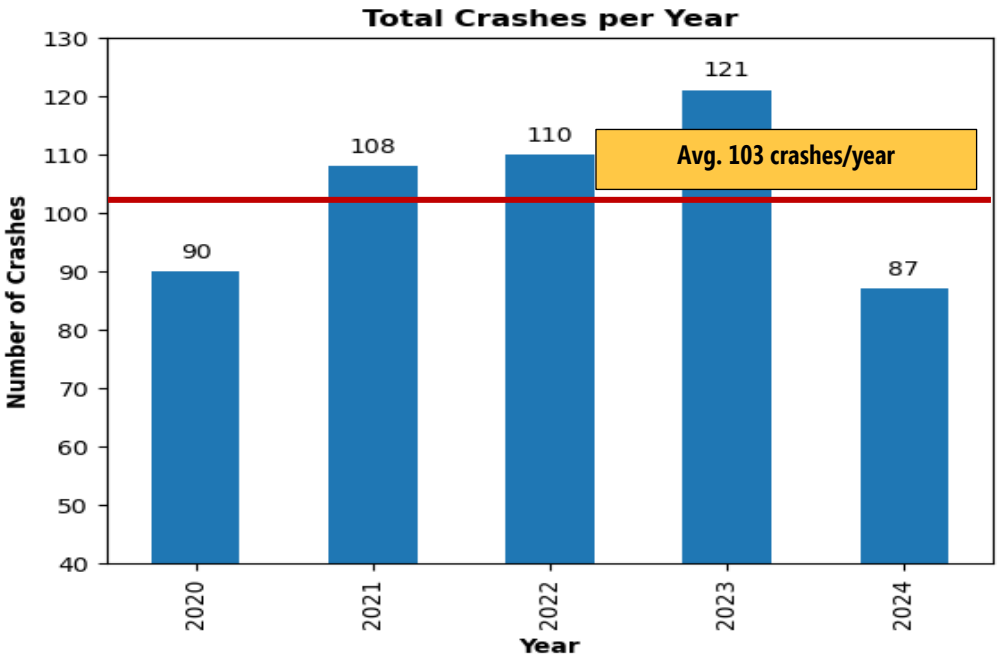


Exhibit 2-8. Yearly Trend of Crashes

Crash Severity

A total of 516 crashes were recorded over the five years. The summary of all crashes based on severity is presented in the following table:

Table 2. Crash Severity (2020 – 2024)

Crash Severity	KABCO	Number	Percentage (%)
Fatal Crash	K	8	1.55
Serious (or Incapacitating) Injury Crash	A	6	1.16
Minor (or Non-Incapacitating) Injury Crash	B	48	9.30
Possible Injury Crash	C	86	16.67
Property Damage Only Crash (PDO)	O	368	71.32

Furthermore, a focused examination of fatal and serious injury crashes was conducted. The analysis revealed that there were no fatal or serious injury crashes reported in the year 2022. The year 2023 recorded the highest number of fatal crashes (five fatal crashes). This increase in fatal crashes highlights a need for safety interventions to address the factors contributing to these fatal incidents.

Exhibit 2-9 illustrates the yearly distribution of fatal and serious injury crashes:

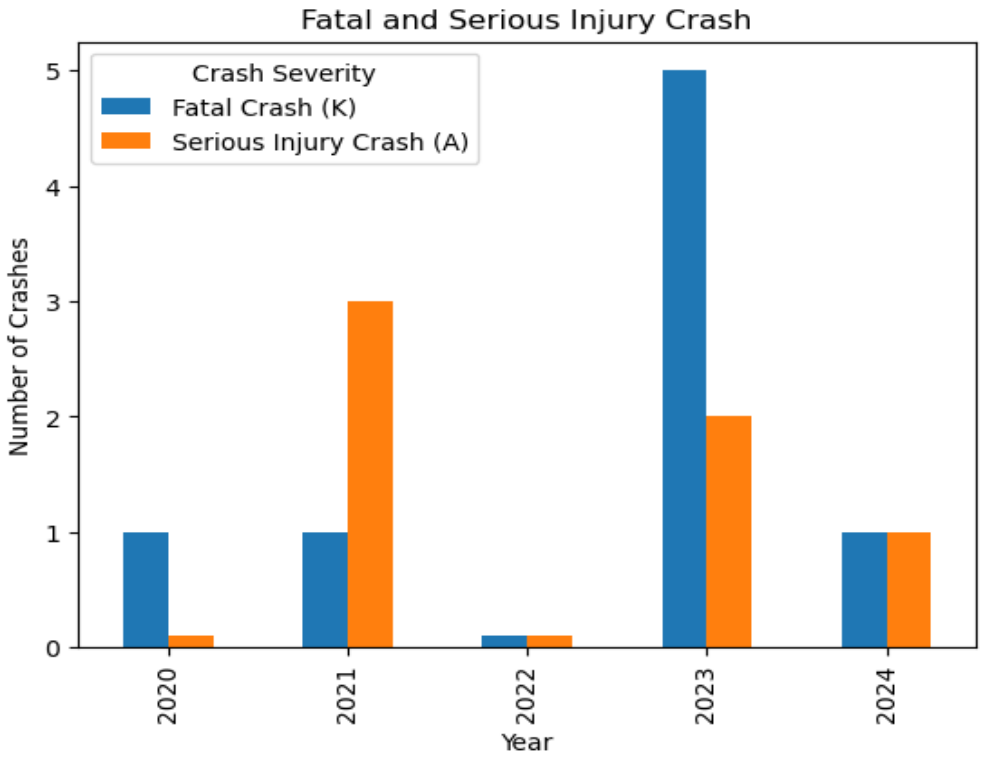


Exhibit 2-9. Yearly Trend of Severe Crashes

2.2.3 Crashes in the Vicinity of J-Turns at 243rd Ave and 245th Ave

In the year 2021, Sherburne County led a project to construct J-Turn intersections, also known as Restricted Crossing U-turn (RCUT), at two locations on US 169: the intersections at 243rd Ave and 245th Ave. These modifications were introduced to enhance traffic safety. During the field review, questions were raised by the RSA team regarding the number of crashes before and after the installation of these J-Turns.

In this regard, we conducted a comparative analysis of crash data before and after the implementation of the J-Turns. MnDOT has published a comprehensive study titled "Traffic Safety Evaluation of J-Turns in Minnesota"[1] which provides detailed assessments of J-turns on traffic safety. For comparison, three years of crash data prior to the installation of the J-Turns (from January 2017 to December 2019) and three years of crash data following the installation of the J-Turns (from January 2022 to December 2024) were analyzed. The crash data for the year 2020 were excluded from the analysis due to potential anomalies caused by the COVID-19 pandemic, which affected traffic conditions. Additionally, the crash data for the year 2021 was excluded as the J-Turns were installed during that year.

Given the complexity of traffic movements in the vicinity of the intersections and J-Turns where vehicles change lanes, accelerate, and decelerate, it is essential to consider spatial limits encompassing both the intersections and the J-Turns for the before and after periods. To achieve this, specific spatial extents of the roadway for each intersection were defined.

[1] *Max Moreland, Derek Leuer, Ian Saari (2024). Traffic Safety Evaluation at J-turns in Minnesota. Final Report 2024-05*

The spatial distribution of crashes before and after the installation of J-turns is illustrated on the following map for each intersection. A summary of the crash data analysis is provided in **Table 3**. The analysis indicates a 36% reduction in the total number of crashes at the 243rd Ave intersection and a 13% reduction at the 245th Ave intersection following the implementation of J-turns. Furthermore, intersection-related crashes, as labeled by police officers in the field, decreased by 33% at the 243rd Ave intersection and 27% at the 245th Ave intersection. While angle crashes remained at zero before and after the installation of J-turns at the 243rd Ave intersection, they were reduced by 43% at the 245th Ave intersection after the installation of J-turns. These findings suggest an improvement in safety performance, likely due to the J-turn installations.

For a comprehensive evaluation of the impact of the J-turns, refer to the research report published by MnDOT[2].



Exhibit 2-10. Before-After Crashes at J-Turn Intersections

[2] *Max Moreland, Derek Leuer, Ian Saari (2024). Traffic Safety Evaluation at J-turns in Minnesota. Final Report 2024-05*

Table 3. Before-After Crash Analysis at J-Turn Intersections

Crash Attributes	Intersection US 169 at 243rd Ave			Intersection US 169 at 245th Ave		
	Before (Counts)	After (Counts)	Change (%)	Before (Counts)	After (Counts)	Change (%)
Total Crashes	14	9	-36	16	14	-13
K+A Crashes	0	0	0	0	0	0
PDO	12	8	-33	11	10	-9
Intersection-Related Crashes	9	6	-33	11	8	-27
Angle Crashes	0	0	0	7	4	-43

2.2.4 Intersections Safety Screening

The study corridor includes a total of 35 intersections, comprising various types such as T-intersections, 4-legged intersections with median crossovers, multiple J-turns constructed in 2021, and three interchanges. These intersections were evaluated using the Minnesota Department of Transportation (MnDOT) Intersection Safety Screening tool to assess their safety performance. This tool helps in identifying intersections with higher-than-expected crash rates by comparing the observed crash rates to critical crash rates derived from similar intersections statewide.

- **Observed Crash Rate**: The observed crash rate is the number of crashes per million entering vehicles (MEV).
- **Critical Rate**: This is a statistical benchmark based on crash rates from similar intersections across the state.
- **Critical Index**: The critical index reports the magnitude of the difference between the observed crash rate and the critical crash rate. It is calculated as the ratio of the observed crash rate to the critical crash rate. A critical index greater than 1.0 indicates that the observed crash rate exceeds the critical rate, suggesting that the intersection operates outside the expected, normal range.

The most recent five years (January 2020 to December 2024) of crash data was used in the intersection safety screening. The results indicated that all intersections within the study corridor have crash rates lower than the critical crash rate, suggesting that these intersections operate within the expected, normal range for similar intersections. However, a few intersections were still selected for detailed field examination based on crash clusters and community comments for those specific intersections, even though their crash rates are within acceptable limits.

A comprehensive list of the evaluated intersections, along with detailed screening reports, is included in the Briefing Book provided in **Appendix A**.

2.2.5 Segment Safety Screening

The study corridor has been systematically divided into eight segments, labeled from A to H, as illustrated in the following Exhibit. This segmentation is primarily based on the distribution of crashes along the corridor, as well as the unique roadway characteristics of each segment.

Similar to the intersection safety screening, the MnDOT Safety Screening tool for segments was utilized to evaluate the safety performance of each segment along the corridor, using five years of crash data from January 2020 to December 2024. This tool helps identify segments with higher-than-expected crash rates by comparing observed crash rates to critical rates derived from similar roadways statewide. The segment crash data includes all crashes, both on roadway segments and at intersections.

- **Observed Crash Rate**: The number of crashes per million vehicle miles traveled (MVMT).
- **Critical Rate**: This is a statistical benchmark based on crash rates from similar trunk highways across the state.
- **Critical Index**: The ratio of the observed crash rate to the critical crash rate. A critical index greater than 1.0 indicates that the observed crash rate exceeds the critical rate, suggesting that the segment operates outside the expected, normal range.

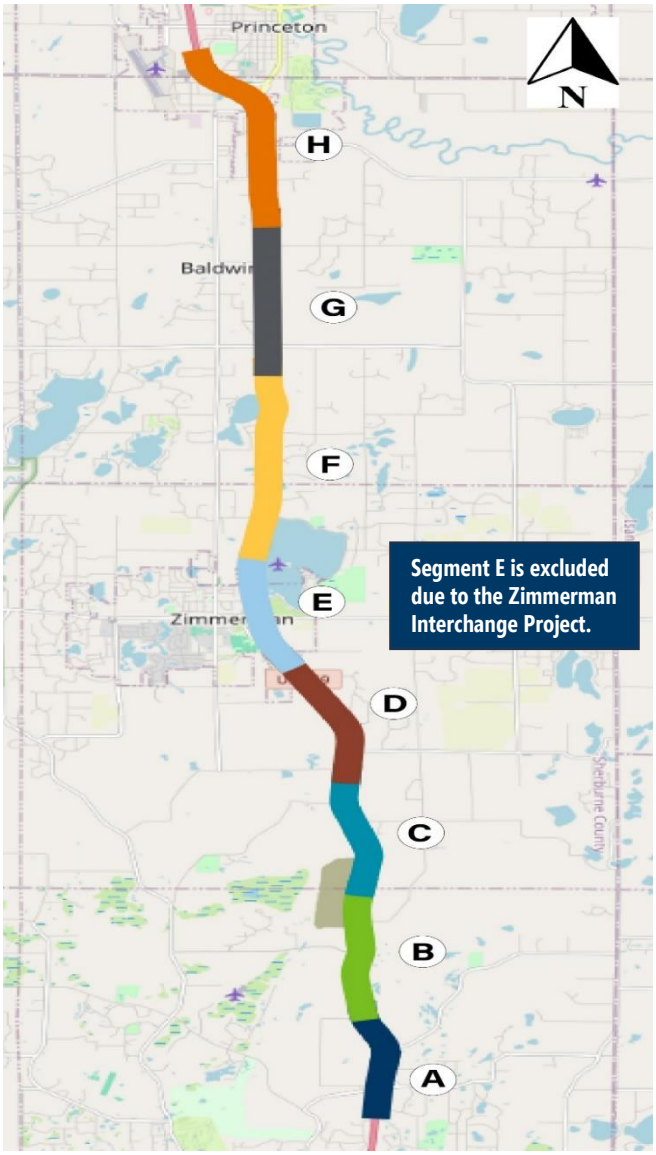


Exhibit 2-11. Study Corridor Segmentation

The safety screening results, presented in the following table, indicate that all evaluated segments of the study corridor have crash rates exceeding the critical threshold values. This suggests that these segments operate outside the expected, normal range for similar roadways, highlighting the need for a detailed investigation of crashes along each segment.

A detailed analysis of each segment, along with detailed screening reports, is included in the Briefing Book provided in **Appendix A**.

Table 4. Safety Screening of Segments

Segment	From	To	Total Crash Rate (CR)			Critical Index	Critical (Yes/No)
			Observed	State Average	Critical		
A	CSAH 33 Interchange (Elk River)	213th Ave NW	0.833	0.304	0.470	1.77	Yes
B	Access Road to 'Gerber Collision & Glass Factory'	South of Livonia Pit	1.175	0.304	0.470	2.50	Yes
C	Livonia Pit	243rd Ave NW	0.606	0.304	0.470	1.29	Yes
D	243rd Ave	255th Ave	0.688	0.304	0.460	1.50	Yes
E	255th Ave (South of Zimmerman)	269th Ave (North of Zimmerman)	1.602	0.304	0.490	3.27	Yes
F	South of 273rd Ave	Interchange of 293rd Ave	0.470	0.304	0.450	1.04	Yes
G	Interchange of 293rd Ave	305th Ave	0.573	0.304	0.470	1.22	Yes
H	312th Ave	CSAH 29 Interchange (Princeton, MN)	0.528	0.304	0.460	1.15	Yes

Segments operate outside the normal range.

2.3 COMMUNITY COMMENTS/FEEDBACK

Community feedback regarding traffic safety concerns along the study corridor was collected using an online "Comment Mapping" tool. This tool allowed community members to place pins on a map at locations where they had safety concerns and to provide detailed comments. In total, 189 respondents submitted their feedback through this tool. Additionally, several participants emailed their concerns about the safety performance of US 169 at various locations.

A comprehensive analysis of the community comments was conducted both at the individual comment level and at the location level. The concerns highlighted by community members were presented to the RSA Field Review team and are documented in detail in the Briefing Book, which is included in **Appendix A**. Each safety concern raised by the community was reviewed, and these comments aided in the selection of locations for the field review. The suggested safety countermeasures were also developed with careful consideration of the community feedback.

In this section, we present a high-level overview of the community comments and concerns regarding traffic safety along the study corridor. Based on our analysis, 8 major themes emerged. These themes, supported by specific examples from the data, are outlined below:

i. Acceleration and Turn Lanes

Summary**:** A major concern is the lack of adequate acceleration and turn lanes, especially for trucks and vehicles entering US 169. Majority of the comments mention that the turn lanes are too short, causing drivers to decelerate in the main through lane, which is seen as a significant safety hazard.

Examples**:**

- "The merge lane is too short, making it difficult for trucks to accelerate and match the speed of oncoming traffic."
- "An acceleration lane is needed. They have them in Elk River and they are a much better way to get traffic up to speed."

ii. Sight Distance and Lighting

Summary: Poor visibility due to inadequate lighting, especially at night or during winter, is a recurring concern. Residents requested more street lighting along the corridor, particularly at intersections and curves. Additionally, there are multiple comments regarding poor line of sight at multiple locations along the corridor.

Examples:

- "Adding street lights would help with visibility."
- "Awkward intersection. The visibility is extremely poor for vehicles entering to northbound 169 from 221st and vehicles turning westbound from US 169 NB to 221st Ave."

iii. Guardrails and Barriers

Summary: Multiple comments express concern about the lack of guardrails along curves, especially between southbound US 169 and Lake Cantlin. Residents fear vehicles could easily veer off the road into water or ditches during icy conditions.

Examples:

- "There needs to be a barrier between the highway and the lake."
- "Why are there no barriers around this lake? Or even an actual shoulder?"

iv. Intersection Safety

Summary: Multiple respondents proposed redesigning intersections and incorporating roundabouts. They also expressed concerns about limited gaps in through traffic for crossing US 169, inadequate sightlines, and the necessity of overpasses to enhance safety.

Examples:

- "This intersection poses safety challenges for truck drivers, particularly during busy hours."
- "The result of US 169's conversion to a "Signal-Free Corridor" is the northbound traffic between Elk River and Zimmerman becoming a steady stream of vehicles with very few gaps to turn, enter traffic, or cross the divided highway safely and an increased risk of hazards at the remaining uncontrolled intersections. "

v. Winter Conditions

Summary: Slippery roads, snow accumulation, and icy bridges are major safety concerns. Many comments mention spinouts, crashes, and poor snow removal practices.

Examples:

- "This turn is deadly in the winter. Seen more than a few accidents here."
- "The curve in the bridge is very slippery in the winter and many accidents here."

vi. Speed Management

Summary: There are mixed views on speed limits, some want them increased, others want better enforcement. Speeding is often linked to aggressive driving and unsafe merging.

Examples:

- "Speed limit of 65 mph should be increased."
- "The speed limit does need to be lowered or at the very least, enforced."

vii. Road Surface and Maintenance

Summary: Several comments mention poor pavement conditions and the need for resurfacing or better maintenance, particularly in winter.

Examples:

- "New pavement needed."
- "Bridge deck needs resurfacing due to horrific icing conditions."

viii. Signage and Markings

Summary: Inadequate or poorly visible signage and road markings are noted, especially in wet or dark conditions.

Examples:

- "Lane markers need to have better visibility in wet conditions."
- "Add more and bigger 'Keep right except to pass' signs."

2.4 Historic and Planned Projects

This section provides a brief discussion of recent and upcoming projects along the US 169 corridor that have an impact on traffic safety performance.

2.4.1 Tree Removal for Sight Distance Improvement

MnDOT has undertaken multiple projects aimed at improving safety and traffic flow along the US 169 corridor. One notable project was the tree removal initiative, which focused on enhancing sight distance. In the Year 2017, MnDOT initiated a tree removal project to enhance safety on the US 169 corridor. The project's main goal was to address sight distance issues caused by trees within the median, which posed visibility challenges for crossing traffic.

The tree removal was executed at several key locations along the US 169 corridor, particularly in areas with high traffic volumes and considerable sight distance issues. While there are currently no major visibility issues related to median vegetation, future tree clearing may be necessary to maintain adequate sight lines and expand the roadside clear zone—both critical for improving overall safety of the motorists.

The following exhibit shows before-and-after images from two representative locations.



Before Tree Removal



After Tree Removal

Exhibit 2-12. Tree Removal at 283rd Ave Crossover Berm



Before Tree Removal



After Tree Removal

Exhibit 2-13. Tree Removal in Median Near Game Farm

2.4.2 Removal of the Signals in Elk River

The "*169 Redefine – Elk River*" project involved the redesign and reconstruction of a three-mile stretch of US 169 to a new freeway system between Highway 101/10 and 197th Avenue in Elk River. This extensive project included the construction of new freeway lanes, bridges, adjacent road, sidewalk connections, and took three full construction seasons to complete, from April 2022 to November 2024. The project is located south of the RSA study corridor.

The removal of the signals in Elk River and the construction of interchanges have significantly enhanced traffic flow, safety, and capacity along the US 169 corridor in Elk River. However, this has created a continuous stream of traffic, making it challenging for crossing streets north of Elk River to find adequate gaps to cross US 169. The increased traffic flow downstream of the interchange in the north of Elk River has affected the ability of crossing/turning vehicles to safely and efficiently navigate the corridor between Elk River and Zimmerman. The community has also expressed concerns about finding adequate gaps in the

northbound traffic to cross the mainline traffic. This situation underscores the need for further evaluation and the potential implementation of additional safety measures to address these challenges.



Exhibit 2-14. Elk River Interchange Project (Source: MnDOT)

2.4.3 J-Turns at 243rd Ave and 245th Ave

In the Year 2021, Sherburne County led a project to construct J-Turn intersections at two critical locations along US 169: the 243rd Ave and 245th Ave intersections. These modifications were introduced to enhance traffic safety and reduce the frequency of intersection-related crashes.

The J-Turn intersections, also known as Restricted Crossing U-turns (RCUT), are designed to reduce the high frequency of right-angle crashes typically seen at traditional intersections[3]. The design involves redirecting left-turn and through movements from minor streets to safer right-turn and U-turn maneuvers. By reducing the number of conflict points, these intersections are expected to significantly decrease the likelihood of angle crashes, with a reported reduction in angle crashes by 67%[3].

[3] *Max Moreland, Derek Leuer, Ian Saari (2024). Traffic Safety Evaluation at J-turns in Minnesota. Final Report 2024-05*



J-Turn at 243rd Ave W

J-Turn at 245th Ave W

Exhibit 2-15. J-Turns at US 169 (Source: Google)

2.4.4 Zimmerman Interchange Project

The Zimmerman Interchange Project is an effort to improve the intersection of US 169 and County Road 4 (Fremont Avenue). This intersection is currently the last remaining signalized crossing along the US 169 expressway north of Elk River until the signal at the Grand Casino Mille Lacs in Vineland, which is over 60 miles north of Elk River. As part of the broader "169 Redefine" initiative, the project aims to replace the existing at-grade signalized intersection with a grade-separated interchange to enhance safety, mobility, and operational efficiency for all users, including motorists, freight, transit, pedestrians, and bicyclists.

The need for this project is underscored by significant safety and congestion issues. The intersection currently experiences high traffic volumes—approximately 33,800 vehicles per day (2,200 HCADT) on US 169 and 16,700 vehicles per day on County Rd 4. During peak travel seasons, traffic queues can extend up to a mile on US 169 and three-quarters of a mile on County Rd 4.

Traffic volumes are projected to reach 51,000 vehicles per day by Year 2045, leading to severe congestion and rerouting onto adjacent corridors without improvements. Furthermore, the intersection has a concerning safety record, with 101 crashes reported between the Year 2015 and Year 2019. The crash rate is more than four times the statewide average, and the rate of fatal and serious injury crashes is six times higher. Rear-end collisions, which account for 77 of the 101 crashes, are primarily attributed to signal-induced backups.

By removing the last remaining traffic signal on US 169 between Onamia and Elk River, the project will create a continuous free-flow corridor, significantly improving travel time reliability and reducing stop-and-go conditions contributing to rear-end collisions. This uninterrupted flow will enhance the corridor's function as a principal arterial, supporting regional mobility for commuters, freight, and recreational travelers. From a safety perspective, the elimination of the signal will address the high crash rate at the intersection, which has historically been more than four times the statewide average. However, the improved mainline flow on US 169 will introduce new challenges for traffic on crossing streets, particularly upstream and downstream of the interchange. With the removal of the traffic signal, vehicles on nearby local roads will find it more difficult to find acceptable gaps in the traffic stream to cross or merge onto US 169. This is a common trade-off when converting signalized intersections to interchanges on high-volume corridors. To mitigate this, the project includes access management strategies such as converting nearby intersections to right-in/right-out configurations. These measures are intended to maintain local circulation and reduce the risk of crashes caused by risky crossing maneuvers. Construction of the Zimmerman Interchange project is scheduled to begin in Year 2025 and end in Year 2026.



Exhibit 2-16. Zimmerman Interchange Project (Source: Bolton & Menk Inc.)

2.4.5 Cable Median Barrier from 237th Ave to 253rd Ave Zimmerman

High tension cable barriers (HTCB) installed in medians are highly effective in preventing vehicles from crossing into opposing lanes of traffic. Within the study corridor, cable median barrier is currently installed along US 169 from the southern end of the project limit up to the 237th Ave intersection.

A fatal head-on collision occurred just a few hundred feet north of the end of the existing HTCMB installation. During the field review meeting, MnDOT staff highlighted an upcoming project to extend the HTCMB installation further north. MnDOT has scheduled the installation of a cable median barrier from the 237th Ave intersection to 253rd Ave in Zimmerman for construction in Year 2025. This extension aims to enhance overall safety along the US 169 corridor by further preventing cross-median collisions.

3 AUDIT

The detailed analyses of traffic and crash data, community feedback, and discussions during the pre-audit meeting led to the identification of 17 locations for field review. The comprehensive analysis of each of these 17 locations is provided in the Appendix.

The field review was conducted on Wednesday, March 26th, 2025. The RSA Team was on-site from 8:30 AM to 05:00 PM. The team used a bus to travel through the study corridor, stopping at each selected location. At each stop, a brief overview of the safety performance of the location and community concerns was provided to refresh the team's understanding. The RSA Team then examined the actual roadway and traffic conditions, discussed observations, and noted comments. The weather was clear, and the pavement was dry throughout the day.

The following subsections detail the input from the RSA Team for each of the 17 locations selected for field review.

3.1 LOCATION-SPECIFIC REVIEWS

3.1.1 Location 1: Horizontal Curve South of 211th Ave NW

Description: A horizontal curve with a cluster of 18 crashes, including one fatal crash and 14 run-off-road crashes, 12 of which involved southbound vehicles.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- The location becomes slippery during winter conditions, and MnDOT maintenance leads noted difficulty in keeping this area free of icy conditions. They also mentioned a reduction in sand/salt during the snow to avoid icy surface conditions at this location.
- The rumble strips on the outer edge of the northbound lane are faded and need to be reinstalled.
- The pavement may have frost heave, causing vehicle suspension to become bumpy in this area.
- Street lighting may improve this area during the dark, and multiple responders to the community comments survey have mentioned the need for lighting along the corridor.
- Installing a snow fence could help reduce blowing snow that creates slippery conditions within the curve section.
- The curve seems to have a "flat" super-elevation. Check the curve with the ball bank indicator. Look at a change in superelevation if needed based on results.
- A nighttime field review would provide a better understanding of the need for street lighting along the corridor.
- A snowmobile trail is present along this segment.

Exhibit 3-1 presents images that depict the roadway conditions at the location.

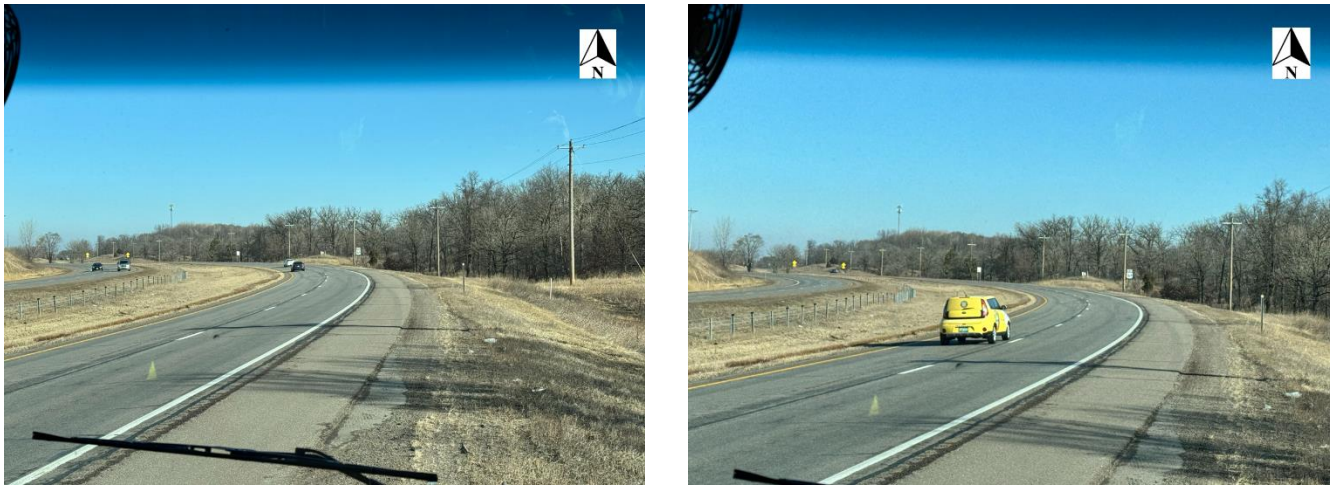


Exhibit 3-1. Location 1: Horizontal Curve South of 211th Ave NW

3.1.2 Location 2: Intersection of 213th Ave

Description: An intersection with a cluster of 10 crashes, including 5 intersection-related crashes.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- A stop sign was not installed on the westbound roadway connecting to US 169. It is a private access road primarily used by ERX as an entrance during events.
- Limited sight distance was noted when looking north from the median crossover. This sight distance issue affects westbound traffic stopped within the median crossover and wanting to turn left towards southbound traffic or travel westbound. Specifically, a 12-second sight distance was noted when standing at the westbound entering road, while a 10-second sight distance was noted when standing in the median crossover to cross the southbound traffic.
- The possibility of closing this crossing and providing a J-turn/U-turn north of this intersection was discussed to improve safety and traffic flow.
- As this intersection is located on a horizontal curve, it was suggested to tag the electric power pole with retroreflective sheeting and install chevrons where power poles diverge away from the roadway shoulder line to enhance visibility.
- ERX has used this intersection as an alternative entrance, and a right-turn lane does not exist on the northbound side, which may affect traffic flow and safety.
- A significant number of truck traffic was observed making northbound left turns to access the Cemstone aggregate yard on the west side of the intersection. It may be beneficial to monitor truck-turning traffic during peak hours to assess whether the existing left-turn lane provides sufficient storage. If warranted, extending the turn lane could help reduce the likelihood of trucks decelerating in the through lanes when vehicles are queued in the turn lane, thereby improving safety and minimizing the risk of rear-end collisions.
- Lighting exists at the northwest side of the intersection; however, additional lighting could be beneficial, as 40% of crashes occurred in dark conditions. Lighting infrastructure can also improve daytime visibility of the intersection by clearly delineating the intersection from a distance, helping drivers recognize it earlier and increasing their alertness and preparedness.

- Community comments suggested extending the turn lanes; however, field observations indicate that the existing turn lane length appeared appropriate. Adding turn lane pavement marking arrows within the lane may better delineate the turn lane.
- It may be helpful to routinely evaluate the condition of existing intersection delineators, such as the cylinder-style (X4-3). If they are intended to remain in use, replacing any damaged or worn units could help maintain visibility and guide drivers safely through the intersection.

Exhibit 3-2 presents images depicting the roadway conditions at the location.







Exhibit 3-2. Location 2: Intersection of 213th Ave

3.1.3 Location 3: Entrance to ERX Motor Park and Crossover of 219th Ave

Description: This location experiences significant turning traffic during events, with a crash cluster comprising 29 crashes, including 18 run-off-road crashes.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- ERX Motor Park implements traffic management plans during their events to manage the high volume of turning traffic.
- ERX Motor Park utilizes four entrances for traffic management during larger events.

- ERX Motor Park is planning to acquire land east of the current location to facilitate traffic movement to the east side, which may impact future traffic patterns.
- The ERX Motor Park traffic control plan for events is included in the Appendix of the Briefing Book, providing detailed information on how traffic is managed during events.
- Coordination with ERX Motor Park regarding their future plans was discussed to align traffic management strategies.
- The view to the south from the ERX Motor Park south entrance presents limited sight distance (~10 seconds), which may impact safety for drivers.
- A snowmobile trail is present along US 169 in this area.
- The implementation of J-turns or a series of 3/4 accesses with a shared U-turn could enhance traffic operations and improve safety.

Exhibits 3-3 and 3-4 present images depicting the roadway conditions at the location.

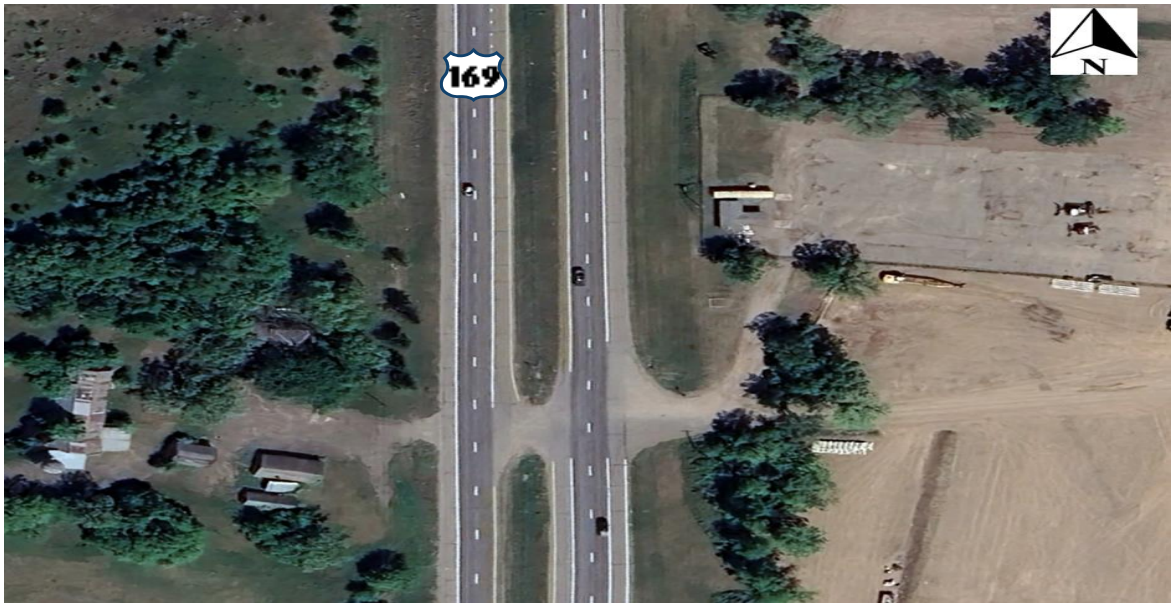


Exhibit 3-3. Location 3: ERX South Entrance



Exhibit 3-4. Location 3: ERX North Entrance

3.1.4 Location 4: Horizontal Curve and Intersection of 221st Ave NW (Southbound Traffic)

Description: A location with a crash cluster of 28 crashes, comprising 16 run-off-road crashes and 12 intersection-related crashes. Southbound traffic had a notable involvement in 15 crashes, amounting to 53% of the total incidents. The community has raised concerns regarding visibility issues while crossing the road.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- Heavy truck traffic from the asphalt plant and gravel pit situated west of the intersection.
- Limited sight distance for northbound left-turning to westbound traffic in the median looking north.
- Narrow median providing insufficient refuge for left-turning traffic.
- Eastbound vehicles face line of sight issues due to the southbound roadway curve.
- Future reconstruction projects might improve sight lines, especially for northbound traffic.

Exhibit 3-5 presents images depicting the roadway conditions at the location.



Exhibit 3-5. Location 4: Horizontal Curve and Intersection of 221st Ave NW

3.1.5 Location 5: Access Roads and Crossover of 225th Ave NW and Elk River Landfill

Description: The intersection of 225th Ave NW and Elk River Landfill is characterized by complex traffic movements due to landfill access. There is a crash cluster at this location involving 13 crashes, including 7 intersection-related crashes and one fatal crash in 2024. The community has raised significant concerns regarding crossing from east to west.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- Tight turn radius for northbound heavy vehicles to turn left.
- There is currently no acceleration lane for eastbound-to-northbound left-turn traffic. A large number of heavy vehicles were observed exiting the landfills located on the west side of the intersection and making northbound left turns.
- If heavy vehicles are queued in the northbound to westbound left turn lane, they are expected to obstruct the sight distance for eastbound traffic waiting in the median, limiting their ability to see the northbound mainline traffic. One potential option is to restrict eastbound movement from the landfills through the median for safety reasons.
- Treat the westbound approach of 225th Ave more frequently in winter as it is downhill and vehicles could slide down to the northbound mainline.
- One lighting fixture is installed at the southwest corner of the intersection. Adding more lighting to the intersection will improve nighttime visibility at the intersection.
- Heavy left-turn traffic from northbound to westbound was observed entering the landfill.
- The median is wide with a steep slope.
- Northbound turning trucks observed to cross southbound through lanes with small gaps – risky maneuvers.
- A snowmobile trail is present along US 169 at this location.
- Cable median positioned near ditch bottom – based on field review discussion, this is not MnDOT's current standard. Given the high number of run-off-road crashes, consider upgrading/moving the cable median barrier.
- Review this area for potential benefits of adding a snow fence to decrease snow drifting on the roadway.

Exhibit 3-6 presents images depicting the roadway conditions at the location.



Exhibit 3-6. Location 5: Access Roads and Crossover of 225th Ave NW and Elk River Landfill

3.1.6 Location 6: Horizontal Curve North of 225th Ave NW

Description: This location has a crash cluster involving 15 crashes, including 14 run-off-road crashes. Notably, 11 of these crashes occurred with southbound traffic.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- A snowmobile trail is present along US 169 at this location.
- The HTCMB is positioned near the ditch bottom, which is not MnDOT's current standard per discussion in the field. Given the high number of run-off-road crashes, upgrading or moving the cable median barrier should be considered.
- The area may benefit from the addition of a snow fence to decrease snow drifting on the roadway.
- Rumble strips are present at the edge of the roadway.
- In the southbound direction, the road is downhill and curves to the right.
- The "Truck Entering" warning sign located upstream of the curve on the southbound side should be removed as trucks are visible. This sign could be replaced with an advance curve warning sign.

- Installing chevron signs along the curve and an advance intersection warning sign for southbound traffic is expected to help alert drivers to the upcoming intersection, aiding in navigation through the curve and increasing awareness of the downstream intersection.
- Providing an advance curve warning sign on the southbound side is expected to enhance safety.
- The possibility of adding chevron signs in the median, as it is outside of the curve for southbound traffic, should be checked against MN MUTCD and MnDOT guidelines.

Exhibit 3-7 presents images depicting the roadway conditions at the location.



Exhibit 3-7. Location 6: Horizontal Curve North of 225th Ave NW

3.1.7 Location 7: Segment Between 237th Ave NW and 239th Ave NW

Description: This segment has a crash cluster involving 10 crashes, including one fatal crash.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- The southbound segment features both an uphill grade and a horizontal curve, creating a challenging driving environment due to the combined vertical and horizontal curvature.
- A snowmobile trail is present along US 169 at this location.
- This curve has historically posed challenges during winter conditions, as vehicles tend to accelerate uphill and subsequently lose control.
- Southbound traffic experiences traction problems on the uphill grade during winter months, indicating a potential need for high-friction surface treatment.
- Plans are in place to extend the median cable barrier along US 169 from 237th Ave to 253rd Ave in Zimmerman, with project completion scheduled for 2025.
- The 239th Ave access point could be monitored over time to identify any safety concerns related to turning traffic. If issues arise, future changes may be considered.
- The possibility of clearing more trees to the right side (west side) of the roadway in the southbound direction could be considered to improve the roadside clear zone.

Exhibit 3-8 presents images depicting the roadway conditions at the location.





Exhibit 3-8. Location 7: Segment Between 237th Ave NW and 239th Ave NW

3.1.8 Location 8: Intersection of 243rd Ave NW

Description: This location has a crash cluster involving 9 incidents, with 8 being intersection-related.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- Median restrictions were noted in the Year 2021. It is important to identify if crashes occurred after the implementation of these restrictions (examined crash data and provided in Section 3.2.3 of this report).
- The intersection is straight and flat, and no immediate suggestions were made as J-turns have been recently implemented.
- J-turns were installed in 2021, and it is crucial to continue monitoring crashes related to the new intersection configuration.

Exhibit 3-9 presents images depicting the roadway conditions at the location.



Exhibit 3-9. Location 8: Intersection of 243rd Ave NW

3.1.9 Location 9: Intersection of 245th Ave NW (County Rd 19)

Description: This location has a crash cluster involving 15 intersection-related incidents.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- The U-turn (J-turn) is located approximately 360 feet north of 245th Ave. If needed, the sight distance and distance between the U-turn and the side road could be reviewed to ensure it meets safety standards. Adjustments could be considered if improvements are found to be beneficial for driver visibility and overall safety.
- Tree removal north of the intersection along the inside curve for southbound traffic may improve sight lines for U-turn traffic.

- The street name sign for 245th Ave (County Rd 19) is missing and could be installed along the northbound direction.
- 245th Ave (County Rd 19) is on a downhill approach to the intersection with US 169 mainline, which may require High Friction Surface Treatment (HFST).
- An additional Stop-Ahead sign could be added on 245th Ave (County Rd 19) upstream of the intersection with US 169.

Exhibit 3-10 presents images depicting the roadway conditions at the location.



Exhibit 3-10. Location 9: Intersection of 245th Ave NW (County Rd 19)

3.1.10 Location 10: Access Road and Crossover of 253rd Ave NW

Description: This location has a cluster of community comments regarding various issues and potential improvements.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- The frontage road lacks delineation with no clear pavement markings or curbs. This lack of delineation may make it difficult for motorists to navigate the area effectively.
- The stop sign is positioned approximately 5 ft from the roadway edge due to the large radius. There is an opportunity to better define the curb and bring the stop sign closer to the functional edge of the travel lane.
- The northern access to the business will close as part of the Zimmerman interchange project, making the south access the only entrance for the business.
- Drivers perceive the left turn lane as shorter in length when driving southbound and turning left to the businesses on the east side. This perception is likely because southbound traffic sees the north entrance and slows down early before the left turn begins for the southern access.

Exhibit 3-11 presents images depicting the roadway conditions at the location.



Exhibit 3-11. Location 10: Access Road and Crossover of 253rd Ave NW

3.1.11 Location 11: Intersection and Crossover at 273rd Ave NW

Description: This location has a crash cluster involving 10 crashes, with 7 intersection-related crashes.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- Advance street name signs are expected to make it easier for drivers to navigate the intersection.
- This intersection will be the first in the north to be impacted by the Zimmerman interchange project, which is expected to diminish the gaps in traffic.
- Given that all the crashes at this location have involved multiple vehicles, closing the median crossover may potentially have a significant impact on reducing crashes at this location.
- The median crossover can be closed and implement a RIRO (right in, right out) configuration. The east side of US 169 can use the frontage road connected to County Rd 4 in the south, and the west side of US 169 can use County Rd 45. A U-turn can be added on the south side of the intersection if needed.
- Adding lighting to the intersection could help improve the nighttime visibility of the intersection and overall safety.
- A J-turn could be considered in the future.

Exhibit 3-12 presents images depicting the roadway conditions at the location.



Exhibit 3-12. Location 11: Intersection and Crossover at 273rd Ave

3.1.12 Location 12: Intersection of 283rd Ave NW

Description: This location has a crash cluster of crashes and has received numerous community comments regarding various issues and potential improvements.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- Community concerns have been raised regarding visibility at this location, suggesting a review of grass mowing plans to ensure clear sight lines.
- North of 283rd Ave NW, a northbound horizontal curve warning sign is present. The installation of chevron signs might be considered to provide improved guidance for motorists navigating the curve.
- The possibility of closing the median crossover was discussed during the field review to enhance safety.
- The addition of lighting at the intersection was identified as a potential improvement to enhance visibility, especially during nighttime.
- The installation of advanced street name signage was discussed to assist drivers in recognizing the intersection and navigating it more effectively.

Exhibit 3-13 presents images depicting the roadway conditions at the location.



Exhibit 3-13. Location 12: Intersection of 283rd Ave NW

3.1.13 Location 13: Horizontal Curve Next to Cantlin Lake

Description: This location has a perceived safety risk and has received a cluster of community comments regarding various issues and potential improvements.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- Maintenance staff and County officials noted that vehicles have occasionally needed to be pulled out of the lake at this location, despite no crashes being recorded in the available data. There may be an opportunity to collaborate with law enforcement to gather information on unreported incidents or near-miss collisions to better understand the extent of the issue.
- Maintenance staff expressed concerns that installing a barrier between the lake and the roadway could lead to increased snow drifting, potentially impacting road safety and maintenance operations.
- There is not enough deflection space for the cable barrier between the road and the lake. Additionally, maintenance access would be challenging, as crews may need to enter the water to perform necessary maintenance.
- The southbound curve north of Cantlin Lake may require a review of its radius to ensure it aligns with current safety and geometric design standards.
- Snow drifting is a recurring concern in this area. Potential measures to mitigate drifting could be explored to improve winter driving conditions.

Exhibit 3-14 presents images depicting the roadway conditions at the location.

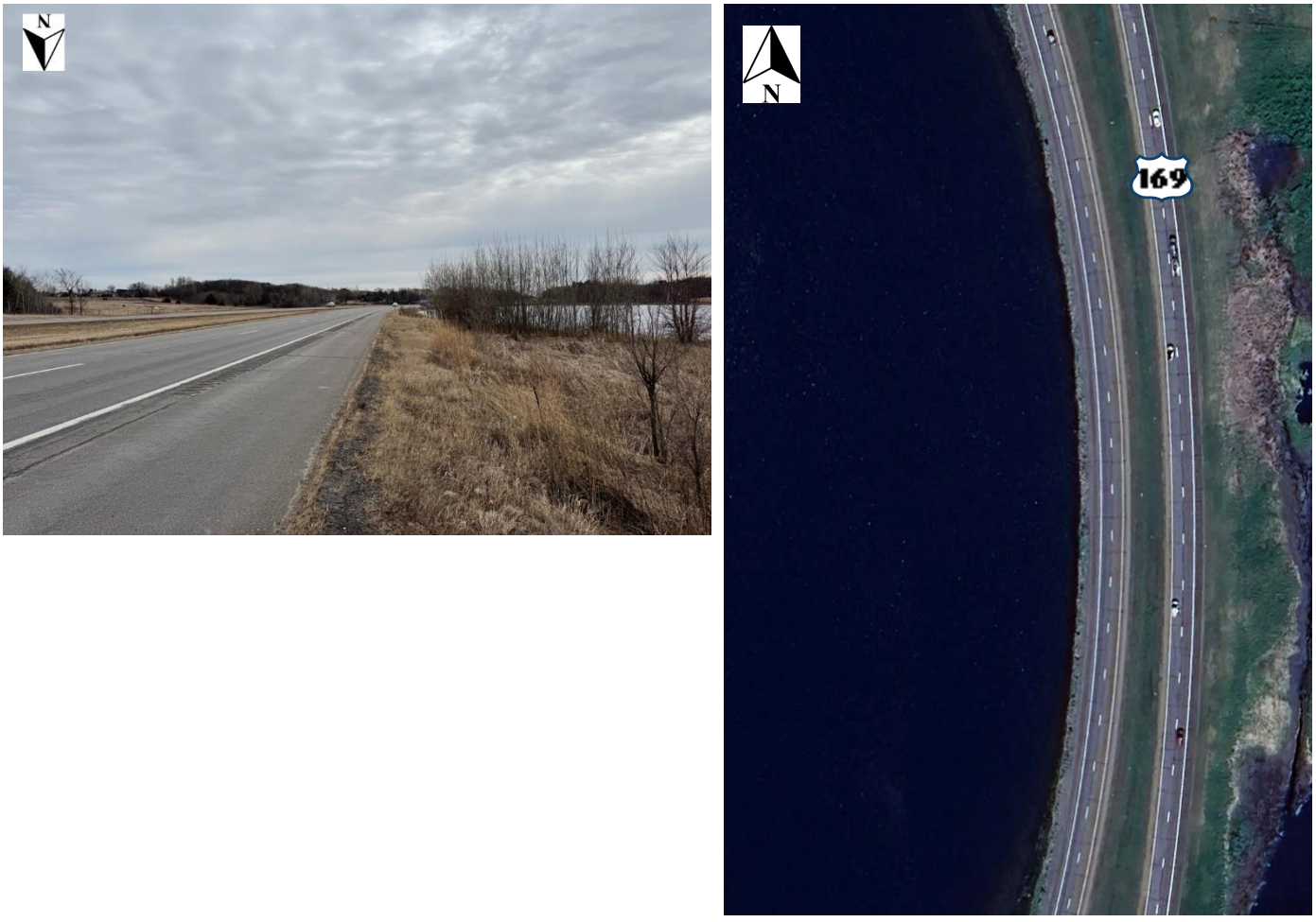


Exhibit 3-14. Location 13: Horizontal Curve Next to Cantlin Lake

3.1.14 Location 14: Intersections at West Ramps of US 169 to 289th Ave NW (CSAH 9)

Description: This location has received a cluster of community comments regarding sight distance issues.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- The intersection at the west ramps presents a significant visibility challenge for drivers attempting to turn left onto CSAH 9 from the southbound off-ramp. The line of sight to the left is restricted, primarily due to the presence of the parapet wall, which obstructs the driver's view and increases the difficulty of safely executing the turn.
- The stop bar on the southbound off-ramp is positioned far back, making it challenging for drivers to turn left at the intersection.
- The wide shoulder on the westbound side of the intersection may be mistaken for a through lane, causing confusion for drivers.

Exhibit 3-15 presents images depicting the roadway conditions at the location.

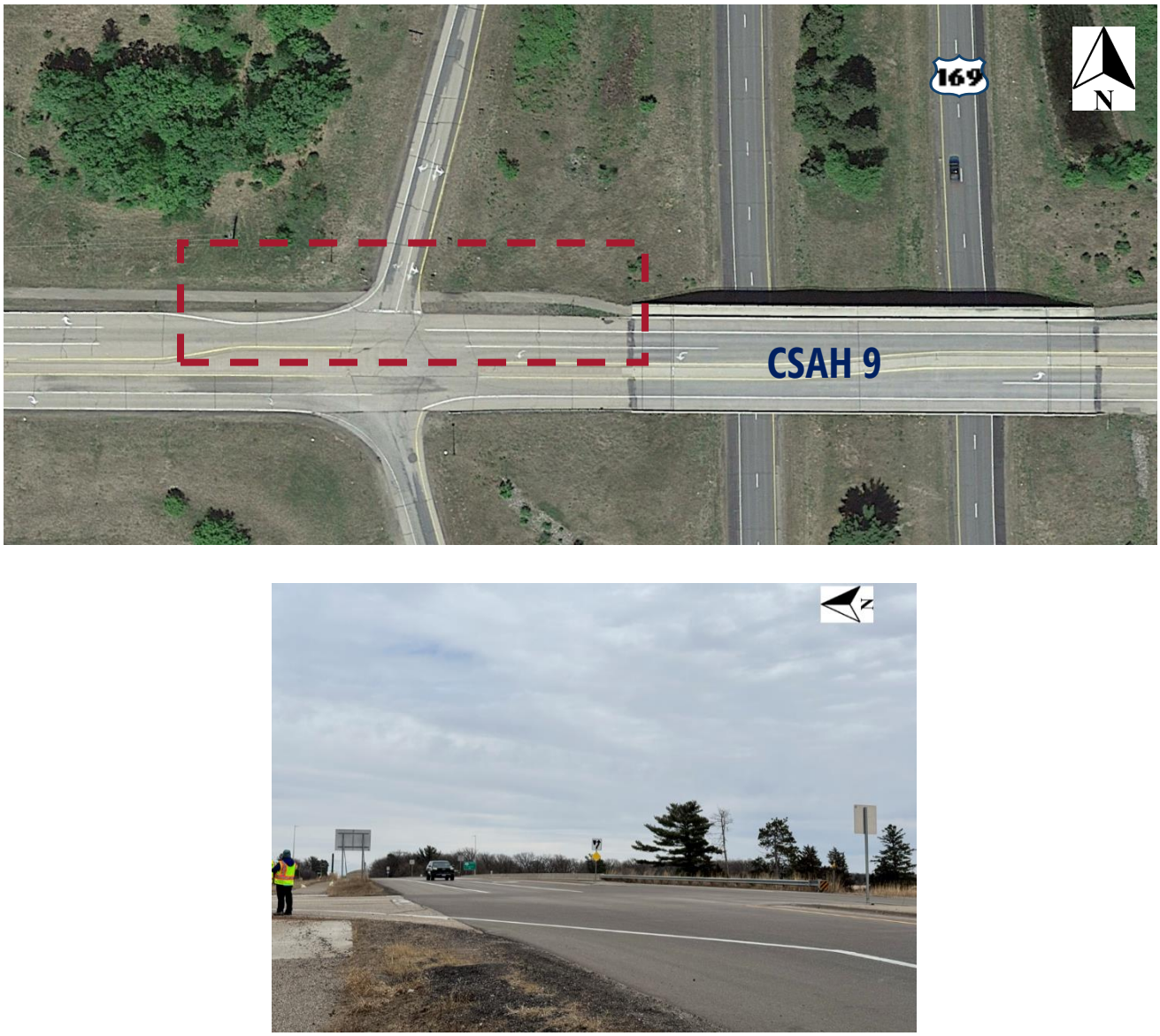


Exhibit 3-15. Location 14: Intersections at West Ramps of US 169 to 289th Ave NW (CSAH 9)

3.1.15 Location 15: Intersection and Crossover of 305th Ave NW

Description: This location has a crash cluster involving multiple incidents.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- The street name sign is positioned lower than the standard height, which may affect visibility for drivers.
- The median signs at this location are stop signs rather than yield signs. This inconsistency with other locations could be reviewed, and if this area requires different traffic control, the reasoning might be documented.
- The stop sign posts in the median could be reflective to enhance visibility.
- Median stop bar markings are absent.
- The street name sign is missing on the southbound left turn to assist drivers in recognizing the intersection and intersecting road to the east.
- Intersection lighting could be installed in the median and westbound connection to improve visibility and safety.

Exhibit 3-16 presents images depicting the roadway conditions at the location.



Exhibit 3-16. Location 15: Intersection and Crossover of 305th Ave NW

3.1.16 Location 16: Intersection of 313th Ave NW

Description: This location has received a cluster of community comments regarding the potential reopening of the crossover.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- The intersection has a low number of crashes, likely due to existing restrictions. Given the high volume and high speed of the highway, the suggestion to reopen the crossover may not align with current safety priorities.
- The stop bar on the eastbound approach is missing, which may impact traffic control and safety.
- Property Damage Only (PDO) crashes have been reported at this location, indicating that no major revisions are necessary.
- The necessity of this connection could be revisited in the future to assess whether reopening the crossover would be appropriate based on evolving traffic needs and safety data.

Exhibit 3-17 presents images depicting the roadway conditions at the location.



Exhibit 3-17. Location 16: Intersection of 313th Ave NW

3.1.17 Location 17: US 169 Bridge Over CSAH 29 (S Rum River Dr) and Intersections at East and West Ramps

Description: This location has a crash cluster and has received numerous community comments regarding sight distance issues and slippery road surface conditions.

Observed Issues/Comments: The following issues were discussed and/or identified during the field review:

- The northbound off-ramp intersection with CSAH 29 (Rum River Dr) has multiple signs to the west that obstruct the view for drivers turning left. This signage creates a significant visual barrier, making it challenging for drivers to accurately judge the traffic flow and the presence of oncoming vehicles.
- The curvature to the east of the channelized right turn may make it difficult for drivers to assess the distance of oncoming vehicles from the west when merging onto CSAH 29/Rum River Dr.
- The northbound off-ramp intersection with CSAH 29 (Rum River Dr) is fairly wide, which will likely increase pedestrian crossing distance.
- Lights are present on both sides of this east ramps intersection, but additional lighting may be needed given the size of the intersection.

- The exiting traffic on off-ramp of the southbound (west intersection) US 169 can use the roundabout located to the west of the intersection for left turn movements to reduce conflict and wait time at the intersection of the southbound off-ramp and CSAH 29/Rum River Dr.
- The surface conditions of the bridge on US 169 have resulted in a significant number of run-off-road crashes.
- The horizontal curve appears tight and may have an improper transition with the curve and superelevation at the bridge.
- A steep drop-off was noted beyond the bridge in the northbound direction, which poses a safety risk.

Exhibit 3-18 presents images depicting the roadway conditions at the location.



Exhibit 3-18. Location 17: US 169 Bridge Over CSAH 29 (S Rum River Dr) and Intersections at East and West Ramps

4 POST AUDIT – RECOMMENDATIONS

In this section, we will delve into the comprehensive recommendations derived from the pre-audit analyses, field reviews during the audit phase, and the insightful comments collected from the field review team. These recommendations are designed to enhance safety performance across the entire corridor and are presented first as general recommendations for the entire corridor followed by specific recommendations for each of the 17 locations meticulously reviewed during the field audit.

4.1 GENERAL CORRIDOR-WIDE RECOMMENDATIONS

The corridor-wide recommendations aim to address systemic issues impacting multiple locations along the corridor. These include strategies to improve traffic safety performance and mitigate common risk areas encountered throughout the corridor. By adopting these measures, we seek to provide a holistic solution that benefits the entire corridor.

1. Enforce Posted Speed Limits: Traffic speed data indicates that vehicles are operating at speeds higher than the posted speed limit of 65 mph i.e., the 85th percentile speed is 75 mph on average. To enforce the posted speed limit along the study corridor, we recommend increasing law enforcement presence, especially during summer when traffic peaks.
2. Apply High Friction Surface Treatment (HFST): Crash data shows numerous crashes on horizontal curves during winter. To address this, we recommend applying HFST on horizontal curves throughout the entire corridor. This treatment is expected to improve traction and reduce the risk of run-off-road crashes. HFST can reduce up to 48% of injury crashes at horizontal curves and up to 20% of total crashes at intersections[4].
3. Develop an Access Management Plan: After the construction of the interchange at US 169 and County Rd 4 in Zimmerman, this entire study corridor from Elk River to Princeton will become a signal-free corridor. It would be challenging to find gaps in traffic to cross the roadway. Therefore, we recommend developing an access management plan that includes closing some median crossovers and installing J-turns instead. This would help manage traffic flow and reduce conflict points.
4. Install Advance Street Name Signs: It is important to inform drivers in advance about the streets they want to turn onto so that they can move to the turn lane at the start of the turn lane and have enough deceleration distance. This could also aid drivers behind the turning vehicles to identify potential turns, thereby reducing the possibility of rear-end crashes. Therefore, we recommend installing advance intersection warning signs with cross-street name plaques along the study corridor. This could improve navigation and safety for drivers.
5. Install Intersection Lighting: To improve visibility and safety at intersections, we recommend installing/improving lighting at key locations and intersections along the corridor. Proper lighting would help drivers see the intersections more clearly, reducing the risk of crashes. According to FHWA's proven safety countermeasures, lighting can reduce nighttime crashes by up to 33-38% at rural and urban intersections. Additionally, lighting along highways can reduce up to 28% of nighttime injury crashes on rural and urban highways[5].
6. Enhanced Delineation: We recommend enhanced delineation, such as chevron signs and guide delineators on horizontal curves throughout the corridor. Chevron signs could reduce nighttime crashes by 25% and non-intersection fatal and injury crashes by 16%[6].
7. Trees Clearing in Median: Improving the roadside environment is expected to provide additional recovery space for vehicles and can reduce the severity of crashes. Clearing trees within the median—particularly north of Zimmerman—could improve sight distance and expand the clear zone, contributing to safer driving conditions. As conditions evolve,

[4] FHWA Proven Safety Countermeasures. https://highways.dot.gov/safety/proven-safety-countermeasures
[5] FHWA Proven Safety Countermeasures. https://highways.dot.gov/safety/proven-safety-countermeasures

it is recommended to monitor this area for potential tree removal, providing improved visibility and additional recovery space for errant vehicles, thereby reducing the likelihood and severity of fixed-object crashes.

By implementing these general corridor-wide recommendations, we aim to address systemic safety issues and potentially improve overall traffic management and safety along the US 169 corridor.

4.2 Location-Specific Recommendations

For each of the 17 locations examined during the field review, detailed recommendations are provided to tackle unique challenges and improve safety performance. Each recommendation is tailored to the specific needs and conditions observed at these sites, ensuring targeted interventions that are both practical and effective.

While these recommendations are specific to the locations, it is important to note that many of these treatments may also be appropriate at other locations along the corridor, even if those locations were not part of the focused field investigations.

4.2.1 Location 1: Horizontal Curve South of 211th Ave NW

The following recommendations are based on a detailed review conducted in the field and discussions by the field review team. These suggestions aim to address the specific safety challenges identified:

- Apply HFST: To improve surface traction and mitigate slippery conditions, the application of HFST is recommended. Incorporating HFST into the scheduled mill and overlay project for 2034 could be considered. This treatment enhances the skid resistance of the pavement, which could reduce the risk of run-off-road crashes.
- Install Chevrons with Retroreflective Sheeting: Enhancing visibility along the curve is crucial. Installing chevrons with retroreflective sheeting on posts or guide delineators would provide better guidance for drivers, particularly in low-light conditions.
- Conduct a Ball Bank Test: Performing a ball bank test on the southbound side of the curve would help determine the appropriate advisory speed for this section, ensuring that speed limits are optimally set for safety.
- Reinstall Edge Line Rumble Strips: To offer tactile feedback for drivers, edge line rumble strips could be reinstalled on the northbound lane. This measure would help alert drivers if they stray from the lane.
- Add 6" Ground-in Wet Reflective Edge Lines: For a high-speed, high-volume corridor, implementing 6" ground-in wet reflective edge lines could improve lane visibility, especially at night and during wet weather conditions.
- Improve Corridor Lighting: Addressing visibility issues identified during community feedback, improved lighting along the corridor could enhance driver perception and reaction times.
- Install Snow Fences: To combat the impact of blowing snow and compaction, snow fences could be installed along the curve section. This measure may help maintain a clearer pavement surface during winter.
- Discuss Special Snowplow Approaches: Engaging with other districts to discuss potential special snow plow strategies could provide insights into effective winter maintenance techniques for this area.

4.2.2 Location 2: Intersection of 213th Ave

The following recommendations aim to address the specific safety challenges identified at Location 2:

- Flatten the Curve: Flattening the curve to the north would improve sight distance for drivers, making it easier for them to see oncoming traffic and navigate the intersection safely.
- Convert to J-Turn Configuration: Converting the intersection to a J-turn configuration could improve both safety and traffic flow. This concept would utilize the existing northbound acceleration lane as a dedicated U-turn lane. Under

this approach, a U-turn on the south side may not be necessary; instead, eastbound-to-northbound movements could be directed to use the nearby interchange to the south.

- Extend Left Turn Lane: It is suggested to monitor truck-turning traffic during peak hours to determine if the left-turn lane needs to be extended, especially braking distance and taper length. If warranted, extending the turn lane could help reduce the likelihood of trucks decelerating in the through lanes, especially when multiple vehicles are queued in the left turn lane.
- Add Turn Lane Arrows: Adding turn lane pavement marking arrows within the lane per MN MUTCD may better delineate the turn lane and help drivers to move to the turn lane more effectively.
- Improve Intersection Lighting: Improving lighting at the intersection will address visibility issues identified during community feedback and enhance safety during dark conditions.
- Install Delineators: Installing post-mounted intersection delineators, as illustrated below, may help increase visibility, improve driver awareness, and support safer navigation through the intersection.



Exhibit 4-1. Post Mounted Delineator (Source: Google)

4.2.3 Location 3: Entrance to ERX Motor Park and Crossover of 219th Ave

The following recommendations aim to address the specific safety challenges identified at Location 3:

- Mandate Right Turns for Event Traffic: It is recommended to require all traffic to turn right when exiting ERX Motor Park during events. It is essential to ensure that downstream U-turns have sufficient deceleration lane length and queuing space, taking into account event traffic, thereby enhancing safety and traffic flow.
- Configure Alternative Access Points: Due to limited sight lines at the current entrance, it is suggested to consider configuring other access points as the main access for events. This would help distribute traffic more effectively and reduce congestion at the primary entrance.
- Close the Median: As a potential long-term solution to improve safety and traffic flow, it is recommended to consider closing the median. This change may help to reduce conflict points and streamline traffic movements in the area.
- Coordinate with ERX Motor Park: To align traffic management strategies and ensure effective traffic control during events, it is suggested to coordinate with ERX Motor Park regarding their long-term plans. This collaboration could help in developing a comprehensive traffic management approach that addresses both current and future needs.

- Implement J-Turns or 3/4 Accesses: To improve traffic operations and enhance driver safety, the implementation of J-turns or a series of 3/4 accesses with a shared U-turn could be considered. This configuration may offer safer turning movements and reduce the risk of collisions by minimizing conflict points.

4.2.4 Location 4: Horizontal Curve and Intersection of 221st Ave NW (Southbound Traffic)

The following recommendations aim to address the specific safety challenges identified at Location 4:

- Cut the Roadway in the North: It is recommended to consider lowering the roadway profile elevation approximately 800 feet north of the intersection during future reconstruction projects to improve sight lines. This measure could enhance driver visibility and reduce the risk of collisions.
- Provide Chevron Signs or Guide Delineators: To improve visibility and safety along the curve, it is suggested to provide chevron signs or guide delineators. These chevron signs could guide drivers through the curve, especially in low-light conditions.
- Close the Driveway on the East Side: The driveway on the east side of the intersection appears to have minimal or no active use. Closing this access point could help reduce unnecessary conflict points and improve overall intersection safety.
- Add Turn Lane Arrow Markings: Adding turn lane arrow markings is suggested as per the MN MUTCD. These markings would help drivers understand the intended path of travel and reduce confusion at the intersection.
- Close the Median: To restrict eastbound traffic from making left turns onto northbound US 169, it is recommended to close the existing median in the long term or consider converting the intersection into a 3/4 access configuration. Under this approach, eastbound to northbound traffic would instead turn right and proceed south to a designated U-turn location. This measure is expected to streamline traffic movements and reduce conflict points.
- Provide Stop-Bar Markings: It is recommended to provide stop-bar markings for eastbound traffic at 221st Ave NW.
- Relocate Northbound Left-Turn Traffic: If the median at this intersection is closed to reduce the conflict points, consider redirecting northbound to westbound left-turn traffic to a proposed U-turn for the intersection of 225th Ave at US 169, located north of the intersection.
- Frontage Road: A potential long-term recommendation involves evaluating the feasibility of constructing a frontage road along the west side of US 169. This approach could help consolidate access points for 221st Avenue and 225th Avenue, which may support improved access management, reduce potential conflict points, and enhance overall safety and efficiency along the corridor.

4.2.5 Location 5: Access Roads and Crossover of 225th Ave NW and Elk River Landfill

The following recommendations aim to address the specific safety challenges identified at Location 5:

- Implement 3/4 Intersection: Implementing a 3/4 intersection with offset northbound and southbound left turns is suggested to improve traffic flow and reduce conflict points. This configuration would provide safer turning movements and reduce the risk of collisions.
- Restrict Westbound Traffic: In the short to medium term, it is recommended to restrict westbound traffic from 225th Ave to right turn only by implementing temporary curbs, signage, and markings. This measure is expected to alleviate the difficulty of crossing the intersection due to limited gaps in northbound through traffic. In the long term, consider additional median measures and permit only northbound to westbound left turn movements.
- Access Road Closure and U-Turn Provision: The access road serving the property on the west side of US 169, located north of the intersection, appears to have minimal usage and may be considered for closure. The existing median

opening at this location could then be repurposed as a U-turn facility for westbound traffic originating from 225th Ave.

- Implement J-Turn: A J-turn approximately 1500 feet south of the intersection is recommended to better accommodate eastbound to northbound traffic, providing a safer and more efficient turning movement.
- Intersection Lighting: Increasing lighting at the intersection is recommended to enhance visibility and safety, particularly during nighttime. Improved lighting could help drivers see the intersection more clearly and react to potential hazards.
- Extend Northbound-to-Westbound Left Turn Lane: Due to frequent queuing by heavy vehicles in the turn lane, it is suggested to extend the northbound-to-westbound left turn lane. This measure would provide additional storage capacity and increase braking distance for turning traffic, improving traffic flow and safety.
- Review South Side of Median Crossover: The south side of the median crossover requires a thorough review to identify potential roadside safety improvements for southbound traffic. This area includes a steep slope and the end terminal of the cable median barrier. The assessment could explore options such as extending the culvert or modifying the end treatment of the cable median barrier to enhance overall safety.
- Apply HFST: It is recommended to apply HFST on the downhill approach to the intersection at 225th Ave NW. Additionally, to prevent vehicles from sliding into the northbound mainline during winter, it is recommended to treat the westbound approach of 225th Ave more frequently.

4.2.6 Location 6: Horizontal Curve North of 225th Ave NW

The following recommendations aim to address the specific safety challenges identified at Location 6:

- Apply HFST: It is recommended to apply HFST to improve surface traction and address slippery conditions. This treatment would enhance the skid resistance of the pavement, potentially reducing run-off-road crashes.
- Conduct a Ball Bank Test: Performing a ball bank test on the southbound side of the curve is recommended to determine the appropriate advisory speed for this section.
- Install Chevron Signs: To enhance visibility along the curve, it is suggested to install chevron signs with retroreflective sheeting on posts or guide delineators in both directions of travel, based on the ball bank test results and in accordance with Table 2C-5 in the MN MUTCD, as presented in **Table 5**. The chevron signs would provide better guidance for drivers, particularly in low-light conditions.
- Improve Lighting: Improving lighting at this location is suggested to address visibility issues. Enhanced lighting is expected to help drivers see the curve more clearly and react to potential hazards.
- Remove 'Truck Entering Next 2 Miles' Signs: It is recommended to remove the 'truck entering next 2 miles' sign upstream of the curve on the southbound side. This sign may no longer be needed as trucks are visible, and its removal would reduce visual clutter for drivers.
- Upgrade or Relocate Cable Median Barrier: The cable median barrier positioned near the ditch bottom may benefit from being upgraded or relocated. This adjustment should align with current MnDOT standards and improve safety for errant vehicles.
- Add a Snow Fence: To help mitigate snow drifting on the roadway, it is suggested to possibly add a snow fence. This measure is expected to help maintain clearer roadways during winter conditions.
- Provide an Advance Curve Warning Sign: Providing an advance curve warning sign on the southbound side is recommended to enhance safety. This sign would alert drivers to the upcoming curve, allowing them to adjust their speed and driving behavior accordingly.

Table 5. MN MUTCD Table 2C-5 Horizontal Alignment Sign Selection

Type of Horizontal Alignment Sign	Difference Between Speed Limit and Advisory Speed				
	5 mph	10 mph	15 mph	20 mph	25 mph or more
Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), Winding Road (W1-5), and Combination Horizontal Alignment/Intersection (W1-10 Series) (see Section 2C.7 to determine which sign to use)	Recommended	Required	Required	Required	Required
Advisory Speed Plaque (W13-1P)	Recommended	Required	Required	Required	Required
Chevrons (W1-8) and/or One Direction Large Arrow (W1-6)	Optional	Recommended	Required	Required	Required
Exit Speed (W13-2) and Ramp Speed (W13-3) on exit ramp	Optional	Optional	Recommended	Required	Required

Note:
Required means that the sign and/or plaque shall be used, recommended means that the sign and/or plaque should be used, and optional means that the sign and/or plaque may be used.

See Section 2C.6 for roadways with less than 1,000 ADT.

4.2.7 Location 7: Segment Between 237th Ave NW and 239th Ave NW

The following recommendations aim to address the specific safety challenges identified at Location 7:

- Install Advance Curve Warning Signage: It is recommended to install advance curve warning signage to alert drivers of the upcoming curve. These signs would encourage appropriate speed adjustments and improve driver awareness, particularly for unfamiliar or nighttime travelers.
- Apply HFST: To improve surface traction and address slippery conditions during winter, it is suggested to apply HFST along this segment.
- Extend High Tension Cable Median Barrier (HTCMB): It is recommended to extend the cable median barrier from 237th Ave up to 253rd Ave in Zimmerman. This project is planned for construction in 2025 and is expected to provide additional protection by preventing vehicles from crossing into opposing lanes.
- Clear Trees on the West Side: To improve the roadside clear zone, it is suggested to remove trees along the west side of the roadway. Expanding the clear zone would provide drivers with a greater recovery area in the event of a loss of control or run-off-road, thereby improving overall roadside safety.
- Provide Wet Reflective Markings: It is recommended to install wet-reflective markings to improve lane visibility during wet weather or low-light conditions.
- Monitor Median Access to 239th Ave: It is suggested to monitor the median access to 239th Ave and consider closing it if it creates safety issues in the future.

4.2.8 Location 8: Intersection of 243rd Ave NW

The following recommendations aim to address the specific safety challenges identified at Location 8:

- Continue Monitoring Crashes**:** It is recommended to continue monitoring crashes related to the new intersection configuration to assess the effectiveness of the J-turns. This ongoing evaluation will help determine if the J-turns are successfully reducing the number of crashes and improving safety at the intersection.

4.2.9 Location 9: Intersection of 245th Ave NW (County Rd 19)

The following recommendations aim to address the specific safety challenges identified at Location 9:

- Review Sight Line and Distance: It is recommended to review the sight line and distance of the U-turn from 245th Ave. If visibility is found to be limited, adjustments to the U-turn location or surrounding features may be considered to enhance safety.
- Remove or Clear Trees: To improve sight lines for U-turning vehicles, it is recommended to remove or clear trees located north of the intersection along the inside of the curve for southbound traffic. This measure would enhance visibility for drivers, reducing the risk of collisions.
- Install Street Name Sign: It is suggested to coordinate with the county to install the cross-street name sign for 245th Ave (County Rd 19) along the northbound direction of US 169.
- Apply HFST: Due to the downhill approach to the intersection with US 169, it is recommended to apply HFST on 245th Ave (County Rd 19).
- Add Stop-Ahead Sign: To enhance traffic control and safety, it is suggested to install an additional Stop-Ahead sign on 245th Ave (County Rd 9), upstream of the intersection with US 169. This sign is expected to alert drivers to the upcoming stop, allowing them to adjust their speed accordingly.

4.2.10 Location 10: Access Road and Crossover of 253rd Ave NW

The following recommendations aim to address the specific safety challenges identified at Location 10:

- Install Advance Street Name Signs: It is recommended to install an advance intersection warning sign with a cross-street name plaque. This would help drivers recognize that the turn lane serves the cross street and nearby businesses along the frontage road. This approach could also be considered at other intersections along the corridor to support consistent wayfinding.
- Add Intersection Lighting: Adding lighting to the intersection is suggested to improve nighttime visibility and enhance overall safety.
- Relocate Intersection Southward: To allow adequate spacing for a potential future J-turn to the north, it is recommended to consider shifting the intersection slightly south of its current location. This adjustment would support better geometric design and traffic operations.
- Implement Future Access Management: As part of long-term planning, implementing access management strategies in coordination with the frontage road is suggested. This would help reduce conflict points and improve safety along the corridor.
- Frontage Road Delineation: It is recommended to coordinate with the local agency to explore opportunities for improving pavement markings and delineation along the frontage road. Clear and consistent markings are expected to reduce driver confusion, improve navigation, and enhance overall roadway safety.
- Relocate Stop Sign: Moving the stop sign closer to the functional edge of the travel lane is suggested to improve its visibility and effectiveness. This adjustment would ensure that drivers can see the stop sign clearly and respond appropriately.

4.2.11 Location 11: Intersection and Crossover at 273rd Ave NW

The following recommendations aim to address the specific safety challenges identified at Location 11:

- Install Advance Street Name Signs: It is recommended to install an advance intersection warning sign with a cross-street name plaque to make it easier for drivers to navigate the intersection. These signs would help drivers recognize the street in advance and prepare for the necessary turning movements.
- Close the Median Crossover: To mitigate multi-vehicle crashes, it is suggested to close the existing median crossover and implement a Right-In/Right-Out (RIRO) configuration. This would limit direct left turns and cross-traffic movements. Traffic could instead utilize the frontage road on the east side of US 169 and County Rd 45 on the west side. If needed, a U-turn facility could be added south of the intersection to accommodate redirected turning movements.
- Add Intersection Lighting: Adding lighting to the intersection is recommended to improve nighttime visibility.

4.2.12 Location 12: Intersection of 283rd Ave NW

The following recommendations aim to address the specific safety challenges identified at Location 12:

- Review and Adjust Grass Mowing Plans: It is recommended to review and adjust the grass mowing plans to address community concerns regarding limited visibility at the intersection. Proper maintenance of the grass would ensure that drivers have a clear line of sight, reducing the risk of collisions.
- Install Chevron Signs North of 283rd Ave: To provide improved guidance for motorists navigating the curve north of the intersection, it is suggested to install chevron signs or guide delineators.
- Consider Median Crossover Closure: To reduce conflict points and enhance safety at the intersection, it is recommended to consider closing the median crossover if future conditions warrant it. This measure is expected to reduce the potential for angle crashes.
- Add Intersection Lighting: It is recommended to add lighting to the intersection to improve nighttime visibility.
- Install Advanced Street Name Signage: To assist drivers in recognizing and moving to the right/left turn lanes at the start of the turn lanes, it is suggested to install an advance intersection warning sign with a cross-street name plaque.

4.2.13 Location 13: Horizontal Curve Next to Cantlin Lake

The following recommendations aim to address the specific safety challenges identified at Location 13:

- Aerate the Water Near the Road: It is recommended to aerate the water near the road to keep it open in the winter. This measure would help catch snow drifts, reducing the accumulation of snow on the roadway and improving safety for motorists.
- Review and Install Snow Fence: It may be beneficial to review the potential for installing a snow fence near the lake to help mitigate snow drifting issues in this area and prevent snow from entering the roadway. A strategically placed snow fence could reduce the amount of windblown snow reaching the roadway, improving winter driving conditions and overall safety.
- Install HTCMB: It is recommended to install a cable median barrier to improve safety. These barriers would help prevent vehicles from crossing into oncoming traffic, reducing the risk of head-on collisions.
- Consider Installing a J-Barrier with Crash Cushion: To further improve roadside safety, it is suggested to evaluate the feasibility of installing a J-barrier with a crash cushion between the lake and the roadway.

- Review Radius of Southbound Curve: To ensure the curve meets the required geometric design standards, it is suggested to review the radius of the southbound curve north of Cantlin Lake.

4.2.14 Location 14: Intersections at West Ramps of US 169 to 289th Ave NW (CSAH 9)

The following recommendations aim to address the specific safety challenges identified at Location 14:

- Evaluate and Implement All-Way Stop Control (AWSC): It is recommended to evaluate the need for an All-Way STOP Control at the intersection of the west ramps of US 169 and CSAH 9 to improve traffic safety.
- Relocate Southbound Offramp Stop Bar: To improve line of sight and enhance safety for drivers making turning movements, it is suggested to move the stop bar on the southbound offramp further south in accordance with MN MUTCD guidelines. This adjustment is expected to provide drivers with a better line of sight and improve overall safety.
- Add Crosshatching on Westbound Shoulder: It is recommended to add crosshatching on the westbound shoulder of CSAH 9 to indicate that the wide shoulder is not a travel lane. This visual cue would help reduce driver confusion and improve traffic flow.

4.2.15 Location 15: Intersection and Crossover of 305th Ave NW

The following recommendations aim to address the specific safety challenges identified at Location 15:

- Raise Street Name Sign: It is recommended to raise the street name sign to meet standard height requirements. This adjustment would improve visibility for approaching drivers.
- Install Reflective Stop Sign: To improve visibility, it is suggested to install reflective stop sign posts in the median.
- Install Median Stop Bars: It is recommended to install stop bars in the median to reinforce stop control.
- Install Advance Intersection Warning Sign: To assist drivers in recognizing the intersection and selecting the correct turn lane, it is suggested to install an advance intersection warning sign with a cross-street name plaque on the southbound left turn lane.
- Install Intersection Lighting: It is recommended to install intersection lighting in the median and westbound connection to improve visibility and safety.
- Consider Closing the Crossover: As a long-term strategy, it is suggested to consider closing the existing median crossover. Westbound traffic could instead turn right to travel northbound and use the median crossover of other intersection located approximately 1,500 feet north. Similarly, southbound-to-eastbound left-turning traffic could be redirected to a U-turn at the median crossover of another intersection approximately 1,300 feet south. This change would reduce conflict points and improve overall intersection safety.

4.2.16 Location 16: Intersection of 313th Ave NW

The following recommendations aim to address the specific safety challenges identified at Location 16:

- Add Intersection Lighting: It is recommended to add lighting to the intersection to improve visibility and safety.
- Install Stop Bar Pavement Marking: It is recommended to add a stop bar pavement marking on the eastbound approach to reinforce stop control and enhance safety.
- Evaluate the Necessity of the Connection: It is suggested to evaluate the long-term necessity of this connection to determine if reopening the median crossover is warranted.

4.2.17 Location 17: US 169 Bridge Over CSAH 29 (S Rum River Dr) and Intersections at East and West Ramps

The following recommendations aim to address the specific safety challenges identified at Location 17:

- Reduce or Relocate Traffic Signs: It is recommended to reduce or relocate traffic signs located west of the northbound off-ramp intersection with CSAH 29 (Rum River Drive). This adjustment is expected to improve sightlines for drivers making left turns, ensuring they have a clearer and more unobstructed view of oncoming traffic.
- Consider Installing Intersection Lighting: To improve pedestrian visibility, it is suggested to consider installing lighting at all corners of the northbound off-ramp intersection with CSAH 29 (Rum River Drive).
- Evaluate Radii at Northbound Off-Ramp Intersection: It is recommended to evaluate the turning radii at the northbound off-ramp intersection with CSAH 29 (Rum River Drive) to determine if they can be tightened to reduce pedestrian crossing distance.
- Collect Turning Movement Data: To assess the operation of the intersection and make necessary adjustments, it is suggested to collect turning movement data at the intersection.
- Restripe Stop Bar Pavement Markings: It is recommended to review and, if needed, restripe the stop bar pavement markings at the northbound off-ramp intersection with CSAH 29 (Rum River Drive).
- Extend Rum River Dr Roundabout Median: To close off the median crossing for left turning or convert the intersection into a ¾ access configuration, it is suggested to extend the median from the Rum River Dr roundabout eastward to the southbound off-ramp terminal intersection. This would require left-turning traffic from the southbound off-ramp to turn right and use the roundabout to complete a U-turn. This change is expected to reduce conflict points and enhance overall safety.
- Apply HFST on the Bridge: It is recommended to apply HFST on the US 169 bridge to address the slippery surface conditions that have contributed to run-off-road crashes.
- Install Cable Median Barrier: It is recommended to install a cable median barrier along the curves on US 169 north of the bridge to enhance safety. This barrier is expected to prevent vehicles from crossing into oncoming traffic, reducing the risk of head-on collisions.
- Add De-Icing Equipment to the Bridge: To address slippery surface conditions during winter, it is suggested to add de-icing equipment to the bridge.

4.3 Summary of Potential Improvement Strategies

To facilitate strategic planning, potential improvement strategies were compiled into a summary table, categorized by their implementation timeline: short-term (0-5 years), medium-term (5-10 years), and long-term (10+ years). This table will enable stakeholders to prioritize actions based on urgency, cost-effectiveness, and anticipated benefits, ensuring a structured and phased approach to corridor enhancements.

It is recommended to start with short-term recommendations as they can be implemented quickly and at a lower cost, and provide some improvement in safety performance while waiting for the ultimate solution.

The detailed table below presents the short-, medium-, and long-term solutions for each of the 17 locations, providing a comprehensive overview of the recommended actions.

Table 6. Summary of Recommended Solutions

Location	Recommended Short (0-5 yrs.), Medium (5-10 yrs.), and Long (10+ yrs.) Term Solutions
General Corridor-Wide Recommendations	**Short-Term:** • Enforce posted speed limits by increasing law enforcement. • Apply HFST on horizontal curves to improve traction and reduce run-off-road crashes. • Install advance intersection warning signs with cross-street name plaques to improve navigation and safety. • Install intersection lighting to enhance visibility and safety at key intersections. **Medium-Term:** • Develop an access management plan that includes closing some median crossovers and installing J-turns to manage traffic flow and reduce conflict points. • Remove and clear trees located within the median north of Zimmerman to improve sight distance and expand the roadside clear zone, thereby enhancing roadside safety. **Long-Term:** • Plan and execute long-term access management strategies to preserve the functionality of the signal-free corridor (following the completion of the Zimmerman Project) and minimize conflict points to support sustained safety.
Location 1: Horizontal Curve South of 211th Ave NW	**Short-Term:** • Apply HFST to improve surface traction. • Conduct a ball bank test to check for potential advisory speed. • Based on the outcome of the ball bank test and as per MN MUTCD Table 2C-5, install chevron signs (or guide delineators) with retroreflective sheeting on posts along the curve. • Reinstall edge line rumble strips for the northbound lane. **Medium-Term:** • Explore alternative treatments or strategies to improve winter maintenance in this challenging area. • Improve lighting along the corridor to address visibility issues. • Consider installing snow fences to reduce the impact of blowing snow. • Consider adding 6-inch ground-in wet reflective edge lines along the corridor to improve lane visibility during wet weather. **Long-Term:** • As part of the scheduled 2034 mill and overlay project, consider upgrading the super-elevation or applying high-friction pavement to the curve section.

Location	Recommended Short (0-5 yrs.), Medium (5-10 yrs.), and Long (10+ yrs.) Term Solutions
Location 2: Intersection of 213th Ave	**Short-Term:** • Add turn lane pavement marking arrows within the turn lane per MN MUTCD specifications • Improve lighting at the intersection. • Install delineators. **Medium-Term:** • Consider converting the intersection to a J-turn configuration and use the existing northbound acceleration lane for a U-turn. • Monitor northbound left-turn lane traffic to determine if an extension is needed for adequate braking distance. **Long-Term:** • Explore lowering the roadway profile elevation (flatten the crest curve) north of the intersection to improve sight distance for drivers.
Location 3: Entrance to ERX Motor Park and Crossover of 219th Ave	**Short-Term:** • Restrict left-turning traffic for all traffic exiting ERX Motor Park during events. • Coordinate with ERX Motor Park regarding their future plans and operations. **Medium-Term:** • Reconfigure other access points to function as the main accesses during events, due to limited sight lines at the south entrance. **Long-Term:** • Consider closing the median access to improve safety and traffic flow. • Explore implementing J-turns or a series of 3/4 accesses with shared U-turns.
Location 4: Horizontal Curve and Intersection of 221st Ave NW (Southbound Traffic)	**Short-Term:** • Provide chevron signs or guide delineators along the curve. • Close the east-side driveway at the intersection. • Add turn lane arrow markings. • Provide stop-bar for eastbound traffic at 221st Ave NW. • Increase winter maintenance frequency on the westbound approach of 225th Ave, including additional snowplowing and de-icing. **Medium-Term:** • Consider closing the median to restrict eastbound-to-northbound left-turn movement. Eastbound-to-northbound traffic from west approach would turn right and use a designated U-turn in the south. A 3/4 intersection configuration may also be considered as an alternative. • Evaluate relocating northbound-to-westbound left-turn traffic northward to utilize the U-turn proposed for the intersection of 225th Ave at US 169. **Long-Term:** • Consider lowering the roadway profile elevation (flattening crest) approximately 800 feet north of the intersection during future reconstruction projects to improve sight lines. • To consolidate access points of 221st Ave and 225th Ave, assess the feasibility of constructing a frontage road on the west side of US 169.

Location	Recommended Short (0-5 yrs.), Medium (5-10 yrs.), and Long (10+ yrs.) Term Solutions
Location 5: Access Roads and Crossover of 225th Ave NW and Elk River Landfill	**Short-Term:** • Apply HFST on the westbound downhill approach to the intersection. • Install additional lighting at this intersection. • Extend the northbound-to-westbound left turn lane to accommodate queuing. • Consider extending the culvert or modifying the end treatment of the median cable barrier on the south side of the median crossover. **Medium-Term:** • Restrict westbound traffic from 225th Ave to right turn only using curbs, signage, and markings. • Consider closing the west side access road (serving a property) north of the intersection and repurposing the median opening as a U-turn for westbound traffic originating from 225th Ave. • Implement a 3/4 intersection with offset northbound and southbound left turns to reduce conflict points and improve traffic flow. **Long-Term:** • Consider additional median measures and permit only northbound to westbound left turn movements. • Implement a J-turn approximately 1500 feet south of the intersection to better accommodate eastbound traffic.
Location 6: Horizontal Curve North of 225th Ave NW	**Short-Term:** • Apply HFST to improve surface traction. • Conduct a ball bank test to check for potential advisory speed. • Install chevron signs with retroreflective sheeting on posts or guide delineators along the curve. • Add lighting to this location to address visibility issues. • Provide an advance curve warning sign on the southbound side. **Medium-Term:** • Upgrade or relocate the cable median barrier positioned near the ditch bottom. • Consider installing a snow fence or vegetated windbreaks to reduce snow drifting onto the roadway. **Long-Term:** • No long-term solutions specified.
Location 7: Segment Between 237th Ave NW and 239th Ave NW	**Short-Term:** • Install advance curve warning signage. • Apply HFST to improve surface traction. • Clear trees on the west side of the roadway. • Extend the cable median barrier from 237th Ave up to 253rd Ave in Zimmerman, as planned for construction in Year 2025. **Medium-Term:** • Install wet reflective pavement markings to enhance visibility during wet conditions. **Long-Term:** • Monitor the median access to 239th Ave and consider closing it if it creates safety issues in the future.

Location	Recommended Short (0-5 yrs.), Medium (5-10 yrs.), and Long (10+ yrs.) Term Solutions
Location 8: Intersection of 243rd Ave NW	**Short-Term:** • Continue monitoring crashes related to the new intersection configuration to assess the effectiveness of the new J-turns. **Medium-Term:** • No medium-term solutions specified. **Long-Term:** • No long-term solutions specified.
Location 9: Intersection of 245th Ave NW (County Rd 19)	**Short-Term:** • Review the sight line and distance of the U-turn from 245th Ave and consider adjustments if applicable. • Clear trees north of the intersection along the inside curve for southbound traffic. • Coordinate with the county to install a cross-street name sign for 245th Ave. • Apply HFST on 245th Ave (County Rd 19) to improve traction on the downhill approach. • Add an additional Stop-Ahead sign on 245th Ave upstream of the intersection. **Medium-Term:** • No medium-term solutions specified. **Long-Term:** • No long-term solutions specified.
Location 10: Access Road and Crossover of 253rd Ave NW	**Short-Term:** • Install an advance intersection warning sign with a cross-street name plaque. • Add lighting to the intersection. • Coordinate with the local agency to delineate the frontage road with pavement markings or curbs. • Shift the stop sign closer to the functional edge of the travel lane. **Medium-Term:** • Consider relocating the intersection south to allow more space for a future J-turn to the north. **Long-Term:** • Implement access management with the frontage road to minimize driveway conflicts.
Location 11: Intersection and Crossover at 273rd Ave NW	**Short-Term:** • Install an advance intersection warning sign with a cross-street name plaque. • Add lighting at the intersection to improve nighttime visibility. **Medium-Term:** • Consider closing the median crossover to reduce conflict points. • Utilize the frontage road on the east side of US 169 and County Rd 45 on the west side of US 169. • Add a U-turn south of the intersection to support redirected traffic flow. **Long-Term:** • No long-term solutions specified.

Location	Recommended Short (0-5 yrs.), Medium (5-10 yrs.), and Long (10+ yrs.) Term Solutions
Location 12: Intersection of 283rd Ave NW	**Short-Term:** • Review and adjust grass mowing plans to improve visibility. • Install chevron signs or guide delineators along the curved north of 283rd Ave. • Add lighting at the intersection. • Install an advance intersection warning sign with cross-street name plaques. **Medium-Term:** • Consider closing the median crossover if crashes continue to rise. **Long-Term:** • No long-term solutions specified.
Location 13: Horizontal Curve Next to Cantlin Lake	**Short-Term:** • Review opportunity to install a snow fence or vegetative screen to reduce snow drifting onto the roadway. • Consider installing a J-barrier with a crash cushion between the lake and the road. **Medium-Term:** • Review the radius of the southbound curve north of Cantlin Lake. • Aerate the water near the road to help prevent snow drifts onto the roadway. • Install a snow fence or vegetative screen along the lake to reduce snow drifting onto the roadway. • Install median cable barrier in the median to improve safety. **Long-Term:** • Implement long-term snow drift mitigation measures.
Location 14: Intersections at West Ramps of US 169 to 289th Ave NW (CSAH 9)	**Short-Term:** • Implement all-way stop control (AWSC) at the west intersection. • Relocate the southbound off-ramp stop bar forward to enhance driver visibility. • Add crosshatching on the westbound shoulder. **Medium-Term:** • No medium-term solutions specified. **Long-Term:** • No long-term solutions specified.
Location 15: Intersection and Crossover of 305th Ave NW	**Short-Term:** • Raise the street name sign to the required standard height. • Install reflective stop sign posts in the median. • Install median stop bars to enhance traffic control. • Install an advance intersection warning sign with a cross-street name plaque on the southbound left turn. • Consider installing intersection lighting in the median and on the westbound approach. **Medium-Term:** • No medium-term solutions specified. **Long-Term:** • Consider closing this crossover to reduce conflict points.

Location	Recommended Short (0-5 yrs.), Medium (5-10 yrs.), and Long (10+ yrs.) Term Solutions
Location 16: Intersection of 313th Ave NW	**Short-Term:** • Add lighting at the intersection. • Add a stop bar pavement marking at the eastbound approach. **Medium-Term:** • No medium-term solutions specified. **Long-Term:** • Monitor traffic conditions and evaluate whether reopening the crossover may be appropriate in the future.
Location 17: US 169 Bridge Over CSAH 29 (S Rum River Dr) and Intersections at East and West Ramps	**Short-Term:** • Reduce or relocate the existing traffic signs at northbound off-ramp intersection. • Consider increasing lighting at the northbound off-ramp intersection. • Collect turn movement data to assess the operation of the intersections. • Restripe stop bar pavement markings on the northbound off-ramp intersection. • Apply friction treatment on the bridge surface as part of the 2025 redecking project. **Medium-Term:** • Extend the Rum River Dr roundabout median eastward to the southbound off-ramp terminal to close it off for southbound-to-eastbound left-turn traffic or make it a 3/4 intersection. **Long-Term:** • Install a cable median barrier along the curves on US 169 north of the bridge. • Add de-icing equipment to the bridge to address slippery conditions.

4.4 Conceptual Visual Alternatives

In this section, conceptual-level visual alternatives are presented for two specific locations out of the 17 locations examined during the field review. These visual alternatives provide higher-level representations of the recommended solutions at these locations, offering a clear and concise understanding of the proposed safety improvements. Schematic drawings of the proposed geometry for these locations have been created to provide a realistic and accurate depiction of the changes.

Location 14: Shifting Stop Bar South

At Location 14, the intersection of US 169 and 289th Ave NW (CSAH 9) West Ramps, the current positioning of the stop bar creates poor sightlines for left-turning vehicles due to the pedestrian parapet wall. To improve visibility and safety, we recommend shifting the stop bar a few feet to the south. This adjustment will provide southbound left-turning vehicles with a better line of sight to the east, allowing them to see oncoming traffic more clearly and make safer turning decisions.

Location 17: Extend Median to Redirect Thru and Left Turn Traffic

At Location 17, the intersection of US 169 west ramps and CSAH 29 (S Rum River Dr), the proposed solution involves extending the median to the east. This extension will redirect thru and left turn traffic from the southbound offramp of US 169 to CSAH 29 into the roundabout. By directing traffic to the roundabout, vehicles are expected to make a U-turn and proceed in the desired direction. This configuration will eliminate the need for direct left turns at the intersection, reducing conflict points and enhancing overall safety.

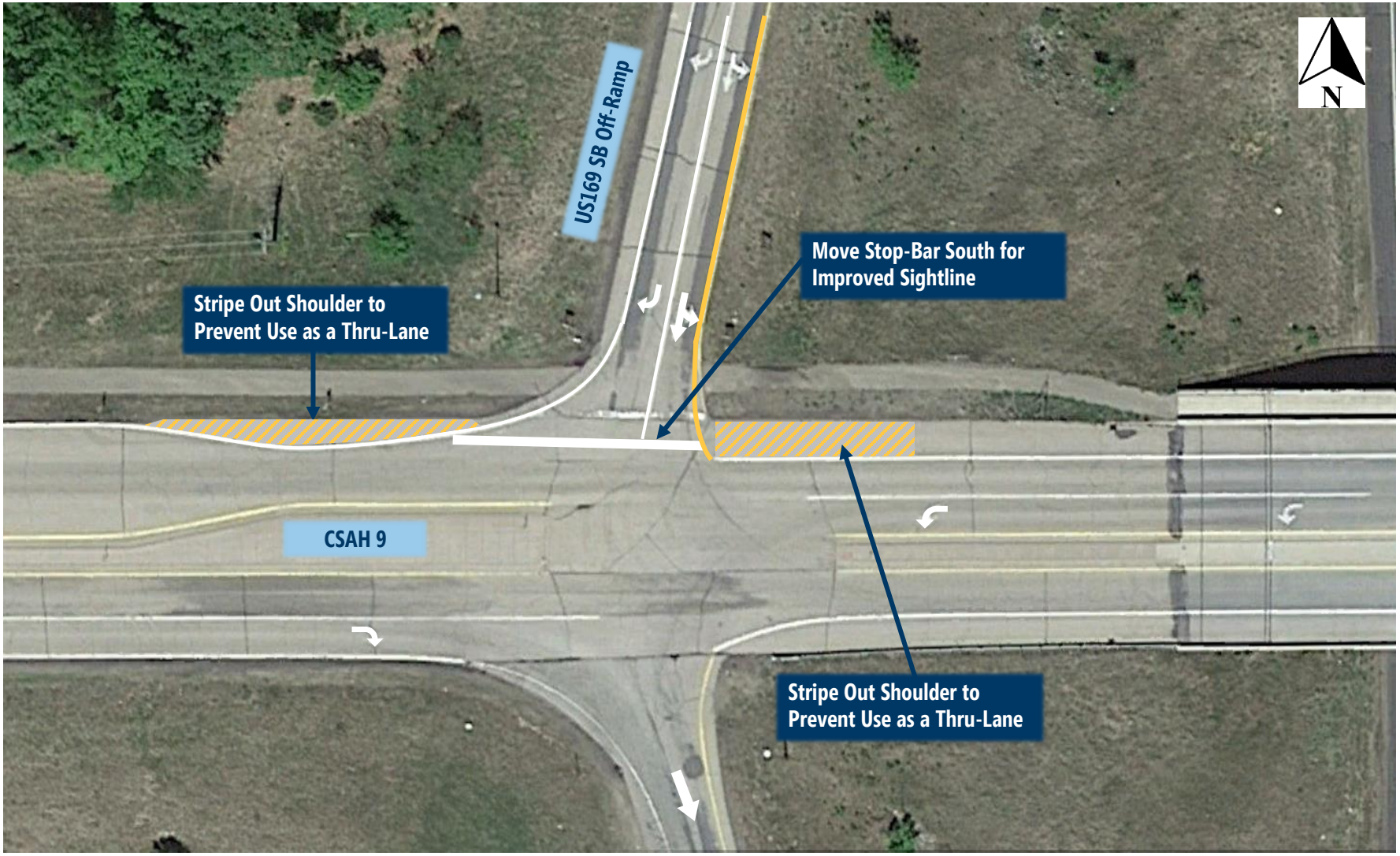


Exhibit 4-2. Location 14: Shifting Stop Bar South at Intersection of US 169 and 289th Ave NW (CSAH 9) West Ramps

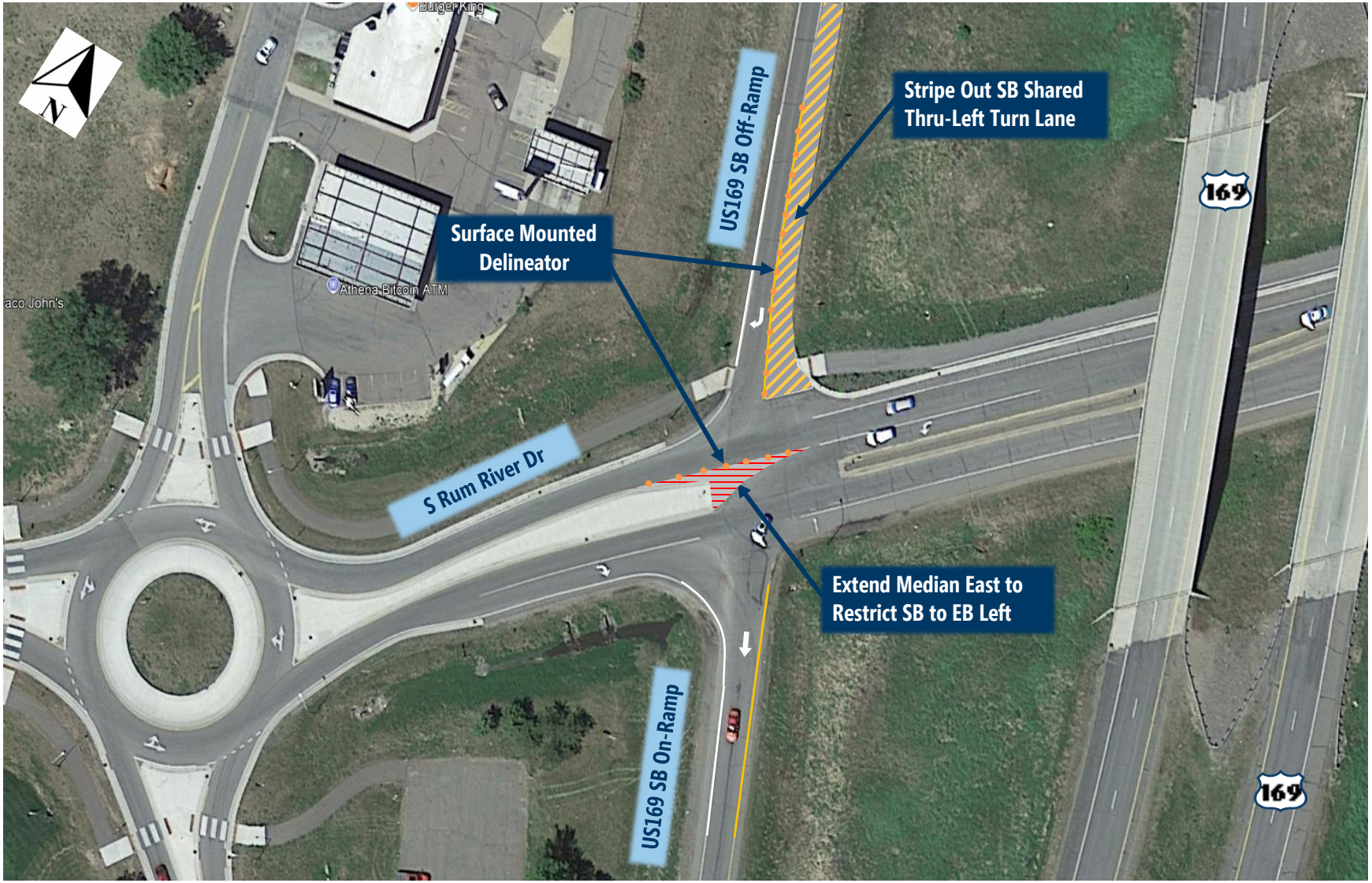


Exhibit 4-3. Location 17: Extend Median; Redirect Thru-Left Turn Traffic to Roundabout at Intersection of US 169 and CSAH 29 (S Rum River Dr) West Ramps

5 CONCLUSION

The RSA conducted for US 169 has provided a comprehensive analysis of roadway conditions, crash data, and community feedback. The audit team meticulously reviewed 17 locations along the corridor, identifying specific safety challenges and proposing targeted recommendations to enhance road safety. This conclusion summarizes the key findings, recommendations, and overarching themes that emerged from the RSA.

The primary goal of the RSA was to identify traffic safety issues and propose strategies to improve safety performance for all road users. The study corridor extends from the County Road 33 (County Rd 33) Interchange in Elk River, Minnesota, to the County Road 29 (County Rd 29) Interchange in Princeton, Minnesota. The RSA was conducted in response to concerns about safety performance along US 169 and the possibility of increased development and traffic volumes in the area.

The RSA team identified several critical safety issues across the 17 locations reviewed in the field. These issues varied from poor visibility and inadequate signage to challenging roadway geometries and high crash frequencies at intersections. The audit revealed that many of the crashes were intersection-related or involved run-off-road incidents, particularly during adverse weather conditions. High speed, limited sight distance, and insufficient lighting were common factors contributing to the safety challenges observed.

For instance, Location 1, the Horizontal Curve South of 211th Ave NW, experienced a high number of run-off-road crashes due to slippery conditions. Similarly, Location 2, the Intersection of 213th Ave, faced visibility issues. Location 3, the Entrance to ERX Motor Park and Crossover of 219th Ave, had significant turning traffic during events, leading to complex traffic movements and increased crash risk.

Other locations, such as Location 4, the Horizontal Curve and Intersection of 221st Ave NW, and Location 5, the Access Roads and Crossover of 225th Ave NW and Elk River Landfill, also exhibited safety concerns related to heavy-vehicle traffic, limited sight distances, and challenging roadway geometries. The audit team noted that many of these issues could be addressed through targeted interventions, such as improved signage, enhanced lighting, and roadway modifications.

The RSA report provides a comprehensive set of recommendations designed to address the identified safety challenges and improve overall traffic safety performance along the US 169 corridor. These recommendations are categorized into short-term, medium-term, and long-term solutions to facilitate strategic planning and implementation.

5.1 SHORT-TERM RECOMMENDATIONS

- Apply HFST to improve surface traction and mitigate slippery conditions.
- Install chevrons with retroreflective sheeting on posts or guide delineators to enhance visibility along curves.
- Conduct ball bank tests to determine appropriate advisory speeds for specific sections of US 169.
- Reinstall rumble strips and add ground-in wet reflective edge lines to improve lane visibility.
- Improve corridor lighting to address visibility issues identified during community feedback.
- Install snow fences to reduce the impact of blowing snow on the road.
- Implement advance intersection warning signs with street name plaques and turn lane arrows marking to aid traffic navigation.
- Add stop bar markings and intersection delineators at crossings to improve traffic control.

5.2 MEDIUM-TERM RECOMMENDATIONS

- Flatten curves and lower roadway profiles to improve sight distances.
- Convert cross street intersections to J-turn configurations to enhance safety and traffic flow.

- Extend left turn lanes to accommodate heavy-vehicle turning traffic and provide braking distance.
- Redirect eastbound-to-northbound left-turn traffic to turn right and proceed southbound to use U-turn.
- Restrict westbound traffic to right-turn only by implementing temporary curbs, signage, and markings.
- Monitor median access points and consider closing them if they create safety issues.

5.3 Long-Term Recommendations

- Plan high friction surface pavement as part of scheduled mill and overlay projects to ensure long-term skid resistance and safety improvements.
- Close medians to prevent unsafe turning movements and streamline traffic flow.
- Implement 3/4 intersections and J-turns to manage traffic safely and efficiently.
- Develop access management plans and implement them to enhance overall corridor safety.

By implementing these recommendations, MnDOT can improve the safety performance of US 169. The collaborative efforts of the RSA team, community members, and MnDOT will ensure that the proposed interventions are effectively executed, leading to a safer and more reliable transportation corridor for all road users.

5.4 Overarching Themes

The RSA report highlights several overarching themes that are critical to improving road safety along the US 169 corridor:

a. *Community Involvement*: The importance of community feedback in identifying safety concerns and shaping recommendations cannot be overstated. The RSA team collected and analyzed feedback from the community to understand local safety concerns and experiences.
b. *Holistic Approach*: The RSA team emphasized a holistic approach to ensure that short-term, medium-term, and long-term solutions were both feasible and effective.
c. *Collaboration*: The success of the RSA project relied on collaboration between various stakeholders, including MnDOT, Sherburne County, the Federal Highway Administration (FHWA), and Michael Baker International.

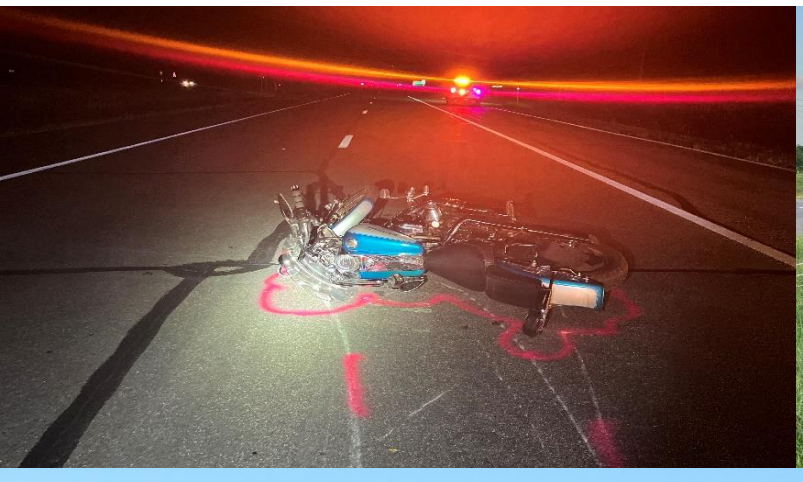
The RSA conducted for US 169 has provided valuable insights into the safety challenges and opportunities for improvement along the corridor. By implementing the recommended strategies, MnDOT and other stakeholders can enhance traffic safety performance, reduce the risk of crashes, and create a safer environment for all road users. The structured approach of the RSA ensures a thorough examination of safety issues and the development of effective strategies to enhance the safety performance of US 169 in Sherburne County, Minnesota.

APPENDIX A. US 169 – BRIEFING BOOK

Michael Baker INTERNATIONAL

US Route 169 – ROAD SAFETY AUDIT
Sherburne County, MN

Briefing Book

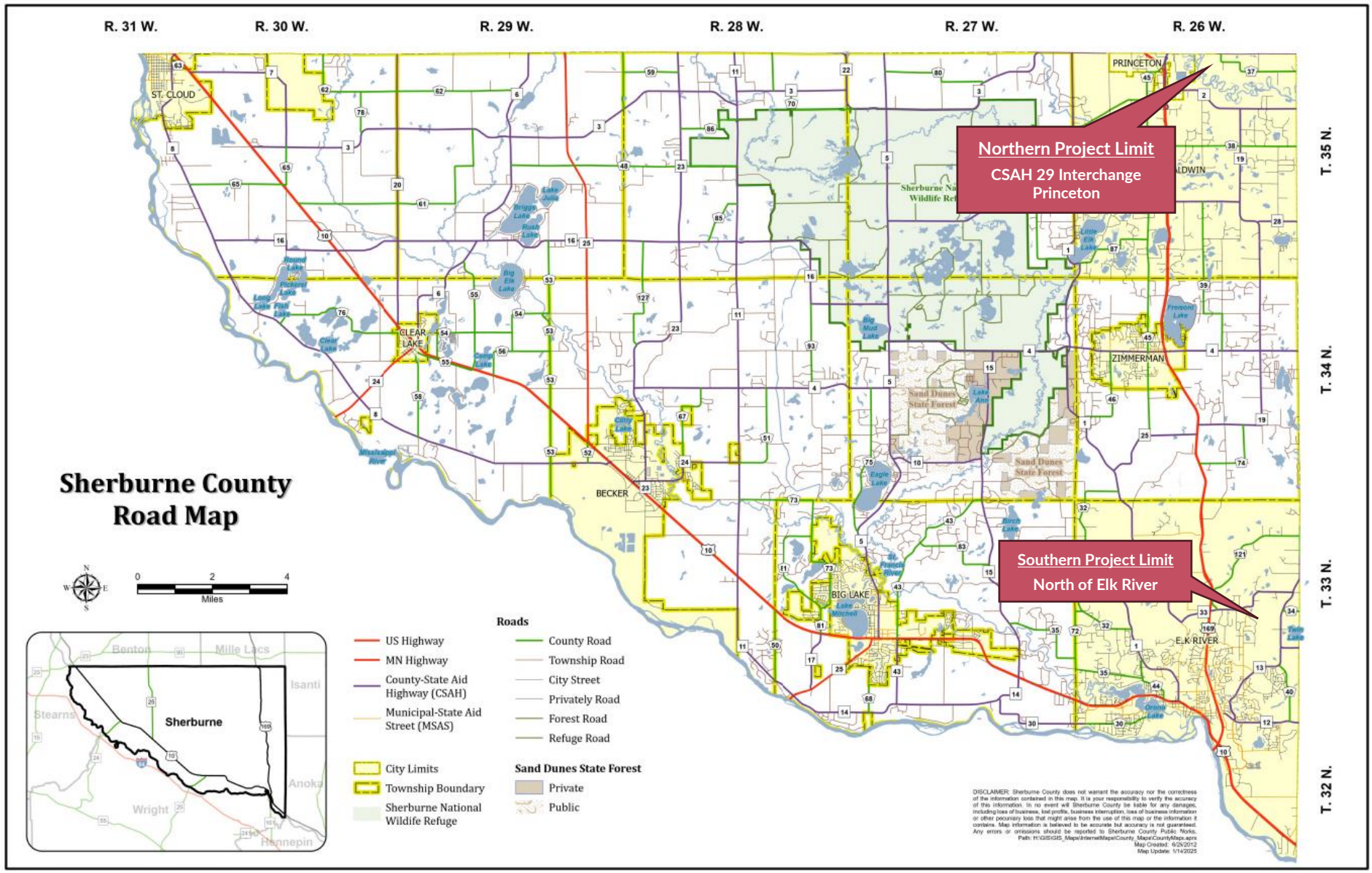






DEPARTMENT OF TRANSPORTATION

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1. Road Safety Audit (RSA)

A Road Safety Audit (RSA) is the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in safety for all road users based on FHWA RSA guidelines.

1.1. Goal of RSA

The primary goal of the US 169 RSA is to identify areas where safety performance does not align with the expected standards for the roadway setting. The audit aims to propose strategies to enhance the safety of all road users.

2. Purpose of the Briefing Book

The primary purpose of this briefing book is to provide the RSA team with a comprehensive overview of the existing roadway and traffic conditions, and safety issues along the US Highway 169 corridor. This pre-audit report is designed to equip the RSA team with the necessary background information to conduct an effective and thorough audit.

The briefing book will encompass the following key elements:

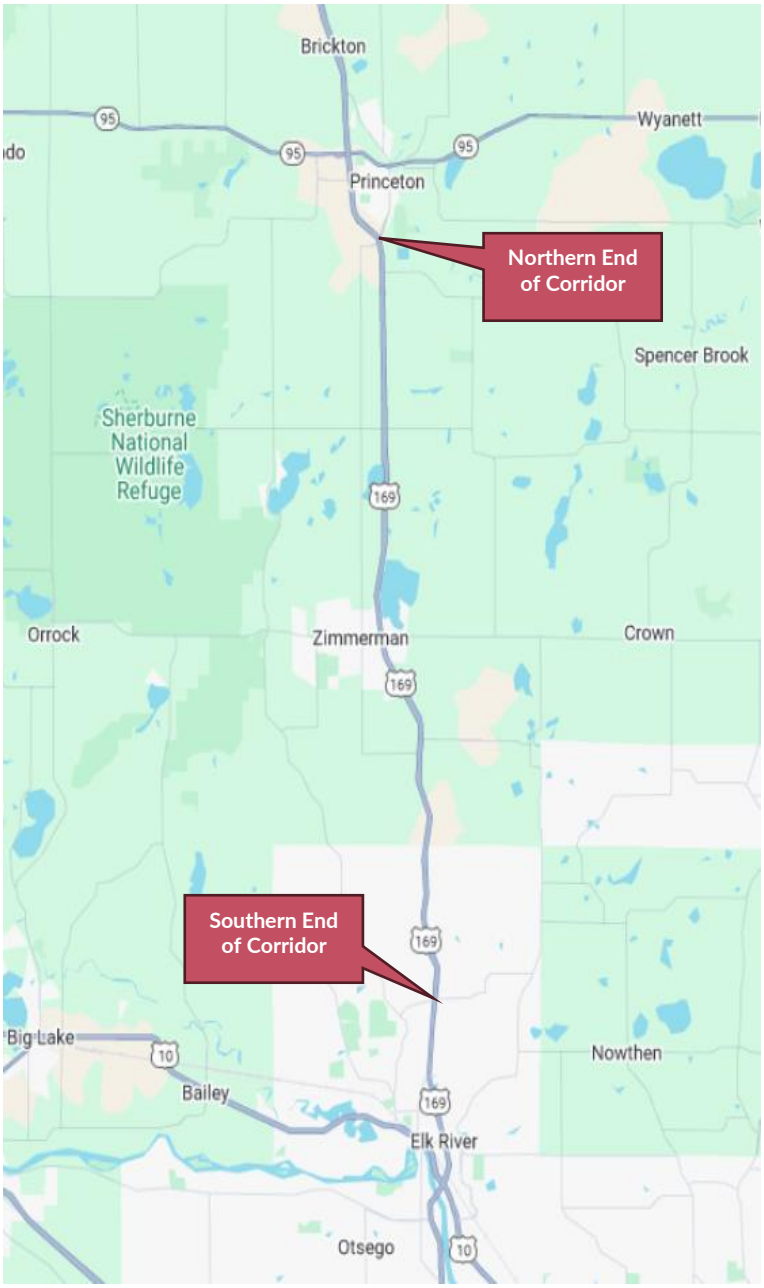
- **Existing Traffic Conditions**: A detailed analysis of current traffic conditions, including traffic volumes and speeds. This section will present data collected from multiple strategic locations along the corridor, highlighting peak traffic times, average speeds, and areas where speed limits may be exceeded or traffic flow may be impeded.
- **Existing Roadway Conditions:** An assessment of the physical conditions of the roadway, including geometry, speed limits, pavement quality, signage, lighting, and other infrastructure elements. This section will identify any deficiencies that may contribute to crashes.
- **Crash Data Analysis**: A comprehensive examination of crash data along the corridor. This analysis will identify crash clusters, common types of collisions, and contributing factors to these incidents. The goal is to identify specific locations and conditions that require targeted safety improvements.
- **Public Engagement Feedback**: A summary of comments and feedback gathered from the public engagement tool. This section will reflect the concerns and suggestions of local residents, commuters, and other stakeholders, providing valuable insights into perceived safety issues and potential areas for improvement.

Based on the information presented in the briefing book, the RSA team will identify multiple locations for detailed field visits during the RSA field review. These site visits will allow the team to observe on-site conditions, validate data findings, and develop practical recommendations for enhancing road safety along the US Highway 169 corridor.

3. Study Corridor

The study corridor extends from the County State Aid Highway (CSAH) 33 Interchange in Elk River to the CSAH 29 Interchange in Princeton, Minnesota, covering a total length of approximately 15 miles.

This corridor features a four-lane highway divided by depressed median. It serves a diverse range of traffic including daily commuters, recreational travellers on weekends and in summer, and significant truck traffic originating from the quarries of crushed stones and concrete plants located near the southern end of the project area.



Key Characteristics of the corridor include:

- 39 Intersections: includes T-intersections, and 4-legged intersections with median cross-over
- Multiple J-turns were constructed in the last few years.
- Three interchanges

It is important to note that a road segment of approximately 1.8 miles, from 255th Avenue (0.8 miles south of Zimmerman) to the north side of Zimmerman, is excluded from this project. This segment includes the intersection of US 169 and County Road 4 (CR 4), which is planned for conversion to an interchange. This anticipated improvement is expected to significantly enhance the safety performance of this segment of US 169.

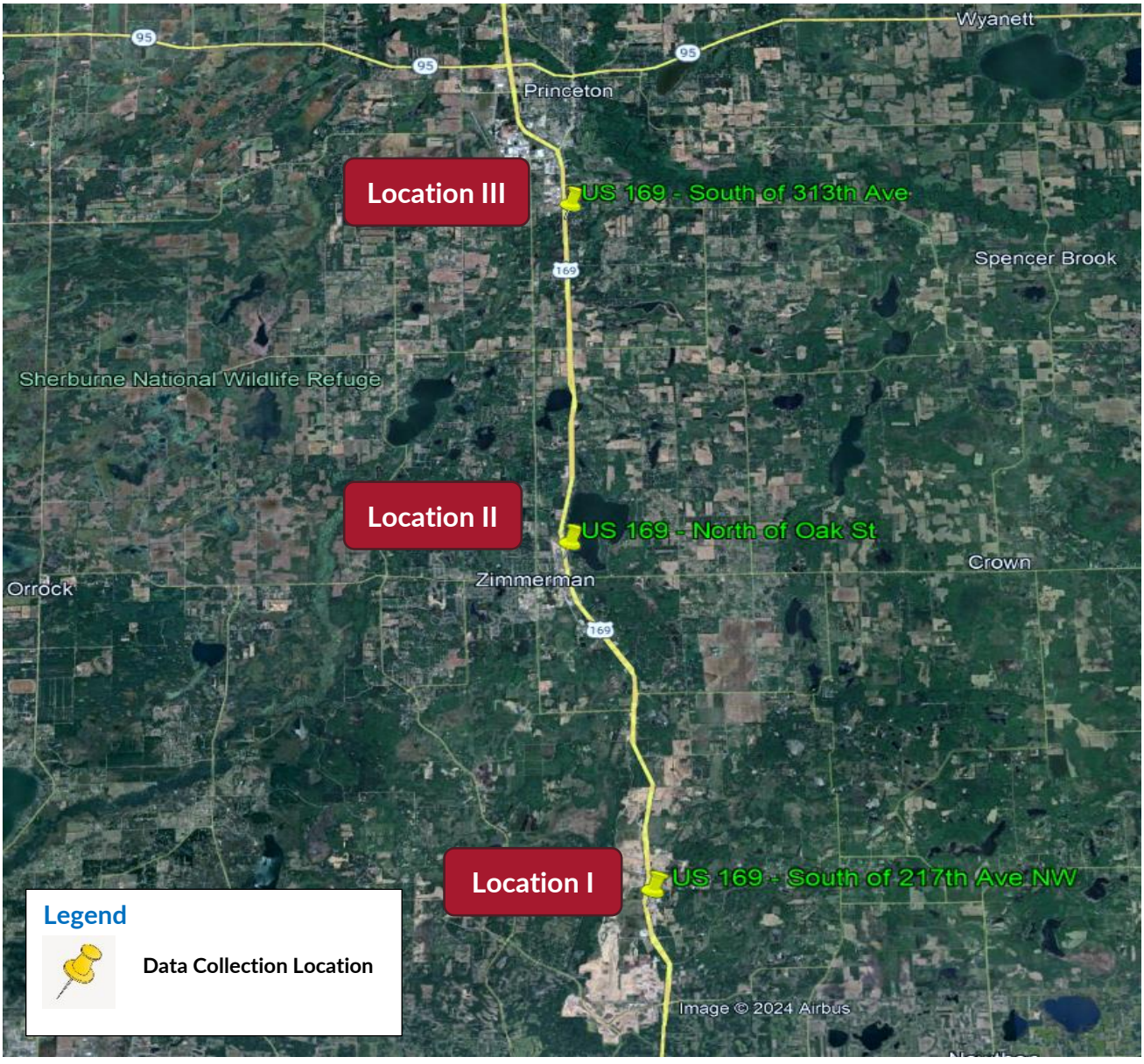
4. Traffic Conditions

Traffic data were collected at three strategic locations along US Highway 169. This data collection effort included both traffic volume and speed data, providing a comprehensive snapshot of traffic conditions over a one-week period from December 5, 2024, to December 11, 2024.

Key aspects of the traffic data collection include:

- **Traffic Volume Data**: This data captures hourly traffic counts, helping to identify peak traffic times and overall traffic trends throughout the day for both weekdays and weekends.
- **Traffic Speed Data**: A statistically valid sample of speeds was collected at each of the three data collection sites on different weekdays. This data provides insight into the average speeds of vehicles, highlighting areas where speed limits may be exceeded or where traffic flow may be impeded.

The collected data is crucial for understanding current traffic conditions and identifying potential safety issues within the corridor. This information will inform the safety audit team and will help in the development of targeted recommendations to improve safety performance along the US 169 corridor.



4.1. Traffic Volume

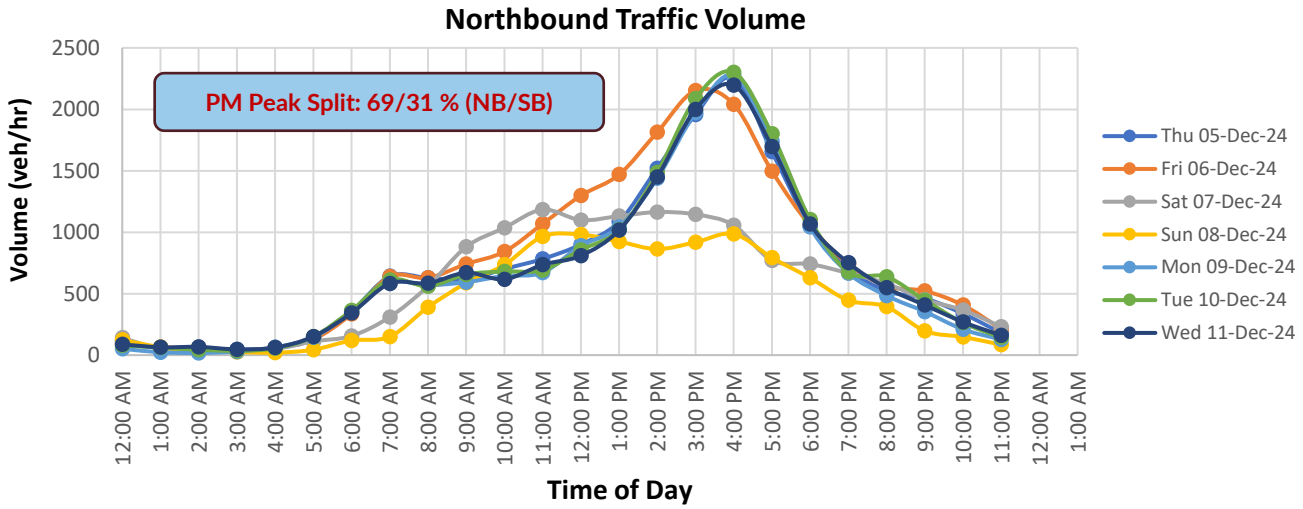
Traffic volume data collected at three locations along US 169 reveal distinct peak hour patterns for both northbound and southbound traffic.

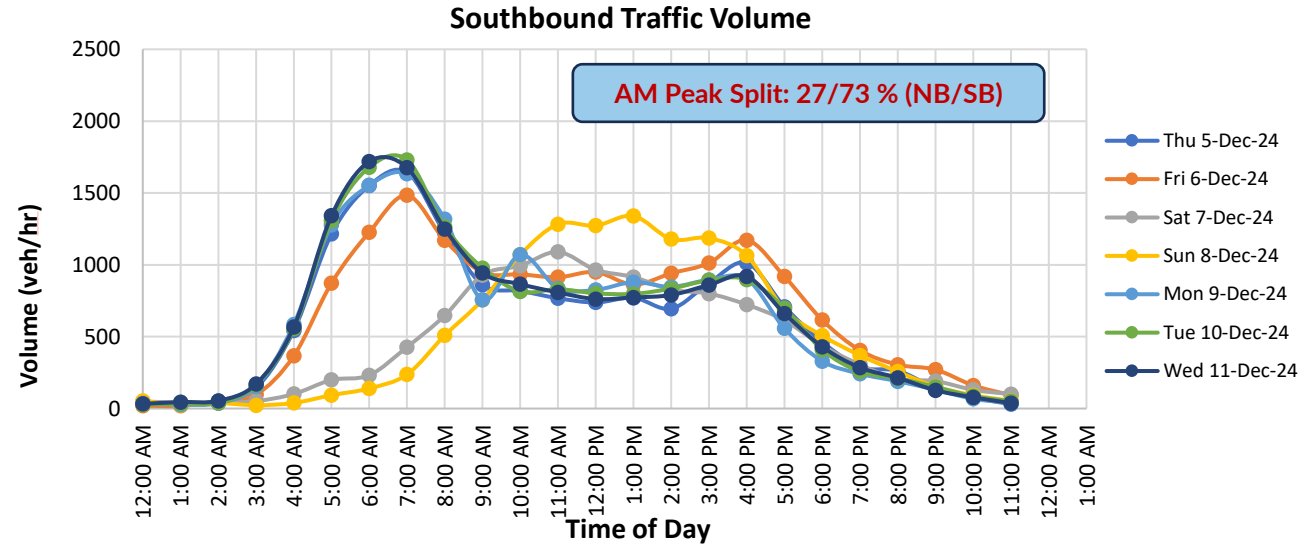
Location I: South of 217th Ave NW

This data collection site is located approximately 4.5 miles north of Elk River. The daily traffic volume trend plots provide the following insights:

- **Northbound Traffic**: The peak hour for northbound traffic occurs during the evening, with hourly volumes exceeding 2,300 vehicles per hour. This indicates a significant flow of vehicles heading northbound during the evening commute, likely due to residents returning home from work or other activities.
- **Southbound Traffic**: Conversely, the peak hour for southbound traffic is observed during the morning, with traffic volumes around 1,700 vehicles per hour. This suggests a high volume of vehicles traveling southbound during the morning commute, likely due to residents heading to work or school.

The traffic patterns on weekdays exhibit a consistent trend, with similar peak hours and volumes observed each day. Additionally, traffic patterns on Saturdays and Sundays show a different distribution, indicating that weekend traffic follows a different trend to that of weekdays.

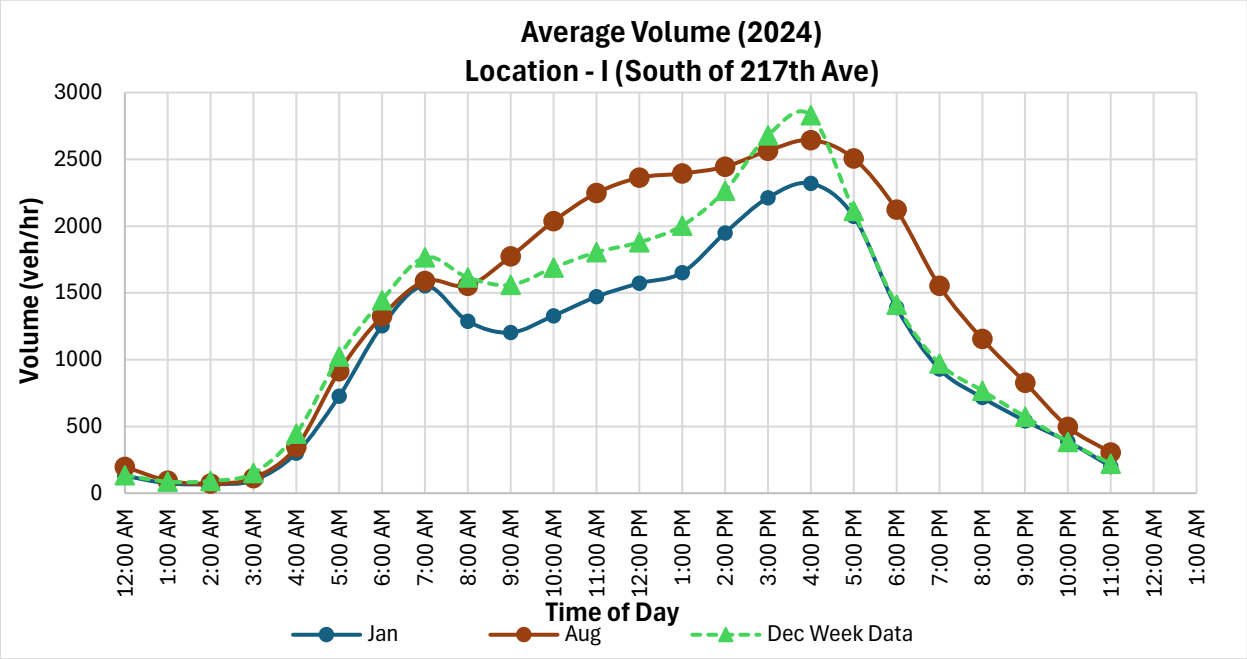




Seasonal Traffic Volume Analysis

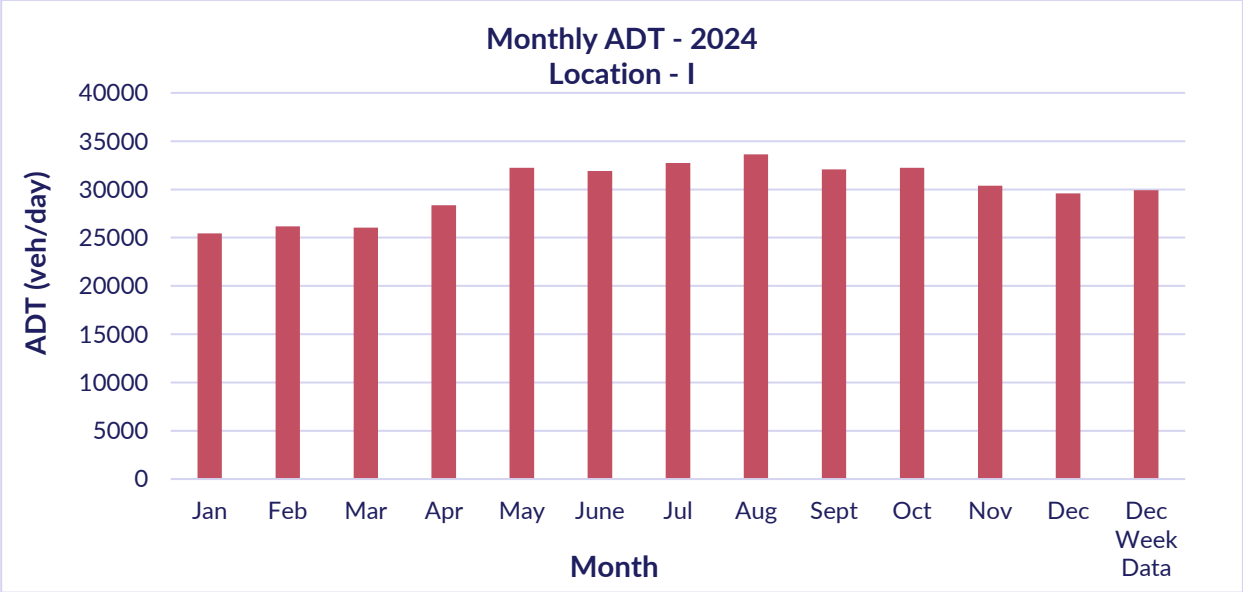
To identify seasonal trends in traffic volume, we utilized StreetLight data to compare our collected traffic data for a week in December 2024 with traffic volumes from August 2024.

The following plot illustrates the average bi-directional traffic volumes. The hourly volume trend lines for most months of the year fall between the highest volume observed in August and the lowest volume in January. This data was obtained from StreetLight. Additionally, the plot shows the average hourly volume trend line for the data we collected over one week in December 2024. This comparison provides valuable insights into how traffic volumes vary between winter and summer months, helping us understand the seasonal impacts on traffic flow and safety.



Note: *"Dec Week Data" represents traffic data collected over one week in December 2024.*

Monthly Variation in Traffic Volumes (StreetLight Data)



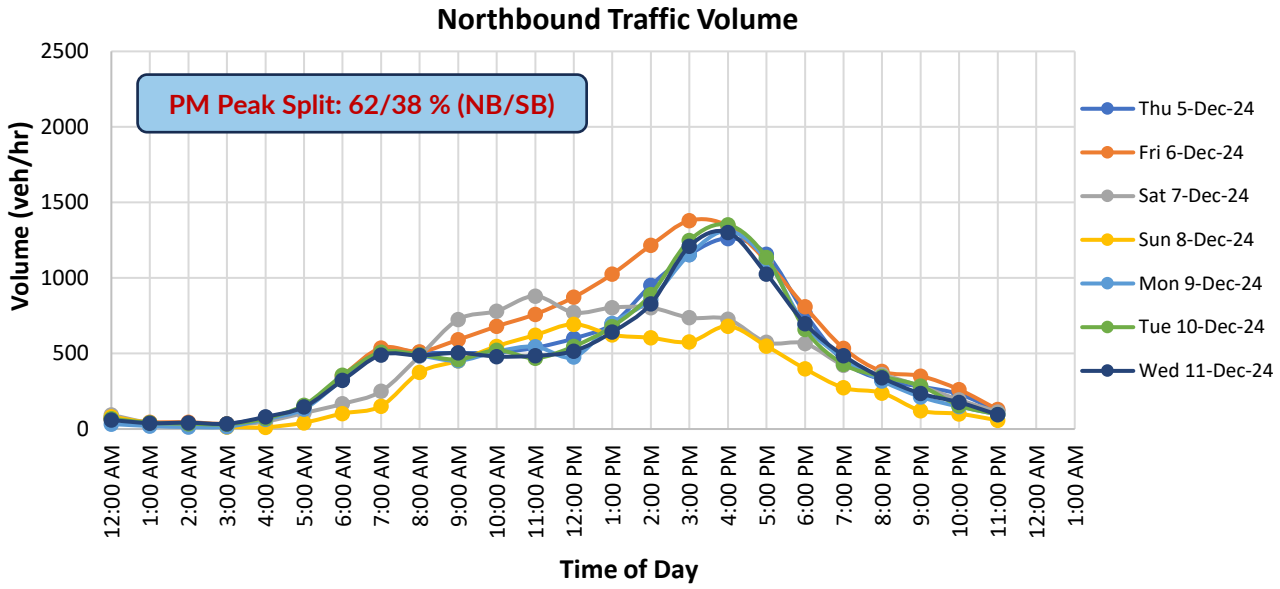
Note: *"Dec Week Data" represents traffic data collected over one week in December 2024.*

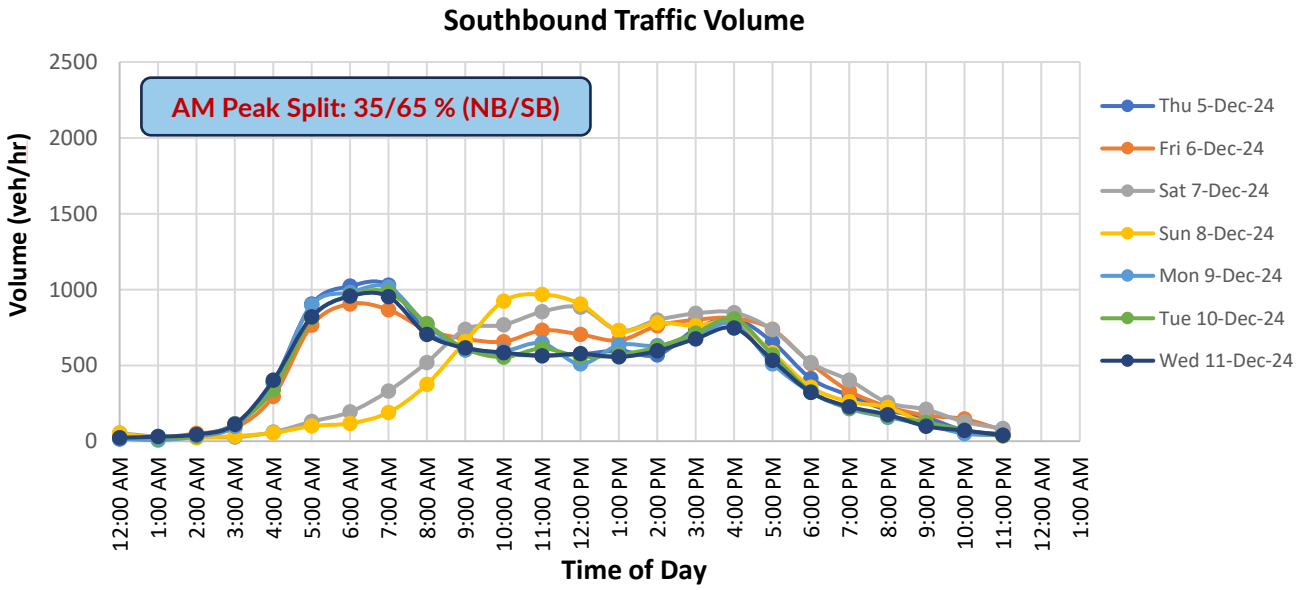
Location II: North of Oak St (Zimmerman)

This data collection site is located approximately 0.3 miles north of the intersection of US 169 and CR 4 in Zimmerman. The daily traffic volume trend plots provide the following insights:

- **Northbound Traffic**: The peak hour for northbound traffic occurs during the evening, with hourly volumes exceeding 1,300 vehicles per hour.
- **Southbound Traffic**: Conversely, the peak hour for southbound traffic is observed in the morning, with traffic volumes around 1,000 vehicles per hour.

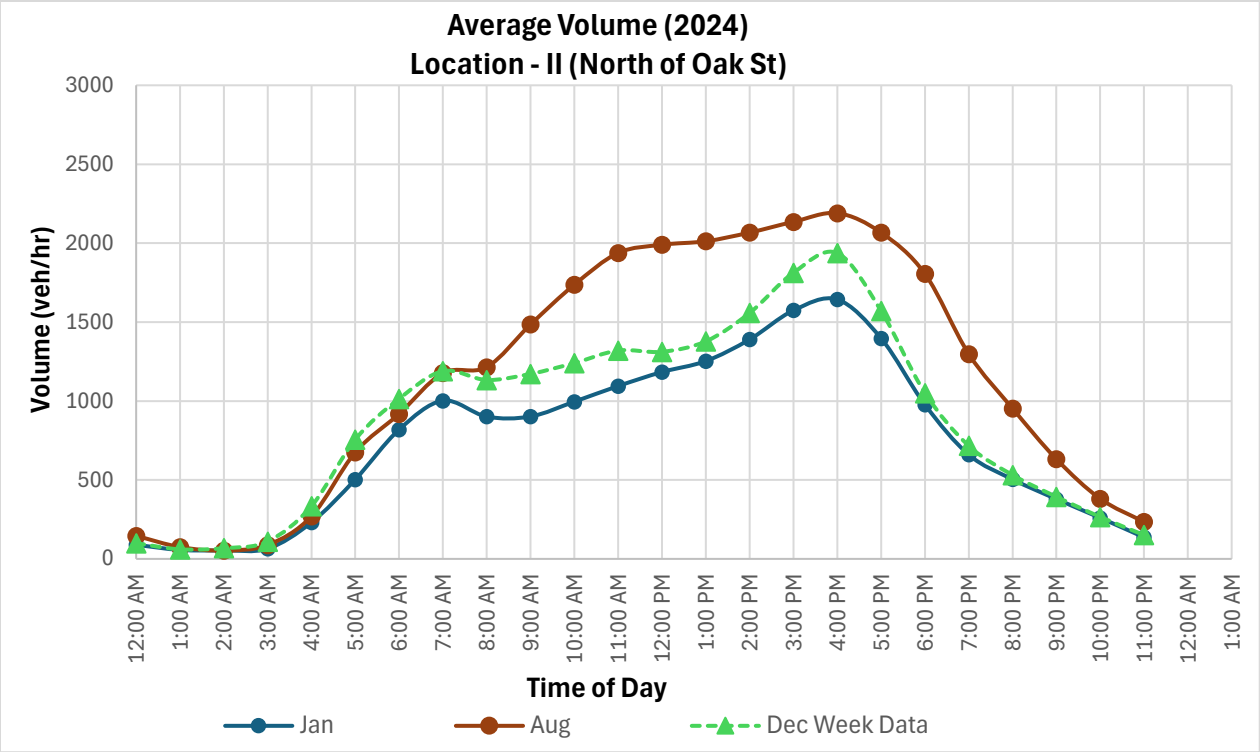
Traffic volumes at this location are significantly lower compared to the first location, which exists between Elk River and Zimmerman. The data collection site at Location II is positioned between Zimmerman and Princeton, where traffic patterns may be influenced by the more rural and less densely populated surroundings.





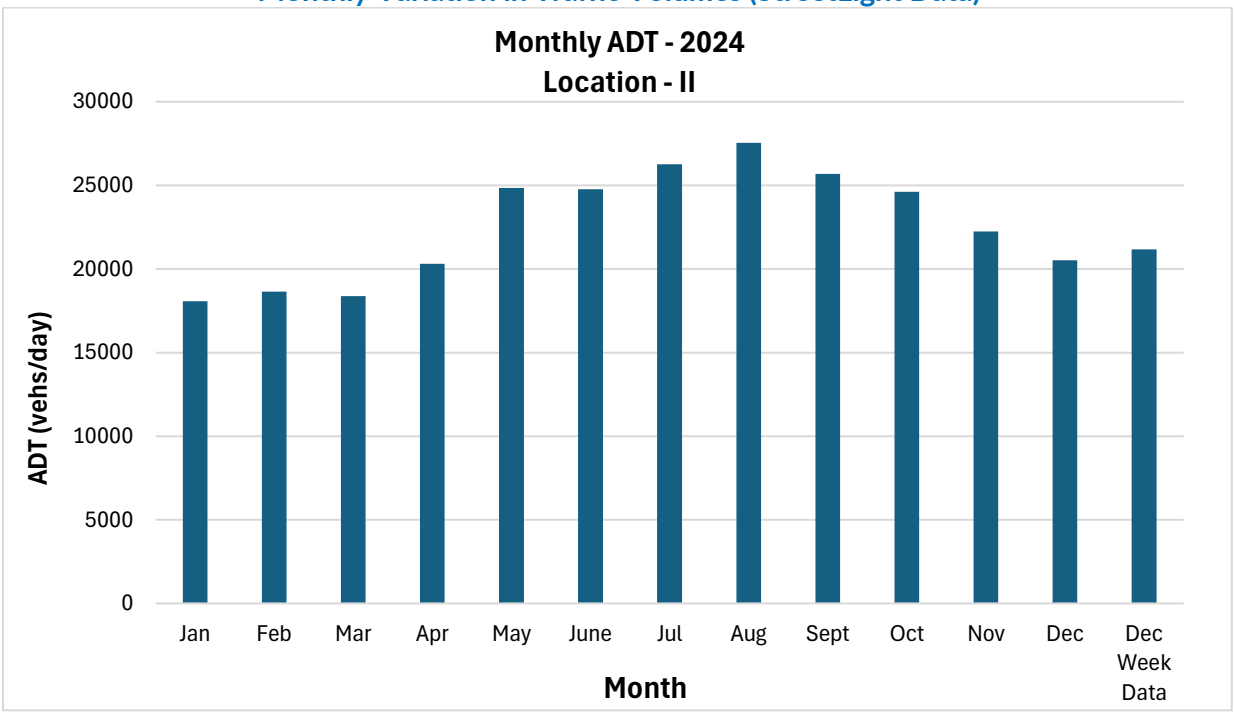
Seasonal Traffic Volume Analysis

The following plot presents the bi-directional average traffic volumes at Location II.



Note: *"Dec Week Data" represents traffic data collected over one week in December 2024.*

Monthly Variation in Traffic Volumes (StreetLight Data)



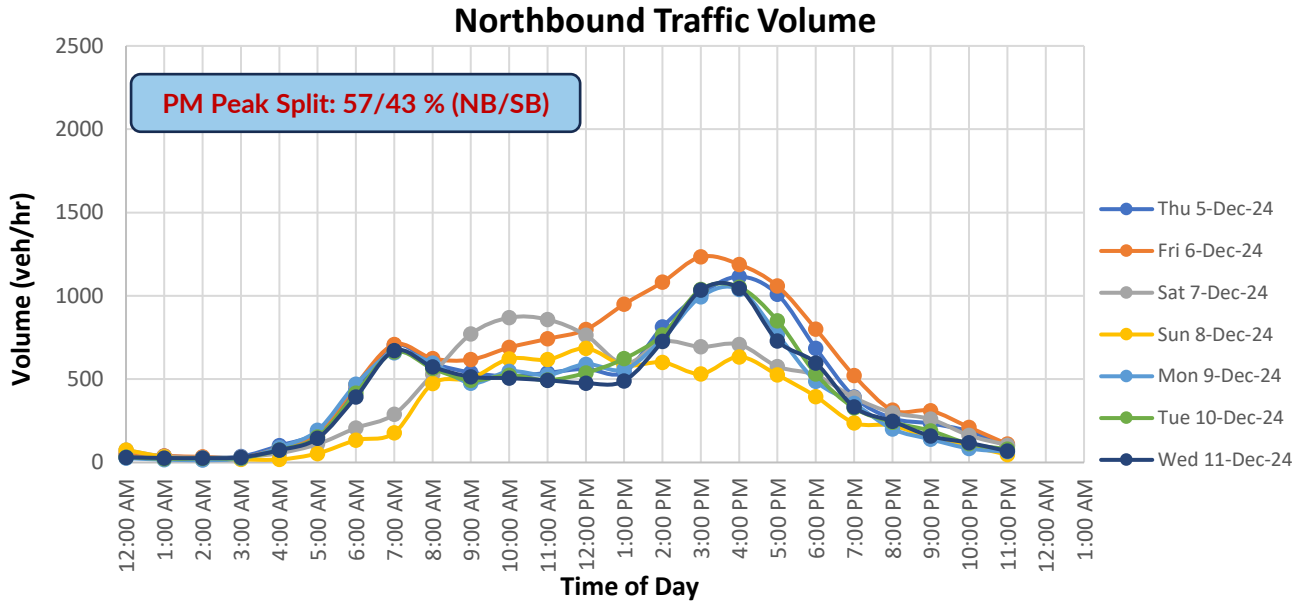
Note: *"Dec Week Data" represents traffic data collected over one week in December 2024.*

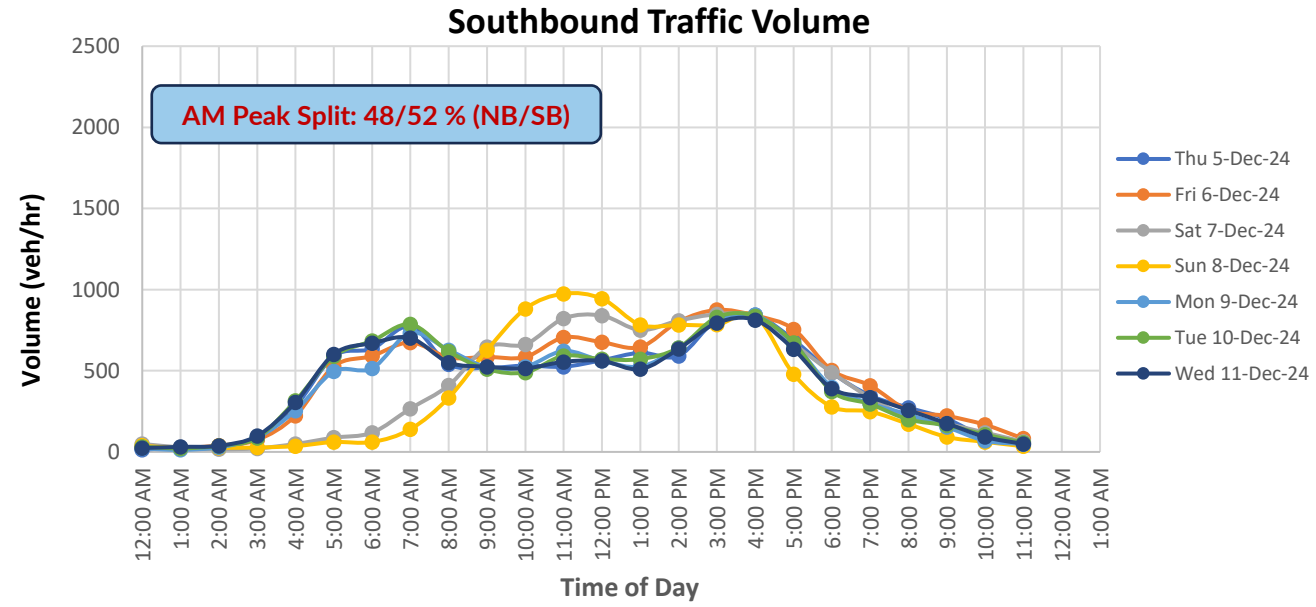
Location III: South of 313th Ave (Princeton)

This data collection site is located approximately 1.2 miles south of the interchange of US 169 and CSAH 29 in Princeton. The daily traffic volume trend plots provide the following insights:

- **Northbound Traffic**: The AM peak hour volumes were approximately 670 vehicles per hour, while the PM peak hour volumes exceeded 1,050 vehicles per hour. This indicates a moderate flow of northbound traffic during the morning commute, with a significant increase in volume during the evening commute.
- **Southbound Traffic**: For southbound traffic, the AM peak hour volumes were around 750 vehicles per hour, and the PM peak hour volumes exceeded 800 vehicles per hour. This suggests a steady flow of southbound traffic during both the morning and evening commutes.

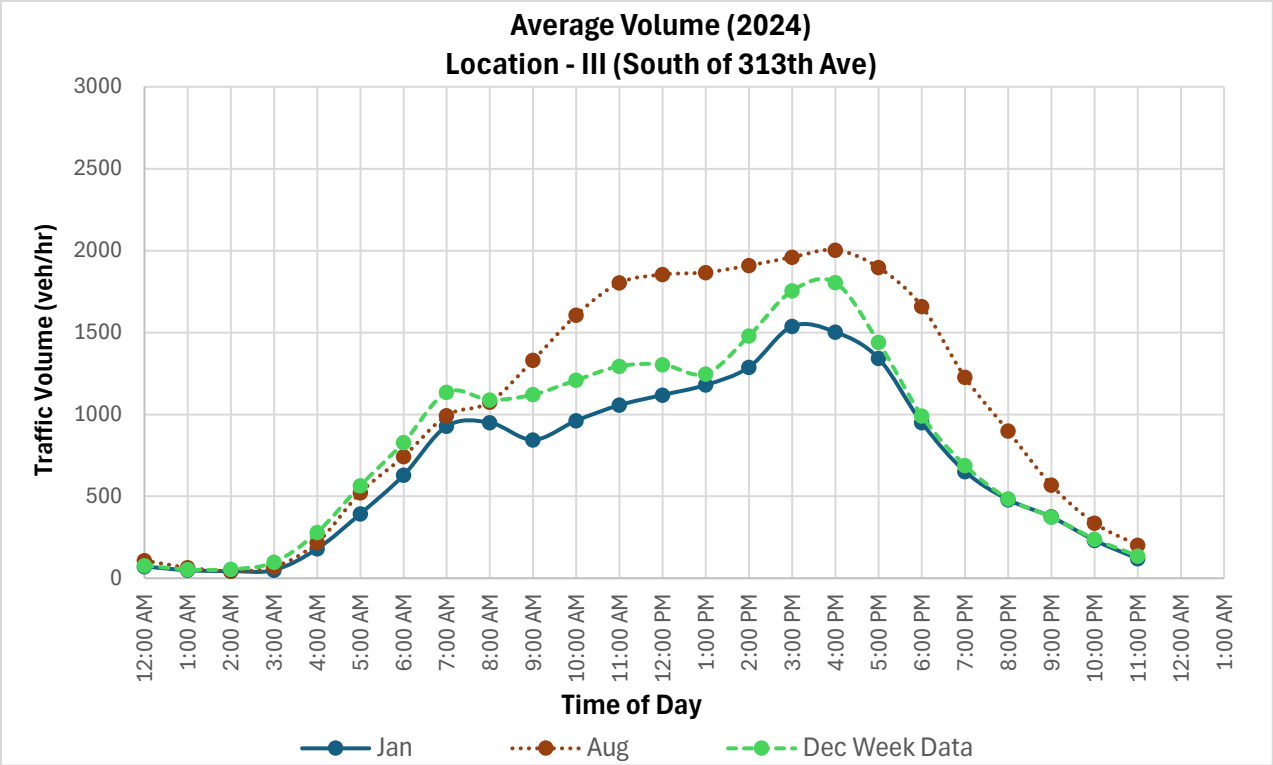
Traffic volumes at this location are significantly lower compared to the first and second data collection locations. This is likely due to the majority of traffic being concentrated between Zimmerman and Elk River.





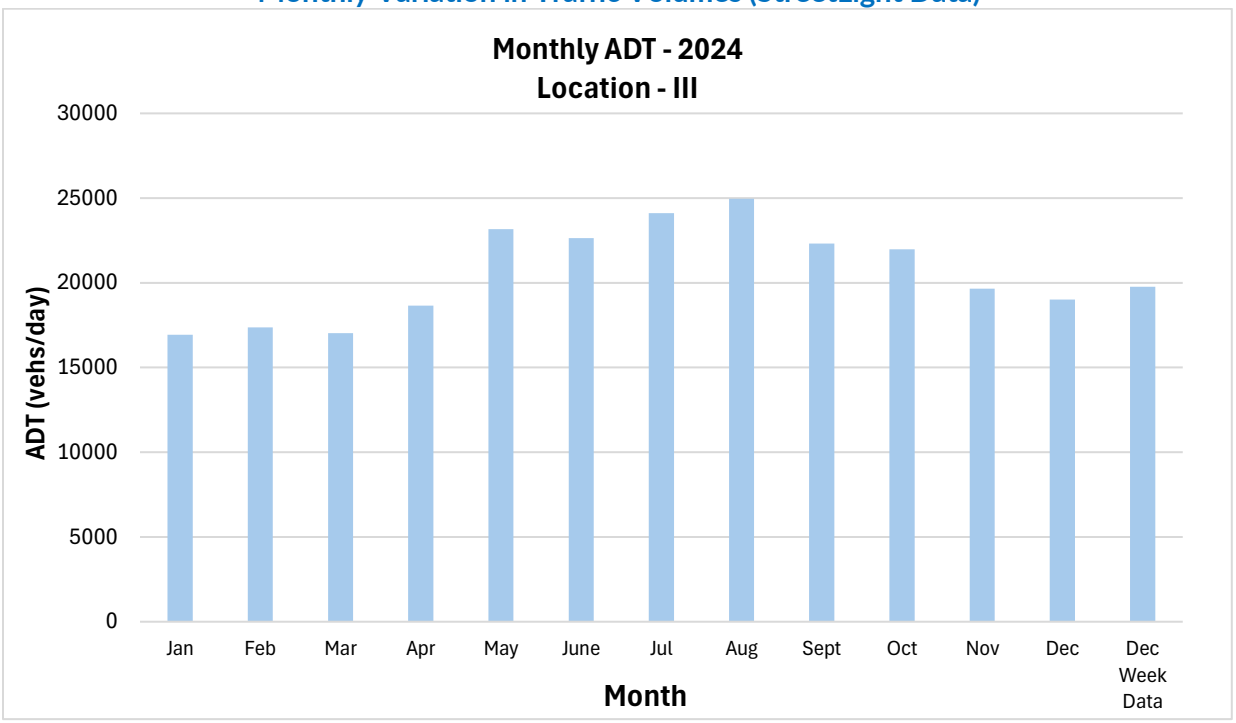
Seasonal Traffic Volume Analysis

The following plot presents the bi-directional average traffic volumes at Location III.



Note: *"Dec Week Data" represents traffic data collected over one week in December 2024.*

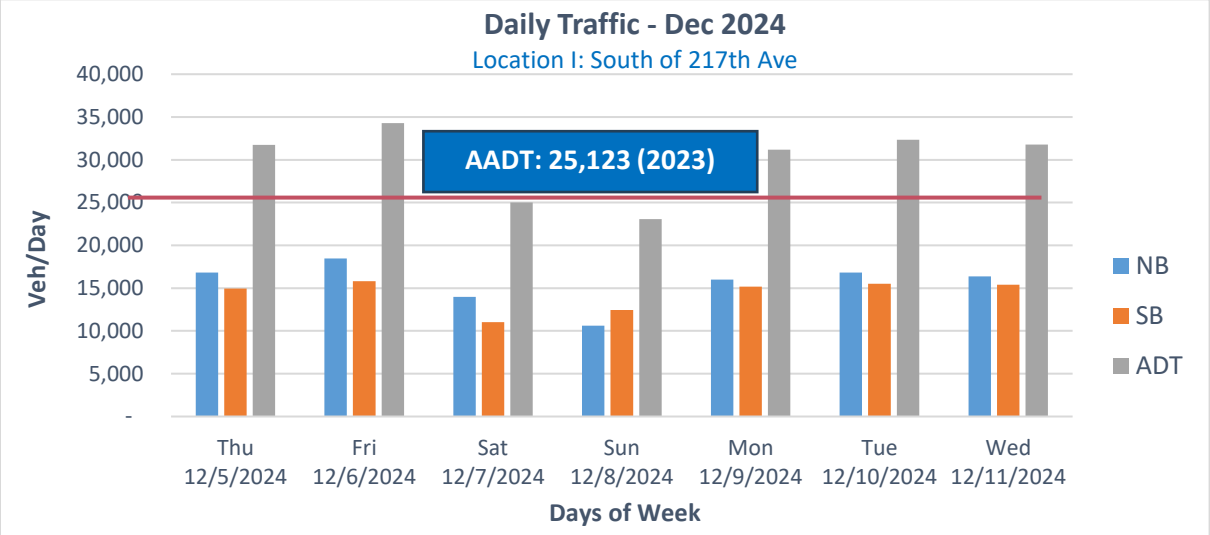
Monthly Variation in Traffic Volumes (StreetLight Data)

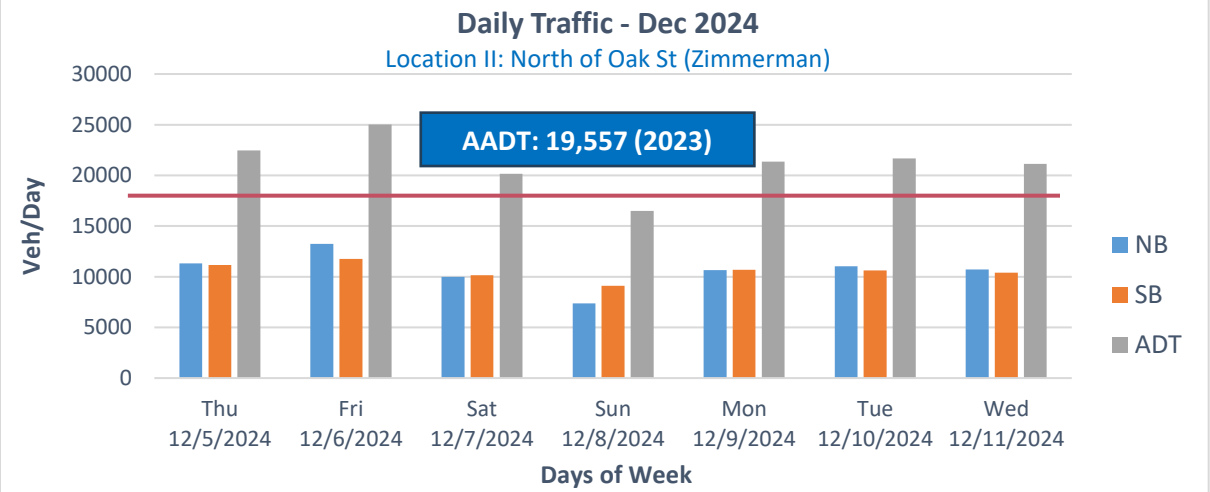


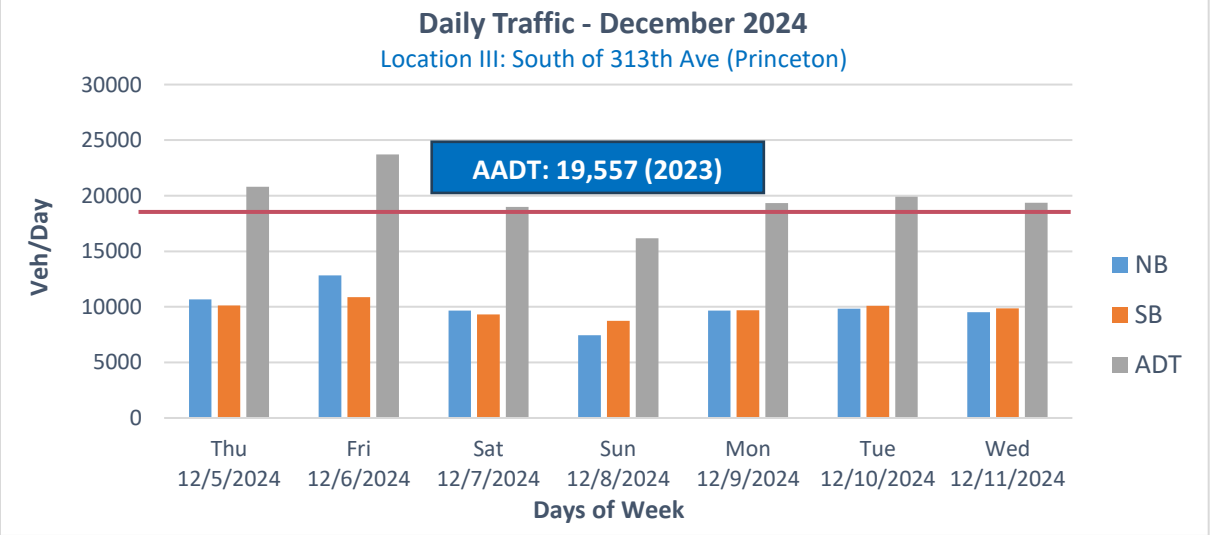
Note: *"Dec Week Data" represents traffic data collected over one week in December 2024.*

4.1.1. Daily Traffic (2024)

The following plots illustrate the daily traffic along US Highway 169 on different days of the week in December 2024. These plots provide a detailed overview of traffic patterns, highlighting variations in traffic volumes throughout the week. For comparison purposes, the annual average daily traffic (AADT) for the year 2023 along US Highway 169 is also included.

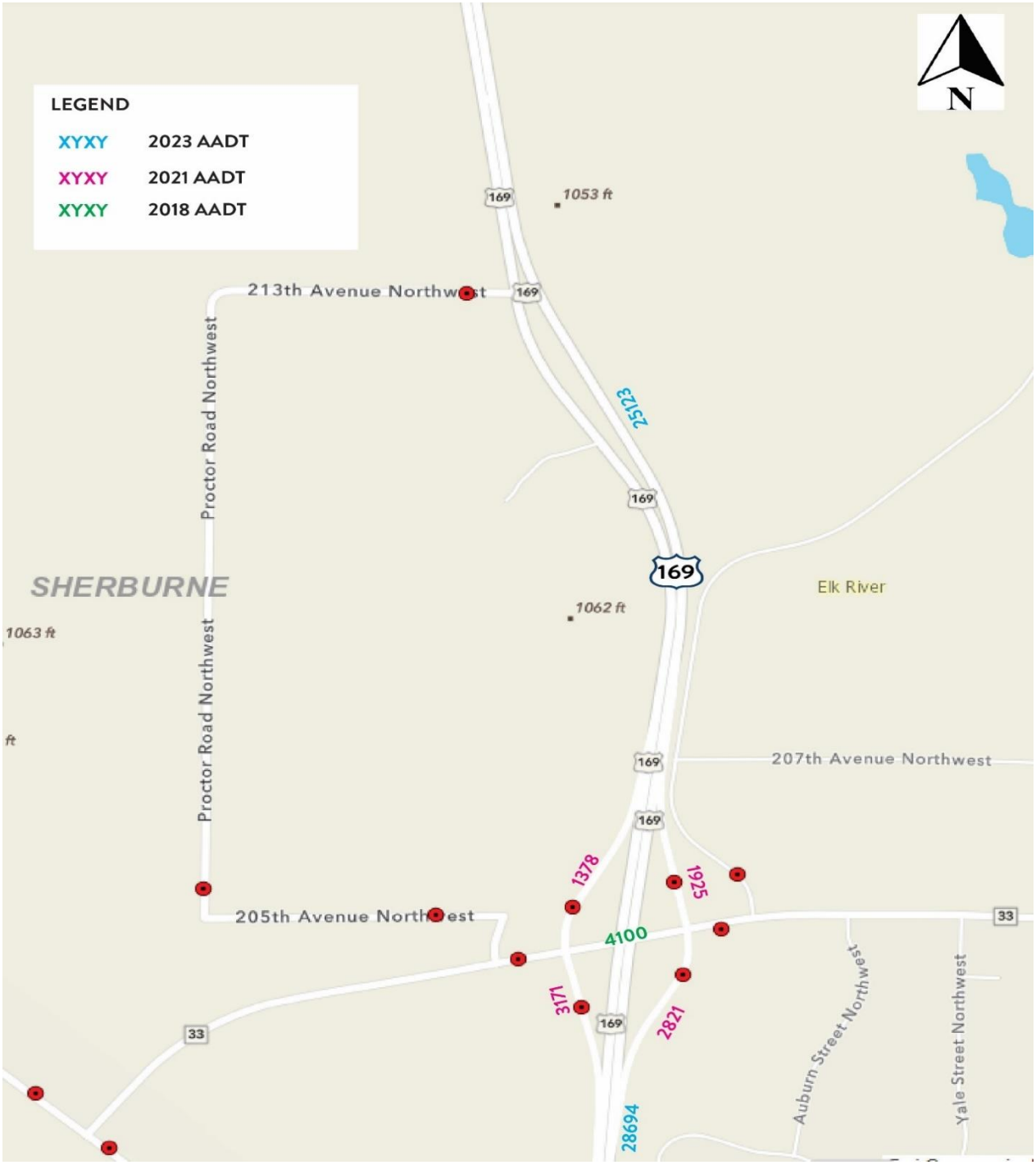




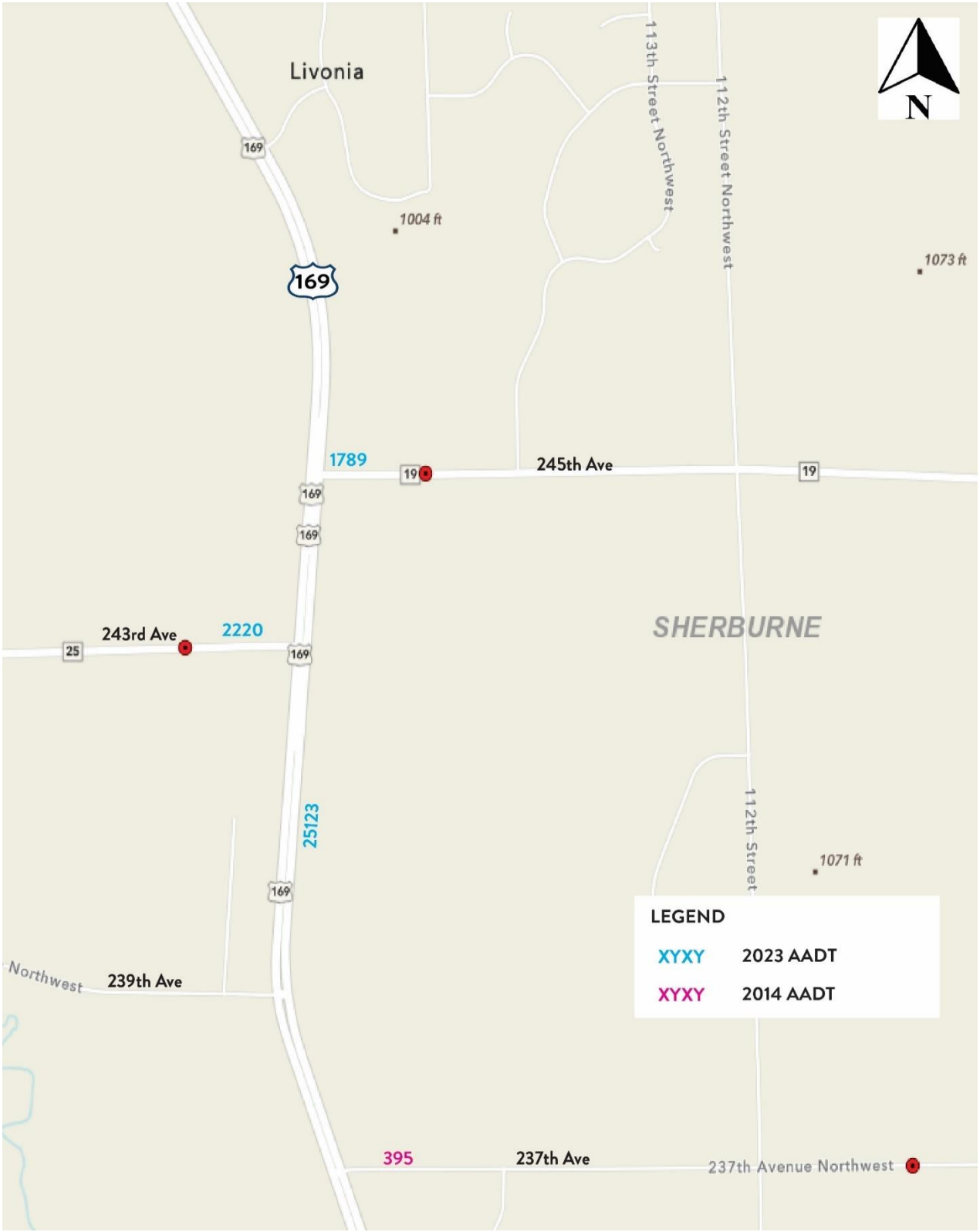


4.1.2. AADT from MnDOT Traffic Mapping Application

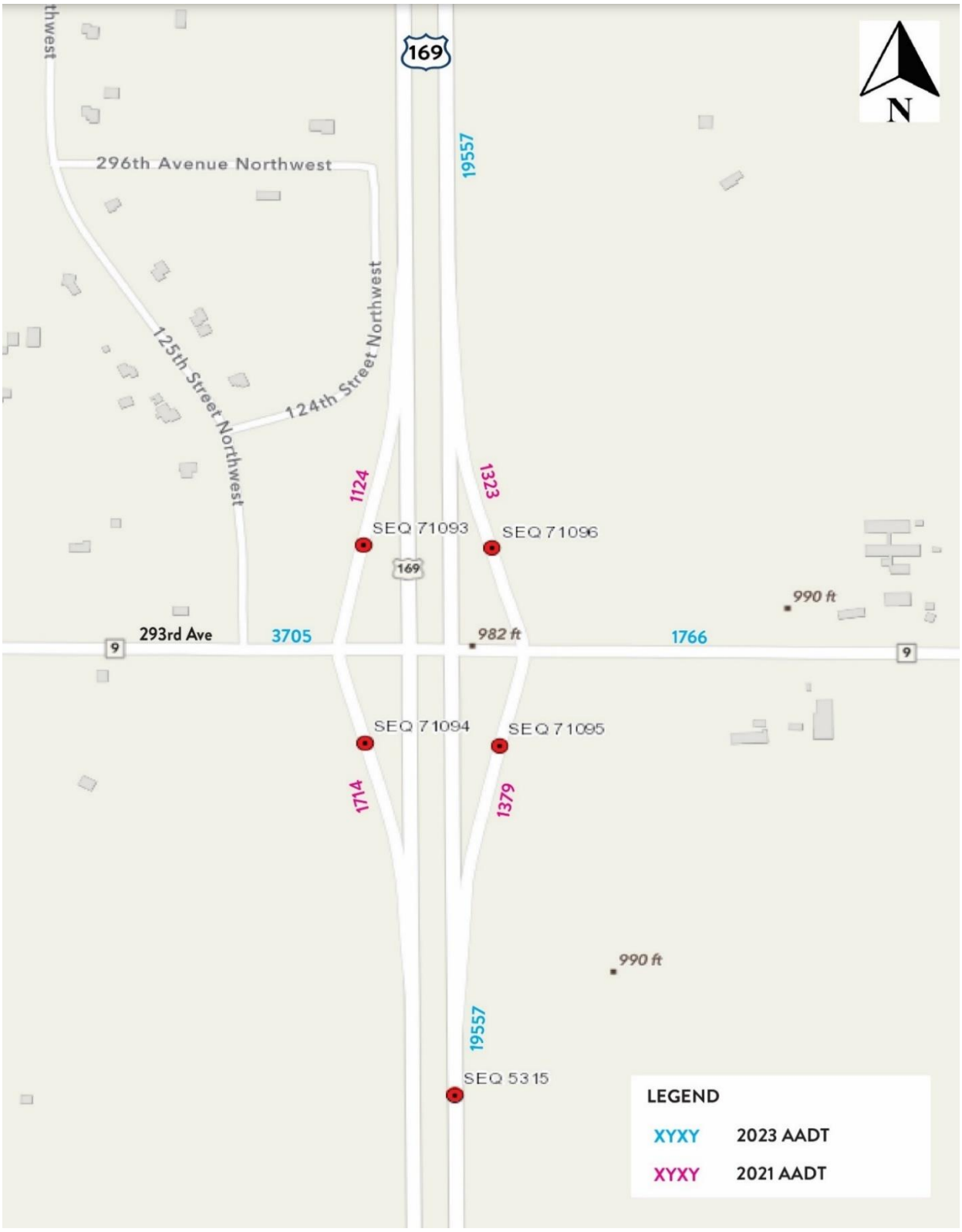
The traffic data presented in the preceding sections were collected exclusively along the mainline corridor of US Highway 169 and during the month of December. To gain a more comprehensive understanding of traffic patterns along the connected roadways, ramps, and the entire US 169 corridor, Annual Average Daily Traffic (AADT) data from the MnDOT Traffic Mapping Application is presented on the following maps.



AADT Maps (1 of 4)



AADT Maps (2 of 4)



AADT Maps (3 of 4)



AADT Maps (4 of 4)

4.2. Traffic Speed

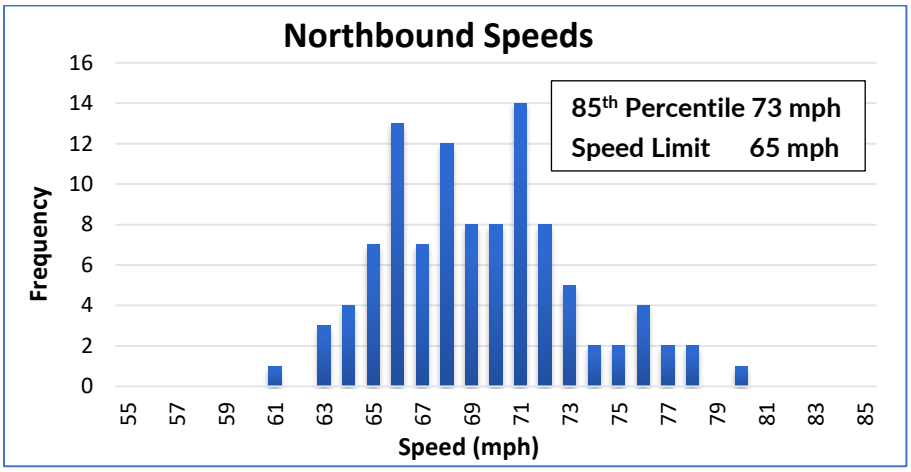
Traffic speed data was collected from a statistically valid sample of vehicles at each of the three data collection sites on weekdays. This data collection effort provides valuable insights into vehicle speed statistics, 85th percentile speeds, and pace. The data highlights areas where speed limits may be exceeded.

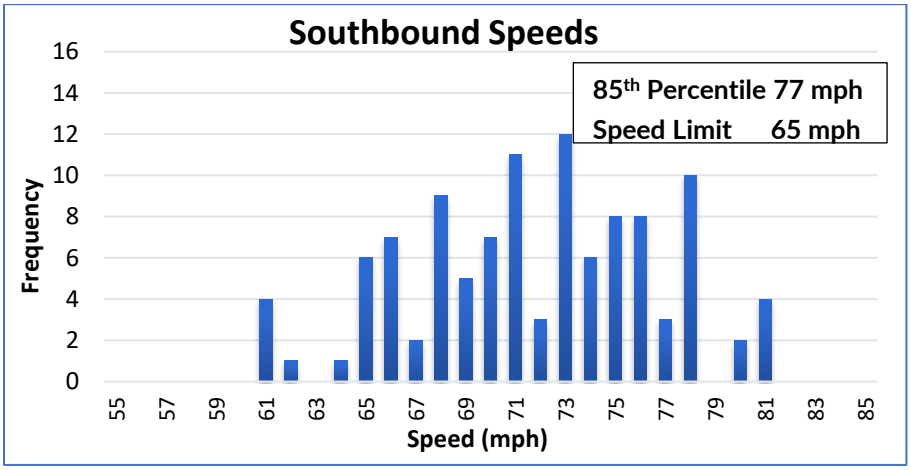
Key aspects of the traffic speed data collection include:

- **85th Percentile Speed**: This statistic indicates the speed at or below which 85% of vehicles are traveling, helping to identify the typical driving behavior and potential speeding issues.
- **Pace**: This refers to the range of speeds within which the majority of vehicles are traveling, providing insights into the consistency of traffic flow.

The data was collected around 1:00 PM on a Monday in December 2024, ensuring a representative free flow sample of weekday traffic conditions. Understanding these speed patterns is crucial for identifying potential safety issues and developing targeted recommendations to improve safety performance along the US Highway 169 corridor.

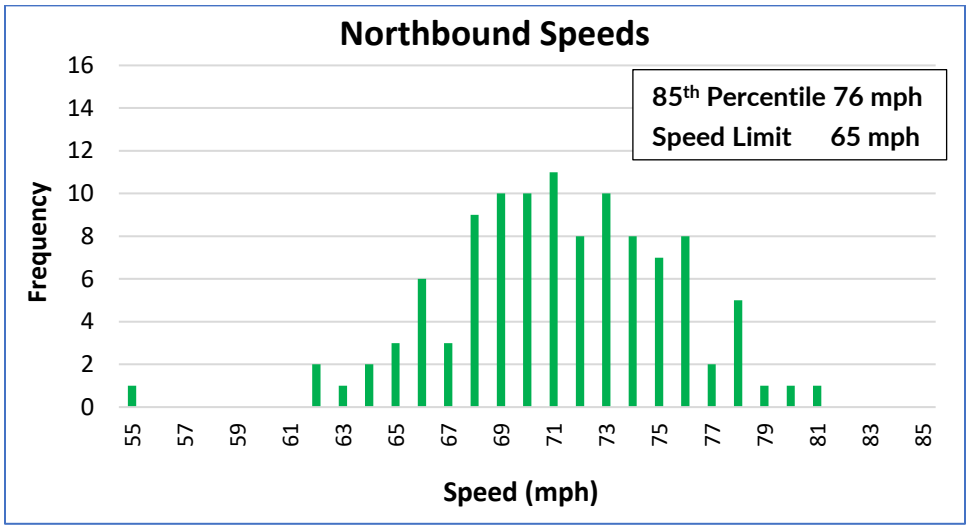
Location I: South of 217th Ave NW

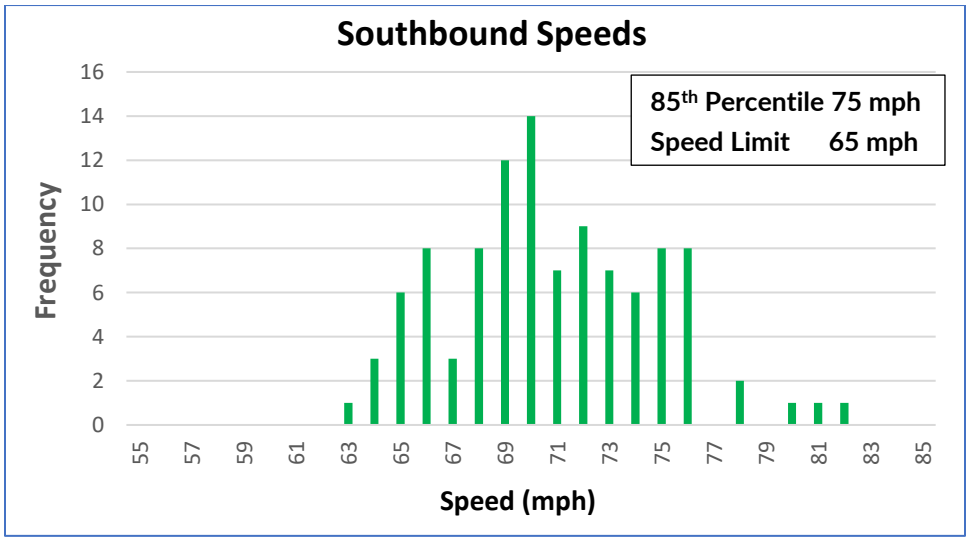




Direction	Class	Count	Posted Speed Limit (mph)	Range	50th %	85th %	10 MPH Pace	# in Pace	% in Pace	# Below Pace / %	# Above Pace / %
NB	ALL	103	65	61-80	69	73	64-73	86	83.5%	4 / 3.9 %	13 / 12.6%
SB	ALL	109	65	61-81	72	77	69-78	73	67.0%	30/27.5%	2 / 1.8%

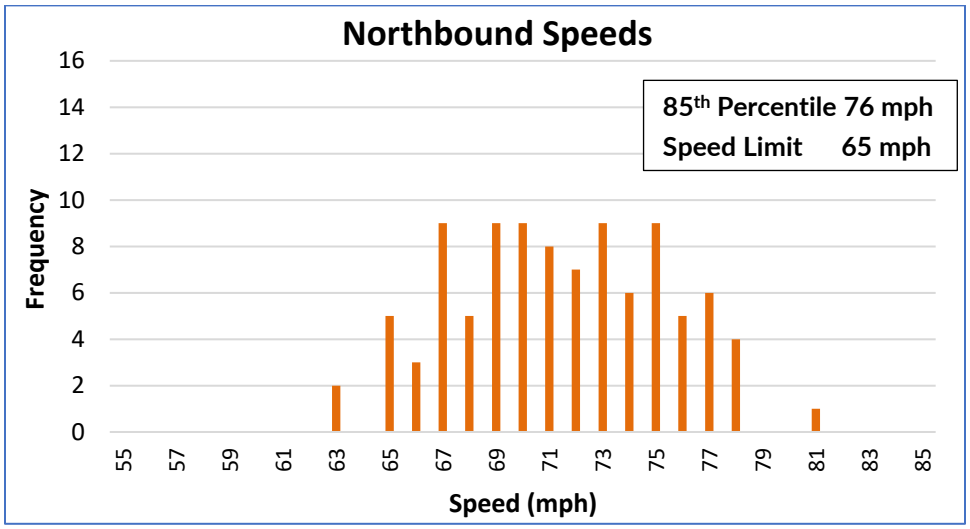
Location II: North of Oak St (Zimmerman)

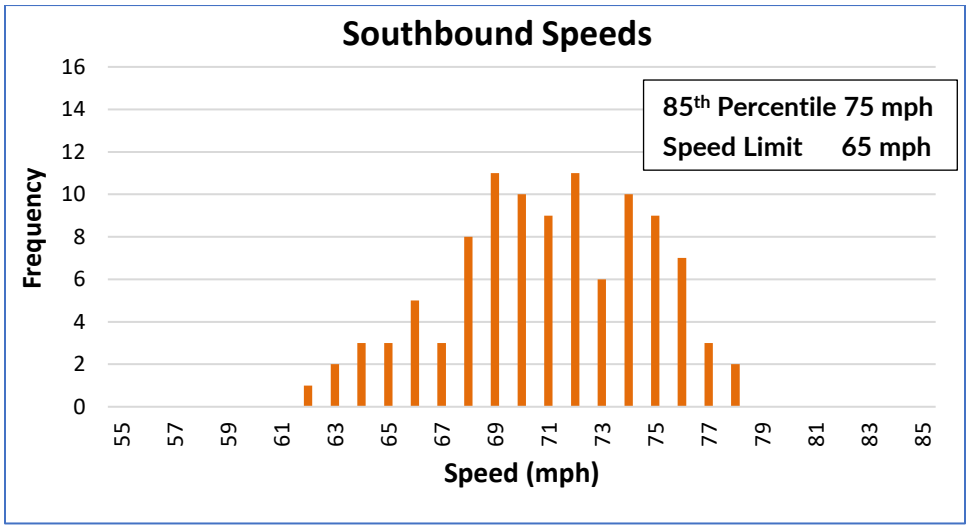




Direction	Class	Count	Posted Speed Limit (mph)	Range	50th %	85th %	10 MPH Pace	# in Pace	% in Pace	# Below Pace / %	# Above Pace / %
NB	ALL	109	65	55-81	71	76	67-76	84	77.1%	15 / 13.8%	9 / 8.3%
SB	ALL	105	65	63-82	70	75	67-76	82	78.1%	10 / 9.5%	11 /10.5%

Location III: South of 313th Ave (Princeton)





Direction	Class	Count	Posted Speed Limit (mph)	Range	50th %	85th %	10 MPH Pace	# in Pace	% in Pace	# Below Pace / %	# Above Pace / %
NB	ALL	97	65	63-81	71	76	67-76	76	78.4%	10 / 10.3%	10 / 10.3%
SB	ALL	103	65	62-78	71	75	67-77	84	81.6%	14 / 13.6%	5 / 4.9%

50th and 85th Percentile Speeds at Three Locations



5. Crash Data Analysis

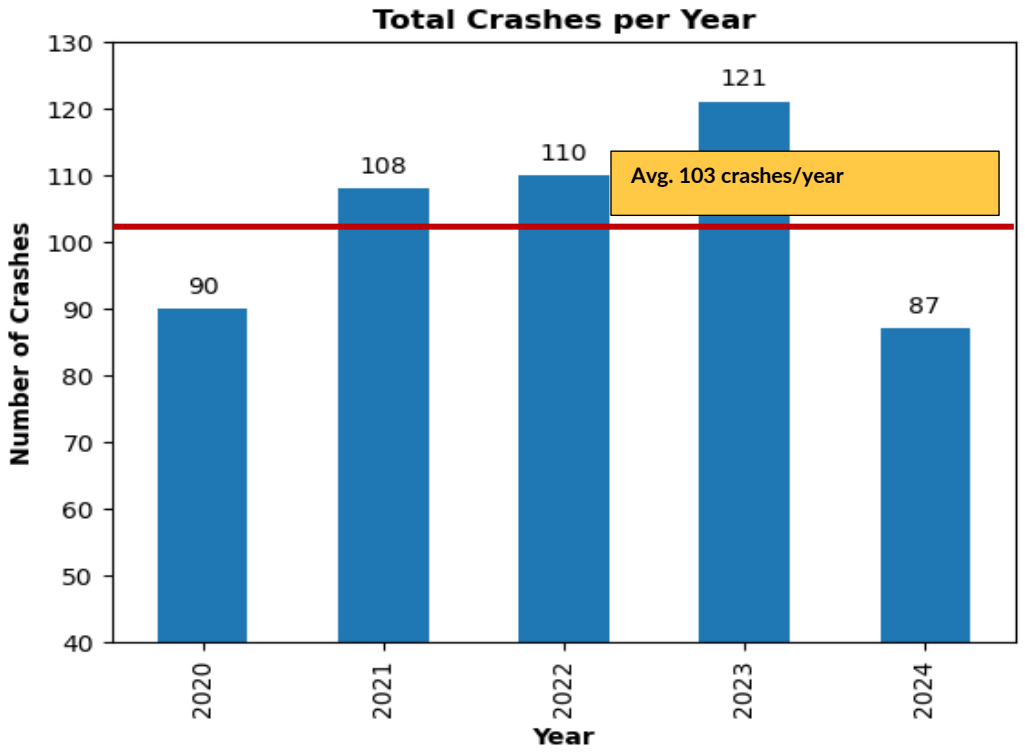
This section provides a comprehensive analysis of crash data along the US 169 corridor over a five-year period, from January 1, 2020, to December 31, 2024. The analysis aims to identify trends, patterns, and contributing factors to crashes, with the goal of pinpointing targeted locations and types of crashes for field review.

A total of 516 crashes were recorded over the five-year period. The summary of all crashes based on severity is presented in the following table:

Crash Severity	KABCO	Number	Percentage (%)
Fatal Crash	K	8	1.55
Serious (or Incapacitating) Injury Crash	A	6	1.16
Minor (or Non-Incapacitating) Injury Crash	B	48	9.30
Possible Injury Crash	C	86	16.67
Property Damage Only Crash (PDO)	O	368	71.32

Yearly Trends

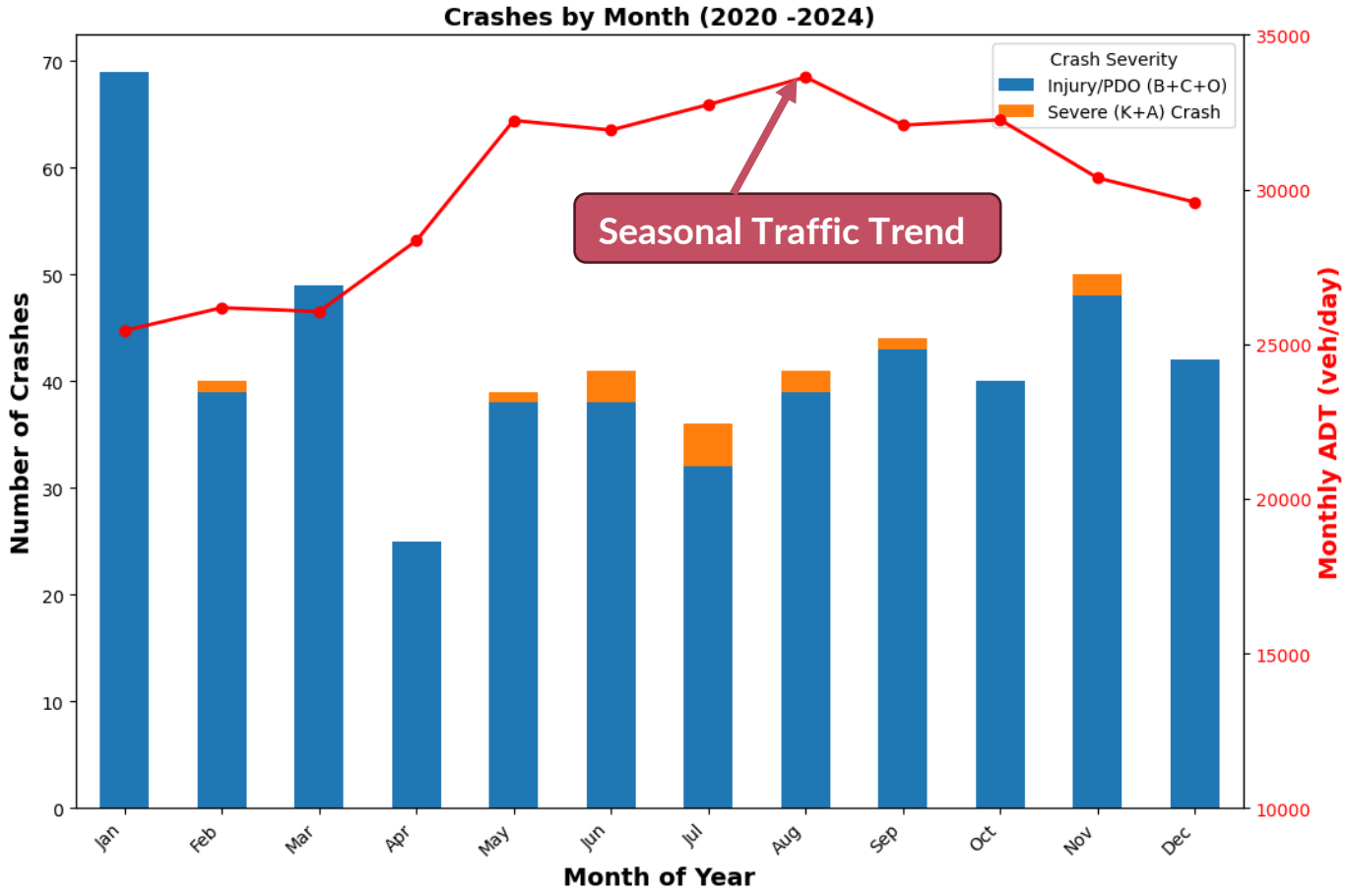
The crash data was analyzed to identify the total number of crashes each year over the past five years. The analysis revealed notable variations in crash occurrences, with the highest number of crashes recorded in 2023 and the lowest in 2024.



Monthly Trends

The crash data were analysed to identify monthly trends. This analysis revealed that the highest number of crashes occurred in January, followed by March and November. The spike in January may be attributed to winter weather conditions, including snow and ice, which create hazardous driving conditions. March also saw a higher number of crashes, possibly due to the transition from winter to spring, with fluctuating temperatures and residual winter conditions impacting road safety

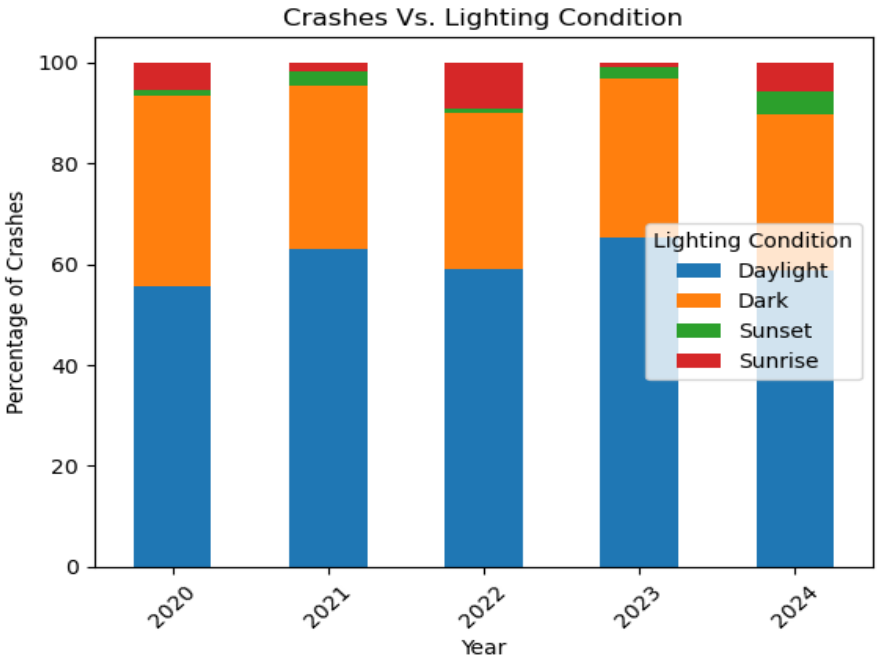
The following figure illustrates the monthly distribution of severe (fatal plus serious injury) crashes and non-severe (minor injury plus PDO) crashes over the five years, providing a visual representation of the data:



Lighting Condition

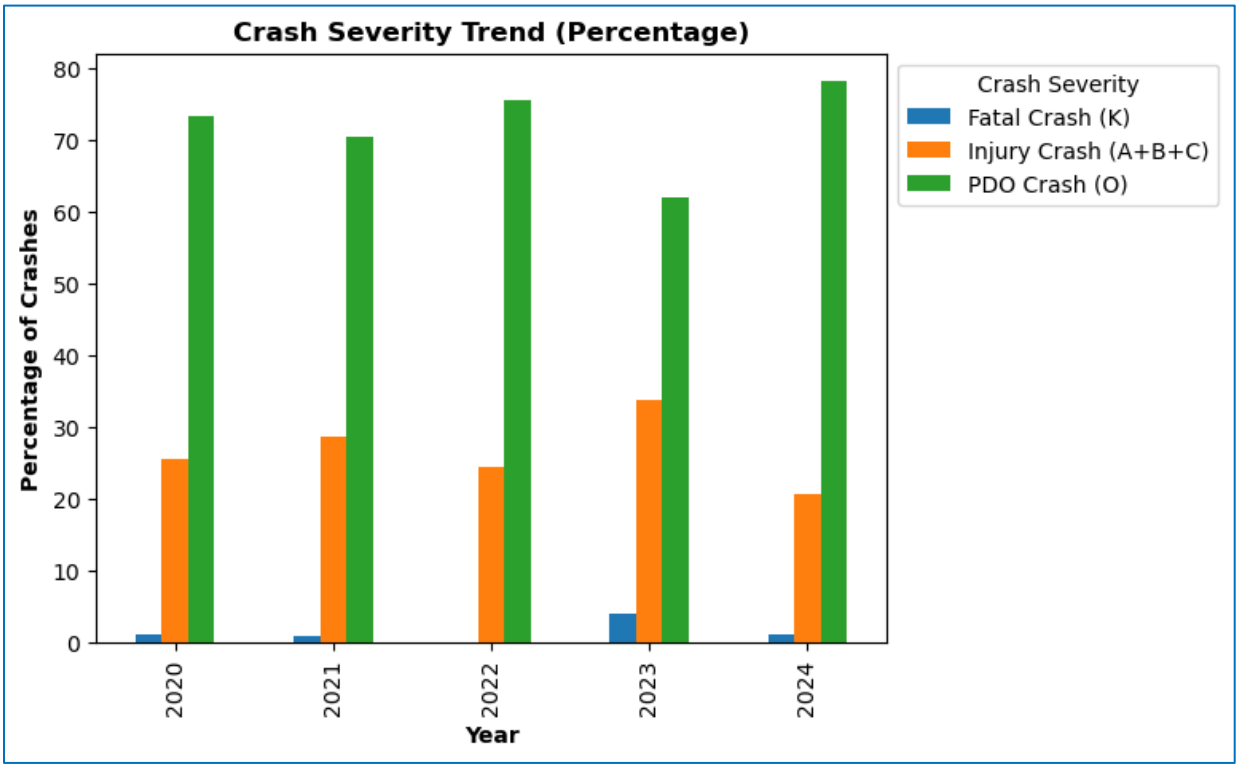
The analysis of crashes based on lighting conditions revealed that up to 60% of crashes occurred during daylight hours. This is the expected trend as more vehicles are on the road during daylight hours (i.e. higher exposure).

The plot illustrates the distribution of crashes across different lighting conditions over the five-year period.



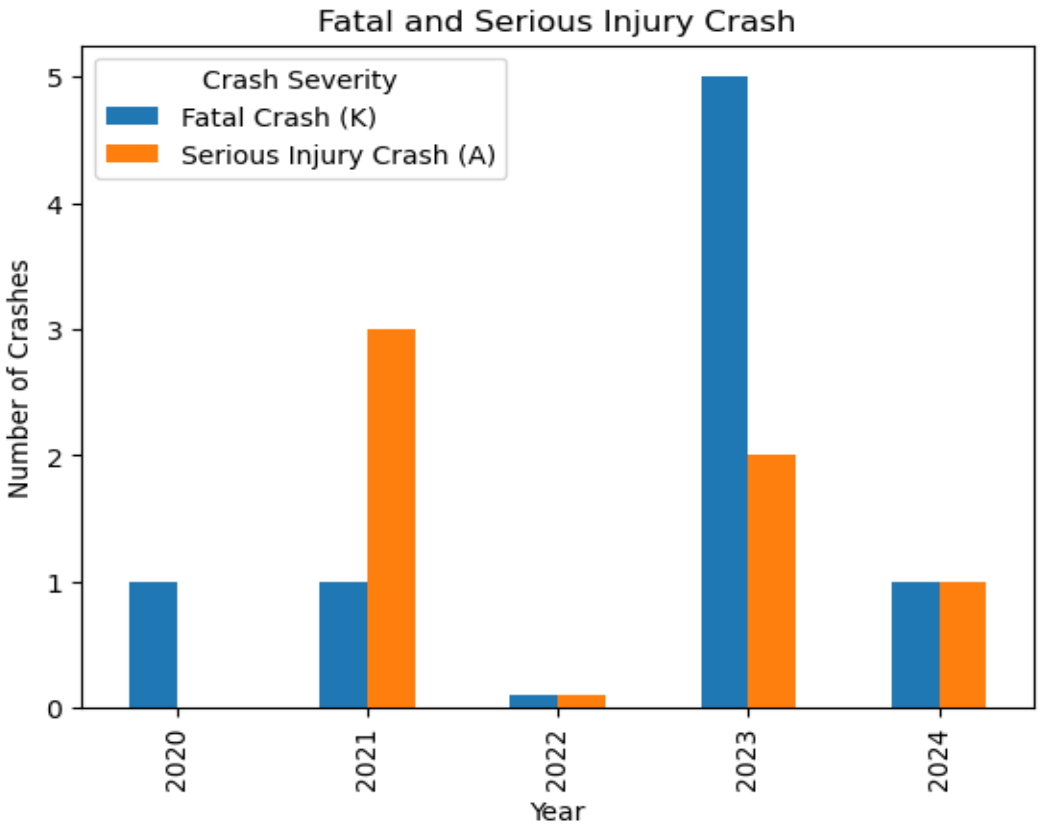
Crash Severity

The severity of crashes was categorized to understand their impact on road users. The raw data included five categories of crash severity: fatal, serious injury, minor injury, possible injury, and property damage-only (PDO) crashes. Due to the high frequency of PDO crashes, the three categories of injury crashes were combined into one group, referred to as "injury crashes". Analysing crash severity helps prioritize safety improvements based on the potential to reduce severe outcomes.



Furthermore, a focused examination of fatal and serious injury crashes was conducted. The analysis revealed that there were no fatal or serious injury crashes reported in the year 2022. The most concerning finding is the occurrence of 5 fatal crashes in 2023. This increase highlights a need for targeted safety interventions to address the factors contributing to these fatal incidents.

The figure below illustrates the yearly distribution of fatal and serious injury crashes:



Fatal and Severe Crashes (K+A)

Over the past five years, the study corridor has experienced a total of 8 fatal crashes and 6 serious injury crashes.

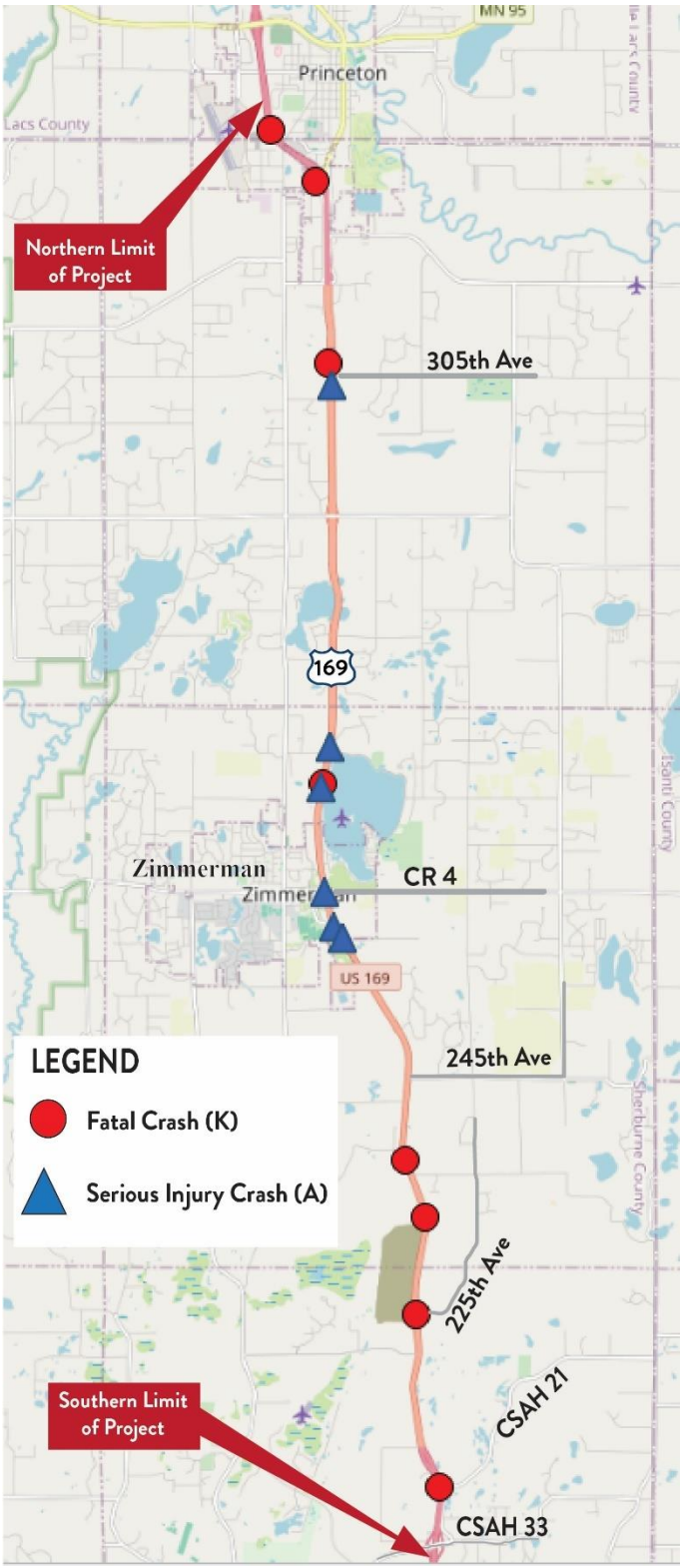
Fatal Crashes:

- Among the fatal crashes, three involved motorcycles overturning or rolling over, one involved a pedestrian and a passenger car, one was a sideswipe collision involving a passenger car, two were angle collisions, and one was a front-to-rear collision involving a medium/heavy truck.

Serious Injury Crashes:

- Among the serious injury crashes, two involved motorcycles overturning or rolling over, four were angle collisions, and one was a front-to-rear collision involving a pickup.

Summary of fatal and serious injury crashes is provided in the following table.



Summary of Fatal and Serious Injury Crashes (K+A) – [2020 – 2024]

No	Crash Severity	Year	Month	Time of Day	Travel Direction	Manner of Collision	Vehicle Type
1	Fatal	2020	11	7:58 AM	Southbound	Overturn/Rollover	Motorcycle
2	Fatal	2021	6	1:12 AM	Northbound	Pedestrian	Passenger Car
3	Fatal	2023	5	7:37 PM	Northbound	Overturn/Rollover	Motorcycle
4	Fatal	2023	6	1:07 PM	Southbound	Sideswipe	Passenger Car
5	Fatal	2023	7	12:06 PM	Southbound	Angle	Passenger Van
6	Fatal	2023	8	6:43 PM	Southbound	Overturn/Rollover	Motorcycle
7	Fatal	2023	11	7:15 AM	Northbound	Front to Rear	Medium/Heavy Truck
8	Fatal	2024	2	8:09 AM	Northbound	Angle	Passenger Car
9	Serious Injury	2021	6	9:22 AM	Southbound	Angle	Sport Utility Vehicle
10	Serious Injury	2021	7	2:42 PM	Southbound	Angle	Passenger Car
11	Serious Injury	2021	9	1:08 PM	Northbound	Angle	Motorcycle
12	Serious Injury	2023	7	10:47 PM	Northbound	Overturn/Rollover	Motorcycle
13	Serious Injury	2023	7	5:54 PM	Northbound	Front to Rear	Pickup
14	Serious Injury	2024	8	7:26 PM	Southbound	Overturn/Rollover	Motorcycle

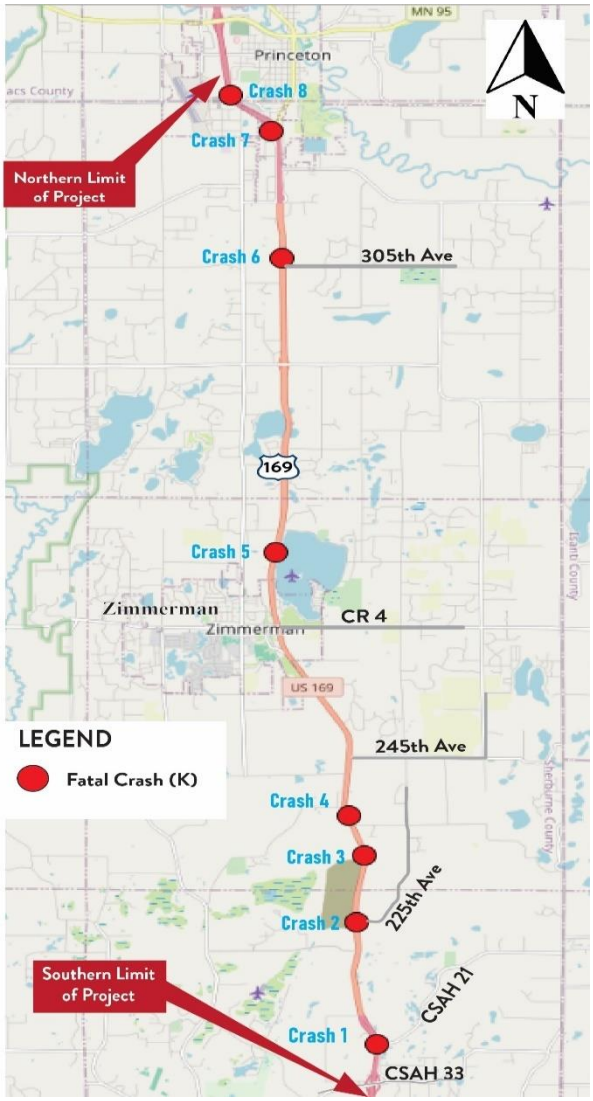
Fatal Crash Details

Crash 1

- **Date and Time**: November 2020, around 8 AM
- **Location**: North of Elk River, southbound on US 169, near 213th Ave
- **Conditions**: Daylight, dry road surface
- **Description**: A motorcycle was overtaking another vehicle when it lost control, went off the road to the left into the median, and flipped approximately three times before coming to rest near the median cable barriers. Speeding was reported as a contributing factor. This was not an intersection-related crash. It is on a horizontal curve.

Crash 2

- **Date and Time**: February 2024, around 8 AM
- **Location**: Intersection of 225th Ave and US 169, opposite the Elk River Landfill
- **Conditions**: Dry road surface
- **Description**: A westbound vehicle on 225th Ave attempted to cross northbound US 169 traffic to go southbound. The vehicle failed to yield and collided with a northbound vehicle on US 169. The first vehicle



went off the road into the median, while the second vehicle came to rest partially on the left shoulder. The driver of the first vehicle was transported to Mercy Hospital with non-life-threatening injuries, but the rear right passenger died from injuries. The driver of the second vehicle sustained minor injuries and refused medical transport. Witnesses reported that the first vehicle stopped at the stop sign and then attempted to cross at approximately 20 mph before the collision occurred.

Crash 3

- **Date and Time:** August 2023, around 7 PM
- **Location:** South of 237th Avenue, Livonia Township
- **Conditions:** Clear weather, dry road surface
- **Description:** A motorcycle rollover crash occurred on a horizontal curve while traveling southbound on US 169. The rider reached down for something, causing the motorcycle to straighten out the curve and lose control. Both riders were ejected from the bike. The passenger was thrown into the median, sustaining moderate injuries, while the rider landed in the middle of the road, with the motorcycle suspected to have landed on him. The rider was airlifted to a hospital with life-threatening injuries.

Crash 4

- **Date and Time:** November 2023, around 7 AM
- **Location:** Horizontal curve segment between 237th Ave and 239th Ave, US 169
- **Conditions:** Clear weather, ice/frost road surface
- **Description:** A pickup (Vehicle 2) traveling southbound on US 169 ran off the road, entered the median, and crossed into the northbound lanes, colliding head-on with a northbound vehicle (Vehicle 1). The crash occurred just a few hundred feet from where the high-tension cable barrier in the median ended. If the barrier had been present, the vehicle 2 might not have crossed into the northbound lanes.

Crash 5

- **Date and Time:** June 2021, around 1 AM
- **Location:** North of Zimmerman, near Lake Fremont, Livonia Township
- **Conditions:** Dark, no streetlights, clear weather, dry surface
- **Description:** A passenger car collided with a pedestrian on US HWY 169. The driver of Vehicle 1 stated that the pedestrian appeared suddenly, and the collision happened too quickly to make an evasive maneuver. Vehicle 1 struck the pedestrian with its front bumper. Both the driver of Vehicle 1 and a witness following behind confirmed they were traveling at approximately 65-70 mph before the crash.

Crash 6

- **Date and Time:** June 2023
- **Location:** North of 305th Ave, Baldwin Township
- **Conditions:** Cloudy weather, dry surface
- **Description:** A sideswipe collision occurred between two passenger cars traveling southbound on US HWY 169. Vehicle 2 sideswiped Vehicle 1 twice, causing Vehicle 1 to run off the road and collide with trees. All occupants of Vehicle 1 were ejected. The driver of Vehicle 1 died at the scene, while the passengers were transported to hospital with injuries. The driver of Vehicle 2 was suspected of drinking.

Crash 7

- **Date and Time:** July 2023, around noon.
- **Location:** Intersection of southbound off-ramp to Rum River Dr, Princeton
- **Conditions:** Clear weather, dry road surface
- **Description:** An angle crash occurred at the intersection of the southbound off-ramp to Rum River Dr. Vehicle 1 was traveling southbound on the off-ramp from US HWY 169, driven by Driver 1 (D1). Vehicle 2 was westbound on Rum River Dr, approaching the intersection, driven by Driver 2 (D2). Vehicle 3 was eastbound on Rum River Dr, driven by Driver 3 (D3). Vehicle 1 ran off the road to the right while on the off-ramp, traveled through the ditch, and began to cross Rum River Dr. While crossing, Vehicle 1 struck Vehicle 2 on the passenger side with its front end, sending Vehicle 2 across the raised median into the northbound lane of Rum River Dr, where it struck the dump trailer of Vehicle 3. Vehicle 1 came to rest in the northbound lane of Rum River Dr facing southeast. Driver 1 was killed, while both occupants of Vehicle 2 suffered minor injuries.

Crash 8

- **Date and Time:** May 2023, around 8 PM
- **Location:** City of Princeton
- **Conditions:** Clear weather, dry road surface
- **Description:** A motorcycle rollover/overturn crash occurred while traveling northbound on US HWY 169. The motorcycle failed to keep the proper lane on a horizontal curve and went off the road to the left. The motorcycle came to a final rest in the center median. Ambulance arrived on the scene shortly after the crash and pronounced the rider deceased.

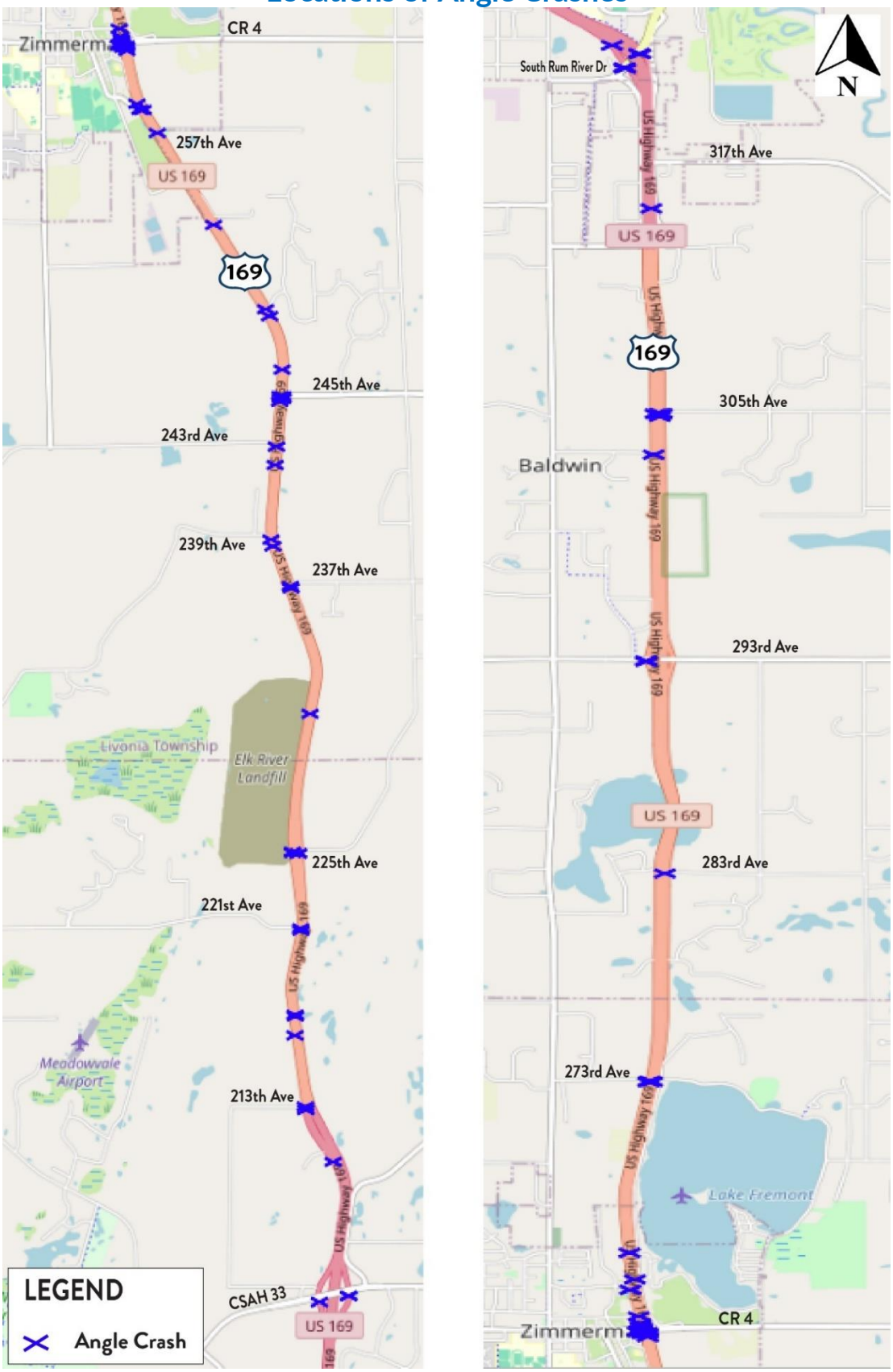
Angle Crashes

The following table provides a detailed breakdown of angle crashes, highlighting the severity of injuries, light conditions, and road surface conditions at the time of the incidents. Angle crashes, which often occur at intersections, are a significant indicator of intersection safety performance. The data shows that a substantial portion of these crashes result in injuries, with 4.05% being fatal and 2.70% causing serious injuries. Additionally, 50% of angle crashes resulted in property damage only (PDO).

Attributes	Counts	Percentage (%)
Angle Crashes	74	-
Fatal	3	4.05
Serious Injury	2	2.70
Minor Injury	13	17.57
Possible Injury	19	25.67
PDO	37	50.00
Light Condition - Dark	20	27.03
Light Condition - Daylight	54	72.97
Road Surface Condition - Dry	48	64.86
Road Surface Condition – Non-Dry	26	35.14

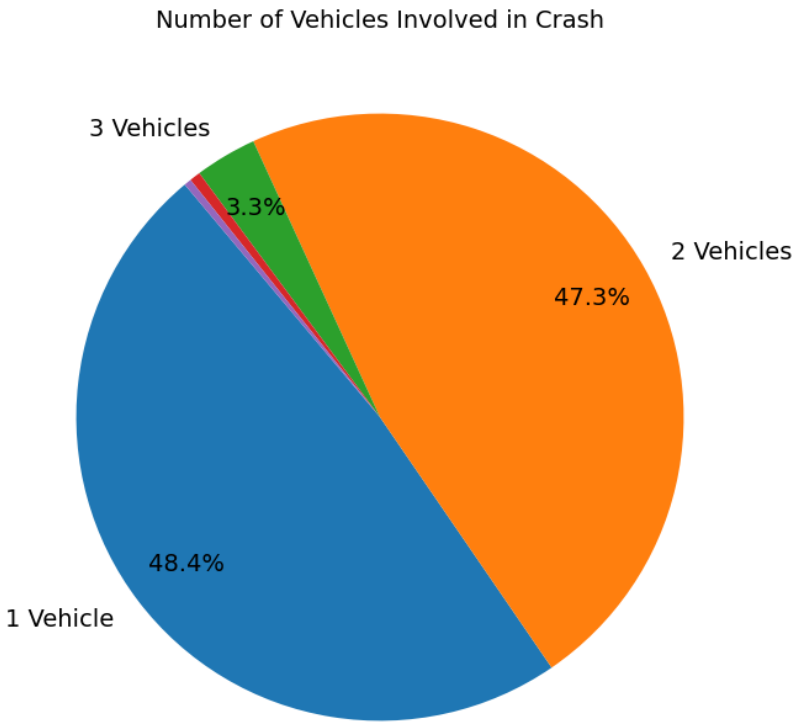
The locations of the angle crashes are illustrated in the following figure.

Locations of Angle Crashes



Number of Vehicles Involved in Crash

Analysing the number of vehicles involved in crashes along the US 169 corridor reveals that single-vehicle crashes, mostly run-off-road incidents and collisions with animals, account for 48.4% of total crashes. Multi-vehicle crashes, primarily involving two vehicles, make up approximately 47.3% of total crashes. These findings highlight the need for targeted safety interventions to address both single-vehicle and two-vehicle crash scenarios.

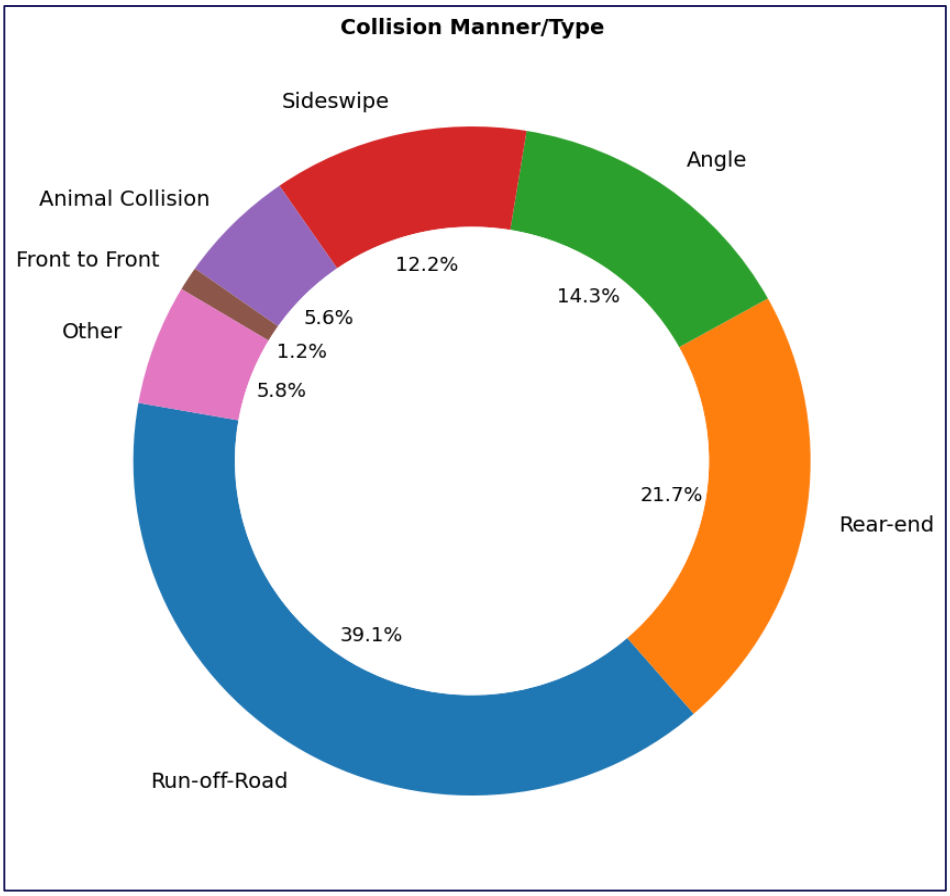


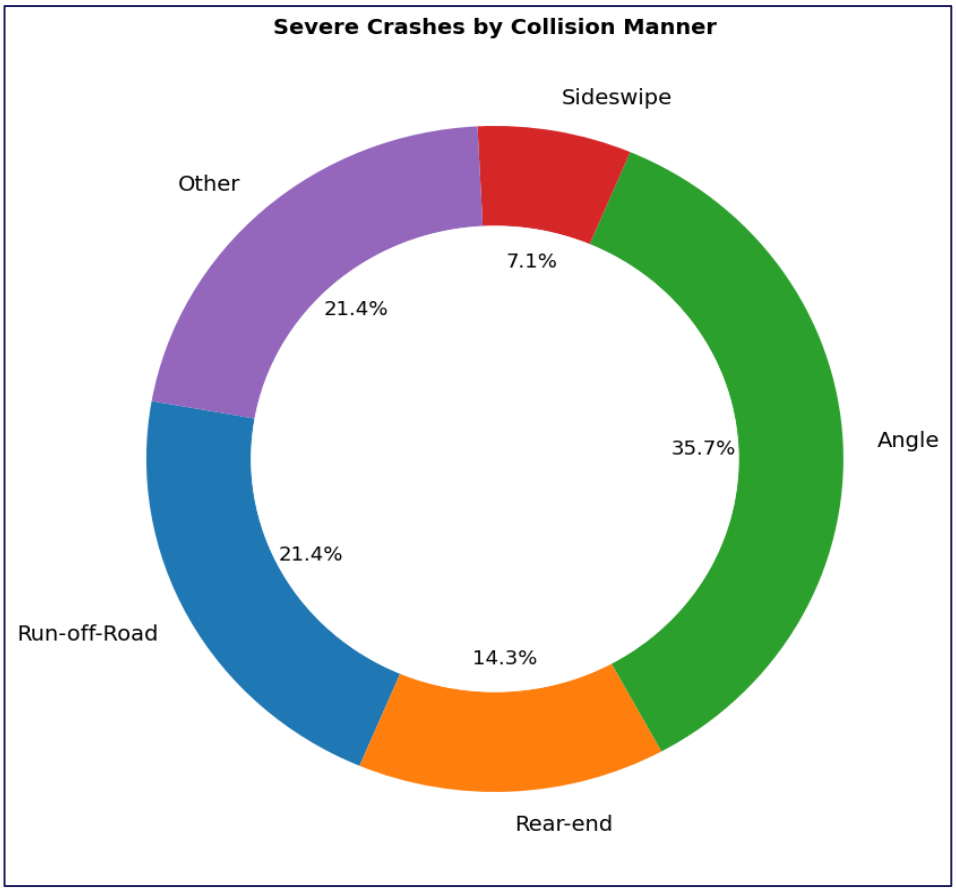
Collision Manner/Type

After examining the number of vehicles involved in each crash, it is imperative to analyze the type of crash based on the collision manner. This analysis provides insights into the most common crashes and helps identify specific areas for safety improvements. The crash data were analyzed over the five-year period from 2020 to 2024, revealing the following key findings:

- **Run-Off-Road Crashes**: These crashes account for 39% of the total incidents. Run-off-road crashes typically occur when a vehicle departs from the roadway, often due to driver error, adverse weather conditions, or roadway design issues. These crashes can result in severe outcomes, including rollovers and collisions with fixed objects. Run-off-the-road crashes are indicative of higher operating speeds.
- **Rear-End Crashes**: Rear-end collisions represent 22% of the total crashes. Contributing factors may include driver inattention, following too closely, and sudden stops. Typically, indicative of congestion or slowing at intersections.
- **Angle Crashes**: Angle crashes make up 14% of the total crashes. These crashes occur at intersections. Factors contributing to angle crashes include failure to yield, running red lights, and misjudging gaps in traffic.

These three crash types account for more than 75% of the crashes occurring in the 5-year study period.

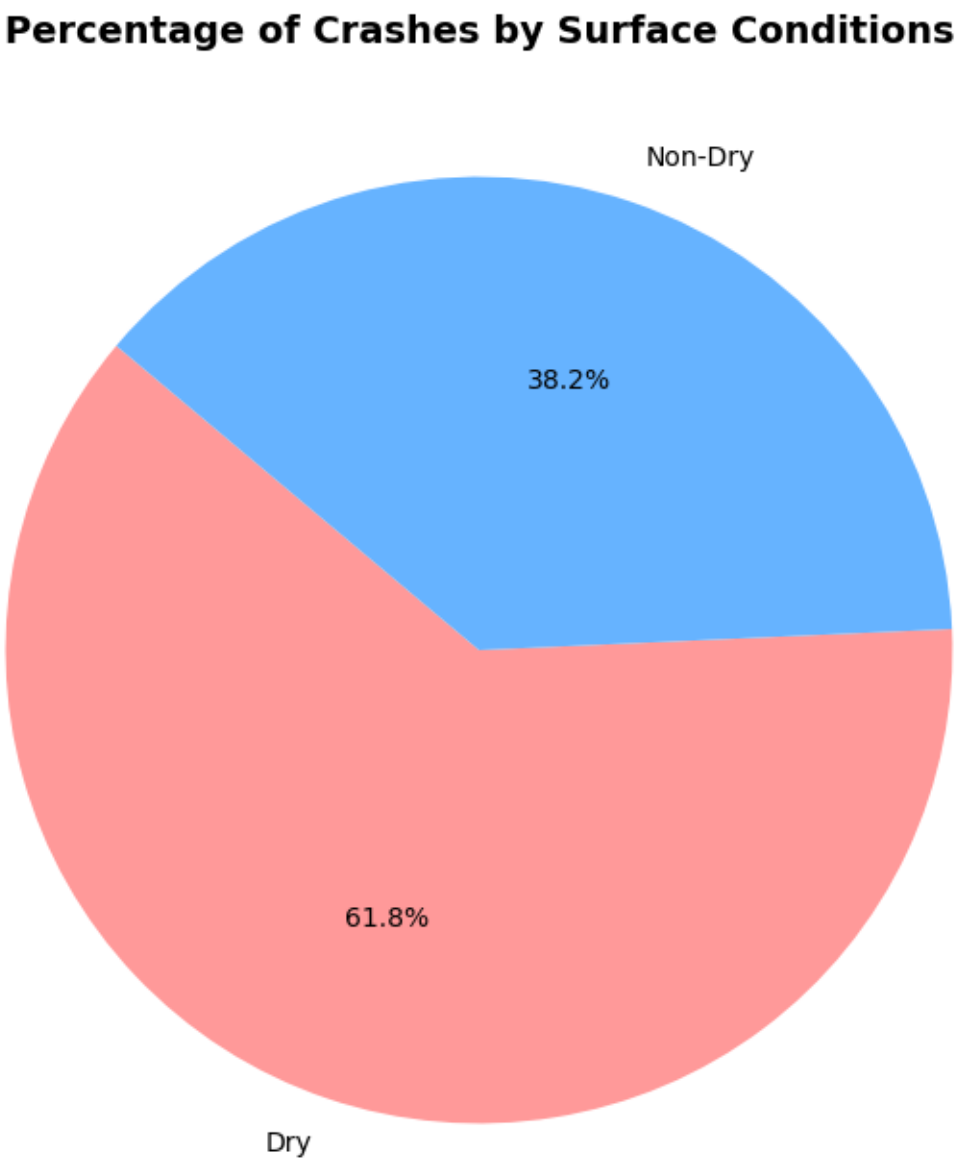

Collision Manner/Type
Sideswipe
Angle
Animal Collision
Front to Front
Other
12.2%
14.3%
5.6%
1.2%
5.8%
21.7%
Rear-end
39.1%
Run-off-Road


Severe Crashes by Collision Manner
Sideswipe
Other
7.1%
21.4%
35.7%
Angle
21.4%
Run-off-Road
14.3%
Rear-end

Road Surface Condition

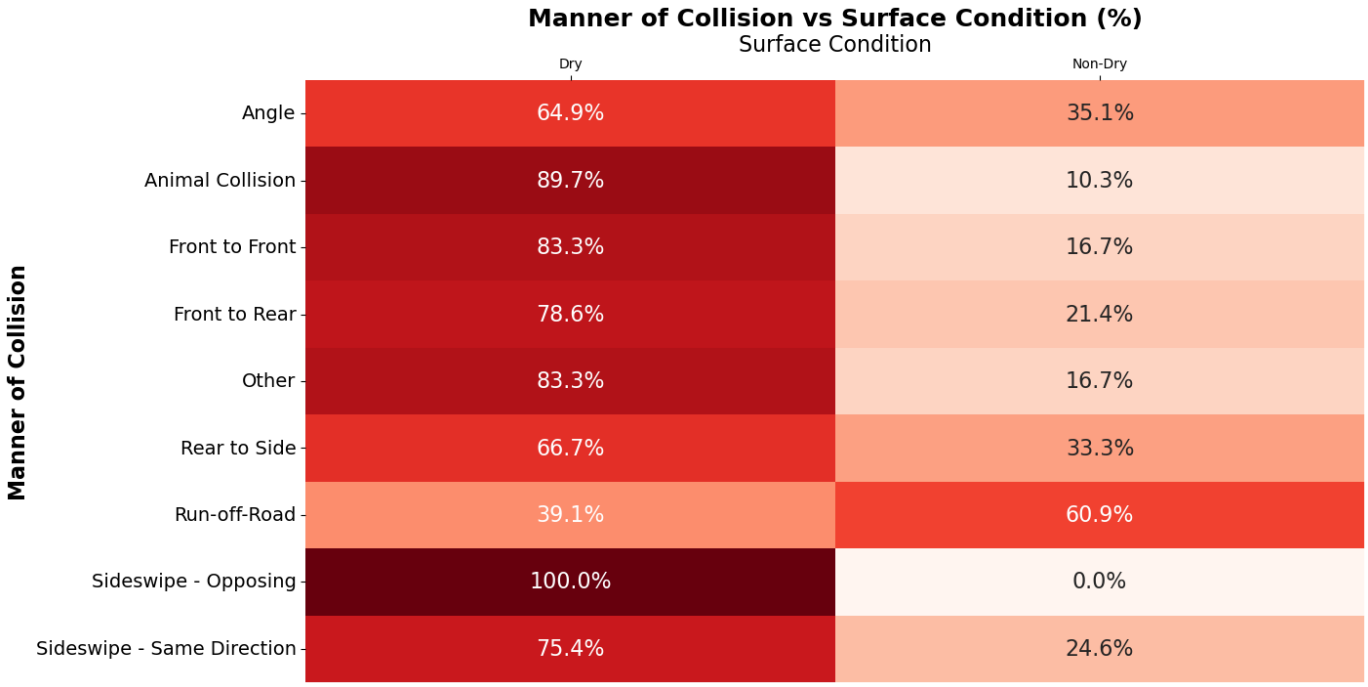
Road surface condition is another contributing factor to crashes. The US Highway 169 corridor experiences a frequent run-off-road crashes and rear-end collisions. Therefore, it is crucial to examine the road surface conditions at the time of these crashes.

The following plot illustrates the crashes with respect to different surface conditions, including dry and non-dry (snow, ice/frost, wet, and slush) conditions. The data indicates that approximately 62% of crashes occurred on dry surface conditions, while the remaining 38% occurred under non-dry conditions.



In addition, it is crucial to analyze crash types (collision manner) with respect to road surface conditions. This analysis provides deeper insights into how different surface conditions influence the nature of crashes along the US 169 corridor.

- **Run-Off-Road Crashes**: The analysis revealed that 39.1% run-off-road crashes occurred on dry road surfaces. In contrast, 60.9% run-off-road crashes happened under non-dry conditions, including ice/frost, slush, snow, and wet surfaces. This indicates that adverse weather conditions contribute to run-off-road incidents, likely due to reduced traction and increased stopping distances.
- **Rear-End Crashes**: Most rear-end collisions occurred on dry road surfaces, suggesting that factors such as driver inattention, following too closely, and sudden stops are primary contributors. However, a smaller portion of rear-end crashes also occurred under non-dry conditions, highlighting the additional risks posed by slippery surfaces.
- **Angle Crashes**: Similarly, the majority of angle crashes took place on dry road surfaces. A relatively smaller number of angle crashes were recorded under non-dry conditions, indicating that adverse weather can exacerbate these types of collisions. Speed is typically higher during dry pavement, so that also affects PEV, acceleration, and deceleration.



Crashes in Relation to Junction

The study corridor includes numerous junctions, such as T-intersections, four-leg intersections, J-turns, crossovers, and interchanges. These junctions are critical points where vehicle paths cross, making it essential to investigate crash data at these locations to understand safety performance and identify areas for improvement.

Approximately 40% of all crashes occurred at intersections or interchanges. Notably, about 43% of "fatal plus serious injury" crashes took place at T-intersections and four-way intersections. This highlights the significant safety concerns at these types of junctions. Additionally, only about 7% of all crashes were categorized as interchange-related, indicating that while interchanges are less frequent crash sites, they still contribute to the overall safety profile of the corridor.

The following table summarizes the distribution of all crashes and "fatal plus serious injury" crashes in relation to junctions:

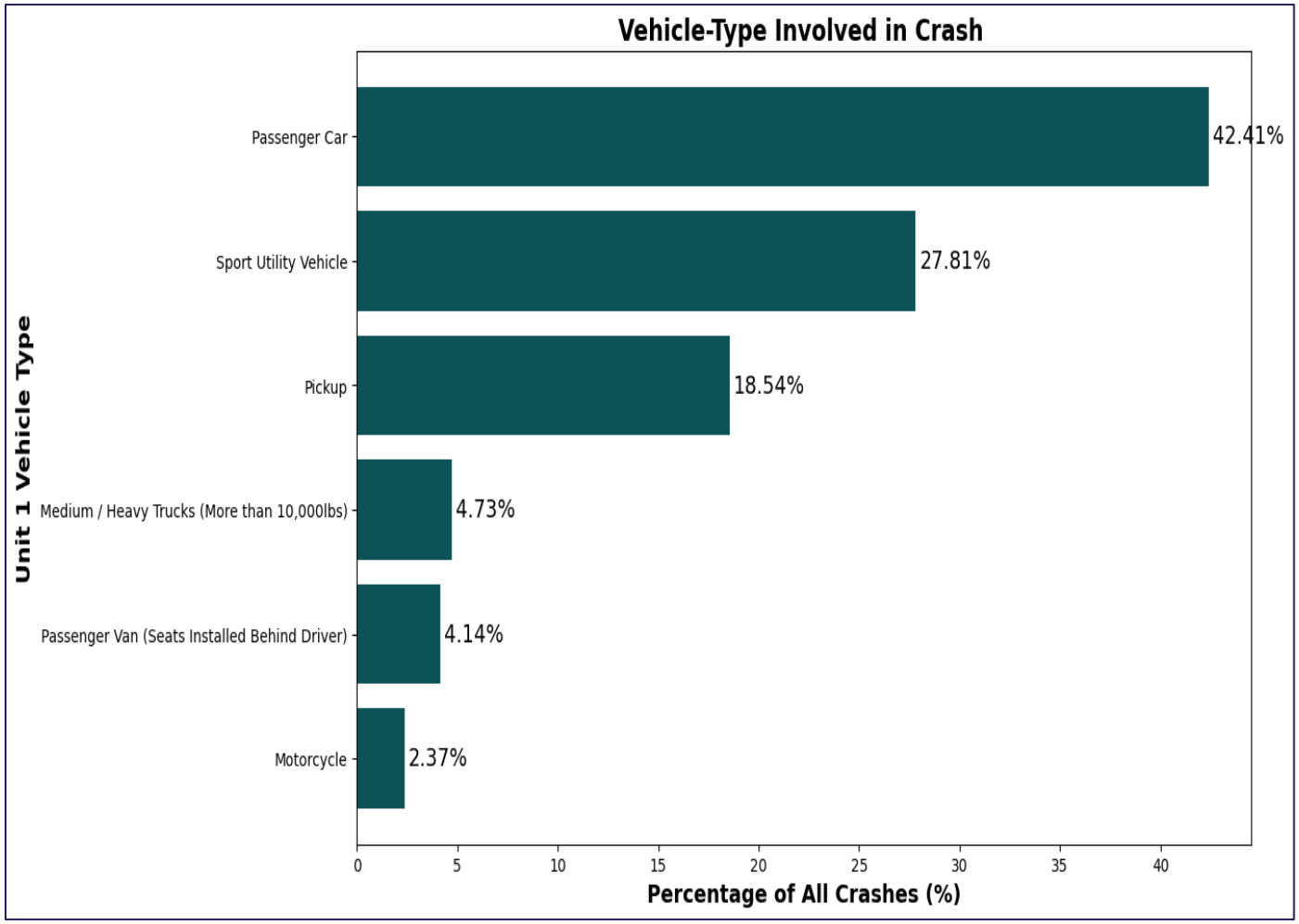
Relation to Junction (2020-2024)

Relative to Junction	All Crashes		Fatal+Serious Injury Crashes	
	Number	Percentage (%)	Number	Percentage (%)
Not Intersection/Interchange Related	310	60.07	8	57.14
Intersection Related	36	6.98	0	0
Crossover Related	19	3.68	0	0
T Intersection	45	8.72	3	21.43
Four-Way Intersection	65	12.60	3	21.43
Interchange Related	26	6.98	0	0
Acceleration/Deceleration Lane	2	0.40	0	0
Other	13	2.52	0	0

Vehicle Type

The analysis of crash data along the US 169 corridor reveals important insights into the types of vehicles most frequently involved in accidents. This information is crucial for understanding the dynamics of crashes and developing targeted safety measures.

The majority of vehicles involved in crashes on the US 169 corridor are passenger cars and sports utility vehicles (SUVs). These vehicle types constitute a significant portion of the traffic flow and, consequently, are more frequently involved in accidents. Medium and heavy trucks account for about 5% of all crashes on this corridor.



Hight Tension Cable Barrier (HTCB)

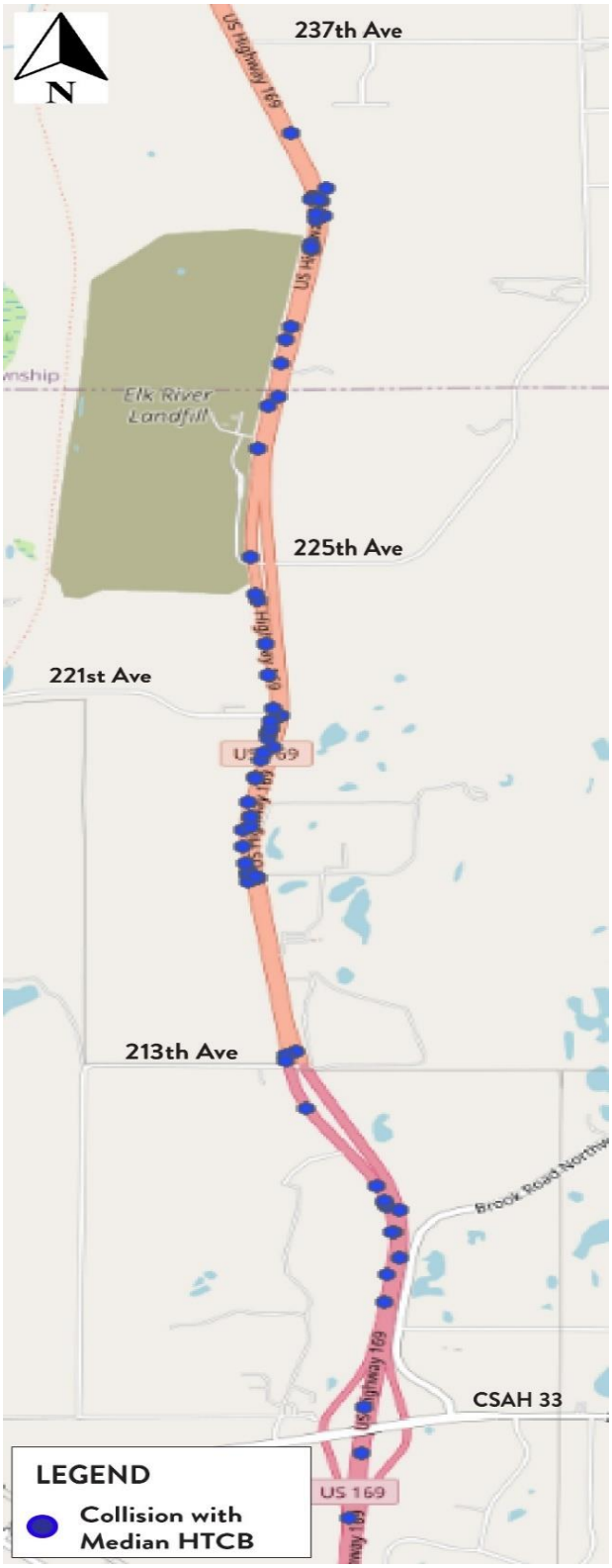
The High-Tension Cable Barrier (HTCB) is installed in the median from the southern limit of the study corridor at Elk River to the cross street of 237th Ave. This barrier plays a crucial role in enhancing road safety by preventing vehicles from crossing into oncoming traffic.

Crash Analysis

From the start of the study corridor to the cross street of 237th Ave, a total of 188 crashes were recorded. Of these, 67 crashes (35.64%) involved collisions with the median HTCB. This percentage indicates that the HTCB effectively prevented many vehicles from crossing the median and potentially causing head-on collisions with traffic traveling in the opposite direction.

A notable incident occurred just a few hundred feet north of 237th Ave, beyond the end of the median HTCB. This fatal crash involved a head-on collision where a southbound vehicle crossed the median (which lacked HTCB protection) and collided with a northbound vehicle. This event underscores the importance of extending HTCB coverage to prevent such occurrences.

The figure illustrates the locations of crashes involving collisions with the median HTCB.



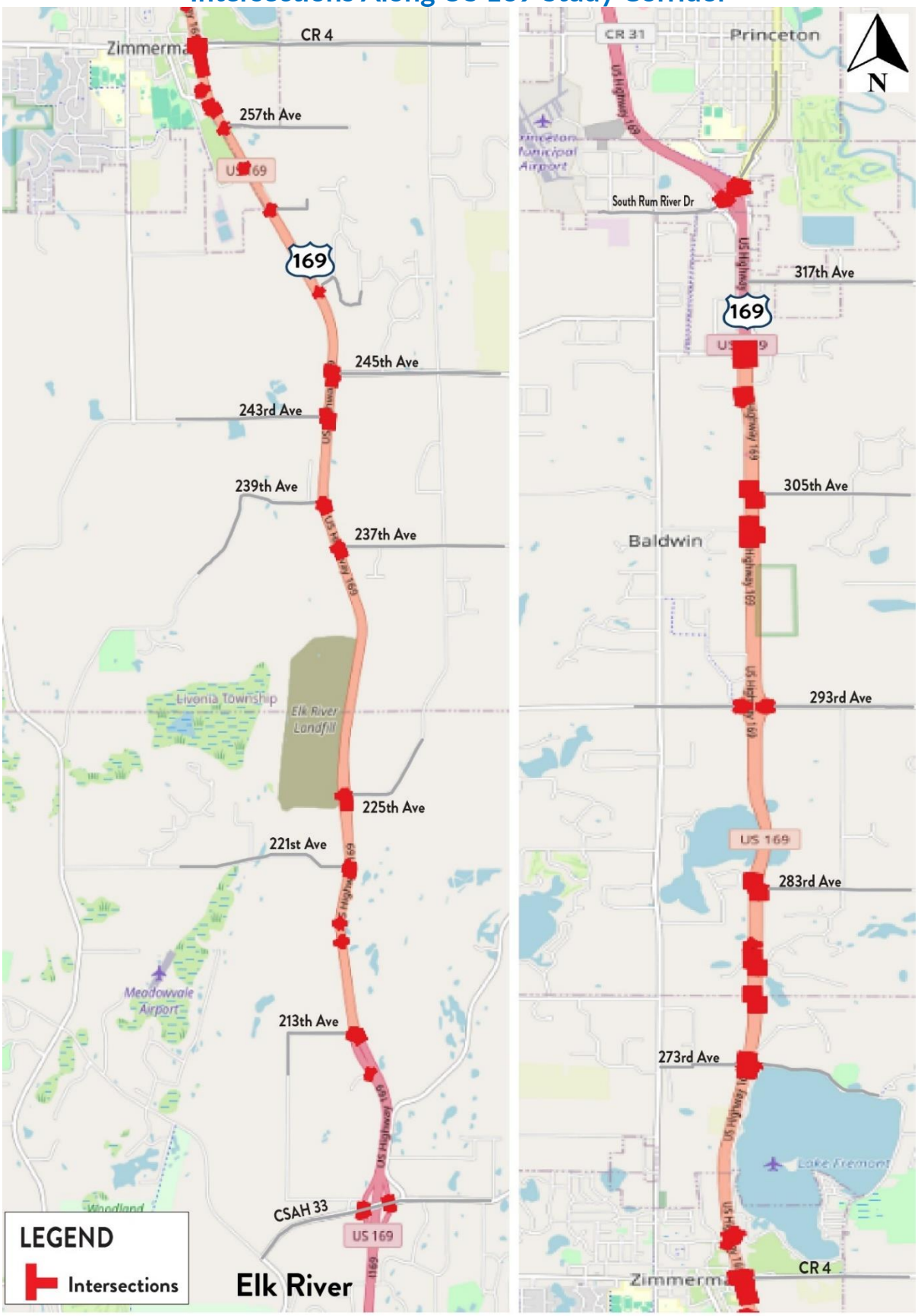
5.1. Intersections Safety Screening

The study corridor includes a total of 35 intersections, comprising various types such as T-intersections, 4-legged intersections with median crossovers, multiple J-turns constructed in recent years, and three interchanges. These intersections were evaluated using the Minnesota Department of Transportation (MnDOT) Intersection Safety Screening tool to assess their safety performance. This tool helps in identifying intersections with higher-than-expected crash rates by comparing the observed crash rates to critical crash rates derived from similar intersections statewide.

Traffic data, specifically Average Annual Daily Traffic (AADT), were obtained from the MnDOT Traffic Mapping tool. The safety screening results indicate that all intersections within the study corridor have crash rates lower than the critical crash rate. This suggests that these intersections are operating within the expected, normal range for similar intersections. However, a few intersections may still require detailed analysis and potential safety improvements, even though their crash rates are within acceptable limits.

The locations of the intersections are provided on the accompanying map. A comprehensive list of the evaluated intersections, along with detailed screening reports, is included in the **Appendix**.

Intersections Along US 169 Study Corridor



List of Intersections

S. No	Intersections	ADT Entering	ADT Year	Min.ADT	Max.ADT
1	CSAH 33 (205th AVE NW) and US 169 E Ramps	6503	2021	1925	4100
2	CSAH 33 (205th AVE NW) and US 169 W Ramps	7025	2021	1378	5400
3	US 169 and M 626 (211th Ave)	25123	2023	20	25123
4	US 169 and MSAS 139 (213th Ave NW)	25423	2023	600	25123
5	US 169 and M 430 (217th Ave NW)	25223	2023	200	25123
6	US 169 and M 130 (219th Ave NW)	25223	2023	200	25123
7	US 169 and MSAS 123 (221st Ave NW)	25723	2023	1200	25123
8	US 169 and M 128 (225th St NW)	25723	2023	1200	25123
9	US 169 and CR 128 (237th AVE NW)	25321	2023	395	25123
10	US 169 and T 152 (239th AVE NW)	25723	2023	1200	25123
11	US 169 and CSAH 25 (243rd Ave)	26233	2023	2220	25123
12	US 169 and CSAH 19 (245th Ave)	26018	2023	1789	25123
13	US 169 and T 1348 (247th AVE NW)	25223	2023	200	25123
14	US 169 and T 923 (253rd Ave)	25223	2023	200	25123
15	US 169 and M 138 (255th AVE NW)	25223	2023	200	25123
16	US 169 and T 1591 (257th AVE NW)	25223	2023	200	25123
17	US 169 and MSAS 103 (Main ST)	25864	2023	1482	25123
18	US 169 and M 31 (Main St)	12612	2023	100	25123
19	US 169 and CSAH 4 (Fremont AVE)	32390	2023	7912	25123
20	US 169 and M 170 (5th Ave N)	9879	2023	200	9779
21	US 169 and MSAS 109 (Oak St)	21135	2023	268	19557
22	US 169 and T 123 (273rd AVE NW)	19710	2023	305	19557
23	US 169 and T 1636 (123rd ST NW)	19557	2023	0	19557
24	US 169 and T 986 (278th Ave)	19557	2023	0	19557
25	US 169 and T 796 (278th AVE NW)	19557	2023	0	19557
26	US 169 and PVT 134 (280th AVE NW)	19557	2023	0	19557
27	US 169 and T 121 (283rd Ave)	19707	2023	300	19557
28	CSAH 9 and CON 299	3117	2023	1323	1766
29	CSAH 9 and CON 2398	5124	2023	1124	3705
30	US 169 and T 109 (303rd Ave)	19807	2023	500	19557
31	US 169 and CR 38 (305th Ave)	19892	2023	670	19557
32	US 169 and T 1160 (312th Ave)	9779	2023	0	9779
33	US 169 and CSAH 2	19795	2023	475	19557
34	CSAH 29 (Rum River DR) and CON 110	17590	2022	1819	14900
35	CR 45 (Rum River DR) and CON 3026	17905	2022	1818	14900

Intersection Safety Screening Results

S. No	Intersections	Total Crash Rate (CR)			Critical Index	Critical (Yes/No)
		Observed	State Average	Critical		
1	CSAH 33 (205th AVE NW) and US 169 E Ramps	0.337	0.306	0.760	0.44	No
2	CSAH 33 (205th AVE NW) and US 169 W Ramps	0.156	0.141	0.450	0.35	No
3	US 169 and M 626 (211th Ave)	0.022	0.141	0.290	0.08	No
4	US 169 and MSAS 139 (213th Ave NW)	0.149	0.141	0.290	0.51	No
5	US 169 and M 430 (217th Ave NW)	0.065	0.141	0.290	0.22	No
6	US 169 and M 130 (219th Ave NW)	0.065	0.141	0.290	0.22	No
7	US 169 and MSAS 123 (221st Ave NW)	0.192	0.141	0.290	0.66	No
8	US 169 and M 128 (225th St NW)	0.149	0.141	0.290	0.51	No
9	US 169 and CR 128 (237th AVE NW)	0.065	0.141	0.290	0.22	No
10	US 169 and T 152 (239th AVE NW)	0.106	0.141	0.290	0.37	No
11	*US 169 and CSAH 25 (243rd Ave)	*0.188	*0.141	*0.290	*0.65	No
12	*US 169 and CSAH 19 (245th Ave)	*0.253	*0.141	*0.290	*0.87	No
13	US 169 and T 1348 (247th AVE NW)	0.043	0.141	0.290	0.15	No
14	US 169 and T 923 (253rd Ave)	0.022	0.141	0.290	0.08	No
15	US 169 and M 138 (255th AVE NW)	0.043	0.141	0.290	0.15	No
16	US 169 and T 1591 (257th AVE NW)	0.022	0.141	0.290	0.08	No
17	US 169 and MSAS 103 (Main ST)	0.064	0.141	0.290	0.22	No
18	US 169 and M 31 (Main St/Gateway Dr)	0.087	0.141	0.360	0.24	No
19	US 169 and CSAH 4 (Fremont AVE)	0.947	0.693	0.980	0.97	No
20	US 169 and M 170 (5th Ave N)	0.111	0.141	0.400	0.28	No
21	US 169 and MSAS 109 (Oak St)	0.104	0.141	0.310	0.34	No
22	US 169 and T 123 (273rd AVE NW)	0.194	0.141	0.320	0.61	No
23	US 169 and T 1636 (123rd ST NW)	0.028	0.141	0.320	0.09	No
24	US 169 and T 986 (278th Ave)	0.000	0.141	0.320	0.00	No
25	US 169 and T 796 (278th AVE NW)	0.028	0.141	0.320	0.09	No
26	US 169 and PVT 134 (280th AVE NW)	0.000	0.141	0.320	0.00	No
27	US 169 and T 121 (283rd Ave)	0.056	0.141	0.320	0.18	No
28	CSAH 9 and CON 299	0.351	0.141	0.630	0.56	No
29	CSAH 9 and CON 2398	0.321	0.141	0.510	0.63	No
30	US 169 and T 109 (303rd Ave)	0.028	0.141	0.320	0.09	No
31	US 169 and CR 38 (305th Ave)	0.165	0.141	0.320	0.52	No
32	US 169 and T 1160 (312th Ave)	0.000	0.141	0.400	0.00	No
33	US 169 and CSAH 2 (313th Ave)	0.055	0.141	0.320	0.17	No
34	CSAH 29 (Rum River DR) and CON 110	0.093	0.141	0.330	0.28	No
35	CR 45 (Rum River DR) and CON 3026	0.153	0.141	0.330	0.46	No

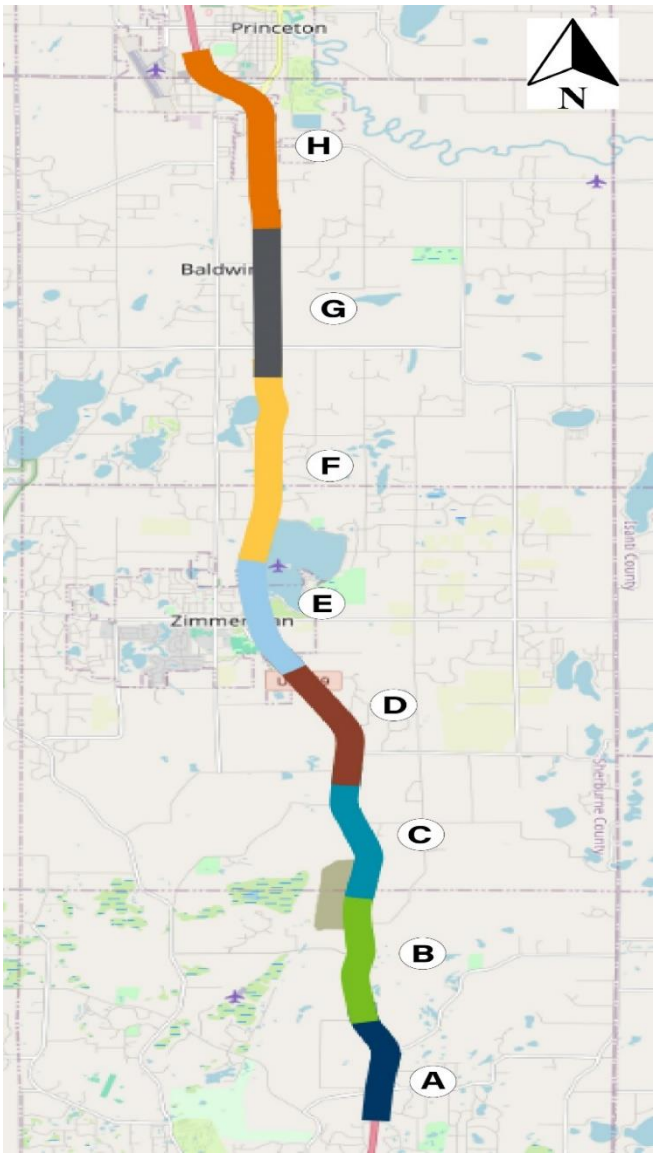
Intersection operates within the normal range.

**Note: J-turns were implemented at these intersections in 2021. Consequently, the current critical rates may not accurately reflect the updated safety conditions. The average rate at these intersections should be taken with caution.*

5.2. Segment Level Analysis

To facilitate a detailed and comprehensive traffic safety analysis, the study corridor has been systematically divided into eight segments, labeled from A to H as shown. This segmentation is primarily based on the distribution of crashes along the corridor, as well as the unique roadway characteristics of each segment.

Each segment was thoroughly evaluated to identify specific safety concerns and potential areas for field review.



Corridor Segmentation

The following table presents the characteristics of each segment, including the length and Average Annual Daily Traffic (AADT) values:

Seg.	From	To	Length (mi)	AADT*
A	CSAH 33 Interchange (Elk River)	213th Ave NW	1.7	25,123
B	Access Road to 'Gerber Collision & Glass Factory'	South of Livonia Pit	1.8	25,123
C	Livonia Pit	243rd Ave NW	1.8	25,123
D	243rd Ave	255th Ave	1.9	25,123
E	255th Ave	269th Ave (Zimmerman Interchange Project Area)	1.8	19,557
F	South of 273rd Ave	Interchange of 293rd Ave	2.8	19,557
G	Interchange of 293rd Ave	305th Ave	2.2	19,557
H	312th Ave	CSAH 29 Interchange (Princeton, MN)	2.6	19,557

**Note:* *AADT values are sourced from the MnDOT Traffic Mapping Application.*

Segment Safety Screening

The MnDOT Safety Screening tool was utilized to evaluate the safety performance of each segment along the corridor, using five years of crash data from January 2020 to December 2024. This tool helps in identifying segments with higher-than-expected crash rates by comparing observed crash rates to critical rates derived from similar roadways statewide.

- **Observed Crash Rate**: The number of crashes per million vehicle miles traveled (MVMT).
- **Critical Rate**: This is a statistical benchmark based on crash rates from similar trunk highways across the state.
- **Critical Index**: The ratio of the observed crash rate to the critical crash rate. A critical index greater than 1.0 indicates that the observed crash rate exceeds the critical rate, suggesting that the segment operates outside the expected, normal range.

The following table summarizes the results of the safety screening for each segment of the corridor:

Summary of Safety Screening of Segments (Segments Includes Intersections)

Segment	From	To	Total Crash Rate (CR)			Critical Index	Critical (Yes/No)
			Observed	State Average	Critical		
A	CSAH 33 Interchange (Elk River)	213th Ave NW	0.833	0.304	0.470	1.77	Yes
B	Access Road to 'Gerber Collision & Glass Factory'	South of Livonia Pit	1.175	0.304	0.470	2.50	Yes
C	Livonia Pit	243rd Ave NW	0.606	0.304	0.470	1.29	Yes
D	243rd Ave	255th Ave	0.688	0.304	0.460	1.50	Yes
E	255th Ave (South of Zimmerman)	269th Ave (North of Zimmerman)	1.602	0.304	0.490	3.27	Yes
F	South of 273rd Ave	Interchange of 293rd Ave	0.470	0.304	0.450	1.04	Yes
G	Interchange of 293rd Ave	305th Ave	0.573	0.304	0.470	1.22	Yes
H	312th Ave	CSAH 29 Interchange (Princeton, MN)	0.528	0.304	0.460	1.15	Yes

Segment operates outside the normal range.

The safety screening results indicate that all evaluated segments of the study corridor have crash rates exceeding the critical threshold values. This suggests that these segments are operating outside the expected, normal range for similar roadways, highlighting the need for a more detailed investigation of crashes along each segment.

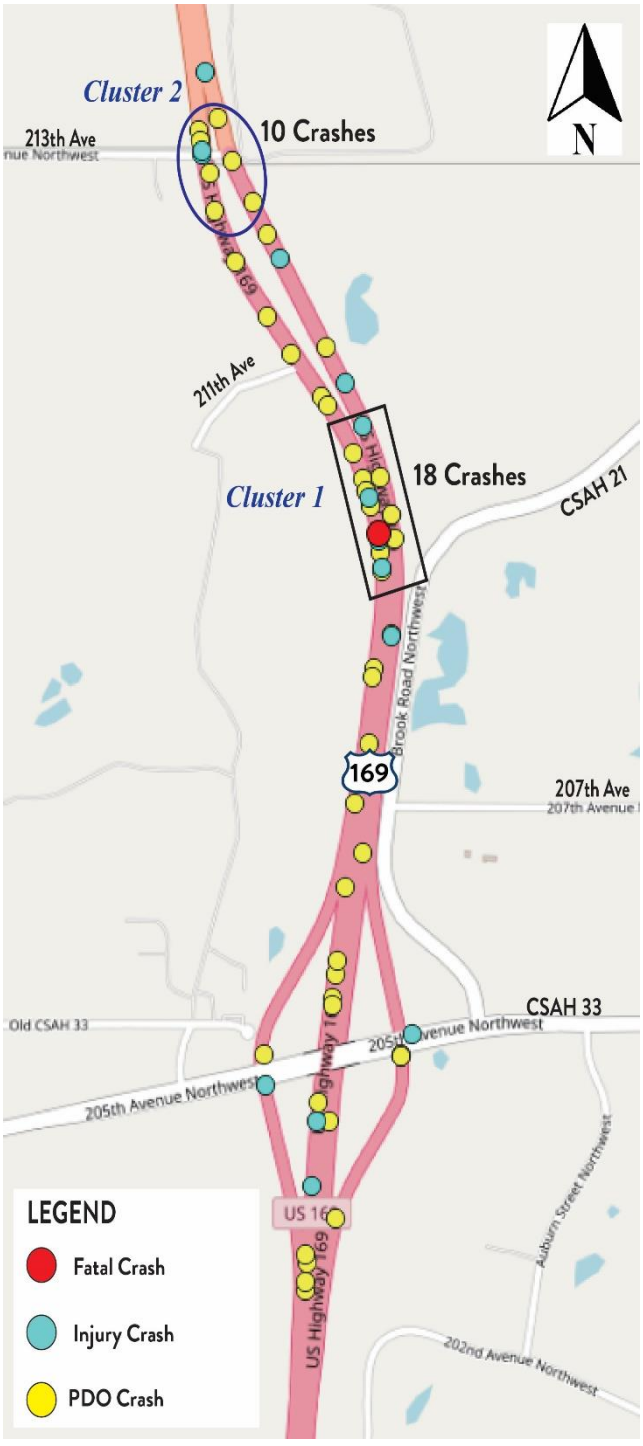
In the next section, we will conduct a detailed examination of each individual segment. This analysis will include identifying crash clusters (areas with a high concentration of crashes) and examining the attributes of these crashes to understand the underlying factors contributing to the elevated crash rates.

5.2.1. Segment A: From Southern End of Project Start to 213th Ave NW

Segment A spans 1.7 miles from the southern end of the project start to 213th Ave NW. This segment has been identified as having a significant number of run-off-road crashes, with approximately 48% of crashes occurring under adverse road surface conditions such as wet, icy, snowy, or slushy surfaces. Notably, two crash clusters are primarily located on horizontal curves within this segment.

Segment A		
Crash Attributes	**Counts**	**Percent (%)**
Total Crashes	65	-
Fatal (K)	1	1.5
Serious Injury (A)	0	0.0
Minor Injury (B)	6	9.2
Possible Injury (C)	8	12.3
Property Damage Only (O)	50	76.9
Run-off-Road	36	55.4
Front to Rear	11	16.9
Cable Median Barrier	17	26.2
Dark (No Street Light)	20	30.8
Daylight	41	63.1
Road Surface Conditions (wet, icy, snow, slush, etc.)	31	47.7

Attributes	Crash Counts	
	Cluster 1	Cluster 2
Total Crashes	18	10
Fatal (K)	1	0
Serious Injury (A)	0	0
Minor Injury (B)	1	1
Possible Injury (C)	3	1
Property Damage Only (O)	13	8
Single Vehicle Crash	14	7
Multiple Veh Crash	4	3
Run-off-Road	14	6
Angle Crash	0	2
Front to Rear	1	1
Sideswipe	2	0
Intersection Related	1	5
Dark (No Street Lights)	4	4
Road Surface Conditions (wet, icy, snow, slush, etc.)	11	5
Curve Left	7	2
Curve Right	9	2
Northbound	2	3
Southbound	12	5
Westbound	0	2
Eastbound	0	0



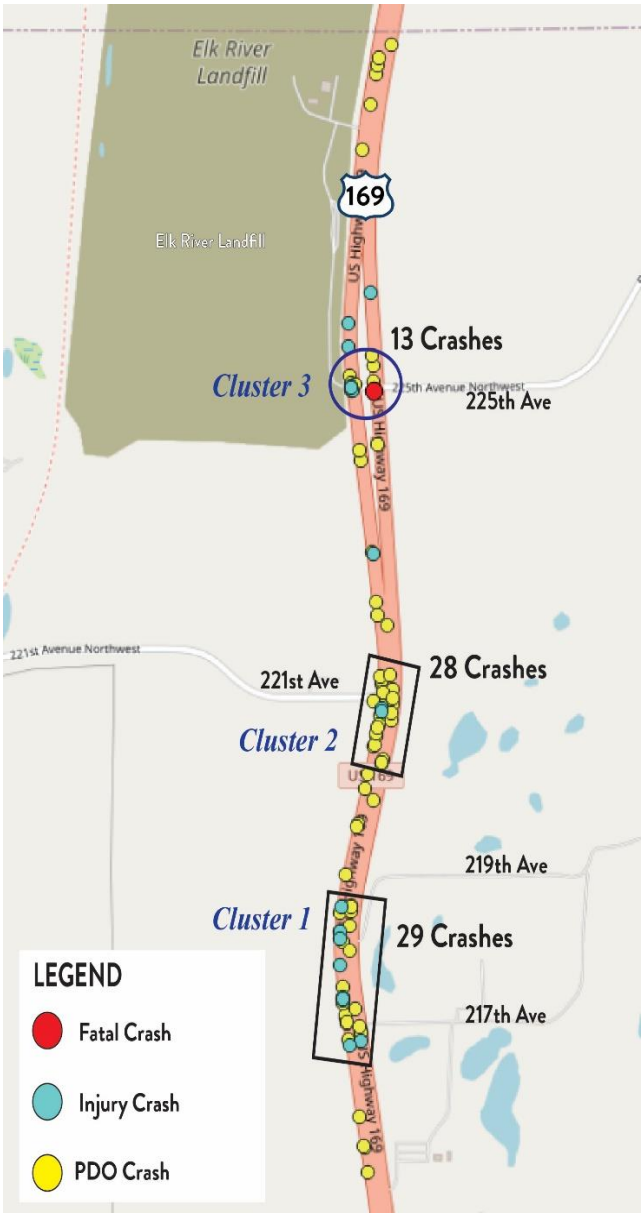
5.2.2. Segment B: From Access Road to 'Gerber Collision & Glass Factory' to South of Livonia Pit

Segment B spans 1.8 miles, covering access roads to key locations such as ERX Motor Park, Elk River Landfill, and local roads 217th Ave, 219th Ave, and 21st Ave. The segment's start and end coordinates are [45.361612, -93.563313] and [45.386388, -93.563087], respectively. This segment has experienced a variety of crash types, with notable incidents and patterns that warrant detailed analysis. A fatal crash occurred in February 2024 at the intersection of US 169 and 25th Ave. Vehicle 1 attempted to cross the northbound lanes from the east side and collided with a northbound Vehicle 2.

Approximately 57% of crashes in this segment are run-off-road incidents and 34% of all crashes involve collisions with the median barrier. Two primary crash clusters are located on horizontal curves within this segment. The following tables summarize the crash attributes for Segment B.

Segment B		
Attributes	**Counts**	**Percent (%)**
Total Crashes	97	-
Fatal (K)	1	1.0
Serious Injury (A)	0	0.0
Minor Injury (B)	7	7.2
Possible Injury (C)	12	12.4
Property Damage Only (O)	77	79.4
Intersection Related	28	28.9
Angle Collision	9	9.3
Run-off-Road	55	56.7
Front to Rear	12	12.4
Cable Median Barrier	33	34.0
Dark (No Street Light)	28	28.9
Daylight	59	60.8
Road Surface Conditions (wet, icy, snow, slush, etc.)	42	43.3

Attributes	Crash Counts		
	Cluster 1	**Cluster 2**	**Cluster 3**
Total Crashes	29	28	13
Fatal (K)	0	0	1
Serious Injury (A)	0	0	0
Minor Injury (B)	0	2	2
Possible Injury (C)	9	0	2
Property Damage Only (O)	20	26	8
Single Vehicle Crash	18	17	5
Multiple Veh Crash	11	11	8
Run-off-Road	18	16	4
Angle Crash	2	2	4
Front to Rear	6	5	1
Sideswipe	3	3	1
Intersection Related	6	12	7
Dark (No Street Lights)	9	10	5
Road Surface Conditions (wet, icy, snow, slush, etc.)	16	10	5
Curve Left	9	4	1
Curve Right	6	10	0
Northbound	14	12	2
Southbound	14	15	7

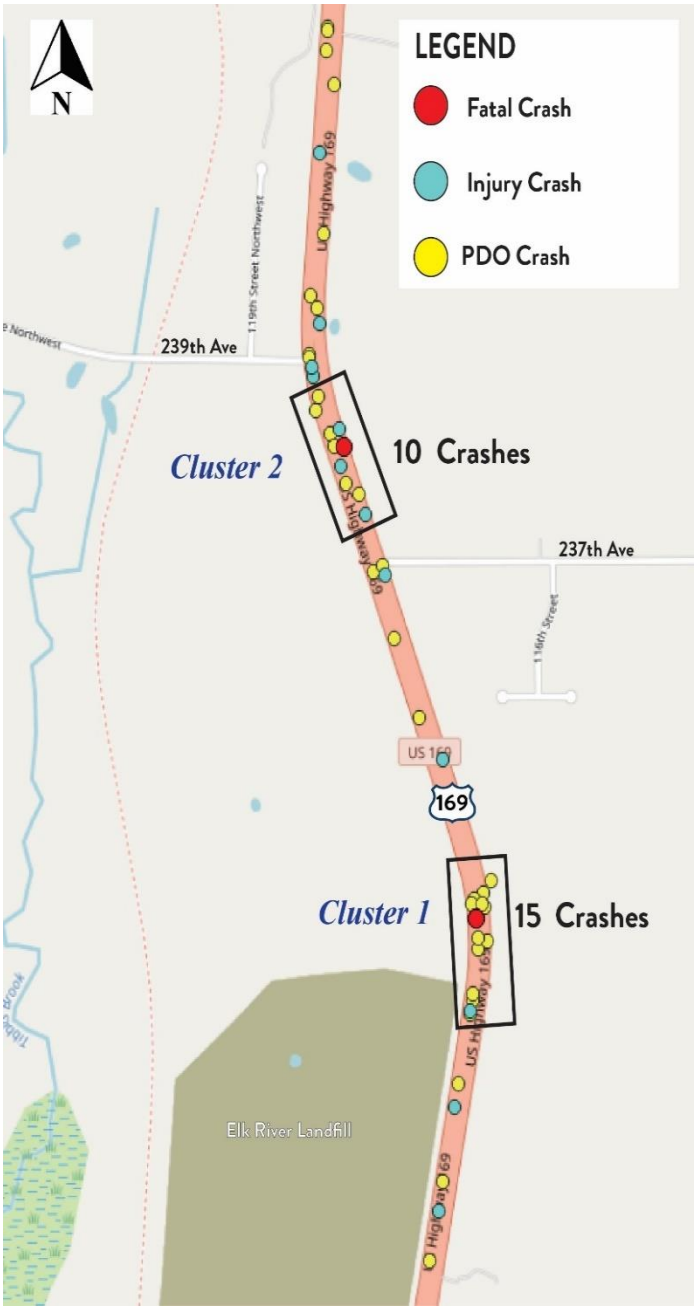


5.2.3. Segment C: From Livonia Pit to 243rd Ave

Segment C spans 1.8 miles, including access roads to key locations such as Livonia Pit, Manthei Hog Farm, and local roads 237th Ave and 239th Ave. The segment's start and end coordinates are [45.386009, -93.562987] and [45.4106089, -93.5660566], respectively. This segment has experienced two fatal crashes in 2023. A fatal head-on collision occurred when a southbound vehicle ran off the road, crossed the median, and collided with a northbound vehicle. Another fatal crash involved a motorcyclist who lost control.

One primary crash cluster is located on a horizontal curve within this segment. This cluster exhibits a higher concentration of run-off-road crashes. Second crash cluster, located between 237th Ave and 239th Ave, has 10 crashes including one fatal crash. The following tables summarize the crash attributes for Segment C.

Segment C		
Attributes	**Counts**	**Percent (%)**
Total Crashes	50	-
Fatal (K)	2	4.0
Serious Injury (A)	0	0.0
Minor Injury (B)	5	10.0
Possible Injury (C)	8	16.0
Property Damage Only (O)	35	70.0
Intersection Related	10	20.0
Angle Collision	6	12.0
Run-off-Road	29	58.0
Front to Rear	6	12.0
Cable Median Barrier	13	26.0
Dark (No Street Light)	13	26.0
Daylight	34	68.0
Road Surface Conditions (wet, icy, snow, slush, etc.)	24	48.0



Attributes	Crash Counts	
	Cluster 1	Cluster 2
Total Crashes	15	10
Fatal (K)	1	1
Serious Injury (A)	0	0
Minor Injury (B)	1	2
Possible Injury (C)	1	1
Property Damage Only (O)	12	6
Single Vehicle Crash	13	6
Multiple Veh Crash	2	4
Run-off-Road	14	6
Sideswipe	1	1
Road Surface Conditions (wet, icy, snow, slush, etc.)	6	7
Curve Left	4	5
Curve Right	10	0
Northbound	3	4
Southbound	11	6

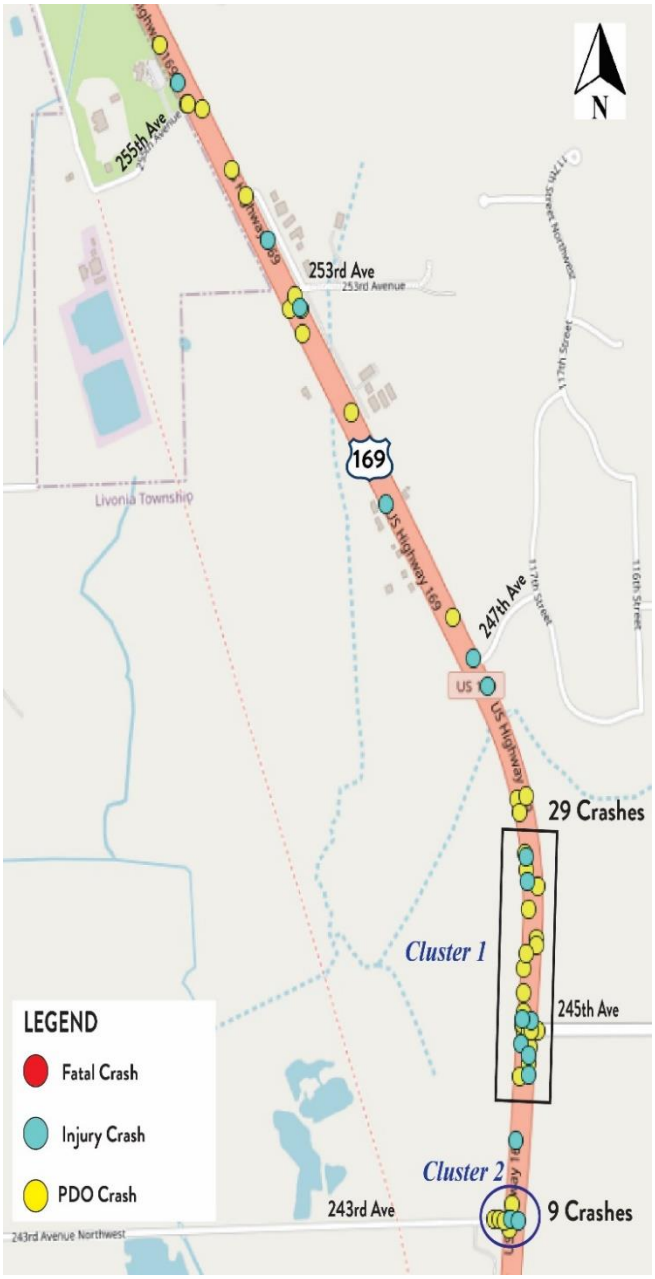
5.2.4. Segment D: From 243rd Ave to 255th Ave

Segment D spans 1.9 miles, and have intersections with local roads such as 243rd Ave, 245th Ave, 247th Ave, and 255th Ave. The segment's start and end coordinates are [45.4103803, -93.5660331] and [45.434921, -93.578881], respectively.

One major crash cluster with total 29 crashes is located on a horizontal curve within this segment. Another crash cluster is located at the intersection of 243rd Ave, with eight intersection-related crashes recorded. The following tables summarize the crash attributes for Segment D.

Segment D		
Attributes	**Counts**	**Percent (%)**
Total Crashes	60	
Fatal (K)	0	0.0
Serious Injury (A)	0	0.0
Minor Injury (B)	4	6.7
Possible Injury (C)	12	20.0
Property Damage Only (O)	44	73.3
Intersection Related	28	46.7
Angle Collision	11	18.3
Run-off-Road	16	26.7
Front to Rear	13	21.7
Cable Median Barrier	1	1.7
Dark (No Street Light)	14	23.3
Daylight	39	65.0
Road Surface Conditions (wet, icy, snow, slush, etc.)	20	33.3

Attributes	Cluster 1 Counts	Cluster 2 Counts
Total Crashes	29	9
Fatal (K)	0	0
Serious Injury (A)	0	0
Minor Injury (B)	1	2
Possible Injury (C)	6	0
Property Damage Only (O)	22	7
Single Vehicle Crash	11	2
Multiple Veh Crash	18	7
Run-off-Road	7	2
Angle Crash	7	1
Front to Rear	4	5
Sideswipe	6	1
Intersection Related	15	8
Dark (No Street Lights)	7	2
Road Surface Conditions (wet, icy, snow, slush, etc.)	11	2
Northbound	8	2
Southbound	13	1
Westbound	8	0
Eastbound	0	6



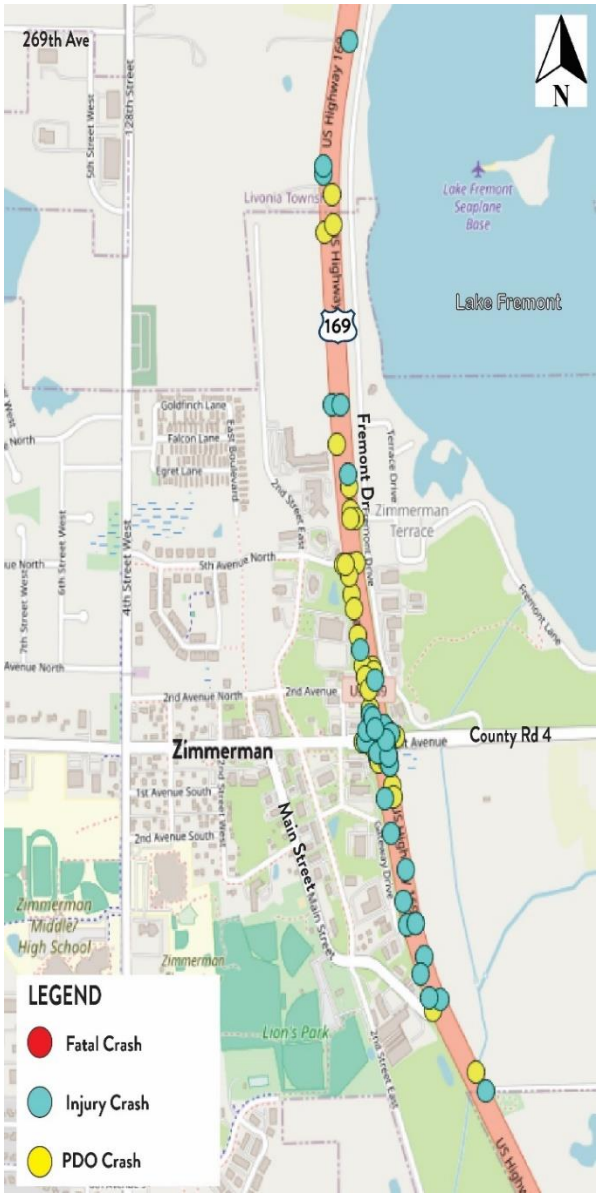
5.2.5. Segment E: From 255th Ave to 269th Ave (Zimmerman Interchange Project Area)

Segment E spans 1.8 miles and includes intersections with local roads such as 257th Ave, Main Street, and County Road 4 (CR 4). This segment passes through the city of Zimmerman and is part of the Zimmerman Interchange Project. The Zimmerman Interchange Project aims to enhance traffic flow and safety by replacing the signalized intersection of US 169 with CR 4 with a new interchange. The project area extends from approximately 255th Ave (south of CR 4, [45.434561, -93.578860]) to a point parallel to 269th Ave (north of CR 4, [45.458129, -93.585478]). This significant infrastructure improvement is expected to reduce congestion and improve safety for all road users.

Due to the planned Zimmerman Interchange Project, detailed crash data analysis and field investigations for this segment will not be carried out. The construction of the interchange is anticipated to address many of the current safety and congestion issues, making a detailed analysis less relevant at this stage.

Although detailed analysis is not conducted for this segment, the following table provides a summary of the crash attributes for the existing configuration of Segment E.

Segment E		
Attributes	**Counts**	**Percent (%)**
Total Crashes	103	-
Fatal (K)	0	0.0
Serious Injury (A)	3	0.0
Minor Injury (B)	10	9.7
Possible Injury (C)	25	24.3
Property Damage Only (O)	65	66.0
Intersection Related	66	64.1
Angle Collision	22	21.4
Run-off-Road	11	10.7
Front to Rear	54	52.4
Cable Median Barrier	0	0.0
Dark (No Street Light)	10	9.7
Daylight	75	72.8
Road Surface Conditions (wet, icy, snow, slush, etc.)	22	21.4



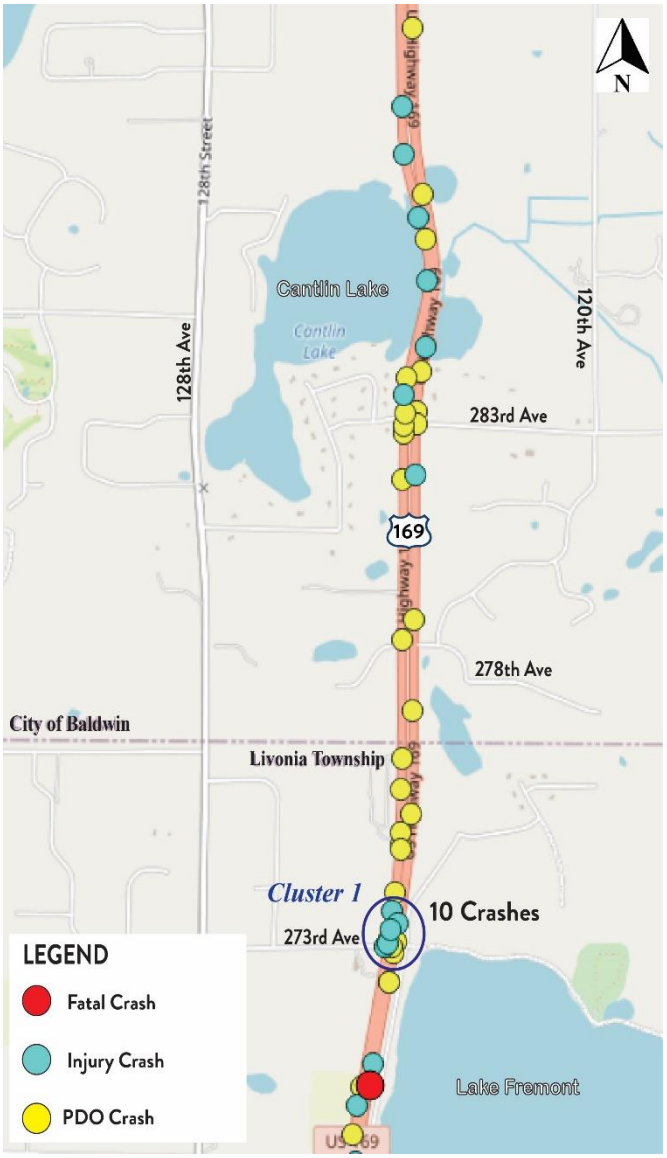
5.2.6. Segment F: From South of 273rd Ave to Interchange of 293rd Ave

Segment F spans 2.8 miles and includes intersections with local roads such as 273rd Ave, 278th Ave, and 283rd Ave. The segment's start and end coordinates are [45.4581192, -93.5851439] and [45.497370, -93.582237], respectively. This segment has experienced a total of 47 crashes, including a fatal pedestrian crash and two serious injury crashes.

In 2021, a fatal crash involving a pedestrian occurred. One major crash cluster with a total of 10 crashes is located at the intersection of US 169 and 273rd Ave. The crash data figure indicates a cluster of crashes near the intersection of US 169 and 283rd Ave. However, with six crashes in total and just two being intersection-related, this cluster does not warrant further detailed analysis and investigation at this time. The following tables summarize the crash attributes for Segment D.

Segment F		
Attributes	**Counts**	**Percent (%)**
Total Crashes	47	
Fatal (K)	1	2.1
Serious Injury (A)	2	4.3
Minor Injury (B)	4	8.5
Possible Injury (C)	8	17.0
Property Damage Only (O)	32	68.1
Intersection Related	12	25.5
Angle Collision	5	10.6
Run-off-Road	14	29.8
Front to Rear	11	23.4
Cable Median Barrier	0	0.0
Dark (No Street Light)	10	21.3
Daylight	36	76.6
Road Surface Conditions (wet, icy, snow, slush, etc.)	15	31.9

Attributes	Cluster 1
	Counts
Total Crashes	10
Fatal (K)	0
Serious Injury (A)	1
Minor Injury (B)	0
Possible Injury (C)	3
Property Damage Only (O)	6
Multiple Veh Crash	10
Run-off-Road	0
Angle Crash	4
Front to Rear	3
Sideswipe	3
Intersection Related	7
Dark (No Street Lights)	2
Road Surface Conditions (wet, icy, snow, slush, etc.)	2
Northbound	6
Southbound	3

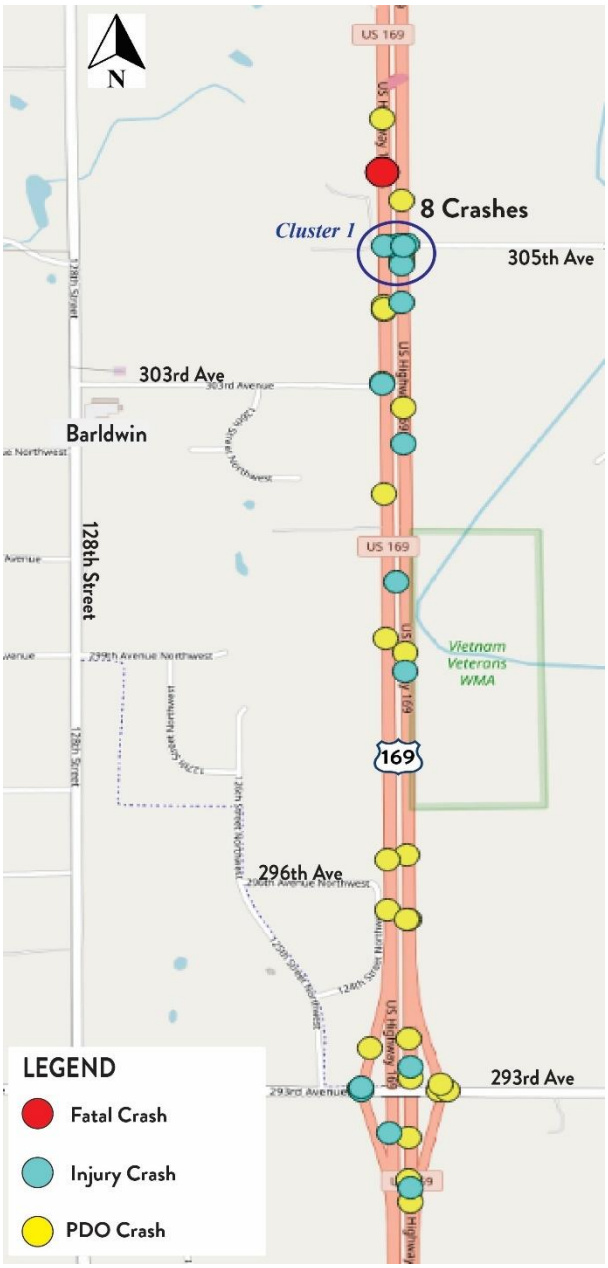


5.2.7. Segment G: From Interchange of 293rd Ave to 305th Ave

Segment G spans 2.2 miles and includes an interchange at 293rd Ave, T-intersections with local roads 303rd Ave and 305th Ave. as 273rd Ave, 278th Ave, and 283rd Ave. The segment's start and end coordinates are [45.497289, -93.582233] and [45.528912, -93.582611], respectively. This segment has experienced a total of 45 crashes, including one fatal and one serious injury crashes.

Segment G		
Attributes	**Counts**	**Percent %**
Total Crashes	45	-
Fatal (K)	1	2.2
Serious Injury (A)	1	2.2
Minor Injury (B)	6	13.3
Possible Injury (C)	10	22.2
Property Damage Only (O)	27	60.0
Intersection Related	15	33.3
Angle Collision	8	17.8
Run-off-Road	8	17.8
Front to Rear	17	37.8
Cable Median Barrier	0	0.0
Dark (No Street Light)	15	33.3
Daylight	27	60.0
Road Surface Conditions (wet, icy, snow, slush, etc.)	17	37.8

Attributes	Cluster 1 Counts
Total Crashes	8
Fatal (K)	0
Serious Injury (A)	0
Minor Injury (B)	4
Possible Injury (C)	2
Property Damage Only (O)	2
Single Vehicle Crash	2
Multiple Veh Crash	6
Run-off-Road	2
Angle Crash	5
Front to Rear	1
Sideswipe	0
Intersection Related	6
Dark (No Street Lights)	3
Road Surface Conditions (wet, icy, snow, slush, etc.)	2
Northbound	4
Southbound	0
Westbound	4



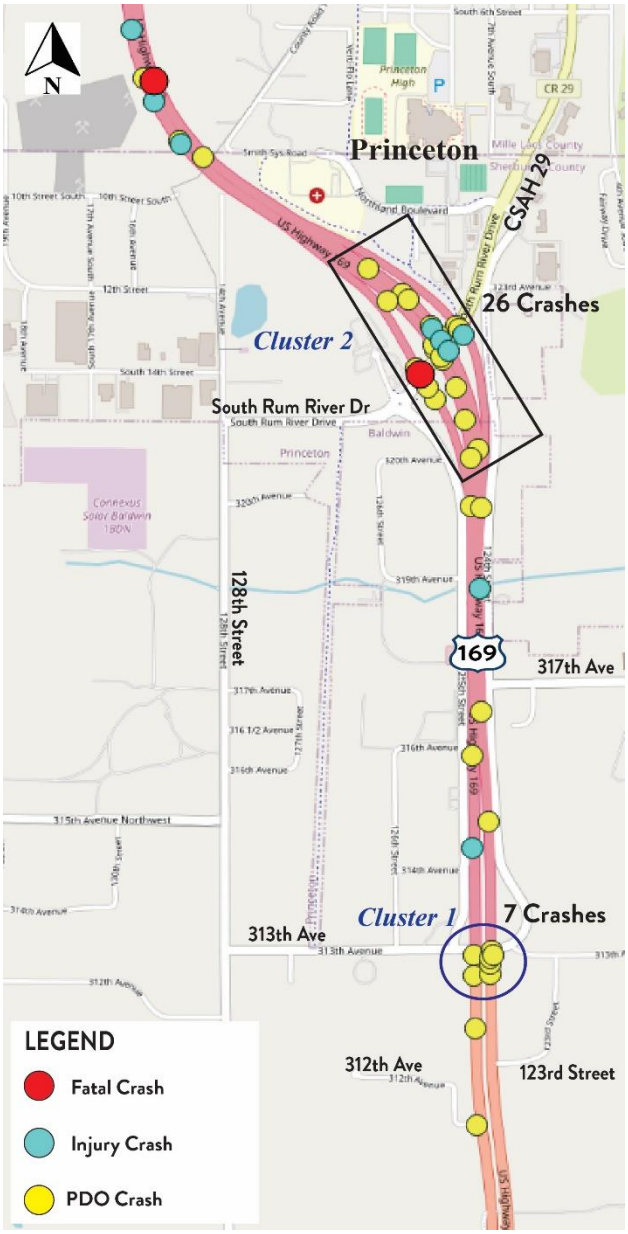
5.2.8. Segment H: From 312th Ave to CSAH 29 Interchange in Princeton

Segment H spans 2.6 miles and includes T-intersections with local roads such as 312th Ave, 313th Ave, and an interchange at CSAH 29 in Princeton, MN. The segment's start and end coordinates are [45.5298639, -93.5826422] and [45.5631125, -93.5968768], respectively. This segment has experienced a total of 49 crashes, including two fatal crashes.

Cluster 1, located at the intersection of 313th Ave, two crashes are intersection related, and three involve collisions with animals (deer). Cluster 2, located at interchange of CSAH 33, includes one fatal crash that occurred here in 2023. The crash happened when a vehicle (V1) went off the southbound off-ramp of US 169, crossed Rum River Drive South, and struck another vehicle. The driver of V1 was killed, and the occupants of V2 suffered minor injuries.

Segment H		
Attributes	**Counts**	**Percent (%)**
Total Crashes	49	
Fatal (K)	2	4.1
Serious Injury (A)	0	0.0
Minor Injury (B)	6	12.2
Possible Injury (C)	3	6.1
Property Damage Only (O)	38	77.6
Intersection Related	16	32.7
Angle Collision	7	14.3
Run-off-Road	24	49.0
Front to Rear	6	12.2
Cable Median Barrier	5	10.2
Dark (No Street Light)	12	24.5
Daylight	33	67.3
Road Surface Conditions (wet, icy, snow, slush, etc.)	26	53.1

Attributes	Cluster 1	Cluster 2
	Counts	Counts
Total Crashes	7	26
Fatal (K)	0	1
Serious Injury (A)	0	0
Minor Injury (B)	0	2
Possible Injury (C)	0	2
Property Damage Only (O)	7	21
Single Vehicle Crash	5	13
Multiple Veh Crash	2	13
Run-off-Road	1	14
Angle Crash	0	6
Front to Rear	1	4
Sideswipe	1	2
Intersection Related	2	13
Dark (No Street Lights)	3	7
Road Surface Conditions (wet, icy, snow, slush, etc.)	3	17
Curve Left	1	7
Curve Right	0	11
Northbound	4	11
Southbound	2	14



6. Community Comments/Feedback Analysis

To gather community feedback on the safety performance of the US 169 corridor, the RSA project was made available online through MnDOT's Let's Talk Transportation (MnDOT LTT) web portal. This platform provided detailed information about the project and its objectives, encouraging community engagement and participation.

Comment Collection Methodology

The MnDOT-LTT portal featured a *Comment Map* tool, allowing users to place pins on a map along the corridor and add comments about specific locations. This interactive tool enabled users to highlight safety concerns precisely where they occur. Each user could place multiple pins and provide comments for each pin, ensuring comprehensive feedback.

Three types of pins were defined to categorize comments:

1. **Needs Improvement**: Highlighting areas requiring immediate attention and safety enhancements.
2. **Opportunity**: Suggesting potential improvements or new safety measures.
3. **Other**: General comments or concerns not fitting into the above categories.

Participants were also asked to provide additional information to contextualize their comments:

- **Zip Code**: To understand the geographical distribution of respondents.
- **Corridor Usage**: To identify the purpose of their travel along the corridor (e.g., work, recreation, home, school).

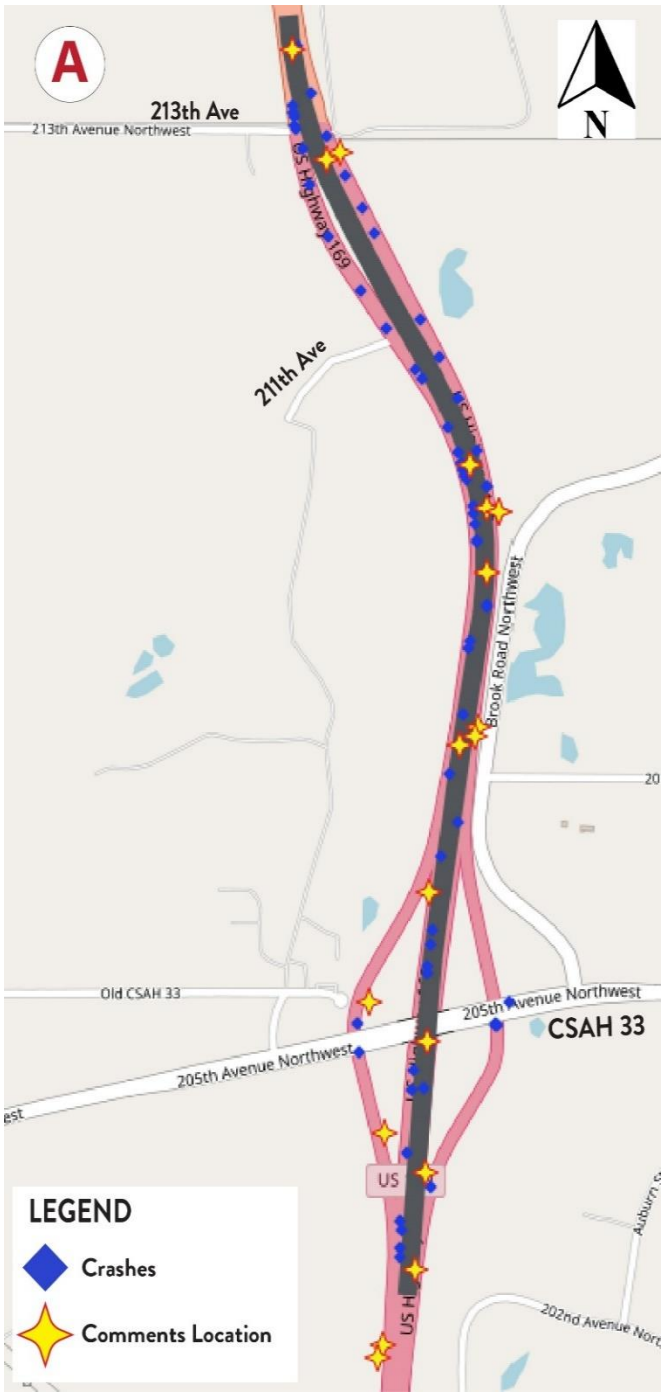
Analysis of Community Comments

The collected comments were analyzed at each segment level, as defined in Section 5 for crash data analysis, to identify clusters of safety concerns and their association with crash data clusters. This analysis aimed to determine if community-identified safety concerns align with areas of high crashes.

6.1. Segment A: From Southern End of Project Start to 213th Ave NW

i. Visibility and Lighting Improvements

- **Street Lighting**: Several participants emphasized the need for additional street lighting along the corridor to enhance visibility, particularly during nighttime and adverse weather conditions. Comments included, "Need more lighting up and down 169 from Elk River to Zimmerman. It gets really dark in the winter time and dangerous to drive at night with no extra lighting, especially in snowy and blizzard conditions."
- **Specific Lighting Issues**: A participant mentioned a specific issue with the lighting at the top of the 169 southbound exit ramp to CSAH 33.



ii. Acceleration and Merge Lanes

- **Extension of Acceleration Lanes**: Multiple comments addressed the need to extend acceleration lanes from entrance ramps to improve merging to the US 169. One detailed comment highlighted the urgency of extending the acceleration/merge lane coming onto 169 off the 197th bridge onto northbound traffic. The participant described the dangers of the current setup, where vehicles struggle to reach highway speeds before the lane ends, leading to potential collisions with semi-trucks. The comment stated, "The acceleration/merge lane coming onto US 169 off 197th bridge onto Northbound Traffic DESPERATELY NEEDS TO BE EXTENDED!!"
- **General Acceleration Lane Improvements**: Another participant suggested, "Extend acceleration lane to account for those that do not get up to speed and will just blindly merge into traffic. This will also help truckers with heavy loads to have time to get up to speed."
- **Conversion to Exit-Only Lanes**: There were suggestions to convert existing acceleration lanes into exit-only lanes to improve traffic flow. One comment proposed, "Why not extend this acceleration lane to turn into an exit-only lane at the next bridge (exit). It gives people more time to merge into traffic and it allows those exiting to move out of traffic."

iii. Lane Markings and Speed Limits

- **Visibility of Lane Markings**: Participants expressed concerns about the visibility of lane markers, especially in wet conditions. One comment noted, "Lane markers need to have better visibility in wet conditions - fog lines, center lines, etc. The new way of recessing the lines in newly constructed lanes are worse than the standard painted at surface level."

- **Speed Limit Adjustments**: There were mixed opinions on speed limits. One participant suggested increasing the speed limit from 65 to 70 mph, ideally to 75 mph. Conversely, another participant recommended enforcing the current speed limit more strictly, stating, "I don't think the speed needs to be increased drastically like some (way too many cars coming on at lower speeds) but rather enforce the speed that is posted."

iv. Safety and Enforcement

- **Traffic Enforcement**: Some participants called for increased traffic enforcement measures, including the installation of more cameras and issuing tickets to violators.

- **Signage**: There were suggestions to add more and bigger "Keep right except to pass" signs to improve traffic flow and reduce aggressive driving.

v. Specific Location Concerns

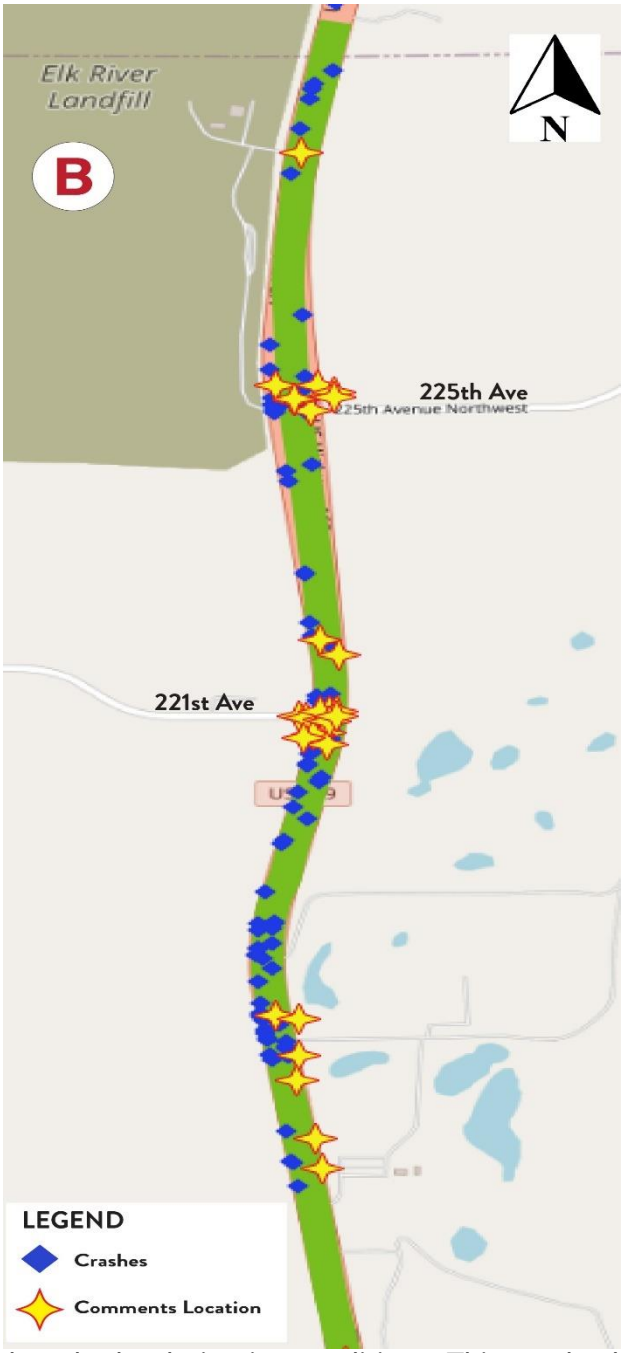
- **Slippery Conditions**: Several comments highlighted the dangers of slippery conditions on horizontal curves. One participant mentioned, "This corner on the SB lanes gets really slippery and there have been many spinouts and accidents."

- **Turn Lanes**: There were calls to extend the northbound left turn lane for truck traffic turning on 213th Ave to improve safety and traffic flow.

6.2. Segment B: From Access Road to 'Gerber Collision & Glass Factory' to South of Livonia Pit

This segment has comments clusters at intersections of 221st Ave and US 169, 225th Ave and US 169, and at the entrance of the ERX Motor Park.

i. Intersection of 221st Ave at US 169



- ***Visibility Issues***: Residents living off 221st Ave have reported significant visibility challenges at the intersection with US 169, particularly due to the curve of the highway when approaching from the south. This issue is exacerbated during winter when snow piles further obstruct the view.
- ***Crossing Difficulties***: The difficulty in seeing oncoming traffic from the north makes crossing the intersection hazardous. A participant noted that this problem is expected to worsen with the completion of the Zimmerman project, which will likely increase traffic flow.
- ***Heavy Truck Traffic:*** A participant mentioned that the area is busy with both passenger vehicles and heavy trucks, which complicates the traffic dynamics. Trucks entering and exiting the highway, especially on a hill with limited visibility, pose a risk.
- ***Road Hazards:*** The entrance area tends to collect road hazards from large trucks such as large rocks that likely fall from gravel pit trucks, causing damage to vehicles, a participant reported.
- ***Suggested Improvements***: Suggestions include creating a frontage road with on/off ramps. Also recommended to address sight lines, speed of traffic, elevation changes, and short merge lanes. Another participant suggested extending the turn lane onto 221st Ave from the south and the southbound acceleration lane to allow smoother traffic flow and bypass slower vehicles. A comment stated, "This intersection needs to be made safe for the trucks and automobiles, perhaps an overpass/ underpass type of interchange will work."

ii. Intersection of 225th Ave at US 169

- ***Steep Slope and Icy Conditions***: The approach to US 169 from 225th Ave NW is steep, making it difficult to brake during icy conditions. This can lead to vehicles sliding into traffic, posing a high risk of severe crashes. One participant noted, "When there are icy conditions there is no room for extra braking once you've started the drive from the top of the hill."
- ***Acceleration Lane for Semi Trucks***: There is a need for an acceleration lane on the median side of US 169 for northbound semi traffic from the Elk River Landfill. This would help trucks merge safely into the highway traffic.

- ***General Traffic Hazards:*** The intersection is tricky and dangerous, with a history of crashes, including a fatal accident. One participant mentioned, "Traffic can cause crashes. We have lost a life already here."
- ***High Truck Traffic:*** The intersection serves as the main entrance to the Elk River Landfill and two gravel mining operations, leading to heavy semi-truck traffic. This increases the risk of accidents due to the steady stream of vehicles and limited openings to turn or cross the highway.
- ***Suggested Improvements:*** Solutions suggested including creating an overpass, frontage road, or alternative access points to improve safety and traffic flow. A participant suggested updating both southbound and northbound lanes to include passing and acceleration lanes would help manage traffic better. One participant mentioned that there is a need for different access for 225th Ave onto US 169 to prevent semi-trucks from backing up the intersection.

iii. ERX Motor Park

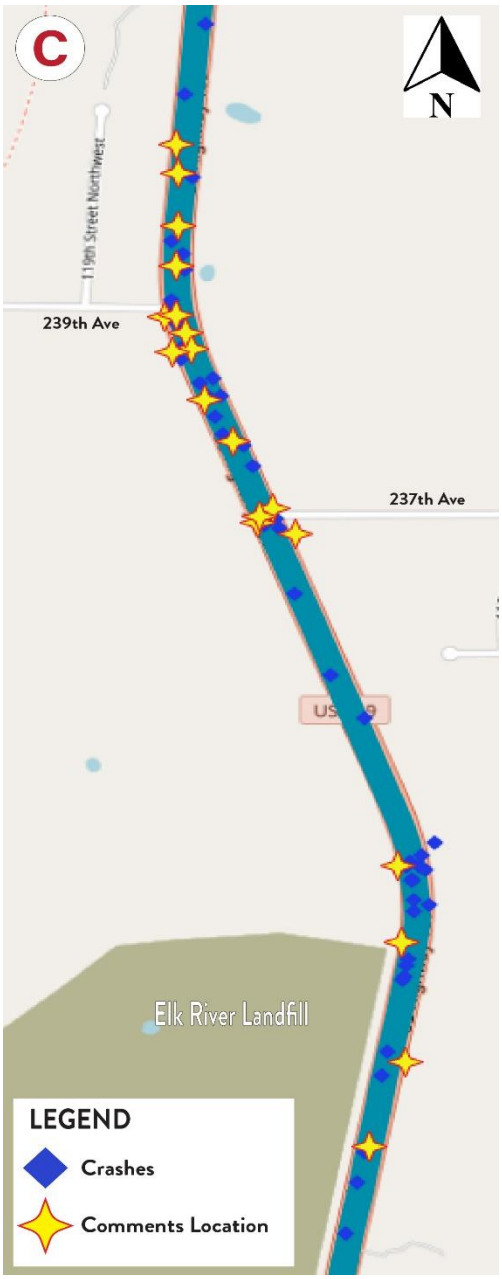
- ***Event Traffic Management***: Participants highlighted the difficulty of leaving ERX Motor Park events due to oncoming traffic. One suggestion was to add an acceleration lane to facilitate safer exits.
- ***Lighting Issues***: The lights from ERX Motor Park were reported to cause blinding conditions for drivers leaving Elk River, leading to accidents. One participant stated, "Lights from ERX need to be moved, they cause a complete blinding leaving Elk River. Seen many accidents from this alone."
- ***U-Turn Crossovers***: The new U-turn crossovers were criticized for lacking acceleration lanes, causing dangerous situations where vehicles cut into traffic without reaching highway speeds.
- ***Turn and Acceleration Lanes***: One participant mentioned that there is a need for a full turn lane and acceleration lane starting from 213 Ave to the main exit of ERX Motor Park. This would accommodate trucks, trailers, and cars, ensuring they can safely merge into highway traffic.
- ***Rerouting Private Accesses***: A comment noted that private accesses, such as the driveway to ERX, should be rerouted to safer intersections or interchanges to mitigate safety concerns.
- ***Dedicated Third Lane***: One participant suggested that ERX Motor Park should fund the addition of a dedicated third lane to serve as a bypass for vehicles braking on the highway to access the motocross.

iv. General Safety Enhancements

- ***Passing and Acceleration Lanes***: A comment suggested that updating both southbound and northbound lanes to include passing and acceleration lanes would improve traffic flow and safety.
- ***Speed Monitoring***: One participant noted that deploying a permanent state trooper to monitor speeds will address the issue of vehicles, particularly pickups, exceeding speed limits.
- ***Lighting Improvements***: Additional lighting along US 169 from Elk River to Zimmerman was suggested to enhance visibility and safety, especially during winter and blizzard conditions.

6.3. Segment C: From Livonia Pit to 243rd Ave

i. Intersection of 237th Ave at US 169



- ***Heavy Truck Traffic***: Trucks frequently use this intersection. It poses significant safety challenges, especially during busy hours. The merge lane is too short, making it difficult for trucks to accelerate and match the speed of oncoming traffic.
- ***Icy Conditions and Low Visibility***: One participant noted this area is problematic due to a short turn lane on an icy hill, coupled with low visibility as vehicles go uphill. Snow melt and refreeze on the curve make the road very slick, increasing the risk of accidents if drivers are not cautious.
- ***Sharp Turn and Angle***: One participant mentioned that the turn lane from southbound US 169 onto 237th Ave (County Road 74) is tricky to navigate. Crossing the northbound lanes can be challenging, and the turn itself is sharp due to the angle of the intersection. This design issue complicates safe maneuvering for drivers.

ii. Intersection of 239th Ave at US 169

- ***Short Turn Lane:*** The turn lane at this intersection is short and often not plowed, making it dangerous for vehicles to turn, especially during winter, one participant noted.
- ***Increased Traffic from the North***: A comment highlighted that with the removal of the Zimmerman intersection, there will be a constant flow of traffic from the north, making it more challenging to cross incoming traffic. This issue is compounded by the inability to see over the hill when heading north from 239th Ave.
- ***Southbound and Northbound Acceleration Lanes***: One comment stated, "Turning south off of 239th needs an acceleration lane. Traffic does not move over and end up waiting long periods for a gap, and in the winter the road is not plowed, making it difficult to accelerate uphill into traffic."
- ***Extended Turn Lane:*** A participant suggested that extending the northbound turn lane would prevent vehicles from braking on the highway, improving safety.
- ***Black Ice Formation:*** One comment mentioned, “Traffic cutting across US 169 causes black ice to build up in the left lane at the base of the hill, creating hazardous driving conditions.

iii. General Comments

- ***Horizontal Curve:*** Participants mentioned that the turns (curve) in this segment are deadly, specifically in the winter. A comment highlighted, "Turn is too sharp, needs to be banked up better. I worry about spinning out or going in the ditch there every day.”
- ***Truck Traffic:*** A participant highlighted that trucks frequently pull across in front of cars at high speeds, creating dangerous situations.

- **Visibility and Speed Variations**: A comment stated, that when heading south up the hill, drivers lose sight of vehicles ahead, leading to speed variations and sudden braking. This has contributed to accidents, especially in icy conditions.
- **Cable Barriers**: Installing cable barriers along northbound US 169 could prevent vehicles from crossing the median and causing head-on collisions. A retired firefighter mentioned, "It would be nice to have cable barriers going north on 169. I've seen cable barriers several times save the driver and oncoming traffic from possible fatalities." Another participant shared, "Please continue northward with median catch fencing; currently goes from Elk River but ends at 237th."
- ***Lighting***: A participant suggested additional lighting along US 169 from Elk River to Zimmerman is needed to enhance visibility and safety, especially during winter and blizzard conditions.
- ***Longer Turn Lanes and Acceleration Lanes***: Extending turn lanes and adding acceleration lanes, particularly for southbound traffic, would improve safety and traffic flow.

6.4. Segment D: From 243rd Ave to 255th Ave

i. Intersection of 243rd Ave at US 169



- **Acceleration and Turn**: Several comments highlighted that the lack of an acceleration lane makes it difficult and dangerous to merge onto US 169, especially during peak traffic times. One participant mentioned, "Needs an acceleration lane or we wait forever, or people get cut off trying to merge." Another participant noted, "Extend the turn lane while going northbound to prevent people from braking on the highway."
- ***Winter Conditions***: The center of the road becomes slick and poorly plowed during winter, exacerbating safety concerns, one participant mentioned.

ii. J-Turns near Intersection of 245th Ave at US 169

- ***Turn Around Crossings or J-Turns***: The turn-around crossings at this intersection have been described as dangerous, causing numerous near misses and evasive actions. The narrow road exacerbates these issues. One participant stated, "This area is a Death Trap. The Turn Around crossings here cause More Near Misses and Evasive actions than ever before." Another participant highlighted that the J-turns at this intersection have limited sight lines due to the curve in US 169 to the north. This issue is particularly problematic at night when it is difficult to see which lane cars are in. An acceleration lane would help mitigate this problem.
- **Need for Acceleration Lanes**: There were multiple comments for the addition of acceleration lanes for J-turns to improve safety and traffic flow. One participant suggested, "Add acceleration lanes onto the highway." Another participant noted, "Many trucks use this crossover or intersection to access the Elk

River Landfill. However, this intersection poses safety challenges for truck drivers, particularly during busy hours."

- ***Specific Issues with J-Turns***: One participant noted that J-turns require more space between oncoming cars than perpendicular crossings, making them feel more dangerous. The removal of traffic lights in Elk River has reduced the gaps in traffic, making it difficult to get up to speed in a J-turn.
- **Suggested Improvements:** There were suggestions to move the J-turns to locations with better sight lines to improve safety. One participant suggested considering overpass or underpass options to improve safety at the intersection or provide acceleration lanes for side roads. Another participant noted, to reduce confusion and improve safety, the construction of frontage roads with a reduced grade/slope to the highway was recommended.
- ***Explaining J-Turn Benefits***: Participants expressed a desire for more information on the studies and benefits of J-turns to understand their safety implications better. One participant mentioned, "Maybe you could explain the studies and the benefits of this type of turn to us in the Sherburne County Educator."

iii. Intersection of 253rd Ave at US 169

- ***Lengthening Turn Lanes***: One participant noted that the turn lanes serving businesses such as Zimmvet and the bait shop need to be extended. The current lanes are too short, forcing drivers to slow down on the highway before entering the turn lane, which can lead to dangerous situations with tailgating vehicles.
- ***Left Turn Lane Issues***: A comment highlighted that the left turn lane for accessing businesses on the opposite side of the highway is also too short. Drivers often brake while still in the left lane of the highway, creating a hazard for other vehicles.
- ***Eliminating Crossings:*** One participant proposes eliminating crossings at this intersection to improve safety. They proposed making US 169 a limited access road, with drivers using alternative routes or frontage roads to reach their destinations.
- ***J-Turn Intersections:*** Adding a J-turn was suggested to make crossing the highway safer. Additionally, extending the turn lanes off US 169 to access township roads would improve safety.
- ***Need for Acceleration Lanes:*** One participant suggested, adding acceleration lanes along US 169 for small side roads would help vehicles merge safely into traffic. This improvement is crucial for both crossing and merging traffic.

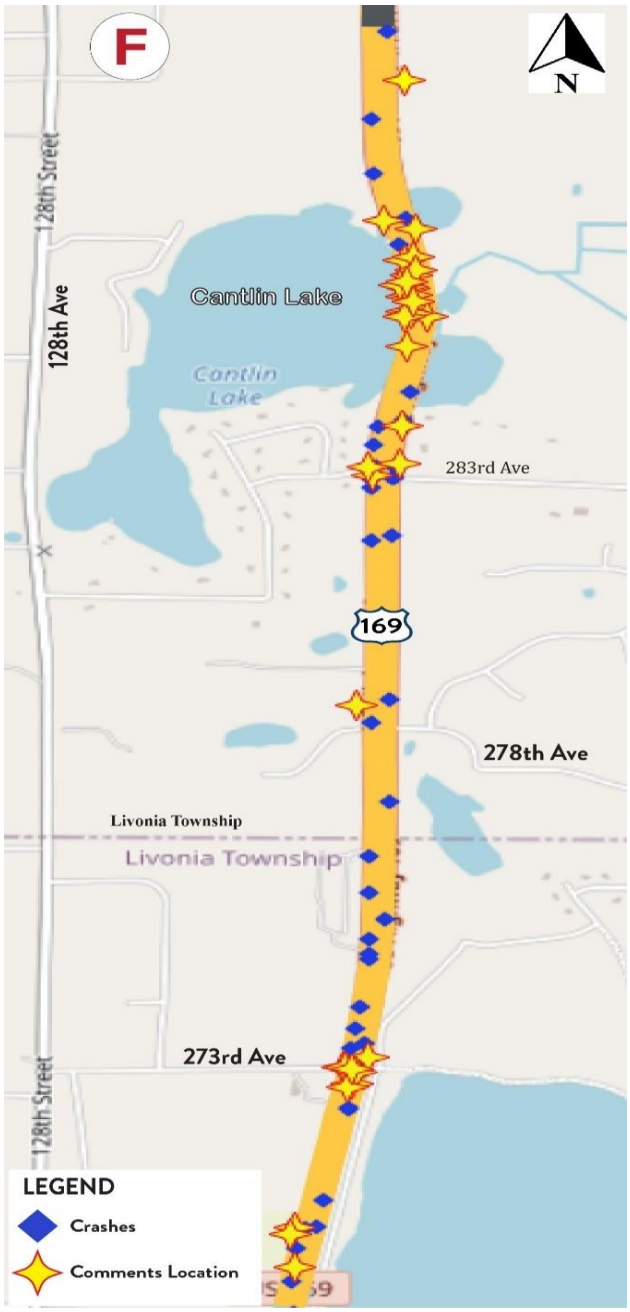
iv. General Comments

- ***Alignment of 243rd Ave and 245th Ave***: One participant suggested, there is a need to align roads 243rd Ave and 245th Ave (CSAH 19 & CSAH 25) in this area with an overpass to accommodate the high volume of traffic accessing both roadway systems.
- ***Obstructed Signage***: A comment highlighted that the sign on northbound US 169 with flashing lights indicating a red light ahead at 261st is currently obscured by trees, billboards, and construction-related dirt. This obstruction reduces the time available for drivers to react to changes in traffic flow.
- ***Specific Incidents:*** There were specific incidents where vehicles had to make sudden maneuvers to avoid collisions due to the lack of acceleration lanes. A comment described, "This morning a full-size SUV turned southbound from 247th and was accelerating, and then at CSAH 19/245th another car pulled right out in front of it."

6.5. Segment F: From South of 273rd Ave to Interchange of 293rd Ave

i. Intersection of 273rd Ave at US 169

- ***Short Turn Lane:*** One comment highlighted that the left turn lane for northbound traffic onto 273rd Ave is too short, causing significant slowdowns and dangerous situations. This issue is exacerbated in winter when the turn lane is covered with snow and ice. Another participant suggested, "Extend both of the turn lanes while going northbound to prevent people from braking on the highway."
- ***Difficult to Make Turn:*** One participant reported that making any turn at this intersection is challenging due to the heavy and fast-moving traffic. This difficulty is present regardless of the direction of the turn.
- ***Proximity to the Lake***: The intersection is dangerously close to the lake, with no barriers to prevent vehicles from veering off the road.
- ***Avoiding the Intersection***: Due to the perceived danger, some drivers go out of their way to avoid making left turns at this intersection.



ii. Intersection of 283rd Ave at US 169

- ***Dark Conditions***: The area around 283rd Ave and heading south near 273rd Ave becomes very dark at night. This makes it difficult for drivers to see vehicles pulling out from driveways, as their lights are not always visible. This situation leaves little time for other drivers to react. One participant suggested, "Street lights along this stretch might help."
- ***Acceleration Lane Requirement:*** With the removal of traffic lights in Zimmerman, there would be an increased need for an acceleration lane at this intersection. Even currently, drivers often have to wait for a long time to turn.
- ***Grass Cutting:*** A comment highlighted that the long grass in this area needs to be cut more frequently. When the grass gets too long, it obstructs the view for drivers trying to cross US 169, making it difficult to see oncoming traffic.

iii. Vicinity of Cantlin Intersection of 283rd Ave at US 169

- ***Guardrail/Barrier Installation***: Multiple participants emphasized the need for guardrails along the lake to prevent vehicles from veering off the road into the water, especially during winter when roads are slick.
- ***Lighting:*** Additional lighting along US 169 is needed to improve visibility, particularly at night and during adverse weather conditions.

- ***Center Divider:*** One participant suggested that installing a center divider where there are no trees between the northbound and southbound lanes would help reduce the blinding effect of oncoming traffic's bright lights or high beams.

iv. General Comments

- **Inadequate Snow Plowing**: On snowy days, plows reportedly stop at Zimmerman and turn back south on US 169, leaving the stretch north of Zimmerman inadequately cleared. With Baldwin Township's growing population and its transition to city status, there is a need for consistent road-clearing coverage extending north of Princeton.
- ***Speed Limit Concerns***: There is a call to lower the speed limit or at least enforce it more strictly. Drivers coming from the cities often travel at speeds exceeding 80 mph and do not slow down until they reach the two-lane section by Mille Lacs Lake.
- ***Keep Right Except to Pass Signs***: There is a suggestion to add "Keep Right Except to Pass" signs, similar to those in other states, to reduce aggressive driving and improve traffic flow.
- ***Unsafe Merging from Fremont Avenue***: A comment stated that drivers accessing US 169 southbound from Fremont Avenue often pull out in front of traffic, treating the access as an on-ramp. This forces vehicle traveling at 65 mph to brake suddenly to avoid collisions with cars entering at much lower speeds.

6.6. Segment G: From Interchange of 293rd Ave to 305th Ave

i. Intersection of 303rd Ave at US 169

- ***Lengthening the Turn Lane:*** The current turn lane at this intersection is too short, providing insufficient space for vehicles to slow down safely. Extending the turn lane would improve safety and traffic flow.
- ***Frontage Road and Bridge Proposal***: A long-term solution proposed by a participant is to connect 303rd Avenue with 305th Avenue via a frontage road and bridge.
- ***Busy Exit Usage:*** This exit is heavily used by residents of Baldwin, including trucks, to access County Road 45 and local businesses. The high volume of traffic makes it almost impossible to cross during weekends or peak hours. A participant mentioned that closing the road is not seen as a viable solution to the traffic issues.
- ***Lack of Left Turn Option***: A comment highlighted that there is no means to turn left when traveling northbound, which significantly impacts commute times. Drivers have to take the next exit, adding unnecessary time to their journeys.



ii. Intersection of 305th Ave at US 169

- ***Longer Turn Lanes:*** Multiple comments stated that the intersection needs longer turn lanes to reduce the risk of accidents. Additionally, installing traffic lights (warning lights) would improve safety.
- ***Overpass or Acceleration Lanes***: Given the high traffic volume and the removal of traffic lights in Zimmerman, an overpass or acceleration lanes would be ideal to ensure safe access to the highway, a participant mentioned.
- ***Maintaining Access Point***: Participants emphasized the importance of keeping the access point at 305th Ave open. They suggested considering an overpass in long-range plans to improve connectivity and safety.
- ***Lower Speed Limit***: There is a suggestion to lower the speed limit on US 169, especially once the Zimmerman project is completed. The increased traffic flow will make it difficult to access the highway from intersections like 305th Ave.
- ***Southbound Acceleration Lane:*** One participant suggested adding an acceleration lane for southbound traffic would facilitate easier and safer access to the highway.
- ***Opposition to J-Turn***: There is opposition to the installation of J- turns, as they are perceived to offer no benefit and would result in the destruction of trees. A participant stated, "Do not add one of those useless new horse shoe turns, does not give a benefit and will result in the destruction of the trees."

iii. Interchange of 293rd Ave (CR 9) at US 169

- ***Blind Intersection***: The bridge at this interchange creates a blind intersection, making it difficult for drivers to see oncoming traffic when exiting southbound US 169 and stopping at the stop sign. This is especially dangerous for vehicles turning left (east) onto CR 9. One participant mentioned, "This is the worst turn in Baldwin. Coming off North 169, you can not see! The bridge blocks your view." Another participant noted that the blind intersection has led to numerous accidents and near misses, with community members frequently having to stop or brake aggressively to avoid incidents.
- ***Traffic Control Measures:*** To address the dangerous conditions at intersections of ramps, one participant recommended installing lights, stop signs, or a roundabout at the intersection of the east ramps.
- ***Driveway Access Issues***: Residents with a driveway just off the ramp face significant challenges with vehicles consistently running them off the road. A participant mentioned that the upcoming changes in Zimmerman are expected to exacerbate these difficulties, particularly for semi-trucks that already struggle to navigate the traffic.

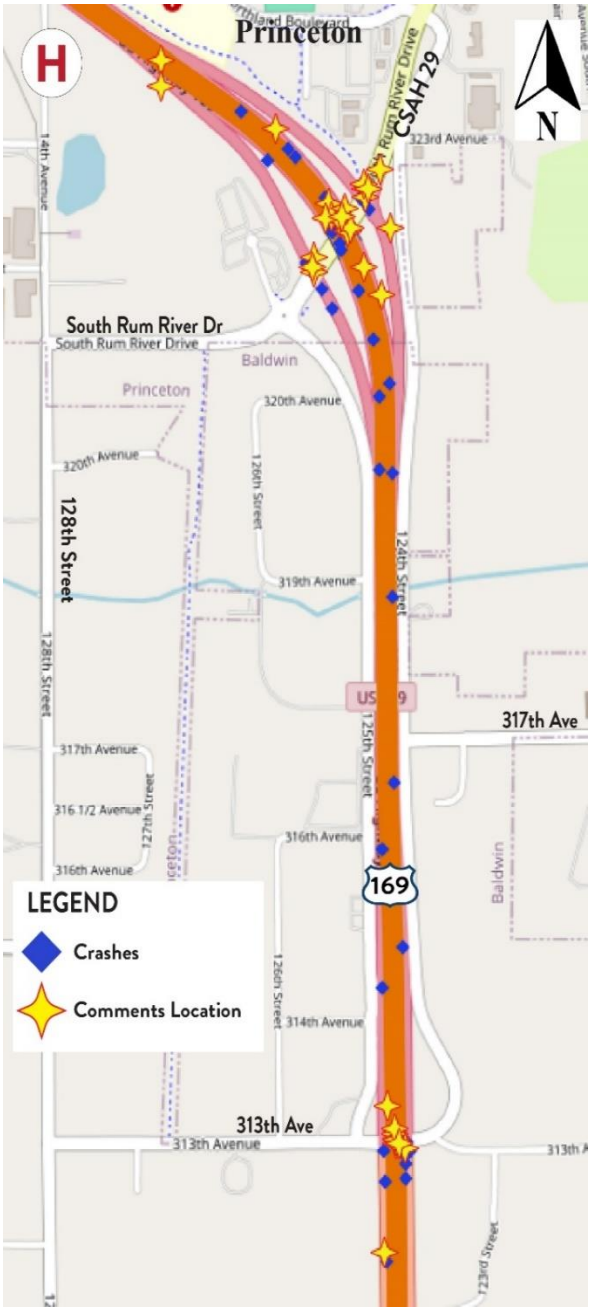
iv. General Comments

- ***Tree Removal for Improved Safety***: There is a suggestion to cut down trees along the highway to improve visibility and prevent dangerous situations where southbound traffic ends up in the northbound lane at night.
- ***Turn Lane for Veterans Memorial State Land***: One participant highlighted that adding a dedicated turn lane for the Veterans Memorial State Land is urgently needed to prevent near-accidents, especially during weekends when traffic is heavy with people heading north to hunt or to their cabins.
- ***Turn and Acceleration Lanes for Trucks***: One comment noted that there are no safety provisions for the heavy truck traffic entering and exiting Jake's Tree Service. Large trucks currently turn right off and onto US 169 without a turn lane or acceleration lane, creating unsafe conditions.

6.7. Segment H: From 312th Ave to CSAH 29 Interchange in Princeton

i. Intersection of 313th Ave at US 169

- ***Reopening the Crossing***: There were multiple suggestions to reopen the crossing at 313th Ave, limiting it to left-hand turns through the median. This would help relieve congestion at the Rum River Drive South and US HWY 169 interchange.
- ***Crossroad Implementation***: Participants suggested creating a crossroad to allow access to northbound US 169 from 313th Ave and 125th St, and vice versa. This would also facilitate crossing the highway to the other side, benefiting both travel and local businesses.
- ***Eliminating Access:*** One participant suggested eliminating the access point altogether and replacing it with a bridge or underpass. This would address safety concerns related to the proximity of the Rum River Drive interchange, which is less than a mile north of this intersection.



ii. Interchange of South Rum River Dr (CSAH 29)

- ***Dangerous Bridge Conditions***: Several comments stated that the bridge at this interchange is considered very dangerous, particularly in winter due to severe icing conditions. Participants emphasized the need for a de-icing system or resurfacing of the bridge deck to improve safety.
- ***Slippery Curve***: One comment highlighted curve in the bridge becomes extremely slippery in winter, leading to numerous accidents.
- ***Difficulty Turning***: Making left turns from the ramps onto CR 29 is nearly impossible due to the dangerous conditions and high traffic volume.
- ***Longer Northbound Entrance Ramp***: One comment mentioned extending the northbound entrance ramp would provide a longer merge zone, improving safety for drivers transitioning from the bridge to the highway.
- ***Warning Lights and Cameras***: One participant suggested installing warning lights and cameras to alert drivers of upcoming vehicles and enforcing speed limits was recommended.

iii. Intersection of South Rum River Dr (CSAH 29) at East Ramps

- ***Roundabout Proposal***: Multiple participants recommended converting this intersection into a roundabout to improve traffic flow and safety. Additionally, extending the exit and entrance ramps would help vehicles slow down and merge onto US 169 more safely.

- ***Left-Hand Turn Challenges***: Making a left-hand turn from the 169 off-ramp is often difficult, regardless of whether drivers are coming from the northbound or southbound side. This issue causes significant delays and safety concerns.
- ***Difficulty Seeing Oncoming Traffic***: Drivers coming from the off-ramp have difficulty seeing northbound/eastbound traffic on Rum River Drive. The merging zone is not clearly defined, creating confusion and potential hazards.
- ***Busy Merge Zone***: A comment highlighted that the merge zone of the channelized right-turn lane at this intersection can become very busy with high traffic volumes. Drivers coming off US 169 often struggle to enter the lane due to resistance from traffic on S Rum Drive. One suggestion was to create a double lane up to the light in the east, which would then merge into one lane,

iv. Intersection of South Rum River Dr (CSAH 29) at West Ramps

- ***Need for Roundabout***: A comment stated that a roundabout is needed at this intersection. Surprisingly, a roundabout was built nearby when this intersection experiences higher traffic volumes. Another participant suggested installing roundabouts on both sides of US 169 could help manage the heavy traffic around the bridge.
- ***Eliminating Left Turns:*** One participant suggested eliminating all left turns at this intersection. Traffic from westbound CSAH 29 to southbound US 169, and from southbound US 169 to eastbound CSAH 29, can use the roundabout at the frontage road. Another participant mentioned to improve safety, remove the cross-traffic left turn for southbound US 169 traffic. All vehicles should turn right and use the roundabout to the west. This change could reduce the number of close calls.

v. General Comments

- ***Safety and Traffic Flow Concerns***: One participant mentioned that US HWY 169 from Elk River to north of Highway 23 is hazardous due to high traffic volumes, recreational traffic, and ongoing development. Proposed solutions include adding interchanges, eliminating direct driveway access, and constructing a comprehensive frontage road system. Addressing dangerous curves and hills is also crucial. A phased approach to funding and implementation is recommended, aiming for completion by 2030. This corridor should be treated more like a freeway to enhance safety and efficiency.

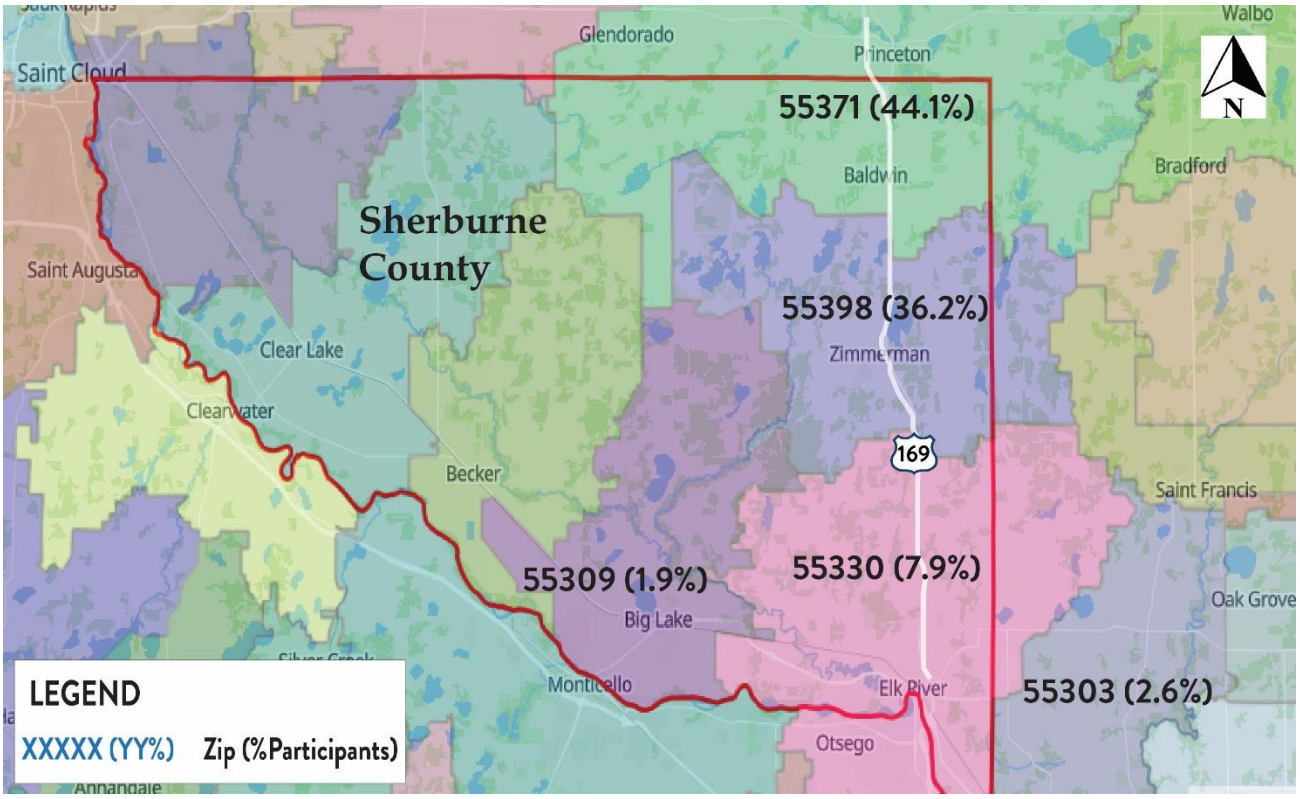
6.8. Respondent Information

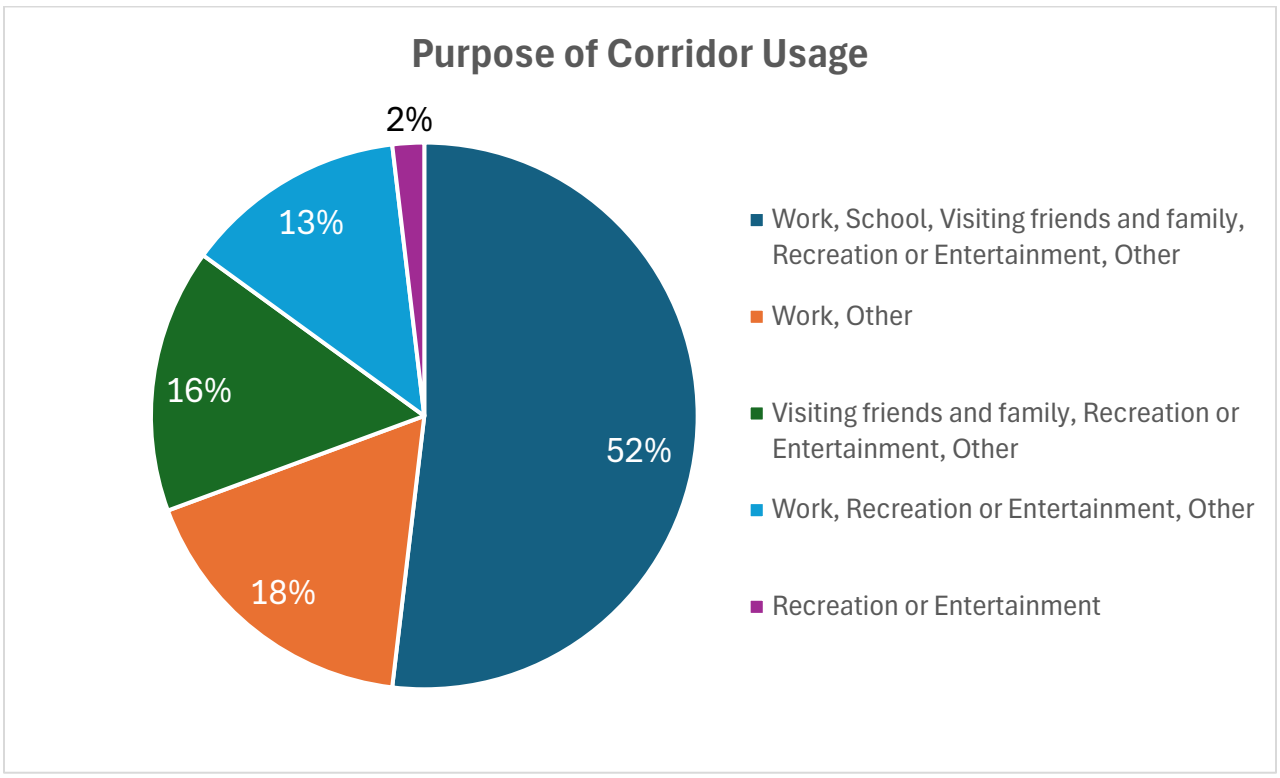
In addition to gathering community comments regarding the safety performance of the US 169 study corridor, we also collected demographic data to better understand the respondents' backgrounds and usage patterns. This information is crucial for contextualizing the feedback and ensuring that the recommendations are representative of the diverse user base.

Participants were asked to provide their Zip Code, which allowed us to understand the geographical distribution of respondents. This data helps identify whether the feedback is coming from local residents, frequent commuters, or occasional users from other regions. The percentage of participants from different Zip Codes is illustrated on the following map.

Additionally, we inquired about the purpose of their travel along the US 169 corridor. Respondents were asked to specify whether they use the corridor for: Work, School, Visiting friends and family, Recreation or Entertainment, or Other.

The following plot summarizes the participants' travel purposes along the US 169 study corridor.


Glendorado
Princeton
Walbo
Saint Cloud
55371 (44.1%)
Baldwin
Bradford
N
Sherburne
County
Saint Augusta
55398 (36.2%)
Zimmerman
Clear Lake
Clearwater
169
Becker
Saint Francis
55309 (1.9%)
55330 (7.9%)
Big Lake
Oak Grove
Monticello
Elk River
55303 (2.6%)
Otsego
LEGEND
XXXXX (YY%) Zip (%Participants)


Purpose of Corridor Usage
2%
13%
16%
52%
18%
Work, School, Visiting friends and family, Recreation or Entertainment, Other
Work, Other
Visiting friends and family, Recreation or Entertainment, Other
Work, Recreation or Entertainment, Other
Recreation or Entertainment

7. Land Use

The study corridor of US 169 is located approximately 35 miles northwest of Minneapolis, stretching from Elk River to Princeton, Minnesota. This corridor passes through a mix of urban, suburban, and rural areas, each with distinct land use characteristics that influence traffic patterns and safety considerations.

Elk River

At the southern end of the project, the city of Elk River, with a population of 27,342 (2023), serves as the county seat of Sherburne County. This area is characterized by a mix of residential, commercial, and industrial land uses. In the first five miles of the study corridor, several material suppliers and gravel pits, including concrete suppliers and asphalt plants, generate significant heavy vehicle traffic. Additionally, the Elk River Landfill, located near the intersection with 225th Ave, also contributes to the high volume of truck trips along the corridor, impacting traffic flow and safety.

The ERX Motor Park, an off-road race track located in this section, hosts events throughout the year. These events attract substantial traffic, necessitating the implementation of Traffic Management Plans (TMPs) and permits from MnDOT for larger events such as the Midwest Ride-In3. The influx of vehicles during event days can significantly affect traffic conditions and safety on US 169. A sample TMP for an event is provided in the Appendix.

Zimmerman

As the corridor continues north, it passes through the city of Zimmerman, which has a population of 6,762 (2023). Zimmerman is a growing suburban community with a mix of residential and commercial developments. One of the major intersections in this area is with County Road 4 (CR 4), which has an Average Annual Daily Traffic (AADT) of 7,912 (2023). This intersection is a critical point for traffic flow and safety. MnDOT's Zimmerman Interchange Project aims to replace the signalized intersection with a grade-separated interchange to improve traffic efficiency and safety.

Princeton

At the northern end of the study corridor lies the city of Princeton, with a population of 5,312 (2023). Princeton is a smaller community with a predominantly rural character, featuring agricultural land, residential areas, and small businesses. The transition from suburban to rural land use as the corridor approaches Princeton affects traffic patterns, with fewer heavy vehicles and lower traffic volumes compared to the southern sections.

8. Tree Removal for Sight Distance Improvement

To improve the safety performance of the US 169 corridor, the MnDOT undertook a tree removal project in 2017. The primary objective was to address sight distance issues caused by trees in the median, which were particularly problematic for crossing traffic.

The tree removal was carried out at multiple critical points along the US 169 corridor, focusing on areas with high traffic volumes and significant sight distance issues. The following before and after photos illustrate the changes made through the tree removal project.



Before Tree Removal: 283rd Ave Crossover Berm



After Tree Removal: 283rd Ave Crossover Berm



Before Tree Removal: Median Near CR 9



After Tree Removal: Median Near CR 9



Before Tree Removal: Median Near Game Farm

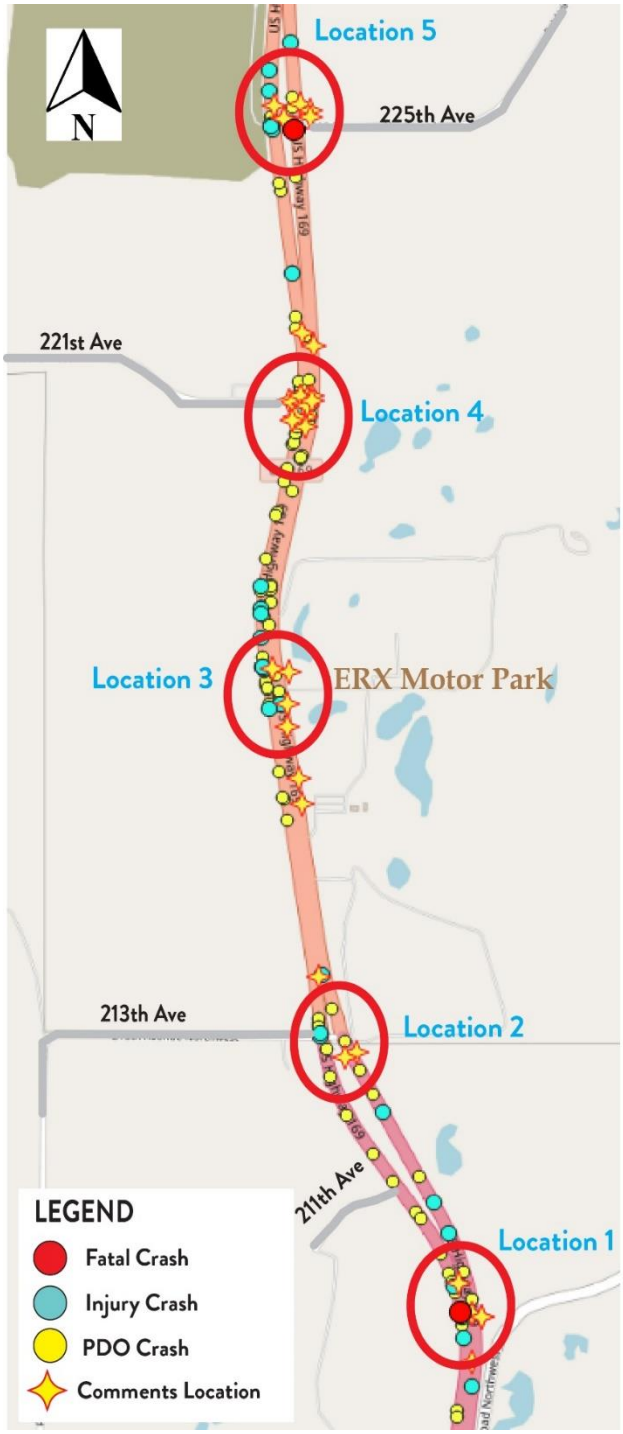


After Tree Removal: Median Near Game Farm

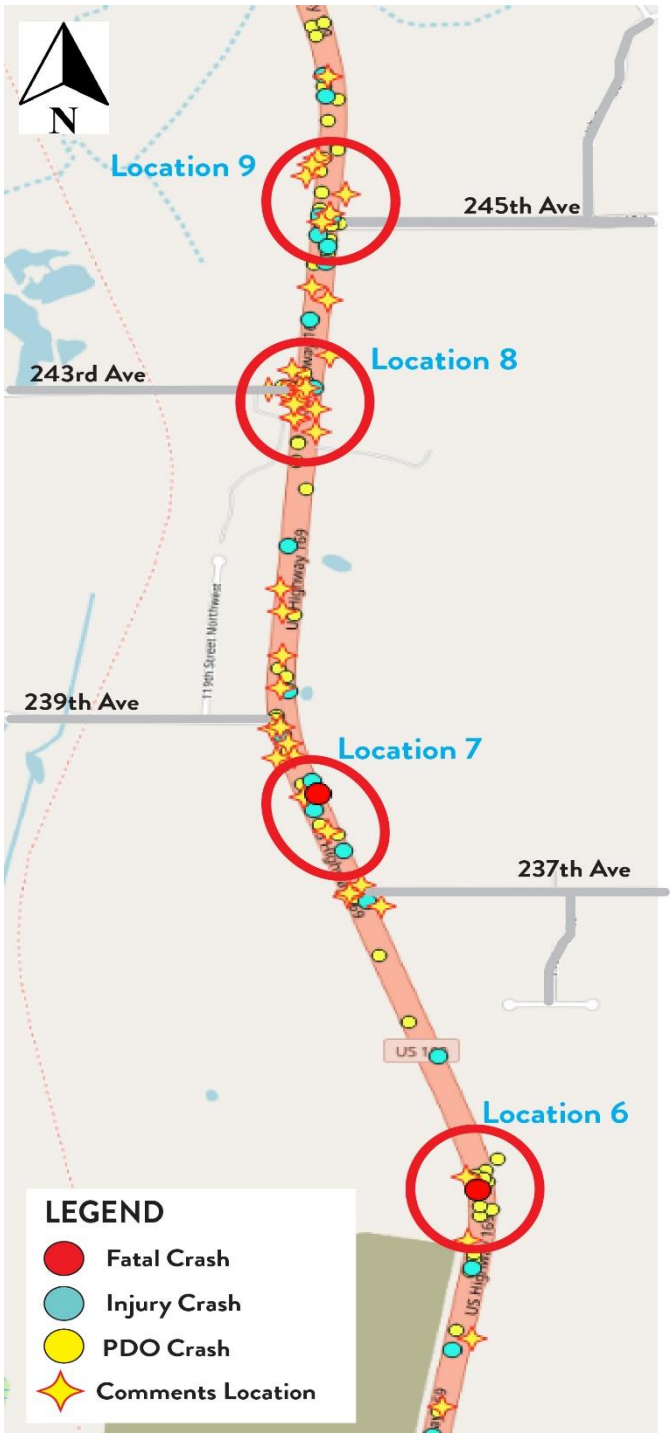
9. Recommended Locations for Field Review

Based on a comprehensive analysis of crash data and community comments, the following locations along the study corridor have been identified as critical areas for field review. These locations have been selected due to their low safety performance, challenging road conditions, or significant community concerns.

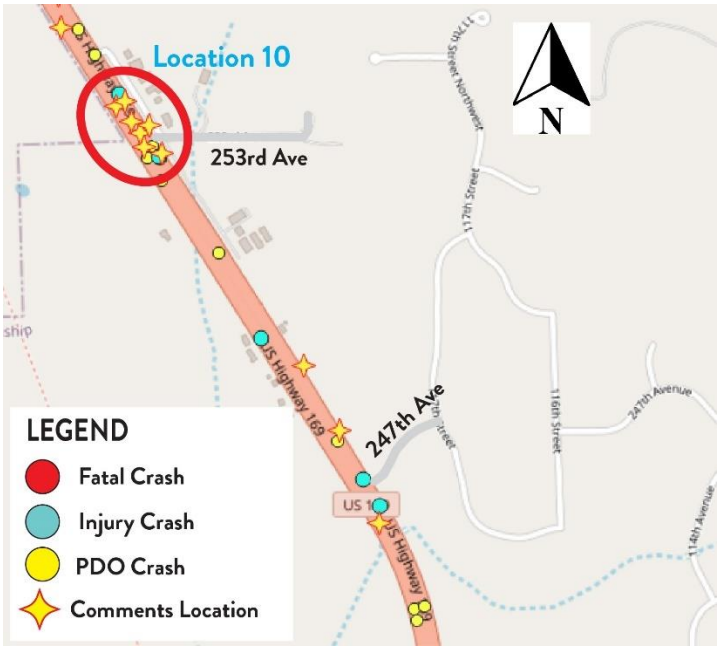
1. **Horizontal Curve South of 211th Ave NW:** This horizontal curve has been identified as a high-risk area due to a cluster of 18 crashes. These crashes include one fatal crash and 14 run-off-road crashes. Notably, 11 of these crashes occurred under non-dry surface conditions, and 12 crashes involved southbound vehicles.
2. **Intersection of 213th Ave**: This intersection is recommended for field review due to a cluster of 10 crashes. Among these, 5 crashes are intersection-related crashes.
3. **Entrance to ERX Motor Park and Crossover of 219th Ave NW**: This location experiences high traffic volumes and low safety performance, especially during events. This location is recommended for field review due to the crash cluster and participants' comments.
4. **Horizontal Curve and Intersection of 221st Ave NW (Southbound Traffic):** This location is recommended for field review based on a crash cluster of 28 crashes that includes 16 run-off-road crashes and 12 intersection-related crashes. The community comment has also mentioned the issue of visibility while crossing the road.
5. **Access Roads and Crossover of 225th Ave NW and Elk River Landfill:** This area experiences complex traffic movements due to landfill access, resulting in a crash cluster of 13 crashes. Seven of these crashes are intersection-related, including one fatal crash that occurred in 2024. Additionally, numerous participant comments have highlighted the need for a thorough review of this location.



6. **Horizontal Curve North of 225th Ave NW:** This location is recommended for field review due to a crash cluster involving 15 crashes, including 14 run-off-road crashes. Notably, 11 of these crashes occurred with southbound traffic.
7. **Segment Between 237th Ave NW and 239th Ave NW:** This segment has been identified for field review based on a crash cluster of 10 crashes including one fatal crash.
8. **Intersection of 243rd Ave NW**: This intersection has a crash cluster involving 9 incidents, with 8 being intersection-related. Additionally, community comments have highlighted concerns at this location, underscoring the need for a thorough review.
9. **Intersection of 245th Ave NW:** This intersection is recommended for field review due to a crash cluster involving 15 intersection-related incidents. However, the J-turns were established in 2021 to enhance the safety of intersections of 243rd Ave and 245th Ave.



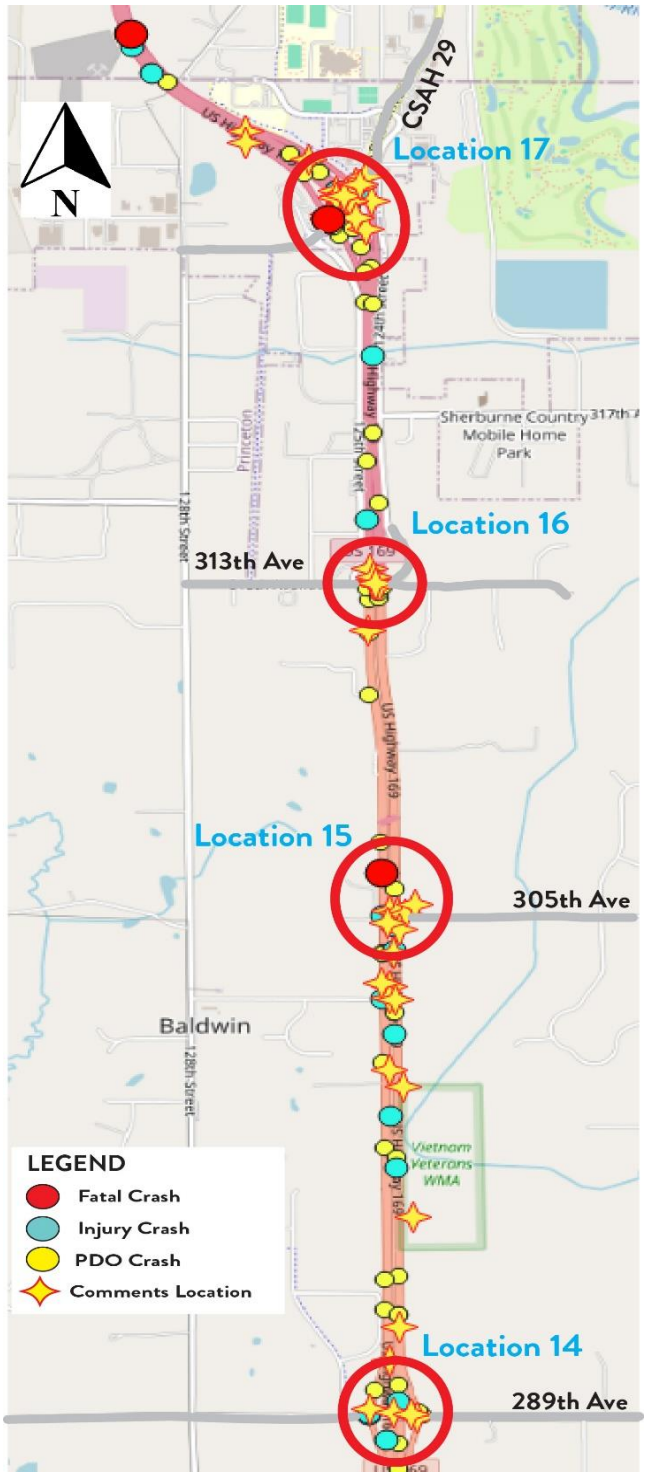
10. **Access Road and Crossover of 253rd Ave NW**: This location is recommended for field review based on the cluster of community comments.



11. **Intersection and Crossover at 273rd Ave NW**: This intersection has been identified for field review due to a crash cluster involving 10 crashes, with 7 being intersection-related. Additionally, community comments have highlighted safety concerns at this location.
12. **Intersection of 283rd Ave NW**: This intersection is recommended for field review based on both community feedback and the number of crashes reported. However, the review will be conducted if time permits.
13. **Horizontal Curve Next to Cantlin Lake:** This curve poses a significant risk due to its proximity to the lake. Community comments indicate a perceived risk, suggesting the installation of barriers along the lake to prevent vehicles from veering off the road.



14. **Intersections at East and West Ramps of US 169 to 289th Ave NW (CSAH 9)**: These intersections are recommended for field review based on community comments.
15. **Intersection and Crossover of 305th Ave NW**: This intersection has been identified for field review due to a crash cluster and feedback from the community.
16. **Intersection of 313th Ave NW**: This intersection is recommended for field review based on a crash cluster.
17. **US 19 Bridge Over CSAH 29 (S Rum River Dr) and Intersections at East and West Ramps:** This bridge has been highlighted for its safety issues, particularly slippery surface conditions during winter, as noted by numerous participants. The review should consider measures to improve traction and safety. Additionally, both intersections have been identified for field review based on number of crashes and community comments.



These recommended locations for field review are critical for identifying and implementing targeted safety improvements along the US 169 study corridor. By addressing these high-risk areas, we can significantly enhance the overall safety performance of the corridor for all road users.

Appendix A

Intersection Safety Screening

Appendix A

Intersection Safety Screening

Intersection: CSAH 33 (205th AVE NW) and US 169 E Ramps

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	1
Possible Injury (C)	0
Property Damage (PDO)	3
Total Crashes	4

Intersection Characteristics	
Entering Volume	6,503
Environment	Rural
Lighting	Lit
Traffic Control	All-way Stop

Annual crash cost = $86,800

Statewide comparison = All-way STOP

Total Crash Rate	
Observed	0.337
Statewide Average	0.306
Critical Rate	0.760
Critical Index	**0.44**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.444
Critical Rate	7.130
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.34 per MEV; this is 56% below the critical rate. Based on similar statewide intersections, an additional 6 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: CSAH 33 (205th AVE NW) and US 169 W Ramps

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	1
Possible Injury (C)	0
Property Damage (PDO)	1
Total Crashes	2

Intersection Characteristics	
Entering Volume	7,025
Environment	Rural
Lighting	Lit
Traffic Control	Thru-Stop

Annual crash cost = $79,600

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.156
Statewide Average	0.141
Critical Rate	0.450
Critical Index	**0.35**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	8.270
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.16 per MEV; this is 65% below the critical rate. Based on similar statewide intersections, an additional 4 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and M 626 (211th Ave)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	1
Total Crashes	1

Intersection Characteristics	
Entering Volume	25,143
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $3,600

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.022
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.08**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	3.840
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.02 per MEV; this is 92% below the critical rate. Based on similar statewide intersections, an additional 13 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and MSAS 139 (213th Ave NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	1
Possible Injury (C)	1
Property Damage (PDO)	5
Total Crashes	7

Intersection Characteristics	
Entering Volume	25,723
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $130,000

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.149
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.51**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	3.790
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.15 per MEV; this is 49% below the critical rate. Based on similar statewide intersections, an additional 7 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

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Intersection Safety Screening

Intersection: US 169 and M 430 (217th Ave NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	3
Total Crashes	3

Intersection Characteristics	
Entering Volume	25,323
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $10,800

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.065
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.22**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	3.820
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.07 per MEV; this is 78% below the critical rate. Based on similar statewide intersections, an additional 11 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and M 130 (219th Ave NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	1
Property Damage (PDO)	2
Total Crashes	3

Intersection Characteristics	
Entering Volume	25,223
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $43,200

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.065
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.22**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	3.830
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.07 per MEV; this is 78% below the critical rate. Based on similar statewide intersections, an additional 11 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

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Intersection Safety Screening

Intersection: US 169 and MSAS 123 (221st Ave NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	9
Total Crashes	9

Intersection Characteristics	
Entering Volume	25,723
Environment	Rural
Lighting	Lit
Traffic Control	Thru-Stop

Annual crash cost = $32,400

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.192
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.66**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	3.790
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.19 per MEV; this is 34% below the critical rate. Based on similar statewide intersections, an additional 5 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and M 128 (225th St NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	1
Incapacitating Injury (A)	0
Minor Injury (B)	2
Possible Injury (C)	1
Property Damage (PDO)	3
Total Crashes	7

Intersection Characteristics	
Entering Volume	25,723
Environment	Rural
Lighting	Lit
Traffic Control	Thru-Stop

Annual crash cost = $878,800

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.149
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.51**

Fatal & Serious Injury Crash Rate	
Observed	2.129
Statewide Average	0.926
Critical Rate	3.790
Critical Index	**0.56**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.15 per MEV; this is 49% below the critical rate. Based on similar statewide intersections, an additional 7 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 2.13 per 100 MEV; this is 44% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and CR 128 (237th AVE NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	1
Possible Injury (C)	0
Property Damage (PDO)	2
Total Crashes	3

Intersection Characteristics	
Entering Volume	25,321
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $83,200

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.065
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.22**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	3.820
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.07 per MEV; this is 78% below the critical rate. Based on similar statewide intersections, an additional 11 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and T 152 (239th AVE NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	1
Possible Injury (C)	1
Property Damage (PDO)	3
Total Crashes	5

Intersection Characteristics	
Entering Volume	25,723
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $122,800

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.106
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.37**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	3.790
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.11 per MEV; this is 63% below the critical rate. Based on similar statewide intersections, an additional 9 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

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Intersection Safety Screening

Intersection: US 169 and CSAH 25 (243rd Ave)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	2
Possible Injury (C)	0
Property Damage (PDO)	7
Total Crashes	9

Intersection Characteristics	
Entering Volume	26,233
Environment	Rural
Lighting	Lit
Traffic Control	Thru-Stop

Annual crash cost = $177,200

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.188
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.65**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	3.750
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.19 per MEV; this is 35% below the critical rate. Based on similar statewide intersections, an additional 5 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and CSAH 19 (245th Ave)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	2
Property Damage (PDO)	10
Total Crashes	12

Intersection Characteristics	
Entering Volume	26,018
Environment	Rural
Lighting	Lit
Traffic Control	Thru-Stop

Annual crash cost = $108,000

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.253
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.87**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	3.770
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.25 per MEV; this is 13% below the critical rate. Based on similar statewide intersections, an additional 2 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and T 1348 (247th AVE NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	1
Possible Injury (C)	1
Property Damage (PDO)	0
Total Crashes	2

Intersection Characteristics	
Entering Volume	25,223
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $112,000

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.043
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.15**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	3.830
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.04 per MEV; this is 85% below the critical rate. Based on similar statewide intersections, an additional 12 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and T 923 (253rd Ave)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	1
Property Damage (PDO)	0
Total Crashes	1

Intersection Characteristics	
Entering Volume	25,223
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $36,000

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.022
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.08**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	3.830
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.02 per MEV; this is 92% below the critical rate. Based on similar statewide intersections, an additional 13 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and M 138 (255th AVE NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	2
Total Crashes	2

Intersection Characteristics	
Entering Volume	25,223
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $7,200

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.043
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.15**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	3.830
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.04 per MEV; this is 85% below the critical rate. Based on similar statewide intersections, an additional 12 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and T 1591 (257th AVE NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	1
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	0
Total Crashes	1

Intersection Characteristics	
Entering Volume	25,223
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $340,000

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.022
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.08**

Fatal & Serious Injury Crash Rate	
Observed	2.171
Statewide Average	0.926
Critical Rate	3.830
Critical Index	**0.57**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.02 per MEV; this is 92% below the critical rate. Based on similar statewide intersections, an additional 13 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 2.17 per 100 MEV; this is 43% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and MSAS 103 (Main ST)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	1
Minor Injury (B)	1
Possible Injury (C)	0
Property Damage (PDO)	1
Total Crashes	3

Intersection Characteristics	
Entering Volume	25,864
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $419,600

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.064
Statewide Average	0.141
Critical Rate	0.290
Critical Index	**0.22**

Fatal & Serious Injury Crash Rate	
Observed	2.117
Statewide Average	0.926
Critical Rate	3.780
Critical Index	**0.56**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.06 per MEV; this is 78% below the critical rate. Based on similar statewide intersections, an additional 11 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 2.12 per 100 MEV; this is 44% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and M 31 (Main St/ Gateway Dr)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	1
Possible Injury (C)	1
Property Damage (PDO)	0
Total Crashes	2

Intersection Characteristics	
Entering Volume	12,612
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $112,000

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.087
Statewide Average	0.141
Critical Rate	0.360
Critical Index	**0.24**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	5.670
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.09 per MEV; this is 76% below the critical rate. Based on similar statewide intersections, an additional 7 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and CSAH 4 (Fremont AVE)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	1
Minor Injury (B)	2
Possible Injury (C)	14
Property Damage (PDO)	39
Total Crashes	56

Intersection Characteristics	
Entering Volume	32,390
Environment	Urban
Lighting	Lit
Traffic Control	Signal

Annual crash cost = $1,136,400

Statewide comparison = Signal, High Volume (>20K)

Total Crash Rate	
Observed	0.947
Statewide Average	0.693
Critical Rate	0.980
Critical Index	**0.97**

Fatal & Serious Injury Crash Rate	
Observed	1.691
Statewide Average	1.261
Critical Rate	3.980
Critical Index	**0.42**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.95 per MEV; this is 3% below the critical rate. Based on similar statewide intersections, an additional 2 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 1.69 per 100 MEV; this is 58% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and M 170 (5th Ave N)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	2
Total Crashes	2

Intersection Characteristics	
Entering Volume	9,879
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $7,200

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.111
Statewide Average	0.141
Critical Rate	0.400
Critical Index	**0.28**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	6.600
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.11 per MEV; this is 72% below the critical rate. Based on similar statewide intersections, an additional 6 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and MSAS 109 (Oak St)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	4
Total Crashes	4

Intersection Characteristics	
Entering Volume	21,135
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $14,400

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.104
Statewide Average	0.141
Critical Rate	0.310
Critical Index	**0.34**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	4.210
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.10 per MEV; this is 66% below the critical rate. Based on similar statewide intersections, an additional 8 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and T 123 (273rd AVE NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	1
Minor Injury (B)	0
Possible Injury (C)	2
Property Damage (PDO)	4
Total Crashes	7

Intersection Characteristics	
Entering Volume	19,710
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $426,400

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.194
Statewide Average	0.141
Critical Rate	0.320
Critical Index	**0.61**

Fatal & Serious Injury Crash Rate	
Observed	2.779
Statewide Average	0.926
Critical Rate	4.370
Critical Index	**0.64**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.19 per MEV; this is 39% below the critical rate. Based on similar statewide intersections, an additional 5 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 2.78 per 100 MEV; this is 36% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and T 1636 (123rd ST NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	1
Total Crashes	1

Intersection Characteristics	
Entering Volume	19,557
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $3,600

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.028
Statewide Average	0.141
Critical Rate	0.320
Critical Index	**0.09**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	4.390
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.03 per MEV; this is 91% below the critical rate. Based on similar statewide intersections, an additional 11 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and T 986 (278th Ave)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	0
Total Crashes	0

Intersection Characteristics	
Entering Volume	19,557
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $0

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.000
Statewide Average	0.141
Critical Rate	0.320
Critical Index	**0.00**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	4.390
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.00 per MEV; this is 100% below the critical rate. Based on similar statewide intersections, an additional 12 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and T 796 (278th AVE NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	1
Total Crashes	1

Intersection Characteristics	
Entering Volume	19,557
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $3,600

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.028
Statewide Average	0.141
Critical Rate	0.320
Critical Index	**0.09**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	4.390
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.03 per MEV; this is 91% below the critical rate. Based on similar statewide intersections, an additional 11 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and PVT 134 (280th AVE NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	0
Total Crashes	0

Intersection Characteristics	
Entering Volume	19,557
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $0

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.000
Statewide Average	0.141
Critical Rate	0.320
Critical Index	**0.00**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	4.390
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.00 per MEV; this is 100% below the critical rate. Based on similar statewide intersections, an additional 12 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and PVT 134 (280th AVE NW)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	2
Total Crashes	2

Intersection Characteristics	
Entering Volume	19,707
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $7,200

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.056
Statewide Average	0.141
Critical Rate	0.320
Critical Index	**0.18**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	4.370
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.06 per MEV; this is 82% below the critical rate. Based on similar statewide intersections, an additional 10 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: CSAH 9 and CON 299 (East Ramps)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	2
Total Crashes	2

Intersection Characteristics	
Entering Volume	3,117
Environment	Rural
Lighting	Lit
Traffic Control	Thru-Stop

Annual crash cost = $7,200

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.351
Statewide Average	0.141
Critical Rate	0.630
Critical Index	**0.56**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	14.880
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.35 per MEV; this is 44% below the critical rate. Based on similar statewide intersections, an additional 2 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: CSAH 9 and CON 2398 (West Ramps)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	1
Possible Injury (C)	2
Property Damage (PDO)	0
Total Crashes	3

Intersection Characteristics	
Entering Volume	5,124
Environment	Rural
Lighting	Lit
Traffic Control	Thru-Stop

Annual crash cost = $148,000

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.321
Statewide Average	0.141
Critical Rate	0.510
Critical Index	**0.63**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	10.300
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.32 per MEV; this is 37% below the critical rate. Based on similar statewide intersections, an additional 2 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and T 109 (303rd Ave)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	1
Property Damage (PDO)	0
Total Crashes	1

Intersection Characteristics	
Entering Volume	19,807
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $36,000

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.028
Statewide Average	0.141
Critical Rate	0.320
Critical Index	**0.09**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	4.360
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.03 per MEV; this is 91% below the critical rate. Based on similar statewide intersections, an additional 11 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and CR 38 (305th Ave)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	3
Possible Injury (C)	2
Property Damage (PDO)	1
Total Crashes	6

Intersection Characteristics	
Entering Volume	19,892
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $303,600

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.165
Statewide Average	0.141
Critical Rate	0.320
Critical Index	**0.52**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	4.350
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.17 per MEV; this is 48% below the critical rate. Based on similar statewide intersections, an additional 6 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and T 1160 (312th Ave)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	0
Total Crashes	0

Intersection Characteristics	
Entering Volume	9,779
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $0

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.000
Statewide Average	0.141
Critical Rate	0.400
Critical Index	**0.00**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	6.650
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.00 per MEV; this is 100% below the critical rate. Based on similar statewide intersections, an additional 8 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: US 169 and CSAH 2 (313 Ave)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	2
Total Crashes	2

Intersection Characteristics	
Entering Volume	19,795
Environment	Rural
Lighting	Unlit
Traffic Control	Thru-Stop

Annual crash cost = $7,200

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.055
Statewide Average	0.141
Critical Rate	0.320
Critical Index	**0.17**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	4.360
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.06 per MEV; this is 83% below the critical rate. Based on similar statewide intersections, an additional 10 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: CSAH 29 (Rum River DR) and CON 110 (E Ramp)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	1
Property Damage (PDO)	2
Total Crashes	3

Intersection Characteristics	
Entering Volume	17,590
Environment	Rural
Lighting	Lit
Traffic Control	Thru-Stop

Annual crash cost = $43,200

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.093
Statewide Average	0.141
Critical Rate	0.330
Critical Index	**0.28**

Fatal & Serious Injury Crash Rate	
Observed	0.000
Statewide Average	0.926
Critical Rate	4.660
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.09 per MEV; this is 72% below the critical rate. Based on similar statewide intersections, an additional 8 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Appendix A

Intersection Safety Screening

Intersection: CR 45 (Rum River DR) and CON 3026 (W Ramp)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	1
Incapacitating Injury (A)	0
Minor Injury (B)	0
Possible Injury (C)	0
Property Damage (PDO)	4
Total Crashes	5

Intersection Characteristics	
Entering Volume	17,905
Environment	Rural
Lighting	Lit
Traffic Control	Thru-Stop

Annual crash cost = $694,400

Statewide comparison = Thru/STOP, Rural

Total Crash Rate	
Observed	0.153
Statewide Average	0.141
Critical Rate	0.330
Critical Index	**0.46**

Fatal & Serious Injury Crash Rate	
Observed	3.059
Statewide Average	0.926
Critical Rate	4.610
Critical Index	**0.66**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.15 per MEV; this is 54% below the critical rate. Based on similar statewide intersections, an additional 6 crashes over the five years would indicate this intersection operates outside the normal range.

The observed fatal and serious injury crash rate for this period is 3.06 per 100 MEV; this is 34% below the critical rate. The intersection operates within the normal range.

Appendix B

Segment Safety Screening

Appendix A

Segment Safety Screening

Segment: Segment A: From Southern End of Project Start to 213th Ave NW

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	1
Incapacitating Injury (A)	0
Minor Injury (B)	6
Possible Injury (C)	8
Property Damage (PDO)	50
Total Crashes	65

Analysis Description	
Length	1.700 miles
VMT	77,986,817
Non-junction AND Juction Crashes	

Annual crash cost per mile = *$575,294*

Statewide comparison = *Rural 4-Lane Divided*

Total Crash Rate (CR)	
Observed	0.833
Statewide Average	0.304
Critical Rate	0.470
Critical Index	**1.77**

Fatal & Serious Injury Crash Rate (FAR)	
Observed	1.282
Statewide Average	0.687
Critical Rate	2.530
Critical Index	**0.51**

The observed crash rate is the number of crashes per million vehicle miles traveled (MVMT). The critical rate is a statistical comparison based on similar trunk highways statewide. An observed crash rate greater than the critical rate indicates that the section operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.83 per MVMT; this is 1.8 times the critical rate. If crashes were reduced by 29 over five years (45%), the section would perform within normal range.

The observed fatal and serious injury crash rate for this period is 1.28 per 100 MVMT; this is 49% below the critical rate. The section operates within the normal range.

Appendix A

Segment Safety Screening

Segment: Segment B: From 'Gerber Collision & Glass Factory' to S. of Livonia Pit

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	1
Incapacitating Injury (A)	0
Minor Injury (B)	7
Possible Injury (C)	12
Property Damage (PDO)	77
Total Crashes	97

Analysis Description	
Length	1.800 miles
VMT	82,574,276
Non-junction AND Juction Crashes	

Annual crash cost per mile = *$673,889*

Statewide comparison = *Rural 4-Lane Divided*

Total Crash Rate (CR)	
Observed	1.175
Statewide Average	0.304
Critical Rate	0.470
Critical Index	**2.50**

Fatal & Serious Injury Crash Rate (FAR)	
Observed	1.211
Statewide Average	0.687
Critical Rate	2.460
Critical Index	**0.49**

The observed crash rate is the number of crashes per million vehicle miles traveled (MVMT). The critical rate is a statistical comparison based on similar trunk highways statewide. An observed crash rate greater than the critical rate indicates that the section operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 1.18 per MVMT; this is 2.5 times the critical rate. If crashes were reduced by 59 over five years (61%), the section would perform within normal range.

The observed fatal and serious injury crash rate for this period is 1.21 per 100 MVMT; this is 51% below the critical rate. The section operates within the normal range.

Appendix A

Segment Safety Screening

Segment: Segment C: From Livonia Pit to 243rd Ave

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	2
Incapacitating Injury (A)	0
Minor Injury (B)	5
Possible Injury (C)	8
Property Damage (PDO)	35
Total Crashes	50

Analysis Description	
Length	1.800 miles
VMT	82,574,276
Non-junction AND Juction Crashes	

Annual crash cost per mile = *$668,333*

Statewide comparison = *Rural 4-Lane Divided*

Total Crash Rate (CR)	
Observed	0.606
Statewide Average	0.304
Critical Rate	0.470
Critical Index	**1.29**

Fatal & Serious Injury Crash Rate (FAR)	
Observed	2.422
Statewide Average	0.687
Critical Rate	2.460
Critical Index	**0.98**

The observed crash rate is the number of crashes per million vehicle miles traveled (MVMT). The critical rate is a statistical comparison based on similar trunk highways statewide. An observed crash rate greater than the critical rate indicates that the section operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.61 per MVMT; this is 1.3 times the critical rate. If crashes were reduced by 12 over five years (24%), the section would perform within normal range.

The observed fatal and serious injury crash rate for this period is 2.42 per 100 MVMT; this is 2% below the critical rate. The section operates within the normal range.

Appendix A

Segment Safety Screening

Segment: Segment D: From 243rd Ave to 255th Ave

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	0
Minor Injury (B)	4
Possible Injury (C)	12
Property Damage (PDO)	44
Total Crashes	60

Analysis Description	
Length	1.900 miles
VMT	87,161,736
Non-junction AND Juction Crashes	

Annual crash cost per mile = *$338,947*

Statewide comparison = *Rural 4-Lane Divided*

Total Crash Rate (CR)	
Observed	0.688
Statewide Average	0.304
Critical Rate	0.460
Critical Index	**1.50**

Fatal & Serious Injury Crash Rate (FAR)	
Observed	0.000
Statewide Average	0.687
Critical Rate	2.400
Critical Index	**0.00**

The observed crash rate is the number of crashes per million vehicle miles traveled (MVMT). The critical rate is a statistical comparison based on similar trunk highways statewide. An observed crash rate greater than the critical rate indicates that the section operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.69 per MVMT; this is 1.5 times the critical rate. If crashes were reduced by 20 over five years (33%), the section would perform within normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MVMT; this is 100% below the critical rate. The section operates within the normal range.

Appendix A

Segment Safety Screening

Segment: Segment E: From 255th Ave to 269th Ave (Zimmerman Interchange Project)

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	0
Incapacitating Injury (A)	3
Minor Injury (B)	10
Possible Injury (C)	25
Property Damage (PDO)	65
Total Crashes	103

Analysis Description	
Length	1.800 miles
VMT	64,279,948
Non-junction AND Juction Crashes	

Annual crash cost per mile = *$1,013,889*

Statewide comparison = *Rural 4-Lane Divided*

Total Crash Rate (CR)	
Observed	1.602
Statewide Average	0.304
Critical Rate	0.490
Critical Index	**3.27**

Fatal & Serious Injury Crash Rate (FAR)	
Observed	4.667
Statewide Average	0.687
Critical Rate	2.790
Critical Index	**1.67**

The observed crash rate is the number of crashes per million vehicle miles traveled (MVMT). The critical rate is a statistical comparison based on similar trunk highways statewide. An observed crash rate greater than the critical rate indicates that the section operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 1.60 per MVMT; this is 3.3 times the critical rate. If crashes were reduced by 72 over five years (70%), the section would perform within normal range.

The observed fatal and serious injury crash rate for this period is 4.67 per 100 MVMT; this is 1.7 times the critical rate. This section may be a sustained severe crash location.

Appendix A

Segment Safety Screening

Segment: Segment F: From South of 273rd Ave to Interchange of 293rd Ave

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	1
Incapacitating Injury (A)	2
Minor Injury (B)	4
Possible Injury (C)	8
Property Damage (PDO)	32
Total Crashes	47

Analysis Description	
Length	2.800 miles
VMT	99,991,030
Non-junction AND Juction Crashes	

Annual crash cost per mile = *$408,571*

Statewide comparison = *Rural 4-Lane Divided*

Total Crash Rate (CR)	
Observed	0.470
Statewide Average	0.304
Critical Rate	0.450
Critical Index	**1.04**

Fatal & Serious Injury Crash Rate (FAR)	
Observed	3.000
Statewide Average	0.687
Critical Rate	2.250
Critical Index	**1.33**

The observed crash rate is the number of crashes per million vehicle miles traveled (MVMT). The critical rate is a statistical comparison based on similar trunk highways statewide. An observed crash rate greater than the critical rate indicates that the section operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.47 per MVMT; this is 1.0 times the critical rate. If crashes were reduced by 3 over five years (6%), the section would perform within normal range.

The observed fatal and serious injury crash rate for this period is 3.00 per 100 MVMT; this is 1.3 times the critical rate. This section may be a sustained severe crash location.

Appendix A

Segment Safety Screening

Segment: Segment G: From Interchange of 293rd Ave to 305th Ave

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	1
Incapacitating Injury (A)	1
Minor Injury (B)	6
Possible Injury (C)	10
Property Damage (PDO)	27
Total Crashes	45

Analysis Description	
Length	2.200 miles
VMT	78,564,380
Non-junction AND Juction Crashes	

Annual crash cost per mile = *$509,545*

Statewide comparison = *Rural 4-Lane Divided*

Total Crash Rate (CR)	
Observed	0.573
Statewide Average	0.304
Critical Rate	0.470
Critical Index	**1.22**

Fatal & Serious Injury Crash Rate (FAR)	
Observed	2.546
Statewide Average	0.687
Critical Rate	2.520
Critical Index	**1.01**

The observed crash rate is the number of crashes per million vehicle miles traveled (MVMT). The critical rate is a statistical comparison based on similar trunk highways statewide. An observed crash rate greater than the critical rate indicates that the section operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.57 per MVMT; this is 1.2 times the critical rate. If crashes were reduced by 9 over five years (20%), the section would perform within normal range.

The observed fatal and serious injury crash rate for this period is 2.55 per 100 MVMT; this is 1.0 times the critical rate. This section may be a sustained severe crash location.

Appendix A

Segment Safety Screening

Segment: Segment H: From 312th Ave to CSAH 29 Interchange in Princeton

Statewide Averages based on 2019-2023 crashes

Crashes by Crash Severity	
Fatal (K)	2
Incapacitating Injury (A)	0
Minor Injury (B)	6
Possible Injury (C)	3
Property Damage (PDO)	38
Total Crashes	49

Analysis Description	
Length	2.600 miles
VMT	92,848,813
Non-junction AND Juction Crashes	

Annual crash cost per mile = *$435,385*

Statewide comparison = *Rural 4-Lane Divided*

Total Crash Rate (CR)	
Observed	0.528
Statewide Average	0.304
Critical Rate	0.460
Critical Index	**1.15**

Fatal & Serious Injury Crash Rate (FAR)	
Observed	2.154
Statewide Average	0.687
Critical Rate	2.330
Critical Index	**0.92**

The observed crash rate is the number of crashes per million vehicle miles traveled (MVMT). The critical rate is a statistical comparison based on similar trunk highways statewide. An observed crash rate greater than the critical rate indicates that the section operates outside the expected, normal range. The critical index reports the magnitude of this difference (i.e. observed crash rate ÷ critical crash rate).

The observed total crash rate for this period is 0.53 per MVMT; this is 1.2 times the critical rate. If crashes were reduced by 7 over five years (14%), the section would perform within normal range.

The observed fatal and serious injury crash rate for this period is 2.15 per 100 MVMT; this is 8% below the critical rate. The section operates within the normal range.

Appendix C

Sample Traffic Management Plan for ERX Event

Appendix A

Primoris Services Corporation
Q3 Contracting
651-365-7355

CONTRACTOR NAME: ERX		
CONTRACTOR JOB #: -	Q3 #: 2865330	
DESIGNED BY: Sam Quaal, T.C.S.		
DATE PREPARED: 1/17/22	DATE REVISED: 1/26/23	
ORDERED BY: Heidi Goodin	REVISED BY: Tyler Sweeney, T.C.S.	
CITY: Elk River, MN	STREET/LOCATION: Hwy 169	
PROJECT NAME: Midwest Ride In - 2022	STAGE/PHASE#: -	

● - REFLECTIVE DRUM ✱ - TYPE A CHANNELIZER ◘ - REFLECTIVE CONES

DISCLAIMER: This is a proposed traffic control layout. It has not been created or approved by a Professional Engineer and must be approved by the Road Authority prior to setup.

NOTES:
- Reflective cones may be used - Daytime only setup.

N

MATCH LINE - SEE PAGE # 2

DETOUR
DETOUR
DETOUR

205TH AVE

HWY 169

EVENT CONGESTION AHEAD
EVENT CONGESTION AHEAD
EVENT CONGESTION AHEAD
RIGHT LANE CLOSED
RIGHT LANE CLOSED
RIGHT LANE CLOSED
DETOUR
DETOUR
DETOUR
DETOUR
LANE CLOSED
800' TAPER
HWY 169
←1000'→

PCMS
PCMS MESSAGE:
MIDWEST RIDE IN EVENT | FOLLOW EVENT SIGNING

ADDITIONAL PCMS PLACED NORTH OF THE LAST SIGNALIZED NORTHBOUND INTERSECTION

PCMS
PCMS MESSAGE:
EXPECT DELAYS | REDUCE YOUR SPEED

PAGE # 1

Appendix A

Primoris Services Corporation
Q3 Contracting
651-365-7355

CONTRACTOR NAME: ERX	
CONTRACTOR JOB #: -	Q3 #: 2865330
DESIGNED BY: Sam Quaal, T.C.S.	
DATE PREPARED: 1/17/22	DATE REVISED: 1/26/23
ORDERED BY: Heidi Goodin	REVISED BY: Tyler Sweeney, T.C.S.
CITY: Elk River, MN	STREET/LOCATION: Hwy 169
PROJECT NAME: Midwest Ride In - 2022	STAGE/PHASE#: -

● - REFLECTIVE DRUM ✱ - TYPE A CHANNELIZER ◘ - REFLECTIVE CONES

DISCLAIMER: This is a proposed traffic control layout. It has not been created or approved by a Professional Engineer and must be approved by the Road Authority prior to setup.

NOTES:
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N

213TH AVE
HWY 169
DETOUR
TURN LANE CLOSED
←1000'→
48"x48" SIGN
MIDWEST RIDE-IN EVENT FOLLOW DETOUR
ROAD CLOSED
EVENT ENTRANCE
250' DOWNWARD TAPER
50'
300' GAP FOR TURN LANE ENTERANCE
800' STRAIGHT AWAY
←750'→
MIDWEST RIDE-IN EVENT RIGHT TURN 750' FT
LANE CLOSED

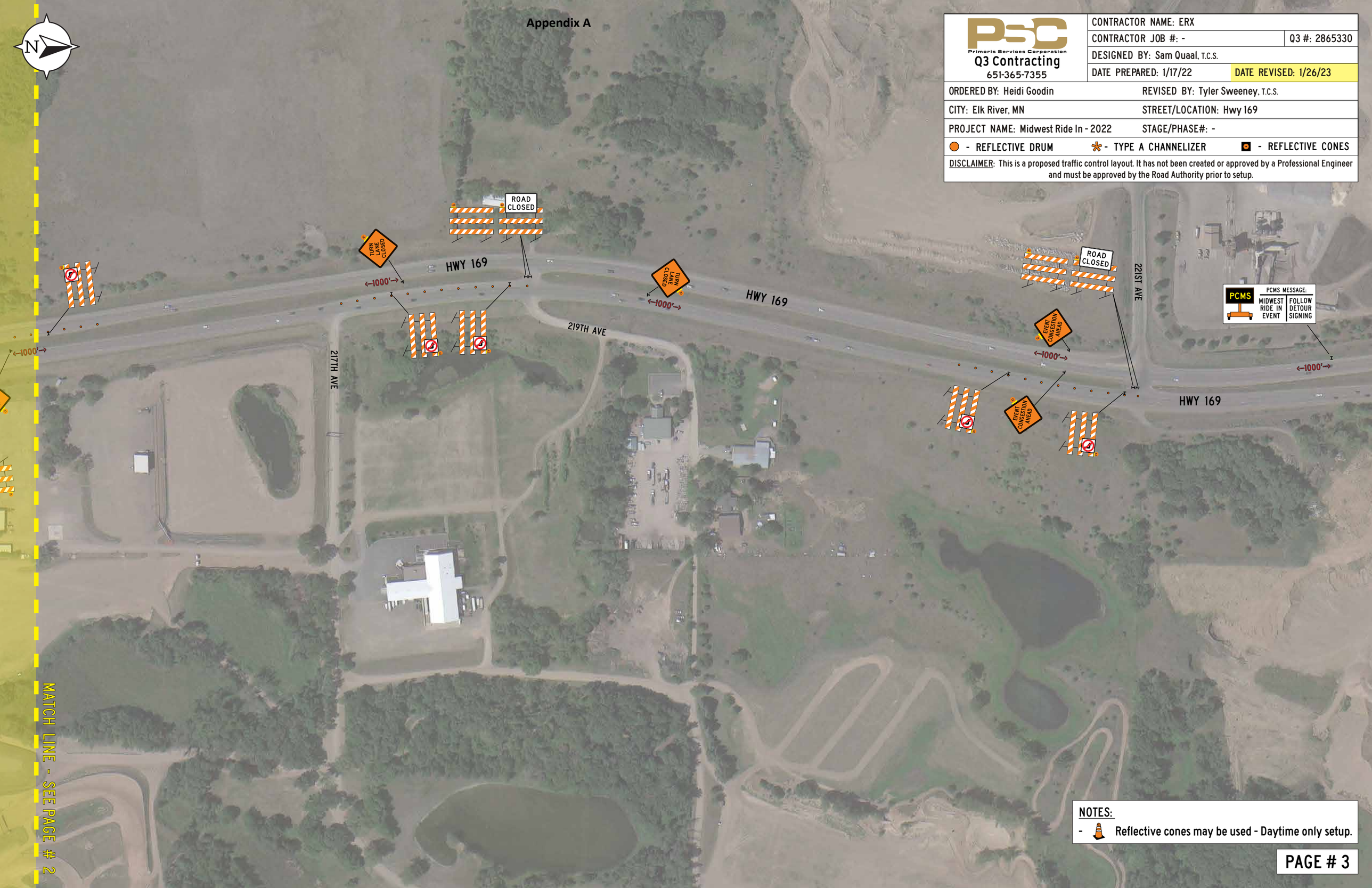
MATCH LINE - SEE PAGE # 1
MATCH LINE - SEE PAGE # 3

Appendix A

PSC Primoris Services Corporation Q3 Contracting 651-365-7355	CONTRACTOR NAME: ERX	
	CONTRACTOR JOB #: -	Q3 #: 2865330
	DESIGNED BY: Sam Quaal, T.C.S.	
	DATE PREPARED: 1/17/22	DATE REVISED: 1/26/23
ORDERED BY: Heidi Goodin	REVISED BY: Tyler Sweeney, T.C.S.	
CITY: Elk River, MN	STREET/LOCATION: Hwy 169	
PROJECT NAME: Midwest Ride In - 2022	STAGE/PHASE#: -	

● - REFLECTIVE DRUM ✱ - TYPE A CHANNELIZER ■ - REFLECTIVE CONES

DISCLAIMER: This is a proposed traffic control layout. It has not been created or approved by a Professional Engineer and must be approved by the Road Authority prior to setup.



NOTES:
- Reflective cones may be used - Daytime only setup.

Appendix D

Community Comments – Raw Data

Appendix A

S. No	Date of contribution	Category	Your Comment	How do you use the corridor? (Check all that apply)	Zip code?
1	Jan 24 25 08:38:51 am	Needs improvement	Many trucks use this crossover or intersection to access the Elk River Landfill. However, this intersection poses safety challenges for truck drivers, particularly during busy hours. Additionally, the merge lane is too short, making it difficult for trucks to accelerate and match the speed of oncoming traffic. This presents a significant safety concern that needs to be addressed.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55371
2	Jan 24 25 08:40:54 am	Needs improvement	Many trucks use this crossover or intersection to access the Elk River Landfill. However, this intersection poses safety challenges for truck drivers, particularly during busy hours. Additionally, the merge lane is too short, making it difficult for trucks to accelerate and match the speed of oncoming traffic. This presents a significant safety concern that needs to be addressed.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55371
3	Feb 03 25 10:48:47 am	Opportunity	Many people use cty rd 25 to access southern zimmerman. An acceleration lane is needed. They have them in elk river and they are a much better way to get traffic up to speed when getting on the highway.	Work	55398
4	Feb 03 25 11:29:34 am	Needs improvement	The turn lane is short and never gets plowed making it dangerous to turn. With the removal of the Zimmerman stoplight, there will be constant traffic coming from the north making it harder to cross incoming traffic. There also needs to be an acceleration lane coming out of 239th onto 169 going both north and south. When you're going north from 239th, you cannot see over the hill to identify if cars are coming.	Other	55330
5	Feb 03 25 12:04:10 pm	Needs improvement	This bridge is very dangerous	Work, School, Visiting friends and family, Recreation or Entertainment	56353
6	Feb 03 25 12:28:10 pm	Needs improvement	Needs an acceleration lane or we wait forever or people get cut off trying to merge.	Work, Visiting friends and family, Recreation or Entertainment, Other	55398
7	Feb 03 25 12:29:21 pm	Needs improvement	This turn is deadly in the winter. Seen more then a few accidents here.	Work, Visiting friends and family, Recreation or Entertainment, Other	55398
8	Feb 03 25 12:34:06 pm	Needs improvement	Something has to be done with erx leaving the event. Either add an acceleration lane or what but it's super difficult to leave with oncoming traffic.	Work, Visiting friends and family, Recreation or Entertainment	55398
9	Feb 03 25 12:39:37 pm	Needs improvement	Cut down the trees. I've been in the North bound lane at night and met southbound traffic in the northbound lane	Work, Visiting friends and family, Recreation or Entertainment	55371
10	Feb 03 25 12:55:06 pm	Other	Our driveway is just off the ramp. People are consistently running us off the road. With the new changes coming to Zimmerman, we will have more difficult time getting in and out of our driveway. Many past the zimmerman stop lights that have driveways directly on Hwy 169, struggle and time getting out to the road based on the stoplight. without it. we will have more issues. WE also have a lot of semi trucks coming and going and they struggle to get in/out due to the traffic.	Work, Other	55371
11	Feb 03 25 12:58:51 pm	Needs improvement	Add an acceleration lane for those turning to go southbound.	Work, Recreation or Entertainment	55398
12	Feb 03 25 01:02:24 pm	Needs improvement	Traffic coming from the off ramp can have difficulty seeing northbound/eastbound traffic on Rum River drive, and merging zone isn't obvious. This should be a roundabout or an added second lane up to the stoplight (which would turn into a right turn only).	Work, Recreation or Entertainment	55371
13	Feb 03 25 01:10:22 pm	Needs improvement	Need acceleration lane in order to safely accommodate traffic entering and merging onto 169 south.		
14	Feb 03 25 01:21:34 pm	Needs improvement	Must have a de-icing system installed or a resurfacing of the bridge deck to improve deck surface due to horrific icing conditions. To leave this issue out of any project would be purely neglect on behalf of the MNDOT.	Work, Visiting friends and family, Recreation or Entertainment, Other	56353
15	Feb 03 25 01:22:35 pm	Needs improvement	The curve in the bridge is very slippery in the winter and many accidents here		
16	Feb 03 25 01:25:53 pm	Opportunity	I think a guard rail should be considered here. If I'm remembering correctly, there have been instances of cars going into the lake due to slick roads. I know I get nervous to drive by the lake when the roads are bad.	Work, Visiting friends and family, Recreation or Entertainment, Other	55398
17	Feb 03 25 01:26:01 pm	Opportunity	Adding street lights would be help with visibility	Work, School, Recreation or Entertainment	55398
18	Feb 03 25 01:26:06 pm	Needs improvement	This turn lane ALWAYS causes a slow down after the stoplight in Zim, going north. Needs a longer turn lane or something.		
19	Feb 03 25 01:28:14 pm	Needs improvement	This turn lane should be longer for increased space to slow down	Work	55371
20	Feb 03 25 01:28:58 pm	Needs improvement	I'm sure an accident has happened at some point but there needs to be a barrier between the highway and the lake. One wrong turn and you're in the lake. Seems so unsafe	Work, School, Visiting friends and family, Recreation or Entertainment	55398
21	Feb 03 25 01:29:34 pm	Opportunity	It's too bad there isn't a safer option for people to cross all lanes of 169 here vs just having it closed.	Work, Visiting friends and family	55371
22	Feb 03 25 01:31:43 pm	Needs improvement	There's no means to turn left here going northbound. It really cuts into my commute, I have to take the next exit and it would be so simple to add a crossover here.	Visiting friends and family, Recreation or Entertainment	55398
23	Feb 03 25 01:31:53 pm	Opportunity	Any way to make this curve safer along the lake? Maybe a wire system guard rail to keep cars out of the lake?	Work, Visiting friends and family, Recreation or Entertainment	55371

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24	Feb 03 25 01:37:03 pm	Other	Fix the light at the top of the 169 entrance ramp. I've called it in twice already, with no actions.	Work, Other	55330
25	Feb 03 25 02:40:13 pm	Needs improvement	Bridge gets very icy		
26	Feb 03 25 03:03:37 pm	Opportunity	Need an acceleration lane from 25 onto 169 southbound. The only safe route out is when there's a break in traffic caused from the stoplights on 4/169. When those are removed, this intersection from 25 onto 169 will be horrific.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55398
27	Feb 03 25 03:34:15 pm	Needs improvement	Need guard rails along lake	Visiting friends and family, Recreation or Entertainment	55330
28	Feb 03 25 03:57:44 pm	Needs improvement	19 and 25 need to be aligned in this area with an overpass for the amount of traffic that access both roadway systems.		
29	Feb 03 25 03:58:58 pm	Opportunity	I think there's an opportunity to straighten out this curve.		
30	Feb 03 25 04:00:02 pm	Needs improvement	Northbound semi traffic from the dump needs an acceleration lane on the median side of 169.		
31	Feb 03 25 05:00:52 pm	Needs improvement	Lights from ERX need to be moved, they cause a complete blinding leaving Elk River. Seen many accidents from this alone.	Recreation or Entertainment	
32	Feb 03 25 05:20:16 pm	Needs improvement	New payment needed	Work	55398
33	Feb 03 25 05:46:52 pm	Needs improvement	This area is a Death Trap. The Turn Around crossings here cause More Near Misses and Evasive actions than ever before. Personally there have been 5-6 times when I had to quickly shift lanes to avoid someone pulling out of the center median. The road is Way too narrow here for this type of crossing. Very Similar to the Issues on Hwy 65 through Ham Lake between Bethel & Blaine. And yet In their Infinite Wisdom Mn DOT continues to install these Death Trap U turn crossings everywhere.	Work, Visiting friends and family, Recreation or Entertainment	55371
34	Feb 03 25 05:56:46 pm	Needs improvement	Better barriers around the lake	Work	55398
35	Feb 03 25 06:11:23 pm	Needs improvement	Needs acceleration lane/ safer way to enter 169	Work	55398
36	Feb 03 25 06:31:04 pm	Needs improvement	The acceleration/merge lane coming onto 169 off 197th bridge onto North bound Traffic DESPERATELY NEEDS TO BE EXTENDED!! No one is actually going 55mph through Elk River and if you get a Semi in the right lane as you come down that bridge and someone in front of you doesnt hit the gas pedal to the 65 mph speed limit that the sign says immediately at that bottom of the ramp, where the ramp abruptly dumps you in that lane of traffic. You will have no choice but you go off the road to avoid being hit by on coming semis or other traffic. This has now happened to me Twice by dilly dallyer mergers - you know the ones who make absolutely no attempt to even come close to highway speed before the lane literally just ends!! Both times it was a semi immediately there in the right lane, so I ended up off the road to avoid the crash while the slow poke in front of me was completely unaware of what mess they just caused because all they end up seeing is a semi on their bumper, honking and slamming on their brakes, and not the truck or van serving off the road, because their 53' trailer blocks the view of the shoulder by then.	Work, Visiting friends and family, Recreation or Entertainment	55371
37	Feb 03 25 06:34:11 pm	Other	Lower speed on 169 and once Zimmerman is done these interceptions are going to be hard to get out to on 169	Work, Visiting friends and family, Recreation or Entertainment	55371
38	Feb 03 25 06:34:30 pm	Needs improvement	Need a roundabout here. Stupid they built one near here when this intersection is more busy.	Work, Visiting friends and family, Recreation or Entertainment	55398
39	Feb 03 25 06:40:25 pm	Needs improvement	People are constantly running the red light! Also going way over the speed limit. If you aren't going 80 they basically run you off the road. Mostly in the morning.	Visiting friends and family	55371
40	Feb 03 25 06:49:51 pm	Needs improvement	Why are there no barriers around this lake? Or even an actual shoulder? First major snow fall we got November 2024 while MNDot had not been out doing anything on the highway, that thick ice sludge on the road, combined with the grade of the road pulled my work van within inches from going right into the lake. Work van was a Dodge Caravan which is your typical family van and transport van for the transportation companies in this exact area, so a very common van driven around here. I wasn't going much faster then 10-15 mph because of how bad the road conditions were, and as I came around the lake, headed south towards Zimmerman from Princeton, there was enough grade towards the lake mixed with the ice sludge to catch the undercarriage of the van and start pulling it straight towards the lake! I managed to slow down just enough that when my front tire hit that foot of gravel right before the drop off the van abruptly stopped, thank god.	Work, Visiting friends and family, Recreation or Entertainment, Other	55371
41	Feb 03 25 06:59:40 pm	Needs improvement	The new U-turn cross overs are a complete joke. The first one, people just whip around and cut out and expect everyone on the highway to move for them while they putz to make it to highway speeds. There should have been acceleration lanes made! There should have been some sort of acceleration lane added for the last intersection headed South bound towards Elk River as well. Far too many people just pull out from the cross road there as well. So you will be going 65-70 and have someone whip a U-turn from the left causing you to swirve right out of no where, meanwhile the folks at the intersection up a head will think the right lane is clear to pull out into and bam! Now you are in that lane and another car has just pulled out again from the right, so you have to swirve back to the left to avoid a second car as it putzs to get to highway speeds. And more often then not, the first person whipping that U-turn looked right at you the whole time they pulled out in front of you too, while putting no effort into accelerating!	Work, Visiting friends and family, Recreation or Entertainment, Other	55371
42	Feb 03 25 07:12:33 pm	Needs improvement	The turn lane these businesses needs to be longer so you can actually get over and slow down and stop properly IN the turn lane. Versus getting basically ran off the road by cars tailgating you on the highway while you slow down before the turn lane, because it's way too short to stop a vehicle in property.	Work, Visiting friends and family, Recreation or Entertainment, Other	55371

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43	Feb 03 25 07:15:37 pm	Opportunity	Lane markers need to have better visibility in wet conditions - fog lines, center lines, etc. The new way of recessing the lines in newly constructed lanes are worse than the standard painted at surface level. Recessed paint fills with liquid, making lines visible when wet. Wider, bolder lines are needed.	Work, Visiting friends and family, Recreation or Entertainment	55371
44	Feb 03 25 07:19:58 pm	Needs improvement	The left handed turn lane to get to the businesses (Zimmvet, bait shop, etc) on other side of highway needs to be longer. People come off Freeport trying to accelerate to highway speed while someone just putzs along at like 40-50ish all the way to that turn lane in the left lane, but not before they start braking while still in that left lane of the highway, basically to a complete stop, AND then getting into the turn lane.	Work, Visiting friends and family, Recreation or Entertainment, Other	55371
45	Feb 03 25 07:51:27 pm	Needs improvement	Turn is to sharp needs to be banked up better I worry about spinning out or going in the ditch there every day	Work	55371
46	Feb 03 25 08:02:56 pm	Needs improvement	When traveling southbound on 169, exiting for CR9 and stopping at the stop sign, you cannot see over the bridge. This intersection is very dangerous especially for the vehicles that need to turn left (East) onto CR9.	Work, School, Visiting friends and family, Other	
47	Feb 03 25 08:13:23 pm	Needs improvement	Turning south off of 239th needs an acceleration lane. Traffic does not move over and end up waiting long periods of time for a gap and in the winter the road is not plowed, making it difficult to accelerate up hill into traffic. This intersection also needs an acceleration lane going north as well. You cannot see traffic coming over the hill and with no stop lights in elk river the traffic is constant.	Work	55330
48	Feb 03 25 09:51:18 pm	Needs improvement	This is the worst turn in Baldwin. Coming off north 169, you can't see! The bridge blocks your view. You think your clear one second and the next your slamming on the breaks. I have been in both positions.	Work, School, Visiting friends and family, Other	55371
49	Feb 03 25 09:55:37 pm	Opportunity	Keep this access point open. Please consider an overpass in the long range plans. County Road 38 and US HWY 169.		
50	Feb 03 25 10:00:26 pm	Opportunity	Reopen this crossing. Limit it to only left hand turns through the median of US HWY 169 at 313th Avenue. This would relieve congestion Rum River Drive South and US HWY 169 interchange.		
51	Feb 03 25 10:03:27 pm	Opportunity	Overpass.		
52	Feb 03 25 10:05:53 pm	Opportunity	Connect 303rd Avenue with 305th Avenue with frontage road and bridge..... long range 20 year plan.		
53	Feb 03 25 10:21:49 pm	Opportunity	At State HWY 95 and US HWY 169.... I know it's out of your scope, however I have an idea. Extend 13th Avenue North to State Highway 95 as a roundabout. Disconnect West Branch Street from Highway 95 including access on the North side of 95. Eliminate all left hand turns at US HWY 169 and State Highway 95. Vehicles exiting 169 will have their own lane to merge with Highway 95. All vehicles will have choose direction of travel at the roundabout at 13th Avenue or 21st Avenue. Each roundabout will double laned. The existing Highway 95 overpass will remain single lane in each direction. A vehicle exiting HWY 169 will have enough time to change lanes to travel the opposite direction after entering either roundabout. Currently traveling North on Highway 169 with the route of exiting to travel West on Highway 95 is extremely difficult for a semi to make the lefthand turn on a weekday afternoon. Let me know if you want me draw this idea out for you. Very inexpensive solution to a very serious problem. You would definitely win an award for this project!!!		
54	Feb 03 25 10:25:21 pm	Needs improvement	Make a crossroad so we can access 169 Northbound from 313th ave and 125th St. And also have the ability to get onto those roads from 169 Northbound. Even crossing the highway to the other side of the road (313th / 124th ST.) Would be incredibly ideal.	Work	55371
55	Feb 03 25 10:27:09 pm	Opportunity	Make a crossroad so we can access 169 Northbound from 313th ave and 125th St. And also have the ability to get onto those roads from 169 Northbound. Even crossing the highway to the other side of the road (313th / 124th ST.) Would be incredibly ideal.	Work	55371
56	Feb 04 25 04:51:21 am	Opportunity	A crossroad would make travel coming off the highway much easier on the west side. Putting in a crossroad would also be very beneficial to businesses.	Work	55008
57	Feb 04 25 05:29:11 am	Opportunity	Put a roundabout here and close off all left turns at this interchange. Use the roundant at the frontage road to turn traffic from westbound 29 to south bound 169 , and southbound traffic to eastbound 29.	Work, Visiting friends and family, Recreation or Entertainment	55371
58	Feb 04 25 05:32:12 am	Needs improvement	Eliminate this access.	Work, Visiting friends and family, Recreation or Entertainment	55371
59	Feb 04 25 05:32:21 am	Opportunity	Trucks pull across in front of cars here all the time, often times when the cars on the highway are at very high speed.	Work, Recreation or Entertainment	55371
60	Feb 04 25 06:22:33 am	Needs improvement	This bridge creates a blind intersection if you're coming or going on CR9. Very dangerous my old neighbor was killed on this bridge from a car pulling put infront of him from 169 going east bound as he was going west bound on 169. Nearly everyone in our community has had to stop or brake aggressively to avoid incidents at this intersection.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55371
61	Feb 04 25 06:30:56 am	Needs improvement	This intersection needs a longer exit and enter lane. The intersection itself is a accident prone spot unfortunately. It needs traffic entering lights. (Warning lights) this is a very busy intersection so it either needs an overpass or make the frontage road on the Southside of princeton that was closed into a overpass.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55371
62	Feb 04 25 06:35:57 am	Opportunity	Make this intersection a roundabout. As well as make the exit and entrance ramps a little longer to help with slowing and entering 169.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	
63	Feb 04 25 06:44:41 am	Opportunity	On days it snows you can bet on it. The plows stop at Zimmerman and turn back South on 169. With Baldwin township becoming a city because of a growing population we need the same road clearing coverage until North of Princeton. The amount of cars and accidents in the ditch always happen in the same spots. This should be taken into consideration with the new road project as well.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55371
64	Feb 04 25 06:48:21 am	Opportunity	Increase the speed limit from 65 to 70 would be nice. Ideally it would be 75mph but that may be wishful thinking.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55371

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65	Feb 04 25 06:52:38 am	Needs improvement	I hate to say it, because I like getting places quickly, but the speed limit does need be lowered or at the very least, enforced. People come out of the cities going 80+ MPH (and Lord help you if you're the one going 72) and they don't slow down until they get to 2 lanes by MilleLacs Lake.	Recreation or Entertainment, Other	56357
66	Feb 04 25 06:58:03 am	Opportunity	The sign (on 169 northbound) with flashing lights indicating a red light ahead at 261st used to be easily visible from the highway at a distance. Now, trees, ugly billboards, and a large pile of construction-related dirt obscure it, and it can't be seen from a distance. This reduces time available to react to changes in traffic flow through the intersection.	Work, Visiting friends and family, Recreation or Entertainment	55371
67	Feb 04 25 07:00:52 am	Needs improvement	Turning left from 169 northbound onto 273rd has a very short left turn lane. Drivers have two options: either brake very hard after moving into the turn lane, or obstruct traffic by driving slowly in the left lane. Northbound traffic here moves very quickly (70-75mph), which makes both options dangerous. This is especially true when the left turn lane is covered with snow and ice while the remainder of the highway is clear.	Work, Visiting friends and family, Recreation or Entertainment	55371
68	Feb 04 25 07:04:39 am	Needs improvement	J-turns need acceleration lanes for side roads, or overpass/underpass opportunity.	Work, School, Recreation or Entertainment	55371
69	Feb 04 25 08:56:22 am	Needs improvement	21591 hwy 169 is ERX's main entrance. There needs to be a FULL turn lane AND acceleration lane added starting BACK AT 213 AVE that runs the full length of that part of 169, all the way in front of the park's front track to that Main exit. This will allow for all of the trucks and trailers to safely get out of the lanes of the highway when hauling in. This will also allow for cars to get out of the lanes as well. They have recently started hosting large music events there during the summer; most of the traffic come up from the cities, so from the south headed north. This would ALSO ACCOMMODATE the now new Collision Centers need for a properly lengthed turn lane for tow trucks to get over and slow down to make the turn into their lot, while hauling in vehicles. Adding this full length lane would then also allow for those same tow trucks and folks leaving the Collision Center lot to be able to use that lane to Accelerate to highway speeds before moving over into the lane of traffic. Versus struggling to find a gap as cars come up around a curve and hill and just shoot out in front of them. I believe ERX also has a second driveway just past the Collision Center, they could start using that as the EXIT, which would allow for trucks hauling to have the full length their property in front of their front track and all that trailer parking there, to accelerated before, again, having to attempt to fit into traffic at highway speeds while hauling.	Work, Visiting friends and family, Recreation or Entertainment, Other	55371
70	Feb 04 25 10:06:37 am	Needs improvement	Crossings like this need to be eliminated. The highway isn't a freeway, but it needs to be a limited access road. People can go beyond and come back or turn around. It's not ideal for the businesses, but for safety this needs to be a priority. Maybe the addition of frontage roads would be best	Visiting friends and family, Recreation or Entertainment	55309
71	Feb 04 25 11:24:18 am	Needs improvement	Private accesses like the driveway to ERX should be rerouted to safer intersections/interchanges. This stretch of highway tends to have traffic traveling at freeway speeds, and traffic entering and exiting at driveways poses a major safety concern for both the through traffic (north and south) and the turning traffic.	Visiting friends and family, Recreation or Entertainment, Other	55303
72	Feb 04 25 11:28:56 am	Needs improvement	Private driveways should be eliminated from directly accessing 169. If possible, a frontage road system connecting these driveways to the Zimmerman interchange would be the safest alternative.	Visiting friends and family, Recreation or Entertainment, Other	55303
73	Feb 04 25 11:32:47 am	Opportunity	Consider connecting 305th Avenue and 303rd Avenue with a bridge (and, if funding allows, add quadrant interchanges) to improve safety for folks entering and exiting both sides of the highway.	Visiting friends and family, Recreation or Entertainment, Other	55303
74	Feb 04 25 12:37:20 pm	Other	We live off 221st. With the curve of 169 coming south, it's hard to see some traffic - making crossing sometimes quite dangerous, especially in the winter with snow piles. This intersection needs to be made safe for the trucks and automobiles perhaps a over under type of interchange with merge.. no round about because of the sand trucks	Other	55330
75	Feb 04 25 01:15:23 pm	Other	This can be very dangerous to try to cross. You can't see super far north to see cars headed south. Cars have spacing that makes it hard to cross, this will likely become worse when the Zimmerman project is completed. Add in snow piles or other vehicles waiting and it's nearly impossible. Cars speeding over 70 mph straight at your stopped and waiting car is scary too.	Work, Visiting friends and family, Recreation or Entertainment	55309
76	Feb 04 25 01:18:59 pm	Needs improvement	Heading south up this hill you lose sight of vehicles a bit ahead of you. A lot of people tend to lose speed headed up the hill, which results in braking and lane merging that has sometimes been scary. I believe this is what helped lead to deaths there, combined with ice.	Work, Visiting friends and family, Recreation or Entertainment	55309
77	Feb 04 25 02:01:36 pm	Needs improvement	right lane in front of old scrapyard	Work, School, Visiting friends and family, Recreation or Entertainment	55398
78	Feb 04 25 02:04:53 pm	Opportunity	Close this access to 169 and replace it with a bridge/underpass. Having the Rum River Drive interchange less than one mile north of this intersection could cause an unsafe distance for merging and diverging traffic. Redirecting traffic to the interchange would improve safety.	Visiting friends and family, Recreation or Entertainment, Other	55303
79	Feb 04 25 03:13:43 pm	Other	Dangerous when trying to exit. Highway traffic crosses the line into the turn lane daily	Work, Visiting friends and family, Recreation or Entertainment	
80	Feb 04 25 03:29:43 pm	Other	This area gets very icy in winter months.	Visiting friends and family, Recreation or Entertainment	55371
81	Feb 04 25 03:33:53 pm	Opportunity	I would remove the cross traffic left turn for those going south on 169. Make all traffic turn right and go around the roundabout to the west. Too many close calls there.	Visiting friends and family, Recreation or Entertainment	55371
82	Feb 04 25 05:39:40 pm	Needs improvement	This area is a death trap whenever it snows	Work, Visiting friends and family, Recreation or Entertainment, Other	56353
83	Feb 04 25 07:56:09 pm	Opportunity	Guardrails by the lakes. Far too close to the road in a state that is covered in slick ice part of the year and near impossible to see in whiteouts. More overhead lights up and down the highway. It's very dark at night in the country and you can't see easily on the winding parts, especially all the deer. Perhaps a center divider where there are no trees between the north and south bound. With everyone's bright LED lights or high beams since its so dark, on the turns, you are blinded by oncoming traffic - a barrier to block that would be nice.	Work, Visiting friends and family	56353
84	Feb 05 25 04:03:31 am	Needs improvement	Blowing snow causes a lot of problems in the winter.	Other	55371

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85	Feb 05 25 05:51:54 am	Opportunity	Having an actual turn lane for the veterans memorial state land is a very much needed addition. So many near horrific accident trying to turn into here, especially on weekends with people heading north to hunt here or even farther north to cabins and such and the traffic is heavy. It makes zero sense that the state owns this land but doesn't have an actual turn lane to safety get into it off a major highway.	Work, Recreation or Entertainment, Other	55371
86	Feb 05 25 09:20:09 am	Needs improvement	Speed limit of 65 mph should be increased.	Visiting friends and family	56353
87	Feb 05 25 09:23:22 am	Needs improvement	Speed limit for this corridor should be increased safety for entrance and exits along this corridor should be improved, including potential introduction of highway entrance and exit ramps, and frontage road systems.	Visiting friends and family	56353
88	Feb 05 25 01:58:48 pm	Needs improvement	Super hard to see cars coming from the north heading south especially in a semi	Work, Recreation or Entertainment	55371
89	Feb 05 25 04:07:32 pm	Needs improvement	Traffic cutting across 169 causes black ice to build up in the left lane, right at the base of the hill.	Work	55371
90	Feb 05 25 05:26:10 pm	Needs improvement	These j turn need to be move so you have better sight lines the south bound lane is turning right into to this j turn, which has no execration lane and traffic is often at speeds above 70 mph.	Work	55398
91	Feb 05 25 06:00:43 pm	Needs improvement	More lighting		
92	Feb 05 25 06:01:29 pm	Needs improvement	More lighting		
93	Feb 05 25 07:10:12 pm	Needs improvement	Dangerous intersection. Once Zimmerman gets rid of light there won't be any breaks in traffic to get on north or south which could be a dangerous scenario. Overpass or acceleration lanes would be ideal	Work, Visiting friends and family, Recreation or Entertainment	55371
94	Feb 06 25 12:56:42 am	Needs improvement	Trying to make a left-hand turn from the 169 off ramp can be impossible at times. Doesn't matter if your coming from the north Bound or south bound side of 169.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55398
95	Feb 06 25 05:39:40 am	Opportunity	Should put in two J-turn intersections to cross the highway to make the crossing safer. Also make turning lanes off of 169 to access the township road longer.	Work	55371
96	Feb 06 25 06:41:38 am	Needs improvement	I'm a retired firefighter and I've been on many of the accident calls in the last 20 years. It would be nice to have cable barriers going north on 169. I've seen cable barriers several times save the driver and oncoming traffic from possible fatalities. Also 239 Ave and 169 has been an intersection that has seen a lot accidents. With the hill and curve the site lines are pretty poor in this area. Thanks for the new overpass, that alone will save many lives.	Work, School, Visiting friends and family, Recreation or Entertainment	55398
97	Feb 06 25 09:06:07 am	Needs improvement	There should definitely be a guardrail here. When it snows 169 gets very slick and someone's going to end up going in, if they haven't already. Even better would be a short wall of some sort as the wind coming off the lake in winter blows the snow all over the highway making it even slicker. There should also be overhead street lights. Deer are every where and with oncoming lights you are blinded and it makes it very hard to see. Overhead lights would help this.	Work, Visiting friends and family, Recreation or Entertainment	55371
98	Feb 06 25 09:30:23 am	Needs improvement	This curved bridge is extremely dangerous in winter. My house is behind this stretch and this winter there were sirens for about 45 minutes straight because of constant accidents. The emergency vehicles would keep making loops from here to Highway 95 because of how many people crashed.	Work, Visiting friends and family, Recreation or Entertainment	55371
99	Feb 06 25 09:31:29 am	Opportunity	Roundabout here and on the other side. People turning left off either side are waiting forever.	Work, Visiting friends and family, Recreation or Entertainment	55371
100	Feb 06 25 01:09:35 pm	Needs improvement	Definitely needs a guard rail on the southbound side with the road being so close to the lake. Any sort of wrong movement or collision could cause a vehicle to go in the lake and winter road conditions worsen that possibility.	Work, Other	55371
101	Feb 06 25 01:12:49 pm	Needs improvement	This curve gets incredibly dangerous in the winter and any other slick conditions. Putting guardrails lining further from the bridge would help or maybe there's another solution.	Work, Other	55371
102	Feb 06 25 03:55:31 pm	Needs improvement	Street lights from Fremont Dr in Zimmerman to Rum River Dr in Princeton would be great. It's so dark.		
103	Feb 06 25 03:57:19 pm	Needs improvement	Street lights from Elk River to Princeton. 169 is to dark.	Work	55371
104	Feb 06 25 06:25:24 pm	Needs improvement	Needs guardrail installed. Roadway too close to water.		
105	Feb 06 25 08:30:31 pm	Other	More cameras and give tickets.	Visiting friends and family, Recreation or Entertainment, Other	56090
106	Feb 06 25 08:43:50 pm	Other	Put in the light things that tell each driver 's cars are coming up to the roads . And slow down sighs with a camera 📸 on the pole. And hand out tickets .		

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107	Feb 07 25 02:52:19 am	Other	I don't think the speed needs to be increased drastically like some (way too many cars coming on at lower speeds) but rather enforce the speed that is posted. Max speed I could see if going to is 60. Anything higher than that and no vehicles will have room to accelerate on the on/off ramps. This would lead to much higher accident rates in that area.	Work, Visiting friends and family	55398
108	Feb 07 25 02:53:56 am	Needs improvement	Acceleration lanes along 169 for the small side roads would be incredibly helpful for cars needing to either cross or just merge into traffic.	Work, Visiting friends and family, Recreation or Entertainment	55398
109	Feb 07 25 08:23:19 am	Needs improvement	Acceleration lanes at the busy intersections like 25.	Work, Visiting friends and family, Recreation or Entertainment, Other	55398
110	Feb 07 25 08:24:16 am	Needs improvement	Long wait at times to pull out, maybe a round a bout on this side of 169 and one on the other side, it gets busy under around this bridge	Other	55398
111	Feb 07 25 08:50:11 am	Needs improvement	To do any turn from this area can be very difficult with heavy fast traffic, crossing over no matter which direction. Overpass? Something	Visiting friends and family, Recreation or Entertainment, Other	55398
112	Feb 07 25 09:00:23 am	Opportunity	Reopening this might ease the congestion around Rum River Dr. Accessing the businesses easier heading north.	Visiting friends and family, Recreation or Entertainment, Other	55398
113	Feb 07 25 09:21:40 am	Needs improvement	Around this area and heading south down near 273rd this area gets pretty dark ar night , when cars are wanting to pull out to head south on 169, their cars are at an angle and their lights are not always visible , so when they do pull out (from driveways) it is infront of you with short time to react . Street lights along this stretch might help 🤷‍♀️	Visiting friends and family, Recreation or Entertainment, Other	55398
114	Feb 07 25 09:48:21 am	Needs improvement	This is a bad area, short turn lane on an icy hill, low visibility as you go up hill, snow melts and freezes on curve making very slick if you ain't careful.	Visiting friends and family, Recreation or Entertainment, Other	55398
115	Feb 07 25 10:00:19 am	Needs improvement	This is a busy area, people turning in, trucks coming out, traffic headed south on a hill you can not see beyond, I see something is going to happen here.	Visiting friends and family, Recreation or Entertainment, Other	55398
116	Feb 07 25 01:58:18 pm	Other	Like many other States, MN needs to add signs; "Keep Right Except to Pass". In traveling across the US, it is evident that Minnesotans like to ride the left lane regardless of the speed limit and traffic flow, resulting in aggressive driving and increased speeds to pass.	Visiting friends and family, Recreation or Entertainment	55371
117	Feb 08 25 10:18:11 pm	Other	I've lived here 45 years and in my opinion, this bridge is a death trap, especially when icy. It has a dangerous curve after a long straight stretch where drivers always seem to have picked up speed, it has hardly any guardrail's, not to mention poor visibility from every direction, inefficient lighting, to name a few. Also making a left turn on the exits here is nearly impossible more often then not.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55371
118	Feb 09 25 05:53:48 am	Needs improvement	Dangerous intersection! Needs improvement as does the entire side of 169. Way too close to the lake with NO barriers!	Visiting friends and family, Recreation or Entertainment	55398
119	Feb 09 25 01:27:32 pm	Needs improvement	Approaching 169 from 225th Ave NW is sloped downwards too steep. When there are icy conditions there is no room for extra braking once you've started the drive from the top of the hill. If you slide into 169 it will result in a driver's side impact crash at 70 MPH. I've had to steer my car into the ditch on the right to avoid entering traffic when conditions were icy.	Work, School	55330
120	Feb 09 25 03:18:36 pm	Needs improvement	Traffic can cause crashes. We have lost a life already here. It can be tricky and dangerous to get to southbound 169 from here.	Work, School, Visiting friends and family, Recreation or Entertainment	55330
121	Feb 09 25 06:04:55 pm	Needs improvement	Please fix	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55330
122	Feb 09 25 06:55:40 pm	Needs improvement	safety concern- need gaurd rails	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55371
123	Feb 09 25 08:35:37 pm	Needs improvement	People accessing 169 southbound from Fremont Avenue pull out in front of traffic, treating the access as an on-ramp. People are going at 65 mph on 169 southbound and have to hit the brakes because of people pulling out doing only 20-30 miles an hour.	Work, Visiting friends and family, Recreation or Entertainment, Other	55371
124	Feb 10 25 12:44:18 pm	Needs improvement	This particular intersection (225th Avenue NW) is the main entrance to the Elk River Landfill operated by Waste Management and two gravel mining operations (east side) where countless semi-trucks enter and exit throughout the day. February 14th will mark the first anniversary of the tragic accident that took the life of our neighbors' 8-year-old child. The result of Highway 169's conversion to a "Signal-Free Corridor" is the northbound traffic between Elk River and Zimmerman becoming a steady stream of vehicles with very few openings to turn, enter traffic, or cross the divided highway safely and an increased risk of hazards at the remaining uncontrolled intersections. The final phase of this corridor conversion (at the intersection of Hwy 169 and CSAH 4) will eliminate the last remaining traffic signal on the 75-mile stretch of Highway 169 between Rogers and Lake Mille Lacs. What is not addressed by this project is that the intersection changes will now likely produce the same steady stream of high-speed traffic heading southbound, further exacerbating the safety issues on this roadway and intersections noted above. The Solutions could involve an overpass, frontage road, and/or alternative access points. The steep downward hill from 225th to 169 is dangerous in winter conditions.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55330
125	Feb 10 25 12:48:05 pm	Needs improvement	Awkward intersection. The visibility is extremely poor for vehicles entering to northbound 169 from 221st and vehicles turning westbound from 169N to 221st. Winter/snow conditions exacerbate the visibility challenges. Several accidents (some with fatalities) have occurred here.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55330
126	Feb 10 25 04:31:25 pm	Needs improvement	This on ramp tends to collect road hazards from large trucks. I've had several popped tires and even damaged my rim with large rock that likely fell from gravel pit truck.	Work	55398
127	Feb 10 25 04:37:09 pm	Opportunity	This merge can get quite busy with high traffic and seems like the traffic doesn't want the folks coming off 169 to enter their lane. Make double lane to light? Then a merge to one lane?	Recreation or Entertainment, Other	55398
128	Feb 10 25 06:36:09 pm	Other	The j-turn has limited sight line due to curve in 169 to the north. This is especially bad at night when you can't see what lane cars are in. At the very least an acceleration lane would be helpful.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55398

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129	Feb 11 25 04:49:47 pm	Needs improvement	Need an acceleration lane since it seems like most of Zimmerman uses this road to get on to 169 and some mornings it takes forever to get on to 169. Also people drive so fast when you do merge there is someone right on your tail.	Work, Visiting friends and family, Recreation or Entertainment	55398
130	Feb 11 25 05:09:56 pm	Needs improvement	Acceleration lane		
131	Feb 11 25 08:08:09 pm	Needs improvement	There needs to be an acceleration lane added here. As neighborhoods grow more and more people are using this road to get in the highway	Work, Visiting friends and family, Recreation or Entertainment, Other	55398
132	Feb 11 25 08:12:11 pm	Needs improvement	Needs acceleration lane once the lights are gone in Zimmerman because even now at times you just sit to be able to turn	Work, Recreation or Entertainment	55398
133	Feb 12 25 08:43:53 am	Opportunity	There needs to be guardrails here. The highway is much too close to the water. Many people have ended up in the lake, especially during the winter.	Work, Visiting friends and family, Recreation or Entertainment, Other	55371
134	Feb 12 25 10:15:26 am	Needs improvement	Either needs acceleration lanes or to be put back to the way it was	Work, Visiting friends and family, Recreation or Entertainment, Other	55398
135	Feb 12 25 05:43:51 pm	Needs improvement	This intersection is a nightmare! Big trucks turning through southbound traffic is dangerous. Also traffic entering the southbound lanes from the west are not able to get up to 65 mph to enter the flow of traffic. It's all on a corner.	Work, Visiting friends and family, Recreation or Entertainment, Other	55398
136	Feb 13 25 08:54:17 am	Needs improvement	Add acceleration lanes onto the highway	Work	55371
137	Feb 13 25 08:54:55 am	Needs improvement	Add acceleration lane onto highway	Work, Recreation or Entertainment, Other	55371
138	Feb 13 25 08:56:37 am	Needs improvement	Extend the turn lane while going north bound to prevent people from braking in the highway	Work, Recreation or Entertainment	55371
139	Feb 13 25 08:57:47 am	Needs improvement	Extend both of the turn lanes while going north bound to prevent people from braking on the highway	Work, Visiting friends and family, Recreation or Entertainment	55371
140	Feb 13 25 08:59:20 am	Opportunity	Extend the turn lane while going north bound to prevent people from braking on the highway	Work, Visiting friends and family, Recreation or Entertainment	55371
141	Feb 13 25 09:00:55 am	Opportunity	Add an acceleration lane going southbound for easier access. Do not add one of those useless new horse shoe turns, does not give a benefit and will results in the destruction of the trees	Work, Visiting friends and family, Recreation or Entertainment	55371
142	Feb 13 25 09:02:27 am	Needs improvement	Require the motocross to pay for the addition of a dedicated third lane that will serve as a bypass for all of the people that brake on the highway to access the motocross.	Work, Visiting friends and family, Recreation or Entertainment	55371
143	Feb 13 25 09:03:40 am	Needs improvement	Extend the turn lane onto 221st coming from the south to prevent people people from braking on the highway.	Work, Visiting friends and family, Recreation or Entertainment	55371
144	Feb 13 25 09:04:42 am	Opportunity	Extend the south bound acceleration lane to be a third lane for a bit to allow smoother traffic and to bypass trucks and other larger/slower vehicles.	Work, Visiting friends and family, Recreation or Entertainment	
145	Feb 13 25 09:05:49 am	Opportunity	Update both the south & north bound lanes to be passing lanes & acceleration lanes	Work, Visiting friends and family, Recreation or Entertainment	55371
146	Feb 13 25 09:06:15 am	Opportunity	Update both the south & north bound lanes to be passing lanes & acceleration lanes	Work, Visiting friends and family, Recreation or Entertainment	55371
147	Feb 13 25 09:09:23 am	Opportunity	Extend acceleration lane to account for those that do not get up to speed and will just blindly merge into traffic. This will also help truckers with heavy loads to have time to get up to speed.	Work, Visiting friends and family, Recreation or Entertainment	55371
148	Feb 13 25 09:11:14 am	Opportunity	Why not extend this acceleration lane to turn into an exit only lane at the next bridge (exit). It gives people more time to merge into traffic and it allows those exiting to move out of traffic.	Work, Visiting friends and family, Recreation or Entertainment	55371
149	Feb 13 25 09:19:44 am	Opportunity	Extend the entrance ramp from the last bridge in elk river by the Harley dealer and turn it into an exit only (third lane) to this point. Improve traffic flow by allowing those that are exiting to move and also giving others more time to accelerate onto the highway	Work, Visiting friends and family, Recreation or Entertainment	55371
150	Feb 13 25 12:09:26 pm	Opportunity	Very busy exit both ways - people in Baldwin use this exit including trucks to get to Cty 45 & access businesses and home on the west side without going to Rum River and trying to go west. Almost impossible to get across on a weekend or peak hours. Closing the road is NOT the answer.	Visiting friends and family, Recreation or Entertainment, Other	55371
151	Feb 15 25 05:46:53 pm	Opportunity	Use the money to get a permanent state trooper to monitor speeds. Pickups go 85mph or more	Other	55330
152	Feb 15 25 05:47:53 pm	Opportunity	Use the money to get a permanent state trooper to monitor speeds. Pickups go 85mph or more in this area		
153	Feb 15 25 05:48:18 pm	Opportunity	Use the money to get a permanent state trooper to monitor speeds. Pickups go 85mph or more in this area		
154	Feb 15 25 07:20:43 pm	Needs improvement	Crossing from NB 169 to the street here feels really dangerous, especially in winter when plows create big piles between NB & SB 169 making it really hard to see oncoming SB traffic as we turn left from NB 169. I see impatient drivers crossing when it's not safe. This is a risky Crossing in traffic going very fast.	Work, Other	55398
155	Feb 16 25 07:45:29 am	Needs improvement	Quit building bridges with curves in winter climates.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55398
156	Feb 16 25 07:48:54 am	Needs improvement	Add more and bigger "Keep right except to pass" signs.	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55398
157	Feb 16 25 07:54:00 am	Needs improvement	Extend northbound left turn lane for the truck traffic turning on 213th	Work, School, Visiting friends and family, Recreation or Entertainment, Other	55398
158	Feb 16 25 09:58:19 am	Needs improvement	Please continue on northward with median catch fencing; currently goes from Elk River but ends at 237th. Last year a woman had slipped on ice going southbound between 239th and 237th and slid through the median into the northbound lanes and was struck and killed by a large truck. If she had made it 100 or so yards further southbound she would have been retained and saved by the fencing. I've driven the route every day for 15 years and do get nervous with the potential for median crossing serious accidents. Thank you.	Work	
159	Feb 16 25 06:58:16 pm	Needs improvement	Definitely need guardrails along Cantlin Lake.	Visiting friends and family, Recreation or Entertainment, Other	55398
160	Feb 16 25 07:15:38 pm	Needs improvement	This bridge is very slippery and dangerous . Hopefully there's something that can help.	Visiting friends and family, Recreation or Entertainment, Other	55398
161	Feb 17 25 04:58:49 am	Needs improvement	This corner on the SB lanes gets really slippery and there have been many spinouts and accidents		
162	Feb 17 25 05:05:03 am	Needs improvement	The turn lane from SB 169 onto 237th (cty74) can be tricky to get across NB lanes and the turn can be sharp due to the angle of the intersection.		

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163	Feb 17 25 05:09:42 am	Needs improvement	This should be a frontage road with on/off ramps. The sight lines, speed of traffic, elevation change in the road, and the short merge lanes make this a particularly dangerous intersection. Also there are several large trucks that turn here and cross dangerously.		
164	Feb 17 25 12:35:16 pm	Needs improvement	Need different access of 225th Ave onto Hwy 169. Semis going into Waste Management back-up the intersection. It is difficult for vehicles to communicate with the semis to know if they are going to wait on Hwy 169 or turn into the lane and wait.	Work, School, Visiting friends and family, Recreation or Entertainment	55330
165	Feb 17 25 12:56:49 pm	Needs improvement	I have been driving this stretch for quite sometime... Notoriously, no matter the road conditions the flow of traffic impedes the safety of travel through this area. J-turns do not seem to solve the issue of reducing accidents because of the confusion they cause. Perhaps frontage roads with a reduced grade/slope to the highway. Improved line of site to intersections. The buffer in that area distorts visibility	Work, Recreation or Entertainment	55371
166	Feb 18 25 09:28:30 am	Needs improvement	Bridge is super slippery in winter, especially northbound with the grade + curve it is super dangerous. Also think that a longer NB entrance ramp would be beneficial as it feels like when you are done dealing with bridge + curve you need to quick switch lanes for entering drivers. Could be done simply by striping to allow longer merge zone. As others have mentioned it is very difficult to turn from the ramps on to CR 29 at times. Also	Work, Visiting friends and family, Recreation or Entertainment, Other	56353
167	Feb 19 25 08:47:31 am	Needs improvement	I drive from Zimmerman to Princeton for work. The amount of traffic entering the highway between 247th and 225th is simply not safe. This morning a full size SUV turned southbound from 247th and was accelerating and then at CSAH 19/245th another car pulled right out in front of it. I was in the lane next to the SUV and they had to choose between slamming on their brakes or cutting me off. Meanwhile people are pulling out into traffic off of CSAH 25/243rd. And they just pull out - often without stopping and/or without regard for the traffic they are pulling in to. The same scenario repeats as you approach the landfill.	Work, Recreation or Entertainment	55398
168	Feb 19 25 10:18:26 am	Other	J-turns take more room between oncoming cars than perpendicular crossings so it feels much more dangerous. Especially with the traffic lights gone in Elk River, the breaks in traffic are not very large at times. Getting up to speed in a J-turn is difficult. It's not as bad when there is a third lane for the right turn, but still feels like it's cutting off traffic if oncoming cars don't realize there is a turn lane to enter because many J-turns don't have that. I wonder if studies show less accidents because fewer people use the turn. I know many of my friends and family will take other road options to get to our neighborhoods on the east side of 169 near 19 because of the perceived increased danger of J-turns. Maybe you could explain the studies and the benefits of this type of turn to us in the Sherburne County Educator.	Visiting friends and family, Recreation or Entertainment, Other	55398
169	Feb 19 25 06:08:51 pm	Needs improvement	Dangerous		
170	Feb 19 25 06:10:25 pm	Needs improvement	So dangerous and people fly though. Need lights, stop signs or round about.		
171	Feb 19 25 06:11:32 pm	Needs improvement	This area needs guardrails, Please!		
172	Feb 19 25 06:18:19 pm	Needs improvement	Cable barriers all the way and longer turn lanes, always slick. Plus an acceleration lane for those going south		
173	Feb 19 25 06:20:18 pm	Needs improvement	These corners are always so slippery with people driving way too fast		
174	Feb 20 25 06:40:56 am	Needs improvement	Need more lighting up and down 169 from Elk River to Zimmerman. It gets really dark in the winter time and dangerous to drive at night with no extra lighting, especially in snowy and blizzard conditions.	Work, Visiting friends and family, Recreation or Entertainment	55398
175	Feb 20 25 06:44:28 am	Needs improvement	Need more lighting up and down 169 from Elk River to Zimmerman. It gets really dark in the winter time and dangerous to drive at night with no extra lighting, especially in snowy and blizzard conditions.	Work, Visiting friends and family, Recreation or Entertainment	55398
176	Feb 20 25 06:46:12 am	Needs improvement	Need more lighting up and down 169 from Elk River to Zimmerman. It gets really dark in the winter time and dangerous to drive at night with no extra lighting, especially in snowy and blizzard conditions.	Work, Visiting friends and family, Recreation or Entertainment	55398
177	Feb 20 25 06:48:03 am	Needs improvement	Need more lighting up and down 169 from Elk River to Zimmerman. It gets really dark in the winter time and dangerous to drive at night with no extra lighting, especially in snowy and blizzard conditions.	Work, Visiting friends and family, Recreation or Entertainment	55398
178	Feb 20 25 06:48:38 am	Needs improvement	Need more lighting up and down 169 from Elk River to Zimmerman. It gets really dark in the winter time and dangerous to drive at night with no extra lighting, especially in snowy and blizzard conditions.	Work, Visiting friends and family, Recreation or Entertainment	55398
179	Feb 20 25 06:51:24 am	Needs improvement	Need more lighting up and down 169 from Elk River to Zimmerman. It gets really dark in the winter time and dangerous to drive at night with no extra lighting, especially in snowy and blizzard conditions.	Work, Visiting friends and family, Recreation or Entertainment	55398
180	Feb 20 25 06:52:15 am	Needs improvement	Need more lighting up and down 169 from Elk River to Zimmerman. It gets really dark in the winter time and dangerous to drive at night with no extra lighting, especially in snowy and blizzard conditions.	Work, Visiting friends and family, Recreation or Entertainment	
181	Feb 20 25 06:55:11 am	Needs improvement	Need more lighting up and down 169 from Elk River to Zimmerman. It gets really dark in the winter time and dangerous to drive at night with no extra lighting, especially in snowy and blizzard conditions.	Work, Visiting friends and family, Recreation or Entertainment	
182	Feb 20 25 06:59:05 am	Needs improvement	Long grass needs to be cut more often. It becomes hard to see when it gets too long for cars trying to use this to get across 169.	Work, Visiting friends and family, Recreation or Entertainment	55398
183	Feb 20 25 07:00:38 am	Needs improvement	More lighting needed along this stretch on both sides.	Work, Visiting friends and family, Recreation or Entertainment	55398
184	Feb 20 25 12:09:05 pm	Needs improvement	Unsafe to turn left at this intersection. I drive out of my way to avoid having to do it. Not willing to risk my life to save a few mintues.	Work, Recreation or Entertainment	55398
185	Feb 20 25 07:40:11 pm	Needs improvement	Acceleration lane is needed taking a right onto 169 south from county road 25. Thought it might have been installed when j turns were put in.	Work, Visiting friends and family	55398
186	Feb 23 25 06:52:47 pm	Other	There are no safety provisions for the heavy truck traffic into and out of Jake's Tree Service. Large trucks turn right off of, and onto 169 with no turn lane or acceleration lane. This is an unsafe situation	Work	55371

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187	Feb 25 25 04:00:26 am	Other	I am from Grand Rapids and my family and I drive 169 to the cities on a regular basis. 169 is very dangerous once you leave the new Elk River stretch until you get north of Highway 23 due to the increase in recreation traffic, development along this stretch, growth in even towns like Grand Rapids, and Brainerd area. With the huge traffic volumes I have an idea for the perfect solution to the problem. Why not add interchanges at appropriate locations along this corridor, then get rid of all driveways and roads onto and off off the highway. Build frontage a great frontage road system between the Elk River new freeway and Highway 23. I have heard with the elimination of lights that from about the Rum River Rest Area all the way to I 94 along this corridor is going to boom in the next 10 years, you can already see it with thats going on especially in Zimmerman and Princeton and just starting in Milaca the last couple years. Also as part of the project please address the numerous dangerous curves and hills along this stretch of highway. Please do a complete project from Highway 23 or just north of Co. Rd. 11, and work towards securing funding one piece at a time, but make sure each project isn't separate its part of the complete highway scope. If you could turn this stretch and the part further north I mentioned into a freeway with frontage roads, safe on and off ramps, safer hills and curves it would make traveling through this corridor much safer. I am always scared traveling this corridor, its one of the most dangerous corridors in the state due to amount of on an off traffic, driveways, trucks, tourist traveling up towards Lake Winnie, Crowing/Cass Counties, the Garrison area, Grand Casino area, Grand Rapids/Itasca County. Why not figure out what it would cost to properly do the entire corridor Like I mentioned and try and get if funded in three sections from combo of legislature money, corridors of commerce, any special federal funding, maybe even see if some of the businesses in the area with heavy truck traffic would help contribute. Maybe by 2030 yo could start implementing some of these long term projects. In the end this corridor could become safe and more of a pleasure to drive. I dont consider Co. rd. 11 by Milaca to I 94 in Roger's a rural road because its at the beginning of becoming urbanized with all the current and soon to be coming development I have heard will follow with the elimination of the traffic lights. I hope my ideas are a great long term solution to a dangerous and busy highway. It should be treated more like a freeway not a four lane regular highway.	Visiting friends and family, Recreation or Entertainment	55744
188	Mar 01 25 07:03:47 pm	Needs improvement	With the Elk River project complete, it creates a steady stream of traffic. I love the project as it decongested traffic flow through Elk River, however making it nearly Impossible to merge or cross to the southbound lane during medium too heavy traffic times. Also, cause for great concern during winter as the center is quite slick and not plowed equivocally. I recommend an overpass at either 237th or 245th. at a minimum, acceleration lanes are needed.	Work, School, Visiting friends and family, Recreation or Entertainment	55398