MIC Area Safety Action Plan
Phase 1 Project Summary

A data-driven systemic safety analysis of all arterial and collector roadways within the MIC's jurisdiction


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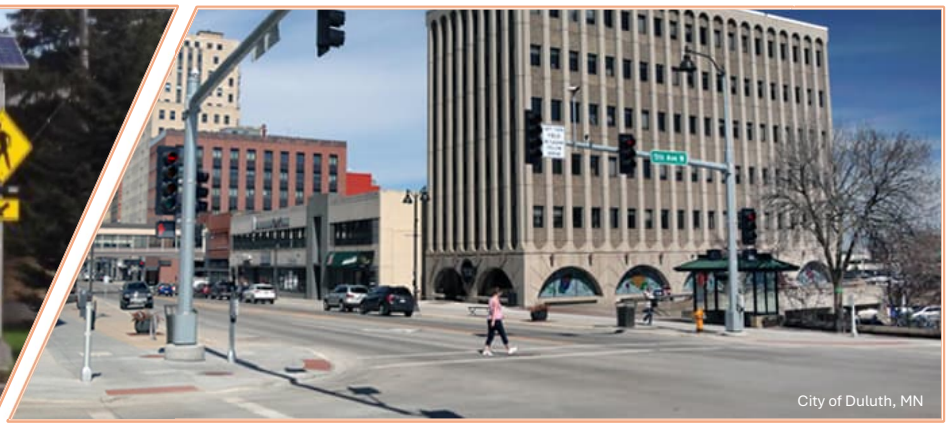
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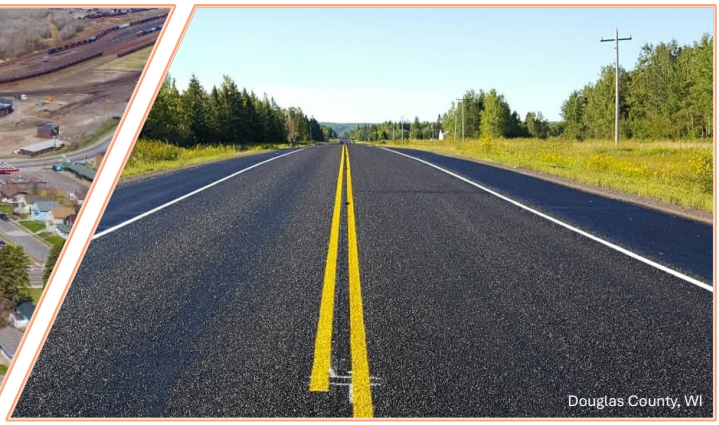
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Executive Summary – Phase 1

The Duluth-Superior Metropolitan Interstate Council (MIC) is developing a Comprehensive Safety Action Plan in accordance with the US Department of Transportation's (DOT) National Roadway Safety Strategy. Its goal is to develop a comprehensive strategy to significantly reduce roadway fatalities and serious injuries within the Duluth-Superior planning area, by identifying high-risk areas and implementing targeted interventions to improve road safety for all users. In addition, it will support the Minnesota DOT (MnDOT) and the Wisconsin DOT (WisDOT) highway safety goals as part of their 2020-2024 (MnDOT) and 2023-2027 (WisDOT) Strategic Highway Safety Plans (SHSP) in service of their long term *Towards Zero Deaths* programs. This Safety Action Plan implements a data-driven systemic approach to roadway safety for all arterial and collector roadways within the MIC's jurisdiction. Applying Federal Highway Administration's (FHWA) systemic approach involves six major steps:

1. Identify focus crash types, facility types, and risk factors
2. Screen and prioritize candidate locations
3. Identify and select countermeasures
4. Prioritize systemic projects
5. Deliver Systemic Projects
6. Evaluate Systemic Safety Results

The US DOT has outlined the below nine components which may be a part of a successful Safety Action Plan:

1. Leadership Commitment and Goal Setting
2. Planning Structure
3. Safety Analysis
4. Engagement and Collaboration
5. Equity
6. Policy and Process Changes
7. Strategy and Project Selection
8. Progress and Transparency:
9. Action Plan Date

For this phase of the development for the Comprehensive Safety Action Plan, AECOM assisted the MIC with completion of the technical components (3) Safety Analysis and (7) Strategy and Project Selection. The MIC has received a Safe Streets for All (SS4A) planning grant to complete the other community and public engagement-focused components of the Safety Action Plan in 2025-2026.

The MIC formed an advisory committee to assist with this phase of the study. The committee consists of members that represent all jurisdictions within the MIC planning area, including municipal, state DOT, and County representatives. Monthly progress meetings were held with this group to discuss study progress and to gather feedback or questions from the committee members. Additionally, two four-hour workshop meetings were held at critical points throughout the study to gather committee input.

This action plan included consideration of all high severity crash data, excluding possible injury and property damage crashes, for all roadways functionally classified as collectors or arterials (excluding interstates). An area-wide crash analysis was completed for high severity crashes, including creating crash trees and crash statistics. Possible injury crashes and property damage crashes were not included in this study. Crashes were disaggregated by crash type, location, functional classification, roadway geometrics, traffic volume, and other roadway characteristics. Engineering-related safety emphasis areas were identified based on the results of the crash analysis. A safety emphasis area is an area with safety concerns that was identified in

the systemic safety analysis. These safety emphasis areas have a historically high occurrence of high severity crashes. The following Safety Emphasis Areas were identified as part of this study:

1. Two-lane undivided rural roads with an Average Annual Daily Traffic (AADT) Less Than 5,000, with an Emphasis on Lane Departure Crashes
2. Urban Side Road Stop Control Intersections, with an Emphasis on Angle Crashes
3. Signalized Intersections along Multi-Lane Arterials, with an Emphasis on all Crash Types
4. Urban Intersections, with an Emphasis on Pedestrian and Bicycle Crashes

Crash risk factors were developed for each safety emphasis area based on roadway characteristics that contribute to the high severity crash history, such as AADT, occurrence of high severity crashes, speed limit, roadway geometric features, intersection features, land use, and pedestrian or bicycle facility features. These risk factors were used to assess risk for roadway segments, curves, and intersections to prioritize at-risk crash locations. Priority was assigned to locations that met the most risk factor criteria. A workshop was held with the MIC advisory committee to determine the final list of risk factors to be included in this study.

A workshop was held with the MIC advisory committee to develop a list of possible safety strategies. Safety strategies were developed using the follow resources: FHWA approved safety countermeasures, WisDOT Safety Engineering Strategies, MnDOT's District Safety Plan Updates (Big Book of Ideas), and various Crash Modification Factor (CMF) data. Decision trees were created for each of the MIC safety emphasis areas to help determine appropriate safety strategies. Recommended safety improvements and cost estimates were specifically assigned to the high-risk locations by applying the decision trees.

The MIC Safety Action Plan is a tool that focuses on the engineering-related safety emphasis areas and identifies safety strategies for locations that otherwise may not qualify for safety improvements. A detailed project-level review of each location would be necessary for selecting final safety countermeasures and costs. Recommendations may be implemented in several ways, including:

- SS4A Grants
- Systemic safety improvement projects
- Existing contracts
- Highway Safety Improvement Program (HSIP) projects
- As part of highway improvement projects
- Other upcoming local projects

Systemic safety strategies are most effective when applied throughout a corridor or at a series of intersections, rather than on an individual spot basis. As projects are developed, corridors can be reviewed in detail for application of the selected safety improvement strategies in a systemic manner. Additionally, all at-risk intersections from safety emphasis areas 2, 3, and 4 were evaluated based on their combined risk and corridor-wide systemic safety projects were developed. The list of corridor-wide intersection projects is shown as an attachment, including the estimated cost. This list of corridor-wide systemic safety projects is prioritized based on cost per weighted risk factor.

Introduction

The Duluth-Superior Metropolitan Interstate Council (MIC) is developing a Comprehensive Safety Action Plan[1] in accordance with the US Department of Transportation's (DOT) National Roadway Safety Strategy. Its goal is to develop a comprehensive strategy to significantly reduce roadway fatalities and serious injuries within the Duluth-Superior planning area, by identifying high-risk areas and implementing targeted interventions to improve road safety for all users. In addition, the MIC Safety Action Plan is being developed to support the Minnesota DOT (MnDOT) and the Wisconsin DOT (WisDOT) highway safety goals as part of their 2020-2024 (MnDOT)[2] and 2023-2027 (WisDOT)[3] Strategic Highway Safety Plans (SHSP) in service of their long term *Towards Zero Deaths* programs. This Safety Action Plan implements a data-driven systemic approach to roadway safety for all arterial and collector roadways within the MIC's jurisdiction.

MIC Planning Area Description

The MIC's planning jurisdiction—the Duluth-Superior Metropolitan Planning Area—encompasses 641 square miles within St. Louis and Douglas Counties in Minnesota and Wisconsin, respectively. It extends from the Duluth-Superior Urbanized Area out to the first ring of non-urbanized townships, including:

- Town of Lakeside, WI
- Town of Parkland, WI
- Town of Superior, WI
- Village of Superior, WI
- City of Superior, WI
- Village of Oliver, WI
- Town of Duluth, MN
- City of Duluth, MN
- Town of Lakewood, MN
- Town of Midway, MN
- City of Proctor, MN
- City of Hermantown, MN
- Town of Solway, MN
- Town of Grand Lake, MN
- Town of Canosia, MN
- City of Rice Lake, MN

Background

In 2021, 43,230 people were killed in the United States in motor vehicle crashes, of which 7,388 were people walking. However, improvements were observed in 2022 and have continued through 2023, where fewer motor vehicle fatalities (40,990) occurred across the nation. Minnesota had 451 traffic fatalities and Wisconsin had 595 traffic fatalities in 2021. Another 17,483 people were injured in Minnesota and 35,676 persons were injured in Wisconsin motor vehicle crashes in 2021. In 2022, there were 7 traffic fatalities in Douglas County, Wisconsin and 15 traffic fatalities in St. Louis County, Minnesota. Traffic crashes are preventable and can be avoided, and the MIC and its highway safety partners are being challenged with the task of reducing the number of fatalities and injury-related traffic crashes on their roadways.

Figure 1 shows the number of motor vehicle fatality crashes for the United States, Minnesota, and Wisconsin over the past 15 years.

[1] US DOT: https://highways.dot.gov/safety/data-analysis-tools
[2] MnDOT SHSP: https://www.dot.state.mn.us/trafficeng/safety/shsp/
[3] MnDOT SHSP: https://www.wisdotplans.gov/plan/shsp

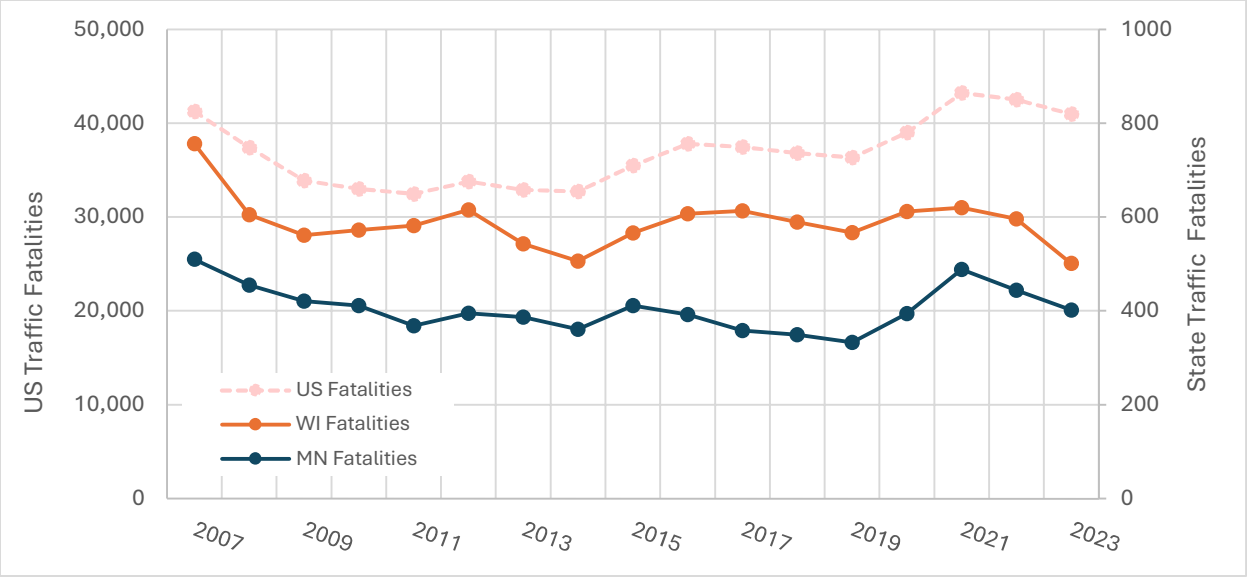


Figure 1 – Minnesota, Wisconsin, and United State Traffic Fatalities[4]

Goals & Objectives

The MIC's long-term goal is to develop a Safety Action Plan in accordance with the US DOT's Comprehensive Safety Action Plan guidance to be eligible for future funding opportunities. The goal of the Safety Action Plan is to develop a systemic safety strategy to mitigate roadway fatalities and serious injuries in the MIC planning region, including all roadways on the functionally classified system (arterials and collectors). The plan identifies at-risk locations in the MIC planning area and recommends systemic safety strategies that will mitigate safety risk in the future.

The US DOT has outlined nine components which may be a part of a successful Safety Action Plan[5]:

(1) Leadership Commitment and Goal Setting

An official public commitment (e.g., resolution, policy, ordinance) by a high-ranking official and/or governing body to an eventual goal of zero roadway fatalities and serious injuries.

(2) Planning Structure

A committee, task force, implementation group, or similar body charged with oversight of the Action Plan development, implementation, and monitoring.

[4] NHTSA FARS: https://www-fars.nhtsa.dot.gov/Main/index.aspx
[5] US DOT: https://www.transportation.gov/grants/ss4a/action-plan-components

(3) Safety Analysis

Analysis of existing conditions and historical crash trends that provides a baseline level of crashes involving fatalities and serious injuries across a region. It includes an analysis of locations where there are crashes and the severity of the crashes, as well as contributing factors and crash types by relevant road users.

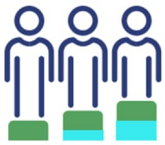
Analysis of systemic and specific safety needs is also performed. To the extent practical, the analysis should include all roadways within the jurisdiction, without regard for ownership. Based on the analysis performed, a geospatial identification of higher-risk locations is developed.

(4) Engagement and Collaboration

Includes engagement with the public and relevant stakeholders, including the private sector and community groups, that allows for both community representation and feedback. Information received from engagement and collaboration is analyzed and incorporated into the Action Plan.

Overlapping jurisdictions are included in the process. Plans and processes are coordinated and aligned with other governmental plans and planning processes to the highest extent practicable.

(5) Equity



Plan development should utilize inclusive and representative processes. Underserved communities are identified through data and other analyses in collaboration with appropriate partners. Analysis includes both population characteristics and initial equity impact assessments of the proposed projects and strategies.

(6) Policy and Process Changes

The plan should include assessment of current policies, plans, guidelines, and/or standards (e.g., manuals) to identify opportunities to improve how processes prioritize transportation safety. The Action Plan discusses implementation through the adoption of revised or new policies, guidelines, and/or standards, as appropriate.

(7) Strategy and Project Selection

The plan should include identification of a comprehensive set of projects and strategies—shaped by data, the best available evidence and noteworthy practices, and stakeholder input and equity considerations—that will address the safety problems described in the Action Plan. These strategies and countermeasures focus on a Safe System Approach and effective interventions and consider multidisciplinary activities. Once identified, the projects and strategies are prioritized in a list that provides time ranges for when the strategies and countermeasures will be deployed.

(8) Progress and Transparency:

The action plan should implement a method to measure progress over time after an Action Plan is developed, including outcome data. It's a means to ensure ongoing transparency is established with residents and other relevant stakeholders. The approach must include, at a minimum, annual public and accessible reporting on progress toward reducing roadway fatalities and serious injuries and public posting of the Action Plan online.

(9) Action Plan Date

For an Action Plan to be used for an Implementation Grant or for supplemental planning and demonstration activities only, it must have been finalized in the five-year crash period.

The requirement for each component is further outlined in the *Safe Streets and Roads For All* (SS4A) Self-Certification Eligibility Worksheet, shown in ***Appendix A***. A *SS4A* application is only considered eligible if the requirements are met for the components of 3, 7, and 9. Additionally, at least four of the six remaining components must be incorporated into the Safety Action Plan (1, 2, 4, 5, 6, or 8). **For this phase of the development of the Comprehensive Safety Action Plan, AECOM assisted the MIC with completion of the technical components (3) Safety Analysis and (7) Strategy and Project Selection. The MIC has received a SS4A planning grant to complete the other community and public engagement-focused components of the Safety Action Plan in 2025-2026.**

Approach

The US DOT has adopted a safe system approach (***Figure 2)*** as the primary method to address roadway safety across the country. This is a shift from the conventional, reactive, approach to safety because it focuses on proactive systemic methods of mitigating the risks in our extensive transportation system. The principles of the safe system approach include:

1. Death and Serious Injury Crashes are Unacceptable
2. Humans make mistakes and are vulnerable
3. Responsibility is shared, including government at all levels
4. Safety is proactive, rather than being reactive after crashes occur and lives are lost
5. Redundancy is crucial and all parts of the transportation system need strengthening

Source: https://www.transportation.gov/NRSS/SafeSystem

Figure 2 – US DOT Safety System Approach

Systemic Process

The Federal Highway Administration (FHWA) states that "*Using the systemic approach to perform data-driven safety analysis supports the Safe System Approach principle: Safety is Proactive, a fundamental component of the National Roadway Safety Strategy. This approach can identify opportunities to install Proven Safety Countermeasures to effectively reduce fatalities and serious injuries at scale.*"

A systemic safety analysis is a proactive safety approach that identifies safety issues based on an entire roadway network, instead of identifying location-specific safety issues. This approach looks for high-risk roadway characteristics that are frequently present in historical crash trends. This approach is useful in identifying safety issues in locations with low crash frequency, including on low volume roadways, crashes involving pedestrians and bicycles, and high severity crashes. To accomplish this approach to safety, a four-step process, as shown in Element 1 of ***Figure 3***, was used in this Safety Action Plan. This approach was used to determine the at-risk locations and possible safety strategies to address risk at those locations. The basic procedures for each of these steps are summarized below.

Source: https://highways.dot.gov/safety/data-analysis-tools/systemic

Figure 3 – Systemic Safety Process

1. ***Identify Focus Crash Types, Facility Types, and Risk Factors***

   Conduct a MIC area-wide crash analysis for high severity crashes, including creating crash trees and crash statistics. Possible injury crashes and property damage crashes were not included in this study. Crashes were disaggregated by crash type, location, functional classification, roadway geometrics, traffic volume, and other roadway characteristics. This step includes identifying engineering-related safety emphasis areas based on the results of the crash analysis. A safety emphasis area is an area with safety concerns that was identified in the systemic safety analysis and are locations with a historically high occurrence of high severity crashes.

2. ***Screen and Prioritize Candidate Locations:***

   Develop crash risk factors for each safety emphasis area based on roadway characteristics that contribute to the high severity crash history. These risk factors are then used to assess risk for roadways and intersections. Priority is then assigned to locations that met the most risk factor criteria.

3. ***Identify and Select Countermeasures***

   Identify all possible safety improvement strategies that focuses on the selected safety emphasis areas. Additionally, determine the expected safety benefit of each safety strategy based on available research. Decision trees are developed for each of the MIC safety emphasis areas to assist in determining appropriate safety strategies. Recommended safety improvements and cost estimates were specifically assigned to the high-risk locations by applying the decision trees.

4. ***Prioritize Systemic Projects***

   Systemic safety strategies are most effective when applied throughout a corridor or at a series of intersections, rather than on an individual spot basis. As projects are developed, corridors are reviewed in detail for application of the selected safety improvement strategies in a systemic manner.

Safety Workshops

One of components of the US DOT Safety Action Plan process is the development of a committee, task force, implementation group, or similar body charged with oversight of the Safety Action Plan development, implementation, and monitoring. The MIC formed an advisory committee to assist in the completion of this phase of the study. This committee consisted of members that represent all jurisdictions within the MIC planning area, including municipal, state DOT, and County representatives. The following coordination meetings were held throughout the development of this Safety Action Plan:

- ***Monthly Progress Meetings***

  Ten monthly progress meetings were held with this group to discuss study progress and to gather feedback or questions from the committee members.

- ***Workshops***

  Two four-hour workshop meetings were held at critical points throughout the study to create a shared understanding of the technical approach, having participants identify what they consider important themes to advance roadway safety in the MIC planning area, and to provide a means for sharing feedback to help the MIC prioritize infrastructure safety strategies.

  - The first workshop was held for Step 2 of the systemic safety process to assist in identifying risk factors to be evaluated for each of the safety emphasis areas. This meeting focused on refining the list of risk factors for the safety emphasis areas. Stakeholders provided feedback about proposed risk factors, suggested adding and removing risk factors, and helped to define the data collection needs.
  - The second workshop was held during Step 3 of the systemic safety process to assist in identifying safety countermeasure strategies. This meeting focused on refining proposed safety countermeasures. Stakeholders provided feedback about the feasibility of proposed countermeasures, proposed additional countermeasures, and suggested criteria for inclusion in safety countermeasure decision trees.

The meetings minutes that summarize these committee meetings are included in ***Appendix B***.

Crash Analysis

The first step in the systemic safety process was to complete a crash analysis. Region-wide crash data was collected for the five-year period from January 2017 to December 2021. Only high-severity (KAB) crash data was obtained and analyzed as part of this study. The following crash severities were included in this study:

- K – Fatal Crashes
- A – Suspected Serious Injury Crashes
- B – Suspected Minor Injury Crashes

Crash data was obtained from the following sources, including the collection of police reports for each crash:

- Wisconsin Crash Data - University of Wisconsin TOPS Laboratory WisTransPortal Database
- Minnesota Crash Data – Minnesota Crash Mapping Analysis Tool (MnCMAT2).

The crash data, information from police reports, and Regional Geographic Information Systems (GIS) data (provided by the MIC) were all used to disaggregate crash data by the following categories:

- Municipality
- Crash type or nature of collision
- Roadway typical section type (divided vs. undivided, number of lanes)
- Roadway functional classification (principal/minor arterial, major/minor collector)
- Intersection vs. non-intersection
- Intersection traffic control type (signal, roundabout, stop control, free-flow)
- Urban (curb & gutter) vs rural (shoulder & ditch) roadside characteristics
- Traffic volume – Average Annual Daily Traffic (AADT)
- Posted speed limits
- Time of day/year
- Presence of sidewalks and terrace
- Presence of bicycle facilities (trails, paths, on-street bike lane, paved shoulder, etc.)
- Weather/roadway conditions

Note that the roadway typical section data did not differentiate one-way streets from two-lane undivided roads. Majority of the one-way roads have two through lanes, so one-way streets on the functional roadway system are primarily categorized as a two-lane undivided road.

Crash Validation

The KAB crash data on the functional roadway system was validated by reviewing police crash reports. All pedestrian and bicycle crashes (107) were validated and approximately 10% of all vehicle crashes (90) were validated to confirm data accuracy. See ***Table 1*** below for the results from the crash validation. Note that pedestrian and bicycle crash data was updated if the data was found to be inaccurate. Inaccurate crash data for vehicular crashes was not updated since only 10% of these types of crashes were validated.

Table 1 **-** Crash Data Inconsistencies

Data Entry	% of Validated KAB Crashes with Incorrect Data	
	Ped and Bike	**Vehicle**
Location	56%	64%
Posted Speed	15%	15%
Intersection Related	6%	10%
Crash Type	7%	19%
Traffic Control Type	19%	15%

It was determined that location data was the most inconsistent when completing this crash validation process. This was due to crashes being coded to the incorrect roadway or being coded to the incorrect cross-street. The breakdown of inconsistencies for location data are:

- 49% of KAB crashes were coded to the correct roadway but were coded to the incorrect nearest cross street.
  - 78% of this data inconsistency was due to Minnesota crash data not including any cross street information when the crash was found to have occurred at an intersection.
    - Note that Minnesota crash data is not coded to a cross street unless the crash occurred at an intersection.
  - 22% of this data inconsistency was due to the incorrect cross street being coded.
- 46% of KAB crashes were coded to the incorrect intersection approach.

Other common data inconsistencies include:

- Intersection Related: For crashes coded as not occurring at an intersection, it was discovered that the main contributing factor for many of these crashes was intersection traffic control. Therefore, intersection-related crashes are likely under-represented.
  - Rear end crashes were sometimes found to have been coded as having not occurred at an intersection, but many rear-end crashes were found to have been caused by a red traffic signal or congestion due to a traffic signal at an intersection.
- Wisconsin crash data is not coded to differentiate between angle crashes and left turn crashes, whereas Minnesota crash data does difference between these crash types. Therefore, left turn crashes are likely under-represented.
- There was insufficient data to determine contributing factors related to speeding since the crash data only documents posted speed at the crash location.

Agencies and stakeholders should consider improving the crash data collection process with the objective of improving data collection accuracy and consistency. Improvements to the crash data will allow transportation safety professionals to determine high-risk areas on roadways, identify contributing factors

to crashes, and select safety interventions with a higher likelihood of success, ultimately leading to more effective safety projects in the future.

Crash Statistics

The MIC planning area was found to have 836 KAB crashes occur on functionally classified roadways in the five-year study period from January 2017 to December 2021. A total of 1,042 KAB crashes were found to have occurred in the MIC planning area, but 206 of those crashes were removed as documented in ***Table 2***. These include crashes not on the functionally classified system (arterials or collectors) or crashes involving a deer.

Table 2 - Removed KAB Crashes from MIC planning area

KAB Crashes.....	Removed WI Crashes	Removed MN Crashes	Total Crashes Removed
on Local Roads	48	44	92
on Interstates	13	83	96
With Deer	6	12	18
Total Removed	**67**	**139**	**206**

The remaining 836 crashes were disaggregated using GIS data provided by the MIC and by data provided within police reports. This data was used to create crash analysis trees to assist in determining crash trends in the MIC planning area. ***Appendix C*** shows the crash trees and high-level crash statistics for the MIC planning area, including crashes by year, functional classification, roadway type, location, and crash type. Major crash trends identified in the MIC planning area include:

- 71% of all KAB crashes occurred within the City limits of Superior and Duluth.
- 60% of all KAB crashes occur on two-lane undivided roads.
    - 60% occur on rural roads and 40% on urban roads.
- Angle (28%) and lane departure (22%) KAB crashes are the most common crash types, and primarily occur at:
    - 74% of angle KAB crashes occur at urban intersections with traffic control.
        - 61% occur at stop-controlled intersections and 39% at signalized intersections.
    - 60% of lane departure (run-off the road) KAB crashes occur on rural roadway segments.
        - 90% occur outside the influence area of an intersection and its traffic control.
- *Intersection KAB Crashes* – 75% of intersection KAB crashes occur at urban intersections.
    - 93% of urban intersection KAB crashes were on low-speed roads (<45 mph).
    - 48% of urban intersection KAB crashes were angle crashes.
- *Segment KAB Crashes* – 40% of segment KAB crashes occur along Two-Lane Undivided roads with an AADT less than 5,000.
    - 57% are lane departure KAB crashes with 48% of those lane departure KAB crashes including vehicles running into ditches/medians and/or overturning their vehicle.
- 13% of KAB crashes included a pedestrian (9%) or bicycle (4%).

- *Pedestrian KAB Crashes* – 48% of pedestrian KAB crashes occur at intersections where the vehicle fails to yield to a pedestrian in a marked crosswalk.
- *Bike KAB Crashes* - 85% of bike KAB crashes occur at intersections with no bicycle accommodations.

Overrepresentation Crash Analysis

The KAB crashes were compared to MIC planning area GIS data to determine if KAB crashes are over-represented on roadways with certain characteristics. The percent miles of each roadway type in the MIC planning area were compared to the percentage of KAB crashes that occurred under those various roadway types. Overrepresentation is useful at indicating if crashes are occurring on certain roadway types at a higher rate than expected, but this approach does not consider exposure. Exposure in this situation is a measurement of driver activity on a roadway, typically represented by AADT. ***Appendix D*** shows the results of the overrepresentation analysis.

This analysis shows there being an overrepresentation of crashes on multi-lane roadways, urban roadways, arterial roadways, and roadways with an AADT over 5,000.

Crash Rate Analysis

Crash rates are used to determine relative safety compared to other similar roadways due to crash rates using exposure data (AADT). Five-year Segment KAB crash rates were calculated for all arterial and collector roads in the MIC planning area. The project roadway network was segmented by the project team based on substantial changes in roadway attributes, including AADT, typical section, posted speed limits, functional classification, area type, and/or changes in route designation.

Some segments of road were found to have no KAB crashes occur in the five-year crash period, including 8% of arterial roadway miles and 35% of collector roadway miles. Note that crash rates for single lane roads and two-lane divided roads were calculated using the low number of roadway miles in the MIC planning area for each of these typical section types. Caution should be used when making conclusions regarding these two roadway types due to the low sample size. Two-way divided roads were found to be located where there are transitions in the typical section or roadway approaches to intersections.

Safety Emphasis Areas

A safety emphasis area is an area with safety concerns that was identified in the systemic safety analysis. These safety emphasis areas have a historically high occurrence of high severity crashes. The following four Safety Emphasis Areas were identified as part of this study:

1. ***Two-lane Undivided Rural Roads with an AADT Less Than 5,000, with a Focus on Lane Departure Crashes***
   - 60% of all MIC planning area KAB crashes occurred on two-lane undivided roads.
   - Run-off the road crashes account for 22% of all KAB crashes and is the second highest crash type in the MIC planning area.
   - 66% of sideswipe, run-off the road, and head-on high severity crashes occurred on two-lane undivided roads; or 53% occurred on rural two-lane undivided roads with less than 5,000 AADT.
   - 52% of all fatal crashes in the MIC planning area occurred on two-lane undivided roads and were either a head-on or run-off the road crash.
2. ***Urban Side Road Stop-Controlled Intersections, with a Focus on Angle Crashes***
   - Angle crashes account for 28% of all KAB crashes and is the highest crash type in the MIC planning area, and 80% of angle high severity crashes occurred at intersections.
   - 66% of all angle intersection high severity crashes occurred at side road stop-controlled intersections, and 68% of those angle crashes at side road stop-controlled intersections occurred in urban locations.
3. ***Signalized Intersections along Multi-Lane Arterials, with a Focus on all Crash Types***
   - 60% of all MIC planning area high severity crashes occurred on arterials, but this roadway type only accounts for 35% of roadway miles in the MIC planning area.
   - 27% of all MIC planning area high severity crashes occurred on multi-lane arterials, but this road type only accounts for 12% of roadway miles in the MIC planning area.
   - 50% of KAB crashes on multi-lane arterials occurred at an intersection, and 69% of those KAB crashes occurred at a signalized intersection.
4. ***Urban Intersections, with a Focus on Pedestrian and Bicycle Crashes***
   - 69% of high severity bicycle crashes occurred at intersections with no existing bicycle accommodations.
   - 48% of high severity pedestrian crashes occurred at intersections where the vehicle fails to yield to a ped in a marked crosswalk.
   - 52% of pedestrian and bicycle KAB crashes that occurred at urban intersections are on a two-way undivided roadway.
   - 34% of pedestrian KAB crashes occurred under poor weather conditions.

Nighttime Crashes

The systemic safety analysis identified 20% of all KAB crashes as having occurred at night in the MIC planning area (8PM to 5AM). These nighttime crashes were found to have good overlap with the other four safety emphasis areas identified:

- 26% of all pedestrian and bicycle crashes occurred at night.
- 73% of nighttime KAB crashes were run-off the road KAB crashes, and 59% of those crashes occurred on rural two-lane undivided roads.

Nighttime crashes were not carried forward as a standalone safety emphasis area because of the overlap this category has with other safety emphasis areas. Therefore, consideration for nighttime crashes was accounted for throughout the remaining steps of this Safety Action Plan.

System Screening

The second step in the systemic safety process was to develop crash risk factors for each safety emphasis area based on roadway characteristics that contribute to the high severity crash history. These risk factors are then used to assess risk for roadways and intersections and to prioritize locations within each safety emphasis area.

Risk Factors

The systemic approach focuses on risk rather than locations with a crash history. The safety emphasis areas indicate where high severity crashes are occurring, and the target crash types for each safety emphasis area. Crash risk factors are attributes of each safety emphasis area that indicate the location has a higher potential for crashes. The risk factors are used as a substitute for crashes to enable the identification of locations where it would be beneficial to apply safety improvement measures even though there is not a significant crash history at that location.

Risk factors were selected based on high-risk roadway features unique to each safety emphasis area. The at-risk criteria was developed based on the representation of risk factors across the MIC region. Each risk factor was evaluated based on the at-risk criteria and assigns a full star or a half star to each safety emphasis area location. A general rule-of-thumb was to set the at-risk criteria so that approximately 40% to 80% of all safety emphasis area locations receive either a full star or half star. The lists of risk factors and at-risk criteria were presented to the MIC Advisory Committee at a workshop meeting to gather feedback and to refine the final list of risk factors.

The crash data and regional GIS data provided by the MIC assisted with evaluation of some risk factors. However, additional data collection was necessary to appropriately evaluate all risk factor selected. This additional data collection was conducted by AECOM and stakeholders in the MIC Advisory Committee. The sources of this additional data came from agency, county, or MIC databases, and recent aerial imagery or Google Street View. See ***Appendix F*** for a memo containing more details on this data collection effort.

See ***Appendix G*** for a full list of risk factors considered for each safety emphasis area, including the data source of each risk factor.

See ***Appendix H*** for a map showing all locations included in each of the safety emphasis areas.

SEA 1: Rural Two-Lane Undivided Roads (AADT <5,000)

Safety Emphasis Area 1 (SEA1) includes all rural two-lane undivided roads on the functional system with an AADT less than 5,000. A rural roadway is defined as having shoulders with sloped ditches, or otherwise not having curb and gutter. Rural segments ranged from 150 feet to 6 miles in length, and these were segmented based on substantial changes in roadway attributes, including AADT, typical section, posted speed limits, functional classification, area type, and/or changes in route designation. This safety emphasis area included analysis of 360 miles of roadway, or 273 roadway different segments, including 252 horizontal curves. This study did not include horizontal curves with a radius greater than 1,150 feet. WisDOT's *Facility Development Manual* (FDM) indicates that a curve with a radius of 1,150 feet can accommodate vehicle speeds of up to 55 mph. Therefore, curves with a radius greater than 1,150-ft would most likely not have significant impacts on horizontal curve safety.

The focus of this safety emphasis area is lane departure crashes (run-off road, sideswipe, and head-on), so risk factors were selected to target these crash types on this type of rural roadway facility. A full list of risk factors, including the at-risk criteria, are shown in ***Table 3***.

Table 3 - Rural Roadway Segments & Curve – SEA1 Risk Factors

Risk Factor - Segments	At-Risk Criteria
Density of Lane Departure KAB Crashes	↾ >0.10 crashes per mile per 5 year period ★ >=0.50 crashes per mile per 5 year period
Curve Density	↾ >=1 curve/s per mile ★ >=3 curves per mile
Access Density (driveways, field entrances, unsignalized public streets)	↾ >=7 & <15 access points per mile ★ >=15 access points per mile
Edge Risk Assessment & Shoulder/Surface Type (Deficiencies = steep slopes, fixed objects in clear zone)	↾ No Paved Shoulder & No Deficiencies ↾ Paved Shoulder & 1 or 2 Deficiencies ★ No Paved Shoulder & 1 or 2 Deficiencies
Speed Limit	↾ >=40 mph & <55 mph ★ >=55 mph
Roadway Width	★ <24-feet
Risk Factor - Curves	**At-Risk Criteria**
Occurrence of KAB Crashes on Curves	↾ 1 crash per curve per 5 year period ★ >=2 crashes per curve per 5 per period
Presence of Intersection on Curve or Visual Trap	↾ Intersection on curve ★ Visual Trap & Intersection on Curve
Curve Radii	↾ >=500-feet to 1,000-feet ★ < 500-feet
Horizontal Curve Speed Differential	↾ 5-10 mph (curve advisory speed sign present) ★ >10 mph (curve advisory speed sign present) ★ Curve Radius <=750', Speed Limit >=45 mph (no curve advisory speed sign present)
Shoulder/Surface Type	↾ Gravel Shoulder Only ★ No Paved or Gravel Shoulder

SEA2: Urban Side Road Stop-Controlled Intersections (Angle Crashes)

Safety Emphasis Area 2 (SEA2) includes urban side road stop-controlled intersections in the MIC planning area. Urban intersections are defined as roadways with curb and gutter. This safety emphasis area included only urban side road stop control intersections on the functionally classified system, otherwise intersections where both intersecting roadways are either a collector or arterial. Intersections where the side road is a local street were not included in this evaluation due to the large number of low volume side streets throughout the MIC planning region. This safety emphasis area included analysis of 167 intersections.

The focus of this safety emphasis area was angle crashes, so risk factors were selected to target this crash type at urban side road stop-controlled intersections. A full list of risk factors, including the at-risk criteria, are shown in ***Table 4***.

Table 4 – Urban Side Road Stop-Controlled Intersections – SEA2 Risk Factors

Risk Factor	At-Risk Criteria
Occurrence of Angle Crashes	★ >=1 crash per 5 year period
Speed Limit on Major Road	↾ >=30 mph ★ >=40 mph
Mainline Cross Section	↾ Multi-Lane, with median ★ Multi-Lane, no median
Skew of Intersection	↾ > 5 degrees ★ >= 25 degrees
Number of Entering Legs	★ 4 or more intersection legs
Context Zone	★ Commercial, Retail, School, Library, Park
Mainline AADT	↾ >= 5,000 & < 12,000 ★ >=12,000

SEA3: Signalized Intersections along Multi-Lane Arterials

Safety Emphasis Area 3 (SEA3) includes all signalized intersections along multi-lane arterials in the MIC planning area. All data for this safety emphasis area was provided by the maintaining agency for each of these intersections in this safety emphasis area. This safety emphasis area included analysis of 93 intersections.

The focus of this safety emphasis area is to reduce all crash types at signalized intersections along multi-lane arterials. Risk factors were selected to reduce rear end crashes, angle crashes, and left turn crashes as those were the most predominant crash types in the MIC Region at signalized intersections. A full list of risk factors, including the at-risk criteria, are shown in ***Table 5*.**

Table 5 – Signalized Intersections on Multi-Lane Arterials – SEA3 Risk Factors

Risk Factor	At-Risk Criteria
Number of KAB Crashes	↾ 1 crash per 5 year period ★ 2 or more crashes per 5 year period
Speed Limit on Major Road	↾ >=35 mph ★ >=45 mph
Speed Limit on Minor Road	↾ >=30 mph ★ >=40 mph
Mainline AADT	↾ > 8,000 & < 12,000 ★ >=12,000
Skew of Intersection	↾ > 5 degrees ★ >= 20 degrees
Presence of Mainline Median	↾ Median on One Mainline Approach ★ No Median on Mainline
Presence of Mainline Left Turn Lanes	↾ No Left Turn on One Mainline Approach ★ No Left Turn on Both Mainline Approaches
Left Turn Signal Phasing, by Mainline Approach	↾ Permitted/Protected ★ Permitted Only
Signal Heads per Number of Mainline Thru Lanes	↾ <1:1 signal heads/lanes ★ <=1:2 signal heads/lanes
Access Within Influence Area	↾ 1-2 driveways ★ >=3 driveways
Mainline Left Turn Lane Alignment	↾ Zero Offset ★ Negative Offset
Isolated vs. Coordinated	★ Isolated Signal

SEA4: Urban Intersections (Pedestrian and Bicycle Crashes)

Safety Emphasis Area 4 (SEA4) includes urban intersections of all traffic control types in the MIC planning area. Urban intersections are defined as roadways with curb and gutter. This safety emphasis area included the same 167 intersections from Safety Emphasis Area 2, plus an additional 555 intersections, for a total of 722 intersections. Intersections for this safety emphasis area include intersections with low-volume local side streets. The additional intersections were selected based on coordination with the MIC and feedback from the MIC Advisory Committee. It was determined that additional third-party data would be used to identify locations with higher pedestrian or bicycle activity. The sources of this third-party data included:

- Replica: Data was used to determine where short-distance trips (1-mile or less) were occurring.
- Strava: Data was used to determine highly trafficked urban areas based on activity tracking (exercise phone applications).

Generally, the additional 555 locations are in areas with higher pedestrian or bicycle activity, and these are typically near areas with schools, shopping centers, parks, or trails.

The focus of this safety emphasis area is pedestrian and bicycle crashes, so risk factors were selected to target these crash types at urban intersections. A full list of risk factors, including the at-risk criteria, are shown in ***Table 6***.

Table 6 – Urban Intersection – SEA4 Risk Factors

Risk Factor	At-Risk Criteria
Occurrence of Ped & Bike Crashes	↳ 1 crash per 5 year period ★ >1 crash per 5 year period
Mainline AADT	↳ > 5,000 & < 10,000 ★ >=10,000
Type of Traffic Control	★ Signalized
Speed Limit on Major Road	↳ 30 mph ★ >=35 mph
Number of Thru Lane on Major Intersection Approaches	★ >2-lanes
Presence of Bicycle Facilities (mainline)	↳ Paved Shoulder ★ No Bike Facilities
Exposure Length (exclude median refuge)	↳ >=36-ft & <50-ft ★ >=50-ft
Presence of Sidewalk (mainline)	↳ Partial Sidewalk Present ★ No Sidewalk Present
Presence of Lighting	↳ No Lighting on Minor Approaches ★ No Lighting any Approach
Presence of On-Street Parking (mainline)	★ Parking Present
Presence of Pedestrian Generators	↳ Commercial, Parks & School ↳ On DTA Route
Disadvantaged Neighborhoods	★ Adjacent to Disadvantaged Community

Risk Assessments & Prioritization

All risk factors were assessed to determine risk for roadways and intersections, and priority within each safety emphasis area was assigned to locations that met the most risk factor criteria. All risk factors were weighted equally in this prioritization. The top at-risk locations within each safety emphasis area were carried forward in the following steps of the systemic safety process. The at-risk locations were categorized as defined below:

- **Tier 1 Location:** Top 5%, or minimum of top 20 locations, within each safety emphasis area.
- **Tier 2 Locations:** Evaluate the next 5%, or the next 20 locations, within the safety emphasis area. These Tier 2 locations were evaluated for corridor-wide projects and to assure there is a good representation of locations across different municipalities. Evaluate locations in municipalities that are not well represented in Tier 1 and evaluate locations that have corridor consistency in Tier 1.

See ***Table 7*** for the number of at-risk locations identified for each safety emphasis area.

Table 7 - Risk Assessment – Number of At-Risk Locations

	SEA1 (Segments)	SEA2 (Intersections)	SEA3 (Intersections)	SEA4 (Intersections)
Tier 1 Locations	20 (25 Miles)	22	39	61
Tier 2 Locations	18 (32 Miles)	33	18	32
Total	**38 (57 Miles)**	**55**	**57**	**93**

The project team then verified that the risk factors selected for each of the safety emphasis areas were properly identifying at-risk locations with actual crash history. The high-severity crash data was evaluated to determine the number of crashes represented in the at-risk locations. ***Table 8*** shows the percentage of locations in each safety emphasis that were identified as being either Tier 1 or Tier 2, as well as the percentage of high-severity crashes which occurred at the locations identified as being either Tier 1 or Tier 2.

Table 8 - Risk Assessment Validation for Safety Emphasis Areas (SEA)

	SEA1	SEA2	SEA3	SEA4
% Locations in Tier 1	7%	12%	42%	9%
% KAB Crashes in Tier 1	15%	35%	65%	38%
% of Locations in Tier 1+ Tier 2	14%	33%	62%	13%
% of KAB Crashes in Tier 1+ Tier 2	27%	77%	90%	48%

See ***Appendix I*** for a complete prioritized list for each safety emphasis area.

Safety Improvement Strategies

Step three of the systemic safety process involves identifying all potential safety improvement strategies that focus on addressing risk at each of the safety emphasis areas and their targeted crash types. Possible safety countermeasures were identified from the following resources, including the expected safety benefit of each safety strategy:

- FHWA Proven Safety Countermeasures[6]
- WisDOT Approved Crash Modification Factors[7]
- MnDOT District Safety Plan Updates "The Big Book of Ideas"[8]
- Crash Modification Clearinghouse[9]

The list of safety strategies was presented to the MIC Advisory Committee at a workshop meeting to gather feedback and to refine the list. The MIC Advisory Committee preferred having a comprehensive list of possible safety strategies and preferred to not reduce the list based on safety performance data. This was primarily because safety strategies and safety performance data can chance in the future, and the stakeholders do not want to limit the type of improvements which could be implemented with future funding opportunities.

Decision trees were then developed for each of the safety emphasis areas to assist in determining appropriate safety strategies. Recommended safety improvements and cost estimates were specifically assigned to the at-risk (Tier 1 and Tier 2) locations by applying the decision trees.

A comprehensive list of safety improvement strategies considered for each safety emphasis area is shown in ***Appendix J***, including the expected safety benefit of each safety strategy. The safety benefit is typically reported as the Crash Modification Factor (CMF). Per the CMF Clearinghouse, "A CMF is used to compute the expected number of crashes after implementing a target safety countermeasure on a road or intersection." Therefore, the Crash Reduction Factor (CRF) is computed as 1-CMF=CRF.

The decision trees for selecting safety strategies for each safety emphasis are shown in ***Appendix K***.

Many intersection safety strategies consider a change in traffic control. It is important to note that a conversion in traffic control is not considered an effective safety strategy for reducing total crashes, but many types of traffic control are found to be effective at reducing certain high-severity crash trends or are appropriate based on the context of the surrounding area.

[6] FHWA: https://highways.dot.gov/safety/proven-safety-countermeasures
[7] WisDOT TEOpS Manual: https://wisconsindot.gov/Pages/doing-bus/local-gov/traffic-ops/manuals-and-standards/teops
[8] MnDOT Big Book of Ideas: https://www.dot.state.mn.us/trafficeng/safety/engineeringcountermeasures.html
[9] CMF Clearinghouse: https://cmfclearinghouse.fhwa.dot.gov/

SEA1: Rural Two-Lane Undivided Roads (AADT <5,000)

Safety strategies for rural undivided roadway segments are typically designed to target high severity crashes on high-speed facilities. Strategies with an (*) are ones only considered for roadways with a posted speed limit of 40 mph or greater. The final safety strategies being considered for Safety Emphasis Area 1 includes:

- *Install shoulder and/or centerline rumble strips (See ***Figure 4***)[10]
- *Provide or widen paved shoulder to a minimum 3-ft paved shoulder width.
- *Install Safety Edge (See ***Figure 5***)[11]
- Flatten steep side slopes
- Provide a barrier for non-recoverable slopes or fixed objects
- Install enhanced pavement markings, including:
  - Increase edgeline pavement markings from 4-Inch to 6-Inch
  - Install wet reflective pavement markings
- Clear zone maintenance, including removal of vegetation and/or small trees

All of the segment safety strategies also apply to curves. However, there are other safety strategies specific to curves, including:

- *High Friction Surface Treatment (HFST)
  - This strategy includes the application of aggregates to the pavement surface using a polymer binder to improve the pavement friction on a horizontal curve.
- Signing enhancements, including:
  - Chevron signs (See ***Figure 6***) and/or night arrow signs (See ***Figure 7***)
  - In-lane curve warning pavement markings (See ***Figure 8***)[12]
  - Verify and/or update curve advisory speed signs (See ***Figure 9***) based on MUTCD and State Policies
- Reconstruct a triangle intersection (two T-intersections) to a single T-intersection (See ***Figure 10***)
- Install "Advance Stop Ahead" flashing beacon at intersections
  - This strategy is considered if there is a curve that may obstruct the view of the stop sign as a vehicle approaches the stop-controlled approach of an intersection (See ***Figure 11***)[13].

The images below are from FHWA or US DOT resources, unless otherwise noted.

[10] Image (right): https://asphalt-materials.com; Image (right): https://www.asphaltmagazine.com
[11] Bottom Image: https://epg.modot.org/index.php/231.4_Shoulder_Width; Top Image: https://www.flickr.com/photos/ncdot/
[12] Image: MDOT Innovative Safety Solutions with Pavement Markings and Delineation 2016
[13] Image: https://carmanah.com/news/ (Carmanah Technologies Corp.)

Figure 4 – Edgeline (left) or Centerline (right) Rumble

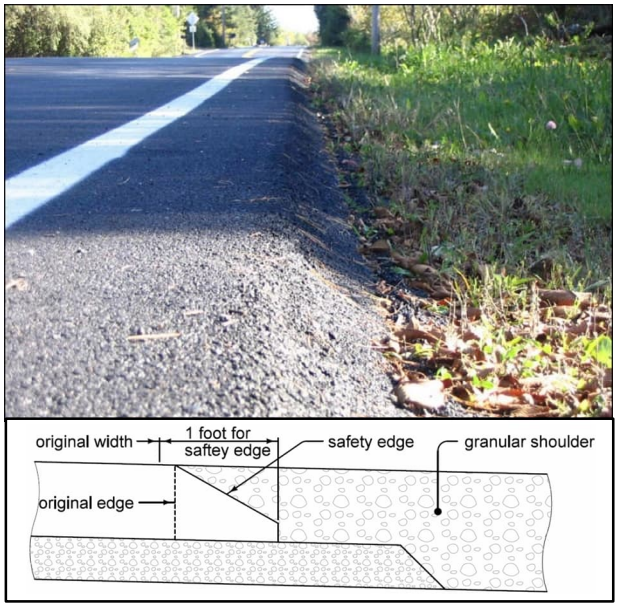


Figure 5 – Install Safety Edge

Figure 6 – Chevrons

Figure 7 – Night Arrow

Figure 8 – In-Lane Curve Warning Pavement Markings

Figure 9 – Curve Advisory Speed Sign

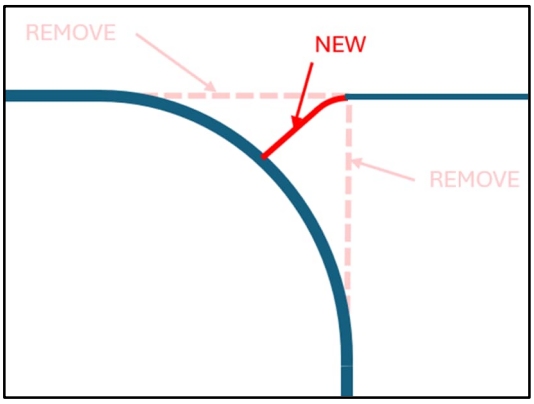


Figure 10 – Reconstruct Triangle Intersection to T-Intersection

Figure 11 – Advance Stop Ahead Flashing Beacon

SEA 2: Urban TWSC Intersections (Angle Crashes)

The final safety strategies considered for Safety Emphasis Area 2 includes:

- Conduct an intersection traffic study, if determined that crashes could be mitigated by a change in traffic control. Consider the following intersection traffic control options:
    - All-Way Stop Control
    - Traffic Signal
    - Single Lane Roundabout (See ***Figure 12***)
    - Compact or Mini Roundabout (See ***Figure 13***)
    - Non-Signalized Continuous Green T-Intersection (See ***Figure 14***)
    - Install Median on Mainline for Minor Road Right-In/Right-Out (RIRO) Access Only (See ***Figure 15***)
- Install left turn and/or right turn lanes on mainline approaches of the intersection (See ***Figure 16***)
    - Consideration should be given to all state and local policies and guidelines.
- Complete a road diet to reconfigure a multi-lane roadway to having a single lane in each direction, including using the additional space for left turn lanes, medians, bicycle lanes, or other features fit for the context of the area (See ***Figure 17***)[14]. This will require a road diet evaluation to determine the feasibility of removing through lanes.
- Install a median refuge with marked crosswalk on the mainline (See ***Figure 18***)
- Install a raised crosswalk (See ***Figure 19***) or a raised intersection (See ***Figure 20***)[15]
- Install stop bar pavement markings on side road intersection approaches (See ***Figure 22***)[16]
- Install pedestrian curb extensions in areas with parking (See ***Figure 21***)[17]
- Install retroreflective strips on the side road approach stop sign posts (See ***Figure 23***)[18]
- Improve intersection sight distances (See ***Figure 24***)[19]or stop sign visibility by removing vegetation or parking near the intersection
- Install or upgrade intersection lighting
- Reduce lane widths on the mainline intersection approaches

The images below are from FHWA or US DOT resources, unless otherwise noted.

[14] Image: https://www.romi.gov/1667/4--to-3-Lane-Conversions
[15] Image: https://www.cambridgema.gov/participatorybudgeting
[16] Image: https://www.sureseal pavement.com (Pavement Maintenance Inc.)
[17] Image: https://nacto.org/
[18] Image: https://www.ussignsandsafety.com
[19] Image: https://www.sddc.army.mil/sites/TEA/Functions/SpecialAssistant/TrafficEngineeringBranch

Figure 12 – Roundabout (Google Maps)

Figure 13 – Compact or Mini Roundabout

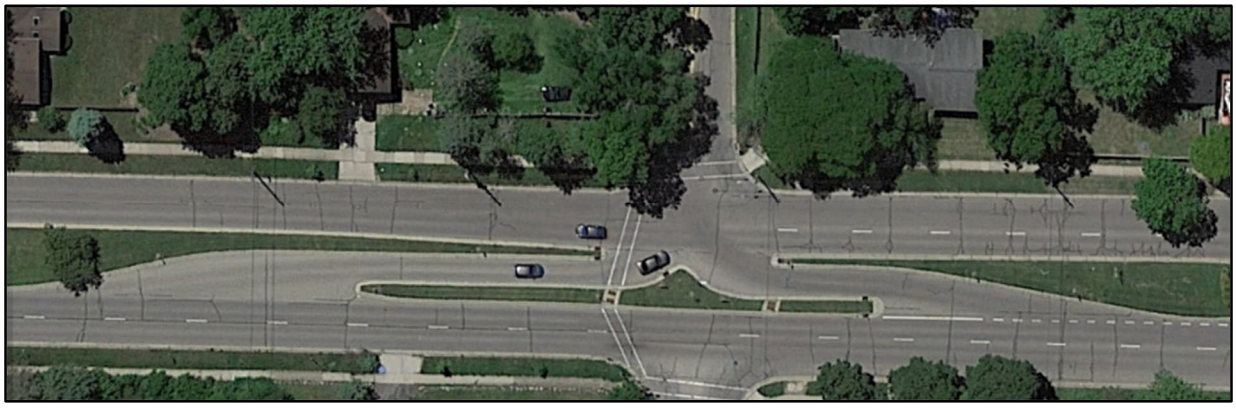


Figure 14 – Continuous Green T-Intersection (Google Maps)

Figure 15 – RIRO Intersection (Google Maps)

Figure 16 – Turn Lanes

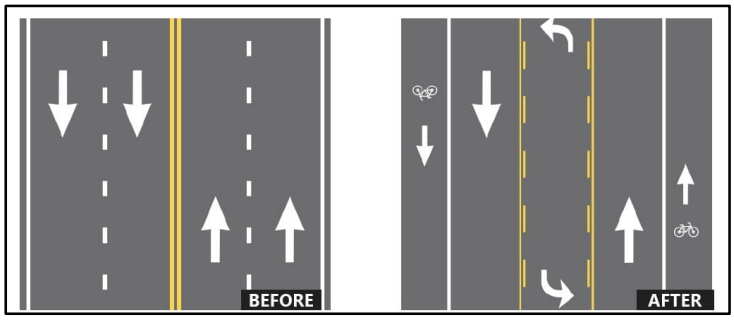


Figure 17 – Road Diet Conversion

Figure 18 – Median with Marked Crosswalk

Figure 19 – Raised Crosswalk

Figure 20 – Raised Intersection

Figure 22 – Stop Bar Pavement Markings

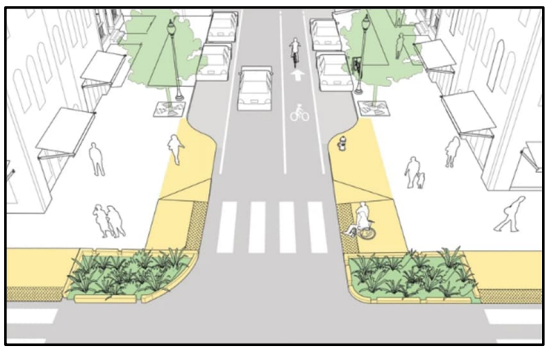


Figure 21 – Pedestrian Curb Extensions (yellow)

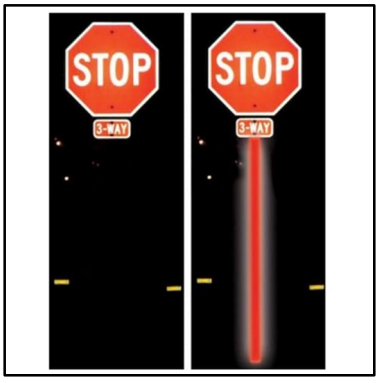


Figure 23 – Retroreflective Stop Sign Post

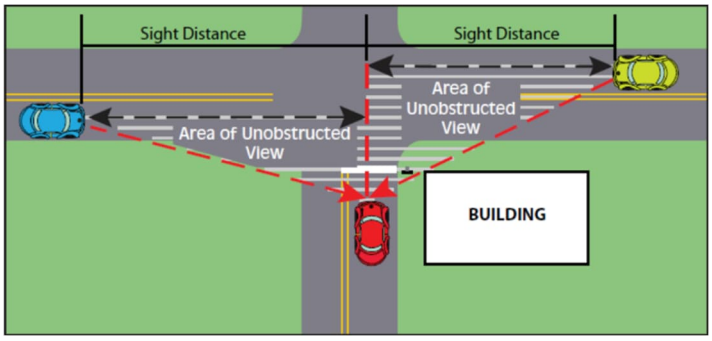


Figure 24 – Intersection Sight Distances

SEA 3: Signalized Intersections along Multi-Lane Arterials

The final safety strategies considered for Safety Emphasis Area 3 includes:

- Conduct an intersection traffic study, if determined that crashes could be mitigated by a change in traffic control. Consider the following intersection traffic control options:
  - All-Way Stop Control
  - Roundabout
  - Signalized Continuous Green T-Intersection
  - Install Median on Mainline for Minor Road Right-In/Right-Out (RIRO) Access Only
  - Signalized Restricted Crossing U-Turn (RCUT or J-Turn) Intersection (See ***Figure 25***)[20]
  - Close, relocate, or change access at driveways near the intersection
- Install left turn lanes on mainline approaches of the intersection.
  - Consideration should be given to all state and local policies and guidelines.
- Complete a road diet to reconfigure a multi-lane roadway to having a single lane in each direction, including using the additional space for left turn lanes, medians, bicycle lanes, or other features fit for the context of the area. This will require a road diet evaluation to determine the feasibility of removing through lanes.
- Install or upgrade intersection lighting
- Reduce lane widths on the mainline intersection approaches
- Realign the intersection to improve the intersection skew angle (See ***Figure 26***)
- Install flashing yellow arrow signal heads for left turn movements (See ***Figure 27***)[21]
- Change the left turn signal phasing to provide a protected left turn phase (solid green arrow)
- Improve signal head visibility by installing signal heads over each approach lane (See ***Figure 28***)[22]
- Install retroreflective signal head backplates (See ***Figure 29***)
- Improve mainline left turn lane alignment to create a neutral or positive offset between opposing left turn lanes (See ***Figure 30***)
- Pedestrian and Bicycle Improvements, including:
  - Install a pedestrian leading interval to allow a pedestrian to enter the crosswalk prior to vehicles receiving the green signal indication.
  - Install countdown timers on pedestrian signal head indications (See ***Figure 31***)
  - Install high-visibility crosswalks (See ***Figure 32***)
  - Verify and/or update the pedestrian crossing times (clearance intervals)
- Adjust corridor signal timing for coordinated signal systems to reduce high-speed flow
- Add enforcement confirmation lights to assist police with red light running (See ***Figure 33***)[23]
- Add "Prepare to Stop When Flashing" beacons for mainline approaches (See ***Figure 34***)
- Improve channelized right turn lane geometry with approach angle closer to 90-deg. (See ***Figure 35***)

[20] Image: https://www.aldotnews.org
[21] Image: https://wisconsindot.gov/Pages/safety/safety-eng
[22] Image: https://itewisconsinorg.starchapter.com
[23] Image: St Louis County, MN – County Roadway Safety Plan - 2020

The images below are from FHWA or US DOT resources, unless otherwise noted.

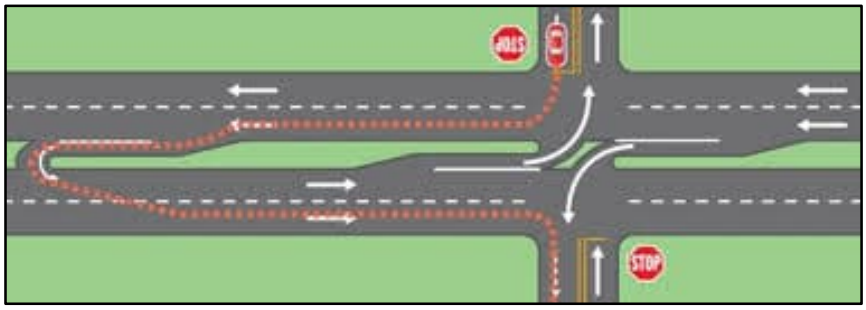


Figure 25 – RCUT / J-Turn Intersection

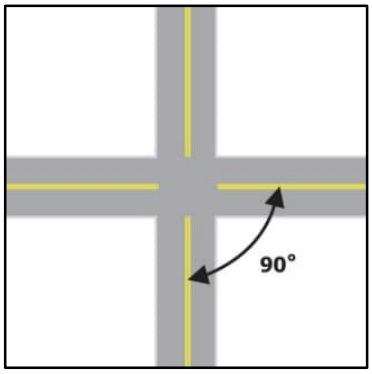


Figure 26 – Realign Intersection

Figure 27 – Flashing Yellow Arrow Signal

Figure 28 – Signal Heads by Lane

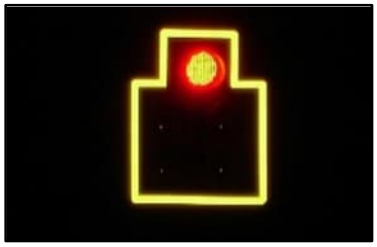


Figure 29 – Retroreflective Backplates

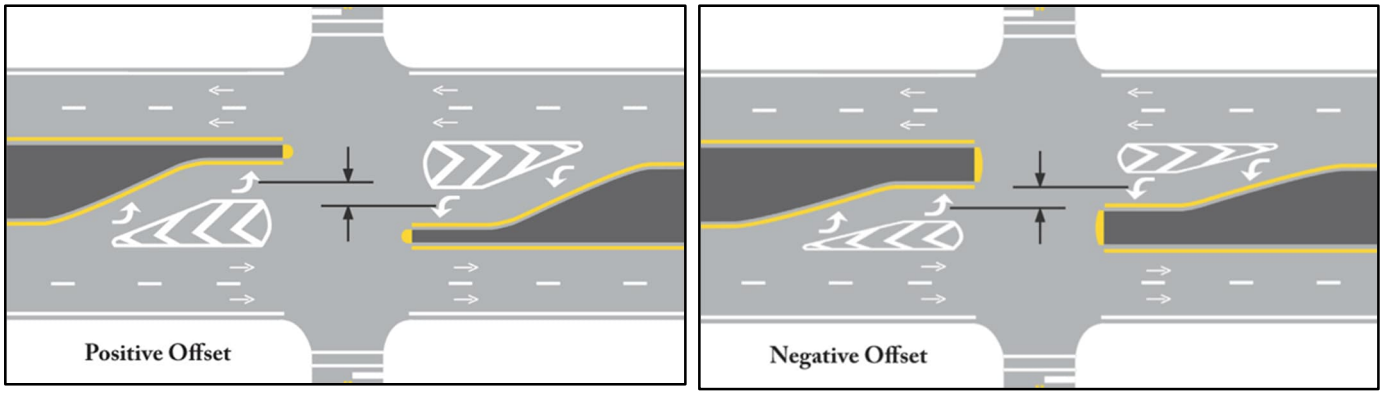


Figure 30 – Positive Offset vs. Negative Offset Left Turn Lanes

Figure 31 – Pedestrian Countdown Timer

Figure 32 – High-Visibility Crosswalk

Figure 33 – Enforcement Confirmation Light

Figure 34 – "Prepare to Stop When Flashing" Warning Beacons

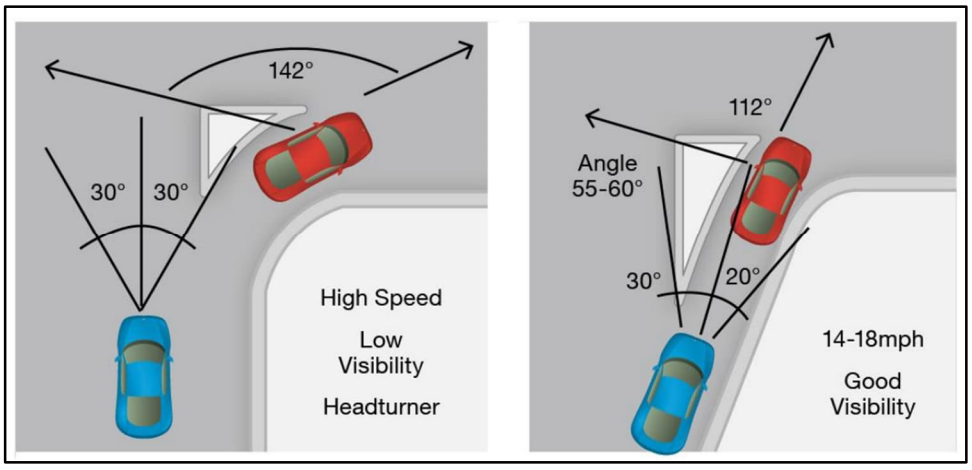


Figure 35 – Improve Channelized Right Turn Lane
Poor Angle (Left) vs. Proper Angle (Right)

SEA 4: Urban Intersections (Pedestrian and Bicycle Crashes)

The final safety strategies considered for Safety Emphasis Area 4 includes:

- Conduct an intersection traffic study, if determined that crashes could be mitigated by a change in traffic control. Consider the following intersection traffic control options:
  - All-Way Stop Control
  - Roundabout
  - Compact of mini roundabout
  - Install Median on Mainline for Minor Road Right-In/Right-Out (RIRO) Access Only
  - Close, relocate, or change access at driveways near the intersection
- Complete a road diet to reconfigure a multi-lane roadway to having a single lane in each direction, including using the additional space for left turn lanes, medians, bicycle lanes, or other features fit for the context of the area. This will require a road diet evaluation to determine the feasibility of removing through lanes.
- Reduce lane widths on the mainline intersection approaches
- Install or update intersection lighting
- Left turn calming where no raised median is present (See ***Figure 36***)[24]
- Enhance transit stops, consider seating, shelter, pedestrian accessibility, lighting, and dedicated bus lanes or pullouts.
- Pedestrian and Bicycle Improvements, including:
  - Install a median refuge with marked crosswalks on the mainline intersection approaches
  - Install pedestrian curb extensions in areas with parking
  - Install a raised crosswalk or raised intersection
  - Leading pedestrian interval at signalized intersections
  - Install high-visibility crosswalks
  - Install pedestrian countdown timers at signalized intersections
  - Verify and/or update the pedestrian crossing times at signalized intersections
  - Install Rectangular Rapid Flashing Beacons (See ***Figure 37***)
  - Pedestrian hybrid beacon (See ***Figure 38***)
  - Install sidewalk where no sidewalk exists (See ***Figure 39***)
  - Green color pavement markings for on-street bicycle facilities (See ***Figure 40***)
  - Mark bike lanes through the intersection (See ***Figure 41***)
  - Provide flexible delineators between on-street bicycle lanes and travel lanes (See ***Figure 42***)
  - Install bicycle signal heads at signalized intersections (See ***Figure 43***)
  - Bike box for two-stage turning (queue box) at signalized intersections (See ***Figure 44***)[25]
  - Install on-street bicycle lanes (See ***Figure 45***) or off-street shared-use path (See ***Figure 46***)[26]

The images are from FHWA, US DOT, National Association of City Transportation Officials (NACTO) resources, unless otherwise noted.

[24] Image: https://www.chicago.gov/city/en/depts/cdot/provdrs/ped/news/2022/september/cdot-installing-left-turn-traffic-calming-infrastructure-to-impr.html
[25] Image: https://www.bainbridgewa.gov
[26] Image: https://bikeportland.org

Figure 36 – Left Turn Calming

Figure 37 – Rectangular Rapid Flashing Beacon (RRFB)

Figure 38 – Pedestrian Hybrid Beacon

Figure 39 – Install Sidewalk

Figure 40 – Green Color Pavement Markings

Figure 41 – Marked Bicycle Lanes Through Intersection

Figure 42 – Flexible Delineators for Bicycle Lanes

Figure 43 – Bicycle Signal Heads

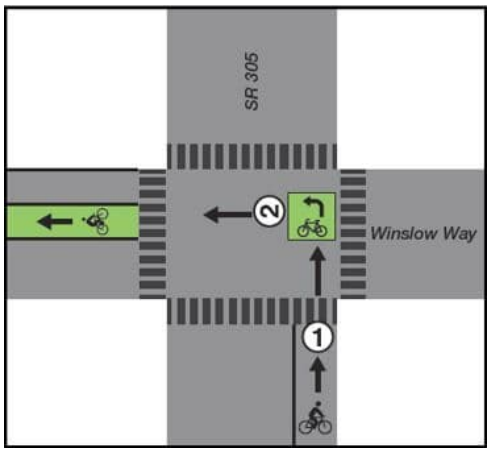


Figure 44 – Two-Stage Bike Box

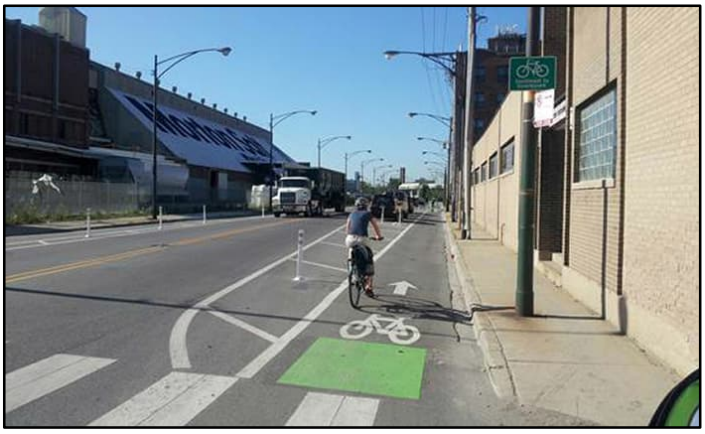


Figure 45 – On-Street Bike Lanes

Figure 46 – Off-Street Shared-Use Path

Cost Estimates

Cost estimates were developed for each of the safety strategies to assist in the development of safety projects. Cost estimates were developed based on regional WisDOT and MnDOT bid letting information available from 2021 through 2023. Cost estimates were developed based on the below guidance determined through coordination with the MIC Advisory Committee:

- Cost estimates are typically developed by a per mile or per intersection unit cost.
- A 20% contingency was applied to all cost estimates.
- All costs are represented in 2024 dollars.
- No design costs are included, and costs are only meant to reflect construction costs.
- The higher cost strategy was selected if an 'or' condition exists between two safety strategies.
    - For example, a raised crosswalk or a raised intersection would be selected, but not both. In this situation the raised intersection is the higher cost strategy selected.

Cost estimates for Safety Emphasis Area 1 were developed independently for segments and curves. Segment cost estimates include the cost of the curve recommendations for a total safety project cost.

A summary of the cost estimates is shown in ***Appendix L***, including detailed assumptions for each individual safety strategy.

Safety Plan

The Safety Action Plan is a tool that focuses on engineering-related safety emphasis areas and identifies safety strategies for locations that otherwise may not qualify for safety improvements. A detailed project-level review of each location would be necessary for selecting final safety countermeasures and costs. Recommendations may be implemented in several ways, including:

- SS4A Grants
- Systemic safety improvement projects
- Existing contracts
- Highway Safety Improvement Program (HSIP) projects
- As part of highway improvement projects
- Other upcoming local projects

Safety Projects

Individual safety projects were developed for the at-risk locations within each safety emphasis area. Safety projects were developed by selecting safety strategies using the decision trees. Costs were applied based on the recommended safety strategies to develop overall cost estimates for each at-risk location. The locations not identified as being 'at-risk' can also be evaluated for future projects by using the decision trees and cost estimates.

Prioritization within each safety emphasis area can be evaluated two different ways, including:

- ***Prioritize by Risk***: Priority was given to locations that met the most risk factor criteria (all risk factors being weighted equally). See ***Appendix M*** for a list of safety strategies being recommended for each at-risk location, including the priority based on risk.
- ***Prioritize by Cost per Weighted Risk***: Locations that met a higher number of risk factor criteria were weighted higher than locations that met a lower number of risk factor criteria. This approach gives priority to locations that have lower cost safety strategies or locations that met more risk factor criteria. See ***Appendix N*** for a list of safety strategies being recommended for each at-risk location, including the priority based on this approach.
    - The weighted risk is calculated by applying a ten-point scale to each safety emphasis area, and then scaling it by the number of stars. For example, the top at-risk location for Safety Emphasis Area 2 has 5.5 stars and received a value of 10. Therefore, an at-risk location which has 4 stars in SEA2 would translate to a weighted risk of 7.27 (4 ÷ 5.5 x 10).

Plan Implementation

Systemic safety strategies are most effective when applied throughout a corridor or at a series of intersections, rather than on an individual spot basis. As projects are developed, corridors can be reviewed in detail for application of the selected safety improvement strategies in a systemic manner. The study evaluated all at-risk intersections from Safety Emphasis Areas 2, 3, and 4 to develop corridor-wide systemic safety projects. The top ten corridor-wide systemic safety projects are shown in ***Table 9***, including the estimated cost. This list of corridor-wide systemic safety projects is prioritized based on cost per weighted risk factor. More weight is given to a project if it included intersections in multiple safety emphasis areas.

See ***Appendix O*** for more details on these safety projects, including where recent or upcoming construction is planned.

Table 9 – Urban Side Road Stop-controlled Intersections – Angle Crash Risk Factors

Corridor Rank	Corridor	State	Limits	Length (Mi)	Total Cost	Total Prioritization ($/Weight)
1	Superior St	MN	6th Ave W to 4th Ave E	0.9	$927,000	$14,000
2	2nd St	MN	4th Ave W to 3rd Ave E	0.6	$2,034,000	$32,000
3	Lake Ave	MN	Superior St to 3rd St	0.2	$993,000	$40,000
4	Grand Ave	MN	59th Ave to Central Ave	0.4	$939,000	$41,000
5	4th St	MN	3rd Ave E to 5th Ave E	0.2	$1,258,000	$59,000
6	46th Ave	MN	Mike Colalilo Dr/1st St to Grand Ave	0.2	$917,000	$67,000
7	Superior St - 3	MN	12th Ave E to 14th Ave E	0.2	$1,540,000	$71,000
8	6th Ave/Central Entrance Dr	MN	3rd St to 10th St	0.5	$3,648,000	$74,000
9	Woodland Ave	MN	Kent Rd/8th St to Oxford St	1.5	$6,115,000	$89,000
10	US 2/Belknap St	WI	STH 35/Tower Ave to Catlin Ave	1	$4,345,000	$91,000

Appendix A

SS4A Self – Certification Eligibility Worksheet

Safe Streets and Roads for All
Self-Certification Eligibility Worksheet

All applicants should follow the instructions in the NOFO to correctly apply for a grant. See the SS4A website for more information.

Table 1 of the SS4A NOFO describes eight components of an Action Plan, which correspond to the questions in this worksheet. Applicants should use this worksheet to determine whether their existing plan(s) contains the required components to be considered an eligible Action Plan for SS4A.

This worksheet is required for all SS4A **Implementation Grant** applications and any **Planning and Demonstration Grant applications to conduct Supplemental Planning/Demonstration Activities only**. Please complete the form in its entirety, do not adjust the formatting or headings of the worksheet, and upload the completed PDF with your application.

Eligibility

An Action Plan is considered eligible for an SS4A application for an Implementation Grant or a Planning and Demonstration Grant to conduct Supplemental Planning/Demonstration Activities if the following two conditions are met:

- You can answer "YES" to Questions **3, 7,** and **9** in this worksheet; *and*
- You can answer "YES" to **at least four of the six remaining** Questions, **1, 2, 4, 5, 6**, and **8.**

If both conditions are not met, an applicant is still eligible to apply for a Planning and Demonstration Grant to fund the creation of a new Action Plan or updates to an existing Action Plan to meet SS4A requirements.

Applicant Information

Lead Applicant: _____ **UEI:** _____

Action Plan Documents

In the table below, list the relevant Action Plan and any additional plans or documents that you reference in this form. Please provide a hyperlink to any documents available online or indicate that the Action Plan or other documents will be uploaded in Valid Eval as part of your application. Note that, to be considered an eligible Action Plan for SS4A, the plan(s) coverage must be broader than just a corridor, neighborhood, or specific location.

Document Title	Link	Date of Most Recent Update

Action Plan Components

For each question below, answer "YES" or "NO." If "YES," list the relevant plan(s) or supporting documentation that address the condition and the specific page number(s) in each document that corroborates your response. This form provides space to reference multiple plans, but please list only the most relevant document(s).

1. Leadership Commitment and Goal Setting

Are **BOTH** of the following true?

- A high-ranking official and/or governing body in the jurisdiction publicly committed to an eventual goal of zero roadway fatalities and serious injuries; and
- The commitment includes either setting a target date to reach zero OR setting one or more targets to achieve significant declines in roadway fatalities and serious injuries by a specific date.

☐ **YES**

☐ **NO**

Note: This may include a resolution, policy, ordinance, executive order, or other official announcement from a high-ranking official and the official adoption of a plan that includes the commitment by a legislative body.

If "YES," please list the relevant document(s) and page number(s) that corroborate your response.

Document Title	Page Number(s)

2. Planning Structure

To develop the Action Plan, was a committee, task force, implementation group, or similar body established and charged with the plan's development, implementation, and monitoring?

☐ **YES**

☐ **NO**

Note: This should include a description of the membership of the group and what role they play in the development, implementation, and monitoring of the Action Plan.

If "YES," please list the relevant document(s) and page number(s) that corroborate your response.

Document Title	Page Number(s)

3. Safety Analysis

Does the Action Plan include **ALL** of the following?

- Analysis of existing conditions and historical trends to provide a baseline level of crashes involving fatalities and serious injuries across a jurisdiction, locality, Tribe, or region;
- Analysis of the location where there are crashes, the severity, as well as contributing factors and crash types;
- Analysis of systemic and specific safety needs, as needed (e.g., high-risk road features or specific safety needs of relevant road users); and,
- A geospatial identification (geographic or locational data using maps) of higher risk locations.

☐ **YES**

☐ **NO**

Note: Availability and level of detail of safety data may vary greatly by location. The Fatality and Injury Reporting System Tool (FIRST) provides county- and city-level data. When available, local data should be used to supplement nationally available data sets.

If "YES," please list the relevant document(s) and page number(s) that corroborate your response.

Document Title	Page Number(s)

4. Engagement and Collaboration

Did the Action Plan development include **ALL** of the following activities?

- Engagement with the public and relevant stakeholders, including the private sector and community groups;
- Incorporation of information received from the engagement and collaboration into the plan; and
- Coordination that included inter- and intra-governmental cooperation and collaboration, as appropriate.

☐ **YES**

☐ **NO**

Note: This should be a description of public meetings, participation in public and private events, and proactive meetings with stakeholders.

If "YES," please list the relevant document(s) and page number(s) that corroborate your response.

Document Title	Page Number(s)

5. Equity Considerations

Did the Action Plan development include **ALL** of the following?

- Considerations of equity using inclusive and representative processes;
- The identification of underserved communities through data; and
- Equity analysis developed in collaboration with appropriate partners, including population characteristics and initial equity impact assessments of proposed projects and strategies.

☐ **YES**

☐ **NO**

Note: This should include data that identifies underserved communities and/or reflects the impact of crashes on underserved communities, prioritization criteria that consider equity, or a description of meaningful engagement and collaboration with appropriate stakeholders.

If "YES," please list the relevant document(s) and page number(s) that corroborate your response.

Document Title	Page Number(s)

6. Policy and Process Changes

Are **BOTH** of the following true?

- The plan development included an assessment of current policies, plans, guidelines, and/or standards to identify opportunities to improve how processes prioritize safety; and
- The plan discusses implementation through the adoption of revised or new policies, guidelines, and/or standards.

☐ **YES**

☐ **NO**

Note: This may include existing and/or recommended Complete Streets policy, guidelines for community engagement and collaboration, policy for prioritizing areas of greatest need, local laws (e.g., speed limit), design guidelines, and other policies and processes that prioritize safety.

If "YES," please list the relevant document(s) and page number(s) that corroborate your response.

Document Title	Page Number(s)

7. Strategy and Project Selections

Does the plan identify a comprehensive set of projects and strategies to address the safety problems in the Action Plan, with information about time ranges when projects and strategies will be deployed, and an explanation of project prioritization criteria?

☐ **YES**
☐ **NO**

Note: This should include one or more lists of community-wide multi-modal and multi-disciplinary projects that respond to safety problems and reflect community input and a description of how your community will prioritize projects in the future.

If "YES," please list the relevant document(s) and page number(s) that corroborate your response.

Document Title	Page Number(s)

8. Progress and Transparency

Does the plan include **BOTH** of the following?

- A description of how progress will be measured over time that includes, at a minimum, outcome data.
- The plan is posted publicly online.

☐ **YES**
☐ **NO**

Note: This should include a progress reporting structure and list of proposed metrics.

If "YES," please list the relevant document(s) and page number(s) that corroborate your response.

Document Title	Page Number(s)

9. Action Plan Date

Was at least one of your plans finalized and/or last updated between 2019 and April 30, 2024?

☐ **YES**
☐ **NO**

Note: Updates may include major revisions, updates to the data used for analysis, status updates, or the addition of supplemental planning documents, including but not limited to an Equity Plan, one or more Road Safety Audits conducted in high-crash locations, or a Vulnerable Road User Plan.

If "YES," please list your most recent document(s), date of finalization, and page number(s) that corroborate your response.

Document Title	Date of Most Recent Update	Page Number(s)

Appendix B

Study Meeting Minutes

Meeting Minutes

Workshop #1

MIC Safety Action Plan

October 30, 2023

12:30 PM to 4:30 PM

ACTION ITEMS SHOWN IN YELLOW

Attendance (I could not hear a lot of the people in the room)

- Derek Salomonsen – AECOM
- Jeff Sandberg – AECOM
- Angie Christo – AECOM
- Todd Janigo – City of Superior
- Vic Lund – St Louis County
- Ron Chika – MIC
- Dena Ryan – WisDOT
- James Miles – MnDOT

Emphasis Area 1: Rural Two-Lane Undivided Roads, w/ < than 5,000 AADT

- Add risk factors:
  - Speed Limit
  - Curves:
    - Visual trap
    - Edge risk assessment

- Remove risk factors and use as mitigation measure to other risk factors.
  - Pavement Markings
  - Rumble Strips
    - There are not very common in the MIC study area

- Combine the below risk factors:
  - Shoulder width/surface/type & Edge Risk Assessment

- Modify risk factors:
  - Lane Width: Change this to be total roadway width of both thru travel lanes
    - Vic feels this is not a worthy risk factor as all St. Louis County roads already are maintained at a minimum 24-ft width.
    - Check-in with Douglas County to determine if this is the same in WI.

- Data Needs:
  - MnDOT has curve information catalogued. WisDOT does not.
  - St Louis County has curve info from previous safety studies. Douglas County likely doesn't.
  - All agencies to provide speed limit data by corridor
  - AECOM to provide pdf map showing segments where speed data is needed.

- Data to be collected by AECOM:
  - Curve Density
  - Access Density
    - Distinguish between public vs. private.
  - Edge Risk Assessment
  - Lane Width (Depending on conversation with Douglas Co)
  - Curve Data, likely in the Wisconsin side of things.
    - Curve radii

- Horizontal curve speed differential
- Presence of intersection

Emphasis Area 2: Urban Intersection Side Road Stop Control

- Is there intersection data available?
  - All agencies either have this intersection location data (WisDOT), or they could obtain this data with relatively little effort (Cities, Counties, and MnDOT).
  - AECOM to follow-up with Douglas County regarding this data.

- Can we remove 'urban' from this emphasis area? – Vic

- Can we reduce this to a type of roadway? Two-lane only? Divided vs. undivided? - Vic

- Add risk factors:
  - Context zone. Vic wanted this for commercial development.

- Remove risk factors (mainly Vic's comments):
  - Intersection Location
  - Minor road speed limit
  - Presence of on-street parking
  - Presence of turn lanes, make this a countermeasure/safety strategy.
  - May have to remove total entering AADT due to limited traffic data on local roads.

- Modify risk factors:
  - Change total entering AADT to mainline AADT

- Data from agencies:
  - Speed limit data by corridor
  - Intersection location data

- Data collected by AECOM
  - Intersection skew
  - Number of intersection legs
    - >4 legs should not be included in the at-risk criteria. Only 3-leg (no risk) or 4-leg (risk).

Emphasis Area 3: Signalized Intersections – Multi-Lane Arterials

- Is there information regarding signalized intersection available?
  - MIC originally had database/spreadsheet containing all signalized intersections in the MIC study area.
  - AECOM to put together a map showing all multi-lane arterials in the MIC area.
  - AECOM to put together a spreadsheet of all data collection needs for this emphasis area. Each agency can go into this spreadsheet and provide data for each of their signals.

- Add risk factors:
  - Signal coordination – Vic
    - Isolated vs coordinated.
  - Speed limit on minor road

- Remove risk factors:
  - Backplates, use as a safety strategy.

Emphasis Area 4: Urban Intersections – Ped & Bike Crashes

- AECOM to provide map of segments to gather speed data and list of intersections for.

- Can these be reduced to only be intersections on functional system? – Vic
    - Start with all urban intersections and scale down if needed. - City of Duluth

- Add risk factors:
    - Signalized intersection risk factor. – Vic
        - We can incorporate this into the 'Type of Traffic Control' risk factor.
    - Disadvantage Neighborhoods – Stakeholders to provide GIS data and AEOCM to overlay.

- Remove risk factors:
    - Presence of crosswalks, use as a mitigation strategy.

- Modify risk factors:
    - Combine Pedestrian generator with presence of bus stops.
    - Combine mainline cross section, and presence of turn lanes into a crossing distance or exposure length.
        - Keep number of thru lanes/approaching lanes separate to target multi-lane threats.
    - Total Entering AADT – revise to just be mainline AADT
    - Presence of parking – only look at mainline and do it by corridor.

Meeting Minutes

Safety Plan Advisory Meeting

MIC Safety Action Plan

January 12, 2024

9:00 AM to 10:00 AM

ACTION ITEMS SHOWN IN YELLOW
Meeting Notes

Attendance:

- Derek Salomonsen – AECOM
- Jeff Sandberg – AECOM
- Todd Janigo – City of Superior
- Vic Lund – St Louis County
- Ron Chika – MIC
- Maren Webb – MnDOT
- Miles Hansen -
- Joseph Jurewicz – City of Duluth
- Prescott Morrill - MIC
- James Miles – MnDOT

Agenda:

I. Data Collection Effort Updates

a. Safety Emphasis Area 1 – Two-Lane Undivided Rural Highways (AADT <5,000)

i. Data collection complete (segments and curves)
ii. Next task: risk assessment

b. Safety Emphasis Area 2 – Urban Two-Way Stop Controlled Intersections (Angle Crashes)

i. Data collection for intersections on the functional system: ~60% complete (700 intersections)
ii. Missing intersection location data for City of Duluth
iii. Focused review of intersections on two-lane urban streets?
    1. ~1500-2000 intersections (minus those already reviewed)
    2. Data Collection Rate: ~4 intersections per hour.
iv. Continue moving forward with the current list of intersections, those on the functional classification system.

c. Safety Emphasis Area 3 – Signalized Intersections along Multi-Lane Arterials

i. Data being collected by stakeholders.
ii. Missing data from City of Duluth, St Louis County, and WisDOT (data entered by MnDOT and City of Superior).

d. Safety Emphasis Area 4 – Urban Intersections (Bike/Ped Crashes)

i. Data collection for intersections on the functional system: ~60% complete (700 intersections)
ii. Missing intersection data for City of Duluth
iii. Missing socioeconomic mapping and zoning/land use mapping from the City of Duluth
    1. City of Duluth – Socioeconomic data should be available on the Cities data commons website.

iv. Options for more focused review of intersections in areas with high bike/ped traffic:
    1. Replica Short Trip Data
    2. Strava
    3. City of Duluth Data?
        a. AECOM to investigate how many intersections would be added through the following process:
            i. Start with replica 1-mile trip data.
            ii. Compare with Strava data to see if new areas should be added, or if boundaries should be expanded.
                1. The City of Superior Data Available:
                    a. https://www.ci.superior.wi.us/907/Active-Transportation-Plan
                2. City of Duluth Data Available:
                    a. Bike/pedestrian network map.

DULUTH - SUPERIOR
Metropolitan Interstate Council

Meeting Minutes

Safety Plan Advisory Meeting

MIC Safety Action Plan

February 16, 2024

9:00 AM to 10:00 AM

Meeting Notes in Red
ACTION ITEMS SHOWN IN YELLOW

Attendance:

- Derek Salomonsen – AECOM
- Jeff Sandberg – AECOM
- Vic Lund – St Louis County
- Ron Chicka – MIC
- Maren Webb – MnDOT
- Joseph Jurewicz – City of Duluth
- James Miles – MnDOT
- Dena Ryan – WisDOT
- James Gittemeier
- Prescott Morrill

Agenda:

1. Data collection effort update
    a. Safety Emphasis Area 1 – Two-Lane Undivided Rural Highways (AADT <5,000)
        i. Data collection complete
    b. Safety Emphasis Area 2 – Urban Two-Way Stop Controlled Intersections (Angle Crashes)
        i. Data collection complete
    c. Safety Emphasis Area 3 – Signalized Intersections along Multi-Lane Arterials
        i. Still missing signal data from St Louis County.
            1. The St Louis County signal information should all be accounted for in the City of Duluth data provided.
            2. City of Duluth mentioned that their data also likely has overlaps with the MnDOT data provided.
    d. Safety Emphasis Area 4 – Urban Intersections (Bike/Ped Crashes)
        i. Options for expanding project area to include areas with high bike/ped activity.
            1. City of Duluth is having a safety plan completed by MnDOT.
                a. Several intersections are included in both plans
                b. This City plan is only for Local Roads intersections.
                c. The City plan only looked at KA crashes.
                d. The City of Duluth will send a list of intersections included in this plan. Remove these intersections from this Safety Emphasis Area.
            2. The question was raised if we could overlay bike/ped crash locations (all severities) with the expanded project area to validate the expanded project area.
                a. AECOM only collected KAB crashes for WI And MN, so this would require additional crash data collection.
                b. There was concern that the infrequency of bike/ped crashes might result in exclusion of high-risk locations.
            3. We will move forward with the original expanded bike/ped areas plus the Central Entrance Corridor and Lincoln Park Areas. This includes an estimated 600 intersections, though that number will likely be reduced with the removal of select City of Duluth intersections as described above.
            4. If additional analysis of bike/ped areas is needed, it may be included in the upcoming SS4A project.
2. Next Steps
    a. Risk Assessment
    b. Countermeasures

Meeting Minutes

Safety Plan Advisory Meeting

MIC Safety Action Plan

February 16, 2024

9:00 AM to 10:00 AM

ACTION ITEMS SHOWN IN YELLOW

Attendance:

- Derek Salomonsen – AECOM
- Jeff Sandberg – AECOM
- Vic Lund – St Louis County
- Maren Webb – MnDOT
- Joseph Jurewicz – City of Duluth
- Dena Ryan – WisDOT
- James Gittemeier – City of Duluth
- Prescott Morrill – MIC
- Todd Janigo – City of Superior
- Chris Carlson – City of Superior
- Trish Crego – City of Hermantown

Agenda:

1. Systemic Safety Plan Process:
    a. A brief overview of the process was provided. Currently, the study team is working on the risk assessment and developing countermeasures.
2. Data collection effort update
    a. All data has been collected for each of the four safety emphasis areas.
3. Risk Assessment Overview
    a. A brief overview of the risk assessment format was provided. Discussion included:
        i. It was noted that facilities that rank high in more than one safety emphasis area should be highlighted as higher risk.
    b. Validation options were discussed for confirming the facilities selected based on risk factors are also locations where crashes are occurring. AECOM to discuss with MIC how this might be built into this safety action plan.
4. Countermeasure Overview
    a. A brief overview of the countermeasure lists was provided. Discussion included:
        i. There was concern that countermeasures would be selected that improve safety for vehicular traffic without considering safety improvements for non-vehicular traffic. It was discussed that these countermeasures would be discussed in depth at the upcoming workshop.
        ii. It was noted that recent research indicated retroreflective backplates may not be as effective as previously thought. This will also be discussed at the upcoming workshop.
        iii. It was noted that most of the crash modification factors (CMF) listed were from a WisDOT–specific CMF list. Maren and Vic provided additional resources that will be used to refine these lists.
            1. Where CMFs differ between Wisconsin and Minnesota, separate countermeasures may be considered to address select deficiencies.

b. A Local Road Research Board study on Minnesota roads indicated roundabouts and raised medians were most effective in calming traffic, while adding bike lanes resulted in a slight increase in travelled speeds. These results should be considered when developing potential countermeasures.

5. Upcoming Workshop
    a. Monday, May 6, 1:00 – 4:00 PM
    b. WisDOT NW Region Office (Superior) – Lake Superior Room
    c. Agenda
        i. Risk Assessment Walk-through
        ii. Countermeasure Walk-through
    d. Workshop Goal
        i. Gain input on the risk assessments and countermeasure lists that will allow us to finalize these documents.
6. General Discussion
    a. Vision Zero success stories were briefly discussed and may factor into the countermeasures selected for implementation.

Meeting Minutes

Safety Plan Workshop

MIC Safety Action Plan

May 6, 2024

1:00 PM to 4:00 PM

Meeting Notes in Red
ACTION ITEMS SHOWN IN YELLOW

Attendance:

- Derek Salomonsen – AECOM (virtual)
- Jeff Sandberg – AECOM
- Jen Leech – WisDOT (virtual)
- Vic Lund – St Louis County
- Maren Webb – MnDOT
- Jim Miles - MnDOT
- Joseph Jurewicz – City of Duluth
- James Gittemeier– City of Duluth
- Dena Ryan – WisDOT
- Prescott Morrill – MIC
- Rondi Watson – MIC (virtual)

Agenda:

Safety Emphasis Area 1

- Risk Factors
- Risk Assessment
    - Can the risk assessment include who maintains ownership of each segment of road/curve?
        - AECOM has data to where we can indicate which municipality each roadway and/or curve lies. AECOM does not have data to identify roadways and/or curves by who maintains ownership. Municipalities to check on this data availability. If this data exists then it can be incorporated into the risk assessment for this Safety Emphasis Area.
    - Can we include the highway designation in the roadway name.
        - We don't have that information. If GIS data is available from the stakeholders AEOCM could put this information together, otherwise it would have to be a manual effort. Municipalities to check on this data availability.
    - Clarify in the risk assessment that these are roadways are on the functional system.
        - AECOM to include this in the risk assessments.
    - Can a map/KMZ file be provided to locate segments and curves?
        - Yes, AECOM will develop this to include with final deliverables.
    - Will the risk assessments be provided in Excel format?
        - Yes, AECOM to provide this once risk assessments are finalized.
- Safety Countermeasures
    - Some of these segments are rural in nature and some rural in context, many believe rural should be high-speed roads. How does this get addressed in the Safety Action Plan?
        - The decision trees that will be developed will take care of nuances like this.
        - AECOM to consider safety countermeasure for low-speed rural two-lane undivided roads. It was found that ~38% of KAB lane departure crashes had occurred on low-speed rural two-lane undivided roads, so these low-speed roads will remain in the risk assessment at this time.
    - Don't like countermeasures that increase lane width, specifically the CMF for increased lane width from 11-ft to 12-ft. Would rather see lane width decreased.
        - The risk factor associated with this safety countermeasure was developed based on total roadway width.
            - This safety countermeasure will be removed. The idea is to instead provide the extra width to the shoulder, and not increase lane widths. The change in shoulder width is accounted for in other safety countermeasures.

- How are 'fluorescent' signs being incorporated into the new MUTCD?
  - WisDOT stated the CMF was added to their list of approved CMFs to address the new MUTCD requirements.
  - Consideration for both Wisconsin and Minnesota MUTCD supplemental guides should be given when developing safety countermeasures related to pavement markings and signing.
    - AECOM will incorporate this into the final decision tree for this Safety Emphasis Area.

Safety Emphasis Area 2

- Risk Factors (No Notes – AECOM only provided summary of updates since last workshop)
- Risk Assessment
  - AECOM to look into providing linked latitude/longitude in each risk assessment spreadsheet for ease of locating the intersection.
- Safety Countermeasures
  - Both MnDOT and WisDOT stated that majority of safety countermeasures related to a change in traffic control would require some form of intersection study to justify a change in traffic control for a state highway intersection.
    - AECOM will incorporate this into the final decision tree for this Safety Emphasis Area.
  - It is also likely that a warrant analysis would need to be completed for any intersection included in this list.
    - AECOM will incorporate this into the final decision tree for this Safety Emphasis Area.
  - Consider removing the safety countermeasure to convert to a signal. Would prefer a TWSC to convert to an AWSC for safety reasons, and only a signal for operational reasons.
    - AECOM to remove this safety countermeasure from the list.
  - Consider adding a safety countermeasure for the addition of turn lanes on the mainline.
    - AECOM will incorporate this into the list of possible safety countermeasures.
  - Use raised crosswalks/intersections with caution as this type of improvement would typically only be incorporated on low-speed roads.
    - Look into % of roads that are low speed and provide response. 85% of intersections are on 25 mph or 30 mph roads. Will work this into the decision tree for this Safety Emphasis Area.
  - Change 'improve intersection lighting' countermeasure to instead be 'install or upgrade intersection lighting'.
    - AEOCM will update in the list of safety countermeasures.
  - Was a road diet considered as a possible safety countermeasure?
    - Yes, but a road diet is maybe not applicable when evaluating safety at a single intersection. If the risk assessment identifies multiple intersections along the same corridor, then a road diet could be a feasible safety countermeasure.
      - AECOM will incorporate this into the final decision tree for this Safety Emphasis Area.
      - AECOM to include in list of possible safety countermeasures.
  - Vic would like to see a safety countermeasure for a continuous t-intersection (non-signalized).
    - AECOM will incorporate this into the list of possible safety countermeasures.
  - It would be better to simplify the mini/compact roundabout safety countermeasure into 'roundabout', so that the jurisdictions have more flexibility to determine which type of roundabout best fits their desired needs.
    - AECOM to update the list of countermeasures to show all types of roundabouts and their safety benefit. The decision tree will then simplify this safety countermeasure to allow the decision to be made by individual jurisdictions.

Safety Emphasis Area 3

- Risk Factors (No Notes – AECOM only provided summary of updates since last workshop)
- Risk Assessment
  - Maren noticed many intersections on this list that were not multi-lane highways, which is what the Safety Emphasis Area targets.
    - Some stakeholders confirmed they provided data for all signals in their jurisdictions, not just on multi-lane highways.
      - AECOM will update the risk assessment to remove intersections that do not have a multi-lane arterial present.
      - Update links for all Lat/Long.

- Safety Countermeasures
  - Consider including a safety countermeasure to convert a signal to an AWSC.
    - AECOM will incorporate this into the list of possible safety countermeasures.
  - Vic would like to include 'enforcement lights' for red light running as a possible safety countermeasure as this is something that is being implemented throughout St Louis County.

        - AECOM will incorporate this into the list of possible safety countermeasures.
        - WisDOT to confirm (Jen Leech) if this is allowed in Wisconsin.
    - Would it be possible to include a j-turn intersection, signalized green-T intersection, or other types of intersection improvements with access restrictions as possible safety countermeasures?
        - AECOM will incorporate these into the list of possible safety countermeasures.
        - It was suggested that the j-turn replace the signalize intersection safety countermeasure. Additionally, it was suggested to include a j-turn if the road is divided an AWSC if the road is undivided.
            - AECOM will incorporate this into the final decision tree for this Safety Emphasis Area.
    - Can we combine safety countermeasures for some of these? For example, just say install FYA instead of having the multiple rows of various scenarios for left turn signal heads.
        - AECOM prefers keeping the data broken out by scenario in this list of possible countermeasures to show the various safety benefits. The final decision trees will simplify things.
    - Change 'improve intersection lighting' countermeasure to instead be 'install or upgrade intersection lighting'.
        - AEOCM will update in the list of safety countermeasures.
    - New countermeasure for remove signal and convert to median with RIRO.
        - AECOM will incorporate this into the final decision tree for this Safety Emphasis Area.
    - It would be nice to have a way for select safety countermeasures based on AADT of the road.
        - AECOM will incorporate this into the final decision tree for this Safety Emphasis Area.

Safety Emphasis Area 4

- Risk Factors (No Notes – AECOM only provided summary of updates since last workshop)
- Risk Assessment
    - AECOM still finalizing data collection for this Safety Emphasis Area. The risk assessment and the updated list of risk factors will be provided to all stakeholders once data collection is complete.
    - Provide linked lat/long for all intersections.
- Safety Countermeasures
    - The City of Duluth likes the inclusion of bike boxes, as they are currently considering these with the newly added bike facilities throughout the City.
    - Left turn traffic calming is well perceived, but there were many concerns related to general maintenance. Additionally, concerns were noted regarding the effectiveness of these if they have to be removed during winter months.
        - Recommend to leave left turn calming as a possible safety countermeasure, but it is a discussion item to have later on during the development of the decision tree.
    - Please include a bike signal as a possible safety countermeasure.
        - AECOM will incorporate this into the list of possible safety countermeasures.
    - Consider including a safety countermeasure to convert a signal to an AWSC.
    - General conversations were had regarding separated bicycle facilities, and it was questioned if any municipalities would prefer these over on-street bike facilities.
        - Many municipalities agreed to separated bike facilities being ideal for safety, but that also many of the intersections in this SEA will not be able to accommodate such facilities.
    - Build something into the decision tree for context of intersection (speed, AADT, etc.), including a way to weight locations based on pedestrian and/or bicycle facilities.
        - AECOM will incorporate this into the final decision tree for this Safety Emphasis Area.
    - Add countermeasure for verifying/updating crossing times at signalized intersections.
        - AECOM will incorporate this into the list of possible safety countermeasures.
    - Change 'improve intersection lighting' countermeasure to instead be 'install or upgrade intersection lighting'.
        - AEOCM will update in the list of safety countermeasures.
    - Similar to SEA 2, was a road diet considered as a possible safety countermeasure?
        - Yes, but a road diet is maybe not applicable when evaluating safety at a single intersection. If the risk assessment identifies multiple intersections along the same corridor, then a road diet could be a feasible safety countermeasure.
            - AECOM will incorporate this into the final decision tree for this Safety Emphasis Area.
            - AECOM to include in list of possible safety countermeasures.

Meeting Minutes

Safety Plan Advisory Meeting

MIC Safety Action Plan

June 21, 2024

9:00 AM to 10:00 AM

ACTION ITEMS SHOWN IN YELLOW

Attendance:

- Derek Salomonsen – AECOM
- Jeff Sandberg – AECOM
- Vic Lund – St Louis County
- Maren Webb – MnDOT
- James Miles – MnDOT
- Victor Lund – St Louis County
- Jennifer Leech – WisDOT
- Ron Chicka – MIC
- Miles Hansen - City of Duluth

Agenda:

1. Comments/discussion on the updated documents from the workshop.
    a. Safety Emphasis Area 4 was provided to all stakeholders after the previous workshop.
2. Inclusion of a "maintaining agency" field for each intersection or roadway segment.
    a. We will need assistance completing this task.
        i. AGENCIES to identify their segments and intersections.
    b. A Geodatabase where data can be entered for the "maintaining agency" field is here: Maintaining Agency.gdb
        i. AECOM to update Geodatabase to include column for inputting 'secondary agency'.
        ii. AECOM to provide this information in KMZ format.
3. Number of locations from each safety emphasis area to select for potential implementation.
    a. Discussed selecting top X% for each risk assessment.
        i. Could be an issue with Safety Emphasis Area 4 due to the large number of intersections (700+).
    b. Discussed selecting intersections which are located along the same corridor, even if some of those intersections don't fall in the top X% originally selected. Suggested to look at top 5%, then look at top 10% to see if any additional intersections can be evaluated which fall along similar corridors as the top 5%.
    c. Discussed using the % of stars as a threshold.
    d. Discussed selecting segments and intersections which would fall within a greater roadway/structure project in the next 5-10 years.
        i. Would require input from each agency to identify segments and intersections which would fall within the limits of a future planned project.
    e. AECOM to select locations based on this guidance and adjust as need based on feedback from agencies.
4. Draft countermeasure cost estimates.
    a. AECOM began development of cost estimates for all safety countermeasures.
        i. AECOM to develop documentation showing the assumptions made for each cost estimate. Examples include:
            1. What type of crosswalk markings are assumed for high-visibility crosswalks?

2. What assumptions were used for estimating 'widen paved shoulder'. Identify width, depth, etc.

5. Other Discussion
    a. AECOM is planning to present at the August MIC bike/ped committee meeting.
    b. The MIC bike/ped plan is currently being updated.

Meeting Minutes

Safety Plan Advisory Meeting

MIC Safety Action Plan

July 19, 2024

9:00 AM to 10:00 AM

ACTION ITEMS SHOWN IN YELLOW

Attendance:

- Derek Salomonsen – AECOM
- Jeff Sandberg – AECOM
- Vic Lund – St Louis County
- James Miles – MnDOT
- Jennifer Leech – WisDOT
- Ron Chicka – MIC
- Joseph Jurewicz – City of Duluth
- Prescott Morrill – MIC
- Todd Janigo – City of Superior

Agenda:

1. Progress update on collecting 'maintaining agency' data
    a. WisDOT and MnDOT have provided data.
    b. Other stakeholders to provide maintaining agency data.
2. Number of locations from each safety emphasis area to select for potential implementation.
    a. Evaluating countermeasures for top 5% of locations or a minimum of the top 20 locations for each Safety Emphasis Area (SEA).
    b. Evaluate top 10% or minimum of top 40 locations for corridor-wide projects.
        i. Are all locations falling within one or two jurisdictions? If so, how can we make sure locations are being evaluated for all municipalities in the MIC study area?
            1. AECOM to look at next 5% to see if there is a good representation of different municipalities. Evaluate locations in municipalities that are not well represented in the original top 5%.
    c. How many of the high-severity crashes were accounted for in the top 5% or top 20 locations?
        i. AECOM to collect this data to share with project team.
3. New countermeasures
    a. Added 'install bike lanes or bike path' for SEA 4.
    b. Added 'install reflective pavement markings' to address nighttime crashes in SEA 1.
4. Draft decision trees
    a. Decision tree for SEA 4 was shared with the project team.
    b. It would be good to include notes on the decision trees to indicate that these are high-level recommendations and improvements should be reviewed individually by the maintaining agencies to verify the appropriate recommendation for countermeasures.
        i. AECOM to incorporate this into final deliverable documents.
5. Draft countermeasure cost estimates.
6. General discussion on the upcoming MIC Bicycle-Pedestrian Advisory Committee Meeting.
    a. AECOM to attend virtually and to present for ~30 minutes and facilitate Q/A for an additional ~30 minutes.
7. Other Discussion
    a. How would this process assist with HSIP funding and applications in Wisconsin?
        i. Jen: This list of top locations would help, but it would not replace the typical process or application.

Meeting Minutes

Safety Plan Advisory Meeting

MIC Safety Action Plan

August 16, 2024

9:00 AM to 10:00 AM

ACTION ITEMS SHOWN IN YELLOW

Attendance:

- Derek Salomonsen – AECOM
- Jeff Sandberg – AECOM
- Vic Lund – St Louis County
- James Miles – MnDOT
- Ron Chicka – MIC
- Joseph Jurewicz – City of Duluth
- Prescott Morrill – MIC
- Todd Janigo – City of Superior
- Chris Carlson – City of Superior

Agenda:

1. Discussed Decision Trees
    a. Decision Trees
    b. SEA 1: Why is 'Roadway in Rural Area?' asked as the first question when the SEA is for rural roads?
        i. Roadways were identified as rural based on typical section. There are some typical sections which have a rural typical section but are located in what would typically be considered an urban area type. Many countermeasures are not intended for low speed roads in these urban area types.
            1. AECOM to include description of what rural is in the decision tree.
    c. SEA 1: 8" pavement markings seem to be too wide for pavement marking.
        i. AECOM to evaluate and consider removing 8" pavement markings and only using 6" pavement markings.
    d. SEA 2/3/4: Seems that the way these are set up will result in many improvements being recommended for a single intersection.
        i. This will assist in maximizing funding opportunities but won't necessarily mean all recommended improvements would need to be included in a safety project.
    e. SEA 2: There is much more to consider for installing left turn lanes than just there not being any present today.
        i. AECOM to include disclaimers to account for agency and municipal guidelines for installing left turn lanes.
    f. SEA 2: Sight Obstructions can't typically be fixed when the obstruction is a building, what would the recommendation be in that situation.
        i. AECOM to evaluate other possible countermeasures to be included in these situations.
    g. SEA 4: Concerned that RRFB or pedestrian hybrid beacons wouldn't actually be warranted at all unsignalized intersection in the SEA 4 risk assessment. This can be said for other countermeasures as well.
        i. AECOM to include disclaimers in the documents that indicate there are other factors needing to be accounted for.

2. Number of Safety Projects for each Safety Emphasis Area
    a. Discuss the percentage of crashes in the top 5%/10% locations.

3. Safety Projects
    a. Risk Assessment & Safety Projects

DULUTH - SUPERIOR
Metropolitan Interstate Council

Meeting Minutes

Safety Plan Advisory Meeting

MIC Safety Action Plan

November 15, 2024

9:00 AM to 10:00 AM

ACTION ITEMS SHOWN IN YELLOW

Attendance:

- Derek Salomonsen – AECOM
- Jeff Sandberg – AECOM
- Jim Meyer – AECOM
- Ron Chicka – MIC
- Rondi Watson – MIC
- Vic Lund – St Louis County
- Joseph Jurewicz – City of Duluth
- Todd Janigo – City of Superior
- Jen Leech – WisDOT
- Mae Sommerfeld - WisDOT
- James Miles – MnDOT
- Maren Webb – MnDOT

Previous Monthly Progress Meetings:

Monthly progress meetings held on October 18, 2024, and on September 20, 2024, did not have any meeting minutes distributed after the conclusion of those meetings. These meetings did not include any discussion beyond AECOM sharing progress as outlined in the meeting agendas.

Agenda:

Updated Safety Projects & Prioritization of Safety Projects

- The cost estimates for SEA 1, SEA 2, and SEA 3 were applied to the list of safety projects. These safety project cost estimates can be reviewed in the updated risk assessment spreadsheets at the location below. Note that individual safety projects have been set up to be prioritized based on risk (# of stars) or based on cost per star ($/risk). The cost per star can be seen in the far-right column of each spreadsheet.
    - Box: https://aecom.box.com/s/7wh6pv0hrzlx5wfmiytm2y97u6t9lovo
    - Sharepoint: Risk Assessment & Safety Projects
        i. KMZ files are now included in the links above for each of the safety emphasis areas. Each KMZ contains layers to visually see the locations where each safety strategy is being recommended.

Corridor Safety Projects & Prioritization

- The list of at-risk (tier 1 and tier 2) intersections in SEA 2, SEA 3, and SEA 4 were compiled to develop corridor-wide safety projects. The spreadsheet containing this information is at the location below. Note that these corridor safety projects were prioritized based on cost per star ($ per weighted risk factor).
    - Box: https://aecom.box.com/s/4mcl54bldm8n90cbsl27k64ksyhayczv
    - Sharepoint: Corridor Safety Projects
    - Input was provided regarding ongoing or planned future safety projects in this spreadsheet.
        i. Woodland Avenue, from Snively Rd to Oxford St, has recently been reconstructed.
        ii. 6th Ave/Central Entrance Dr, from 3rd St to 10th St, is scheduled for a project in 2025 to convert from a 4-lane to a 3-lane typical, with pedestrian improvements.
    - A request was made to incorporate the safety strategies being recommended for each intersection into this spreadsheet.
        i. AECOM to update the spreadsheet to include this information.
    - A request was made to create a KMZ to show the locations of these safety projects.
        i. AECOM to create a KMZ to show this information with the final deliverables.
    - Discussion was had regarding the fact that safety projects in this list could overlap multiple maintaining agencies. It was determined that the identification of these cross jurisdictional projects would be a responsibility of the MIC and other maintaining agencies when developing future safety projects.

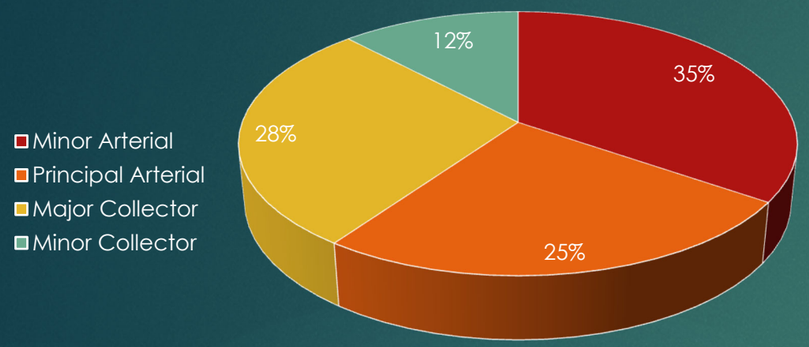
Schedule & Next Steps: Report (Early December), Present at MIC Committee Meetings (December 10/11)

Appendix C

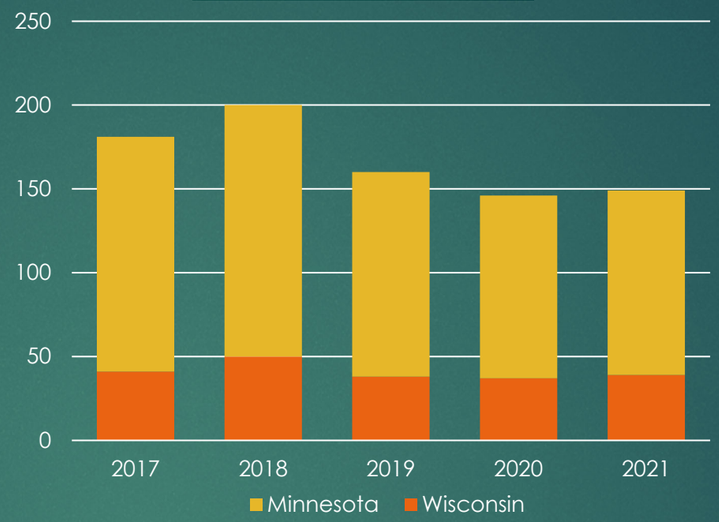
Crash Trees & Crash Statistics

Crash Trends – 836 KAB Crashes

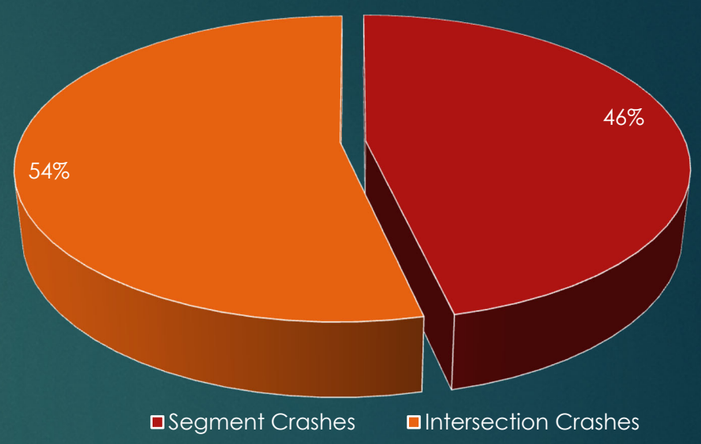
KAB Crashes by Functional Classification



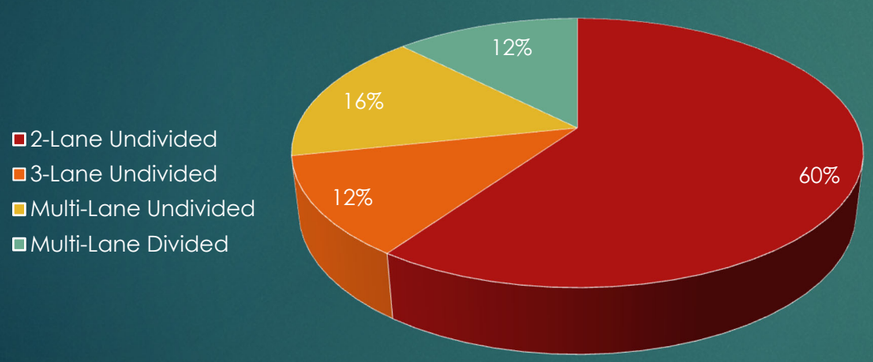
KAB Crashes by Year



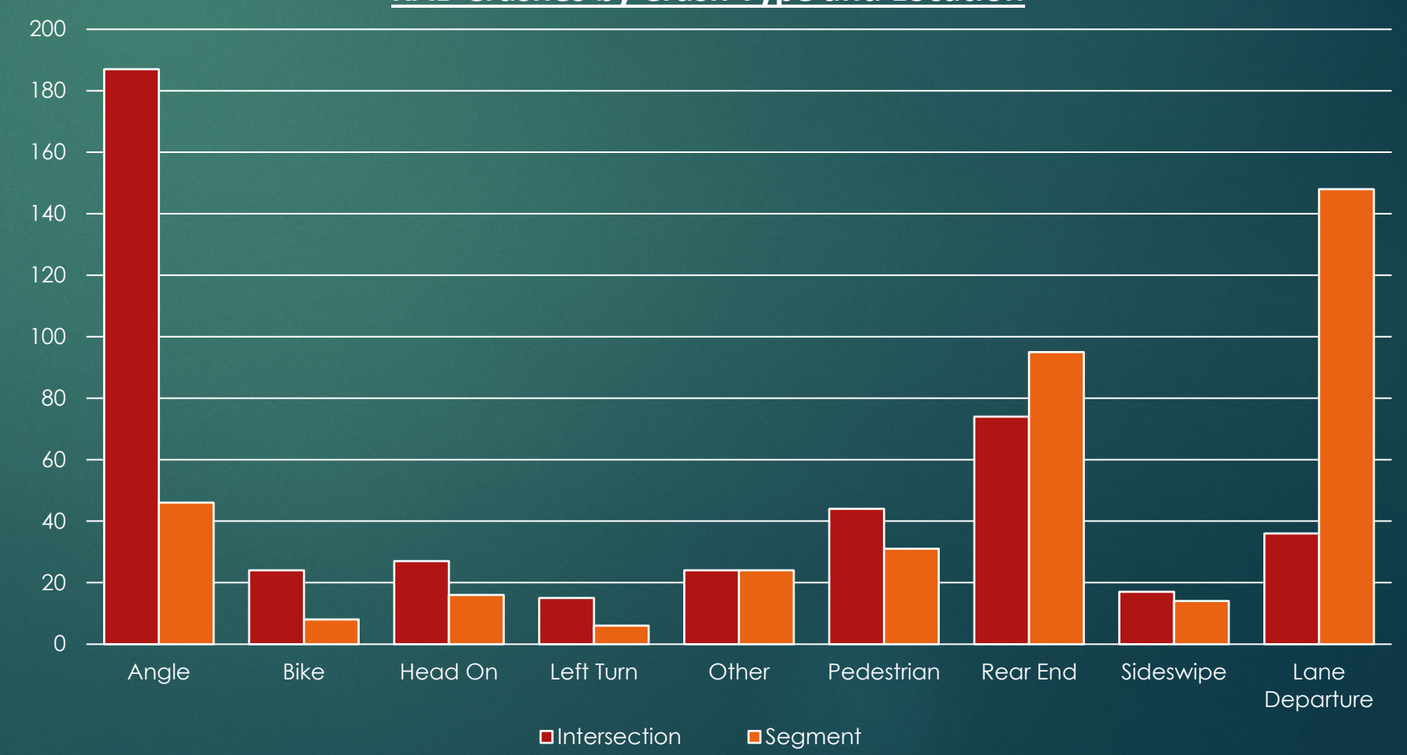
KAB Crashes by Location



KAB Crashes by Roadway Type



KAB Crashes by Crash Type and Location



AECOM

DULUTH - SUPERIOR
Metropolitan Interstate Council
MIC Safety Action Plan – Phase 1

Crash Tree
All Risk Factors

Crashes by Municipality Wisconsin
City of Superior -- 164
Town of Superior -- 22
Town of Parkland -- 14
Town of Lakeside – 3
Village of Superior -- 1
Village of Oliver -- 1

Crashes by Municipality Minnesota
City of Duluth -- 429
City of Hermantown -- 101
Town of Midway – 21
City of Rice Lake -- 16
Town of Duluth -- 15
Town of Solway -- 14
Town of Grand Lake – 14
Town of Lakewood -- 8
Town of Canosia – 7
City of Proctor -- 6

5 Year KAB Crash Data (2017-2021)
1,042 Crashes
(770 / 272)

Crash Removed
206 (139 / 67)

Interstate Crashes
96 (83 / 13)

Local Road Crashes
92 (44 / 48)

Deer Crashes
18 (12 / 6)

KAB Crashes (2017-2021) on Functional Classification System
836 (631 / 205)

Area Type
Urban– 582 (438 / 144)
Rural – 254 (193 / 61)

Area Type
Principal Arterial- 211 (137 / 74)
Minor Arterial -- 289 (224 / 65)
Collector -- 336 (270 / 66)

Pedestrian and Bicycle Crashes
107 (80 / 27)

Pavement Conditions
Snow/Ice/Slush 11 (9 / 2)
Wet 19 (12 / 7)
Dry 77 (59 / 18)

Time of Day
Day 79 (57 / 22)
Night 28 (22 / 6)

Area Type
Urban 99 (74 / 25)
Rural 8 (6 / 2)

Intersection Related
68 (46 / 22)

Segmented Related
39 (34 / 5)

Vehicle Crashes
729 (551 / 178)

Time of Day
Day 596 (456/ 140)
Night 133 (95 / 38)

Pavement Conditions
Snow/Ice/Slush 93 (75 / 18)
Wet 89 (66 / 23)
Dry 547 (410 / 137)

Segment Related
349 (252 / 97)

Intersection Related
380 (299 / 81)

Divided Roadway
44 (33 / 11)

Undivided Roadway
336 (266 / 70)

Legend
Total KAB Crashes
(MN KAB Crashes/WI KAB Crashes)

Vehicle Risk Factors

Vehicle Crashes Segment Related

349

AADT

- **< 5,000** — 148 (42%)
- **5,000 to 10,000** — 75 (21%)
- **10,000 to 15,000** — 52 (15%)
- **> 15,000** — 74 (21%)

Speed

- **High Speed (>=45 mph)** — 125 (36%)
- **Low Speed (<45 mph)** — 224 (64%)

Urban / Rural

- **Urban** — 194 (56%)
- **Rural** — 155 (44%)

Two-Lane Undivided — 209 (60%)

Lane Departure
122 (58%)
Bridge 4 (3%)
Slope/Overturn 47 (39%)
Barriers 4 (3%)
Fixed Obj 27 (22%)
Non-Fixed Obj 12 (10%)
Head On 10 (9%)
Sideswipe 9 (7%)
No collision 9 (7%)

Not Lane Departure
87 (42%)
Rear End 40 (46%)
Angle 25 (29%)
Left Turn 2 (2%)
Other 20 (23%)

Three-Lane Undivided — 29 (8%)

Lane Departure
4 (14%)
Fixed Obj 2 (50%)
Head On 1 (25%)
No collision 1 (25%)

Not Lane Departure
25 (86%)
Rear End 17 (68%)
Angle 6 (24%)
Left Turn 1 (4%)
Other 1 (4%)

Multi-Lane Undivided — 57 (17%)

Lane Departure
16 (28%)
Bridge 2 (13%)
Slope/Overturn 2 (13%)
Barriers 2 (13%)
Fixed Obj 2 (13%)
Non-Fixed Obj 3 (17%)
No collision 5 (31%)

Not Lane Departure
41 (72%)
Rear End 23 (56%)
Angle 12 (30%)
Left Turn 3 (7%)
Other 3 (7%)

Multi-Lane Divided — 54 (15%)

Lane Departure
36 (67%)
Slope/Overturn 16 (44%)
Barriers 3 (8%)
Fixed Obj 5 (14%)
Non-Fixed Obj 2 (6%)
Head On 2 (6%)
Sideswipe 5 (14%)
No collision 3 (8%)

Not Lane Departure
18 (33%)
Rear End 15 (84%)
Angle 3 (16%)

Vehicle Crashes Intersection Related

380

AADT

- **< 5,000** — 151 (40%)
- **5,000 to 10,000** — 111 (29%)
- **10,000 to 15,000** — 58 (15%)
- **> 15,000** — 60 (16%)

Speed

- **High Speed (>=45 mph)** — 88 (23%)
- **Low Speed (<45 mph)** — 292 (77%)

Yield Control — 5 (1%)

Crash Types
Rear ends 2 (40%)
Angle 2 (40%)
Lane Departure 1 (20%)

Signalized Control — 146 (39%)

Urban — 131 (90%)

Crash Types
Rear ends 28 (21%)
Angle 54 (42%)
Left Turn 12 (9%)
Head On 12 (9%)
Sideswipe 7 (5%)
Lane Departure 10 (8%)
Other 8 (6%)

Rural — 15 (10%)

Crash Types
Rear ends 5 (34%)
Angle 8 (53%)
Head On 2 (13X%)

Stop Control — 229 (60%)

Urban — 155 (68%)

Crash Types
Rear ends 28 (18%)
Angle 83 (54%)
Left Turn 1 (1%)
Head On 10 (6%)
Sideswipe 8 (5%)
Lane Departure 14 (9%)
Other 11 (7%)

Rural — 74 (32%)

Crash Types
Rear ends 11 (15%)
Angle 40 (54%)
Left Turn 2 (3%)
Head On 3 (4%)
Sideswipe 2 (3%)
Lane Departure 11 (14%)
Other 5 (7%)

Legend
Total KAB Crashes
(% of previous total)

Ped/Bike Risk Factors

Pedestrian Crashes

AADT

- < 5,000: 31 (41%)
- 5,000 to 10,000: 28 (37%)
- 10,000 to 15,000: 6 (8%)
- > 15,000: 10 (13%)

Time of Day
Day 55 (73%)
Night 20 (27%)

Pedestrian Crashes
75

Facility Type
Two-Lane Undivided 50 (65%)
Three-Lane Undivided 11 (16%)
Multi-Lane Undivided 6 (8%)
Multi-Lane Divided 8 (11%)

No Accommodations
4 (5%)
(All Segment Crashes)

Accommodations Present
71 (95%)

Sidewalk, Behind Curb
29 (41%)

Sidewalk, Including Terrace
42 (59%)

Fatal Crashes
All fatal pedestrian (3) crashes occurred at stop-controlled intersections with sidewalk behind the curb.

Segment Related
28 (39%)

Crash Type
Unmarked Mid-Block Crossing 14 (50%)
Illegally Walking in Road 5 (18%)
Driveway/Alley 3 (11%)
Other 6 (21%)

Intersection Related
43 (61%)

Crash Type
Ped Fail to Yield 7 (16%)
Turning Vehicle Fail to Yield 24 (56%)
Through Vehicle Fail to Yield 12 (28%)

Bicycle Crashes

AADT

- < 5,000: 11 (34%)
- 5,000 to 10,000: 7 (22%)
- 10,000 to 15,000: 8 (25%)
- > 15,000: 6 (19%)

Time of Day
Day 24 (75%)
Night 8 (25%)

Bicycle Crashes
32

Facility Type
Two-Lane Undivided 14 (44%)
Three-Lane Undivided 6 (19%)
Multi-Lane Undivided 5 (15%)
Multi-Lane Divided 7 (22%)

No Accommodations
26 (82%)

Accommodations Present
On-Street 2 (6%)
Shared Lane 3 (9%)
Separate Path 1 (3%)

Segment Related
4 (15%)

Fatal Crashes
All fatal bike (2) crashes occurred on segments without bike accommodations

Intersection Related
22 (85%)

Crash Type
Bike Fail to Yield 10 (45%)
(60% at signals & 40% at stop signs)
Turning Vehicle Fail to Yield 8 (56%)
(50% right turns & 50% left turns)
(70% at signals & 30% at stop signs)
Through Vehicle Fail to Yield 4 (28%)
(38% at stop signs & 62% at signals)

Segment Related
4 (67%)

Intersection Related
2 (33%)

Legend
Total KAB Crashes
(% of previous total)

Appendix D

Overrepresentation Crash Analysis

MIC Safety Action Plan Phase 1

Overrepresentation Crash Analysis

Categories highlighted in yellow indicate an overrepresentation of KAB crashes for that roadway characteristic, and categories highlighted in red indicates an overrepresentation by a factor of two or more.

	Category	% Study Area	% of KAB Crashes
Functional Classification	Principal Arterial	12%	25%
	Minor Arterial	23%	35%
	Major Collector	42%	28%
	Minor Collector	23%	12%
Area Type	Rural	67%	30%
	Urban	33%	70%
Roadway Type	Five-Lane Undivided	1%	6%
	Four-Lane Divided	8%	12%
	Four-Lane Undivided	3%	9%
	Three-Lane Undivided	3%	12%
	Two-Lane Divided	0%	1%
	Two-Lane Undivided	84%	59%
	Single Lane	0%	0%
AADT	<5,000	74%	41%
	5,000 to 10,000	15%	26%
	10,000 to 15,000	6%	15%
	>15,000	4%	13%
State	Minnesota	74%	75%
	Wisconsin	26%	25%

Appendix E

Crash Rate Analysis

MIC Safety Action Plan Phase 1

Crash Rate Analysis

A crash rate was categorized as either being high, moderate, or low, and the threshold for each of those categories is in Table 1 below. The color coding is used in the subsequent table.

Table 1. KAB Crash Rate Categories

Category	KAB Crashes per HMVMT*
Low	<15
Moderate	15 to 50
High	>50

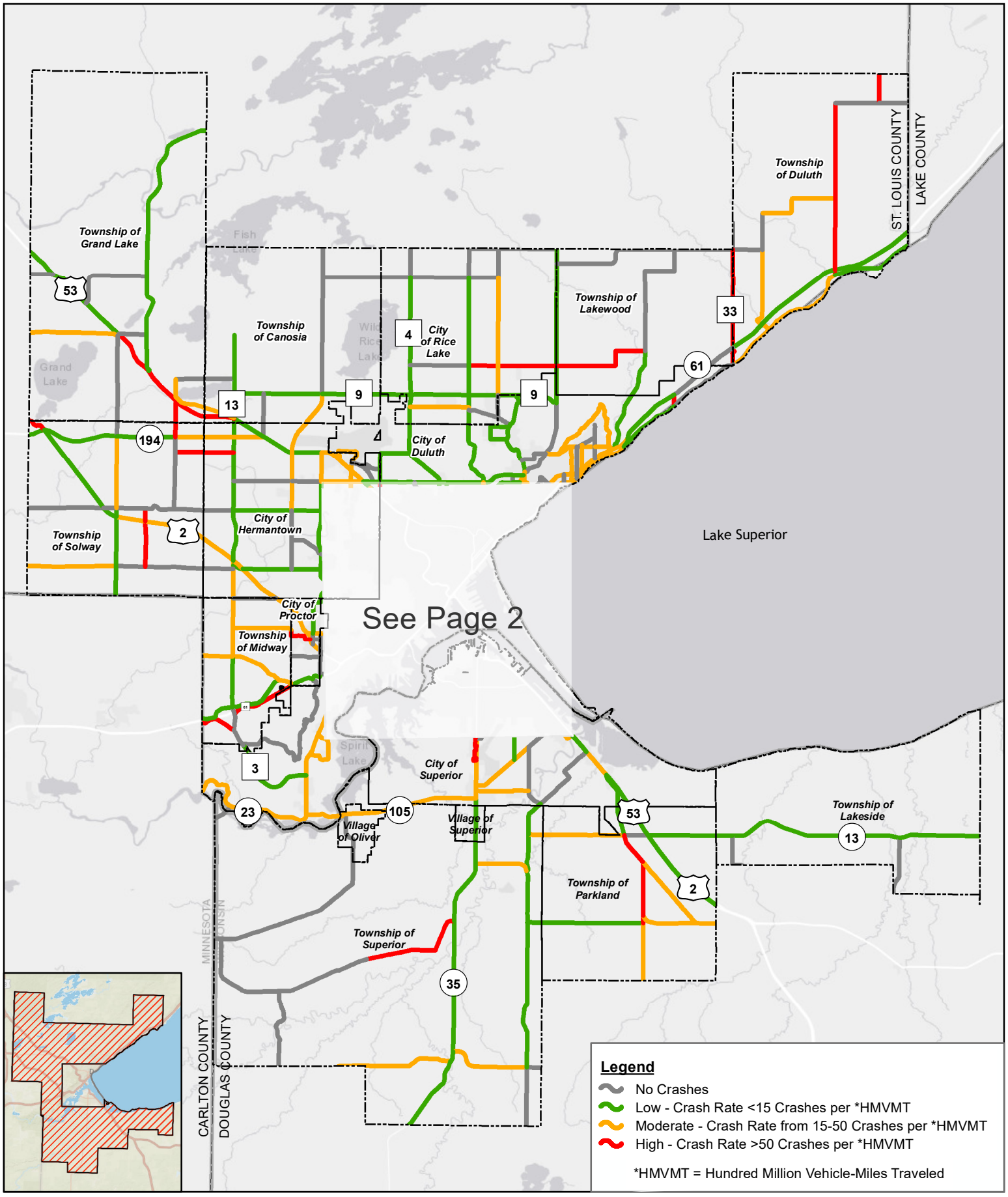
*Hundred Million Vehicle-Miles Traveled

Table 2 summarizes the results of the crash rate analysis, and the crash rates are highlighted based on the categories represented in Table 1 above. Crash rates for the categories in Table 2 were calculated using weighted AADT.

Table 2. Crash Rate Results

	Category	Miles	KAB Crashes	KAB Crash Rate (Crashes per HMVMT*)
Functional Classification	Principal Arterial	78.67	211	13.11
	Minor Arterial	146.96	289	9.16
	Major Collector	267.71	235	6.32
	Minor Collector	147.72	101	12.13
Area Type	Rural	431.60	254	11.14
	Urban	209.46	582	22.78
Roadway Type	Five-Lane Undivided	9.17	54	21.45
	Four-Lane Divided	50.65	103	9.56
	Four-Lane Undivided	21.47	77	17.67
	Three-Lane Undivided	21.05	99	31.34
	Two-Lane Divided	1.89	8	56.27
	Two-Lane Undivided	536.00	494	18.06
	Single Lane	0.84	1	20.87
AADT	<5,000	469.27	335	21.34
	5,000 to 10,000	97.71	215	17.53
	10,000 to 15,000	38.88	136	16.24
	>15,000	35.21	150	12.48

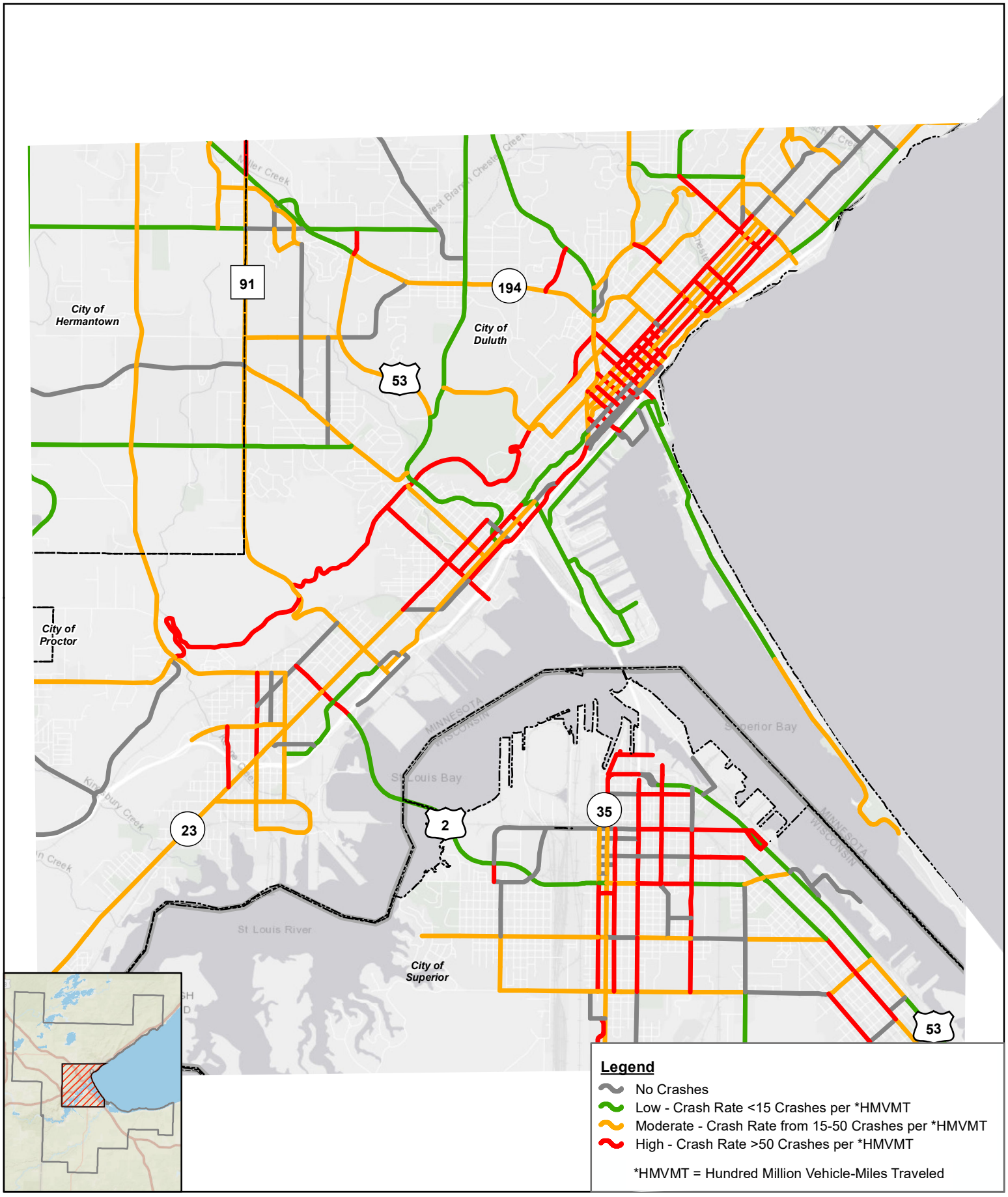
*Hundred Million Vehicle-Miles Traveled



AECOM

Crash Rate Exhibit (Page 1 of 2)

MIC Safety Action Plan Phase 1



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Crash Rate Exhibit (Page 2 of 2)

MIC Safety Action Plan Phase 1

Appendix F

Data Collection Memo

AECOM
1350 Deming Way
Suite #100
Middleton, WI 53562
aecom.com

Project name:
MIC Safety Action Plan

From:
Derek Salomonsen, AECOM

Date:
December 2, 2024

To: MIC Stakeholders

CC: Ron Chicka, ARDC

Derek Salomonsen**, AECOM**

Memorandum

Subject: MIC - Safety Action Plan Phase 1 – Risk Factor Data Collection

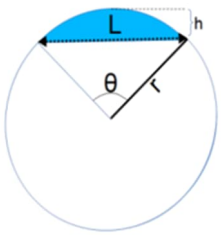
The Metropolitan Interstate Council (MIC), the Metropolitan Planning Organization for the Duluth, MN – Superior, WI urbanized area, is beginning the preparation efforts for a comprehensive safety action plan. This memo documents AECOM's process, methodology, and results of the risk factor data collection. Any risk factor not discussed below had data collected based on aerial imagery or Google Streetview.

Data Collection

- ***Safety Emphasis Area 1: Rural Two-Lane Undivided Roads (AADT <5,000)***

    - Segment data was collected every half mile of road, using aerials for data such as roadway width and a combination of Google Streetview and aerials to collect clear zone and shoulder data. Engineering judgement was used to determine the presence of steep slopes or fixed objects.
    - For roadways with an AADT greater than 1,500 a clear zone width of 18-feet was utilized, and roadways with AADT less than 1,500 utilized a 10-ft clear zone width.
    - Access density was sampled for half mile segments depending on roadway length and aerial imagery.
        - Segments shorter than one half mile had all access points collected
        - Segments less than two miles had one half mile of access points collected
        - Segments between two and three miles had two half mile segments collected
        - Segments greater than three miles had three half mile segments collected

    o Curve data was collected using aerials, with horizontal curve tangents and points of intersection estimated from aerial measurements. Chord lengths and rise were measured using aerials between the estimated tangents to calculate the approximate radius of horizontal curves. All curves on rural segments had their radii collected. Curves with a radius greater than 1,150-ft were not evaluated in the next steps and did not have any additional data collected.



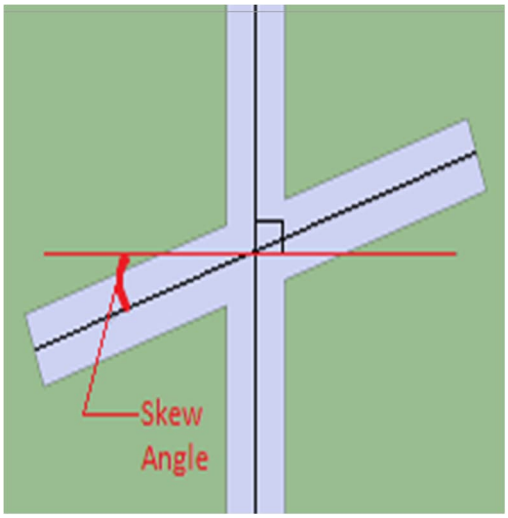
$$r = \frac{L^2}{8h} + \frac{h}{2}$$

- r is the radius of a circle
- L is the length of the chord. Thi
- h is the height above the chord.

- ***Safety Emphasis Area 2: Urban Side Road Stop Controlled Intersections (Angle Crashes)***

    - Presence of pedestrian generator was determined based on the presence of commercial, retail, library, school, or park within 200-ft of the intersection.

    - Intersection Skew: Measure the intersection skew as best as possible if a visual inspection shows the skew to be more than 5 degrees.

        - 

- ***Safety Emphasis Area 3: Signalized Intersections along Multi-Lane Arterials***

    - All data was collected by the maintaining agencies, except for those related to crash data. Note that AECOM collected data for left turn signal phasing, overhead signal indications, and access points for all intersections maintained by the City of Duluth by using aerial imagery or Google Streetview.

- ***Safety Emphasis Area 4: Urban Intersections (Ped & Bike Crashes)***

    - Additional intersections included in Safety Emphasis Area 4 are shown in the below figure. These are the additional intersections based on coordination with the MIC Long Range Transportation Plan (LRTP) and feedback from the MIC Advisory Committee. Additionally, third party data was used from Replica to determine where short-distance trips (1-mile or less) were occurring by multi-modal users, also from Strava to determine highlight trafficked urban areas based on activity tracking (exercise phone applications).

    - All other risk factor data was collected by AECOM by using aerial imagery or Google Streetview.

        - Presence of pedestrian generator was determined based on the presence of commercial, retail, library, school, or park within 200-ft of the intersection.

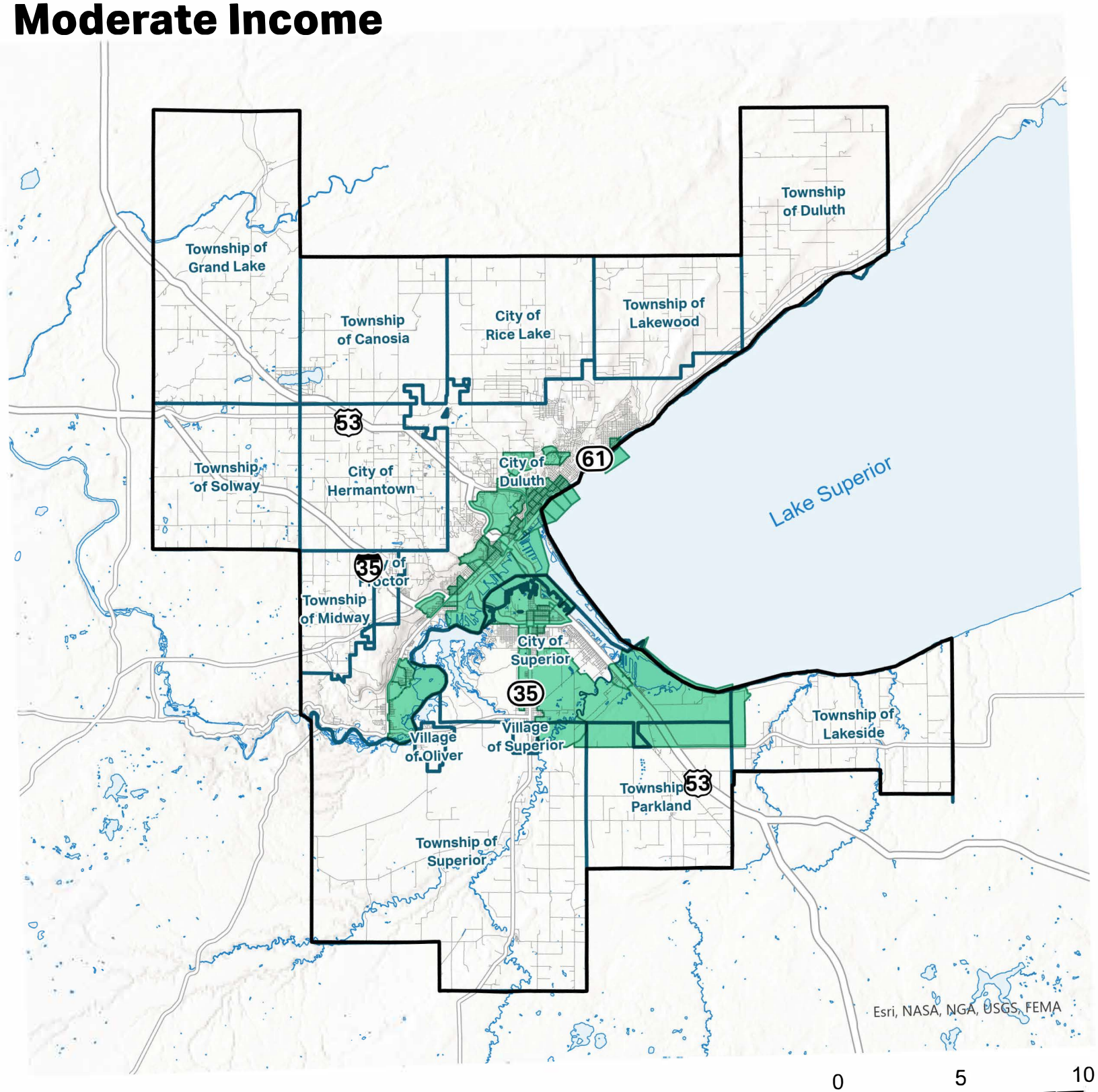
        - The presence of a transit stop was determined based a MTU bus stop being located within 150-ft of an intersection.

        - Length of pedestrian exposure is based on the distance a pedestrian would have to travel when crossing the mainline road, minus the width of pedestrian refuge or raised island.

        - Information on disadvantaged neighborhoods was determined based on data from the US Housing and Urban Development (HUD) on low to moderate income. This data was filtered to include block groups where 50% or less of the population is considered low to moderate income.

Figure: Additional Intersections for Safety Emphasis Area 4

Locations with Majority Low to Moderate Income



0 5 10
Miles

Legend

MIC Planning Area

Disadvantaged Block Groups Within MIC Planning Area

AECOM Imagine it. Delivered.

Appendix G

Risk Factors

Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 1:

Rural Two-Lane Undivided Roads

With Less Than 5,000 AADT

360 miles of roads within Study Area

Risk Factors

Risk Factor -Segments	At-Risk Criteria	Data Source	Include in Study?
Density of Lane Departure KAB Crashes	↾ >0.10 crashes per mile per 5 year period ★ >=0.50 crashes per mile per 5 year period	AECOM	Yes
Curve Density	↾ >=1 curve/s per mile ★ >=3 curves per mile	Stakeholders & AECOM	Yes
Access Density (driveways, field entrances, unsignalized public streets)	↾ >=7 & <15 ★ >=15	AECOM	Yes
Edge Risk Assessment & Shoulder/Surface Type (steep slopes, fixed objects in clear zone)	↾ No Paved Shoulder & No Deficiencies ↾ Paved Shoulder & 1 or 2 Deficiencies ★ No Paved Shoulder & 1 or 2 Deficiencies	AECOM	Yes
Speed Limit	↾ >=40 mph & <55 mph ★ >=55 mph	AECOM	Yes
Roadway Width (of thru travel lanes)	★ <24-feet	AECOM	Yes
Presence of Edgeline and/or Centerline Rumble Strips	-	-	No Use as mitigation strategy
Presence of Edgeline and/or Centerline Pavement Markings	-	-	No Use as mitigation strategy
Risk Factor - Curves	**Criteria**	**Data Source**	**Include in Study?**
Occurrence of KAB Crashes on Curves	↾ 1 crash per curve per 5 year period ★ >=2 crashes per curve per 5 per period	Stakeholders & AECOM	Yes
Presence of Intersection on Curve or Visual Trap	↾ Intersection on curve ★ Visual Trap & Int. on Curve	AECOM	Yes
Curve Radii	↾ >=500-feet to 1,000-feet ★ < 500-feet	AECOM	Yes
Horizontal Curve Speed Differential	↾ 5-10 mph (curve advisory speed sign present) ★ >10 mph (curve advisory speed sign present) ★ Curve Radius <=750', Speed Limit >=45 mph (no curve advisory speed sign present)	Stakeholders & AECOM	Yes
Shoulder/Surface Type	↾ Gravel Shoulder Only ★ No Paved shoulder	AECOM	Yes

Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 2:

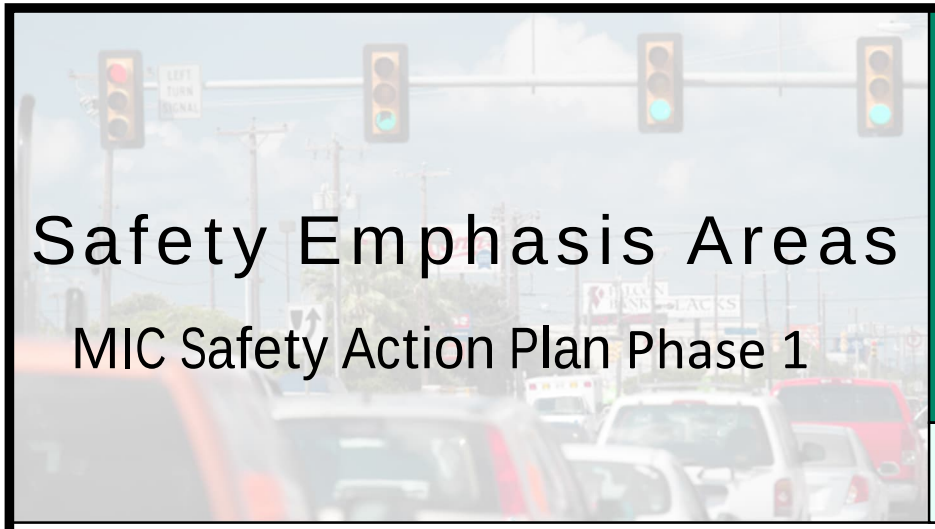
Urban Intersections Side Road Stop Control

Angle Crashes

(167 Intersections)

Risk Factors

Risk Factor	At-Risk Criteria	Data Source	Include in Study?
Occurrence of Angle Crashes	★ >=1 crash per 5 year period	Stakeholders	Yes
Speed Limit on Major Road	↳ >=30 mph ★ >=40 mph	Stakeholders	Yes
Mainline Cross Section	↳ Multi-Lane, with median ★ Multi-Lane, no median	Stakeholders	Yes
Skew of Intersection	↳ > 5 degrees ★ >= 25 degrees	AECOM	Yes
Number of Entering Legs	★ 4 intersection legs	AECOM	Yes
Context Zone	★ Commercial, Retail, School, Library, Park	AECOM	Yes
Mainline AADT	↳ >= 5,000 & < 12,000 ★ >=12,000	Stakeholders	Yes
Speed Limit on Minor Road			No
Intersection Location			No
Presence of On-Street Parking			No
Presence of Turn Lanes			No, Use as mitigation strategy



Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 3:

Signalized Intersections Along Multi-Lane Arterials

(93 Intersections)

Risk Factors

Risk Factor	At-Risk Criteria	Data Source	Include in Study?
Number of KAB Crashes	↳ 1 crashes per 5 year period ★ 2 or more crashes per 5 year period	AECOM	Yes
Speed Limit on Major Road	↳ >=35 mph ★ >=45 mph	Stakeholders	Yes
Speed Limit on Minor Road	↳ >=30 mph ★ >=40 mph	Stakeholders	Yes
Mainline AADT	↳ > 8,000 & < 12,000 ★ >=12,000	Stakeholders	Yes
Skew of Intersection	↳ > 5 degrees ★ >= 20 degrees	Stakeholders	Yes
Presence of Mainline Median	↳ Median on 1 Approach ★ No Median	Stakeholders	Yes
Presence of Mainline Left Turn Lanes	↳ None on 1 Approach ★ None on all Approaches	Stakeholders	Yes
Left Turn Signal Phasing, by Mainline Approach	↳ Permitted/Protected by Mainline Approach ★ Permitted Only by Mainline Approach	Stakeholders (AECOM Collected for City of Duluth Intersections)	Yes
Signal Heads per Number of Mainline Thru Lanes	↳ <1:1 signal heads/lanes ★ <=1:2 signal heads/lanes	Stakeholders (AECOM Collected for City of Duluth Intersections)	Yes
Access Within Influence Area	↳ 1-2 driveways ★ >=3 driveways	Stakeholders (AECOM Collected for City of Duluth Intersections)	Yes
Mainline Left Turn Lane Alignment	↳ Zero Offset ★ Negative Offset	Stakeholders	Yes
Isolated vs. Coordinated	★ Isolated Signal	Stakeholders	Yes
Presence of Signal Head Backplates			No, Use as Mitigation strategy

Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 4:

Urban Intersections

Pedestrian & Bicycle Crashes

(722 Intersections)

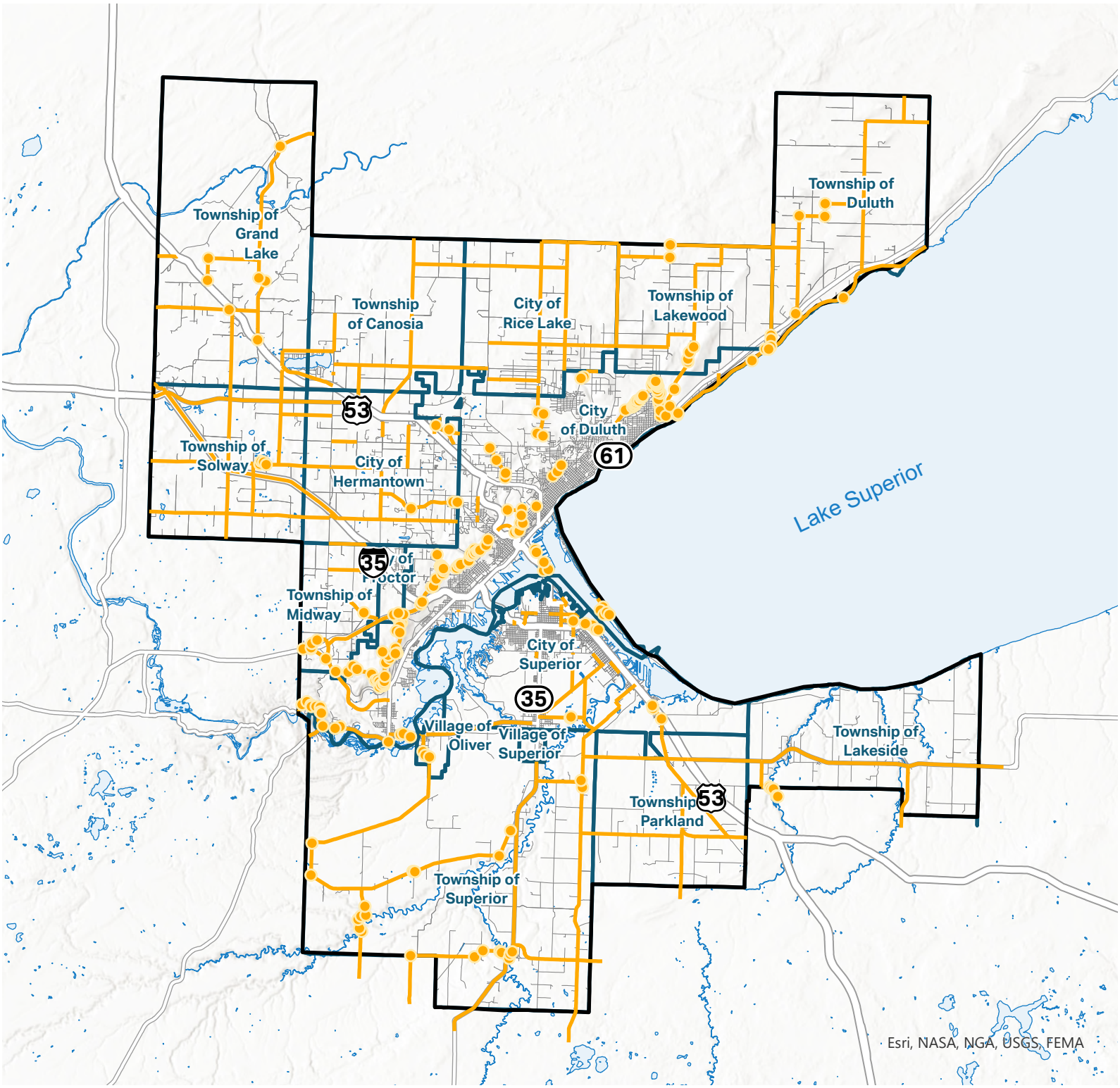
Risk Factors

Risk Factor	At-Risk Criteria	Potential Data Source	Include in Study?
Occurrence of Ped/Bike Crashes	↳ 1 crash per 5 year period ★ >1 crash per 5 year period	Stakeholders	Yes
Mainline AADT	↳ > 5,000 & < 10,000 ★ >=10,000	Stakeholders	Yes
Type of Traffic Control	★ Signalized	Stakeholders	Yes
Speed Limit on Major Road	↳ 30 mph ★ >=35 mph	Stakeholders	Yes
Number of Thru Lane on Major Approach	★ >2-lanes	AECOM	Yes
Presence of Bicycle Facilities (mainline)	↳ Paved Shoulder ★ No Bike Facilities	Stakeholders	Yes
Exposure Length (exclude median refuge)	↳ >=36-ft & <50-ft ★ >=50-ft	AECOM	Yes
Presence of Sidewalk (mainline)	↳ Partial Sidewalk ★ No Sidewalk	Stakeholders	Yes
Presence of Lighting	↳ No Lighting on Minor Approaches ★ No Lighting	Stakeholders	Yes
Presence of On-Street Parking (mainline)	★ Parking	AECOM	Yes
Presence of Pedestrian Generators	↳ Commercial, Parks & School ↳ On DTA Route	Stakeholder	Yes
Disadvantaged Neighborhoods	★ Adjacent to Disadvantaged Community	Stakeholder	Yes
Presence of Bus Stops			No, essentially included in Presence of Pedestrian Generators
Presence of Crosswalks			No, Use as Mitigation Strategy

Appendix H

Safety Emphasis Area Locations

Safety Emphasis Area 1



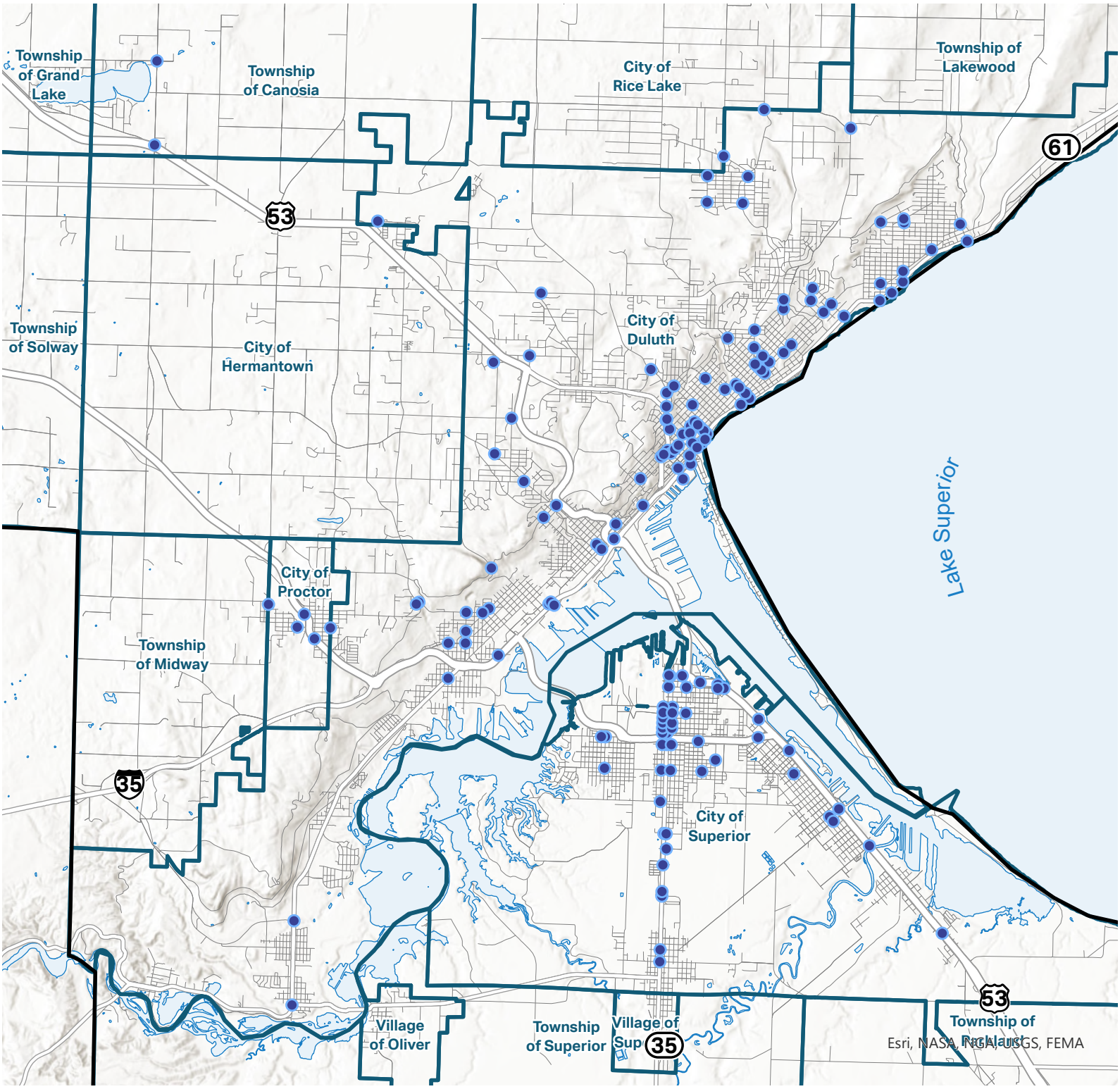
Legend

0 5 10
Miles

- MIC Planning Area
- Curve Locations (251 Curves)
- Rural 2-Lane Roads (273 Segments, 357.23 roadway miles)

AECOM

Safety Emphasis Area 2



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0 2 4
Miles

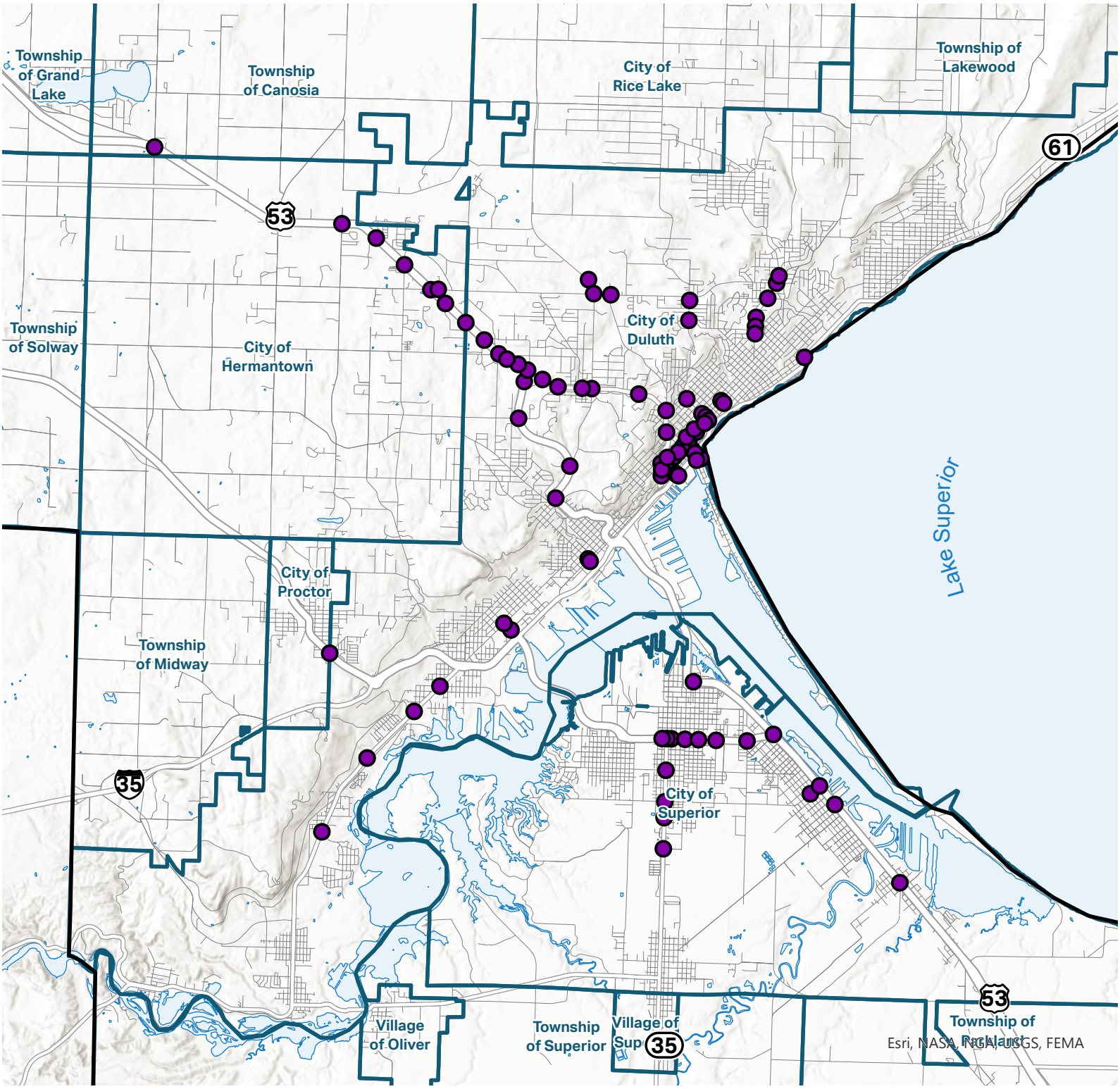
MIC Planning Area

SEA2 Intersections (167 Intersections)

AECOM

DULUTH-SUPERIOR METROPOLITAN INTERSTATE COUNCIL MIC

Safety Emphasis Area 3



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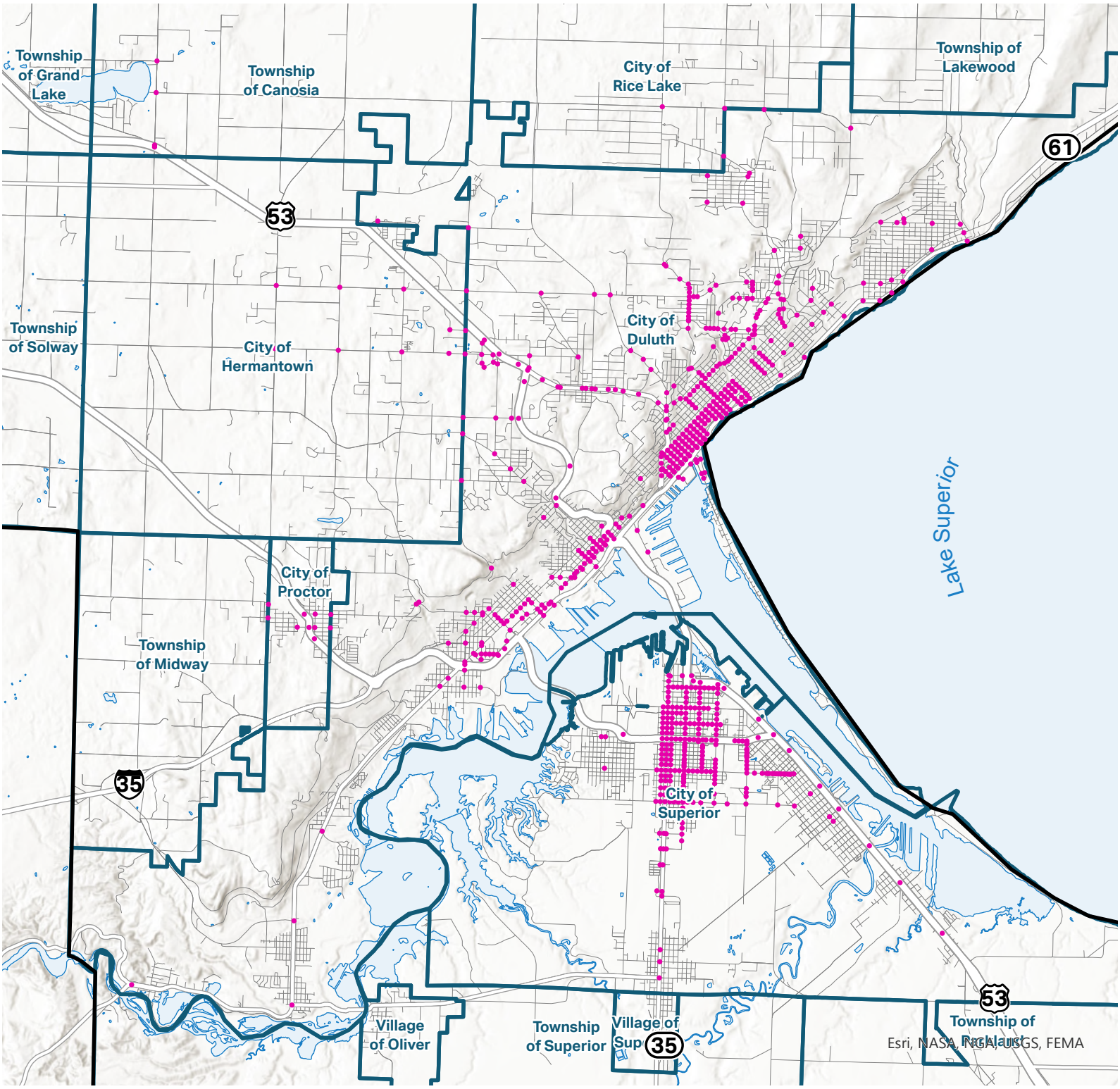
0 2 4
Miles

MIC Planning Area

SEA 3 Intersection Locations (93 Intersections)

AECOM

Safety Emphasis Area 4



Legend

0 2 4
Miles

MIC Planning Area

- SEA4 Intersections (722 Intersections)

AECOM

Appendix I

Risk Assessments

Safety Emphasis Area 1 (Segments)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

Road Name	State	County	Municipality	Speed Limit	Number of KAB Crashes	Length (miles)	AADT	Density of Lane Departure Crashes	Curve Density	Access Density	Edge Risk	Speed Limit	Roadway Width	Total Stars
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	50	1	0.3	364		★	★	★	★	★	★★★★★
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	45	1	3.6	2000	½	★	★	★	½	★	★★★★½
CTH A	Wisconsin	Douglas	Township of Superior	55	2	0.7	970	★		½	★	★	★	★★★★½
Becks Rd	Minnesota	Saint Louis	Township of Midway	55	1	1.1	670	★	½	½	★	½	★	★★★★½
CTH A	Wisconsin	Douglas	Township of Superior	40	1	1.3	730		½	★	★	★	★	★★★★½
S Chicago Ave	Wisconsin	Douglas	Village of Oliver	45	1	1.3	2300		½	★	★	★	★	★★★★½
CTH K	Wisconsin	Douglas	Township of Parkland	55	0	1.8	1200	★		★	½	★	★	★★★★½
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	55	0	0.2	364		★	½	½	★	★	★★★★
Occidental Blvd	Minnesota	Saint Louis	City of Duluth	30	0	0.4	348		★	★	★		★	★★★★
Saginaw Rd	Minnesota	Saint Louis	Township of Solway	55	0	0.4	225		★	★	½	½	★	★★★★
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	40	0	0.7	1450		★	★	★		★	★★★★
CTH 8	Minnesota	Saint Louis	Township of Grand Lake	30	0	0.8	120		½	★	½	★	★	★★★★
CTH U	Wisconsin	Douglas	Township of Lakeside	30	0	0.9	90		★		★	★	★	★★★★
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	55	1	1.0	2800		½	★	★	½	★	★★★★
Observation Rd	Minnesota	Saint Louis	City of Duluth	40	0	1.1	1100	★	★	½	★	½		★★★★
CTH E	Wisconsin	Douglas	Township of Parkland	55	0	1.1	1200	★		★	½	½	★	★★★★
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	30	0	1.2	3000		★	★	★		★	★★★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	45	1	1.4	348	★	★		★		★	★★★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	30	0	1.7	1580	★	★	½	½		★	★★★★
CTH C	Wisconsin	Douglas	Township of Parkland	30	4	4.0	1000	½		★	½	★	★	★★★★
McQuade Rd	Minnesota	Saint Louis	Township of Lakewood	40	2	0.4	345	★	★	★	½			★★★½
W Skyline	Minnesota	Saint Louis	Township of Midway	30	1	0.5	680		½	★	★		★	★★★½
Caribou Lake Rd	Minnesota	Saint Louis	Township of Grand Lake	40	2	0.6	499	★		★	★	½		★★★½
Swan Lake Rd	Minnesota	Saint Louis	City of Hermantown	55	0	0.7	1400		½	★	★	★		★★★½
Lavaque Rd	Minnesota	Saint Louis	City of Hermantown	45	0	0.7	3500	★		★		½	★	★★★½
Schultz Rd	Minnesota	Saint Louis	City of Rice Lake	55	2	1.0	115			★	½	★	★	★★★½
Culbertson Rd	Minnesota	Saint Louis	Township of Duluth	55	0	1.0	380	★		½	★	★		★★★½
CTH E	Wisconsin	Douglas	Township of Parkland	55	0	1.0	2000			★	★	½	★	★★★½
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	30	1	1.8	680		★	½	★		★	★★★½
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	55	1	2.0	2000	★	★		★	½		★★★½
Schultz Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	2.0	170			★	½	★	★	★★★½
W Calvary Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	2.0	1650	½		★	★		★	★★★½
CTH K	Wisconsin	Douglas	Township of Parkland	55	0	2.5	850	½		½	½	★	★	★★★½
CTH D	Wisconsin	Douglas	Township of Lakeside	55	1	2.5	1400			½	★	★	★	★★★½
CTH C	Wisconsin	Douglas	Township of Parkland	55	0	2.7	750			★	½	★	★	★★★½
CTH E	Wisconsin	Douglas	Township of Parkland	45	1	2.8	670	½		★	½	½	★	★★★½
CTH C	Wisconsin	Douglas	Township of Superior	30	0	3.7	430	★			½	★	★	★★★½
CTH W	Wisconsin	Douglas	Township of Superior	30	0	3.7	270		½		★	★	★	★★★½
Saginaw Rd	Minnesota	Saint Louis	Township of Solway	55	0	0.2	2500			½	½	★	★	★★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	30	0	0.2	1580		★		★		★	★★★

Safety Emphasis Area 1 (Segments)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

Road Name	State	County	Municipality	Speed Limit	Number of KAB Crashes	Length (miles)	AADT	Density of Lane Departure Crashes	Curve Density	Access Density	Edge Risk	Speed Limit	Roadway Width	Total Stars
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	30	0	0.3	3000		★	½	½		★	★★½
OLD HWY 2	Minnesota	Saint Louis	City of Hermantown	55	0	0.3	760		½	½	★	★		★★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	30	0	0.4	348		★		★		★	★★½
E McCuen St	Minnesota	Saint Louis	City of Duluth	35	1	0.6	2300	★	★	½	½			★★½
CTH B	Wisconsin	Douglas	Township of Superior	55	0	1.0	1300			½	½	★	★	★★½
W Tischer Rd	Minnesota	Saint Louis	City of Rice Lake	40	1	1.0	600	★		★	½	½		★★½
CTH U	Wisconsin	Douglas	Township of Lakeside	55	0	1.0	90			½	½	★	★	★★½
Lavaque Rd	Minnesota	Saint Louis	City of Hermantown	40	0	1.0	3500			★	½	½	★	★★½
Arnold Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	1.0	270			★	★	★		★★½
Canosia Rd	Minnesota	Saint Louis	Township of Solway	55	0	1.0	1550			★	★	★		★★½
Strand Rd	Minnesota	Saint Louis	Township of Lakewood	40	0	1.0	870			★	½	½	★	★★½
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	50	0	1.1	1466		★	½	★	½		★★½
E Union St	Wisconsin	Douglas	Village of Oliver	55	1	1.1	3300	★		½	½	★		★★½
WIS 105	Wisconsin	Douglas	Village of Oliver	55	3	1.1	3300	★		½	½	★		★★½
Caribou Lake Rd	Minnesota	Saint Louis	Township of Solway	55	0	1.2	265			★	★	★		★★½
St. Louis River Rd	Minnesota	Saint Louis	City of Hermantown	45	0	1.5	531			★	½	½	★	★★½
Rose Rd	Minnesota	Saint Louis	City of Hermantown	45	1	2.0	374	½		★	★	½		★★½
W Tischer Rd	Minnesota	Saint Louis	Township of Lakewood	40	2	2.0	870	★		★	½	½		★★½
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	30	1	2.4	4250	½	½	★	★			★★½
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	55	0	2.6	390			½	½	★	★	★★½
Schultz Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	3.0	170			½	½	★	★	★★½
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	55	1	3.0	1850	½		★	½	★		★★½
Morris Thomas Rd E	Minnesota	Saint Louis	Township of Solway	55	1	3.0	750	½		★	½	★		★★½
Becks Rd	Minnesota	Saint Louis	City of Duluth	55	2	3.2	3600	★	½	½		★		★★½
CTH C	Wisconsin	Douglas	Township of Superior	55	2	3.2	430		½		½	★	★	★★½
Homestead Rd	Minnesota	Saint Louis	Township of Duluth	55	2	3.3	380	★		½	½	★		★★½
CTH A	Wisconsin	Douglas	Township of Superior	55	0	3.3	930			½	½	★	★	★★½
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	30	0	3.5	680		★		★		★	★★½
Jean Duluth Rd	Minnesota	Saint Louis	City of Rice Lake	55	1	4.0	3750	½		★	½	★		★★½
WIS 35	Wisconsin	Douglas	Township of Superior	55	2	4.3	4400	★	½	½		★		★★½
Munger Shaw Rd	Minnesota	Saint Louis	Township of Grand Lake	55	1	4.7	680	½	½	½	½	★		★★½
CTH B	Wisconsin	Douglas	Township of Superior	45	1	5.8	530	½		½	½	½	★	★★½
Industrial Rd	Minnesota	Saint Louis	Township of Grand Lake	50	0	0.1	1000		★	½	½	½		★★ ½
Ugstad Rd	Minnesota	Saint Louis	Township of Midway	55	0	0.1	680				½	★	★	★★ ½
McQuade Rd	Minnesota	Saint Louis	Township of Lakewood	30	0	0.2	345		★	½	★			★★ ½
CTH C	Minnesota	Douglas	Township of Superior	55	0	0.2	230				½	★	★	★★ ½
Truck Rte St	Wisconsin	Douglas	City of Superior	25	0	0.2	350		★		½		★	★★ ½
E 3rd St	Wisconsin	Douglas	City of Superior	35	0	0.3	2000		★	½	★			★★ ½
E 3rd St	Wisconsin	Douglas	City of Superior	35	0	0.4	2000		★	★	½			★★ ½
Lakewood Rd	Minnesota	Saint Louis	City of Duluth	30	0	0.4	740			★	½		★	★★ ½

Safety Emphasis Area 1 (Segments)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

Road Name	State	County	Municipality	Speed Limit	Number of KAB Crashes	Length (miles)	AADT	Density of Lane Departure Crashes	Curve Density	Access Density	Edge Risk	Speed Limit	Roadway Width	Total Stars
E 5th St	Wisconsin	Douglas	City of Superior	30	1	0.4	1900	★		★	½			★★½
Munger Shaw Rd	Minnesota	Saint Louis	Township of Solway	55	0	0.4	305			★	½	★		★★½
Garfield Ave	Wisconsin	Douglas	City of Superior	25	0	0.5	2100		★	★	½			★★½
Caribou Lake Rd	Minnesota	Saint Louis	Township of Solway	55	0	0.5	195			½	★	★		★★½
Woodland Ave	Minnesota	Saint Louis	City of Duluth	30	0	0.5	1724		★	★	½			★★½
42nd Ave	Wisconsin	Douglas	City of Superior	55	0	0.5	970		½			★	★	★★½
Stebner Rd	Minnesota	Saint Louis	City of Hermantown	55	0	0.5	2350		★	½		★		★★½
Port Terminal Dr	Minnesota	Saint Louis	City of Duluth	30	0	0.6	1900		★	★	½			★★½
E 10th St	Wisconsin	Douglas	City of Superior	25	1	0.6	990	★		★	½			★★½
Marina Dr	Wisconsin	Douglas	City of Superior	25	0	0.6	510		★	½	★			★★½
Becks Rd	Minnesota	Saint Louis	Township of Midway	55	2	0.6	3600		½	★		★		★★½
Helberg Dr	Minnesota	Saint Louis	City of Duluth	30	0	0.7	830		★	★	½			★★½
Lakewood Rd	Minnesota	Saint Louis	Township of Lakewood	55	0	0.7	450			★	½	★		★★½
McQuade Rd	Minnesota	Saint Louis	Township of Duluth	55	0	0.9	760			★	½	★		★★½
E Shilhon Rd	Minnesota	Saint Louis	Township of Duluth	55	0	1.0	380		½	½	½	★		★★½
Industrial Rd	Minnesota	Saint Louis	Township of Grand Lake	50	0	1.0	480			★	★	½		★★½
Arnold Rd	Minnesota	Saint Louis	City of Rice Lake	30	1	1.0	1450	★		★	½			★★½
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	40	0	1.0	1800			★	★	½		★★½
USH 2	Minnesota	Saint Louis	Township of Solway	60	1	1.0	3250	★		½		★		★★½
N 58th St	Wisconsin	Douglas	City of Superior	30	1	1.0	2000	★	½	½	½			★★½
Minnesota Ave	Minnesota	Saint Louis	City of Duluth	30	1	1.0	1850	★	★	½				★★½
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	40	0	1.2	750		½	★	½	½		★★½
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	30	3	1.2	1975	★	★		½			★★½
Lindahl Rd	Minnesota	Saint Louis	City of Hermantown	55	0	1.5	580			★	½	★		★★½
Morris Thomas Rd	Minnesota	Saint Louis	City of Hermantown	55	0	1.7	2200			★	½	★		★★½
Canosia Rd	Minnesota	Saint Louis	Township of Solway	55	0	1.7	1650			½	★	★		★★½
Lavaque Bypass Rd	Minnesota	Saint Louis	City of Hermantown	55	0	1.8	3300		½	★		★		★★½
N Cloquet Rd	Minnesota	Saint Louis	Township of Midway	35	0	1.9	680		½	★	★			★★½
Stark Rd	Minnesota	Saint Louis	Township of Midway	45	0	1.9	590			★	★	½		★★½
Caribou Lake Rd	Minnesota	Saint Louis	Township of Solway	55	0	2.0	195			½	★	★		★★½
W Tischer Rd	Minnesota	Saint Louis	City of Rice Lake	45	1	2.0	560	½		★	½	½		★★½
W Tischer Rd	Minnesota	Saint Louis	City of Rice Lake	45	0	2.0	600			★	★	½		★★½
MN 194	Minnesota	Saint Louis	City of Hermantown	55	1	2.0	4850	½		★		★		★★½
Stinson Ave	Wisconsin	Douglas	City of Superior	35	1	2.0	2800	½		★	★			★★½
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	30	5	2.1	620	★	★		½			★★½
WIS 35	Wisconsin	Douglas	Township of Superior	55	2	2.2	4400	½	½	½		★		★★½
Thompson Hill Rd	Minnesota	Saint Louis	Township of Midway	55	2	2.2	425	★	½			★		★★½
Homestead Rd	Minnesota	Saint Louis	Township of Duluth	55	2	2.4	380	½		½	½	★		★★½
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	45	0	2.7	450			★	★	½		★★½
CTH 61	Minnesota	Saint Louis	Township of Duluth	50	2	2.8	1350	½	½	★		½		★★½

Safety Emphasis Area 1 (Segments)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

Road Name	State	County	Municipality	Speed Limit	Number of KAB Crashes	Length (miles)	AADT	Density of Lane Departure Crashes	Curve Density	Access Density	Edge Risk	Speed Limit	Roadway Width	Total Stars
Industrial Rd	Minnesota	Saint Louis	Township of Grand Lake	50	1	3.0	1100	½		★	½	½		★★½
Arnold Rd	Minnesota	Saint Louis	City of Rice Lake	40	0	3.0	820			★	★	½		★★½
CTH Z	Wisconsin	Douglas	Township of Parkland	55	1	3.3	730	½		½	½	★		★★½
USH 2	Minnesota	Saint Louis	City of Hermantown	60	3	3.4	3250	★		½		★		★★½
CTH C/W	Wisconsin	Douglas	Township of Superior	55	0	3.4	230				½	★	★	★★½
Morris Thomas Rd E	Minnesota	Saint Louis	City of Hermantown	55	0	4.0	1100			★	½	★		★★½
WIS 35	Wisconsin	Douglas	Township of Superior	55	2	4.5	4400	½		★		★		★★½
CTH A	Wisconsin	Douglas	Township of Superior	55	1	5.0	1500	½		½	½	★		★★½
CTH W	Wisconsin	Douglas	Township of Superior	55	0	5.1	2300				½	★	★	★★½
WIS 13	Wisconsin	Douglas	Township of Lakeside	55	2	6.0	1600	½		½	½	★		★★½
Catlin Ave	Wisconsin	Douglas	City of Superior	25	1	0.1	2000	★		½	½			★★
N 12th St	Wisconsin	Douglas	City of Superior	25	0	0.1	1100		★	½	½			★★
MN 23	Minnesota	Saint Louis	City of Duluth	30	1	0.1	2000	★	★					★★
Marina Dr	Wisconsin	Douglas	City of Superior	25	0	0.1	510		★		★			★★
Catlin Ave	Wisconsin	Douglas	City of Superior	25	0	0.2	2000			★	★			★★
E 1st St	Wisconsin	Douglas	City of Superior	25	0	0.2	710				★		★	★★
Chambersburg Ave	Minnesota	Saint Louis	City of Duluth	30	0	0.2	2217			★	★			★★
24th Ave E	Wisconsin	Douglas	City of Superior	35	0	0.2	2400			★	★			★★
Oakes Ave	Wisconsin	Douglas	City of Superior	25	0	0.2	1800			★	★			★★
Old North Shore Rd	Minnesota	Saint Louis	Township of Duluth	35	0	0.3	364		★	½	½			★★
CTH K	Wisconsin	Douglas	Township of Parkland	45	0	0.3	1200				½	½	★	★★
Marina Dr	Wisconsin	Douglas	City of Superior	25	0	0.3	560		★		★			★★
Hill Ave	Wisconsin	Douglas	City of Superior	25	0	0.4	4200			★	★			★★
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	30	0	0.4	2450			★	★			★★
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	55	0	0.4	1466			½	½	★		★★
N Tischer Rd	Minnesota	Saint Louis	Township of Lakewood	40	0	0.5	870			★	½	½		★★
N 58th St E	Wisconsin	Douglas	City of Superior	30	0	0.5	2000			★	★			★★
USH 2	Minnesota	Saint Louis	Township of Solway	60	0	0.5	3250		½	½		★		★★
Midway Rd	Minnesota	Saint Louis	Township of Midway	45	0	0.6	3600		½	★		½		★★
E 3rd St	Wisconsin	Douglas	Township of Parkland	35	0	0.6	2000			★	★			★★
Ugstad Rd	Minnesota	Saint Louis	City of Hermantown	45	0	0.6	2400			★	½	½		★★
Chambersburg Ave	Minnesota	Saint Louis	City of Duluth	30	0	0.6	2217			★	★			★★
Mountain Dr	Minnesota	Saint Louis	City of Proctor	40	0	0.8	680		½	½	½	½		★★
CTH Z	Wisconsin	Douglas	Township of Parkland	55	0	0.8	1000			½	½	★		★★
W Knife River Rd	Minnesota	Saint Louis	Township of Duluth	55	0	1.0	275			½	½	★		★★
Ugstad Rd	Minnesota	Saint Louis	City of Hermantown	40	0	1.0	750				½	½	★	★★
Lismore Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	1.0	540			½	½	★		★★
Lavaque Rd	Minnesota	Saint Louis	Township of Canosia	55	0	1.0	3300			★		★		★★
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	1.0	1850			½	½	★		★★
Martin Rd	Minnesota	Saint Louis	Township of Canosia	45	0	1.0	2585			★	½	½		★★

Safety Emphasis Area 1 (Segments)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

Road Name	State	County	Municipality	Speed Limit	Number of KAB Crashes	Length (miles)	AADT	Density of Lane Departure Crashes	Curve Density	Access Density	Edge Risk	Speed Limit	Roadway Width	Total Stars
Morris Thomas Rd	Minnesota	Saint Louis	City of Hermantown	55	0	1.0	3300			★		★		★★
Morris Thomas Rd	Minnesota	Saint Louis	City of Hermantown	40	0	1.0	3800			★	½	½		★★
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	40	0	1.1	1300		½	★		½		★★
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	55	0	1.3	380			½	½	★		★★
Taft Rd	Minnesota	Saint Louis	Township of Grand Lake	40	0	1.4	680			★	½	½		★★
W Knife River Rd	Minnesota	Saint Louis	Township of Duluth	55	0	1.5	275			½	½	★		★★
Midway Rd	Minnesota	Saint Louis	Township of Canosia	50	0	1.5	1400			★	½	½		★★
Munger Shaw Rd	Minnesota	Saint Louis	Township of Solway	55	0	1.6	305			½	½	★		★★
CTH 61	Minnesota	Saint Louis	City of Duluth	50	2	1.7	2900	★	½			½		★★
CTH C	Wisconsin	Douglas	Township of Superior	55	0	1.9	2800			½	½	★		★★
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	30	0	1.9	348		★		★			★★
Korkki Rd	Minnesota	Saint Louis	Township of Duluth	55	0	2.0	380			½	½	★		★★
Central Ave	Wisconsin	Douglas	City of Superior	55	1	2.0	3300	★				★		★★
Lismore Rd	Minnesota	Saint Louis	Township of Lakewood	55	0	2.0	1250			★		★		★★
MN 194	Minnesota	Saint Louis	Township of Solway	60	0	2.0	4800			★		★		★★
Martin Rd	Minnesota	Saint Louis	Township of Canosia	55	0	2.0	2585			★		★		★★
Lismore Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	2.0	540			½	½	★		★★
Lismore Rd	Minnesota	Saint Louis	Township of Lakewood	55	0	2.0	1250			★		★		★★
Lismore Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	2.0	540			½	½	★		★★
Lismore Rd	Minnesota	Saint Louis	Township of Lakewood	55	0	2.0	1250			★		★		★★
Maple Grove Rd	Minnesota	Saint Louis	City of Hermantown	50	0	2.0	1466			★	½	½		★★
CTH 982	Minnesota	Saint Louis	Township of Grand Lake	50	0	2.2	816		½	★		½		★★
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	55	0	2.3	364			½	½	★		★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	30	0	2.4	1240		½	½	★			★★
Caribou Lake Rd	Minnesota	Saint Louis	Township of Solway	55	1	2.5	1400	½			½	★		★★
CTH 61	Minnesota	Saint Louis	Township of Lakewood	50	2	2.5	2900		½	★		½		★★
WIS 13	Wisconsin	Douglas	Township of Lakeside	55	2	2.9	2000	½		½		★		★★
Bergstrom Rd	Minnesota	Saint Louis	Township of Grand Lake	55	0	2.9	215			★		★		★★
McQuade Rd	Minnesota	Saint Louis	Township of Lakewood	55	0	3.4	760			★		★		★★
Munger Shaw Rd	Minnesota	Saint Louis	Township of Grand Lake	45	1	3.4	1050		½	★		½		★★
Canosia Rd	Minnesota	Saint Louis	Township of Solway	55	0	3.4	1000			★		★		★★
WIS 13	Wisconsin	Douglas	Township of Lakeside	55	2	3.7	1400	½			½	★		★★
CTH 61	Minnesota	Saint Louis	Township of Duluth	50	2	4.8	1350	½		★		½		★★
MN 23	Minnesota	Saint Louis	City of Duluth	30	0	0.1	1650		★		½			★½
Hill Ave	Wisconsin	Douglas	City of Superior	25	0	0.1	4200			½	★			★½
E 5th St	Wisconsin	Douglas	City of Superior	30	0	0.1	750			½	★			★½
Stebner Rd	Minnesota	Saint Louis	City of Hermantown	55	0	0.1	2650				½	★		★½
W Mulberry St	Minnesota	Saint Louis	City of Duluth	30	0	0.2	3000			★	½			★½
W SKyline Pkwy	Minnesota	Saint Louis	City of Proctor	30	0	0.2	4150		★	½				★½
Susquehanna Ave	Wisconsin	Douglas	City of Superior	25	0	0.2	3000			½	★			★½
39th Ave E	Wisconsin	Douglas	City of Superior	25	0	0.2	930			★	½			★½
39th Ave E	Wisconsin	Douglas	City of Superior	25	0	0.2	930			★	½			★½

Safety Emphasis Area 1 (Segments)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

Road Name	State	County	Municipality	Speed Limit	Number of KAB Crashes	Length (miles)	AADT	Density of Lane Departure Crashes	Curve Density	Access Density	Edge Risk	Speed Limit	Roadway Width	Total Stars
Winter St	Wisconsin	Douglas	City of Superior	25	0	0.2	2000			★	½			★½
N 58th St	Wisconsin	Douglas	City of Superior	25	0	0.3	2000			★	½			★½
Canosia Rd	Minnesota	Saint Louis	Township of Solway	55	0	0.3	1650				½	★		★½
E McCuen St	Minnesota	Saint Louis	City of Duluth	30	0	0.3	2300			★	½			★½
Lavaque Rd	Minnesota	Saint Louis	Township of Canosia	55	0	0.3	3300			½		★		★½
CTH 45	Minnesota	Saint Louis	Township of Midway	35	0	0.4	680			½	★			★½
USH 2	Minnesota	Saint Louis	City of Hermantown	60	0	0.4	760			½		★		★½
CTH 61	Minnesota	Saint Louis	City of Duluth	50	0	0.4	2900		★			½		★½
USH 2	Minnesota	Saint Louis	Township of Solway	60	0	0.5	4800		½			★		★½
39th Ave E	Wisconsin	Douglas	City of Superior	25	0	0.6	930			★	½			★½
Woodlawn Rd	Wisconsin	Douglas	City of Superior	30	0	0.6	1400		★		½			★½
Ugstad Rd	Minnesota	Saint Louis	City of Hermantown	35	0	0.9	750			★	½			★½
Morris Thomas Rd	Minnesota	Saint Louis	City of Hermantown	45	0	1.0	3300			★		½		★½
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	50	0	1.0	1466			½	½	½		★½
W Arrowhead Rd	Minnesota	Saint Louis	City of Hermantown	45	0	1.0	2760			★		½		★½
Lismore Rd	Minnesota	Saint Louis	Township of Duluth	55	0	1.0	1250				½	★		★½
Roberg Rd	Minnesota	Saint Louis	Township of Lakewood	40	0	1.0	450			½	½	½		★½
N Cloquet Rd	Minnesota	Saint Louis	Township of Midway	50	0	1.0	1950			½	½	½		★½
Airbase Rd	Minnesota	Saint Louis	City of Hermantown	40	0	1.0	2100			★		½		★½
MN 194	Minnesota	Saint Louis	City of Hermantown	55	0	1.0	4850			½		★		★½
CTH 73	Minnesota	Saint Louis	Township of Midway	30	0	1.2	510		★	½				★½
CTH W	Wisconsin	Douglas	Village of Oliver	55	0	1.2	2300				½	★		★½
CTH A	Wisconsin	Douglas	Township of Superior	55	0	1.8	2900			½		★		★½
Helm Rd	Minnesota	Saint Louis	Township of Grand Lake	50	0	2.0	720			★		½		★½
MN 23	Minnesota	Saint Louis	City of Duluth	50	0	2.2	2000		½	½		½		★½
MN 194	Minnesota	Saint Louis	Township of Solway	60	0	2.6	4800		½			★		★½
Martin Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	3.0	4950			½		★		★½
USH 2	Minnesota	Saint Louis	Township of Solway	60	1	3.4	2500	½				★		★½
Lavaque Rd	Minnesota	Saint Louis	Township of Canosia	55	0	4.0	3300			½		★		★½
Chambersburg Ave	Minnesota	Saint Louis	City of Duluth	30	0	0.0	2217				★			★
S 59th Ave W	Minnesota	Saint Louis	City of Duluth	30	0	0.1	943				★			★
Caribou Lake Rd	Minnesota	Saint Louis	Township of Grand Lake	55	0	0.1	265					★		★
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	30	0	0.1	4250				★			★
N 12th St	Wisconsin	Douglas	City of Superior	25	0	0.1	1100			½	½			★
N 5th St	Wisconsin	Douglas	City of Superior	25	0	0.1	1000				★			★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	30	0	0.2	4150		★					★
Catlin Ave	Wisconsin	Douglas	City of Superior	25	0	0.2	1900			½	½			★
N 12th St	Wisconsin	Douglas	City of Superior	25	0	0.2	1100			½	½			★
Homestead Rd	Minnesota	Saint Louis	Township of Duluth	30	0	0.2	380			½	½			★
Catlin Ave	Wisconsin	Douglas	City of Superior	25	0	0.2	2100			★				★

Safety Emphasis Area 1 (Segments)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

Road Name	State	County	Municipality	Speed Limit	Number of KAB Crashes	Length (miles)	AADT	Density of Lane Departure Crashes	Curve Density	Access Density	Edge Risk	Speed Limit	Roadway Width	Total Stars
N 56th St	Wisconsin	Douglas	City of Superior	25	0	0.2	2800			★	★			★
Stinson Ave	Wisconsin	Douglas	City of Superior	35	1	0.2	2400			★	★			★
Midway Rd	Minnesota	Saint Louis	Township of Midway	45	0	0.2	3600			★		★		★
E 18th St	Wisconsin	Douglas	City of Superior	30	0	0.3	800			★	★			★
Winter St	Wisconsin	Douglas	City of Superior	25	0	0.3	1400			★				★
Main St	Wisconsin	Douglas	City of Superior	25	0	0.3	1000				★			★
N Tischer Rd	Minnesota	Saint Louis	Township of Lakewood	40	0	0.4	1250		★			★		★
MN 23	Wisconsin	Douglas	Township of Superior	30	0	0.4	2000		★	★				★
Martin Rd	Minnesota	Saint Louis	City of Rice Lake	50	0	0.5	3600			★		★		★
Winter St	Wisconsin	Douglas	City of Superior	25	0	0.5	1000			★				★
Stinson Ave	Wisconsin	Douglas	City of Superior	35	1	0.5	2500			★	★			★
Winter St	Wisconsin	Douglas	City of Superior	25	0	0.6	1800			★	★			★
42nd Ave	Wisconsin	Douglas	City of Superior	35	0	1.3	800		★		★			★
Bardon Ave	Wisconsin	Douglas	City of Superior	35	0	1.5	1400				★			★
Maple Grove Rd	Minnesota	Saint Louis	City of Hermantown	50	0	1.6	4450			★		★		★
CTH B	Wisconsin	Douglas	Township of Superior	45	0	2.8	2500			★		★		★
Susquehanna Ave	Wisconsin	Douglas	City of Superior	25	0	0.0	3000				★			★
E Union St	Wisconsin	Douglas	Village of Oliver	25	0	0.0	2300				★			★
Winter St	Wisconsin	Douglas	City of Superior	25	0	0.1	710				★			★
Catlin Ave	Wisconsin	Douglas	City of Superior	25	0	0.1	1100				★			★
N 12th St	Wisconsin	Douglas	City of Superior	25	0	0.1	1100				★			★
E St	Wisconsin	Douglas	City of Superior	25	0	0.1	350			★				★
Hill Ave	Wisconsin	Douglas	City of Superior	35	0	0.1	3300				★			★
N 56th St	Wisconsin	Douglas	City of Superior	25	0	0.1	2800				★			★
Midway Rd	Minnesota	Saint Louis	Township of Canosia	40	0	0.1	4200					★		★
Port Terminal Dr	Minnesota	Saint Louis	City of Duluth	30	0	0.2	830				★			★
Hill Ave	Wisconsin	Douglas	City of Superior	35	0	1.0	3300				★			★
Lismore Rd	Minnesota	Saint Louis	Township of Lakewood	50	0	2.0	1600					★		★
Catlin Ave	Wisconsin	Douglas	City of Superior	25	0	0.0	2100							
Grand Ave	Wisconsin	Douglas	City of Superior	10	0	0.1	1000							
Old N Shore Rd	Minnesota	Saint Louis	Township of Lakewood	30	0	0.1	345							
Catlin Ave	Wisconsin	Douglas	City of Superior	25	0	0.2	1100							
WIS 35	Wisconsin	Douglas	Township of Superior	35	2	0.7	4400							

Safety Emphasis Area 1 (Curves)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

RoadName	State	County	Municipality	Lat/Long	Speed Limit (mph)	Curve Advisory Speed (mph)	Length (miles)	AADT	Occurance of KAB Crashes on Curve	Intersection Or Visual Trap	Curve Radii	Horizontal Curve Speed Differential	Shoulder/Surface Type	Total Stars
CTH C	Wisconsin	Douglas	Township of Superior	46°35'25.04"N, 92° 7'58.90"W	55	15	3.7	430	½	★	★	★	½	★★★★
W Tischer Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'49.13"N, 92° 0'19.37"W	40	20	2.0	870	½	★	★	★	½	★★★★
E McCuen St	Minnesota	Saint Louis	City of Duluth	46°39'22.28"N, 92°12'30.51"W	35	25	0.6	2300	½	½	★	★	½	★★★½
CTH 8	Minnesota	Saint Louis	Township of Grand Lake	46°55'24.22"N, 92°24'46.07"W	55	No Posting	0.8	120		½	★	★	★	★★★½
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	46°57'22.91"N, 91°53'59.42"W	55	30	1.3	380		★	★	★	½	★★★½
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	46°54'3.49"N, 91°54'2.98"W	55	No Posting	0.2	364	½	½	★	★	½	★★★½
Industrial Rd	Minnesota	Saint Louis	Township of Grand Lake	46°53'37.03"N, 92°21'56.59"W	50	No Posting	0.1	1000	½	½	★	★	½	★★★½
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	46°54'11.29"N, 91°54'12.54"W	55	15	0.3	364		★	★	★	½	★★★½
Occidental Blvd	Minnesota	Saint Louis	City of Duluth	46°50'38.96"N, 92° 0'37.28"W	30	20	0.4	348			★	★	★	★★★
CTH W	Wisconsin	Douglas	Township of Superior	46°33'7.90"N, 92°14'49.97"W	55	No Posting	3.7	270			★	★	★	★★★
N 58th St	Wisconsin	Douglas	City of Superior	46°40'11.71"N, 92° 4'37.88"W	30	15	1.0	2000	½		★	★	½	★★★
W SKyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'30.81"N, 92°13'1.44"W	30	15	0.2	4150	½	½	★	★		★★★
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	46°48'27.56"N, 92°20'0.41"W	50	25	1.1	1466		½	★	★	½	★★★
E Shilhon Rd	Minnesota	Saint Louis	Township of Duluth	46°57'22.89"N, 91°52'43.28"W	55	25	1.0	380		½	★	★	½	★★★
Becks Rd	Minnesota	Saint Louis	Township of Midway	46°42'15.72"N, 92°17'31.69"W	50	40	1.1	670	½		★	★	½	★★★
Caribou Lake Rd	Minnesota	Saint Louis	Township of Solway	46°51'38.82"N, 92°19'21.75"W	55	No Posting	1.2	265	½	½	½	★	½	★★★
Munger Shaw Rd	Minnesota	Saint Louis	Township of Grand Lake	46°54'46.80"N, 92°20'38.89"W	45	No Posting	3.4	1050		★	½	★	½	★★★
CTH C	Wisconsin	Douglas	Township of Superior	46°34'48.28"N, 92°12'6.64"W	55	20	3.2	430		★	½	★	½	★★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'43.40"N, 92° 7'15.66"W	30	No Posting	1.7	1580	½	★	★			★★½
CTH W	Wisconsin	Douglas	Township of Superior	46°33'14.72"N, 92°14'41.78"W	55	No Posting	3.7	270			½	★	★	★★½
Occidental Blvd	Minnesota	Saint Louis	City of Duluth	46°50'29.15"N, 92° 0'36.58"W	30	20	0.4	348			½	★	★	★★½
CTH W	Wisconsin	Douglas	Township of Superior	46°32'43.85"N, 92°14'38.17"W	55	25	3.7	270			½	★	★	★★½
N 58th St	Wisconsin	Douglas	City of Superior	46°40'9.80"N, 92° 4'40.55"W	30	15	1.0	2000			★	★	½	★★½
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	46°47'22.30"N, 92°10'31.24"W	40	No Posting	1.0	2800	½	½	★		½	★★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°48'43.37"N, 92° 5'26.53"W	30	15	0.7	1450			★	★	½	★★½
S Chicago Ave	Wisconsin	Douglas	Village of Oliver	46°38'42.53"N, 92°11'32.99"W	55	25	1.3	2300			★	★	½	★★½
Becks Rd	Minnesota	Saint Louis	Township of Midway	46°41'56.24"N, 92°16'47.16"W	50	No Posting	1.1	670			★	★	½	★★½
Minnesota Ave	Minnesota	Saint Louis	City of Duluth	46°43'41.96"N, 92° 3'8.90"W	30	No Posting	1.0	1850	½	½	★		½	★★½
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	46°48'28.32"N, 92°20'19.68"W	50	25	1.1	1466			★	★	½	★★½
42nd Ave	Wisconsin	Douglas	City of Superior	46°39'29.00"N, 92° 3'59.28"W	55	35	0.5	970		½	½	★	½	★★½
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	46°48'34.09"N, 92°20'15.47"W	50	25	1.1	1466			★	★	½	★★½
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'21.35"N, 92°17'27.23"W	40	25	2.0	2000			★	★	½	★★½
CTH A	Wisconsin	Douglas	Township of Superior	46°29'38.66"N, 92° 4'20.00"W	55	35	3.3	930		½	½	★	½	★★½
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'56.39"N, 91°54'41.08"W	55	No Posting	0.9	90			★	★	½	★★½
St. Louis River Rd	Minnesota	Saint Louis	City of Hermantown	46°45'50.88"N, 92°14'59.42"W	45	No Posting	1.5	531		½	★	★		★★½
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'40.46"N, 91°54'21.35"W	55	No Posting	0.9	90			★	★	½	★★½
Korkki Rd	Minnesota	Saint Louis	Township of Duluth	46°57'48.95"N, 91°52'43.39"W	55	25	2.0	380			★	★	½	★★½
Swan Lake Rd	Minnesota	Saint Louis	City of Hermantown	46°49'49.50"N, 92°11'2.04"W	55	30	0.7	1400		½	½	★	½	★★½
CTH A	Wisconsin	Douglas	Township of Superior	46°37'49.02"N, 92° 3'58.80"W	55	20	1.3	730			★	★	½	★★½
CTH W	Wisconsin	Douglas	Township of Superior	46°33'17.08"N, 92°14'27.44"W	55	No Posting	3.7	270			½	★	★	★★½
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'55.53"N, 91°54'34.61"W	55	No Posting	0.9	90			★	★	½	★★½
S Chicago Ave	Wisconsin	Douglas	Village of Oliver	46°38'53.05"N, 92°11'52.46"W	55	25	1.3	2300		½	½	★	½	★★½
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'43.44"N, 92° 7'23.31"W	30	No Posting	1.7	1580	½	½	★			★★

Safety Emphasis Area 1 (Curves)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

RoadName	State	County	Municipality	Lat/Long	Speed Limit (mph)	Curve Advisory Speed (mph)	Length (miles)	AADT	Occurance of KAB Crashes on Curve	Intersection Or Visual Trap	Curve Radii	Horizontal Curve Speed Differential	Shoulder/Surface Type	Total Stars
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°42'53.93"N, 92°13'10.82"W	30	No Posting	1.8	680		☆	★		☆	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'14.71"N, 92° 0'38.94"W	30	No Posting	1.4	348	☆		★		☆	★★
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'39.58"N, 91°59'15.54"W	45	No Posting	3.6	2000			☆	★	☆	★★
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'20.41"N, 91°59'19.06"W	45	No Posting	3.6	2000			☆	★	☆	★★
CTH A	Wisconsin	Douglas	Township of Superior	46°38'3.17"N, 92° 4'3.44"W	55	20	1.3	730			☆	★	☆	★★
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°50'29.00"N, 92° 0'20.38"W	45	No Posting	3.6	2000			☆	★	☆	★★
Observation Rd	Minnesota	Saint Louis	City of Duluth	46°47'12.19"N, 92° 7'19.38"W	40	35	1.1	1100			★	☆	☆	★★
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'59.53"N, 91°54'46.40"W	55	20	0.9	90			☆	★	☆	★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'52.49"N, 92°12'11.39"W	30	No Posting	2.4	1240		☆	★		☆	★★
CTH B	Wisconsin	Douglas	Township of Superior	46°31'58.46"N, 92° 9'3.79"W	45	35	5.8	530		☆	☆	☆	☆	★★
Port Terminal Dr	Minnesota	Saint Louis	City of Duluth	46°45'10.57"N, 92° 5'56.58"W	30	25	0.6	1900		☆	★	☆		★★
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	46°48'32.48"N, 92°20'8.32"W	50	25	1.1	1466			☆	★	☆	★★
CTH B	Wisconsin	Douglas	Township of Superior	46°32'11.47"N, 92° 8'39.41"W	45	30	5.8	530			☆	★	☆	★★
CTH A	Wisconsin	Douglas	Township of Superior	46°30'12.34"N, 92° 4'1.10"W	55	35	3.3	930			☆	★	☆	★★
CTH C	Wisconsin	Douglas	Township of Superior	46°36'17.12"N, 92° 7'27.52"W	55	35	3.7	430			☆	★	☆	★★
CTH C	Wisconsin	Douglas	Township of Superior	46°34'48.80"N, 92°12'12.50"W	55	20	3.2	430			☆	★	☆	★★
OLD HWY 2	Minnesota	Saint Louis	City of Hermantown	46°46'42.97"N, 92°16'30.08"W	55	No Posting	0.3	760			☆	★	☆	★★
CTH C/W	Wisconsin	Douglas	Township of Superior	46°35'40.31"N, 92°17'12.23"W	55	No Posting	3.4	230			☆	★	☆	★★
CTH 61	Minnesota	Saint Louis	City of Duluth	46°50'31.61"N, 91°59'46.82"W	50	No Posting	0.4	2900			★	★		★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'57.20"N, 92°12'7.26"W	30	No Posting	2.4	1240		☆	★		☆	★★
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'17.34"N, 92°16'59.43"W	40	No Posting	2.0	2000	☆		★		☆	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'30.48"N, 92°15'40.08"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'27.34"N, 92°14'30.52"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'15.10"N, 92°14'19.14"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'16.48"N, 92°14'12.40"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'12.42"N, 92°14'7.36"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'2.00"N, 92°14'6.74"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'5.31"N, 92°13'56.91"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'4.98"N, 92°13'54.56"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Wisconsin	Douglas	Township of Parkland	46°41'7.81"N, 92°13'53.75"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'6.80"N, 92°14'1.09"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'9.88"N, 92°13'54.45"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'13.85"N, 92°13'52.33"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'23.86"N, 92°13'51.53"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'52.23"N, 92°13'49.58"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°42'7.28"N, 92°13'43.49"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°42'10.83"N, 92°13'22.03"W	30	No Posting	3.5	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°42'13.59"N, 92°14'0.06"W	30	No Posting	3.5	680			★		★	★★
McQuade Rd	Minnesota	Saint Louis	Township of Lakewood	46°53'10.57"N, 91°55'14.48"W	30	No Posting	0.4	345	☆		★		☆	★★
Minnesota Ave	Minnesota	Saint Louis	City of Duluth	46°43'50.54"N, 92° 3'19.92"W	30	No Posting	1.0	1850		☆	★		☆	★★
Minnesota Ave	Minnesota	Saint Louis	City of Duluth	46°43'46.35"N, 92° 3'0.70"W	30	No Posting	1.0	1850		☆	★		☆	★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'24.45"N, 92° 7'38.55"W	30	No Posting	1.7	1580		☆	★			★☆
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'41.36"N, 92° 7'16.51"W	30	No Posting	1.7	1580	☆		★			★☆

Safety Emphasis Area 1 (Curves)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

RoadName	State	County	Municipality	Lat/Long	Speed Limit (mph)	Curve Advisory Speed (mph)	Length (miles)	AADT	Occurance of KAB Crashes on Curve	Intersection Or Visual Trap	Curve Radii	Horizontal Curve Speed Differential	Shoulder/Surface Type	Total Stars
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'31.91"N, 92° 0'49.93"W	30	No Posting	1.4	348			★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'54.58"N, 92° 0'37.47"W	30	No Posting	1.4	348			★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'37.43"N, 92° 0'50.40"W	30	No Posting	1.4	348			★		★	★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'23.51"N, 92°13'11.14"W	30	No Posting	1.8	680			★		★	★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'22.99"N, 92°13'17.74"W	30	No Posting	1.8	680			★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'48.29"N, 92° 0'31.15"W	30	No Posting	1.4	348			★		★	★★
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	46°49'14.32"N, 92° 8'59.53"W	30	No Posting	1.2	3000		★	★		★	★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'17.59"N, 92°13'10.82"W	30	No Posting	1.8	680			★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'37.71"N, 92° 0'53.23"W	30	No Posting	1.4	348			★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'38.94"N, 92° 0'53.12"W	30	No Posting	1.4	348			★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'39.74"N, 92° 0'36.34"W	30	No Posting	1.4	348			★		★	★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°42'57.02"N, 92°13'20.75"W	30	No Posting	1.8	680		★	★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'33.51"N, 92° 0'49.84"W	30	No Posting	1.4	348			★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'34.99"N, 92° 0'51.90"W	30	No Posting	1.4	348			★		★	★★
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	46°54'1.71"N, 91°53'51.94"W	30	No Posting	0.3	364			★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'2.51"N, 92° 0'43.88"W	30	No Posting	1.4	348			★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'28.76"N, 92° 0'46.21"W	30	No Posting	1.4	348			★		★	★★
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°48'30.26"N, 92° 5'37.26"W	30	No Posting	0.7	1450		★	★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'16.37"N, 92° 0'45.02"W	30	No Posting	1.4	348			★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'22.24"N, 92° 0'48.34"W	30	No Posting	1.4	348			★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'55.05"N, 92° 0'41.71"W	30	No Posting	1.4	348			★		★	★★
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°48'20.68"N, 92° 5'50.85"W	30	No Posting	0.7	1450			★		★	★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'10.53"N, 92°13'11.58"W	30	No Posting	1.8	680			★		★	★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'44.50"N, 92° 0'37.97"W	30	No Posting	1.4	348			★		★	★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°42'21.20"N, 92°13'21.94"W	30	No Posting	1.8	680			★		★	★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'13.88"N, 92°13'6.31"W	30	No Posting	1.8	680			★		★	★★
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°42'1.05"N, 92°13'38.55"W	30	No Posting	3.5	680			★		★	★★
Observation Rd	Minnesota	Saint Louis	City of Duluth	46°46'58.99"N, 92° 7'21.01"W	40	No Posting	1.1	1100			★		★	★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°42'12.21"N, 92°13'17.02"W	30	No Posting	1.8	680			★		★	★★
Saginaw Rd	Minnesota	Saint Louis	Township of Solway	46°51'4.46"N, 92°25'35.71"W	40	No Posting	0.4	225		★	★		★	★★
S Chicago Ave	Wisconsin	Douglas	Village of Oliver	46°38'45.85"N, 92°11'45.41"W	55	25	1.3	2300				★	★	★★
CTH E	Wisconsin	Douglas	Township of Parkland	46°38'38.57"N, 91°59'46.42"W	45	40	1.1	1200		★		★	★	★★
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	46°48'14.84"N, 92° 8'11.60"W	30	No Posting	0.3	3000		★	★		★	★★
E McCuen St	Minnesota	Saint Louis	City of Duluth	46°39'26.35"N, 92°13'0.23"W	35	30	0.6	2300			★	★	★	★★
CTH B	Wisconsin	Douglas	Township of Superior	46°31'57.26"N, 92°12'11.99"W	45	35	5.8	530			★	★	★	★★
CTH B	Wisconsin	Douglas	Township of Superior	46°32'11.19"N, 92° 7'49.45"W	45	35	5.8	530			★	★	★	★★
CTH B	Wisconsin	Douglas	Township of Superior	46°32'8.73"N, 92° 7'44.30"W	45	35	5.8	530			★	★	★	★★
Helberg Dr	Minnesota	Saint Louis	City of Duluth	46°45'50.07"N, 92° 6'37.48"W	30	20	0.7	830			★	★		★★
WIS 35	Wisconsin	Douglas	Township of Superior	46°31'57.27"N, 92° 7'21.87"W	55	35	4.3	4400			★	★		★★
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'18.63"N, 92°17'11.96"W	40	30	2.0	2000				★	★	★★
Lismore Rd	Minnesota	Saint Louis	Township of Lakewood	46°55'51.74"N, 92° 0'20.61"W	50	40	2.0	1600		★		★		★★
CTH 61	Minnesota	Saint Louis	City of Duluth	46°50'35.13"N, 91°59'44.54"W	50	No Posting	0.4	2900			★	★		★★
Stebner Rd	Minnesota	Saint Louis	City of Hermantown	46°49'57.31"N, 92°11'40.95"W	55	No Posting	0.5	2350			★	★		★★

Safety Emphasis Area 1 (Curves)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

RoadName	State	County	Municipality	Lat/Long	Speed Limit (mph)	Curve Advisory Speed (mph)	Length (miles)	AADT	Occurance of KAB Crashes on Curve	Intersection Or Visual Trap	Curve Radii	Horizontal Curve Speed Differential	Shoulder/Surface Type	Total Stars
CTH 61	Minnesota	Saint Louis	Township of Lakewood	46°52'50.20"N, 91°55'20.60"W	50	No Posting	2.5	2900			½	★		★½
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°44'45.00"N, 92°11'27.45"W	30	No Posting	2.4	1240		½	½		½	★½
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'8.36"N, 92°10'28.15"W	30	No Posting	2.1	620	★		½			★½
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'42.89"N, 92°15'26.11"W	30	No Posting	3.5	680			½		★	★½
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'36.74"N, 92°15'14.06"W	30	No Posting	3.5	680			½		★	★½
Industrial Rd	Minnesota	Saint Louis	Township of Grand Lake	46°53'40.33"N, 92°22'4.15"W	50	No Posting	3.0	1100		½	½		½	★½
Munger Shaw Rd	Minnesota	Saint Louis	Township of Grand Lake	46°59'15.88"N, 92°19'46.91"W	55	No Posting	4.7	680		½	½		½	★½
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	46°50'26.50"N, 92° 6'23.05"W	30	No Posting	2.4	4250		½	½		½	★½
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	46°49'46.66"N, 92° 6'40.46"W	30	No Posting	2.4	4250		½	½		½	★½
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	46°49'41.87"N, 92° 6'22.84"W	30	No Posting	2.4	4250	½		½		½	★½
CTH W	Wisconsin	Douglas	Township of Superior	46°32'50.16"N, 92°14'45.21"W	55	No Posting	3.7	270			½		★	★½
CTH W	Wisconsin	Douglas	Township of Superior	46°33'35.00"N, 92°14'30.95"W	55	No Posting	3.7	270			½		★	★½
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°44'56.20"N, 92°11'9.49"W	30	No Posting	2.4	1240			★		½	★½
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'34.37"N, 92°11'26.72"W	30	No Posting	2.1	620	½		★			★½
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'9.47"N, 92°11'12.63"W	30	No Posting	2.1	620	½		★			★½
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'38.65"N, 92° 9'46.48"W	30	No Posting	1.2	1975	½		★			★½
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'47.15"N, 92° 9'36.87"W	30	No Posting	1.2	1975	½		★			★½
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'46.07"N, 92° 9'20.48"W	30	No Posting	1.2	1975	½		★			★½
W Skyline	Minnesota	Saint Louis	Township of Midway	46°41'30.87"N, 92°16'17.07"W	30	No Posting	0.5	680			★		½	★½
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'18.23"N, 92°17'25.92"W	40	No Posting	2.0	2000			★		½	★½
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'8.05"N, 92°16'59.29"W	40	No Posting	2.0	2000			★		½	★½
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'5.56"N, 92°16'55.72"W	40	No Posting	2.0	2000			★		½	★½
CTH 73	Minnesota	Saint Louis	Township of Midway	46°42'17.77"N, 92°17'31.48"W	30	No Posting	1.2	510	½		★			★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'48.33"N, 92° 1'55.93"W	30	No Posting	1.9	348			★		½	★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'49.35"N, 92° 1'52.94"W	30	No Posting	1.9	348			★		½	★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'53.13"N, 92° 1'52.14"W	30	No Posting	1.9	348			★		½	★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'54.64"N, 92° 1'49.80"W	30	No Posting	1.9	348			★		½	★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'58.50"N, 92° 1'47.31"W	30	No Posting	1.9	348			★		½	★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'58.61"N, 92° 1'40.72"W	30	No Posting	1.9	348			★		½	★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'5.88"N, 92° 1'32.16"W	30	No Posting	1.9	348			★		½	★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'8.77"N, 92° 1'29.98"W	30	No Posting	1.9	348			★		½	★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'29.03"N, 92° 1'2.71"W	30	No Posting	1.9	348			★		½	★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'32.29"N, 92° 1'3.17"W	30	No Posting	1.9	348			★		½	★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'36.42"N, 92° 0'58.02"W	30	No Posting	1.9	348			★		½	★½
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'40.21"N, 92° 0'59.25"W	30	No Posting	1.9	348			★		½	★½
McQuade Rd	Minnesota	Saint Louis	Township of Lakewood	46°53'18.54"N, 91°55'14.80"W	30	No Posting	0.2	345			★		½	★½
McQuade Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'55.59"N, 91°55'14.39"W	30	No Posting	0.4	345			★		½	★½
Helberg Dr	Minnesota	Saint Louis	City of Duluth	92° 6'33.22"W, 92° 6'26.05"W	30	No Posting	0.7	830		½	★			★½
E 3rd St	Wisconsin	Douglas	City of Superior	46°40'39.14"N, 92° 0'38.61"W	35	No Posting	0.4	2000			★		½	★½
E 3rd St	Wisconsin	Douglas	City of Superior	46°40'12.54"N, 92° 0'10.67"W	35	No Posting	0.3	2000			★		½	★½
Marina Dr	Wisconsin	Douglas	City of Superior	46°43'8.86"N, 92° 3'45.92"W	25	No Posting	0.1	510			★		½	★½
Marina Dr	Wisconsin	Douglas	City of Superior	46°43'19.33"N, 92° 3'41.90"W	25	No Posting	0.6	510			★		½	★½
Marina Dr	Wisconsin	Douglas	City of Superior	46°43'10.93"N, 92° 3'31.32"W	25	No Posting	0.6	510			★		½	★½

Safety Emphasis Area 1 (Curves)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

RoadName	State	County	Municipality	Lat/Long	Speed Limit (mph)	Curve Advisory Speed (mph)	Length (miles)	AADT	Occurance of KAB Crashes on Curve	Intersection Or Visual Trap	Curve Radii	Horizontal Curve Speed Differential	Shoulder/Surface Type	Total Stars
Marina Dr	Wisconsin	Douglas	City of Superior	46°43'10.32"N, 92° 3'23.85"W	25	No Posting	0.6	510			★		☆	★☆
Marina Dr	Wisconsin	Douglas	City of Superior	46°43'22.20"N, 92° 4'2.82"W	25	No Posting	0.3	560			★		☆	★☆
Garfield Ave	Wisconsin	Douglas	City of Superior	46°43'20.90"N, 92° 7'2.07"W	25	No Posting	0.5	2100		☆	★			★☆
N 12th St	Wisconsin	Douglas	City of Superior	46°43'27.00"N, 92° 4'38.78"W	25	No Posting	0.1	1100			★		☆	★☆
WIS 35	Wisconsin	Douglas	Township of Superior	46°32'5.89"N, 92° 7'19.04"W	55	No Posting	4.3	4400	★	☆				★☆
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'27.20"N, 92° 7'25.88"W	30	No Posting	1.7	1580			★			★
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	46°47'22.55"N, 92°10'44.21"W	40	No Posting	1.0	2800			☆		☆	★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'5.93"N, 92°13'12.19"W	30	No Posting	1.8	680			☆		☆	★
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'26.14"N, 91°59'19.72"W	45	No Posting	3.6	2000			☆		☆	★
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'41.57"N, 91°54'24.91"W	55	No Posting	0.9	90			☆		☆	★
Saginaw Rd	Minnesota	Saint Louis	Township of Solway	46°50'55.58"N, 92°25'26.71"W	40	No Posting	0.4	225			☆		☆	★
Observation Rd	Minnesota	Saint Louis	City of Duluth	46°47'9.32"N, 92° 8'2.30"W	40	No Posting	1.1	1100			☆		☆	★
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°50'48.98"N, 92° 0'9.51"W	45	No Posting	3.6	2000			☆		☆	★
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°51'23.60"N, 91°59'57.11"W	45	No Posting	3.6	2000			☆		☆	★
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'50.82"N, 91°59'3.15"W	45	No Posting	3.6	2000			☆		☆	★
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	46°48'24.11"N, 92° 8'10.86"W	30	No Posting	0.3	3000			☆		☆	★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°44'27.71"N, 92°11'41.00"W	30	No Posting	2.4	1240			☆		☆	★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°44'30.28"N, 92°11'34.91"W	30	No Posting	2.4	1240			☆		☆	★
E McCuen St	Minnesota	Saint Louis	City of Duluth	46°39'28.35"N, 92°12'51.73"W	35	No Posting	0.6	2300			☆		☆	★
MN 23	Minnesota	Saint Louis	City of Duluth	46°39'10.70"N, 92°13'35.26"W	50	No Posting	2.2	2000		☆	☆			★
MN 23	Minnesota	Saint Louis	City of Duluth	46°39'35.30"N, 92°16'13.98"W	30	No Posting	0.1	2000	☆		☆			★
MN 23	Minnesota	Saint Louis	City of Duluth	46°39'39.24"N, 92°16'50.42"W	30	No Posting	0.1	1650		☆	☆			★
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'21.86"N, 92°17'53.56"W	40	No Posting	2.0	2000			☆		☆	★
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'27.79"N, 92°17'39.10"W	40	No Posting	2.0	2000			☆		☆	★
N Cloquet Rd	Minnesota	Saint Louis	Township of Midway	46°43'32.24"N, 92°14'58.75"W	35	No Posting	1.9	680			☆		☆	★
Bergstrom Rd	Minnesota	Saint Louis	Township of Grand Lake	46°55'23.69"N, 92°23'10.28"W	55	No Posting	2.9	215		☆	☆			★
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	46°47'19.17"N, 92°13'11.89"W	40	No Posting	1.2	750			☆		☆	★
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	46°47'6.54"N, 92°12'47.89"W	40	No Posting	1.1	1300			☆		☆	★
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'13.98"N, 92° 2'43.46"W	30	No Posting	0.4	348			☆		☆	★
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'19.23"N, 92° 2'39.88"W	30	No Posting	0.4	348			☆		☆	★
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'38.92"N, 92° 2'20.46"W	30	No Posting	1.9	348			☆		☆	★
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'4.14"N, 92° 1'35.43"W	30	No Posting	1.9	348			☆		☆	★
N Tischer Rd	Minnesota	Saint Louis	Township of Lakewood	46°56'17.27"N, 92° 0'20.56"W	40	No Posting	0.4	1250		☆	☆			★
Old North Shore Rd	Minnesota	Saint Louis	Township of Duluth	46°54'15.67"N, 91°53'59.03"W	35	35	0.3	364			☆		☆	★
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	46°50'30.43"N, 92° 6'39.99"W	30	No Posting	2.4	4250			☆		☆	★
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	46°48'49.96"N, 92° 8'39.11"W	30	No Posting	1.2	3000			☆		☆	★
Port Terminal Dr	Minnesota	Saint Louis	City of Duluth	46°45'8.15"N, 92° 6'10.74"W	30	No Posting	0.6	1900		☆	☆			★
Minnesota Ave	Minnesota	Saint Louis	City of Duluth	46°43'57.04"N, 92° 3'11.79"W	30	No Posting	1.0	1850			☆		☆	★
Minnesota Ave	Minnesota	Saint Louis	City of Duluth	46°43'41.76"N, 92° 2'52.54"W	30	No Posting	1.0	1850			☆		☆	★
42nd Ave	Wisconsin	Douglas	City of Superior	46°40'14.75"N, 92° 2'46.64"W	35	No Posting	1.3	800			☆		☆	★
E 3rd St	Wisconsin	Douglas	City of Superior	46°40'33.47"N, 92° 0'36.35"W	35	No Posting	0.4	2000			☆		☆	★
Munger Shaw Rd	Minnesota	Saint Louis	Township of Grand Lake	46°52'40.76"N, 92°20'36.96"W	45	No Posting	3.4	1050			☆		☆	★
Munger Shaw Rd	Minnesota	Saint Louis	Township of Grand Lake	46°54'40.85"N, 92°20'18.83"W	45	No Posting	3.4	1050			☆		☆	★

Safety Emphasis Area 1 (Curves)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

RoadName	State	County	Municipality	Lat/Long	Speed Limit (mph)	Curve Advisory Speed (mph)	Length (miles)	AADT	Occurance of KAB Crashes on Curve	Intersection Or Visual Trap	Curve Radii	Horizontal Curve Speed Differential	Shoulder/Surface Type	Total Stars
CTH 61	Minnesota	Saint Louis	Township of Lakewood	46°52'50.16"N, 91°55'29.81"W	50	No Posting	2.5	2900		★	★			★
Lismore Rd	Minnesota	Saint Louis	Township of Lakewood	46°56'17.25"N, 92° 0'20.12"W	55	No Posting	2.0	1250		★	★			★
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'2.16"N, 92°11'5.74"W	30	No Posting	2.1	620			★			★
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'9.64"N, 92°11'16.63"W	30	No Posting	2.1	620			★			★
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'12.57"N, 92°11'15.58"W	30	No Posting	2.1	620			★			★
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'8.34"N, 92°11'9.07"W	30	No Posting	2.1	620			★			★
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'6.42"N, 92°11'7.01"W	30	No Posting	2.1	620			★			★
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'35.05"N, 92° 9'48.23"W	30	No Posting	1.2	1975			★			★
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'37.37"N, 92° 9'40.14"W	30	No Posting	1.2	1975			★			★
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'41.12"N, 92° 9'33.96"W	30	No Posting	1.2	1975			★			★
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'44.59"N, 92° 9'27.63"W	30	No Posting	1.2	1975			★			★
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'44.49"N, 92° 9'23.06"W	30	No Posting	1.2	1975			★			★
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'56.52"N, 92° 9'2.67"W	30	No Posting	1.2	1975			★			★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'33.38"N, 92°13'16.73"W	30	No Posting	0.2	4150			★			★
Woodland Ave	Minnesota	Saint Louis	City of Duluth	46°51'44.29"N, 92° 4'26.58"W	30	No Posting	0.5	1724			★			★
Woodland Ave	Minnesota	Saint Louis	City of Duluth	46°51'41.05"N, 92° 4'34.83"W	30	No Posting	0.5	1724			★			★
Helberg Dr	Minnesota	Saint Louis	City of Duluth	46°45'25.17"N, 92° 6'10.34"W	30	No Posting	0.7	830			★			★
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°47'18.34"N, 92° 6'36.95"W	30	No Posting	0.2	1580		★			★	★
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'27.18"N, 92° 7'29.74"W	30	No Posting	1.7	1580			★			★
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'13.59"N, 92°10'21.96"W	30	No Posting	2.1	620			★			★
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'15.77"N, 92°10'16.33"W	30	No Posting	2.1	620			★			★
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'23.44"N, 92° 9'52.73"W	30	No Posting	2.1	620			★			★
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'7.78"N, 92° 8'57.49"W	30	No Posting	1.2	1975			★			★
CTH 73	Minnesota	Saint Louis	Township of Midway	46°42'26.55"N, 92°17'29.94"W	30	No Posting	1.2	510			★			★
Bergstrom Rd	Minnesota	Saint Louis	Township of Grand Lake	46°54'38.83"N, 92°23'10.86"W	55	No Posting	2.9	215			★			★
CTH 61	Minnesota	Saint Louis	Township of Lakewood	46°52'25.97"N, 91°56'9.29"W	50	No Posting	2.5	2900			★			★
WIS 35	Wisconsin	Douglas	Township of Superior	46°32'10.77"N, 92° 7'12.85"W	55	No Posting	4.3	4400			★			★
MN 23	Minnesota	Saint Louis	City of Duluth	46°39'39.23"N, 92°15'59.22"W	50	No Posting	2.2	2000		★				★
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'45.49"N, 92° 1'59.97"W	30	No Posting	1.9	348					★	★
Helberg Dr	Minnesota	Saint Louis	City of Duluth	46°45'44.67"N, 92° 6'33.22"W	30	No Posting	0.7	830		★				★
42nd Ave	Wisconsin	Douglas	City of Superior	46°40'9.89"N, 92° 2'51.26"W	35	No Posting	1.3	800					★	★
Woodlawn Rd	Wisconsin	Douglas	City of Superior	46°40'3.31"N, 92° 3'59.08"W	30	No Posting	0.6	1400					★	★
CTH C/W	Wisconsin	Douglas	Township of Superior	46°34'35.39"N, 92°17'12.63"W	55	No Posting	3.4	230					★	★
Mountain Dr	Minnesota	Saint Louis	City of Proctor	46°43'29.71"N, 92°13'30.16"W	40	No Posting	0.8	680						
CTH 73	Minnesota	Saint Louis	Township of Midway	46°42'14.75"N, 92°17'55.17"W	30	No Posting	1.2	510						
CTH 73	Minnesota	Saint Louis	Township of Midway	46°42'33.75"N, 92°17'14.53"W	30	No Posting	1.2	510						
CTH 61	Minnesota	Saint Louis	Township of Duluth	46°54'38.35"N, 91°51'42.52"W	50	No Posting	4.8	1350						

Safety Emphasis Area 2

Urban Intersections - Side Road Stop Control
Angle Crashes

Road Name	Lat/Long	Maintaining Agency	Traffic Control	Number of Angle Crashes	Posted Speed Limit of Major Roadway	Mainline Cross Section	Intersection Skew (degrees)	Number of Entering Legs to Intersection	Pedestrian Generator within 200' of the intersection	Mainline AADT	TOTAL STARS
Grand Ave, S 63rd Ave W	46.733143,-92.177404	City of Duluth	2-Way Stop	★	½	★	★	★		★	★★★★½
Highway 53, E St	46.725675,-92.073523	City of Superior	2-Way Stop	★	★	½		★	★	★	★★★★½
E 2nd St - Hwy 53/2, E 2nd St - Hwy 53/2, E 3rd St	46.67769,-92.01047	City of Superior	2-Way Stop	★	½	★		★	★	★	★★★★½
Midway Rd, Old Miller Trunk Hwy	46.853476,-92.280423	Township of Canosia	2-Way Stop	★	★		★	★	★		★★★★★
Tower Ave, Tower Ave, N 16th St	46.719309,-92.103964	City of Superior	2-Way Stop	★	½	½		★	★	★	★★★★★
Mesaba Ave, Mesaba Ave	46.785267,-92.10836	City of Duluth	2-Way Stop	★	½	½	★	★		★	★★★★★
Railroad St, Railroad St, Harbor Dr	46.783758,-92.098405	City of Duluth	2-Way Stop		½	½	★	★	★	½	★★★★½
Rice Lake Rd, Rice Lake Rd, E Skyline Pkwy	46.796809,-92.107038	City of Duluth	1-Way Stop		★	½	★		★	★	★★★★½
Tower Ave, N 56th St, Tower Ave	46.672224,-92.104293	City of Superior	2-Way Stop	★	½			★	★	★	★★★★½
Tower Ave, Henry Cohen Dr	46.684543,-92.104201	City of Superior	2-Way Stop	★	½	½	½	★		★	★★★★½
Hammond Ave, N 5th St, Hammond Ave, N 5th St	46.732539,-92.097857	City of Superior	1-Way Stop	★	½	½			★	★	★★★★
E 2nd St - Hwy 53/2, E 2nd St - Hwy 53/2, 23rd Ave E	46.705584,-92.046012	City of Superior	2-Way Stop		½	½		★	★	★	★★★★
Hammond Ave, Broadway St, Hammond Ave	46.726591,-92.097838	City of Superior	2-Way Stop	★	½			★	★	½	★★★★
Tower Ave, Tower Ave, N 34th St, N 34th St	46.698911,-92.104079	City of Superior	2-Way Stop		½	½		★	★	★	★★★★
E 2nd St - Hwy 53/2, Marina Dr, E 2nd St - Hwy 53/2	46.718679,-92.063054	City of Superior	2-Way Stop		½	½		★	★	★	★★★★
E 4th St, N 4th Ave E	46.793465,-92.097548	City of Duluth	2-Way Stop	★	½			★	★	½	★★★★
E 2nd St - Hwy 53/2, 31st Ave E, E 2nd St - Hwy 53/2	46.697325,-92.035494	City of Superior	2-Way Stop		½	½		★	★	★	★★★★
Belknap St, E 5th St, E 5th St, Belknap St	46.72148,-92.073535	City of Superior	2-Way Stop		½	½	½	★	★	½	★★★★
E Superior St, N 14th Ave E, S 14th Ave E, E Superior St	46.800315,-92.08077	City of Duluth	2-Way Stop	★	½			★	★	½	★★★★
Tower Ave, N 40th St	46.6917,-92.104146	City of Superior	2-Way Stop		½	½		★	★	★	★★★★
Skyline Pkwy, Mesaba Ave, E 9th St, Mesaba Ave	46.793681,-92.10707	City of Duluth	2-Way Stop		½	½	★	★		★	★★★★
E Superior St, 47th Ave E, 47th Ave E	46.82925,-92.029228	City of Duluth	2-Way Stop		½		★	★	★	½	★★★★
Highway 53, Catlin Ave	46.733377,-92.087412	City of Superior	1-Way Stop		★	½	★			★	★★★½
Tower Ave, N 58th St, Tower Ave	46.669482,-92.104311	City of Superior	2-Way Stop		½			★	★	★	★★★½
Highway 53, Grand Ave, Grand Ave	46.733759,-92.093319	City of Superior	2-Way Stop		★	½		★		★	★★★½
W Michigan St, W Superior St, W Michigan St	46.773974,-92.113991	City of Duluth	1-Way Stop		½	★	½		★	½	★★★½
Broadway St, Broadway St, Tower Ave, Tower Ave	46.726615,-92.103889	City of Superior	2-Way Stop	★				★	★	½	★★★½
Woodland Ave, W Redwing St	46.850022,-92.081848	City of Duluth	2-Way Stop		½		½	★	★	½	★★★½
Banks Ave, N 28th St, N 28th St	46.706216,-92.105571	City of Superior	2-Way Stop	★				★	★	½	★★★½
Woodland Ave, Woodland Ave	46.810829,-92.078289	City of Duluth	2-Way Stop		½		★	★		★	★★★½
N 6th Ave E, E 7th St	46.797353,-92.098371	City of Duluth	2-Way Stop		½	★		★		★	★★★½
E 1st St, N 19th Ave E	46.805754,-92.075682	City of Duluth	2-Way Stop	★	½			★	★		★★★½
N 1st Ave E, E 1st St, E 1st St	46.788585,-92.098036	City of Duluth	2-Way Stop	★	½			★	★		★★★½
N 59th Ave W, N 59th Ave W, Cody St, Cody St	46.741309,-92.171944	City of Duluth	2-Way Stop	★	½	½	½	★			★★★½
N 59th Ave W, N 59th Ave W, W Eighth St	46.744014,-92.171927	City of Duluth	2-Way Stop	★	½		★	★			★★★½
London Rd, 45th Ave E	46.82422,-92.032798	City of Duluth	1-Way Stop	★	½		★			★	★★★½
E 4th St, N 12th Ave E	46.801087,-92.087656	City of Duluth	2-Way Stop		½			★	★	½	★★★
Highway 2, Highway 2, N 2nd Ave	46.741341,-92.222349	City of Proctor	2-Way Stop		½		★	★		½	★★★
W 4th St, N 3rd Ave W	46.786766,-92.10627	City of Duluth	2-Way Stop		½			★	★	½	★★★
E 4th St, N 3rd Ave E, E 4th St	46.792491,-92.098828	City of Duluth	2-Way Stop	★	½			★		½	★★★
Highway 53, N 5th St	46.73254,-92.085315	City of Superior	1-Way Stop		★	½	½			★	★★★
Broadway St, Broadway St, Ogden Ave, Ogden Ave	46.726606,-92.102351	City of Superior	2-Way Stop	★				★	★		★★★
N 24th Ave W, S 24th Ave W, W Superior St, W Superior St	46.764095,-92.128014	City of Duluth	2-Way Stop		½			★	★	½	★★★
E Superior St, N 43rd Ave E, N 43rd Ave E	46.82629,-92.036653	City of Duluth	2-Way Stop	★	½			★		½	★★★
Grand Ave, E McCuen St, Grand Ave	46.657238,-92.226382	City of Duluth	2-Way Stop		½			★	★	½	★★★
Glenwood St, Glenwood St, N 43rd Ave E	46.840383,-92.037093	City of Duluth	2-Way Stop		½			★	★	½	★★★
London Rd, S 14th Ave E, London Rd	46.799193,-92.079391	City of Duluth	2-Way Stop		½			★	★	½	★★★

Safety Emphasis Area 2

Urban Intersections - Side Road Stop Control
Angle Crashes

Road Name	Lat/Long	Maintaining Agency	Traffic Control	Number of Angle Crashes	Posted Speed Limit of Major Roadway	Mainline Cross Section	Intersection Skew (degrees)	Number of Entering Legs to Intersection	Pedestrian Generator within 200' of the intersection	Mainline AADT	TOTAL STARS
E Skyline Pkwy, E Skyline Pkwy, E 13th St	46.801564,-92.104711	City of Duluth	1-Way Stop		½		★	★		½	★★★
Anderson Rd, Anderson Rd, Chambersburg Ave	46.793171,-92.158623	City of Duluth	2-Way Stop	★	½			★		½	★★★
E 9th St, 11th Ave E	46.803465,-92.094328	City of Duluth	2-Way Stop	★	½			★		½	★★★
N 3rd St, N 3rd St	46.735177,-92.099363	City of Superior	2-Way Stop		½	½		★	★		★★★
Winter St, Winter St, Ogden Ave	46.727896,-92.102343	City of Superior	2-Way Stop	★				★	★		★★★
E 2nd St, N 14th Ave E	46.801641,-92.08296	City of Duluth	2-Way Stop	★	½				★	½	★★★
Haines Rd, W SKyline Pkwy, Haines Rd	46.758685,-92.163991	City of Duluth	1-Way Stop		½	★	★			½	★★★
Rice Lake Rd, Rice Lake Rd, E 13th St	46.799962,-92.107071	City of Duluth	1-Way Stop	★	★					★	★★★
N 12th St, N 12th St, Tower Ave, Tower Ave	46.724274,-92.103911	City of Superior	2-Way Stop					★	★	½	★★½
N 13th St, N 13th St, Tower Ave, Tower Ave	46.723112,-92.103924	City of Superior	2-Way Stop					★	★	½	★★½
Woodland Ave, Woodland Ave, Anoka St	46.84388,-92.083375	City of Duluth	2-Way Stop		½		½	★		½	★★½
Highland Ave, Vinland St, W SKyline Pkwy, Getchell Rd	46.750383,-92.187843	City of Duluth	2-Way Stop		★			★		½	★★½
N 21st Ave E, E 1st St	46.807646,-92.073203	City of Duluth	2-Way Stop		½			★		★	★★½
N 19st Ave W, W 1st St	46.76956,-92.122861	City of Duluth	2-Way Stop		½			★	★		★★½
E Superior St, N 19th Ave E	46.805058,-92.07458	City of Duluth	2-Way Stop		½			★	★		★★½
E 1st St, N 4th Ave E	46.791476,-92.094326	City of Duluth	2-Way Stop		½			★	★		★★½
24th Ave E, E 5th St, E 5th St	46.702711,-92.047734	City of Superior	2-Way Stop		½			★	★		★★½
23rd Ave E, E 5th St	46.703738,-92.049035	City of Superior	2-Way Stop		½			★	★		★★½
Martin Rd, Woodland Ave	46.865482,-92.077029	City of Duluth	2-Way Stop		★		½	★			★★½
W SKyline Pkwy, N 24th Ave W	46.773455,-92.142903	City of Duluth	2-Way Stop		½		★	★			★★½
Crosley Ave, 47th Ave E	46.841267,-92.029455	City of Duluth	2-Way Stop		½		★	★			★★½
E Calvary Rd, Arnold Rd, Calvary Rd	46.854539,-92.090157	City of Rice Lake	2-Way Stop		½		★	★			★★½
N Hawthorne Rd, Vermillion Rd	46.819914,-92.068833	City of Duluth	2-Way Stop		½		★	★			★★½
Maple Grove Rd, Joshua Ave, Maple Grove Rd	46.807606,-92.15321	City of Duluth	2-Way Stop	★	½			★			★★½
W Kent Rd, N 19th Ave E, N 19th Ave E	46.812863,-92.087213	City of Duluth	2-Way Stop	★	½			★			★★½
N 4th Ave W, W 4th St, N 4th Ave W	46.78581,-92.10751	City of Duluth	2-Way Stop	★	½			★			★★½
N 24th Ave W, N 24th Ave W, W 1st St, W 1st St	46.764774,-92.129108	City of Duluth	2-Way Stop	★	½			★			★★½
Belknap St, Wyoming Ave	46.720719,-92.12442	City of Superior	1-Way Stop			★			★	½	★★½
60th Ave E, London Rd	46.836542,-92.008037	City of Duluth	1-Way Stop		½		★			★	★★½
Arrowhead Rd, Arrowhead Rd, Swan Lake Rd	46.822025,-92.149924	City of Duluth	1-Way Stop		★	½				★	★★½
London Rd, N 43rd Ave E	46.822379,-92.03671	City of Duluth	1-Way Stop	★	½					★	★★½
Mountain Shadow Dr, Mall Dr	46.805877,-92.165195	City of Duluth	1-Way Stop		½	★			★		★★½
S 5th Ave W, S 5th Ave W, Harbor Dr	46.780278,-92.100843	City of Duluth	1-Way Stop		½	★			★		★★½
Highland Ave, Highland Ave, N 59th Ave W	46.748367,-92.171957	City of Duluth	2-Way Stop		½			★		½	★★
Piedmont Ave, Morris Thomas Rd	46.778747,-92.153965	City of Duluth	2-Way Stop		½			★		½	★★
Glenwood St, 47th Ave E, 47th Ave E	46.840387,-92.029286	City of Duluth	2-Way Stop		½			★		½	★★
W Redwing St, MaXwell Ave	46.849954,-92.095393	City of Duluth	2-Way Stop		½			★		½	★★
E Superior St, E Superior St, S 26th Ave E	46.811732,-92.065909	City of Duluth	2-Way Stop		½			★		½	★★
E Superior St, S 36th Ave E, N 36th Ave E, E Superior St	46.821286,-92.052868	City of Duluth	2-Way Stop		½			★		½	★★
E 7th St, N Lake Ave, E 7th St	46.79164,-92.105799	City of Duluth	2-Way Stop		½			★		½	★★
N 1st St E, E 4th St, N 1st Ave E	46.790576,-92.10133	City of Duluth	2-Way Stop		½			★		½	★★
Banks Ave, N 14th St, Banks Ave	46.721954,-92.105461	City of Superior	2-Way Stop					★	★		★★
N 12th St, N 12th St, Ogden Ave, Ogden Ave	46.724269,-92.102369	City of Superior	2-Way Stop					★	★		★★
N 13th St, Banks Ave, Banks Ave	46.723113,-92.105454	City of Superior	2-Way Stop					★	★		★★
N 13th St, Ogden Ave, Ogden Ave	46.723106,-92.102378	City of Superior	2-Way Stop					★	★		★★
Broadway St, Banks Ave	46.726615,-92.105425	City of Superior	2-Way Stop					★	★		★★
N 16th St, Ogden Ave, Ogden Ave	46.71931,-92.102397	City of Superior	2-Way Stop					★	★		★★

Safety Emphasis Area 2

Urban Intersections - Side Road Stop Control
Angle Crashes

Road Name	Lat/Long	Maintaining Agency	Traffic Control	Number of Angle Crashes	Posted Speed Limit of Major Roadway	Mainline Cross Section	Intersection Skew (degrees)	Number of Entering Legs to Intersection	Pedestrian Generator within 200' of the intersection	Mainline AADT	**TOTAL STARS**
N 16th St, Banks Ave	46.719298,-92.105459	City of Superior	2-Way Stop					★	★		★★
60th Ave E, Glenwood St	46.840383,-92.010504	City of Duluth	2-Way Stop		½		½	★			★★
Midway Rd, Helm Rd, Midway Rd	46.872755,-92.280443	Township of Canosia	2-Way Stop		★			★			★★
E 3rd St, N 14th Ave E	46.802304,-92.084029	City of Duluth	2-Way Stop		½				★	½	★★
E 2nd St, N 4th Ave E, E 2nd St	46.792123,-92.095348	City of Duluth	2-Way Stop		½				★	½	★★
E Superior St, N 4th Ave E	46.790771,-92.093213	City of Duluth	1-Way Stop		½				★	½	★★
N 21st St, E 5th St, E 5th St	46.713365,-92.061309	City of Superior	1-Way Stop		½				★	½	★★
Ogden Ave, Ogden Ave, N 21st St	46.713407,-92.102445	City of Superior	1-Way Stop		½				★	½	★★
Rice Lake Rd, Pecan Ave	46.805201,-92.112551	City of Duluth	1-Way Stop		★		½			½	★★
E 3rd St, N 2nd Ave E	46.790871,-92.098933	City of Duluth	2-Way Stop	★	½					½	★★
Woodland Ave, W College St	46.814879,-92.07827	City of Duluth	1-Way Stop		½	½				★	★★
Tower Ave, N 45th St	46.685588,-92.104197	City of Superior	1-Way Stop		½	½				★	★★
London Rd, S 36th Ave E, London Rd	46.818586,-92.048526	City of Duluth	1-Way Stop		★					★	★★
N 21st St, N 21st St, Wyoming Ave, Wyoming Ave	46.7135,-92.12445	City of Superior	2-Way Stop					★		½	★½
N 5th St, Tower Ave	46.732549,-92.103835	City of Superior	2-Way Stop					★		½	★½
W Eighth St, W Eighth St, N 46th Ave W	46.749381,-92.164445	City of Duluth	2-Way Stop		½			★			★½
W Skyline Pkwy, N 27th Ave W	46.770619,-92.147025	City of Duluth	2-Way Stop		½			★			★½
Boundary Ave, Boundary Ave, 2nd St	46.743942,-92.217122	City of Proctor	2-Way Stop		½			★			★½
2nd St, 5th St	46.743892,-92.228173	City of Proctor	2-Way Stop		½			★			★½
N 10th Ave W, 4th St	46.780113,-92.115073	City of Duluth	2-Way Stop		½			★			★½
E 4th St, 34th Ave E	46.822017,-92.059719	City of Duluth	2-Way Stop		½			★			★½
Tower Ave, N 14th St, Tower Ave	46.721963,-92.103936	City of Superior	1-Way Stop						★	½	★½
N 3rd St, N 3rd St, Tower Ave	46.735002,-92.103369	City of Superior	1-Way Stop						★	½	★½
N 11th St, Tower Ave, Tower Ave	46.725427,-92.103906	City of Superior	1-Way Stop						★	½	★½
Highway 2, 5th St	46.746895,-92.225959	City of Proctor	1-Way Stop		½		½			½	★½
London Rd, S 12th Ave E, London Rd	46.797725,-92.082174	City of Duluth	1-Way Stop		½		½			½	★½
Grand Ave, Grand Ave, Becks Rd	46.676557,-92.226504	City of Duluth	1-Way Stop		★					½	★½
Martin Rd, Jean Duluth Rd, Jean Duluth Rd	46.861737,-92.047945	City of Duluth	1-Way Stop		★					½	★½
N 21st St, Banks Ave, Banks Ave, N 21st St	46.713417,-92.105519	City of Superior	1-Way Stop	★						½	★½
London Rd, 47th Ave E	46.826823,-92.029168	City of Duluth	1-Way Stop		½					★	★½
N 21st Ave E, E 3rd St	46.80895,-92.075328	City of Duluth	1-Way Stop		½					★	★½
N 3rd St, Tower Ave	46.735183,-92.103796	City of Superior	1-Way Stop				½		★		★½
W 3rd St, N 1st Ave W	46.788012,-92.102688	City of Duluth	2-Way Stop		½				★		★½
S 4th Ave W, W Michigan St	46.782743,-92.102601	City of Duluth	2-Way Stop		½				★		★½
S 21st Ave W, W Michigan St, Lower Michigan St	46.766155,-92.12337	City of Duluth	1-Way Stop		½				★		★½
E 3rd St, N 19th Ave E, E 3rd St	46.807056,-92.077812	City of Duluth	2-Way Stop		½				★		★½
E 3rd St, N 4th Ave E	46.792813,-92.096418	City of Duluth	2-Way Stop		½				★		★½
E Superior St, N 52nd Ave E	46.834349,-92.019842	City of Duluth	1-Way Stop		½		★				★½
S 24th Ave W, W Michigan St, W Michigan St	46.763685,-92.127383	City of Duluth	1-Way Stop	★	½						★½
E 2nd St, N 19th Ave E, E 2nd St	46.806405,-92.076744	City of Duluth	2-Way Stop	★	½						★½
E Michigan St, S 2nd Ave E, E Michigan St	46.788566,-92.095023	City of Duluth	1-Way Stop		½				★		★½
E Michigan St, S 1st Ave E, E Michigan St	46.787572,-92.096417	City of Duluth	1-Way Stop		½				★		★½
S 3rd Ave E, E Michigan St	46.789507,-92.093859	City of Duluth	1-Way Stop		½				★		★½
Belknap St, Susquehanna Ave	46.72072,-92.125787	City of Superior	2-Way Stop					★			★
N 21st St, Weeks Ave, N 21st St	46.713378,-92.091999	City of Superior	2-Way Stop					★			★
N 12th St, Banks Ave, Banks Ave	46.724275,-92.105443	City of Superior	2-Way Stop					★			★
N 11th St, Banks Ave, Banks Ave	46.725426,-92.105435	City of Superior	2-Way Stop					★			★

Safety Emphasis Area 2

Urban Intersections - Side Road Stop Control
Angle Crashes

Road Name	Lat/Long	Maintaining Agency	Traffic Control	Number of Angle Crashes	Posted Speed Limit of Major Roadway	Mainline Cross Section	Intersection Skew (degrees)	Number of Entering Legs to Intersection	Pedestrian Generator within 200' of the intersection	Mainline AADT	**TOTAL STARS**
N 5th St, Catlin Ave, Catlin Ave	46.7325,-92.087422	City of Superior	2-Way Stop					★			★
S 37 1/2 Ave W, W Michigan St, W Michigan St	46.751256,-92.143861	City of Duluth	1-Way Stop		★					★	★
W Michigan St, W Michigan St, W Superior St	46.75082,-92.144494	City of Duluth	1-Way Stop		★					★	★
Mike Colalillo Dr, Ramsey St	46.738724,-92.160878	City of Duluth	1-Way Stop		★					★	★
Decker Rd, Piedmont Ave, Piedmont Ave	46.784905,-92.163959	City of Duluth	1-Way Stop		★					★	★
34th Ave E, E Superior St	46.819385,-92.0554	City of Duluth	1-Way Stop		★					★	★
E Superior St, N 24th Ave E	46.809858,-92.068378	City of Duluth	1-Way Stop		★					★	★
W 3rd St, N 2nd Ave W, W 3rd St	46.787078,-92.103882	City of Duluth	2-Way Stop		★					★	★
W 3rd St, N 3rd Ave W	46.786104,-92.105142	City of Duluth	2-Way Stop		★					★	★
Catlin Ave, N 19th St	46.71606,-92.087533	City of Superior	1-Way Stop						★		★
Cody St, Cody St, S 63rd Ave W	46.741188,-92.177673	City of Duluth	1-Way Stop		★	★					★
S 37 1/2 Ave W, Oneota St	46.750561,-92.142716	City of Duluth	1-Way Stop		★						★
N Central Ave, Highland Ave	46.748381,-92.166496	City of Duluth	1-Way Stop		★						★
Vinland St, W Skyline Pkwy, Vinland St	46.749946,-92.188685	City of Duluth	1-Way Stop		★						★
MN-23, Oldenberg Pkwy	46.660836,-92.279964	City of Duluth	1-Way Stop		★						★
N Ugstad Rd, Stark Rd	46.748929,-92.237999	City of Proctor	1-Way Stop		★						★
Cirrus Dr, Airport Rd	46.837487,-92.205139	City of Duluth	1-Way Stop		★						★
MaXwell Ave, Anoka St	46.843897,-92.095288	City of Duluth	2-Way Stop		★						★
Old Howard Mill Rd, N 36th Ave E	46.824795,-92.059324	City of Duluth	1-Way Stop		★						★
Vermillion Rd, E St Marie St	46.821982,-92.068843	City of Duluth	1-Way Stop		★						★
N 1st St E, E 9th St	46.793911,-92.106758	City of Duluth	1-Way Stop		★						★
W Michigan St, S 1st Ave W, S 1st Ave W, W Michigan St	46.78568,-92.098897	City of Duluth	2-Way Stop		★						★
Winter St, Banks Ave	46.727905,-92.105413	City of Superior	1-Way Stop								
N 37th St, Frontage Rd	46.695393,-92.103126	City of Superior	1-Way Stop								
N 34th St, Frontage Rd	46.698847,-92.10331	City of Superior	1-Way Stop								
Grand Ave, Lamborn Ave	46.720238,-92.093426	City of Superior	1-Way Stop								

Safety Emphasis Area 3

Signalized Intersections Along Multi-Lane Arterials

Signalized Intersection Name	Maintaining Agency	Intersection Location (Lat/Long)	Number of KAB Crashes	Speed Limit on Major Road	Speed Limit on Minor Road	Mainline AADT	Skew of Intersection	Presence of Median	Presence of Mainline Left Turn Lanes	Left Turn Signal Phasing N/E	Left Turn Signal Phasing S/W	Signal Heads per Number of Thru Lanes	Access Within Influence Area	Left Turn Lane Alignment	Isolated vs. Coordinated	Total Stars
MNTH 23 (Grand Ave) & MSAS 108, MUN 153 (Raleigh St)	City of Duluth	46.731269,-92.180057	½	½	½	★	★	★	★	★	★		★		★	★★★★★★★★½
MNTH 23 (Grand Ave) & River West Dr/Warkwick St	City of Duluth	46.714344,-92.203656		★	½	½		★	★	★	★		½		★	★★★★★★★½
MNTH 23 (Grand Ave) & MUN 172 (72nd Ave W)	City of Duluth	46.725327,-92.188433		½	½	★		★	★	★	★		½		★	★★★★★★★½
USTH 53 (Trinity Rd) & MSAS 198 (Anderson Rd)	City of Duluth	46.793185,-92.156289	½	★	½	★	½	★		½	½		★	½	★	★★★★★★★½
CSAH 9 (4th St) at 6th Ave E	St. Louis County/Duluth	46.795357,-92.09511	½		½	★		★		½	★	★	★	★		★★★★★★★
First Street and 46th Ave W	City of Duluth	46.744615,-92.1568984	½		½			★	★	★	★	★	½		★	★★★★★★★
18th Ave E & E 5th St	Superior	46.708897,-92.055627	½					★	★	★	★	★	★		★	★★★★★★★
MNTH 23 (Grand Ave) & MSAS 101 (88th Ave W)	MnDOT/Duluth	46.697136,-92.218051		★	½	½	½	★	★		★		½		★	★★★★★★★
USTH 53 (Miller Trunk Hwy) & CSAH 13 (Midway Rd)	MnDOT/County	46.852995,-92.280403		★	★	★	★						★	★	★	★★★★★★★
USH 2/USH 53 (E 2nd) & 22nd Ave E	Superior	46.706586,-92.047341	½	½		★		★		★	★		★	½	★	★★★★★★★
Arrowhead Road and Arlington Ave	City of Duluth	46.8222412,-92.1323428		½	★	★		★		½	½		★	½	★	★★★★★★★
USTH 53 (Trinity Rd) & CSAH 90 (Arlington Ave)	City of Duluth	46.78255,-92.138753	½	★	★	★		★		½	½		½	½	★	★★★★★★★
USTH 53 (Miller Trunk Hwy) & CSAH 91 (Haines Rd)	MnDOT/County	46.814785,-92.174789	½	★	★	★	★			½	½		★	★		★★★★★★★
USTH 53 (Miller Trunk Hwy) & MSAS 104, CSAH 32 (W Arrowhead Rd)	MnDOT/Hermantown	46.822112,-92.18676	★	★	★	★	★					★	★	★		★★★★★★★
Superior Street and 27th Ave W	City of Duluth	46.7613776,-92.1317979			½	½		★	★	½	★	★	★			★★★★★★½
I-35 & MSAS 191 (26th Ave E) & TH 61, MSAS 193 (London Rd)	City of Duluth	46.808919,-92.061389	½	½	★	★	★						★	★	★	★★★★★★½
College Street and Kenwood Ave	City of Duluth	46.8167053,-92.1003188	★		½	½		★	★	★	½	½	½		★	★★★★★★½
USH 53 (2nd St) & USH 2 (Belknap St)	WisDOT	46.722281,-92.068439	★	½	½	★	★			½	½		½	★	★	★★★★★★½
STH 35 (Tower Ave) & N 28th St	Superior	46.706188,-92.104047	★	½		★				½	½	★	★	★	★	★★★★★★½
STH 35 (Tower Ave) & N 21st St	Superior	46.713416,-92.103969	★	½		★				½	½	★	★	★	★	★★★★★★½
TH 194 (Central Ent) & MSAS 198, M 535 (Anderson Rd)	City of Duluth	46.800664,-92.143421	★		½	★	½	★		½	½	★	★	½		★★★★★★½
Summit Street and Woodland Ave	City of Duluth	46.817781,-92.077889			½	★		★	★		★		½		★	★★★★★★
Clover Street and Woodland Ave	City of Duluth	46.8157372,-92.0780403			½	★		★	★	★	★		½			★★★★★★
USTH 53 (Miller Trunk Hwy) & CSAH 48 (Lavaque Bypass Rd), MSAS 101 (Ugstad	MnDOT/County	46.83658,-92.238403	½	★	★	★				½	½		★	★		★★★★★★
STH 35 (Tower Ave) & N 31st St	Superior	46.70253,-92.104136	½			★				½	½	★	★	★	★	★★★★★★
STH 35 (Tower Ave) & N 37th St	Superior	46.695397,-92.104127	½	½		★				½	½	★	½	★	★	★★★★★★
TH 194 (Mesaba Ave) & MSAS 127 (W 7th St)	MnDOT/Duluth	46.790914,-92.106795			½	★	★			½	½	★	½	★		★★★★★★
TH 194 (Mesaba Ave) & MSAS 126 (W 3rd St)	City of Duluth	46.783745,-92.108303			½	★	★		★	★	★		½			★★★★★★
USTH 53 (Miller Trunk Hwy) & CSAH 17, MSAS 103 (Stebner Rd)	MnDOT/Hermantown	46.827651,-92.195789	½	★	★	★	★						★	★		★★★★★★
TH 194 & CSAH 4 (Mesaba Ave) & MSAS 192 (Central Ent)	MnDOT/Duluth	46.795888,-92.107092	½		★	★	★			½	½	½	½	★		★★★★★★
TH 194 (Central Ent) & CSAH 90 (Arlington Ave)	City of Duluth	46.800452,-92.13214	★		½	★		★		½	½	★	★	½		★★★★★★
TH 194 (Central Ent) & MSAS 205, M 494 (Basswood Ave)	City of Duluth	46.80047,-92.135306	★		½	★		★		½	½	★	★	½		★★★★★★
Michigan Street and 27th Ave W	City of Duluth	46.760847,-92.131133	★		½	½		★	½	½	★	½	★			★★★★★½
USTH 53 & CSAH 54 (Piedmont Ave)	City of Duluth	46.775111,-92.143167	½	★	½	★	½			½		★			★	★★★★★½
Grand Ave and 46th Ave W	City of Duluth	46.7460826,-92.1592956	½		½	★		★	½	½	½		½		★	★★★★★½
CSAH 9 (Woodland Ave) at W Arrowhead Rd	St. Louis County/Duluth	46.825768,-92.071347	½		½	★	★	½		½	½		★	½		★★★★★½
TH 194 (Central Ent) & MSAS 182 (Pecan Ave)	City of Duluth	46.799477,-92.116405	½		½	★	½			½	½	★	½	★		★★★★★½
USH 2/USH 53 (E 2nd) & 39th Ave E	Superior	46.689033,-92.025013	★	½		★		★		½	½		½	½	★	★★★★★½
Arrowhead Road and Rice Lake Road (CSAH 4)	City of Duluth	46.822098,-92.12661	★		★	★		★		½	½			½	★	★★★★★½
TH 53 and Lavaque	MnDOT/Hermantown	46.836657,-92.217085		★	★	★							★	★		★★★★★
Arrowhead Road and Menard Drive	City of Duluth	46.8222438,-92.1843165		½	½	★				½	½		½	½	★	★★★★★
St. Marie Street and Woodland Ave	City of Duluth	46.8222306,-92.0741843	½		½	★		★		½	½		★	½		★★★★★
Ninth Street and 6th Ave E	City of Duluth	46.7987104,-92.1003168			½	★		★	★		½	½	½			★★★★★
USTH 53 (Miller Trunk Hwy) & MSAS 107 (Loberg Ave)	MnDOT/Hermantown	46.81906,-92.181777	★	★	½	★					★		½	★		★★★★★
Eighth Street and Woodland Ave	City of Duluth	46.8140462,-92.0780908	★		½	★		★		½	½		★	½		★★★★★
USTH 53 (Trinity Rd) & MSAS 209, MUN 1414 (Mall Drive)	City of Duluth	46.801655,-92.154729	★	★	½	★				½	½		½	★		★★★★★
Railroad Street and Canal Park Dr	City of Duluth	46.7850637,-92.0950474			½	★				½	★		★	★		★★★★★
US 2 at CSAH 14 (Boundary Ave)	MnDOT/St. Louis County	46.738127,-92.217107			½	½	★						★	★	★	★★★★★
Third Street and 6th Ave E	City of Duluth	46.7946977,-92.0938074			½	½		★	★	★			½			★★★★½
USH 2/USH 53 (E 2nd) & 18th Ave E	Superior	46.71075,-92.052616	½	½		★			½	★			½		★	★★★★½
TH 53 & MSAS 108 (Cirrus Dr), M166 (Sugar Maple Dr)	MnDOT/Hermantown	46.833594,-92.205486	★	★	½	★							★	★		★★★★½
USTH 53 (Trinity Rd) & USTH 194 (Central Ent)	City of Duluth	46.804291,-92.153721	★	★	★	★							½	★		★★★★½
Michigan Street and 5th Ave W	City of Duluth	46.7817011,-92.1038757			½			½	★		★	★	½			★★★★½
Second Street and Lake Ave	City of Duluth	46.7882795,-92.1005779			½	½		★	★		★		½			★★★★½
TH 194 (Mesaba Ave) & MSAS 129, 173 (W 1st St)	City of Duluth	46.780905,-92.108101			½	★	★		½	★	½					★★★★½
Third Street and 10th Ave E	City of Duluth	46.7984737,-92.0888588			½			★	★	★			★			★★★★½
Kenwood Ave and Cleveland Street	City of Duluth	46.8212826,-92.1002414			½	½		★		½	½		★	½		★★★★½
CSAH 9 (Woodland Ave) at CSAH 37 (Snively Rd)	St. Louis County/Duluth	46.827429,-92.070623			½	★		★	½		½		½			★★★★
USH 53 NB & USH 53 SB	WisDOT	46.733879,-92.095592		½	½		★		½				½		★	★★★★
Third Street and Lake Ave	City of Duluth	46.7882795,-92.1005779			½			★	★	★			½			★★★★
First Street and Lake Ave	City of Duluth	46.7876425,-92.099137			½	½		★	★	★						★★★★
Second Street and 10th Ave E	City of Duluth	46.797932,-92.0879733			½			★	★		★		½			★★★★
Superior Street and Lake Avenue	City of Duluth	46.7871064,-92.0981324			½	★		★		½	½			½		★★★★
USH 2 (Belknap St) & Hill Ave	Superior	46.720627,-92.077188				½	½	★		½	½		½	½		★★★★
USH 2 (Belknap St) & Ogden Ave	Superior	46.720658,-92.102405				★		★		½	½		½	½		★★★★
USH 2 (Belknap St) & Catlin Ave	Superior	46.72058,-92.087497				½		★		½	½		★	½		★★★★
USH 2 (Belknap St) & Hammond Ave	Superior	46.720625,-92.09788			½	★		★		½	½			½		★★★★
USH 2 (Belknap St) & STH 35 (Tower Ave)	Superior	46.720669,-92.103916			½	★		★		½	½			½		★★★★
USH 2 (Belknap St) & Grand Ave	Superior	46.720619,-92.093397	★			½		★		½	½		★	½		★★★★

Safety Emphasis Area 3

Signalized Intersections Along Multi-Lane Arterials

Signalized Intersection Name	Maintaining Agency	Intersection Location (Lat/Long)	Number of KAB Crashes	Speed Limit on Major Road	Speed Limit on Minor Road	Mainline AADT	Skew of Intersection	Presence of Median	Presence of Mainline Left Turn Lanes	Left Turn Signal Phasing N/E	Left Turn Signal Phasing S/W	Signal Heads per Number of Thru Lanes	Access Within Influence Area	Left Turn Lane Alignment	Isolated vs. Coordinated	Total Stars
USTH 53 (Miller Trunk Hwy) & CSAH 6 (Maple Grove Rd)	City of Duluth	46.807826,-92.163466	½	½	½	★	★						½			★★★½
Second Street and 1st Ave E	City of Duluth	46.7893696,-92.0991934			½	½		★				★	½			★★★½
Second Street and 2nd Ave E	City of Duluth	46.7892288,-92.0993403			½	½		★				★	½			★★★½
Second Street and 3rd Ave E	City of Duluth	46.791135,-92.0968369			½	½		★				★	½			★★★½
Second Street and 1st Ave W	City of Duluth	46.7873687,-92.1014395			½			★				★	★			★★★½
Second Street and 4th Avenue W	City of Duluth	46.7844686,-92.1055561			½			★				★	★			★★★½
5th Ave W and I-35 (Southbound)	City of Duluth	46.7812281,-92.1029379			½			★	★	½		½				★★★½
5th Ave W and I-35 (Northbound)	City of Duluth	46.7810142,-92.102392			½			★	★		½	½				★★★½
USTH 53 (Miller Trunk Hwy) & MSAS 196 (Burning Tree Rd)	City of Duluth	46.810907,-92.168449		½	½	★							½	★		★★★½
Technology Drive and Rice Lake Road (CSAH 4)	City of Duluth	46.8254181,-92.1342029		★	½	½					½				★	★★★½
USTH 53 (Miller Trunk Hwy) & MUN 524 (Cottonwood Ave)	City of Duluth	46.805551,-92.156918	½	½	½	★							½	★		★★★½
TH 194 (Central Ent) & MSAS 209 (Mall Drive)	City of Duluth	46.802236,-92.148654	½	½	½	★							½	★		★★★½
USH 2 (Belknap St) & Banks Ave	Superior	46.720652,-92.105508	½			★		½		½	½		½	½		★★★½
Second Street and 3rd Ave W	City of Duluth	46.7853117,-92.1040793			½			★				★	½			★★★
Second Street and 2nd Ave W	City of Duluth	46.7864064,-92.1027035			½			★				★	½			★★★
TH 194 (Mesaba Ave) & MSAS 130 (2nd St) (Fire Dept Signal)	MnDOT/Duluth	46.782306,-92.108051			½	★	★						½			★★★
I-35 & MSAS 140 (Lake Ave)	City of Duluth	46.786296,-92.097057			★	★								★		★★★
Third Street and 4th Ave W	City of Duluth	46.7851305,-92.1062871			½			★				★	½			★★★
Third Street and 1st Ave E	City of Duluth	46.789903,-92.1000533			½			★				★	½			★★★
Third Street and 3rd Ave E	City of Duluth	46.7917896,-92.0975662			½			★				★	½			★★★
Lake Ave and Railroad Street	City of Duluth	46.7846926,-92.0965137			½	½			½	½	★					★★★
Second Street and 6th Ave E	City of Duluth	46.7938881,-92.0929127	½		½	½		★					★			★★★
Second Street and 5th Ave E	City of Duluth	46.7931931,-92.094169			½	½		★					½			★★½
USTH 53 (Miller Trunk Hwy) & Miller Hill Mall Ent	City of Duluth	46.806671,-92.16072		½	½	★										★★

Safety Emphasis Area 4

Urban Intersections Bike Ped Crashes

Road Name	Lat/Long	Maintaining Agency	Number of Pedestrian Crashes	Mainline AADT	Traffic Control	Posted Speed Limit of Major Roadway	Number of Thru Lanes on Major Roadway	Presence of Bicycle Facilities on the Major Roadway	Length of Pedestrian Exposure on Major Roadway	Presence of Sidewalk on the Major Roadway	Presence of Lighting	Presence of On-Street Parking on Major Roadway	Presence of Pedestrian Generator	Presence of MTU Bus Stop	Disadvantaged Neighborhood	TOTAL STARS
Tower Ave, N 31st St	46.702589,-92.10406	City of Superior	★	★	★	★	★	★	★				½	½	★	★★★★★★★★½
Tower Ave, N 28th Ave, N 28th St, Tower Ave	46.706202,-92.104034	City of Superior	★	★	★	★	★	★	★				½	½	★	★★★★★★★★½
S Lake Ave, W Superior St, N Lake Ave, E Superior St	46.786944,-92.098145	City of Duluth	★	★	★	½		★	★			★	½	½	★	★★★★★★★½
Tower Ave, Tower Ave, N 37th St, N 37th St	46.695387,-92.10411	City of Superior	★	★	★	★	★	★	★					½	★	★★★★★★★½
Belknap St, Hammond Ave	46.720626,-92.097883	City of Superior	★	★	★	½	★		★			★	½	½	★	★★★★★★★½
Tower Ave, N 21st St, N 21st St, Tower Ave	46.71342,-92.104006	City of Superior	★	★	★	★	★	½	★				½	½	★	★★★★★★★½
Tower Ave, Tower Ave, N 16th St	46.719309,-92.103964	City of Superior	★	★		★	★	½	★			★	½	½	★	★★★★★★★½
E 2nd St, N 3rd Ave E	46.791129,-92.096598	City of Duluth	★	½	★	½		★	★			★	½	½	★	★★★★★★★
Grand Ave, Grand Ave, N 40th Ave W, N 40th Ave W	46.751662,-92.15132	City of Duluth	★	★	★	½		½	★			★	½	½	★	★★★★★★★
E 2nd St - Hwy 53/2, 39th Ave E	46.68907,-92.024958	City of Superior		★	★	★	★	★	★				½	½	★	★★★★★★★
E 4th St, N 5th Ave E	46.794438,-92.09629	City of Duluth	★	½	★	½		★	★			★	½	½	★	★★★★★★★
Tower Ave, N 20th St	46.714713,-92.103983	City of Superior		★		★	★	★	★			★	½	½	★	★★★★★★★
Tower Ave, N 18th St	46.717022,-92.10396	City of Superior		★		★	★	★	★			★	½	½	★	★★★★★★★
E 2nd St, N 1st Ave E, N 1st Ave E	46.789237,-92.099117	City of Duluth		½	★	½	★	★	★			★	½		★	★★★★★★★½
N 2nd Ave W, W 2nd St	46.786435,-92.102837	City of Duluth		½	★	½	★	★	★			★	½		★	★★★★★★★½
N Lake Ave, E 2nd St, W 2nd St, N Lake Ave	46.788296,-92.100372	City of Duluth		★	★	½		★	★			★	½	½	★	★★★★★★★½
E 9th St, N Central Entrance, N 6th Ave E	46.798692,-92.100577	City of Duluth		★	★	½	★	★	★				½	½	★	★★★★★★★½
N Lake Ave, W 1st St, E 1st St	46.787635,-92.099302	City of Duluth		★	★	½	★	★	★				½	½	★	★★★★★★★½
Belknap St, Lamborn Ave, Grand Ave, Belknap St	46.72062,-92.09344	City of Superior		★	★	½	★		★			★	½	½	★	★★★★★★★½
Ogden Ave, Belknap St, Belknap St, Ogden Ave	46.720645,-92.102379	City of Superior		★	★	½	★		★			★	½	½	★	★★★★★★★½
W Central Entrance, Basswood Ave	46.800474,-92.135306	City of Duluth	★	★	★	½	★	★	★				½	½		★★★★★★★½
E Central Entrance, S Arlington Ave	46.800418,-92.132132	City of Duluth		★	★	½	★	★	★				½	½	★	★★★★★★★½
Woodland Ave, Summit St	46.817772,-92.077898	City of Duluth		★	★	½	★	★	★				½	½	★	★★★★★★★½
N 1st Ave E, S 1st Ave E, E Superior St, E Superior St	46.787872,-92.09695	City of Duluth		★	★	½		★	★			★	½	½	★	★★★★★★★½
N 24th Ave W, N 24th Ave W, W 3rd St, W 3rd St	46.766138,-92.131292	City of Duluth	★	½	★	½		½	★			★	½	½	★	★★★★★★★½
S 5th Ave W, N 5th Ave W, W Superior St, W Superior St	46.782185,-92.104402	City of Duluth		★	★	½		★	★			★	½	½	★	★★★★★★★½
E Superior St, N 4th Ave E	46.790771,-92.093213	City of Duluth	★	★		½		★	★			★	½	½	★	★★★★★★★½
E 2nd St - Hwy 53/2, E 2nd St - Hwy 53/2, E 3rd St	46.67769,-92.01047	City of Superior	★	★		★	★	★	★				½		★	★★★★★★★½
Tower Ave, N 17th St	46.718164,-92.103965	City of Superior		★		★	★	★	★			★	½		★	★★★★★★★½
Tower Ave, N 19th St	46.715859,-92.103961	City of Superior		★		★	★	★	★			★	½		★	★★★★★★★½
Highway 53, Grand Ave, Grand Ave	46.733759,-92.093319	City of Superior		★		★	★	★	★	★	½				★	★★★★★★★½
W 2nd St, N 3rd Ave W	46.785453,-92.104074	City of Duluth		½	★	½	★	★	★			★			★	★★★★★★★
W 2nd St, N 4th Ave W, N 4th Ave W	46.784465,-92.105373	City of Duluth		½	★	½	★	★	★			★			★	★★★★★★★
N 1st Ave W, W 2nd St, N 1st Ave W	46.787326,-92.101633	City of Duluth			★	½	★	★	★			★	½		★	★★★★★★★
N 6th Ave E, E 4th St, N 6th Ave E	46.795355,-92.095123	City of Duluth		½	★	½	★	★	★				½	½	★	★★★★★★★
N 6th Ave E, E 3rd St, N 6th Ave E, N 6th Ave E, E 3rd St	46.79468,-92.094027	City of Duluth		★	★	½	★	½	★				½	½	★	★★★★★★★
E Central Entrance, Pecan Ave	46.799475,-92.116465	City of Duluth	★	★	★	½	★		★					½	★	★★★★★★★
W Central Entrance, Mall Dr	46.802217,-92.148685	City of Duluth		★	★	★	★	½	★	★				½		★★★★★★★
W Central Entrance, Anderson Rd/ W Myrtle St	46.800619,-92.143463	City of Duluth	★	★	★	½	★	★	★					½		★★★★★★★
E Central Entrance, Blackman Ave	46.800081,-92.121644	City of Duluth	★	★		½	★	★	★					½	★	★★★★★★★
Miller Trunk Hwy, W Central Entrance, US 53 (Trinity Rd), Joshua Ave	46.804276,-92.153697	City of Duluth		★	★	★	★	★	★	★						★★★★★★★
US 53, Cottonwood Ave/Loberg Ave	46.805561,-92.156889	City of Duluth		★	★	★	★	½	★	★			½			★★★★★★★
E St Marie St, Woodland Ave, W Saint Marie St	46.822148,-92.074099	City of Duluth		★	★	½	★	★	★				½		★	★★★★★★★
Woodland Ave, Clover St	46.815825,-92.078254	City of Duluth		★	★	½	★	★	★				½		★	★★★★★★★
N 3rd Ave W, S 3rd Ave W, W Superior St, W Superior St	46.784078,-92.101847	City of Duluth	★	½	★	½		★	½			★	½		★	★★★★★★★
E Superior St, S 2nd Ave E, N 2nd Ave E, E Superior St	46.788881,-92.095628	City of Duluth		★	★	½		★	½			★	½	½	★	★★★★★★★
E Superior St, S 3rd Ave E, N 3rd Ave E	46.789807,-92.094437	City of Duluth		★	★	½		★	½			★	½	½	★	★★★★★★★
N 6th Ave W, S 6th Ave W, W Superior St	46.781205,-92.105671	City of Duluth		★	★	½		★	½			★	½	½	★	★★★★★★★
W Superior St, S 1st Ave W, W Superior St, N 1st Ave W	46.78597,-92.09938	City of Duluth		½	★	½		★	★			★	½	½	★	★★★★★★★
Maple Grove Rd, Burning Tree Rd, Burning Tree Rd	46.807567,-92.169205	City of Duluth		★	★	★	★	★	★				½	½		★★★★★★★
W 1st St, S 46th Ave W, N 46th Ave W, Mike Colalillo Dr	46.744573,-92.157187	City of Duluth		½	★	½	★	★	★	½				½	★	★★★★★★★
Central Ave, Ramsey St, Ramsey St	46.73891,-92.166567	City of Duluth		½	★	½		★	★			★	½	½	★	★★★★★★★
N 59th Ave W, Grand Ave, S 59th Ave W, Grand Ave	46.736998,-92.171989	City of Duluth		★	★	½		½	★			★	½	½	★	★★★★★★★
US 53, US 53, S Arlington Ave	46.782563,-92.138722	City of Duluth		★	★	★	★	★	★						★	★★★★★★★
N Cental Ave, Grand Ave, Central Ave, Grand Ave	46.740858,-92.166553	City of Duluth		★	★	½		½	★			★	½	½	★	★★★★★★★
Ramsey St, Grand Ave	46.739014,-92.169151	City of Duluth		★	★	½		½	★			★	½	½	★	★★★★★★★
E Central Entrance, Rice Lake Rd, N Central Entrance, Mesaba Ave	46.795862,-92.107036	City of Duluth		★	★	½	★	★	★				½		★	★★★★★★★
Hammond Ave, N 5th St, Hammond Ave, N 5th St	46.732539,-92.097857	City of Superior	★	★		½	★	★	★				½		★	★★★★★★★
Haines Rd, Arrowhead Rd, Haines Rd, Arrowhead Rd	46.822086,-92.174837	City of Hermantown		★	★	★	★	★	★	½				½		★★★★★★★
Winter St, Hammond Ave, Winter St	46.727879,-92.097828	City of Superior	★	★	★	½		½	★			★			★	★★★★★★★
N 27th Ave W, W Superior St, W Superior St	46.761256,-92.13176	City of Duluth	★	½	★	½			★			★	½	½	★	★★★★★★★
E 2nd St, N 2nd Ave E, N 2nd Ave E	46.790189,-92.097857	City of Duluth		½	★	½		★	★			★	½		★	★★★★★★½
N Central Entrance, E 10th St	46.798724,-92.102459	City of Duluth		★		½	★	★	★				½	½	★	★★★★★★½
Tower Ave, Tower Ave, Belknap St, Belknap St	46.720642,-92.103942	City of Superior		★	★		★		★			★	½		★	★★★★★★½
Belknap St, Catlin Ave, Catlin Ave	46.720595,-92.087471	City of Superior	★	★	★	½	★		★				½	½		★★★★★★½
Belknap St, Hughitt Ave	46.720639,-92.099447	City of Superior		★		½	★		★			★	½	½	★	★★★★★★½

Safety Emphasis Area 4

Urban Intersections Bike Ped Crashes

Road Name	Lat/Long	Maintaining Agency	Number of Pedestrian Crashes	Mainline AADT	Traffic Control	Posted Speed Limit of Major Roadway	Number of Thru Lanes on Major Roadway	Presence of Bicycle Facilities on the Major Roadway	Length of Pedestrian Exposure on Major Roadway	Presence of Sidewalk on the Major Roadway	Presence of Lighting	Presence of On-Street Parking on Major Roadway	Presence of Pedestrian Generator	Presence of MTU Bus Stop	Disadvantaged Neighborhood	TOTAL STARS
US 53, Maple Grove Rd	46.807792,-92.163401	City of Duluth		★	★	★	★	½	★	★						★★★★★★½
US 53, Maple Burning Tree Rd	46.81089,-92.168446	City of Duluth		★	★	★	★	½	★	★						★★★★★★½
Woodland Ave, Woodland Ave, E Kent Rd, E 8th St	46.813916,-92.078275	City of Duluth	★	★	★	½	★	★	★							★★★★★★½
E Superior St, E Superior St, N 12th Ave E, S 12th Ave E	46.798389,-92.083292	City of Duluth		½	★	½		½	★			★	½	½	★	★★★★★★½
N 4th Ave W, S 4th Ave W, W Superior St	46.783113,-92.103174	City of Duluth		½	★	½		★	½			★	½	½	★	★★★★★★½
W 3rd St, N Lake Ave, E 3rd St	46.788962,-92.101451	City of Duluth		½	★	½		★	★			★	½		★	★★★★★★½
Belknap St, Highway 53, E 2nd St - Hwy 53/2, Marina Dr	46.722237,-92.068388	City of Superior		★	★	★	★	★	★				½			★★★★★★½
Tower Ave, Tower Ave, N 34th St, N 34th St	46.698911,-92.104079	City of Superior		★		★	★	★	★					½	★	★★★★★★½
E Superior St, N 13th Ave E	46.799335,-92.082031	City of Duluth	★	½		½		½	★			★	½	½	★	★★★★★★½
Tower Ave, N 40th St	46.6917,-92.104146	City of Superior		★		★	★	★	★				½		★	★★★★★★½
Tower Ave, N 23rd St	46.710983,-92.104012	City of Superior		★		★	★	★	★					½	★	★★★★★★½
Woodland Ave, Woodland Ave, E Oxford St	46.833266,-92.072396	City of Duluth		★		½	★	★	★			★	½	½		★★★★★★½
Hammond Ave, N 7th St	46.730219,-92.097852	City of Superior		★		½	★	½	★			★	½		★	★★★★★★½
Hammond Ave, N 6th St	46.731377,-92.097843	City of Superior		★		½	★	★	★				½	½	★	★★★★★★½
E 1st St, N 3rd Ave E, N 3rd Ave E, E 1st St	46.790504,-92.095572	City of Duluth	★	½	★	½		★	½			★			★	★★★★★★½
Mesaba Ave, Mesaba Ave, W 1st St, W 1st St	46.780927,-92.108057	City of Duluth		★	★	½	★	½	★				½		★	★★★★★★½
US 53 (Trinity Rd), Mall Dr	46.801647,-92.154711	City of Duluth		★	★	★	★	½	★	½				½		★★★★★★½
Bristol St, Central Ave, Central Ave	46.737641,-92.166577	City of Duluth		★	★	½		½	★			★	½		★	★★★★★★½
W Superior St, N 40th Ave W, W Superior St	46.749569,-92.148236	City of Duluth		½		½	★	★	★	½			½	½	★	★★★★★★½
Maple Grove Rd, Maple Grove Rd, Mall Dr, Mall Dr	46.80756,-92.165403	City of Duluth		★	★	★	★	★	★				½			★★★★★★½
Midway Rd, Midway Rd, Highway 53, Highway 53	46.853005,-92.280425	Township of Canosia			★	★	★	★	★	★			½			★★★★★★½
W Saint Marie St, Oakland Cir/Maplewood Ct	46.822084,-92.085887	City of Duluth	★	½		½		★	★			★	½			★★★★★★½
Arrowhead Rd, Arrowhead Rd, Rice Lake Rd	46.822047,-92.126829	City of Duluth		★	★	★	★		★					½	★	★★★★★★½
Grand Ave, 88th Ave W	46.697264,-92.217955	City of Duluth		★	★	★	★		★					½	★	★★★★★★½
Railroad St, S Lake Ave, Canal Park Dr	46.784937,-92.095199	City of Duluth		★	★	½			★			★	½	½	★	★★★★★★½
E 4th St, N 7th Ave E	46.796306,-92.09388	City of Duluth	★	★		½			★			★	½	½	★	★★★★★★½
Highway 53, N 5th St	46.73254,-92.085315	City of Superior		★		★	★	★		★	½				★	★★★★★★½
E 3rd St, E 3rd St, N 3rd Ave E	46.791815,-92.097719	City of Duluth		½	★	½		★	½			★	½		★	★★★★★★
Belknap St, Baxter Ave	46.72062,-92.0949	City of Superior		★		½	★		★			★	½		★	★★★★★★
Buchanan St, S Lake Ave, S Lake Ave	46.781644,-92.094673	City of Duluth		½	★	½		½	½			★	½	½	★	★★★★★★
E 3rd St, N 10th Ave E	46.798515,-92.088994	City of Duluth		½	★	½		★	½			★	½		★	★★★★★★
E 3rd St, N 5th Ave E, N 5th Ave E	46.793754,-92.095175	City of Duluth		½	★	½		★	½			★		½	★	★★★★★★
N 10th Ave E, E 2nd St	46.797841,-92.087933	City of Duluth		½	★	½		★	½			★	½		★	★★★★★★
N 2nd Ave W, S 2nd Ave W, W Superior St, W Superior St	46.785013,-92.100571	City of Duluth		½	★	½		★	½			★	½		★	★★★★★★
N 5th Ave E, E 2nd St	46.793089,-92.094084	City of Duluth		½	★	½		★	½			★	½		★	★★★★★★
S 5th Ave W, W Michigan St	46.781829,-92.103839	City of Duluth			★	½		★	½			★	½	½	★	★★★★★★
N 2nd Ave W, N 2nd Ave W, W 4th St	46.787749,-92.104994	City of Duluth	★			½		★	½			★	½	½	★	★★★★★★
Grand Ave, Carlton St, W 3rd St	46.756961,-92.143747	City of Duluth		★	★	½		½	★			★			★	★★★★★★
Grand Ave, N 44th Ave W	46.747847,-92.156585	City of Duluth		★	★	½		½	★			★	½	½		★★★★★★
Grand Ave, N 46th Ave W, N 46th Ave W, Grand Ave	46.746006,-92.159307	City of Duluth		★	★	½		½	★			★	½	½		★★★★★★
London Rd, London Rd, N 40th Ave E	46.822264,-92.042335	City of Duluth		★	★	½		½	★			★			★	★★★★★★
E Superior St, N 14th Ave E, S 14th Ave E, E Superior St	46.800315,-92.08077	City of Duluth	★	½		½		½	★			★	½		★	★★★★★★
Kenwood Ave, E Cleveland St	46.821227,-92.100404	City of Duluth		½	★	½	★	★	★				½	½		★★★★★★
Kenwood Ave, Buffalo St	46.820326,-92.10042	City of Duluth		½		½	★	★	★				½	½	★	★★★★★★
Burning Tree Rd, Burning Tree Rd, Mall Dr, Mall Dr	46.810185,-92.169104	City of Duluth		★		½	★	★	★		★		½			★★★★★★
N 6th Ave E, E 6th St	46.7967,-92.097284	City of Duluth		★		½	★	★	★					½	★	★★★★★★
N 6th Ave E, E 7th St	46.797353,-92.098371	City of Duluth		★		½	★	★	★					½	★	★★★★★★
Tower Ave, Henry Cohen Dr	46.684543,-92.104201	City of Superior		★		★	★	★	★						★	★★★★★★
Tower Ave, N 22nd St	46.712125,-92.10401	City of Superior		★		★	★	★	★						★	★★★★★★
Tower Ave, N 24th St	46.709338,-92.104025	City of Superior		★		★	★	★	★				½	½		★★★★★★
Maple Grove Rd, Maple Grove Rd, Loberg Ave	46.807639,-92.180156	City of Hermantown		½	★	★	★	★	★				½			★★★★★★
Grand Ave, N 6th St	46.731369,-92.093355	City of Superior					★	★	★			★	½	½	★	★★★★★★
S 27th Ave W, S 27th Ave W, W Michigan St, W Michigan St	46.76083,-92.131093	City of Duluth	★		★	½		★	★				½		★	★★★★★★
W 1st St, N 4th Ave W, W 1st St	46.783809,-92.104298	City of Duluth			★	½		★	★			★	½		★	★★★★★★
E 4th St, N 2nd Ave E, E 4th St	46.791563,-92.100057	City of Duluth		½		½		★	★			★	½	½	★	★★★★★★
N Lake Ave, E 4th St, W 4th St, N Lake Ave	46.789637,-92.102546	City of Duluth		½		½		★	★			★	½	½	★	★★★★★★
Cody St, N Central Ave, N Cental Ave	46.741492,-92.166548	City of Duluth	★			½		★	★			★	½		★	★★★★★★
E 1st St, N 9th Ave E	46.796183,-92.088098	City of Duluth	★			½		★	★			★	½		★	★★★★★★
E 4th St, N Hawthorne Rd	46.818569,-92.06428	City of Duluth	★			½		★	★		★	★	½			★★★★★★
W 4th St, N 1st Ave W	46.788679,-92.103788	City of Duluth	★			½		★	★			★	½		★	★★★★★★
Haines Rd, Maple Grove Rd, Haines Rd, Maple Grove Rd	46.807578,-92.174751	City of Hermantown		★	★	★		★	★				½	½		★★★★★★
Belknap St, Banks Ave, Banks Ave, Belknap St	46.720655,-92.105459	City of Superior		★	★	½	★		★				½		★	★★★★★★
Belknap St, Cumming Ave	46.720625,-92.096374	City of Superior		★		½	★		★			★	½		★	★★★★★★
Belknap St, John Ave	46.720644,-92.100932	City of Superior		★		½	★		★			★	½		★	★★★★★★
Highway 2, Belknap St, Belknap St, Garfield Ave	46.721396,-92.118521	City of Superior		★		★	★		★	★					★	★★★★★★
E Superior St, 45th Ave E, 45th Ave E	46.827174,-92.032997	City of Duluth		½	★	½			★			★	½	½	★	★★★★★★
E Superior St, E Superior St, N 10th Ave E, S 10th Ave E	46.796472,-92.085797	City of Duluth		½	★	½			★			★	½	½	★	★★★★★★

Safety Emphasis Area 4

Urban Intersections Bike Ped Crashes

Road Name	Lat/Long	Maintaining Agency	Number of Pedestrian Crashes	Mainline AADT	Traffic Control	Posted Speed Limit of Major Roadway	Number of Thru Lanes on Major Roadway	Presence of Bicycle Facilities on the Major Roadway	Length of Pedestrian Exposure on Major Roadway	Presence of Sidewalk on the Major Roadway	Presence of Lighting	Presence of On-Street Parking on Major Roadway	Presence of Pedestrian Generator	Presence of MTU Bus Stop	Disadvantaged Neighborhood	TOTAL STARS
E Central Entrance, E 13th St	46.797601,-92.109866	City of Duluth	★	★		☆	★	★						☆	★	★★★★★★
Woodland Ave, W Griggs Pl	46.81856,-92.07744	City of Duluth		★		☆	★	★			★		☆		★	★★★★★★
Highway 53, E St	46.725675,-92.073523	City of Superior		★		★	★	★		☆			☆		★	★★★★★★
Rice Lake Rd, Rice Lake Rd, E Skyline Pkwy	46.796809,-92.107038	City of Duluth		★		★	★	★			☆		☆		★	★★★★★★
Mike Colalillo Dr, Recycle Wy	46.740288,-92.15881	City of Duluth		☆		☆		★		★	★	★			★	★★★★★★
Highway 53, Highway 53	46.73406,-92.095644	City of Superior		★	★	★		★		★					★	★★★★★★
Grand Ave, Raleigh St	46.731259,-92.180054	City of Duluth		★	★	★	★		★				☆			★★★★★☆
E 1st St, N 14th Ave E	46.800991,-92.081891	City of Duluth	★	☆		☆		☆	☆			★	☆		★	★★★★★☆
W 3rd St, N 4th Ave W	46.785125,-92.106431	City of Duluth		☆	★	☆		★	☆			★			★	★★★★★☆
N 6th Ave E, E 2nd St, N 6th Ave E, E 2nd St	46.793954,-92.092953	City of Duluth		★	★	☆		★	☆				☆		★	★★★★★☆
E 1st St, N 10th Ave E, E 1st St	46.797107,-92.086882	City of Duluth	★		★	☆		★	☆				☆		★	★★★★★☆
E 3rd St, N 1st Ave E, N 1st Ave E, E 3rd St	46.789905,-92.100219	City of Duluth			★	☆		★	☆			★	☆		★	★★★★★☆
W 3rd St, N 2nd Ave W, W 3rd St	46.787078,-92.103882	City of Duluth		☆		☆		★	☆		★	★			★	★★★★★☆
W Saint Marie St, Midway Ave	46.822077,-92.080762	City of Duluth		☆		☆		★	☆			★	☆	☆	★	★★★★★☆
E 3rd St, N 12th Ave E	46.800394,-92.086536	City of Duluth	★			☆		★	☆			★	☆		★	★★★★★☆
Anderson Rd, Anderson Rd	46.793178,-92.156278	City of Duluth		☆	★	★	★	☆	★					☆		★★★★★☆
E Superior St, N Hawthorne Rd, E Superior St	46.816544,-92.059179	City of Duluth		☆	★	☆		☆	★			★	☆	☆		★★★★★☆
Hammond Ave, N 12th St, N 12th St	46.724251,-92.097855	City of Superior	★	☆		☆		☆	★			★			★	★★★★★☆
W 3rd St, N 27th Ave W	46.763253,-92.135024	City of Duluth		☆		☆		☆	★			★	☆	☆	★	★★★★★☆
Grand Ave, N 43rd Ave W	46.748793,-92.155256	City of Duluth		★		☆		☆	★			★	☆		★	★★★★★☆
Grand Ave, N 45th Ave W	46.746608,-92.158329	City of Duluth		★		☆		☆	★			★	☆		★	★★★★★☆
Hammond Ave, Broadway St, Hammond Ave	46.726591,-92.097838	City of Superior		★		☆		☆	★			★	☆		★	★★★★★☆
London Rd, 47th Ave E	46.826823,-92.029168	City of Duluth		★		☆		☆	★		☆	★			★	★★★★★☆
London Rd, N 43rd Ave E	46.822379,-92.03671	City of Duluth		★		☆		☆	★		☆	★			★	★★★★★☆
E 1st St, E 1st St, N 12th Ave E	46.799049,-92.084379	City of Duluth	★			☆		☆	★			★	☆		★	★★★★★☆
Kenwood Ave, W College St	46.816581,-92.100431	City of Duluth		☆	★	☆	★	★	★					☆		★★★★★☆
7th St, Mesaba Ave, E 7th St	46.790937,-92.106782	City of Duluth		★	★	☆	★	★	★							★★★★★☆
Woodland Ave, E Arrowhead Rd, Woodland Ave, W Arrowhead Rd	46.825804,-92.071322	City of Duluth		★	★	☆	★	★	★							★★★★★☆
Woodland Ave, Snively Rd, Woodland Ave	46.827407,-92.070655	City of Duluth		★	★	☆	★	★	★							★★★★★☆
Belknap St, E 5th St, E 5th St, Belknap St	46.72148,-92.073535	City of Superior		☆		☆	★	★	★				☆		★	★★★★★☆
N 6th Ave E, E 5th St	46.796014,46.802025, -92.086410	City of Duluth		★		☆	★	★	★				☆	☆		★★★★★☆
N 6th Ave E, E 8th St	46.798004,-92.09946	City of Duluth		★		☆	★	★	★						★	★★★★★☆
W Arrowhead Rd, Warren Ave	46.822159,-92.098943	City of Duluth		★		☆	★	★	★				☆	☆		★★★★★☆
N 27th Ave W, W 1st St	46.761927,-92.132858	City of Duluth				☆	★	★	★			★			★	★★★★★☆
N 27th Ave W, W 2nd St	46.762596,-92.133952	City of Duluth				☆	★	★	★			★			★	★★★★★☆
E 2nd St - Hwy 53/2, E 2nd St - Hwy 53/2, 23rd Ave E	46.705584,-92.046012	City of Superior		★		★	★	★	★				☆			★★★★★☆
Tower Ave, N 26th St	46.707767,-92.104036	City of Superior		★		★	★	★	★				☆			★★★★★☆
N 3rd St, Hughitt Ave	46.735177,-92.099363	City of Superior				★	★	★	★				☆		★	★★★★★☆
Market St, Haines Rd, Haines Rd, Mall Dr	46.81295,-92.174797	City of Hermantown		☆	★	★	★	★	★							★★★★★☆
Grand Ave, N 7th St	46.730213,-92.093353	City of Superior					★	★	★			★	☆		★	★★★★★☆
Grand Ave, N 8th St	46.729077,-92.093373	City of Superior					★	★	★			★	☆		★	★★★★★☆
Arrowhead Rd, Kenwood Ave, W Arrowhead Rd, Kenwood Ave	46.822097,-92.100401	City of Duluth		★	★	☆		★	★				☆	☆		★★★★★☆
Canal Park Dr, Buchanan St	46.781876,-92.093661	City of Duluth		☆		☆		★	★			★	☆		★	★★★★★☆
E 7th St, N 1st St E	46.792616,-92.10459	City of Duluth		☆		☆		★	★		☆	★			★	★★★★★☆
E 9th St, N 7th Ave E	46.799651,-92.099315	City of Duluth		☆		☆		★	★			★		☆	★	★★★★★☆
E 9th St, N 9th Ave E	46.801565,-92.096819	City of Duluth		☆		☆		★	★			★		☆	★	★★★★★☆
Piedmont Ave, W 1st St, W 1st St	46.771,-92.120956	City of Duluth		☆		☆		★	★		☆	★			★	★★★★★☆
N 46th Ave W, W 6th St	46.747997,-92.162349	City of Duluth	★			☆		★	★			★			★	★★★★★☆
Ramsey St, N 53rd Ave W	46.738946,-92.163784	City of Duluth				☆		★	★			★	☆	☆	★	★★★★★☆
Ramsey St, N 57th Ave W	46.738695,-92.168484	City of Duluth				☆		★	★			★	☆	☆	★	★★★★★☆
N 5th St, Grand Ave, N 5th St	46.732518,-92.093324	City of Superior	★					★	★			★	☆		★	★★★★★☆
Grand Ave, S 63rd Ave W	46.733143,-92.177404	City of Duluth		★		★	★		★					☆	★	★★★★★☆
Rice Lake Rd, Arrowhead Rd, Arrowhead Rd, Arlington Ave	46.822063,-92.132099	City of Duluth		★	★	★	★		★				☆			★★★★★☆
Garfield Ave, Piedmont Ave, W Superior St, W Superior St	46.771445,-92.11841	City of Duluth		☆	★	☆			★			★	☆		★	★★★★★☆
London Rd, S 13th Ave E	46.798499,-92.080666	City of Duluth	★	☆		☆			★			★	☆		★	★★★★★☆
E 4th St, N 8th Ave E	46.79727,-92.092626	City of Duluth		★		☆			★			★	☆	☆	★	★★★★★☆
N 10th Ave E, E 4th St, N 10th Ave E	46.799191,-92.090112	City of Duluth		★		☆			★			★	☆	☆	★	★★★★★☆
N 28th Ave, N 28th Ave, Hammond Ave, Hammond Ave	46.706204,-92.097973	City of Superior	★	☆	★	★			★						★	★★★★★☆
Winter St, Winter St, Tower Ave, Tower Ave	46.727901,-92.103878	City of Superior	★	☆	★				★			★			★	★★★★★☆
N 12th St, N 12th St, Tower Ave, Tower Ave	46.724274,-92.103911	City of Superior	★	☆					★			★	☆	☆	★	★★★★★☆
Tower Ave, N 14th St, Tower Ave	46.721963,-92.103936	City of Superior	★	☆					★			★	☆	☆	★	★★★★★☆
Trinty Rd, US 53, Piedmont Ave	46.775146,-92.143113	City of Duluth		★	★	★	★	☆							★	★★★★★☆
Highway 53, Catlin Ave	46.733377,-92.087412	City of Superior		★		★	★	☆		★					★	★★★★★☆
W 1st St, N 43rd Ave W	46.747365,-92.153283	City of Duluth		☆		☆	★	★		★				☆	★	★★★★★☆
Woodland Ave, Elizabeth St	46.819427,-92.076662	City of Duluth		★		☆	★	★					☆	☆	★	★★★★★☆
Woodland Ave, Norton St/Mount Royal Shopping Cir	46.821233,-92.074807	City of Duluth		★		☆	★	★					☆	☆	★	★★★★★☆
E 2nd St, N 9th Ave E	46.796874,-92.089187	City of Duluth	★	☆		☆		★				★	☆		★	★★★★★☆

Safety Emphasis Area 4

Urban Intersections Bike Ped Crashes

Road Name	Lat/Long	Maintaining Agency	Number of Pedestrian Crashes	Mainline AADT	Traffic Control	Posted Speed Limit of Major Roadway	Number of Thru Lanes on Major Roadway	Presence of Bicycle Facilities on the Major Roadway	Length of Pedestrian Exposure on Major Roadway	Presence of Sidewalk on the Major Roadway	Presence of Lighting	Presence of On-Street Parking on Major Roadway	Presence of Pedestrian Generator	Presence of MTU Bus Stop	Disadvantaged Neighborhood	TOTAL STARS
E 2nd St, N 7th Ave E	46.794976,-92.091673	City of Duluth		½		½		★			★	★	½		★	★★★★★½
Mike Colalillo Dr, W Superior St	46.742049,-92.158201	City of Duluth		½		½		★		★		★		½	★	★★★★★½
E 4th St, N 4th Ave E	46.793465,-92.097548	City of Duluth		½		½		★	½			★	½		★	★★★★★½
Railroad St, Railroad St, S Lake Ave	46.784771,-92.096756	City of Duluth		½	★	½	★		★						★	★★★★★½
W Superior St, 26th Ave W	46.762194,-92.130514	City of Duluth		½		½			★			★	½	½	★	★★★★★½
S Lake Ave, Morse St	46.780572,-92.093976	City of Duluth		½		½		½	½			★	½	½	★	★★★★★½
S Lake Ave, Sutphin St	46.784198,-92.096431	City of Duluth		½		½		½	½			★	½	½	★	★★★★★½
Mesaba Ave, W 2nd St	46.782265,-92.108159	City of Duluth		★	★	½		★	½						★	★★★★★½
E 2nd St, N 4th Ave E, E 2nd St	46.792123,-92.095348	City of Duluth		½		½		★	½			★	½		★	★★★★★½
E 3rd St, N 7th Ave E	46.795634,-92.092782	City of Duluth		½		½		★	½			★	½		★	★★★★★½
E 7th St, N Lake Ave, E 7th St	46.79164,-92.105799	City of Duluth		½		½		★	½			★		½	★	★★★★★½
E 9th St, N 11th Ave E	46.803465,-92.094328	City of Duluth		½		½		★	½			★		½	★	★★★★★½
E Superior St, N 9th Ave E	46.795533,-92.087041	City of Duluth		½		½		★	½			★		½	★	★★★★★½
W Saint Marie St, Oakland Ave/Kirby Dr	46.822078,-92.083674	City of Duluth		½		½		★	½			★	½		★	★★★★★½
W 1st St, N 23rd Ave W	46.76572,-92.127881	City of Duluth	★			½		★	½			★			★	★★★★★½
N 10th Ave W, 4th St	46.780113,-92.115073	City of Duluth				½		★	½		½	★		½	★	★★★★★½
N 19st Ave W, W 1st St	46.76956,-92.122861	City of Duluth				½		★	½			★	½	½	★	★★★★★½
W College St, Fay Ave	46.81492,-92.080347	City of Duluth				½		★	½			★	½	½	★	★★★★★½
Mesaba Ave, W 3rd St	46.783742,-92.108271	City of Duluth		★	★	½	★	½	★							★★★★★½
Highway 2, Highway 2	46.743918,-92.224251	City of Proctor		½	★	½		½	★			★	½			★★★★★½
Hammond Ave, N 14th St	46.721948,-92.097918	City of Superior		½		½		½	★			★	½		★	★★★★★½
Piedmont Ave, Chambersburg Ave, Chambersburg Ave, Piedmont Ave	46.781529,-92.158568	City of Duluth		½		½		½	★		½	★	½	½		★★★★★½
Hammond Ave, N 8th St	46.729072,-92.097854	City of Superior		★		½		½	★			★			★	★★★★★½
Kenwood Ave, Artavia St	46.817622,-92.10045	City of Duluth		½		½	★	★	★						★	★★★★★½
N 21st St, Hill Ave, Hill Ave, N 21st St	46.713289,-92.076982	City of Superior		½		½	★	★	★				½	½		★★★★★½
N 59th Ave W, N 59th Ave W, Cody St, Cody St	46.741309,-92.171944	City of Duluth				½	★	★	★					½	★	★★★★★½
S 5th Ave W, S 5th Ave W, Harbor Dr	46.780278,-92.100843	City of Duluth				½	★	★	★				½		★	★★★★★½
Grand Ave, Winter St	46.727873,-92.093381	City of Superior					★	★	★			★			★	★★★★★½
S 21st Ave E, S 21st Ave E, London Rd, London Rd	46.804654,-92.069151	City of Duluth		★	★	½		★	★				½			★★★★★½
E 4th St, N 3rd Ave E, E 4th St	46.792491,-92.098828	City of Duluth		½		½		★	★			★			★	★★★★★½
E 9th St, N 10th Ave E	46.802489,-92.095619	City of Duluth		½		½		★	★			★			★	★★★★★½
E 9th St, N 12th Ave E	46.804428,-92.093084	City of Duluth		½		½		★	★			★	½	½		★★★★★½
E 9th St, N 13th Ave E	46.805381,-92.091834	City of Duluth		½		½		★	★			★	½	½		★★★★★½
N 1st St E, E 4th St, N 1st Ave E	46.790576,-92.10133	City of Duluth		½		½		★	★			★			★	★★★★★½
N 40th Ave W, W Eighth St	46.755102,-92.156499	City of Duluth		½		½		★	★			★			★	★★★★★½
W 3rd St, N 3rd Ave W	46.786104,-92.105142	City of Duluth		½		½		★	★			★			★	★★★★★½
E 1st St, N 7th Ave E	46.794289,-92.090599	City of Duluth				½		★	★			★	½		★	★★★★★½
E 1st St, N 8th Ave E	46.795233,-92.089355	City of Duluth				½		★	★			★	½		★	★★★★★½
E 3rd St, N 4th Ave E	46.792813,-92.096418	City of Duluth				½		★	★			★	½		★	★★★★★½
N 46th Ave W, W 4th St	46.746638,-92.160269	City of Duluth				½		★	★			★	½		★	★★★★★½
N 4th Ave W, W 4th St, N 4th Ave W	46.78581,-92.10751	City of Duluth				½		★	★			★		½	★	★★★★★½
N 5th Ave W, W 1st St	46.782879,-92.10547	City of Duluth				½		★	★			★	½		★	★★★★★½
Ramsey St, N 51st Ave W	46.738909,-92.16119	City of Duluth				½		★	★			★		½	★	★★★★★½
Ramsey St, N 54th Ave W	46.738947,-92.165137	City of Duluth				½		★	★			★	½		★	★★★★★½
W 4th St, N 3rd Ave W	46.786766,-92.10627	City of Duluth				½		★	★			★	½		★	★★★★★½
London Rd, S 26th Ave E, London Rd	46.808921,-92.06139	City of Duluth		★	★	½	★		★				½			★★★★★½
Railroad St, Railroad St, Harbor Dr	46.783758,-92.098405	City of Duluth		½		½	★		★	½			½		★	★★★★★½
Belknap St, Clough Ave	46.720605,-92.0909	City of Superior		★		½	★		★				½		★	★★★★★½
Belknap St, Weeks Ave	46.720613,-92.091963	City of Superior		★		½	★		★				½		★	★★★★★½
E 2nd St - Hwy 53/2, E 2nd St - Hwy 53/2, 18th Ave E	46.710717,-92.052552	City of Superior		★	★	★	★		★							★★★★★½
Tower Ave, Tower Ave, 61st St	46.665781,-92.104338	City of Superior		★	★	½			★			★	½			★★★★★½
London Rd, S 12th Ave E, London Rd	46.797725,-92.082174	City of Duluth	★	½		½			★			★			★	★★★★★½
E 4th St, N 12th Ave E	46.801087,-92.087656	City of Duluth		½		½			★			★	½	½	★	★★★★★½
E 4th St, N 14th Ave E	46.802992,-92.085181	City of Duluth		½		½			★			★	½	½	★	★★★★★½
W Superior St, 23rd Ave W	46.765056,-92.126794	City of Duluth		½		½			★			★	½	½	★	★★★★★½
E 4th St, N 9th Ave E	46.798222,-92.091383	City of Duluth		★		½			★			★	½		★	★★★★★½
Garfield Ave, Garfield Ave, Railroad St	46.768204,-92.11568	City of Duluth		½	★	½	★	★							★	★★★★★½
Garfield Ave, Helberg Dr	46.763321,-92.11191	City of Duluth		½	★	½	★	★							★	★★★★★½
Kenwood Ave, Niagara St	46.818515,-92.100437	City of Duluth		½		½	★	★					½	½	★	★★★★★½
N 40th Ave W, W 2nd St	46.75096,-92.150256	City of Duluth		½		½	★	★			★				★	★★★★★½
W Superior St/W 1st St, N 42nd Ave W	46.748315,-92.151774	City of Duluth		½		½	★	★		★					★	★★★★★½
Tower Ave, N 45th St	46.685588,-92.104197	City of Superior		★		★	★	★							★	★★★★★½
Joshua Ave, Frontage Rd	46.804839,-92.153277	City of Duluth				★	★	★		★	★					★★★★★½
S 3rd Ave W, W Michigan St	46.783747,-92.101337	City of Duluth			★	½		★				★	½		★	★★★★★½
S 4th Ave W, W Michigan St	46.782743,-92.102601	City of Duluth	★			½		★				★	½		★	★★★★★½
N 59th Ave W, Roosevelt St	46.736405,-92.171976	City of Duluth				½		★			★	★	½		★	★★★★★½
N 28th St, Hill Ave	46.70617,-92.077003	City of Superior		½	★	★	★							½	★	★★★★★½

Safety Emphasis Area 4

Urban Intersections Bike Ped Crashes

Road Name	Lat/Long	Maintaining Agency	Number of Pedestrian Crashes	Mainline AADT	Traffic Control	Posted Speed Limit of Major Roadway	Number of Thru Lanes on Major Roadway	Presence of Bicycle Facilities on the Major Roadway	Length of Pedestrian Exposure on Major Roadway	Presence of Sidewalk on the Major Roadway	Presence of Lighting	Presence of On-Street Parking on Major Roadway	Presence of Pedestrian Generator	Presence of MTU Bus Stop	Disadvantaged Neighborhood	TOTAL STARS
E 2nd St, N 14th Ave E	46.801641,-92.08296	City of Duluth						★				★			★	★★★★
E Superior St, N 19th Ave E	46.805058,-92.07458	City of Duluth							★			★			★	★★★★
60th Ave E, 60th Ave E, E Superior St, E Superior St	46.838428,-92.009233	City of Duluth	★									★				★★★★
London Rd, 45th Ave E	46.82422,-92.032798	City of Duluth		★								★			★	★★★★
E Superior St, E Superior St, N 40th Ave E	46.82627,-92.042322	City of Duluth			★			★								★★★★
N 21st Ave E, E 2nd St	46.808337,-92.074346	City of Duluth		★	★			★								★★★★
N 21st Ave E, E Superior St, S 21st Ave E, E Superior St	46.806973,-92.072026	City of Duluth		★	★			★								★★★★
E 3rd St, N 2nd Ave E	46.790871,-92.098933	City of Duluth						★				★			★	★★★★
E 3rd St, N 8th Ave E	46.796586,-92.09152	City of Duluth						★				★			★	★★★★
E 3rd St, N 9th Ave E	46.797545,-92.090281	City of Duluth						★				★			★	★★★★
W College St, Snelling Ave	46.81492,-92.084658	City of Duluth	★					★				★				★★★★
E 1st St, N 4th Ave E	46.791476,-92.094326	City of Duluth						★				★			★	★★★★
E 2nd St, E 2nd St, N 12th Ave E	46.799738,-92.085468	City of Duluth						★				★			★	★★★★
E 3rd St, N 14th Ave E	46.802304,-92.084029	City of Duluth						★				★			★	★★★★
E 3rd St, N 14th Ave E	46.802278,-92.084063	City of Duluth						★				★			★	★★★★
N 1st Ave E, E 1st St, E 1st St	46.788585,-92.098036	City of Duluth						★				★			★	★★★★
N 1st Ave W, W 1st St	46.786681,-92.10053	City of Duluth						★				★			★	★★★★
N 2nd Ave E, E 1st St	46.789549,-92.096808	City of Duluth						★				★			★	★★★★
Ramsey St, N 52nd Ave W	46.738942,-92.162462	City of Duluth						★				★			★	★★★★
W 1st St, N 22nd Ave W	46.766673,-92.126645	City of Duluth						★				★			★	★★★★
W 1st St, N 2nd Ave W, W 1st St	46.785753,-92.101771	City of Duluth						★				★			★	★★★★
W 1st St, N 3rd Ave W	46.78482,-92.103016	City of Duluth						★				★			★	★★★★
W 3rd St, N 1st Ave W	46.788012,-92.102688	City of Duluth						★				★			★	★★★★
Catlin Ave, N 6th St	46.731354,-92.087434	City of Superior						★				★			★	★★★★
N 12th St, N 12th St, Catlin Ave, Catlin Ave	46.724205,-92.087463	City of Superior						★				★			★	★★★★
N 21st Ave W, S 21st Ave W, W Superior St, W Superior St	46.766949,-92.124254	City of Duluth										★			★	★★★★
W Arrowhead Rd, Dodge Ave	46.822174,-92.097707	City of Duluth		★			★		★							★★★★
Grand Ave, Broadway St	46.726586,-92.093381	City of Superior					★		★			★			★	★★★★
Grand Ave, E McCuen St, Grand Ave	46.657238,-92.226382	City of Duluth							★			★				★★★★
Hammond Ave, N 11th St	46.725407,-92.097878	City of Superior							★			★			★	★★★★
Hammond Ave, N 13th St	46.723104,-92.097902	City of Superior							★			★			★	★★★★
Grand Ave, N 41st Ave W	46.750689,-92.152604	City of Duluth							★			★				★★★★
Haines Rd, Haines Rd, Piedmont Ave, Hermantown Rd	46.789289,-92.174826	City of Hermantown			★	★			★							★★★★
Haines Rd, Haines Rd, Anderson Rd	46.793058,-92.174832	City of Duluth		★	★	★			★							★★★★
Maple Grove Rd, Maple Grove Rd, Ugstad Rd, Ugstad Rd	46.807621,-92.238336	City of Hermantown				★			★			★				★★★★
Hill Ave, N 24th St	46.709703,-92.077011	City of Superior					★	★	★							★★★★
Mesaba Ave, Mesaba Ave, N 4th Ave W	46.786139,-92.108175	City of Duluth		★			★	★	★							★★★★
Skyline Pkwy, Mesaba Ave, E 9th St, Mesaba Ave	46.793681,-92.10707	City of Duluth		★			★	★	★							★★★★
N 21st Ave E, E 4th St, E 4th St	46.809642,-92.076468	City of Duluth		★	★				★							★★★★
W Arrowhead Rd, Carver Ave/Hartley Rd	46.825861,-92.07944	City of Duluth		★	★				★							★★★★
E 8th St/E 9th St, N 15th Ave E/Chester Park Dr	46.807095,-92.088084	City of Duluth							★			★				★★★★
N 40th Ave W, W Michigan St, N 40th Ave W	46.748896,-92.147232	City of Duluth							★						★	★★★★
Ogden Ave, Ogden Ave, N 21st St	46.713407,-92.102445	City of Superior							★						★	★★★★
W Superior St, 39th Ave W	46.750527,-92.14683	City of Duluth							★						★	★★★★
23rd Ave E, E 5th St	46.703738,-92.049035	City of Superior							★			★				★★★★
Crosley Ave, 47th Ave E	46.841267,-92.029455	City of Duluth							★	★		★				★★★★
N 19th Ave E, E 8th St, N 19th Ave E	46.810418,-92.083267	City of Duluth							★			★				★★★★
N 46th Ave W, W 5th St	46.747316,-92.16132	City of Duluth							★			★			★	★★★★
N 59th Ave W, Nicollet St	46.735124,-92.171989	City of Duluth							★			★			★	★★★★
W 1st St, N 25th Ave W	46.763818,-92.130363	City of Duluth							★			★			★	★★★★
W 1st St, N 26th Ave W	46.762861,-92.131604	City of Duluth							★			★			★	★★★★
W Michigan St, S 29th Ave W	46.758964,-92.133612	City of Duluth							★						★	★★★★
Broadway St, Banks Ave	46.726615,-92.105425	City of Superior							★			★			★	★★★★
Broadway St, Broadway St, Ogden Ave, Ogden Ave	46.726606,-92.102351	City of Superior							★			★			★	★★★★
Broadway St, Hughitt Ave	46.726605,-92.099412	City of Superior							★			★			★	★★★★
Grand Ave, Lamborn Ave	46.720238,-92.093426	City of Superior							★			★			★	★★★★
N 12th St, N 12th St, Ogden Ave, Ogden Ave	46.724269,-92.102369	City of Superior							★			★			★	★★★★
N 13th St, Ogden Ave, Ogden Ave	46.723106,-92.102378	City of Superior							★			★			★	★★★★
N 16th St, Banks Ave	46.719298,-92.105459	City of Superior							★			★			★	★★★★
N 3rd St, Tower Ave	46.735183,-92.103796	City of Superior							★			★			★	★★★★
Ogden Ave, N 11th St	46.725412,-92.102379	City of Superior							★			★			★	★★★★
Belknap St, Cedar Ave	46.720576,-92.078679	City of Superior					★								★	★★★★
Belknap St, Pine Ave	46.720592,-92.081264	City of Superior					★								★	★★★★
Belknap St, Fisher Ave	46.720597,-92.089026	City of Superior		★			★									★★★★
N 28th St, Weeks Ave	46.706174,-92.092074	City of Superior				★	★								★	★★★★
E 4th St, N 13th Ave E	46.802025,-92.08641	City of Duluth							★			★			★	★★★★
London Rd, S 14th Ave E, London Rd	46.799193,-92.079391	City of Duluth							★			★			★	★★★★

Safety Emphasis Area 4

Urban Intersections Bike Ped Crashes

Road Name	Lat/Long	Maintaining Agency	Number of Pedestrian Crashes	Mainline AADT	Traffic Control	Posted Speed Limit of Major Roadway	Number of Thru Lanes on Major Roadway	Presence of Bicycle Facilities on the Major Roadway	Length of Pedestrian Exposure on Major Roadway	Presence of Sidewalk on the Major Roadway	Presence of Lighting	Presence of On-Street Parking on Major Roadway	Presence of Pedestrian Generator	Presence of MTU Bus Stop	Disadvantaged Neighborhood	TOTAL STARS
N 24th Ave W, S 24th Ave W, W Superior St, W Superior St	46.764095,-92.128014	City of Duluth		½		½			★			★	½		★	★★★★½
W Superior St, 28th Ave W	46.760298,-92.133003	City of Duluth		½		½			★			★	½		★	★★★★½
N 28th Ave, N 28th Ave, Catlin Ave	46.706176,-92.08762	City of Superior		½	★	★			★						★	★★★★½
Rice Lake Rd, Pecan Ave	46.805201,-92.112551	City of Duluth		½		★			★	★					★	★★★★½
Broadway St, Broadway St, Tower Ave, Tower Ave	46.726615,-92.103889	City of Superior		½					★			★	½	½	★	★★★★½
Hammond Ave, N 19th St	46.715849,-92.097957	City of Superior		½					★		½	★	½		★	★★★★½
Hammond Ave, N 19th St	46.716099,-92.097949	City of Superior		½					★		½	★	½		★	★★★★½
Haines Rd, W SKyline Pkwy, Haines Rd	46.758685,-92.163991	City of Duluth		½		½	★	½			★				★	★★★★½
Midway Rd, Helm Rd, Midway Rd	46.872755,-92.280443	Township of Canosia				★		½		★	★	★				★★★★½
Kenwood Ave, E Skyline Pkwy, E Skyline Pkwy	46.805533,-92.099896	City of Duluth		½		½	★	★						½	★	★★★★½
W Michigan St, S 39th Ave W	46.749852,-92.145812	City of Duluth		½		½	★	★		½					★	★★★★½
E Central Entrance, Harding Ave	46.800383,-92.126644	City of Duluth		★		½	★	★							★	★★★★½
E Central Entrance, Myrtle Pl	46.800389,-92.13095	City of Duluth		★		½	★	★							★	★★★★½
E Central Entrance, Stroll Ave	46.800364,-92.124258	City of Duluth		★		½	★	★							★	★★★★½
N Central Entrance, N 4th Ave E	46.797682,-92.1045	City of Duluth		★		½	★	★							★	★★★★½
W Central Entrance, S Robin Ave	46.800527,-92.142686	City of Duluth		★		½	★	★					½	½		★★★★½
Mountain Shadow Dr, Mall Dr	46.805877,-92.165195	City of Duluth				½	★	★			★		½	½		★★★★½
W College St, Kirby Dr/N 20th Ave E	46.814922,-92.08849	City of Duluth				½	★	★				★	½	½		★★★★½
E 2nd St - Hwy 53/2, 31st Ave E, E 2nd St - Hwy 53/2	46.697325,-92.035494	City of Superior		★		★	★	★					½			★★★★½
Arrowhead Rd, Arrowhead Rd, Swan Lake Rd	46.822025,-92.149924	City of Duluth		★		★	★	★			½					★★★★½
E 2nd St, N 8th Ave E	46.795913,-92.090431	City of Duluth		½		½		★				★	½		★	★★★★½
E 9th St, E 8th St	46.806895,-92.089599	City of Duluth		½		½		★			½	★			★	★★★★½
E 9th St, N 8th Ave E	46.800617,-92.098062	City of Duluth		½		½		★				★	½		★	★★★★½
Mike Colalillo Dr, Wadena St	46.740018,46.738909, -92.161190	City of Duluth		½		½		★		★		★		½		★★★★½
W Saint Marie St, Bayview Ave	46.822048,-92.081102	City of Duluth		½		½		★				★	½		★	★★★★½
W Saint Marie St, University Dr	46.822048,-92.081102	City of Duluth		½		½		★				★	½		★	★★★★½
S 27th Ave W, Helm St	46.759632,-92.129105	City of Duluth		★		½		★					½	½	★	★★★★½
Junction Ave, E Niagara St	46.818527,-92.090513	City of Duluth				½		★				★	½	½	★	★★★★½
N 11th Ave E, E Skyline Pkwy/Denney Dr	46.805744,-92.099063	City of Duluth				½		★			★				★	★★★★½
W Michigan St, S 23rd Ave W	46.764663,-92.126162	City of Duluth				½		★			½	★	½		★	★★★★½
N 16th St, Ogden Ave, Ogden Ave	46.71931,-92.102397	City of Superior	★					★				★	½		★	★★★★½
W Superior St, 33rd Ave W	46.755575,-92.139147	City of Duluth				½				★	★	★			★	★★★★½
Grand Ave, N 42nd Ave W	46.749734,-92.153957	City of Duluth		★		½		½				★	½	½		★★★★
Glenwood St, Crosley Ave	46.840389,-92.031668	City of Duluth		½		½		½	½			★	½	½		★★★★
E 3rd St, N 11th Ave E	46.799438,-92.087786	City of Duluth				½		★	½			★			★	★★★★
N 1st St E, E 9th St	46.793911,-92.106758	City of Duluth				½		★	½			★			★	★★★★
N 21st Ave W, W 1st St, W 1st St, N 21st Ave W	46.767626,-92.125386	City of Duluth				½		★	½			★			★	★★★★
N 6th Ave W, N 6th Ave W, W 1st St	46.781907,-92.106778	City of Duluth				½		★	½			★			★	★★★★
S 14th Ave E, Jefferson St	46.799906,-92.080173	City of Duluth				½		★	½			★			★	★★★★
W Michigan St, S 1st Ave W, S 1st Ave W, W Michigan St	46.78568,-92.098897	City of Duluth				½		★	½			★			★	★★★★
London Rd, S 36th Ave E, London Rd	46.818586,-92.048526	City of Duluth		★		★		★	½		½					★★★★
Banks Ave, N 14th St, Banks Ave	46.721954,-92.105461	City of Superior						★	½			★	½		★	★★★★
N 12th St, Clough Ave	46.724226,-92.090433	City of Superior						★	½			★	½		★	★★★★
N 13th St, Banks Ave, Banks Ave	46.723113,-92.105454	City of Superior						★	½			★	½		★	★★★★
N 5th St, Catlin Ave, Catlin Ave	46.7325,-92.087422	City of Superior						★	½	½		★			★	★★★★
N 5th St, Cumming Ave	46.732535,-92.096281	City of Superior						★	½			★	½		★	★★★★
N 5th St, Fisher Ave	46.732508,-92.08891	City of Superior						★	½			★	½		★	★★★★
Weeks Ave, Grand Ave/N 16th St	46.719263,-92.091954	City of Superior						★	½			★	½		★	★★★★
Weeks Ave, N 19th St	46.71606,-92.091997	City of Superior						★	½			★	½		★	★★★★
E 4th St, N 11th Ave E	46.800126,-92.088898	City of Duluth		½		½			½			★	½		★	★★★★
Glenwood St, Glenwood St, N 43rd Ave E	46.840383,-92.037093	City of Duluth		½		½			½	½		★	½	½		★★★★
Mesaba Ave, Mesaba Ave	46.785267,-92.10836	City of Duluth		★		½	★	½	★							★★★★
Loberg Ave, Loberg Ave, Market St	46.813059,-92.180037	City of Hermantown		½	★	½		½	★					½		★★★★
Decker Rd, Piedmont Ave, Piedmont Ave	46.784905,-92.163959	City of Duluth		½		½		½	★			★		½		★★★★
E Superior St, E Superior St, S 26th Ave E	46.811732,-92.065909	City of Duluth		½		½		½	★			★		½		★★★★
E Superior St, S 36th Ave E, N 36th Ave E, E Superior St	46.821286,-92.052868	City of Duluth		½		½		½	★			★		½		★★★★
Woodland Ave, Woodland Ave	46.810829,-92.078289	City of Duluth		★		½		½	★			★				★★★★
5th St, 5th St, N 2nd Ave, N 2nd Ave	46.747001,-92.222351	City of Proctor				½		½	★			★	½	½		★★★★
N 21st Ave W, W 3rd St	46.768974,-92.127573	City of Duluth				½		½	★			★			★	★★★★
Haines Rd, Haines Rd, Morris Thomas Rd, Morris Thomas Rd	46.778579,-92.174773	City of Duluth		½		★		½	★			★				★★★★
Maple Grove Rd, Maple Grove Rd, Lavaque Rd, Lavaque Rd	46.807638,-92.217105	City of Hermantown		½		★		½	★			★				★★★★
Grand Ave, N 13th St	46.72307,-92.093419	City of Superior						½	★			★	½		★	★★★★
Grand Ave, N 14th St	46.721942,-92.09343	City of Superior						½	★			★	½		★	★★★★
Winter St, Banks Ave	46.727905,-92.105413	City of Superior						½	★			★		½	★	★★★★
Winter St, Winter St, Ogden Ave	46.727896,-92.102343	City of Superior						½	★			★	½		★	★★★★
E 9th St, N 14th Ave E	46.806329,-92.090604	City of Duluth		½		½		★	★			★				★★★★
E St Marie St, E St Marie St, Wallace Ave, Wallace Ave	46.822117,-92.069733	City of Duluth		½		½		★	★						★	★★★★

Safety Emphasis Area 4

Urban Intersections Bike Ped Crashes

Road Name	Lat/Long	Maintaining Agency	Number of Pedestrian Crashes	Mainline AADT	Traffic Control	Posted Speed Limit of Major Roadway	Number of Thru Lanes on Major Roadway	Presence of Bicycle Facilities on the Major Roadway	Length of Pedestrian Exposure on Major Roadway	Presence of Sidewalk on the Major Roadway	Presence of Lighting	Presence of On-Street Parking on Major Roadway	Presence of Pedestrian Generator	Presence of MTU Bus Stop	Disadvantaged Neighborhood	TOTAL STARS
N 40th Ave W, Oneota St, Oneota St	46.748163,-92.146141	City of Duluth		½		½		★	★						★	★★★★
24th Ave E, E 5th St, E 5th St	46.702711,-92.047734	City of Superior				½		★	★			★	½			★★★★
E 8th St, N 17th Ave E	46.808525,-92.085759	City of Duluth				½		★	★			★		½		★★★★
W College St, University Dr/Lawn St	46.814926,-92.086086	City of Duluth				½		★	★			★	½			★★★★
W Michigan St, Carlton St, Carlton St, W Superior St	46.756997,-92.137297	City of Duluth				½		★	★	½					★	★★★★
Highland Ave, Vinland St, W SKyline Pkwy, Getchell Rd	46.750383,-92.187843	City of Duluth		½		★		★	★	½						★★★★
N 21st St, Banks Ave, Banks Ave, N 21st St	46.713417,-92.105519	City of Superior		½				★	★		½				★	★★★★
Broadway St, John Ave	46.726613,-92.100878	City of Superior						★	★			★			★	★★★★
Catlin Ave, Faxon St	46.711549,-92.087598	City of Superior						★	★			★	½	½		★★★★
Hammond Ave, N 34th St	46.698866,-92.098094	City of Superior						★	★			★			★	★★★★
N 11th St, Banks Ave, Banks Ave	46.725426,-92.105435	City of Superior						★	★			★			★	★★★★
Ogden Ave, N 14th St	46.721976,-92.102387	City of Superior						★	★			★			★	★★★★
Winter St, Baxter Ave	46.727878,-92.094846	City of Superior						★	★			★			★	★★★★
Winter St, Clough Ave	46.727865,-92.090415	City of Superior						★	★			★			★	★★★★
Winter St, Cumming Ave	46.727883,-92.096313	City of Superior						★	★			★			★	★★★★
Winter St, Hughitt Ave	46.727894,-92.099395	City of Superior						★	★			★			★	★★★★
Winter St, John Ave	46.727896,-92.100868	City of Superior						★	★			★			★	★★★★
Winter St, Weeks Ave	46.727871,-92.091893	City of Superior						★	★			★			★	★★★★
Belknap St, Hill Ave	46.720615,-92.077228	City of Superior		½	★	½	★		★							★★★★
E 2nd St - Hwy 53/2, Marina Dr, E 2nd St - Hwy 53/2	46.718679,-92.063054	City of Superior		★		★	★		★							★★★★
Junction Ave, W College St, W College St, N 19th Ave E	46.814943,-92.090594	City of Duluth		½	★	½			★				½	½		★★★★
W Superior St, 22nd Ave W	46.765886,-92.125705	City of Duluth		½		½			★			★			★	★★★★
W Superior St, 29th Ave W	46.759334,-92.134264	City of Duluth		½		½			★			★			★	★★★★
Tower Ave, N 58th St, Tower Ave	46.669482,-92.104311	City of Superior		★		½			★			★	½			★★★★
N 19st Ave W, S 19st Ave W, W Superior St	46.768848,-92.121764	City of Duluth				½			★			★	½		★	★★★★
Railroad St, S 5th Ave W	46.780668,-92.102358	City of Duluth				½			★	★			½		★	★★★★
Maple Grove Rd, Maple Grove Rd, Stebner Rd, Stebner Rd	46.807653,-92.195884	City of Hermantown		½	★	★			★				½			★★★★
Rice Lake Rd, Rice Lake Rd, E 13th St	46.799962,-92.107071	City of Duluth		★		★			★	½	½					★★★★
N 11th St, Tower Ave, Tower Ave	46.725427,-92.103906	City of Superior		½					★			★	½		★	★★★★
N 13th St, N 13th St, Tower Ave, Tower Ave	46.723112,-92.103924	City of Superior		½					★			★	½		★	★★★★
Tower Ave, N 4th St	46.733845,-92.103842	City of Superior		½					★			★	½		★	★★★★
Tower Ave, N 6th St	46.731414,-92.103864	City of Superior		½					★			★	½		★	★★★★
Tower Ave, N 7th St	46.730245,-92.103874	City of Superior		½					★			★	½		★	★★★★
Tower Ave, N 8th St	46.7291,-92.103871	City of Superior		½					★			★	½		★	★★★★
Martin Rd, Martin Rd, Arnold Rd, Arnold Rd	46.865513,-92.090258	City of Rice Lake		½		★		½		★		★				★★★★
Kenwood Ave, Benedictine Dr	46.81483,-92.100493	City of Duluth		½		½	★	★							★	★★★★
W Central Entrance, Oregon Ave	46.800465,-92.13407	City of Duluth		★		½	★	★					½			★★★★
Woodland Ave, W College St	46.814879,-92.07827	City of Duluth		★		½	★	★						½		★★★★
E Superior St, N 8th Ave E	46.794623,-92.088431	City of Duluth		½		½		★					½	½	★	★★★★
Mike Colalillo Dr, Ramsey St	46.738724,-92.160878	City of Duluth		½		½		★				★			★	★★★★
W Michigan St, W Michigan St, W Superior St	46.75082,-92.144494	City of Duluth		½		½		★		★					★	★★★★
Carver Ave, Halsey St	46.824358,-92.079348	City of Duluth				½		★			★	★		½		★★★★
E 2nd St, N 11th Ave E	46.798777,-92.086721	City of Duluth				½		★				★	½		★	★★★★
E Michigan St, S 1st Ave E, E Michigan St	46.787572,-92.096417	City of Duluth				½		★				★	½		★	★★★★
E Michigan St, S 2nd Ave E, E Michigan St	46.788566,-92.095023	City of Duluth				½		★				★	½		★	★★★★
S 24th Ave W, W Michigan St, W Michigan St	46.763685,-92.127383	City of Duluth				½		★				★		½	★	★★★★
S 3rd Ave E, E Michigan St	46.789507,-92.093859	City of Duluth				½		★				★	½		★	★★★★
N 28th St, Spartan Rd	46.706074,-92.083263	City of Superior		½		★		★					½		★	★★★★
Banks Ave, N 28th St, N 28th St	46.706216,-92.105571	City of Superior		½				★				★	½		★	★★★★
Henry Cohen Dr, N 45th St	46.685698,-92.105911	City of Superior						★		★	★				★	★★★★
W Michigan St, W Superior St, W Michigan St	46.773974,-92.113991	City of Duluth		½		½	★				½		½		★	★★★★
E Superior St, 47th Ave E, 47th Ave E	46.82925,-92.029228	City of Duluth		½		½						★	½	½	★	★★★★
N 5th St, Baxter Ave	46.73253,-92.094814	City of Superior						★	½			★			★	★★★½
Hammond Ave, Lincoln St	46.71431,-92.097966	City of Superior		½					★			★			★	★★★½
Glenwood St, 47th Ave E, 47th Ave E	46.840387,-92.029286	City of Duluth		½		½		½	½			★		½		★★★½
N 2nd Ave, N 2nd Ave, 2nd St, 2nd St	46.743923,-92.22235	City of Proctor				½		½	½			★	½	½		★★★½
W Skyline Pkwy, N 27th Ave W	46.770619,-92.147025	City of Duluth				½		½	½	★		★				★★★½
E Superior St, N 24th Ave E	46.809858,-92.068378	City of Duluth		½		½		★	½			★				★★★½
E 8th St, N 20th Ave E	46.811369,-92.082045	City of Duluth				½		★	½			★	½			★★★½
MN-23, Oldenberg Pkwy	46.660836,-92.279964	City of Duluth				½		★	½	★	½					★★★½
N 10th Ave E, E 5th St	46.799835,-92.091219	City of Duluth				½		★	½				½		★	★★★½
N 19th Ave E, W Kent Rd	46.812863,-92.087213	City of Duluth				½		★	½			★		½		★★★½
Raleigh St, S 59th Ave W, S 59th Ave W, Raleigh St	46.731217,-92.172038	City of Duluth				½		★	½			★	½			★★★½
N 12th St, Banks Ave, Banks Ave	46.724275,-92.105443	City of Superior						★	½			★			★	★★★½
N 12th St, Weeks Ave	46.724226,-92.091932	City of Superior						★	½			★			★	★★★½
N 5th St, Clough Ave	46.732515,-92.090391	City of Superior						★	½			★			★	★★★½
N 5th St, Weeks Ave	46.732517,-92.091858	City of Superior						★	½			★			★	★★★½

Safety Emphasis Area 4

Urban Intersections Bike Ped Crashes

Road Name	Lat/Long	Maintaining Agency	Number of Pedestrian Crashes	Mainline AADT	Traffic Control	Posted Speed Limit of Major Roadway	Number of Thru Lanes on Major Roadway	Presence of Bicycle Facilities on the Major Roadway	Length of Pedestrian Exposure on Major Roadway	Presence of Sidewalk on the Major Roadway	Presence of Lighting	Presence of On-Street Parking on Major Roadway	Presence of Pedestrian Generator	Presence of MTU Bus Stop	Disadvantaged Neighborhood	TOTAL STARS
Calvary Rd, Woodland Ave, Woodland Ave	46.850796,-92.081401	City of Duluth		½		½			½			★	½	½		★★★½
E Superior St, N 43rd Ave E, N 43rd Ave E	46.82629,-92.036653	City of Duluth		½		½		½	★			★				★★★½
Highland Ave, Highland Ave, N 59th Ave W	46.748367,-92.171957	City of Duluth		½		½		½	★			★				★★★½
Highway 2, Highway 2, N 2nd Ave	46.741341,-92.222349	City of Proctor		½		½		½	★	★						★★★½
4th St, N Ugstad Rd	46.745836,-92.238026	City of Proctor				½		½	★	½		★				★★★½
Boundary Ave, Boundary Ave, 2nd St	46.743942,-92.217122	City of Proctor				½		½	★			★		½		★★★½
Grand Ave, N 11th St	46.72538,-92.0934	City of Superior						½	★			★			★	★★★½
N 12th St, N 12th St, Grand Ave	46.724254,-92.093392	City of Superior						½	★			★			★	★★★½
W Saint Marie St, Carver Ave, W Saint Marie St	46.82214,-92.079322	City of Duluth		½		½		★	★				½			★★★½
N 21st Ave E, E 1st St	46.807646,-92.073203	City of Duluth		★		½		★	★							★★★½
N 21st Ave E, E 3rd St	46.80895,-92.075328	City of Duluth		★		½		★	★							★★★½
E 4th St, 34th Ave E	46.822017,-92.059719	City of Duluth				½		★	★			★				★★★½
N 24th Ave W, N 24th Ave W, W 1st St, W 1st St	46.764774,-92.129108	City of Duluth				½		★	★						★	★★★½
N 59th Ave W, N 59th Ave W, W Eighth St	46.744014,-92.171927	City of Duluth				½		★	★			★				★★★½
S 37 1/2 Ave W, Oneota St	46.750561,-92.142716	City of Duluth				½		★	★						★	★★★½
W Eighth St, N 57th Ave W	46.74594,-92.169237	City of Duluth				½		★	★			★				★★★½
W Eighth St, N Central Ave, W Eighth St, N Central Ave	46.747898,-92.166502	City of Duluth				½		★	★			★				★★★½
N 21st St, Oakes Ave	46.713441,-92.107007	City of Superior		½				★	★						★	★★★½
Catlin Ave, Lincoln St	46.714276,-92.087583	City of Superior						★	★			★	½			★★★½
Belknap St, Elm Ave	46.720569,-92.079969	City of Superior		½		½	★		★				½			★★★½
18th Ave E, E 5th St, 18th Ave E, E 5th St	46.708909,-92.055623	City of Superior		½	★		★		★							★★★½
N 19th Ave E, E 4th St, N 19th Ave E, E 4th St	46.807745,-92.078886	City of Duluth		½		½			★			★	½			★★★½
Hammond Ave, Harrison St	46.718802,-92.097933	City of Superior		½					★			★			★	★★★½
Hammond Ave, N 16th St	46.71929,-92.097927	City of Superior		½					★			★			★	★★★½
Hammond Ave, N 16th St	46.719677,-92.097917	City of Superior		½					★			★			★	★★★½
Hammond Ave, N 17th St	46.717899,-92.097949	City of Superior		½					★			★			★	★★★½
Hammond Ave, N 17th St	46.718148,-92.097947	City of Superior		½					★			★			★	★★★½
Hammond Ave, N 18th St	46.717004,-92.097939	City of Superior		½					★			★			★	★★★½
Hammond Ave, N 20th St	46.714699,-92.097961	City of Superior		½					★			★			★	★★★½
Hammond Ave, N 20th St	46.715216,-92.097956	City of Superior		½					★			★			★	★★★½
N 5th St, Tower Ave	46.732549,-92.103835	City of Superior		½					★			★			★	★★★½
E Skyline Pkwy, E Skyline Pkwy, E 13th St	46.801564,-92.104711	City of Duluth		½		½		½				★			★	★★★½
W Arrowhead Rd, Brainerd Ave	46.823766,-92.093496	City of Duluth		★		½		½						½	★	★★★½
Martin Rd, Woodland Ave	46.865482,-92.077029	City of Duluth	★			★		½		★						★★★½
Midway Rd, Midway Rd, Martin Rd	46.865502,-92.28041	Township of Canosia				★		½		★		★				★★★½
Kenwood Ave, Acre St	46.824112,-92.100408	City of Duluth		½		½	★	★			½					★★★½
Kenwood Ave, Lyons St	46.816863,-92.100433	City of Duluth		½		½	★	★			½					★★★½
Kenwood Ave, St Benedict St	46.823132,-92.100425	City of Duluth		½		½	★	★					½			★★★½
Kenwood Ave, Toledo St	46.819406,-92.100434	City of Duluth		½		½	★	★						½		★★★½
S 37 1/2 Ave W, W Michigan St, W Michigan St	46.751256,-92.143861	City of Duluth		½		½		★			½				★	★★★½
W 2nd St, N 6th Ave W	46.782538,-92.107837	City of Duluth		½		½		★					½		★	★★★½
W Redwing St, Maxwell Ave	46.849954,-92.095393	City of Duluth		½		½		★		½		★				★★★½
N 10th Ave E, E 6th St	46.800494,-92.092283	City of Duluth	★			½		★							★	★★★½
Burning Tree Rd, Mountain Shadow Dr	46.804684,-92.16828	City of Duluth				½		★			★		½	½		★★★½
Cirrus Dr, Airport Rd	46.837487,-92.205139	City of Duluth				½		★		★	★					★★★½
E 2nd St, N 13th Ave E	46.80069,-92.084221	City of Duluth				½		★				★			★	★★★½
E 3rd St, N 13th Ave E	46.801343,-92.0853	City of Duluth				½		★				★			★	★★★½
N 11th Ave E, E 11th St	46.804784,-92.096484	City of Duluth				½		★					½	½	★	★★★½
Old Howard Mill Rd, N 36th Ave E	46.824795,-92.059324	City of Duluth				½		★		★		★				★★★½
S 2nd Ave W, W Michigan St	46.784736,-92.100132	City of Duluth				½		★				★			★	★★★½
W Michigan St, S 26th Ave W	46.761796,-92.129896	City of Duluth				½		★				★			★	★★★½
W Michigan St/Carlton St, W Michigan St	46.757034,-92.136115	City of Duluth				½		★		★					★	★★★½
Banks Ave, N 23rd St	46.710988,-92.105535	City of Superior						★				★	½		★	★★★½
Henry Cohen Dr, N 40th St, Henry Cohen Dr	46.691699,-92.10506	City of Superior						★		★				½	★	★★★½
N 12th St, Fisher Ave	46.724224,-92.088981	City of Superior						★				★	½		★	★★★½
N 12th St, Hughitt Ave	46.724253,-92.099431	City of Superior						★				★	½		★	★★★½
N 5th St, Hughitt Ave	46.732544,-92.09935	City of Superior						★				★	½		★	★★★½
Weeks Ave, Harrison St	46.718781,-92.091964	City of Superior						★				★	½		★	★★★½
N 28th St, Cumming Ave	46.706206,-92.096486	City of Superior		½		★	★								★	★★★½
N 28th St, Lamborn Ave	46.706199,-92.094648	City of Superior		½		★	★								★	★★★½
W Superior St, 25th Ave W	46.763148,-92.129277	City of Duluth		½		½						★	½		★	★★★½
Grand Ave, Grand Ave, Becks Rd	46.676557,-92.226504	City of Duluth		½		★					½			½	★	★★★½
Rice Lake Rd, Hickory St/Chinook Dr	46.809416,-92.11947	City of Duluth		½		★				★					★	★★★½
60th Ave E, London Rd	46.836542,-92.008037	City of Duluth		★		½		★	½							★★★
E 2nd St, N 19th Ave E, E 2nd St	46.806405,-92.076744	City of Duluth				½		★	½						★	★★★
E 8th St, Garden St	46.812875,-92.080111	City of Duluth				½		★	½			★				★★★
E 8th St, N 16th Ave E	46.80755,-92.087034	City of Duluth				½		★	½			★				★★★

Safety Emphasis Area 4

Urban Intersections Bike Ped Crashes

Road Name	Lat/Long	Maintaining Agency	Number of Pedestrian Crashes	Mainline AADT	Traffic Control	Posted Speed Limit of Major Roadway	Number of Thru Lanes on Major Roadway	Presence of Bicycle Facilities on the Major Roadway	Length of Pedestrian Exposure on Major Roadway	Presence of Sidewalk on the Major Roadway	Presence of Lighting	Presence of On-Street Parking on Major Roadway	Presence of Pedestrian Generator	Presence of MTU Bus Stop	Disadvantaged Neighborhood	TOTAL STARS
E 8th St, N 18th Ave E	46.809461,-92.084532	City of Duluth				½		★	½			★				★★½
N 24th Ave W, W 2nd St	46.765423,-92.130187	City of Duluth				½		★	½						★	★★½
N Central Ave, Highland Ave	46.748381,-92.166496	City of Duluth				½		★	½			★				★★½
W Eighth St, W Eighth St, N 46th Ave W	46.749381,-92.164445	City of Duluth				½		★	½			★				★★½
N 21st St, Hughitt Ave	46.713413,-92.09949	City of Superior		½				★	½						★	★★½
N 21st St, John Ave	46.713417,-92.10097	City of Superior		½				★	½						★	★★½
Catlin Ave, Broadway St	46.726564,-92.08748	City of Superior						★	½					½	★	★★½
Hammond Ave, N 29th St	46.704859,-92.098039	City of Superior						★	½			★	½			★★½
Weeks Ave, N 18th St	46.716967,-92.091964	City of Superior						★	½			★	½			★★½
Boundary Ave, 5th St, Vinland St	46.747005,-92.217093	City of Duluth				½		½	★			★				★★½
E Superior St, N 52nd Ave E	46.834349,-92.019842	City of Duluth				½		½	★			★				★★½
Highland Ave, N 57th Ave W	46.748396,-92.169206	City of Duluth				½		½	★			★				★★½
Stebner Rd, W Arrowhead Rd, Stebner Rd, W Arrowhead Rd	46.822092,-92.195835	City of Hermantown		½		★		½	★							★★½
N 28th St, Hughitt Ave	46.706196,-92.099557	City of Superior		½		½		★	★							★★½
N 21st St, E 5th St, E 5th St	46.713365,-92.061309	City of Superior						★	★				½	½		★★½
Catlin Ave, N 22nd St	46.712473,-92.087591	City of Superior						★	★			★				★★½
Hammond Ave, Hammond Ave	46.697325,-92.098092	City of Superior						★	★						★	★★½
N 21st St, Catlin Ave	46.713367,-92.087566	City of Superior						★	★				½	½		★★½
Woodland Ave, W Redwing St	46.850022,-92.081848	City of Duluth		½		½			★				½	½		★★½
Tower Ave, N 56th St, Tower Ave	46.672224,-92.104293	City of Superior		★		½			★				½			★★½
Mall Dr, Decker Rd	46.80551,-92.163808	City of Duluth				½			★	½			½	½		★★½
34th Ave E, E Superior St	46.819385,-92.0554	City of Duluth		½		½		½				★		½		★★½
Glenwood St, Glenwood St	46.840388,-92.019893	City of Duluth		½		½		½				★		½		★★½
W Arrowhead Rd, Valhalla Dr	46.824901,-92.09159	City of Duluth		★		½		½			½			½		★★½
E Calvary Rd, Arnold Rd, Calvary Rd	46.854539,-92.090157	City of Rice Lake				½		½		½		★		½		★★½
Martin Rd, Jean Duluth Rd, Jean Duluth Rd	46.861737,-92.047945	City of Duluth		½		★		½		★						★★½
Martin Rd, Martin Rd, Howard Gnesen Rd, Howard Gnesen Rd	46.865504,-92.111107	City of Rice Lake		½		★		½		★						★★½
Cody St, Cody St, S 63rd Ave W	46.741188,-92.177673	City of Duluth				½	★	★						½		★★½
Hill Ave, N 25th St E	46.708789,-92.077007	City of Superior				½	★	★								★★½
Hill Ave, N 26th St/Grand Ave	46.707908,-92.077008	City of Superior				½	★	★						½		★★½
Belknap St, Wyoming Ave	46.720719,-92.12442	City of Superior		½			★	★					½			★★½
Carver Ave, Brookline St	46.823928,-92.079319	City of Duluth				½		★				★		½		★★½
E 1st St, N 19th Ave E	46.805754,-92.075682	City of Duluth				½		★					½		★	★★½
E 3rd St, N 19th Ave E, E 3rd St	46.807056,-92.077812	City of Duluth				½		★					½		★	★★½
Howard Gnesen Rd, Linzie Rd	46.826133,-92.103736	City of Duluth				½		★		★	½					★★½
W Superior St, 34th Ave W	46.75457,-92.14047	City of Duluth				½		★		½					★	★★½
N 3rd St, Cumming Ave	46.735236,-92.096279	City of Superior				★		★							★	★★½
N 21st St, 12th Ave E	46.713275,-92.064342	City of Superior	★					★			½			½		★★½
Banks Ave, N 17th St	46.718178,-92.105481	City of Superior						★				★			★	★★½
Banks Ave, N 18th St	46.717028,-92.10549	City of Superior						★				★			★	★★½
Banks Ave, N 19th St	46.715861,-92.105494	City of Superior						★				★			★	★★½
Banks Ave, N 20th St	46.714723,-92.105508	City of Superior						★				★			★	★★½
Banks Ave, N 22nd St	46.712138,-92.105526	City of Superior						★				★			★	★★½
Banks Ave, N 24th St	46.709349,-92.105556	City of Superior						★				★			★	★★½
Catlin Ave, N 19th St	46.71606,-92.087533	City of Superior						★				★	½	½		★★½
Henry Cohen Rd, N 31st St	46.702604,-92.104784	City of Superior						★		★					★	★★½
N 12th St, Baxter Ave	46.724236,-92.094882	City of Superior						★				★			★	★★½
N 12th St, Birch Ave	46.724212,-92.08619	City of Superior						★				★			★	★★½
N 12th St, Cumming Ave	46.724242,-92.096353	City of Superior						★				★			★	★★½
N 12th St, John Ave	46.724261,-92.100916	City of Superior						★				★			★	★★½
N 34th St, Henry Cohen Rd, Henry Cohen Rd	46.698922,-92.105519	City of Superior						★		★					★	★★½
N 37th St, Henry Cohen Dr, Henry Cohen Rd	46.695397,-92.105073	City of Superior						★		★					★	★★½
N 5th St, John Ave	46.732554,-92.100844	City of Superior						★				★			★	★★½
N 5th St, Ogden Ave	46.732556,-92.102308	City of Superior						★				★			★	★★½
Ogden Ave, N 17th St	46.718158,-92.102409	City of Superior						★				★			★	★★½
Ogden Ave, N 18th St	46.717011,-92.102418	City of Superior						★				★			★	★★½
Ogden Ave, N 19th St	46.715852,-92.102431	City of Superior						★				★			★	★★½
Ogden Ave, N 20th St	46.714713,-92.102437	City of Superior						★				★			★	★★½
Ogden Ave, N 22nd St	46.712128,-92.102464	City of Superior						★				★			★	★★½
Ogden Ave, N 23rd St	46.71098,-92.102469	City of Superior						★				★			★	★★½
W College St, Missouri Ave	46.814981,-92.094513	City of Duluth		½		½						★	½	½		★★½
W Superior St, 30 1/2 Ave W	46.757872,-92.136195	City of Duluth		½		½						★			★	★★½
W Superior St, 30th Ave W	46.758404,-92.135496	City of Duluth		½		½						★			★	★★½
S 6th Ave W, W Michigan St	46.780861,-92.10514	City of Duluth				½						★	½		★	★★½
N 3rd St, N 3rd St, Tower Ave	46.735002,-92.103369	City of Superior		½								★	½		★	★★½
60th Ave E, Glenwood St	46.840383,-92.010504	City of Duluth				½		½	½			★				★★½
N 21st St, N 21st St, Wyoming Ave, Wyoming Ave	46.7135,-92.12445	City of Superior		½				★	½		½					★★½

Safety Emphasis Area 4

Urban Intersections Bike Ped Crashes

Road Name	Lat/Long	Maintaining Agency	Number of Pedestrian Crashes	Mainline AADT	Traffic Control	Posted Speed Limit of Major Roadway	Number of Thru Lanes on Major Roadway	Presence of Bicycle Facilities on the Major Roadway	Length of Pedestrian Exposure on Major Roadway	Presence of Sidewalk on the Major Roadway	Presence of Lighting	Presence of On-Street Parking on Major Roadway	Presence of Pedestrian Generator	Presence of MTU Bus Stop	Disadvantaged Neighborhood	TOTAL STARS
N 21st St, E 6th St	46.71327,-92.063404	City of Superior						★	½		★					★★½
N 21st St, E 6th St	46.713264,-92.062773	City of Superior						★	½		★					★★½
N 21st St, Linden Ln	46.713282,-92.069983	City of Superior						★	½		½			½		★★½
Weeks Ave, N 20th St	46.715188,-92.091994	City of Superior						★	½			★				★★½
E 4th St, E 4th St, N 24th Ave E	46.812539,-92.072696	City of Duluth				½			½			★	½			★★½
W Arrowhead Rd, Ugstad Rd, Ugstad Rd, W Arrowhead Rd	46.822072,-92.238437	City of Hermantown				★		½	★							★★½
N Hawthorne Rd, Vermillion Rd	46.819914,-92.068833	City of Duluth				½		★	★							★★½
N 21st St, Raspberry Ave	46.713289,-92.071818	City of Superior						★	★					½		★★½
N 28th St/18th Ave E, E 10th St	46.706007,-92.060829	City of Superior		½			★		★							★★½
Anderson Rd, Anderson Rd, Decker Rd, Decker Rd	46.793114,-92.163896	City of Duluth		½		½			★					½		★★½
Woodland Ave, Woodland Ave, Anoka St	46.84388,-92.083375	City of Duluth		½		½			★					½		★★½
N 21st St, Hammond Ave	46.713411,-92.097937	City of Superior		½					★			★				★★½
Highway 2, 5th St	46.746895,-92.225959	City of Proctor		½		½		½		★						★★½
Wallace Ave, Bruce St	46.823312,-92.070681	City of Duluth		½		½		½				★				★★½
W Arrowhead Rd, Woodhaven Ln	46.825874,-92.081388	City of Duluth		★		½		½						½		★★½
E Oxford St, Livingston Ave	46.833906,-92.063739	City of Duluth				½		½				★		½		★★½
Haines Rd, Airport Rd	46.836555,-92.174829	City of Duluth		½		★		½		½						★★½
Midway Rd, Old Miller Trunk Hwy	46.853476,-92.280423	Township of Canosia				★		½		½			½			★★½
Central Ave, Waseca Industrial Rd, Raleigh St	46.731242,-92.166565	City of Duluth		½		½		★					½			★★½
Howard Gnesen Rd/Kenwood Ave, Kenwood Dr	46.825019,-92.100825	City of Duluth		½		½		★			½					★★½
N 28th Ave, Ogden Ave	46.706202,-92.102414	City of Superior		½		½		★			½					★★½
Burning Tree Rd, Matterhorn Dr	46.805594,-92.169012	City of Duluth				½		★			★					★★½
Carlton St, Truck Center Dr	46.756986,-92.140954	City of Duluth				½		★							★	★★½
Carver Ave, Maryland St	46.825257,-92.079354	City of Duluth				½		★				★				★★½
E 8th St, Grandview Ave	46.807915,-92.086583	City of Duluth				½		★				★				★★½
E 8th St, W Kent Rd	46.81377,-92.078926	City of Duluth				½		★				★				★★½
E Skyline Pkwy, Chester Pkwy	46.810811,-92.091904	City of Duluth				½		★		★						★★½
Howard Gnesen Rd, MacFarlane Rd	46.829369,-92.108993	City of Duluth				½		★		★						★★½
Howard Gnesen Rd, Old Howard Gnesen Rd	46.829006,-92.108464	City of Duluth				½		★		★						★★½
Maple Grove Rd, Swan Lake Rd, Swan Lake Rd	46.807602,-92.136961	City of Duluth				½		★		★						★★½
Maxwell Ave, Anoka St	46.843897,-92.095288	City of Duluth				½		★				★				★★½
N 10th Ave E, E 7th St	46.801182,-92.093389	City of Duluth				½		★							★	★★½
N 10th Ave E, E 8th St	46.801845,-92.094478	City of Duluth				½		★							★	★★½
N 19th Ave E, Lawn St	46.81346,-92.088173	City of Duluth				½		★				★				★★½
N Ugstad Rd, Stark Rd	46.748929,-92.237999	City of Proctor				½		★		★						★★½
W Kent Rd, Grandview Ave	46.812503,-92.087809	City of Duluth				½		★				★				★★½
Catlin Ave, N 20th St	46.715192,-92.08758	City of Superior						★				★	½			★★½
Catlin Ave, N 23rd St	46.710636,-92.087603	City of Superior						★				★	½			★★½
Catlin Ave, N 8th St	46.729043,-92.087461	City of Superior						★						½	★	★★½
Catlin Ave, Spartan Rd	46.708308,-92.087624	City of Superior						★				★	½			★★½
Hammond Ave, N 33rd St	46.700249,-92.098073	City of Superior						★				★	½			★★½
Weeks Ave, N 17th St	46.717884,-92.091964	City of Superior						★				★	½			★★½
W College St, Brainerd Ave	46.814984,-92.091881	City of Duluth		½		½								½	★	★★½
S 21st Ave W, W Michigan St, Lower Michigan St	46.766155,-92.12337	City of Duluth				½					½		½		★	★★½
Rice Lake Rd, Howtz St	46.807484,-92.115186	City of Duluth		½		★				★						★★½
Ogden Ave, N 24th St	46.709329,-92.10246	City of Superior						★				★				★★
W Kent Rd/E Skyline Pkwy, Chester Park Dr	46.812558,-92.088854	City of Duluth				½		★	½							★★
Hill Ave, Hayes A Court	46.720358,-92.077236	City of Superior						★	★							★★
N 21st St, 10th Ave E	46.713283,-92.068441	City of Superior						★	★							★★
N 21st St, Aspen Ln	46.713282,-92.068238	City of Superior						★	★							★★
E 4th St, Wallace Ave, E 4th St	46.815914,-92.068276	City of Duluth				½			★				½			★★
Piedmont Ave, Morris Thomas Rd	46.778747,-92.153965	City of Duluth		½		½		½						½		★★
Livingston Ave, Glenwood St	46.83666,-92.063721	City of Duluth				½		½				★				★★
Vinland St, W Skyline Pkwy, Vinland St	46.749946,-92.188685	City of Duluth				½		½		½	½					★★
E Arrowhead Rd, Wallace Ave	46.825806,-92.07075	City of Duluth		½		½		★								★★
N 28th St, John Ave	46.706202,-92.101025	City of Superior		½		½		★								★★
Maple Grove Rd, Joshua Ave, Maple Grove Rd	46.807606,-92.15321	City of Duluth				½		★		½						★★
W SKyline Pkwy, N 24th Ave W	46.773455,-92.142903	City of Duluth				½		★						½		★★
Banks Ave, N 26th St	46.707775,-92.105551	City of Superior						★				★				★★
Belknap St, Susquehanna Ave	46.72072,-92.125787	City of Superior						★				★				★★
Catlin Ave, N 11th St	46.725387,-92.087492	City of Superior						★							★	★★
Catlin Ave, N 13th St	46.723062,-92.087507	City of Superior						★							★	★★
Catlin Ave, N 14th St	46.721917,-92.087516	City of Superior						★							★	★★
Catlin Ave, Winter St	46.727851,-92.087472	City of Superior						★							★	★★
Hammond Ave, N 31st St	46.702571,-92.098062	City of Superior						★				★				★★
Hammond Ave, N 32nd St	46.701421,-92.098062	City of Superior						★				★				★★
Hill Ave, E 8th St	46.719905,-92.077219	City of Superior						★			★					★★

Safety Emphasis Area 4

Urban Intersections Bike Ped Crashes

Road Name	Lat/Long	Maintaining Agency	Number of Pedestrian Crashes	Mainline AADT	Traffic Control	Posted Speed Limit of Major Roadway	Number of Thru Lanes on Major Roadway	Presence of Bicycle Facilities on the Major Roadway	Length of Pedestrian Exposure on Major Roadway	Presence of Sidewalk on the Major Roadway	Presence of Lighting	Presence of On-Street Parking on Major Roadway	Presence of Pedestrian Generator	Presence of MTU Bus Stop	Disadvantaged Neighborhood	TOTAL STARS
N 21st St, Bardon Ave	46.713278,-92.067029	City of Superior						★			½			½		★★
N 21st St, E 9th St	46.713284,-92.069545	City of Superior						★			½			½		★★
N 34th St, Frontage Rd	46.698847,-92.10331	City of Superior						★							★	★★
N 37th St, Frontage Rd	46.695393,-92.103126	City of Superior						★							★	★★
Ogden Ave, N 26th St	46.707772,-92.102487	City of Superior						★				★				★★
Weeks Ave, Lincoln St	46.714273,-92.092	City of Superior						★				★				★★
Anderson Rd, Anderson Rd, Chambersburg Ave	46.793171,-92.158623	City of Duluth		½		½				½				½		★★
Hammond Ave, Faxon St	46.711597,-92.097981	City of Superior										★			★	★★
Hammond Ave, N 22nd St	46.712115,-92.097981	City of Superior										★			★	★★
Hammond Ave, N 22nd St	46.712488,-92.097966	City of Superior										★			★	★★
Hammond Ave, N 23rd St	46.710694,-92.097989	City of Superior										★			★	★★
Hammond Ave, N 23rd St	46.710969,-92.097985	City of Superior										★			★	★★
Hammond Ave, N 25th St	46.708875,-92.098	City of Superior									★	★				★★
N 21st St, Clough Ave	46.713385,-92.090528	City of Superior						★	½							★½
N 21st St, Fisher Ave	46.713375,-92.089056	City of Superior						★	½							★½
N 21st St, Lamborn Ave	46.713392,-92.093473	City of Superior						★	½							★½
N 21st St, Weeks Ave, N 21st St	46.713378,-92.091999	City of Superior						★	½							★½
W Arrowhead Rd, Lavaque Rd, W Arrowhead Rd, Lavaque Rd	46.822086,-92.21719	City of Hermantown				★		½								★½
N 11th Ave E, E 10th St	46.804135,-92.095408	City of Duluth				½		★								★½
Wallace Ave, E 5th St	46.81678,-92.069051	City of Duluth				½		★								★½
Wallace Ave, E 6th St	46.817706,-92.069755	City of Duluth				½		★								★½
Wallace Ave, E 7th St	46.818663,-92.070483	City of Duluth				½		★								★½
Wallace Ave, N Hawthorne Rd/E 8th St	46.819712,-92.07019	City of Duluth				½		★								★½
Catlin Ave, N 16th St	46.719632,-92.087539	City of Superior						★					½			★½
Hill Ave, 2nd Ave E	46.718784,-92.07718	City of Superior						★			½					★½
N 21st St, 13th Ave E	46.71327,-92.062309	City of Superior						★			½					★½
N 21st St, 9th Ave E	46.713286,-92.070431	City of Superior						★			½					★½
N 21st St, E 7th St	46.713277,-92.065456	City of Superior						★						½		★½
N 21st St, E 7th St	46.713275,-92.064587	City of Superior						★						½		★½
N 21st St, E 8th St	46.713283,-92.067492	City of Superior						★						½		★½
N 21st St, E 8th St	46.713278,-92.066327	City of Superior						★						½		★½
N 28th St, Bardon Ave	46.706125,-92.066418	City of Superior		½		★										★½
N 28th St, Oakes Ave	46.706223,-92.107051	City of Superior		½											★	★½
2nd St, 5th St	46.743892,-92.228173	City of Proctor				½		½								★
Hill Ave, 3rd Ave E	46.717372,-92.077135	City of Superior						★								★
Hill Ave, Court B	46.719905,-92.077219	City of Superior						★								★
Hill Ave, Court C	46.71862,-92.077178	City of Superior						★								★
Hill Ave, Court D	46.717904,-92.077153	City of Superior						★								★
Hill Ave, Court E	46.717172,-92.077129	City of Superior						★								★
Hill Ave, E 9th St	46.718473,-92.07716	City of Superior						★								★
Hill Ave, Juniper Ave	46.716856,-92.07712	City of Superior						★								★
Hill Ave, Laurel Ave	46.715999,-92.077087	City of Superior						★								★
Hill Ave, Maple Ave	46.715083,-92.077059	City of Superior						★								★
Hill Ave, Norwood Ave	46.714195,-92.077033	City of Superior						★								★
N 21st St, Baxter Ave	46.713397,-92.094961	City of Superior						★								★
N 21st St, Cumming Ave	46.713403,-92.096426	City of Superior						★								★
N 21st St, Gates Ave	46.713292,-92.07441	City of Superior						★								★
W College St, Mississippi Ave	46.814983,-92.093196	City of Duluth		½		½										★
Hammond Ave, N 24th St	46.709311,-92.098003	City of Superior										★				★
Hammond Ave, N 24th St	46.7098,-92.097996	City of Superior										★				★
Hammond Ave, N 26th St	46.707735,-92.098011	City of Superior										★				★
Hammond Ave, N 27th St	46.70708,-92.098016	City of Superior										★				★
Vermillion Rd, E St Marie St	46.821982,-92.068843	City of Duluth				½										½

Appendix J

Safety Countermeasures

Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 1:

Rural Two-Lane Undivided Roads

With Less Than 5,000 AADT

360 miles of roads within Study Area

Potential Countermeasures - Segments

Safety Countermeasure	In Response to Which Risk Factor?	MN* Safety Benefit (% Crash Reduction)	WI Safety Benefit (% Crash Reduction)	Source of WI Safety Data	Include in Study?
Install Shoulder Rumble Strips	N/A	35%: KA Lane Departure Crashes	8%: Injury Crashes 16%: Lane Departure Crashes	WisDOT Approved CMF CMF ID 3430 & 3442	Yes
Install Centerline Rumble Strips	N/A	36%	No WI Data CMF Clearinghouse: 4% to 11%		Yes
Provide Paved Shoulder	Edge Risk Assessment, Lane Width	17% to 31%	No WI Data CMF Clearinghouse: 12% (Run off Road)		Yes
Widen Paved Shoulder	Edge Risk Assessment, Lane Width	N/A	14%	WisDOT Approved CMF CMF ID 4078	Yes
Install Safety Edge (45 mph or Greater)	Edge Risk Assessment	24%	13%	WisDOT Approved CMF CMF ID 8658	Yes
Side Slope Improvements	Edge Risk Assessment	14% : KAB Rollover Crashes	N/A	N/A	Yes
Increase Edgeline from 4” to 6”	N/A	18%	No WI Data CMF Clearinghouse: 18% (All), 27% (Single Vehicle)		Yes
Install Barrier for Non-Recoverable Slopes	Edge Risk Assessment	35%: Injury Crashes	No WI Data CMF Clearinghouse: 9%		Yes
Clear Zone Maintenance (Clearing of Vegetation and Appropriate R/W Width)	Edge Risk Assessment	22% to 44%	N/A	N/A	Yes
Remove or Relocate Fixed Object	Edge Risk Assessment	No State Data CMF Clearinghouse: 38%		CMF ID 1024	Yes
Install Wet Reflective Pavement Markings	Edge Risk Assessment	N/A	40%: All Crashes 25%: Wet Crashes 30%: Nighttime Crashes (CMFs for multilane divided highways)	WisDOT Approved CMF CMF ID 8110, 8113, 8115	Yes
Increase Lane Width from 11-ft to 12-ft	Lane Width	No State Data CMF Clearinghouse: 5%		CMF ID 3	No

*MN Safety Data Collected From “District Safety Plan Updates – Safe Roads For All (2023)”

Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 1:

Rural Two-Lane Undivided Roads

With Less Than 5,000 AADT

Potential Countermeasures - Curves

Safety Countermeasure	In Response to Which Risk Factor?	MN* Safety Benefit (% Crash Reduction)	WI Safety Benefit (% Crash Reduction)	Source of WI or Other Safety Data	Include in Study?
High Friction Surface Treatment	Curve Radius	62%	Up to 67%	WisDOT Approved CMFs CMF ID 10353, 10355, 10332	Yes
Install Chevron Signs	Horizontal Curve Speed Differential	25%: Injury Nighttime Crashes	16% : Injury Crashes	WisDOT Approved CMF CMF ID 2438	Yes
Upgrade or install Fluorescent Curve Signs	Horizontal Curve Speed Differential	N/A	25%	WisDOT Approved CMF CMF ID 2433	Yes
Clear Zone Maintenance (Clearing of Vegetation and Appropriate R/W Width)	N/A	22% to 44%	N/A	N/A	Yes
Reconstruct Triangle Intersections on Curve to T-Intersection	Presence of Intersection or Visual Trap on Curve	No Safety Benefit Included, but part of list	N/A	N/A	Yes
Increase Edgeline from 4" to 6"	N/A	No Safety Benefit Included, but part of list	No WI Data CMF Clearinghouse: 18% (All), 27% (Single Vehicle)		Yes
In-Lane Curve Warning Pavement Markings	Horizontal Curve Speed Differential	N/A	N/A	FHWA Proven Safety Countermeasure	Yes
Install Barrier at Non-Recoverable Slopes	N/A	51%: KABC Lane Departure Crashes	No WI Data CMF Clearinghouse: 9%		Yes
Slope Flattening	N/A	No State Data FHWA says 22% when flattening from 1:4 to 1:6 or 8% from 1:3 to 1:4		FHWA Proven Safety Countermeasure	Yes
Add or Widen Paved Shoulders	Shoulder/Surface Type	N/A	N/A	FHWA Proven Safety Countermeasure	Yes
Update Curve Advisory Speeds	Curve Speed Differential	No State Data CMF Clearinghouse: 40%; for Installing Chevron Signs and Curve Warning Signs (No CMF for Curve Advisory Signs)			Yes
Install Wet Reflective Pavement Markings	Edge Risk Assessment	N/A	40%: All Crashes 25%: Wet Crashes 30%: Nighttime Crashes (CMFs for multilane divided highways)	WisDOT Approved CMF CMF ID 8110, 8113, 8115	Yes
Install Advance Intersection Flashing Beacons at TWSC Intersection	Curve prior to Intersection	N/A	5%: All 13%: Angle Crashes 8%: Rear End Crashes	WisDOT Approved CMF CMF ID 446/448/449	Yes

*MN Safety Data Collected From "District Safety Plan Updates – Safe Roads For All (2023)"

Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 2:

Urban Intersections
Side Road Stop Control
Angle Crashes

(167 Intersections)

Potential Countermeasures

Safety Countermeasure	In Response to Which Risk Factor?	MN* Safety Benefit (% Crash Reduction)	WI Safety Benefit (% Crash Reduction)	Source of WI or Other Safety Data	Include in Study?
Install Left Turn Lane - Mainline (One Approach)	N/A	N/A	Urban: 10% Rural: 18%	WisDOT Approved CMF Urban CMF ID 262 Rural CMF ID 4647	Yes
Install Left Turn Lane - Mainline (One Approach @ T-Intersection	N/A	N/A	Urban: 7% Rural: 15%	WisDOT Approved CMF Urban CMF ID 4644 Rural CMF ID 4643	Yes
Install Left Turn Lane - Mainline (Both Approaches)	N/A	N/A	Urban: 19% Rural: 33%	WisDOT Approved CMF Urban CMF ID 270 Rural CMF ID 4648	Yes
Install Right Turn Lane- Mainline (One Approach)	N/A	44%	14%	WisDOT Approved CMF CMF ID 285	Yes
Install Right Turn Lane- Mainline (Both approaches)	N/A	44%	26%	WisDOT Approved CMF CMF ID 289	Yes
Road Diet (Lane Reconfiguration)	AADT, Speed	40%: Ped Crashes 47% Vehicle Crashes	N/A	FHWA Proven Safety Countermeasure: 19-47%	Yes
Continuous Green T-Intersection (Non-Signalized)	Occurrence of KAB Angle Crashes, Mainline AADT	12% (Signalized Option)	N/A	No safety information available on this non-signalized concept	Yes
Convert TWSC to Traffic Signal - 3 leg Intersection	Occurrence of KAB Angle Crashes, Mainline AADT	N/A	14%: Injury Crashes 34%: Angle Crashes (Injury) +50%: Rear End Crashes (Injury)	WisDOT Approved CMF CMF ID 316/317/318	No
Convert TWSC to Traffic Signal - 4 leg Intersection	Occurrence of KAB Angle Crashes, Mainline AADT	N/A	23% 67%: Angle Crashes (Injury) +39%: Rear End Crashes (Injury)	WisDOT Approved CMF CMF ID 319/320/321	No

*MN Safety Data Collected From "District Safety Plan Updates – Safe Roads For All (2023)"

Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 2:

Urban Intersections
Side Road Stop Control
Angle Crashes

(167 Intersections)

Potential Countermeasures

Safety Countermeasure	In Response to Which Risk Factor?	MN* Safety Benefit (% Crash Reduction)	WI Safety Benefit (% Crash Reduction)	Source of WI or Other Safety Data	Include in Study?
Convert TWSC to AWSC	Occurrence of KAB Angle Crashes, Context Zone	N/A	70%: All 75%: Angle Crashes 18%: Rear End 53%: Pedestrian	WisDOT Approved CMF CMF ID 3127/310/311/313	Yes
Convert TWSC Intersection to Single Lane Roundabout	Occurrence of KAB Angle Crashes, Mainline AADT	51%	58%: Injury Crashes +50% PDO Crashes	Wisconsin Study	Yes
Convert TWSC Intersection to Mini-Roundabout or Compact Roundabout	Occurrence of KAB Angle Crashes, Mainline AADT	61%: Injury Crashes (Mini-Roundabout)	N/A	CMF ID 11240, 11241 20%: All Crashes 61%: Injury Crashes	Yes
Install Advance Intersection Flashing Beacons at TWSC Intersection	N/A	N/A	5%: All 13%: Angle Crashes 8%: Rear End Crashes	WisDOT Approved CMF CMF ID 446/448/449	Yes
Convert Full Access Intersection to Minor RIRO Access	N/A	N/A	15%: All 40%: Injury Crashes 90%: Angle (All) 90%: Left Turn (All)	WisDOT Approved CMF Specific WI Study	Yes
Increase Triangle Sight Distance	N/A	N/A	56%: Injury Crashes	WisDOT Approved CMF CMF ID 1637/1638	Yes
Install or Upgrade Lighting	All	42%: Nighttime Crashes	N/A	FHWA Proven Countermeasure CMF ID 4462 shows 12%	Yes
Install Median with Marked Crosswalk (Mainline)	Mainline Cross Section, Context Zone	9%: Injury Crashes 86%: Fatal Bike & Ped Crashes	46%: Pedestrian Crashes	WisDOT Approved CMF CMF ID 175	Yes
Install Pedestrian Curb Extension (In Areas with Parking)	Context Zone	30%: All Crashes	37%: Pedestrian Crashes	WisDOT Approved CMF CMF ID 1786	Yes
Raised Crosswalk / Raised Intersection	Context Zone	45%	N/A	CMF ID 135 shows 36%	Yes
Install Retroreflective Strips on Stop Sign Posts	N/A	No Safety Benefit Included, but part of list	N/A	FHWA Proven Countermeasure	Yes
Reduce Lane Width	Speed Limit on Major/Minor Road	Up to 43%: Injury Crashes	N/A	N/A	Yes
Install Stop Bars on Side Road	N/A	N/A	N/A	FHWA Safety Countermeasure for HRRR for Unsignalized Intersections	Yes

*MN Safety Data Collected From "District Safety Plan Updates – Safe Roads For All (2023)"

Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 3:

Signalized Intersections Along Multi-Lane Arterials

(144 Intersections)

Potential Countermeasures

Safety Countermeasure	In Response to Which Risk Factor?	MN* Safety Benefit (% Crash Reduction)	WI Safety Benefit (% Crash Reduction)	Source of WI Safety Data	Include in Study?
Install Median at Intersection	Presence of Median	9%: All Crashes 89%: Fatal Bike/Ped Crashes	46%: Pedestrian Crashes	WisDOT Approved CMF CMF ID 175	Yes
Realign Intersection	Intersection Skew	N/A	Dependent on Facility Type and Existing/Proposed Skew	WisDOT Approved CMF CMF ID 5188/5190/5189/5191	Yes
Convert Signal to AWSC	N/A	N/A	N/A	No CMF data to support this safety countermeasure	Yes
Install Left Turn Lane (One Approach)	Presence of Left Turn Lane	N/A	Urban: 10% Rural: 18%	WisDOT Approved CMF Urban CMF ID 262 Rural CMF ID 4647	Yes
Install Left Turn Lane (One Approach @ T-Intersection	Presence of Left Turn Lane	N/A	Urban: 7% Rural: 15%	WisDOT Approved CMF Urban CMF ID 4644 Rural CMF ID 4643	Yes
Install Left Turn Lane (Both Approaches)	Presence of Left Turn Lane	N/A	Urban: 19% Rural: 33%	WisDOT Approved CMF Urban CMF ID 270 Rural CMF ID 4648	Yes
Install Flashing Yellow Arrow Signal Heads (Maintain Prot/Perm Phasing)	Left Turn Signal Phasing	37%: Left Turn	8%: (All Crashe 20%: Left Turn	WisDOT Approved CMF All Crashes CMF ID 4176 Lef Turn Crashes CMF ID 4177	Yes
Install Flashing Yellow Arrow Signal Heads (Maintain Perm Phasing)	Left Turn Signal Phasing	N/A	37%	WisDOT Approved CMF CMF ID 4175	Yes
Change From Permitted to Protected/Permitted Left Turn Phasing	Left Turn Signal Phasing	N/A	14%: (Left Turn	WisDOT Approved CMF CMF ID 4270	Yes
Change From Permitted or Protected/Permitted to Protected Only Left Turn Phasing	Left Turn Signal Phasing	N/A	99%: Left Turn	WisDOT Approved CMF CMF ID 333	Yes
Improve Signal Head Visibility and Install Retroreflective Backplates	Signal Heads per Number of Thru Lanes	N/A	7%: All Crashes 23%: Angle	WisDOT Approved CMF All Crashes: CMF ID 1430 Angle Crashes: WI Data	Yes
Install Retroreflective Signal Head Backplates	Signal Heads per Number of Thru Lanes	15% 2024 Study Says No Safety Benefit	15%	WisDOT Approved CMF CMF ID 1410	Yes

*MN Safety Data Collected From "District Safety Plan Updates – Safe Roads For All (2023)"

Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 3:

Signalized Intersections Along Multi-Lane Arterials

(144 Intersections)

Potential Countermeasures

Safety Countermeasure	In Response to Which Risk Factor?	MN* Safety Benefit (% Crash Reduction)	WI Safety Benefit (% Crash Reduction)	Source of WI Safety Data	Include in Study?
Close Driveway Near Intersection	Access Within Influence Area	N/A	N/A	N/A	Yes
Modify Access Near Intersection to RIRO	Access Within Influence Area	N/A	51% : Angle, Left Turn, Rear End Crashes	WisDOT Approved CMF CMF ID 8220	Yes
Improve Left Turn Lane Offset, Negative to Zero	Left Turn Lane Alignment	N/A	26%: Left Turn Crashes	WisDOT Approved CMF CMF ID 276	Yes
Provide Positive Offset to Left Turn Lanes	Left Turn Lane Alignment	N/A	34%	WisDOT Approved CMF CMF ID 6095	Yes
Corridor Signal timing to Reduce High-Speed Flow	Coordinated vs. Isolated & Speed	11%	N/A	N/A	Yes
Install Pedestrian Countdown Timer	N/A	9%: Ped Crashes	8%	WisDOT Approved CMF CMF ID 10115	Yes
Reduce Lane Width	Speed Limit on Major/Minor Road	Up to 43%: Injury Crashes	N/A	N/A	Yes
Leading Pedestrian Interval	N/A	59% : Bike & Ped Crashes	13%	WisDOT Approved CMF CMF ID 9916	Yes
Install or Upgrade Lighting	N/A	42% : Nighttime Crashes	N/A	FHWA Proven Countermeasure CMF ID 4462 shows 12%	Yes
High-Visibility Crosswalks	N/A	37% : Bike & Ped Crashes	40%: Ped Crashes	WisDOT Approve CMF CMF ID 4123	Yes
Road Diet (Lane Reconfiguration)	AADT, Left Turn Lanes, Speed	47% : All Crashes	N/A	FHWA Proven Safety Countermeasure: 19-47%	Yes
Improve Channelized Right Turn Angle	N/A	44%	60% Rear End and Sideswipe Crashes	WisDOT Approved CMF CMF ID 8431	Yes

*MN Safety Data Collected From "District Safety Plan Updates – Safe Roads For All (2023)"

Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 3:

Signalized Intersections Along Multi-Lane Arterials

(144 Intersections)

Potential Countermeasures

Safety Countermeasure	In Response to Which Risk Factor?	MN* Safety Benefit (% Crash Reduction)	WI Safety Benefit (% Crash Reduction)	Source of WI Safety Data	Include in Study?
Convert Signal to Signalized RCUT/J-Turn Intersection	AADT, Intersection Skew, Presence of Median	22%	46%: Not exact match TWSC to J-turn	WisDOT Approved CMF CMF ID 4883	Yes
Convert Signal to Continuous Green T-Intersection	AADT	15%	N/A	CMF ID 8655 & 8656 shows 4% (All Crashes) and 16% (Injury Crashes)	Yes
Remove signal and convert Intersection to RIRO Intersection	AADT, Intersection Skew, Presence of Median	N/A	15%: All 40%: Injury Crashes 90%: Angle (All) 90%: Left Turn (All)	WisDOT Approved CMF Specific WI Study	Yes
Verify/Update Clearance Intervals	Speed Limit on Major/Minor Road	Up to 36% : Rear End Crashes	N/A	N/A	Yes
Add "Prepare to Stop When Flashing" Beacons for Mainline Approaches (>40 mph)	Speed Limit on Major/Minor Road	N/A	N/A	N/A	Yes
Convert Signal to Roundabout	N/A	51%	14%: Fatal & Injury Crashes +32% PDO Crashes	Wisconsin Study	Yes
Enforcement Confirmation Lights	N/A	71%: Disobeyed Signal Crashes	N/A	CMF ID 421 & 422 installation of red light cameras: 16% angle/left turn injury; +15%-24% for Rear End	Yes

*MN Safety Data Collected From "District Safety Plan Updates – Safe Roads For All (2023)"

Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 4:

Urban Intersections

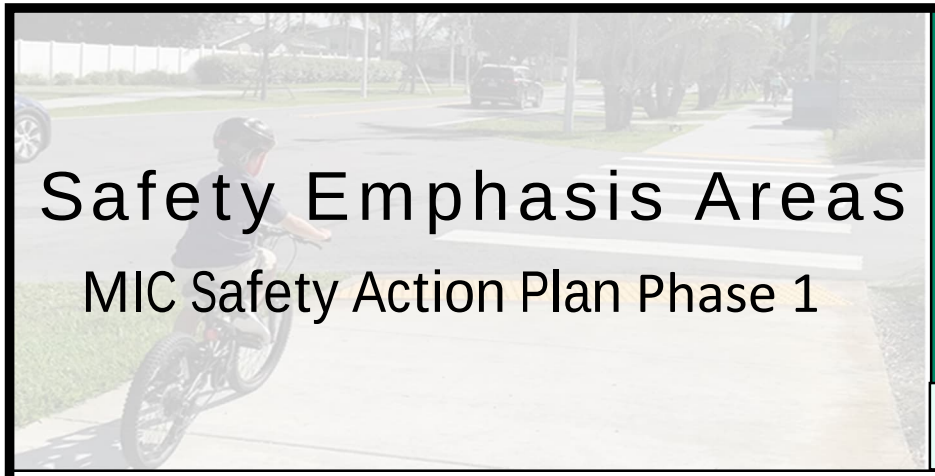
Pedestrian & Bicycle Crashes

722 Intersections

Potential Countermeasures

Safety Countermeasure	In Response to Which Risk Factor?	MN* Safety Benefit (% Crash Reduction)	WI Safety Benefit (% Crash Reduction)	Source of WI or Other Safety Data	Include in Study?
Convert TWSC to Traffic Signal - 3 leg Intersection	Mainline AADT, Type of Traffic Control	N/A	14%: Injury Crashes 34%: Angle Crashes (Injury) +50%: Rear End Crashes (Injury)	WisDOT Approved CMF CMF ID 316/317/318	Yes
Convert TWSC to Traffic Signal - 4 leg Intersection	Mainline AADT, Type of Traffic Control	N/A	23% 67%: Angle Crashes (Injury) +39%: Rear End Crashes (Injury)	WisDOT Approved CMF CMF ID 319/320/321	Yes
Convert TWSC to AWSC	Mainline AADT, Type of Traffic Control	N/A	70%: All 75%: Angle Crashes 18%: Rear End 53%: Pedestrian	WisDOT Approved CMF CMF ID 3127/310/311/313	Yes
Convert AWSC Intersection to Roundabout	Mainline AADT, Type of Traffic Control	N/A	17%: Injury Crashes +47%: PDO Crashes	WisDOT Approved CMF Specific WI Study	Yes
Convert Signal to Roundabout	Mainline AADT, Type of Traffic Control	N/A	14%: Injury Crashes +32%: PDO Crashes	WisDOT Approved CMF Specific WI Study	Yes
Convert TWSC Intersection to Roundabout	Mainline AADT, Type of Traffic Control	51%: Injury Crashes	50% to 59%: Injury Crashes +16 to +50%: PDO Crashes	WisDOT Approved CMF Specific WI Study	Yes
Convert TWSC Intersection to Mini/Compact Roundabout	Mainline AADT, Type of Traffic Control	61%: Injury Crashes (Mini-Roundabout)	N/A	CMF ID 11240, 11241 20%: All Crashes 61%: Injury Crashes	Yes
Convert Full Access Intersection to Minor RIRO Access	Mainline AADT, Type of Traffic Control	N/A	15%: All 40%: Injury Crashes 90%: Angle (All) 90%: Left Turn (All)	WisDOT Approved CMF Specific WI Study	Yes
Convert Signal to AWSC	N/A	N/A	N/A	No CMF data to support this safety countermeasure	Yes
High-Visibility Crosswalks	Exposure Length, Speed Limit on Major Road	37%: Bike & Ped Crashes	40%: Pedestrian Crashes	WisDOT Approved CMF CMF ID 4123	Yes
Install Median (Refuge) with Marked Crosswalk (Mainline)	Exposure Length	9%: Injury Crashes 86%: Fatal Bike & Ped Crashes	46%: Pedestrian Crashes	WisDOT Approved CMF CMF ID 175	Yes
Install Pedestrian Curb Extension (In Areas with Parking)	Presence of Mainline Parking	30%: All Crashes	37%: Pedestrian Crashes	WisDOT Approved CMF CMF ID 1786	Yes

*MN Safety Data Collected From "District Safety Plan Updates – Safe Roads For All (2023)"



Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 4:

Urban Intersections

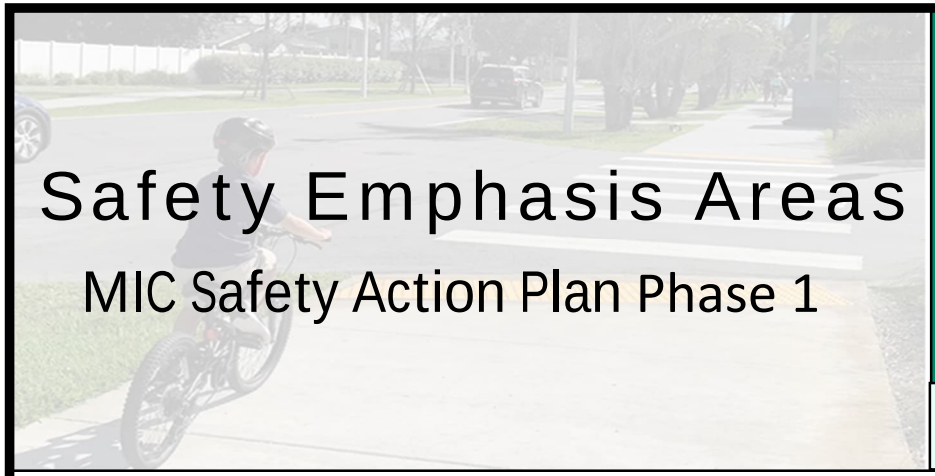
Pedestrian & Bicycle Crashes

722 Intersections

Potential Countermeasures

Safety Countermeasure	In Response to Which Risk Factor?	MN* Safety Benefit (% Crash Reduction)	WI Safety Benefit (% Crash Reduction)	Source of WI or Other Safety Data	Include in Study?
Rectangular Rapid Flashing Beacon (Unsignalized Intersections)	Traffic Control, Pedestrian Generators	69%: Pedestrian Crashes	48%: Pedestrian Crashes	WisDOT Approved CMF CMF ID 9024	Yes
Raised Crosswalk / Raised Intersection	Traffic Control, Occurrence of Crashes	45%	N/A	CMF ID 135 shows 36%	Yes
Enhanced Transit Stops (seating, shelter, dedicated bus lanes/pullouts)	Presence of Pedestrian Generators (MTU Stops)	45%	N/A	N/A	Yes
Leading Pedestrian Interval (Signalized Intersections)	Traffic Control, Presence of Pedestrian Generators	59% : Bike & Ped Crashes	13%: Ped Crashe	WisDOT Approved CMF CMF ID 9916	Yes
Install Pedestrian Countdown Timer (Signalized Intersections)	Traffic Control	9%: Ped Crashes	8%	WisDOT Approved CMF CMF ID 10115	Yes
Pedestrian Hybrid Beacon (Unsignalized Intersections)	Traffic Control, Presence of Pedestrian Generators	43%: Ped Crashes	55%: Ped Crashes	WisDOT Approved CMF CMF ID 10115	Yes
Install Sidewalk where No Sidewalk Exists	Presence of Sidewalk	N/A FHWA Proven Safety Countermeasure w/ 65-89% reduction in crashes involving a pedestrian walking along roadways	88%: Pedestrian	US DOT Study Only targets pedestrian crashes where the pedestrian is walking along roadways or a pedestrian crossing within 250-ft of an intersection where the intersection did not have sidewalks.	Yes
Green color pavement (Bike Facilities)	Presence of Bicycle Facilities	No Safety Benefit Included, but part of list	NACTO Safety Efficacy Guide (2018): 10% increase in vehicles which yield to pedestrians. Rate of conflicts decreased from 0.95 to 0.59 conflicts per 100 bicyclists after colored pavement was added to conflict zones.		Yes
Bike Lanes Marked through Intersection	Presence of Bicycle Facilities	No Safety Benefit Included, but part of list	N/A	FHWA Proven Safety Countermeasure w/ 49% Reduction in Bike Crashes	Yes
Provide Flexible Delineator Posts Adjacent to Bike Lane (Existing Bike Lanes)	Presence of Bicycle Facilities	N/A	N/A	FHWA Proven Safety Countermeasure w/ 53% Reduction in Bike Crashes	Yes
Bike Box (Two-Stage Turn Queue Box)	Presence of Bicycle Facilities	No Safety Benefit Included, but part of list	N/A	N/A	Yes
Left Turn Calming where No Median Present (See Image on Following Page)	Occurrence of Crashes, Presence of Pedestrian Generators, Exposure Length	No Safety Benefit Included, but part of list	City of Chicago Left Turn Traffic Calming Study indicates 24% Crash Reduction and a 20% increase in left turn vehicles yielding to peds in crosswalks.		Yes

*MN Safety Data Collected From "District Safety Plan Updates – Safe Roads For All (2023)"



Safety Emphasis Areas

MIC Safety Action Plan Phase 1

Safety Emphasis Area 4:

Urban Intersections

Pedestrian & Bicycle Crashes

722 Intersections

Potential Countermeasures

Safety Countermeasure	In Response to Which Risk Factor?	MN* Safety Benefit (% Crash Reduction)	WI Safety Benefit (% Crash Reduction)	Source of WI or Other Safety Data	Include in Study?
Install or Upgrade Lighting	Presence of Lighting	42%: Nighttime Crashes	N/A	FHWA Proven Countermeasure CMF ID 4462 shows 12%	Yes
Road Diet (Lane Reconfiguration)	AADT, Speed, Bike Accommodations	40%: Ped Crashes 47% Vehicle Crashes	N/A	FHWA Proven Safety Countermeasure: 19-47%	Yes
Verify/Update Pedestrian Clearance Intervals	Presence of Sidewalk, Type of Traffic Control	N/A	N/A	No CMF data to support this safety countermeasure	Yes
Install Bicycle Signal Heads	Presence of Bicycle Facilities, Type of Traffic Control	N/A	N/A	FHWA states bike signals can be used to make traveling through an intersection safer for bicyclists, and will minimize conflicts between bicyclists and other vehicles to clarify right-of-way.	Yes
Install Bike Lanes or Bike Path	Presence of Bicycle Facilities	57% (Lanes)	N/A	No CMF data to support this safety countermeasure. FHWA states tat the addition of bicycle lanes can reduce crashes up to 49% for total crashes on urban 4-lane undivided collectors and local roads and 30% for 2-lane undivided collectors and local roads.	Yes
Reduce Lane Width	Speed Limit on Major/Minor Road	Up to 43%: Injury Crashes	N/A	N/A	Yes

*MN Safety Data Collected From "District Safety Plan Updates – Safe Roads For All (2023)"

Appendix K

Decision Trees

Rural Segment (No Curb & Gutter)
Two-Lane Undivided Roads
With AADT Less Than 5,000

Roadway in a Rural Area?
(Outside Developed Areas)

NO

Edgeline and/or centerline Marking Improvements**

YES

Are Curves Present in This Segment of Roadway?

NO

Are Paved Shoulders Adequate
(3-ft Paved and Good/New Pavement Quality)?
and
Roadway with Posted Speed >35 mph?

YES

Use Decision Tree for Rural Curves
(See Next Page)
+
Continue Decision Tree for Rural Segments (Dashed Line)

NO

Roadway with Posted Speed >35 mph?

NO

Clear Zone Maintenance*
and/or
Edgeline and/or Centerline Marking Improvements**
and/or
Install Barrier to Delineate Fixed Objects
and/or
Install Barrier for Non-Recoverable Slopes
or
Improve Side Slopes

YES

Would Significant Grading be Required to Widen/Pave a Shoulder?

NO

Provide 3-ft Paved Shoulder
Or
Widen Paved Shoulder to a Total Width of 3-ft or More
and
Shoulder Rumble Strips (If >35 mph)
and/or
Centerline Rumble Strips (If >35 mph)
(Depending on Pavement Quality)
and
Safety Edge
and/or
Edgeline and/or centerline Marking Improvements**
and/or
Improve Side Slopes
and/or
Install Barrier to Delineate Fixed Objects

YES

Clear Zone Maintenance*
and/or
Edgeline and/or Centerline Marking Improvements**
and/or
Centerline Rumble Strips (If >35mph)
and/or
Install Barrier to Delineate Fixed Objects
and/or
Install Barrier for Non-Recoverable Slopes
or
Improve Side Slopes

YES

Shoulder Rumble Strips
and/or
Centerline Rumble Strips
and/or
Edgeline and/or centerline Marking Improvements**

***Edgeline and/or centerline Marking Improvements*

Increase Edgeline and/or Centerline Pavement Marking Width to 6”

and/or

Enhanced Edgeline and/or Centerline Pavement Markings (Wet Reflective Epoxy)

**Clear Zone Maintenance*

This improvement includes removing vegetation and fixed objects within the clear zone. Clear zone width varies based on facility type, speed limit, and AADT.

DISCLAIMER Other Factors Require Consideration Before Moving Forward with Any of These Recommendations, Such as the Context of the Improvement Along a Corridor.

AECOM

Rural Curves (No Curb & Gutter)
Two-Lane Undivided Roads
With AADT Less Than 5,000

MIC Safety Action Plan Phase 1

Curve in a Rural Area?
(Outside Developed Aeas)

NO

Edgeline and/or centerline Marking Improvements**

YES

Is There a History of Lane Departure Crashes on The Curve?

NO

Are Paved Shoulders Adequate
(3-ft Paved and Good/New Pavement Quality)?
and
Roadway with Posted Speed >35 mph?
+
Continue on to curve signing requirements (dashed line)

NO

Roadway with Posted Speed >35 mph?

NO

Clear Zone Maintenance*
and/or
Edgeline and/or Centerline Marking Improvements**
and/or
Install Barrier to Delineate Fixed Objects
and/or
Install Barrier for Non-Recoverable Slopes
or
Improve Side Slopes

YES

Would Significant Grading be Required to Widen/Pave a Shoulder?

NO

Provide 3-ft Paved Shoulder
Or
Widen Paved Shoulder to a Total Width of 3-ft or More
and
Shoulder Rumble Strips (If >35mph)
and/or
Centerline Rumble Strips (If >35 mph)
(Depending on Pavement Quality)
and
Safety Edge
and/or
Edgeline and/or centerline Marking Improvements**
and/or
Improve Side Slopes
and/or
Install Barrier to Delineate Fixed Objects

YES

Shoulder Rumble Strips
and/or
Centerline Rumble Strips
and/or
Edgeline and/or centerline Marking Improvements**

YES

Clear Zone Maintenance*
and/or
Edgeline and/or Centerline Marking Improvements**
and/or
Centerline Rumble Strips (If >35 mph)
and/or
Install Barrier to Delineate Fixed Objects
and/or
Install Barrier for Non-Recoverable Slopes
or
Improve Side Slopes

YES

Consider High Friction Surface Treatment
(If >40 mph)
+
Continue on to paved shoulder requirements
(dashed line)

Re-evaluate the Curve Signing and Updating to Meet MUTCD and State Policy as Necessary.^

Are There Existing Chevrons or Night Arrows on The Curve?

YES

Upgrade to Fluorescent Signs
and/or
In-Lane Curve Warning Pavement Markings

NO

Install Chevrons
And/or
Install Night Arrows

Clear Zone Maintenance

This improvement includes removing vegetation and fixed objects within the clear zone. Clear zone width varies based on facility type, speed limit, and AADT.

Triangle Intersections on Curves

Reconstruct a triangle intersection, or an intersection with a visual trap, on a curve to a T-Intersection with as close to a 90 degree approach angle as possible.

Intersection Near Curve

- Install Flashing Beacons with Warning 'Stop Ahead' Signs if Curve is Adjacent to a stop control intersection.

**Edgeline and/or centerline Marking Improvements*

Increase Edgeline and/or Centerline Pavement Marking Width to 6"

and/or

Enhanced Edgeline and/or Centerline Pavement Markings (Wet Reflective Epoxy)

^*Update Signing to Meet MUTCD and State Policy*

- Curve Warning Signs
  - Required if curve is less than posted or Statutory Speeds and
  - Curve Advisory Speed is >=35 mph
- Curve Turn Sign
  - Required if curve is less than posted or statutory speeds and
  - Curve advisory speed is <=30 mph
- Advisory Plaque
  - Required if speed difference is >=15 mph (>=10 mph for WisDOT)
- Chevrons and/or Night Arrows
  - Required if speed difference is >=15 mph

AECOM

DISCLAIMER Other Factors Require Consideration Before Moving Forward with Any of These Recommendations, Such as the Context of the Improvement Along a Corridor.

Urban Intersections with Side Road Stop Control: Angle Crashes

Answer Each Question in the Blue Boxes to Assist in Selecting Appropriate Safety Countermeasures

History of High-Severity Angle Crashes?

YES

Can Crashes be Mitigated by a Change in Traffic Control or a Change in Access?

YES

Conduct a Traffic Study to Determine Appropriate Type of Traffic Control. Consider Signalization, Roundabouts, Continuous Green T-Intersection (Un-Signalized), All-Way Stop Control, and Access Modification with Medians

NO

Consider Additional Safety Improvements (Follow Dashed Arrow)

Are there Concerns with Stop Sign Visibility?

NO

Install Retoreflective Strips on Stop Sign Posts

YES

Consider Improving Stop Sign Visibility by Doing One or More of the Following:
- Remove Vegetation
- Restrict Parking Near the Intersection
- Install Retoreflective Strips on Stop Sign Posts
- Install Flashing Beacons with Warning 'Stop Ahead' Signs

Does Mainline Have Dedicated Left Turn Lanes?*

NO

Install Left Turn Lane/s if No Right-of-Way Impacts or If Impacts are Acceptable
or
Reduce Lane Widths and Add Left Turn Lanes If No Space is Available

Is mainline speed >40 mph and is it a multilane roadway in each direction?

YES

Conduct a Road Diet Evaluation If AADT less than ~15,000.

Note:
Consider all State and Local policies and guidelines when considering the installation of left turn lanes.

Review crash history, property impacts of installing right turn lanes, bike/ped impacts of installing right turn lanes, and other lane reconfiguration options. Determine if installation of right turn lanes would be an appropriate safety countermeasure based on the results of this evaluation.

NO

Remove Obstructions (Vegetation, Parking Near Intersection, etc.) to Increase Intersection Triangle Sight Distance

Are Sight-Obstructions Present in Intersection Quadrants?

YES

Is the Sight Obstruction a Residential or Commercial Building?

YES

If there is a Crash History Associated with Sight Distance Issues at the Intersection Consider Conducting a Traffic Study to Determine If a Change in Traffic Control would Address the Safety Concern

Parking Present on Mainline and No Existing Pedestrian Curb Extensions?

YES

Install Pedestrian Curb Extensions

NO

Extend Median with High-Visibility Crosswalk

Does the Crosswalk Pass Through the Median?

YES

Install High-Visibility Crosswalk

Median Present?

YES

NO

Install Median with High-Visibility Crosswalks (If Space is Available)
or
Reduce Lane Widths and Add Left Turn Lanes If No Space is Available
or
Left Turn Calming with High-Visibility Crosswalks (If No Space Available)

Does the Intersection have Pedestrian Generators nearby, such as Commercial, Retail, Schools, Library, or Parks?

YES

Install a Raised Crosswalk
or
Install a Raised Intersection

Stop Bars Present on Side Road Approaches?

NO

Install Pavement Marking for Stop Bars

YES

Evaluate Suitability of Existing Lighting System

Lighting Present at Intersection?

NO

Install Intersection Lighting

AECOM

DISCLAIMER Other Factors Require Consideration Before Moving Forward with Any of These Recommendations, Such as the Context of the Improvement Along a Corridor.

Signalized Intersections Along Mult-Lane Arterials

Answer Each Question in the Blue Boxes to Assist in Selecting Appropriate Safety Countermeasures

History of High-Severity Crashes?

YES

Can Crashes be Mitigated by a Change in Traffic Control or a Change in Access?

YES

Conduct a Traffic Study to Determine Appropriate Type of Traffic Control. Consider Roundabouts, Continuous Green T-Intersection, RCUT/J-Turn, All-Way Stop Control, Access Modification with Medians, and/or Driveway Closures.

NO

Consider Additional Safety Improvements
(Follow Dashed Arrow)

Presence of Mainline Median?

NO

Install Median at Intersection
or
Reduce Lane Widths if No Space is Available and Install Median
or
Complete Road Diet Evaluation to Install Median
(Consider Installing Left Turn Lanes if Not Already Present)

Does the Intersection Alignment Contribute to Vision Triangle Issues or a History of High-Severity Crashes?

YES

Realign Intersection if Intersection Skew is >25 Degrees and No Property Impacts or If Impacts are Acceptable

Does the Mainline Have a Left Turn Lane with a Permitted Left Turn Phase?

YES

Are There Existing Flashing Yellow Arrow (FYA) Signal Indications?

NO

Install Flashing Yellow Arrow (FYA) Signal Indications
and
Consider Changing Left Turn Phasing to Protected/Permitted or Protected Only

YES

Consider Changing Left Turn Phasing to Protected/Permitted or Protected Only

Does Mainline Have Dedicated Left Turn Lanes?

NO

Install Left Turn Lane/s if No Right-of-Way Impacts or If Impacts are Acceptable
or
Reduce Lane Widths and Install Left Turn Lanes If No Space is Available
Or
Complete Road Diet Evaluation to Install Left Turn Lanes
(Consider Installing a Median if Not Already Present)

Do Mainline Left Turn Lanes Have Negative Offset?

YES

Improve Left Turn Lane Offset to Neutral or Positive Offset

Review crash history and intersection sight distances and install “Prepare to Stop When Flashing” Beacons for Mainline Approaches and/or Install Enforcement Confirmation Lights if there is found to be a trend of red-light running crashes or poor or deficient intersection sight distances.

Improve Right Turn Lane Geometry

This improvement includes correcting an existing channelized right turn lane to improve the approach angle. Consider a channelized right turn lane with as close as possible to a 90-degree approach angle.

Is the Intersection in a Coordinated Signal System with Mainline Speeds >=30mph?

YES

Update Corridor Signal Timing to Favor Slower Progression Speeds

Are Pedestrian Crossing Present?

YES

Verify and Update Pedestrian Clearance Intervals
+
Consider the following improvements if Not Already Present at Intersection;
- Install High-Visibility Crosswalks
- Install Leading Pedestrian Interval (LPI)
- Install Pedestrian Countdown Timer Signal Indications

Lighting Present at Intersection?

YES

Evaluate Suitability of Existing Lighting System

NO

Install Intersection Lighting

Are Overhead Signal Indications Located Over Each Lane?

YES

Install Retroreflective Signal Head Backplates

NO

Install Traffic Signal Indications Over Each Lane for Mainline Approaches
+
Install Retroreflective Signal Head Backplates

AECOM

DISCLAIMER Other Factors Require Consideration Before Moving Forward with Any of These Recommendations, Such as the Context of the Improvement Along a Corridor.

Urban Intersections: Pedestrian and Bicycle Crashes

Answer Each Question in the Blue Boxes to Assist in Selecting Appropriate Safety Countermeasures

History of Pedestrian or Bicycle Crashes?

YES

Can Crashes be Mitigated by a Change in Traffic Control or a Change in Access?

YES

Conduct a Traffic Study to Determine Appropriate Type of Traffic Control. Consider Signalization, Roundabouts, All-Way Stop Control, Access Modification with Medians, and/or Driveway Closures.

NO

Consider Additional Safety Improvements (Follow Dashed Arrow)

Presence of Mainline Sidewalk?

NO

Install Sidewalk if No Significant Property Impacts

Unsignalized Intersection, Parking Present on Mainline, and No Existing Pedestrian Curb Extensions?

YES

Install Pedestrian Curb Extensions

Large Crossing Distances for Pedestrians?

YES

Median Present?

YES

Does the Crosswalk Pass Through the Median?

NO

Extend Median with High-Visibility Crosswalk

YES

Install High-Visibility Crosswalk

NO

Install Median with High-Visibility Crosswalks
(If Space is Available)
or
Left Turn Calming with High-Visibility Crosswalks
(If No Space Available)
or
Reduce Lane Width and Install Median
or
Complete Road Diet Evaluation

Lighting Present at Intersection?

YES

Evaluate Suitability of Existing Lighting System

NO

Install Intersection Lighting

Is the Intersection Signalized?

YES

Leading Pedestrian Interval
and/or
Install Pedestrian Countdown Timer Signal Indications
and/or
Verify/Update Pedestrian Crossing Times

NO

Install RRFB
Or
Install Pedestrian Hybrid Beacon
and/or
Install Raised Crosswalk
or
Install Raised Intersection

Presence of Bicycle Facilities?

NO

Does the Roadway Have Space for Adding Bike Lanes?

NO

Reduce Lane Widths and Add Bike Lanes
or
Complete Road Diet Evaluation
Or
Consider Bike Path or Multi-Use Path

YES

Install Bike Lanes
+
Consider Additional Bicycle Facility Improvements
(Follow Dashed Arrow)

YES

Install Bicycle Signal Heads at Signalized Intersections
and/or
Bike Box (Two-Stage Turn) at Signalized Intersections
and/or
Install Flexible Delineator Posts to Separate Bike Lanes and Travel Lanes
and/or
Mark Bike Lanes Through Intersection
and/or
Use Green Pavement for Bike Lanes

Note:
Consider improvements to transit stops if one is located near the intersection, including:

- Bus Shelter
- Bus Pullouts
- Seating
- Lighting
- Pedestrian Accessibility

AECOM

DISCLAIMER Other Factors Require Consideration Before Moving Forward with Any of These Recommendations, Such as the Context of the Improvement Along a Corridor.

Appendix L

Cost Estimate Summary

Cost Estimates

SEA 1: Rural Two-Lane Undivided Roads (With Less Than 5,000 AADT) - SEGMENTS			
Safety Countermeasure	Unit	Unit Price	Comments / Assumptions
Add Paved Shoulders + Safety Edge	MI	$ 330,000	Assume a 3-ft min paved shoulder width, 2-ft unpaved shoudler, with new BAD under the entire shoulder. Assumes both sides of road.
Clear Zone Maintenance	MI	$ 47,000	This improvement includes removing vegetation and small diameter trees within the clear zone.
Increase Edgeline + Centerline from 4" to 6" (Paint)	MI	$ 19,800	Assumes removal of existing marking line in addition to new pavement marking. This assumes both side of road
Increase Edgeline + Centerline from 4" to 6" (Epoxy)	MI	$ 34,000	Assumes removal of existing marking line in addition to new pavement marking. This assumes both side of road
Increase Edgeline + Centerline from 4" to 8" (Paint)	MI	$ 34,000	Assumes removal of existing marking line in addition to new pavement marking. This assumes both side of road
Increase Edgeline + Centerline from 4" to 8" (Epoxy)	MI	$ 46,000	Assumes removal of existing marking line in addition to new pavement marking. This assumes both side of road
Install Barrier at Non-Recoverable Slopes	LF	$ 50	Assumes beam guard
Install Centerline Rumble Strips	MI	$ 12,000	Assumes a 2-ft wide mill + overlay down the centerline.
Repave Existing Shoulder and Install Safety Edge	MI	$ 140,000	Assume repaving of a 5' existing paved shoulder. Assumes both sides of road
Install Shoulder Rumble Strips	MI	$ 8,000	Assumes both sides of the road would install rumble strips. All projects that recommend rumble strips also include recommendations to pave or widen shoulders. Costs for shoulder work are included in other items
Remove or Relocate Fixed Object	MI	$ 41,000	Assumes removal of 50 trees over 3-inch in diameter. Removing other fixed objects such as rock/boulder are not included.
Side Slope Improvements	MI	$ 190,000	Improve 2.5:1 slope to 4:1/3:1 slope
Install Wet Reflective Pavement Markings	MI	$ 41,000	Assume double centerline, two edelines, 6"
Widen Paved Shoulder + Safety Edge	MI	$ 240,000	Assumes widening paved shoulder width by 3-ft. Assumes both sides of road.

Note: All costs include a 20% contingency

Note: These costs are in 2024 Dollars

Note: No design costs included

Cost Estimates

SEA 1: Rural Two-Lane Undivided Roads (With Less Than 5,000 AADT) - CURVES			
Safety Countermeasure	Unit	Unit Price	Comments / Assumptions
Add Paved Shoulders + Safety Edge	MI	$ 330,000	
Clear Zone Maintenance	MI	$ 47,000	This improvement includes removing vegetation and small diameter trees within the clear zone.
High Friction Surface Treatment	CURVE	$ 116,600	Cost was developed as a per mile unit cost, but adjusted to a lump sum cost per curve. Max curve length that was evaluated was 0.22 mi.
Increase Edgeline + Centerline from 4" to 6" (Paint)	MI	$ 19,800	
Increase Edgeline + Centerline from 4" to 6" (Epoxy)	MI	$ 34,000	
Increase Edgeline + Centerline from 4" to 8" (Paint)	MI	$ 34,000	
Increase Edgeline + Centerline from 4" to 8" (Epoxy)	MI	$ 46,000	
Install Centerline Rumble Strips	MI	$ 12,000	Assumes a 2-ft wide mill + overlay down the centerline.
Install Shoulder Rumble Strips	MI	$ 8,000	Assumes both sides of the road would install rumble strips. All projects that recommend rumble strips also include recommendations to pave or widen shoulders. Costs for shoulder work are included in other items
In-Lane Curve Warning Pavement Markings	CURVE	$ 3,000	
Install Barrier at Non-Recoverable Slopes	LF	$ 50	
Re-align Side Road on Curve at Intersections	INT	$ 225,000	Assume 25% of cost estimated for SEA3. This improvement only re-aligns one leg of an intersections and impacts are generally less due to the rural nature of curves.
Install Chevron Signs or Night Arrow	CURVE	$ 2,000	Assume $4,000 if installing both Chevrons and a Night Arrow
Reconstruct Triangle Intersections on Curve to T-Intersection	INT	$ 60,000	
Side Slope Improvements	MI	$ 190,000	
Update Curve Advisory Speeds	CURVE	$ 1,000	
Upgrade or Install Fluorescent Curve Signs	CURVE	$ 1,000	
Install Wet Reflective Pavement Markings	MI	$ 41,000	
Widen Paved Shoulder + Safety Edge	MI	$ 240,000	

Note: All costs include a 20% contingency

Note: These costs are in 2024 Dollars

Note: No design costs included

Cost Estimates

SEA 2: Urban Intersections Side Road Stop Control (Angle Crashes)			
Safety Countermeasure	Unit	Unit Price	Comments / Assumptions
Complete a Traffic Study to Determine Appropriate Traffic Control (in house)	INT	$ 10,000	
Complete a Traffic Study to Determine Appropriate Traffic Control (by Consultant)	INT	$ 48,000	
Modify Access Near Intersection to RIRO	INT	$ 68,000	Assumes no roadway widening.
Close Driveway Near Intersection	EACH	$ 4,000	
Continuous Green T-Intersection (Non-Signalized)	INT	$ 220,000	
Convert TWSC to traffic Signal - 3 Leg*	INT	$ 240,000	
Convert TWSC to traffic Signal - 4 Leg*	INT	$ 340,000	
Install Advance Intersection Flashing Becaons at TWSC Intersection	INT	$ 18,000	Assumes a solar system
Upgrade Lighting LED**	INT	$ 3,000	only updating LED's for improved effieciency no new poles
Install Lighting - Decorative	INT	$ 58,000	Update entire fixtures with decorative elements
Install Lighting - DOT standard	INT	$ 26,000	
Convert Full Access Intersection to Minor RIRO Access	INT	$ 380,000	
Convert TWSC Intersection to Mini-Roundabout or Compact Roundabout	INT	$ 1,500,000	
Convert TWSC Intersection to Single Lane Roundabout	INT	$ 2,500,000	
Convert TWSC to AWSC	INT	$ 2,000	
Increase Triangle Sight Distance (Remove Vegetation)**	INT	$ 7,000	
Install Left Turn Lane - Mainline (One Approach)	INT	$ 400,000	Assumes roadway widening being required
Install Left Turn Lane - Mainline (Both Approaches)	INT	$ 800,000	Assumes roadway widening being required
Extend Median through Marked Crosswalk (Mainline)	CROSSING	$ 69,000	Assumes an existing median is present
Install Median with Marked Crosswalk (Mainline)	CROSSING	$ 98,000	Assumes no roadway widening
Left Turn Calming where No Median Present**	INT	$ 8,000	Assumes only being installed on mainline approaches
Install Pedestrian Curb Extension (In Areas with Parking)	INT	$ 100,000	
Restrict Parking Near Intersection**	INT	$ 4,000	Assumes just pavement marking and signing updates
Install Retroreflective Strips on Stop Sign Posts**	INT	$ 1,000	
Install Right Turn Lane- Mainline (Both approaches)	INT	$ 800,000	Assumes roadway widening being required
Install Right Turn Lane- Mainline (One Approach)	INT	$ 400,000	Assumes roadway widening being required
Raised Crosswalk	CROSSING	$ 50,000	
Raised Intersection	INT	$ 120,000	
Install Stop Bars on Side Road Approaches**	INT	$ 2,000	
Road Diet (Lane Reconfiguration) with Resurfacing	MILE	$ 870,000	
Road Diet (Lane Reconfiguration) without Resurfacing	MILE	$ 120,000	
Complete a Road Diet Evaluation	MILE	$ 90,000	
Reduce Lane Width**	MI	$ 120,000	Assumes removing/adding pavement marking edgelines without any road widening/reducing.

Note: All costs include a 20% contingency

Note: These costs are in 2024 Dollars

Note: No design costs included

**Improvements Do NOT Include Geometric Changes or Changes in Traffic Control

Cost Estimates

SEA 3: Signalized Intersections Along Multi-Lane Arterials			
Safety Countermeasure	Unit	Unit Price	Comments / Assumptions
Complete a Traffic Study to Determine Appropriate Traffic Control (in house)	INT	$ 10,000	
Complete a Traffic Study to Determine Appropriate Traffic Control (by Consultant)	INT	$ 48,000	
Close Driveway Near Intersection	EACH	$ 4,000	
Convert Signal to AWSC	INT	$ 33,000	
Install Flashing Yellow Arrow Signal Heads**	INT	$ 29,000	
Change Left Turn Signal Phasing - No Equipment Change*	INT	$ 4,000	
Improve Signal Head Visibility and Install Retroreflective Backpaltes	INT	$ 130,000	
Install Retroreflective Signal Head Backplates**	INT	$ 4,000	Assumes only adding retroreflective backplates
Corridor Signal Timing to Reduce High-Speed Flow (in house)	CORRIDOR	$ 5,000	
Corridor Signal Timing to Reduce High-Speed Flow (by Consultant)	CORRIDOR	$ 26,000	
Upgrade to Pedestrian Countdown Timer**	INT	$ 7,000	Assumes existing pedestrian crossings are present.
Install Pedestrian Counterdown Timer**	INT	$ 17,000	Assumes no existing pedestrian signal heads being present. Would only be used in scenarios where a new crossing was being added to an intersection.
Upgrade Lighting LED**	INT	$ 6,000	
Install Lighting - Decorative	INT	$ 116,000	
Install Lighting - DOT standard	INT	$ 52,000	
Leading Pedestrian Interval*	INT	$ 1,000	Assumes existing pedestrians heads are present.
Verify/Update Clearance Intervals**	INT	$ 2,000	
Improve Channelized Right Turn Angle	INT	$ 150,000	Assumes two channelized right turn lanes.
Add "Prepare to Stop When Flashing" Beacons for Mainline Approaches**	INT	$ 18,000	Assumes solar system
Enforecement Confirmation Lights**	INT	$ 2,000	
Convert Signal to Continuous Green T-Intersection	INT	$ 250,000	Assumes no roadway widening
Convert Signal to Roundabout	INT	$ 2,600,000	
Convert Signal to Signalized RCUT/J-Turn Intersection	INT	$ 2,500,000	
High-Visibility Crosswalks**	CROSSING	$ 6,000	
Improve Left Turn Lane Offset, Negative to Positive or Zero	INT	$ 240,000	Assumes signal modifcations would be required
Install Left Turn Lane (Both Approaches)	INT	$ 800,000	Assumes roadway widening being required
Install Left Turn Lane (One Approach)	INT	$ 400,000	Assumes roadway widening being required
Install Median at Intersection	CROSSING	$ 98,000	Assumes no roadway widening
Modify Access Near Intersection to RIRO	INT	$ 68,000	Assumes no roadway widening.
Realign Intersection	INT	$ 900,000	Assumes an intersection with a skew of 25 degress or more would need to be realigned to 20 deg or less.
Reduce Lane Width**	MI	$ 25,000	Assumes removing/adding pavement marking edgelines without any road widening/reducing.
Road Diet (Lane Reconfiguration) with Resurfacing	MILE	$ 870,000	
Road Diet (Lane Reconfiguration) without Resurfacing	MILE	$ 120,000	
Complete a Road Diet Evaluation	MI	$ 90,000	
Convert Full Access Signalized Intersection to Minor RIRO Access	INT	$ 410,000	Assumes no median present and removal of signal

Note: All costs include a 20% contingency

Note: These costs are in 2024 Dollars

Note: No design costs included

*Only Requires Modifications to Signal Controller.

**Improvements Do NOT Include Geometric Changes or Changes in Traffic Control

AECOM

DULUTH-SUPERIOR METROPOLITAN INTERSTATE COUNCIL MIC

Cost Estimates

SEA 4: Urban Intersections (Pedestrian & Bicycle Crashes)			
Safety Countermeasure	Unit	Unit Price	Comments / Assumptions
Complete a Traffic Study to Determine Appropriate Traffic Control (in house)	INT	$ 10,000	
Complete a Traffic Study to Determine Appropriate Traffic Control (by Consultant)	INT	$ 48,000	
Bike Box (Two-Stage Turn Queue Box)**	INT	$ 1,000	Assumes only for mainline (2 bike boxes)
Bike Lanes Marked through Intersection**	INT	$ 1,000	Assumes only for mainline
Close Driveway Near Intersection	EACH	$ 4,000	
Convert Full Access Intersection to Minor RIRO Access	INT	$ 380,000	Assumes no median present
Convert TWSC to Traffic Signal - 3 Leg Intersection	INT	$ 240,000	
Convert TWSC to Traffic Signal - 4 Leg Intersection	INT	$ 340,000	
Convert Signal to Roundabout	INT	$ 2,600,000	
Convert TWSC or AWSC Intersection to Mini/Compact Roundabout	INT	$ 1,500,000	
Convert TWSC or AWSC Intersection to Roundabout	INT	$ 2,500,000	
Convert TWSC to AWSC	INT	$ 2,000	
Upgrade Lighting LED**	INT	$ 3,000	
Install Lighting - Decorative**	INT	$ 58,000	
Install Lighting - DOT standard**	INT	$ 26,000	
Green color pavement (Bike Facilities)**	INT	$ 22,000	Assumes two crossings.
RRFB	CROSSING	$ 36,000	Assumes per crossing and a 4-legged intersection may have two crossings.
Enhanced Transit Stops (Seating,Shelter, Dedicated Pullout)	BUS STOP	$ 40,000	Cost for Seating + Shelter + Dedicated Pullout. Cost per bus stop.
Leading Pedestrian Interval*	INT	$ 1,000	Assumes existing pedestrians heads are present.
Upgrade to Pedestrian Countdown Timer**	INT	$ 7,000	Assumes existing pedestrian crossings are present.
Install Pedestrian Counterdown Timer**	INT	$ 17,000	Assumes no existing pedestrian signal heads being present. Would only be used in scenarios where a new crossing was being added to an intersection.
Pedestrian Hybrid Beacon	INT.	$ 110,000	Assumes use of monotube equipment
Provide Flexible Delineator Posts Adjacent to Bike Lane**	INT	$ 3,000	Assumes 150-ft per mainline approach
Left Turn Calming where No Median Present**	INT	$ 8,000	Assumes only being installed on mainline approaches
Verify/Update Pedestrian Crossing Times	INT	$ 2,000	
Install Bicycle Signal Heads**	INT	$ 10,000	Assumes signal already present
High-Visibility Crosswalks**	CROSSING	$ 6,000	Assumes per crosswalk
Extend Median (Refuge) with Marked Crosswalk (Mainline)	CROSSING	$ 69,000	Assumes an existing median is present
Install Median at Intersection	CROSSING	$ 98,000	Assumes no roadway widening
Install Pedestrian Curb Extension (In Areas with Parking)	INT	$ 100,000	
Install Sidewalk where No Sidewalk Exists	MI	$ 330,000	Assumes 5-ft wide sidewalk
Raised Crosswalk	CROSSING	$ 50,000	
Raised Intersection	INT	$ 120,000	
Road Diet (Lane Reconfiguration) with Resurfacing	MI	$ 870,000	
Road Diet (Lane Reconfiguration) without Resurfacing	MI	$ 120,000	
Complete a Road Diet Evaluation	MI	$ 90,000	
Bike Path or Multi-Use Path	MI	$ 850,000	Assumes double the cost for Install Sidewalk (10-ft wide shared use path). Assume earthwork or side slope improvements are necessary.
Reduce Lane Width**	MI	$ 25,000	Assumes removing/adding pavement marking edgelines without any road widening/reducing.
Install Bike Lanes (re-striping)**	MI	$ 25,000	Assumes no roadway widening. In most situations it involved removal of parking for adding bike lanes. Assumes both directions.

Note: All costs include a 20% contingency

Note: These costs are estimated in 2024 Dollars

Note: No design costs included

*Only Requires Modifications to Signal Controller.

**Improvements Do NOT Include Geometric Changes or Changes in Traffic Control

Appendix M

Safety Projects Prioritized by Risk

Safety Emphasis Area 1 (Segments)

Safety Projects - Prioritized by Risk

Rural Two-Lane Undivided Roads
With AADT Less Than 5,000

(Roads on the Functional Classification System)

Road Name	State	County	Municipality	Speed Limit	Number of KAB Crashes	Length (miles)	AADT	Total Stars	Edgeline And/or Centerline Marking Improvement	Shoulder Rumble strips	Centerline Rumble Strips	Provide 3 ft shoulder	Widen Shoulder to 3 ft	Safety Edge	Improve Side Slopes	Clear Zone Maintenance	Install barrier to delineate fixed object	Install barrier for non-recoverable slopes	See Curves Recommendations (# Of Curves in Segment)	Project Cost Estimate (No Overlap with Curves)	Project Cost Estimate (Including Costs for Curves)
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	50	1	0.3	364	★★★★★	X	X	X	X		X		X or	X or		1	$151,000	$169,000
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	45	1	3.6	2000	★★★★★	X		X						X		7	$788,000	$1,036,000
CTH A	Wisconsin	Douglas	Township of Superior	55	2	0.7	970	★★★★½	X		X						X		1	$142,000	$183,000
Becks Rd	Minnesota	Saint Louis	Township of Midway	55	1	1.1	670	★★★★½	X	X	X		X	X		X		X	2	$417,000	$581,000
CTH A	Wisconsin	Douglas	Township of Superior	40	1	1.3	730	★★★★½	X		X					X or	X or		2	$154,000	$274,000
S Chicago Ave	Wisconsin	Douglas	Village of Oliver	45	1	1.3	2300	★★★★½	X	X	X	X		X		X or	X or		3	$472,000	$747,000
CTH K	Wisconsin	Douglas	Township of Parkland	55	0	1.8	1200	★★★★½	X	X	X		X	X					0	$556,000	$556,000
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	55	0	0.2	364	★★★★	X	X	X	X		X					2	$89,000	$480,000
Occidental Blvd	Minnesota	Saint Louis	City of Duluth	30	0	0.4	348	★★★★	X								X		2	$129,000	$136,000
Saginaw Rd	Minnesota	Saint Louis	Township of Solway	55	0	0.4	225	★★★★	X	X	X	X		X					2	$177,000	$185,000
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	40	0	0.7	1450	★★★★	X	X	X	X		X			X	X	3	$460,000	$475,000
CTH 8	Minnesota	Saint Louis	Township of Grand Lake	30	0	0.8	120	★★★★	Segment Not Evaluated - Gravel Road										N/A		
CTH U	Wisconsin	Douglas	Township of Lakeside	30	0	0.9	90	★★★★	X						X or			X or	5	$214,000	$462,000
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	55	1	1.0	2800	★★★★	X	X	X	X		X		X or	X or		2	$549,000	$573,000
Observation Rd	Minnesota	Saint Louis	City of Duluth	40	0	1.1	1100	★★★★	X	X	X	X		X			X		3	$613,000	$692,000
CTH E	Wisconsin	Douglas	Township of Parkland	55	0	1.1	1200	★★★★	X	X	X	X		X					1	$448,000	$710,000
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	30	0	1.2	3000	★★★★	X							X or	X or		2	$125,000	$130,000
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	45	1	1.4	348	★★★★	X								X	X	16	$537,000	$617,000
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	30	0	1.7	1580	★★★★	X							X or	X or	X	6	$710,000	$758,000
CTH C	Wisconsin	Douglas	Township of Parkland	30	4	4.0	1000	★★★★	X	X	X		X	X					0	$1,211,000	$1,211,000
McQuade Rd	Minnesota	Saint Louis	Township of Lakewood	40	2	0.4	345	★★★½	Segment Not Evaluated										N/A		
W Skyline	Minnesota	Saint Louis	Township of Midway	30	1	0.5	680	★★★½	Segment Not Evaluated										N/A		
Caribou Lake Rd	Minnesota	Saint Louis	Township of Grand Lake	40	2	0.6	499	★★★½	X	X	X	X		X		X or	X or		0	$297,000	$297,000
Swan Lake Rd	Minnesota	Saint Louis	City of Hermantown	55	0	0.7	1400	★★★½	Segment Not Evaluated										N/A		
Lavaque Rd	Minnesota	Saint Louis	City of Hermantown	45	0	0.7	3500	★★★½	Segment Not Evaluated										N/A		
Schultz Rd	Minnesota	Saint Louis	City of Rice Lake	55	2	1.0	115	★★★½	X		X								0	$59,000	$59,000
Culbertson Rd	Minnesota	Saint Louis	Township of Duluth	55	0	1.0	380	★★★½	Segment Not Evaluated										N/A		
CTH E	Wisconsin	Douglas	Township of Parkland	55	0	1.0	2000	★★★½	X	X	X	X		X		X	X		0	$459,000	$459,000
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	30	1	1.8	680	★★★½	X								X	X	11	$793,000	$852,000
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	55	1	2.0	2000	★★★½	Segment Not Evaluated										N/A		
Schultz Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	2.0	170	★★★½	X		X								0	$116,000	$116,000
W Calvary Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	2.0	1650	★★★½	Segment Not Evaluated										N/A		
CTH K	Wisconsin	Douglas	Township of Parkland	55	0	2.5	850	★★★½	X	X	X		X	X					0	$753,000	$753,000
CTH D	Wisconsin	Douglas	Township of Lakeside	55	1	2.5	1400	★★★½	Segment Not Evaluated										N/A		
CTH C	Wisconsin	Douglas	Township of Parkland	55	0	2.7	750	★★★½	Segment Not Evaluated										N/A		
CTH E	Wisconsin	Douglas	Township of Parkland	45	1	2.8	670	★★★½	X	X	X	X		X					0	$1,113,000	$1,113,000
CTH C	Wisconsin	Douglas	Township of Superior	30	0	3.7	430	★★★½	Segment Not Evaluated										N/A		
CTH W	Wisconsin	Douglas	Township of Superior	30	0	3.7	270	★★★½	Segment Not Evaluated										N/A		

Safety Emphasis Area 1 (Curves)

Safety Projects - Prioritized by Risk

Rural Two-Lane Undivided Roads
With AADT Less Than 5,000

(Roads on the Functional Classification System)

RoadName	State	County	Municipality	Lat/Long	Speed Limit (mph)	Curve Advisory Speed (mph)	Length (miles)	AADT	Total Stars	Curve Overlaps with a Tier 1 Segment?	Curve Overlaps with a Tier 2 Segment?	Edgeline And/or Centerline Marking Improvement	High Friction Surface Treatment	Re-evaluate Curve Signing	Install Chevrons	Install Night Arrows	Upgrade to Fluorescent signs	Install In-Lane curve warning pavement Markings	Shoulder Rumble strips	Centerline Rumble Strips	Provide 3 ft shoulder	Widen Shoulder to 3 ft	Safety Edge	Improve Side Slopes	Clear Zone Maintenance	Install barrier to delineate Fixed object	Install barrier for non-recoverable slopes	Install Flashing Beacons with Warning 'Stop Ahead' Signs	Realign Intersection to Correct Visual Trap	Reconstruct Triangle Intersection	Project Cost Estimate (No Overlap with Segments)	Project Cost Estimate (Assumes Standalone Proejcts for Each Curve)
CTH C	Wisconsin	Douglas	Township of Superior	46°35'25.04"N, 92° 7'58.90"W	55	15	3.7	430	★★★★	N	N	X	X	X	X		X	X	X		X		X							X	$214,000	$214,000
W Tischer Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'49.13"N, 92° 0'19.37"W	40	20	2.0	870	★★★★	N	N	X		X	X		X	X	X		X		X	X or			X or			X		$274,000	$274,000
E McCuen St	Minnesota	Saint Louis	City of Duluth	46°39'22.28"N, 92°12'30.51"W	35	25	0.6	2300	★★★ ↾	N	N	X				X	X															$7,000	$7,000
CTH 8	Minnesota	Saint Louis	Township of Grand Lake	46°55'24.22"N, 92°24'46.07"W	55	No Posting	0.8	120	★★★ ↾	N	N	Dirt/gravel road																X				$18,000	$18,000
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	46°57'22.91"N, 91°53'59.42"W	55	30	1.3	380	★★★ ↾	N	N	X		X	X	X	X	X	X	X	X	X	X							X	$100,000	$100,000
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	46°54'3.49"N, 91°54'2.98"W	55	No Posting	0.2	364	★★★ ↾	Y	N	X	X	X	X	X			X	X	X	X	X					X				$140,000	$167,328
Industrial Rd	Minnesota	Saint Louis	Township of Grand Lake	46°53'37.03"N, 92°21'56.59"W	50	No Posting	0.1	1000	★★★ ↾	N	N	X	X	X	X	X			X	X	X		X					X				$185,000	$185,000
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	46°54'11.29"N, 91°54'12.54"W	55	15	0.3	364	★★★ ↾	Y	N	X		X		X	X	X			X		X		X or	X or			X			$251,000	$278,039
Occidental Blvd	Minnesota	Saint Louis	City of Duluth	46°50'38.96"N, 92° 0'37.28"W	30	20	0.4	348	★★★	Y	N	X			X		X															$3,000	$4,423
CTH W	Wisconsin	Douglas	Township of Superior	46°33'7.90"N, 92°14'49.97"W	55	No Posting	3.7	270	★★★	N	N	Dirt/gravel road		X	X	X																$5,000	$5,000
N 58th St	Wisconsin	Douglas	City of Superior	46°46'11.71"N, 92° 4'37.88"W	30	15	1.0	2000	★★★	N	N	X		X		X	X															$7,000	$7,000
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'30.81"N, 92°13'1.44"W	30	15	0.2	4150	★★★	N	N	X		X	X	X																$8,000	$8,000
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	46°48'27.56"N, 92°20'0.41"W	50	25	1.1	1466	★★★	N	N	X		X		X	X	X	X		X		X		X							$38,000	$38,000
E Shilhon Rd	Minnesota	Saint Louis	Township of Duluth	46°57'22.89"N, 91°52'43.28"W	55	25	1.0	380	★★★	N	N	X		X		X	X	X	X		X		X			X						$91,000	$91,000
Becks Rd	Minnesota	Saint Louis	Township of Midway	46°42'15.72"N, 92°17'31.69"W	50	40	1.1	670	★★★	Y	N	X	X	X		X	X		X	X		X	X			X						$141,000	$184,183
Caribou Lake Rd	Minnesota	Saint Louis	Township of Solway	46°51'38.82"N, 92°12'21.75"W	55	No Posting	1.2	265	★★★	N	N	X	X	X	X	X			X	X	X		X		X or	X or		X				$211,000	$211,000
Munger Shaw Rd	Minnesota	Saint Louis	Township of Grand Lake	46°54'46.80"N, 92°20'38.89"W	45	No Posting	3.4	1050	★★★	N	N	X		X	X	X	X		X	X									X			$240,000	$240,000
CTH C	Wisconsin	Douglas	Township of Superior	46°34'48.28"N, 92°12'6.64"W	55	20	3.2	430	★★★	N	N	X		X	X		X	X	X		X		X						X			$260,000	$260,000
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'43.40"N, 92° 7'15.66"W	30	No Posting	1.7	1580	★★ ↾	Y	N	X		X	X												X					$5,000	$25,536
CTH W	Wisconsin	Douglas	Township of Superior	46°33'14.72"N, 92°14'41.78"W	55	No Posting	3.7	270	★★ ↾	N	N	Dirt/gravel road		X	X	X																$5,000	$5,000
Occidental Blvd	Minnesota	Saint Louis	City of Duluth	46°50'29.15"N, 92° 0'36.58"W	30	20	0.4	348	★★ ↾	Y	N	X			X	Saint Louis																$4,000	$8,999
CTH W	Wisconsin	Douglas	Township of Superior	46°32'43.85"N, 92°14'38.17"W	55	25	3.7	270	★★ ↾	N	N	Dirt/gravel road		X	X	X										X						$14,000	$14,000
N 58th St	Wisconsin	Douglas	City of Superior	46°46'9.80"N, 92° 4'40.55"W	30	15	1.0	2000	★★ ↾	N	N	X		X	X	X											X					$21,000	$21,000
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	46°47'22.30"N, 92°10'31.24"W	40	No Posting	1.0	2800	★★ ↾	Y	N	X																				$19,000	$21,313
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°48'43.37"N, 92° 5'26.53"W	30	15	0.7	1450	★★ ↾	Y	N	X		X	X	X											X					$5,000	$33,132
S Chicago Ave	Wisconsin	Douglas	Village of Oliver	46°38'42.53"N, 92°11'32.99"W	55	25	1.3	2300	★★ ↾	N	Y	X		X	X		X			X							X					$35,000	$40,824
Becks Rd	Minnesota	Saint Louis	Township of Midway	46°41'56.24"N, 92°16'47.16"W	50	No Posting	1.1	670	★★ ↾	Y	N	X		X	X	X			X	X		X	X					X				$23,000	$41,695
Minnesota Ave	Minnesota	Saint Louis	City of Duluth	46°43'41.96"N, 92° 3'8.90"W	30	No Posting	1.0	1850	★★ ↾	N	N	X		X	X	X											X					$43,000	$43,000
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	46°48'28.32"N, 92°20'19.68"W	50	25	1.1	1466	★★ ↾	N	N	X		X	X	X	X	X	X		X		X		X							$46,000	$46,000
42nd Ave	Wisconsin	Douglas	City of Superior	46°39'29.00"N, 92° 3'59.28"W	55	35	0.5	970	★★ ↾	Y	N	X		X	X	X	X		X	X		X	X	X								$41,000	$46,926
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	46°48'34.09"N, 92°20'15.47"W	50	25	1.1	1466	★★ ↾	N	N	X		X	X	X	X		X	X	X		X		X							$47,000	$47,000
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'21.35"N, 92°17'27.23"W	40	25	2.0	2000	★★ ↾	N	N	X		X	X	X			X	X	X		X		X or	X or						$51,000	$51,000
CTH A	Wisconsin	Douglas	Township of Superior	46°29'38.66"N, 92° 4'20.00"W	55	35	3.3	930	★★ ↾	N	N	X		X	X	X			X	X		X	X		X or	X or						$53,000	$53,000
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'56.39"N, 91°54'41.08"W	55	No Posting	0.9	90	★★ ↾	Y	N	X		X	X	X			X		X	X	X				X					$38,000	$55,337
St. Louis River Rd	Minnesota	Saint Louis	City of Hermantown	46°45'50.88"N, 92°14'59.42"W	45	No Posting	1.5	531	★★ ↾	N	N	X		X	X	X			X	X			X				X	X				$59,000	$59,000
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'40.46"N, 91°54'21.35"W	55	No Posting	0.9	90	★★ ↾	Y	N	X		X	X	X			X		X	X	X				X					$41,000	$60,097
Korkki Rd	Minnesota	Saint Louis	Township of Duluth	46°57'48.95"N, 91°52'43.39"W	55	25	2.0	380	★★ ↾	N	N	X		X	X	X	X	X	X		X	X	X	X or			X or					$78,000	$78,000
Swan Lake Rd	Minnesota	Saint Louis	City of Hermantown	46°49'49.50"N, 92°11'2.04"W	55	30	0.7	1400	★★ ↾	N	N	X		X	X	X		X		X						X	X					$79,000	$79,000
CTH A	Wisconsin	Douglas	Township of Superior	46°37'49.02"N, 92° 3'58.80"W	55	20	1.3	730	★★ ↾	Y	N	X		X	X		X		X	X	X		X					X				$72,000	$80,443
CTH W	Wisconsin	Douglas	Township of Superior	46°33'17.08"N, 92°14'27.44"W	55	No Posting	3.7	270	★★ ↾	N	N	X		X	X	X			X	X	X		X					X				$95,000	$95,000
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'55.53"N, 91°54'34.61"W	55	No Posting	0.9	90	★★ ↾	Y	N	X		X	X	X			X		X	X	X				X					$72,000	$107,618
S Chicago Ave	Wisconsin	Douglas	Village of Oliver	46°38'53.05"N, 92°11'52.46"W	55	25	1.3	2300	★★ ↾	N	Y	X		X	X	X													X			$233,000	$238,568
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'43.44"N, 92° 7'23.31"W	30	No Posting	1.7	1580	★★	Y	N	X		X	X	X												X				$23,000	$25,790
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°42'53.93"N, 92°13'10.82"W	30	No Posting	1.8	680	★★	N	Y	X		X	X	X																$5,000	$7,731
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'14.71"N, 92° 0'38.94"W	30	No Posting	1.4	348	★★	Y	N	X		X	X	X											X					$5,000	$27,660
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'39.58"N, 91°59'15.54"W	45	No Posting	3.6	2000	★★	Y	N	X		X	X	X			X	X	X		X				X						$24,000	$41,424
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'20.41"N, 91°59'19.06"W	45	No Posting	3.6	2000	★★	Y	N	X		X	X	X			X	X	X		X				X						$26,000	$45,921
CTH A	Wisconsin	Douglas	Township of Superior	46°38'3.17"N, 92° 4'3.44"W	55	20	1.3	730	★★	Y	N	X		X	X	X		X	X	X	X		X	X or		X or						$48,000	$52,393
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°50'29.00"N, 92° 0'20.38"W	45	No Posting	3.6	2000	★★	Y	N	X		X					X	X	X		X					X				$48,000	$52,809
Observation Rd	Minnesota	Saint Louis	City of Duluth	46°47'12.19"N, 92° 7'19.38"W	40	35	1.1	1100	★★	Y	N	X		X	X	X			X	X	X											$5,000	$83,341
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'59.53"N, 91°54'46.40"W	55	20	0.9	90	★★	Y	N	X		X	X		X	X	X		X	X	X				X					$68,000	$100,500
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'52.49"N, 92°12'11.39"W	30	No Posting	2.4	1240	★★	Curve Not Evaluated																							
CTH B	Wisconsin	Douglas	Township of Superior	46°31'58.46"N, 92° 9'3.79"W	45	35	5.8	530	★★	Curve Not Evaluated																							
Port Terminal Dr	Minnesota	Saint Louis	City of Duluth	46°45'10.57"N, 92° 5'56.58"W	30	25	0.6	1900	★★	Curve Not Evaluated																							
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	46°48'32.48"N, 92°20'8.32"W	50	25	1.1	1466	★★	Curve Not Evaluated																							
CTH B	Wisconsin	Douglas	Township of Superior	46°32'11.47"N, 92° 8'39.41"W	45	30	5.8	530	★★	Curve Not Evaluated																							
CTH A	Wisconsin	Douglas	Township of Superior	46°39'12.34"N, 92° 4'1.10"W	55	35	3.3	930	★★	Curve Not Evaluated																							
CTH C	Wisconsin	Douglas	Township of Superior	46°36'17.12"N, 92° 7'27.52"W	55	35	3.7	430	★★	Curve Not Evaluated																							
CTH C	Wisconsin	Douglas	Township of Superior	46°34'48.80"N, 92°12'12.50"W	55	20	3.2	430	★★	Curve Not Evaluated																							
OLD HWY 2	Minnesota	Saint Louis	City of Hermantown	46°46'42.97"N, 92°16'30.08"W	55	No Posting	0.3	760	★★	Curve Not Evaluated																							
CTH C/W	Wisconsin	Douglas	Township of Superior	46°35'40.31"N, 92°17'12.23"W	55	No Posting	3.4	230	★★	Curve Not Evaluated																							
CTH 61	Minnesota	Saint Louis	City of Duluth	46°50'31.61"N, 91°59'46.82"W	50	No Posting	0.4	2900	★★	Curve Not Evaluated																							
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'57.20"N, 92°12'7.26"W	30	No Posting	2.4	1240	★★	Curve Not Evaluated																							
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'17.34"N, 92°16'59.43"W	40	No Posting	2.0	2000	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'30.48"N, 92°15'40.08"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'27.34"N, 92°14'30.52"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'15.10"N, 92°14'19.14"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'16.48"N, 92°14'12.40"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'12.42"N, 92°14'7.36"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'2.00"N, 92°14'6.74"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'5.31"N, 92°13'56.91"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'4.98"N, 92°13'54.56"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Wisconsin	Douglas	Township of Parkland	46°41'7.81"N, 92°13'53.75"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'6.80"N, 92°14'1.09"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'9.88"N, 92°13'54.45"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'13.85"N, 92°13'52.33"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'23.86"N, 92°13'51.53"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'52.23"N, 92°13'49.58"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°42'7.28"N, 92°13'43.49"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°42'10.83"N, 92°13'22.03"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°42'13.59"N, 92°14'0.06"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																							
McQuade Rd	Minnesota	Saint Louis	Township of Lakewood	46°53'10.57"N, 91°55'14.48"W	30	No Posting	0.4	345	★★	Curve Not Evaluated																							
Minnesota Ave	Minnesota	Saint Louis	City of Duluth	46°43'50.54"N, 92° 2'19.92"W	30	No Posting	1.0	1850	★★	Curve Not Evaluated																							
Minnesota Ave	Minnesota	Saint Louis	City of Duluth	46°43'46.35"N, 92° 3'0.70"W	30	No Posting	1.0	1850	★★	Curve Not Evaluated																							
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'24.45"N, 92° 7'38.55"W	30	No Posting	1.7	1580	★ ↾	Y	N	X		X	X	X											X					$54,203	$54,203
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'41.36"N, 92° 7'16.51"W	30	No Posting	1.7	1580	★ ↾	Y	N	X		X	X	X											X					$5,000	$27,208
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'31.91"N, 92° 0'49.93"W	30	No Posting	1.4	348	★ ↾	Y	N	X		X	X	X																$5,000	$6,871
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'54.58"N, 92° 0'37.47"W	30	No Posting	1.4	348	★ ↾	Y	N	X		X	X	X																$5,000	$6,914
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'37.43"N, 92° 0'50.40"W	30	No Posting	1.4	348	★ ↾	Y	N	X		X	X	X																$5,000	$7,131
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'23.51"N, 92°13'11.14"W	30	No Posting	1.8	680	★ ↾	N	Y	X		X	X	X																$5,000	$8,697
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'22.99"N, 92°13'17.74"W	30	No Posting	1.8	680	★ ↾	N	Y	X		X	X	X																$5,000	$9,326
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'48.29"N, 92° 0'31.15"W	30	No Posting	1.4	348	★ ↾	Y	N	X		X	X	X																$5,000	$9,850
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	46°49'14.32"N, 92° 8'59.53"W	30	No Posting	1.2	3000	★ ↾	Y	N	X		X	X	X																$5,000	$10,311
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'17.59"N, 92°13'10.82"W	30	No Posting	1.8	680	★ ↾	N	Y	X		X	X	X									X							$9,000	$12,360
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'37.71"N, 92° 0'53.23"W	30	No Posting	1.4	348	★ ↾	Y	N	X		X	X	X																$5,000	$12,586
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'38.94"N, 92° 0'53.17"W	30	No Posting	1.4	348	★ ↾	Y	N	X		X	X	X																$5,000	$13,300
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'39.74"N, 92° 0'36.34"W	30	No Posting	1.4	348	★ ↾	Y	N	X		X	X	X											X					$5,000	$14,549
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°42'57.02"N, 92°13'20.75"W	30	No Posting	1.8	680	★ ↾	N	Y	X		X	X	X																$5,000	$14,927
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'33.51"N, 92° 0'49.84"W	30	No Posting	1.4	348	★ ↾	Y	N	X		X	X	X											X					$5,000	$15,270
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'34.99"N, 92° 0'51.90"W	30	No Posting	1.4	348	★ ↾	Y	N	X		X	X	X											X					$5,000	$19,205
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	46°54'1.71"N, 91°53'51.94"W	30	No Posting	0.3	364	★ ↾	Y	N	X																	X			$18,000	$20,351
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'2.51"N, 92° 0'43.88"W	30	No Posting	1.4	348	★ ↾	Y	N	X		X	X	X											X					$5,000	$22,320
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'28.76"N, 92° 0'46.21"W	30	No Posting	1.4	348	★ ↾	Y	N	X		X	X	X											X					$5,000	$22,893
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°48'30.26"N, 92° 5'37.26"W	30	No Posting	0.7	1450	★ ↾	Y	N	X		X	X	X												X				$5,000	$23,081
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'16.37"N, 92° 0'45.02"W	30	No Posting	1.4	348	★ ↾	Y	N	X		X	X	X											X					$5,000	$23,534
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'22.24"N, 92° 0'48.34"W	30	No Posting	1.4	348	★ ↾	Y	N	X		X	X	X											X					$5,000	$25,501

Safety Emphasis Area 1 (Curves)

Safety Projects - Prioritized by Risk

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

RoadName	State	County	Municipality	Lat/Long	Speed Limit (mph)	Curve Advisory Speed (mph)	Length (miles)	AADT	Total Stars	Curve Overlaps with a Tier 1 Segment?	Curve Overlaps with a Tier 2 Segment?	Edgeline And/or Centerline Marking Improvement	High Friction Surface Treatment	Re-evaluate Curve Signing	Install Chevrons	Install Night Arrows	Upgrade to Fluorescent signs	Install In-Lane curve warning pavement Markings	Shoulder Rumble strips	Centerline Rumble Strips	Provide 3 ft shoulder	Widen Shoulder to 3 ft	Safety Edge	Improve Side Slopes	Clear Zone Maintenance	Install barrier to delineate Fixed object	Install barrier for non-recoverable slopes	Install Flashing Beacons with Warning 'Stop Ahead' Signs	Realign Intersection to Correct Visual Trap	Reconstruct Triangle Intersection	Project Cost Estimate (No Overlap with Segments)	Project Cost Estimate (Assumes Standalone Proejcts for Each Curve)
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'55.05"N, 92° 0'41.71"W	30	No Posting	1.4	348	★★	Y	N	X		X	X	X									X					$5,000	$27,937
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°48'20.68"N, 92° 5'50.85"W	30	No Posting	0.7	1450	★★	Y	N	X		X	X	X											X				$5,000	$28,605
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'10.53"N, 92°13'11.58"W	30	No Posting	1.8	680	★★	N	Y	X		X	X	X											X				$5,000	$32,279
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'44.50"N, 92° 0'37.97"W	30	No Posting	1.4	348	★★	Y	N	X		X	X	X										X					$5,000	$33,863
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°42'21.20"N, 92°13'21.94"W	30	No Posting	1.8	680	★★	N	Y	X		X	X	X										X					$5,000	$35,859
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'13.88"N, 92°13'6.31"W	30	No Posting	1.8	680	★★	N	Y	X		X	X	X											X				$5,000	$47,214
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°42'1.05"N, 92°13'38.55"W	30	No Posting	3.5	680	★★	N	Y	X		X	X	X										X					$5,000	$49,618
Observation Rd	Minnesota	Saint Louis	City of Duluth	46°46'58.99"N, 92° 7'21.01"W	40	No Posting	1.1	1100	★★	Y	N	X		X	X	X				X				X or			X or	X			$51,000	$57,115
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°42'12.21"N, 92°13'17.02"W	30	No Posting	1.8	680	★★	N	Y	X		X	X	X										X					$5,000	$62,941
Saginaw Rd	Minnesota	Saint Louis	Township of Solway	46°51'4.46"N, 92°35'5.71"W	40	No Posting	0.4	225	★★	Y	N	X		X		X	X		X	X	X		X								$4,000	$64,305
S Chicago Ave	Wisconsin	Douglas	Village of Oliver	46°38'45.85"N, 92°11'45.41"W	55	25	1.3	2300	★★	N	Y	X			X	X		X	X	X	X		X								$7,000	$72,841
CTH E	Wisconsin	Douglas	Township of Parkland	46°38'38.57"N, 91°59'46.42"W	45	40	1.1	1200	★★	Y	N	X		X	X		X		X	X	X	X	X			X			X		$262,000	$342,974
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	46°48'14.84"N, 92° 8'11.60"W	30	No Posting	0.3	3000	★★	Curve Not Evaluated																						
E McCuen St	Minnesota	Saint Louis	City of Duluth	46°39'26.35"N, 92°13'0.23"W	35	30	0.6	2300	★★	Curve Not Evaluated																						
CTH B	Wisconsin	Douglas	Township of Superior	46°31'57.26"N, 92°12'11.99"W	45	35	5.8	530	★★	Curve Not Evaluated																						
CTH B	Wisconsin	Douglas	Township of Superior	46°32'11.19"N, 92° 7'49.45"W	45	35	5.8	530	★★	Curve Not Evaluated																						
CTH B	Wisconsin	Douglas	Township of Superior	46°32'8.73"N, 92° 7'44.30"W	45	35	5.8	530	★★	Curve Not Evaluated																						
Helberg Dr	Minnesota	Saint Louis	City of Duluth	46°45'50.07"N, 92° 6'37.48"W	30	20	0.7	830	★★	Curve Not Evaluated																						
WIS 35	Wisconsin	Douglas	Township of Superior	46°31'57.27"N, 92° 7'21.87"W	55	35	4.3	4400	★★	Curve Not Evaluated																						
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'18.63"N, 92°17'11.96"W	40	30	2.0	2000	★★	Curve Not Evaluated																						
Lismore Rd	Minnesota	Saint Louis	Township of Lakewood	46°55'51.74"N, 92° 0'20.61"W	50	40	2.0	1600	★★	Curve Not Evaluated																						
CTH 61	Minnesota	Saint Louis	City of Duluth	46°50'35.13"N, 91°59'44.54"W	50	No Posting	0.4	2900	★★	Curve Not Evaluated																						
Stebner Rd	Minnesota	Saint Louis	City of Hermantown	46°49'57.31"N, 92°11'40.95"W	55	No Posting	0.5	2350	★★	Curve Not Evaluated																						
CTH 61	Minnesota	Saint Louis	Township of Lakewood	46°52'50.20"N, 91°55'20.80"W	50	No Posting	2.5	2900	★★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°44'45.00"N, 92°11'27.45"W	30	No Posting	2.4	1240	★★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'8.36"N, 92°10'28.15"W	30	No Posting	2.1	620	★★	Curve Not Evaluated																						
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'42.89"N, 92°15'26.11"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																						
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°41'36.74"N, 92°15'14.06"W	30	No Posting	3.5	680	★★	Curve Not Evaluated																						
Industrial Rd	Minnesota	Saint Louis	Township of Grand Lake	46°53'40.33"N, 92°22'4.15"W	50	No Posting	3.0	1100	★★	Curve Not Evaluated																						
Munger Shaw Rd	Minnesota	Saint Louis	Township of Grand Lake	46°59'15.88"N, 92°19'46.91"W	55	No Posting	4.7	680	★★	Curve Not Evaluated																						
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	46°50'26.50"N, 92° 6'23.05"W	30	No Posting	2.4	4250	★★	Curve Not Evaluated																						
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	46°49'46.66"N, 92° 6'40.46"W	30	No Posting	2.4	4250	★★	Curve Not Evaluated																						
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	46°49'41.87"N, 92° 6'22.84"W	30	No Posting	2.4	4250	★★	Curve Not Evaluated																						
CTH W	Wisconsin	Douglas	Township of Superior	46°32'50.16"N, 92°14'45.21"W	55	No Posting	3.7	270	★★	Curve Not Evaluated																						
CTH W	Wisconsin	Douglas	Township of Superior	46°33'35.00"N, 92°14'30.95"W	55	No Posting	3.7	270	★★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°44'56.20"N, 92°11'9.49"W	30	No Posting	2.4	1240	★★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'34.37"N, 92°11'26.72"W	30	No Posting	2.1	620	★★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'9.47"N, 92°11'12.63"W	30	No Posting	2.1	620	★★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'38.65"N, 92° 9'46.48"W	30	No Posting	1.2	1975	★★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'47.15"N, 92° 9'36.87"W	30	No Posting	1.2	1975	★★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'46.07"N, 92° 9'20.48"W	30	No Posting	1.2	1975	★★	Curve Not Evaluated																						
W Skyline	Minnesota	Saint Louis	Township of Midway	46°41'30.87"N, 92°16'17.67"W	30	No Posting	0.5	680	★★	Curve Not Evaluated																						
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'18.23"N, 92°17'25.92"W	40	No Posting	2.0	2000	★★	Curve Not Evaluated																						
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'8.05"N, 92°16'59.29"W	40	No Posting	2.0	2000	★★	Curve Not Evaluated																						
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'5.56"N, 92°16'55.72"W	40	No Posting	2.0	2000	★★	Curve Not Evaluated																						
CTH 73	Minnesota	Saint Louis	Township of Midway	46°42'17.77"N, 92°17'31.48"W	30	No Posting	1.2	510	★★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'48.33"N, 92° 1'55.93"W	30	No Posting	1.9	348	★★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'49.35"N, 92° 1'52.94"W	30	No Posting	1.9	348	★★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'53.13"N, 92° 1'52.14"W	30	No Posting	1.9	348	★★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'54.64"N, 92° 1'49.80"W	30	No Posting	1.9	348	★★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'58.50"N, 92° 1'47.31"W	30	No Posting	1.9	348	★★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'58.61"N, 92° 1'40.72"W	30	No Posting	1.9	348	★★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'5.88"N, 92° 1'32.16"W	30	No Posting	1.9	348	★★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'8.77"N, 92° 1'29.98"W	30	No Posting	1.9	348	★★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'29.03"N, 92° 1'3.71"W	30	No Posting	1.9	348	★★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'32.29"N, 92° 1'3.17"W	30	No Posting	1.9	348	★★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'36.42"N, 92° 0'58.02"W	30	No Posting	1.9	348	★★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'40.21"N, 92° 0'59.25"W	30	No Posting	1.9	348	★★	Curve Not Evaluated																						
McQuade Rd	Minnesota	Saint Louis	Township of Lakewood	46°53'18.54"N, 91°55'14.80"W	30	No Posting	0.2	345	★★	Curve Not Evaluated																						
McQuade Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'55.59"N, 91°55'14.39"W	30	No Posting	0.4	345	★★	Curve Not Evaluated																						
Helberg Dr	Minnesota	Saint Louis	City of Duluth	92° 6'33.22"W, 92° 6'26.05"W	30	No Posting	0.7	830	★★	Curve Not Evaluated																						
E 3rd St	Wisconsin	Douglas	City of Superior	46°40'39.14"N, 92° 0'38.61"W	35	No Posting	0.4	2000	★★	Curve Not Evaluated																						
E 3rd St	Wisconsin	Douglas	City of Superior	46°40'12.54"N, 92° 0'10.67"W	35	No Posting	0.3	2000	★★	Curve Not Evaluated																						
Marina Dr	Wisconsin	Douglas	City of Superior	46°43'8.86"N, 92° 3'45.92"W	25	No Posting	0.1	510	★★	Curve Not Evaluated																						
Marina Dr	Wisconsin	Douglas	City of Superior	46°43'19.33"N, 92° 3'41.90"W	25	No Posting	0.6	510	★★	Curve Not Evaluated																						
Marina Dr	Wisconsin	Douglas	City of Superior	46°43'10.93"N, 92° 3'31.32"W	25	No Posting	0.6	510	★★	Curve Not Evaluated																						
Marina Dr	Wisconsin	Douglas	City of Superior	46°43'10.32"N, 92° 3'23.85"W	25	No Posting	0.6	510	★★	Curve Not Evaluated																						
Marina Dr	Wisconsin	Douglas	City of Superior	46°43'22.20"N, 92° 4'2.82"W	25	No Posting	0.3	560	★★	Curve Not Evaluated																						
Garfield Ave	Wisconsin	Douglas	City of Superior	46°43'20.90"N, 92° 7'2.07"W	25	No Posting	0.5	2100	★★	Curve Not Evaluated																						
N 12th St	Wisconsin	Douglas	City of Superior	46°43'27.00"N, 92° 4'38.78"W	25	No Posting	0.1	1100	★★	Curve Not Evaluated																						
WIS 35	Wisconsin	Douglas	Township of Superior	46°32'5.89"N, 92° 7'19.04"W	55	No Posting	4.3	4400	★★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'27.20"N, 92° 7'25.88"W	30	No Posting	1.7	1580	★	Y	N	X		X	X	X											X				$5,000	$19,671
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	46°47'22.55"N, 92°10'44.21"W	40	No Posting	1.0	2800	★	Y	N	X		X	X	X				X				X or			X or				$5,000	$9,563
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'5.93"N, 92°13'12.19"W	30	No Posting	1.8	680	★	N	Y	X		X	X	X											X				$5,000	$28,407
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'26.14"N, 91°59'19.72"W	45	No Posting	3.6	2000	★	Y	N	X		X	X	X			X	X	X		X			X					$20,000	$33,392
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'41.57"N, 91°54'24.91"W	55	No Posting	0.9	90	★	Y	N	X		X	X	X			X	X	X		X			X					$29,000	$50,947
Saginaw Rd	Minnesota	Saint Louis	Township of Solway	46°50'55.58"N, 92°25'26.71"W	40	No Posting	0.4	225	★	Y	N	X		X		X	X		X	X	X		X								$4,000	$65,650
Observation Rd	Minnesota	Saint Louis	City of Duluth	46°47'9.32"N, 92° 8'2.30"W	40	No Posting	1.1	1100	★	Y	N	X		X	X	X			X	X	X		X	X or		X or		X			$23,000	$68,123
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°50'48.98"N, 92° 0'9.51"W	45	No Posting	3.6	2000	★	Y	N	X		X	X	X			X	X	X	X			X						$42,000	$76,711
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°51'23.60"N, 91°59'57.11"W	45	No Posting	3.6	2000	★	Y	N	X		X	X	X			X	X	X	X			X						$42,000	$76,782
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'50.82"N, 91°59'3.15"W	45	No Posting	3.6	2000	★	Y	N	X		X	X	X			X	X	X	X			X						$46,000	$84,695
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	46°48'24.11"N, 92° 8'10.86"W	30	No Posting	0.3	3000	★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°44'27.71"N, 92°11'41.00"W	30	No Posting	2.4	1240	★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°44'30.28"N, 92°11'34.91"W	30	No Posting	2.4	1240	★	Curve Not Evaluated																						
E McCuen St	Minnesota	Saint Louis	City of Duluth	46°39'28.35"N, 92°12'51.73"W	35	No Posting	0.6	2300	★	Curve Not Evaluated																						
MN 23	Minnesota	Saint Louis	City of Duluth	46°39'10.70"N, 92°13'35.26"W	50	No Posting	2.2	2000	★	Curve Not Evaluated																						
MN 23	Minnesota	Saint Louis	City of Duluth	46°39'35.30"N, 92°16'13.98"W	30	No Posting	0.1	2000	★	Curve Not Evaluated																						
MN 23	Minnesota	Saint Louis	City of Duluth	46°39'39.24"N, 92°16'50.42"W	30	No Posting	0.1	1650	★	Curve Not Evaluated																						
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'21.86"N, 92°17'53.56"W	40	No Posting	2.0	2000	★	Curve Not Evaluated																						
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'27.79"N, 92°17'39.10"W	40	No Posting	2.0	2000	★	Curve Not Evaluated																						
N Cloquet Rd	Minnesota	Saint Louis	Township of Midway	46°43'32.24"N, 92°14'58.75"W	35	No Posting	1.9	680	★	Curve Not Evaluated																						
Bergstrom Rd	Minnesota	Saint Louis	Township of Grand Lake	46°55'23.69"N, 92°23'10.28"W	55	No Posting	2.9	215	★	Curve Not Evaluated																						
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	46°47'19.17"N, 92°13'11.89"W	40	No Posting	1.2	750	★	Curve Not Evaluated																						
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	46°47'6.54"N, 92°12'47.89"W	40	No Posting	1.1	1300	★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'13.98"N, 92° 2'43.46"W	30	No Posting	0.4	348	★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'19.23"N, 92° 2'39.88"W	30	No Posting	0.4	348	★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'38.92"N, 92° 2'20.46"W	30	No Posting	1.9	348	★	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°51'4.14"N, 92° 1'35.43"W	30	No Posting	1.9	348	★	Curve Not Evaluated																						
N Tischer Rd	Minnesota	Saint Louis	Township of Lakewood	46°56'17.27"N, 92° 0'20.56"W	40	No Posting	0.4	1250	★	Curve Not Evaluated																						
Old North Shore Rd	Minnesota	Saint Louis	Township of Duluth	46°54'15.67"N, 91°53'59.03"W	35	35	0.3	364	★	Curve Not Evaluated																						
Howard Gnesen Rd	Minnesota	Saint Louis	City of Rice Lake	46°50'30.43"N, 92° 6'39.99"W	30	No Posting	2.4	4250	★	Curve Not Evaluated																						
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	46°48'49.96"N, 92° 8'39.11"W	30	No Posting	1.2	3000	★			X																				
Port Terminal Dr	Minnesota	Saint Louis	City of Duluth	46°45'8.15"N, 92° 6'10.74"W	30	No Posting	0.6	1900	★	Curve Not Evaluated																						
Minnesota Ave	Minnesota	Saint Louis	City of Duluth	46°43'57.04"N, 92° 3'11.78"W	30	No Posting	1.0	1850	★	Curve Not Evaluated																						
Minnesota Ave	Minnesota	Saint Louis	City of Duluth	46°43'41.76"N, 92° 2'52.54"W	30	No Posting	1.0	1850	★	Curve Not Evaluated																						
42nd Ave	Wisconsin	Douglas	City of Superior	46°40'14.75"N, 92° 2'46.64"W	35	No Posting	1.3	800	★	Curve Not Evaluated																						

Safety Emphasis Area 1 (Curves)

Safety Projects - Prioritized by Risk

Rural Two-Lane Undivided Roads
With AADT Less Than 5,000

(Roads on the Functional Classification System)

RoadName	State	County	Municipality	Lat/Long	Speed Limit (mph)	Curve Advisory Speed (mph)	Length (miles)	AADT	Total Stars	Curve Overlaps with a Tier 1 Segment?	Curve Overlaps with a Tier 2 Segment?	Edgeline And/or Centerline Marking Improvement	High Friction Surface Treatment	Re-evaluate Curve Signing	Install Chevrons	Install Night Arrows	Upgrade to Fluorescent signs	Install In-Lane curve warning pavement Markings	Shoulder Rumble strips	Centerline Rumble Strips	Provide 3 ft shoulder	Widen Shoulder to 3 ft	Safety Edge	Improve Side Slopes	Clear Zone Maintenance	Install barrier to delineate Fixed object	Install barrier for non-recoverable slopes	Install Flashing Beacons with Warning 'Stop Ahead' Signs	Realign Intersection to Correct Visual Trap	Reconstruct Triangle Intersection	Project Cost Estimate (No Overlap with Segments)	Project Cost Estimate (Assumes Standalone Proejcts for Each Curve)
E 3rd St	Wisconsin	Douglas	City of Superior	46°40'33.47"N, 92° 0'36.35"W	35	No Posting	0.4	2000	★	Curve Not Evaluated																						
Munger Shaw Rd	Minnesota	Saint Louis	Township of Grand Lake	46°52'40.76"N, 92°20'36.96"W	45	No Posting	3.4	1050	★	Curve Not Evaluated																						
Munger Shaw Rd	Minnesota	Saint Louis	Township of Grand Lake	46°54'40.85"N, 92°20'18.83"W	45	No Posting	3.4	1050	★	Curve Not Evaluated																						
CTH 61	Minnesota	Saint Louis	Township of Lakewood	46°52'50.16"N, 91°55'29.81"W	50	No Posting	2.5	2900	★	Curve Not Evaluated																						
Lismore Rd	Minnesota	Saint Louis	Township of Lakewood	46°56'17.25"N, 92° 0'20.12"W	55	No Posting	2.0	1250	★	Curve Not Evaluated																						
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'2.16"N, 92°11'5.74"W	30	No Posting	2.1	620	★	Curve Not Evaluated																						
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'9.64"N, 92°11'16.63"W	30	No Posting	2.1	620	★	Curve Not Evaluated																						
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'12.57"N, 92°11'15.58"W	30	No Posting	2.1	620	★	Curve Not Evaluated																						
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'8.34"N, 92°11'9.07"W	30	No Posting	2.1	620	★	Curve Not Evaluated																						
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'8.42"N, 92°11'7.01"W	30	No Posting	2.1	620	★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'35.05"N, 92° 9'48.23"W	30	No Posting	1.2	1975	★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'37.37"N, 92° 9'40.14"W	30	No Posting	1.2	1975	★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'41.12"N, 92° 9'33.96"W	30	No Posting	1.2	1975	★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'44.59"N, 92° 9'27.63"W	30	No Posting	1.2	1975	★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'44.49"N, 92° 9'23.06"W	30	No Posting	1.2	1975	★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'56.52"N, 92° 9'2.67"W	30	No Posting	1.2	1975	★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'33.98"N, 92°13'16.73"W	30	No Posting	0.2	4150	★	Curve Not Evaluated																						
Woodland Ave	Minnesota	Saint Louis	City of Duluth	46°51'44.29"N, 92° 4'26.58"W	30	No Posting	0.5	1724	★	Curve Not Evaluated																						
Woodland Ave	Minnesota	Saint Louis	City of Duluth	46°51'41.05"N, 92° 4'34.83"W	30	No Posting	0.5	1724	★	Curve Not Evaluated																						
Helberg Dr	Minnesota	Saint Louis	City of Duluth	46°45'25.17"N, 92° 6'10.34"W	30	No Posting	0.7	830	★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°47'18.34"N, 92° 6'36.95"W	30	No Posting	0.2	1580	★	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'27.18"N, 92° 7'29.74"W	30	No Posting	1.7	1580	↑	Y	N	X		X	X	X			X	X		X	X			X	X				$5,000	$66,171
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'13.59"N, 92°10'21.86"W	30	No Posting	2.1	620	↑	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'15.77"N, 92°10'16.33"W	30	No Posting	2.1	620	↑	Curve Not Evaluated																						
W SKyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°45'23.44"N, 92° 9'52.73"W	30	No Posting	2.1	620	↑	Curve Not Evaluated																						
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'7.78"N, 92° 8'57.49"W	30	No Posting	1.2	1975	↑	Curve Not Evaluated																						
CTH 73	Minnesota	Saint Louis	Township of Midway	46°42'26.55"N, 92°17'29.94"W	30	No Posting	1.2	510	↑	Curve Not Evaluated																						
Bergstrom Rd	Minnesota	Saint Louis	Township of Grand Lake	46°54'38.83"N, 92°23'10.86"W	55	No Posting	2.9	215	↑	Curve Not Evaluated																						
CTH 61	Minnesota	Saint Louis	Township of Lakewood	46°52'25.97"N, 91°56'9.29"W	50	No Posting	2.5	2900	↑	Curve Not Evaluated																						
WIS 35	Wisconsin	Douglas	Township of Superior	46°32'10.77"N, 92° 7'12.85"W	55	No Posting	4.3	4400	↑	Curve Not Evaluated																						
MN 23	Minnesota	Saint Louis	City of Duluth	46°39'39.23"N, 92°15'59.22"W	50	No Posting	2.2	2000	↑	Curve Not Evaluated																						
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°50'45.49"N, 92° 1'59.97"W	30	No Posting	1.9	348	↑	Curve Not Evaluated																						
Helberg Dr	Minnesota	Saint Louis	City of Duluth	46°45'44.67"N, 92° 6'33.22"W	30	No Posting	0.7	830	↑	Curve Not Evaluated																						
42nd Ave	Wisconsin	Douglas	City of Superior	46°40'9.89"N, 92° 2'51.26"W	35	No Posting	1.3	800	↑	Curve Not Evaluated																						
Woodlawn Rd	Wisconsin	Douglas	City of Superior	46°40'3.31"N, 92° 3'59.08"W	30	No Posting	0.6	1400	↑	Curve Not Evaluated																						
CTH C/W	Wisconsin	Douglas	Township of Superior	46°34'35.39"N, 92°17'12.63"W	55	No Posting	3.4	230	↑	Curve Not Evaluated																						
Mountain Dr	Minnesota	Saint Louis	City of Proctor	46°43'29.71"N, 92°13'30.16"W	40	No Posting	0.8	680		Curve Not Evaluated																						
CTH 73	Minnesota	Saint Louis	Township of Midway	46°42'14.75"N, 92°17'55.17"W	30	No Posting	1.2	510		Curve Not Evaluated																						
CTH 73	Minnesota	Saint Louis	Township of Midway	46°42'33.75"N, 92°17'14.53"W	30	No Posting	1.2	510		Curve Not Evaluated																						
CTH 61	Minnesota	Saint Louis	Township of Duluth	46°54'38.35"N, 91°51'42.52"W	50	No Posting	4.8	1350		Curve Not Evaluated																						

Safety Emphasis Area 2

Safety Projects - Prioritized by Risk

Urban Intersections - Side Road Stop Control Angle Crashes

Road Name	Lat/Long	Maintaining Agency	Traffic Control	TOTAL STARS	Number of Angle KAB Crashes	Conduct a Traffic Study	Remove Vegetation or Obstructions to Improve Stop Sign Visibility	Restrict Parking Near the Intersection	Install Retroreflective Strips on Stop Sign Posts	Install Flashing Beacons with Warning 'Stop Ahead' Signs	Install Left Turn Lanes	Consider Installing Right Turn Lanes	Remove Obstructions to Increase Intersection Sight Distance	Install Pedestrian Curb Extensions	Extend Median Through Crosswalk	Install High-Visibility Crosswalk	Left Turn Calming	Reduce Lane Widths and Install Median	Install Raised Crosswalk	Install Raised Intersection	Install Stop Bar Pavement Markings on Side Road Approaches	Project Cost Estimate
Grand Ave, S 63rd Ave W	46.733143,-92.177404	City of Duluth	2-Way Stop	★★★★★½	1			X	X			X				X	X or	X or	X or	X or	X	$1,149,000
Highway 53, E St	46.725675,-92.073523	City of Superior	2-Way Stop	★★★★★½	1						X	X									X	$1,931,000
E 2nd St - Hwy 53/2, E 2nd St - Hwy 53/2, E 3rd St	46.67769,-92.01047	City of Superior	2-Way Stop	★★★★★½	2	X				X		X	X			X		X	X or	X or	X	$3,725,000
Midway Rd, Old Miller Trunk Hwy	46.853476,-92.280423	Township of Canosia	2-Way Stop	★★★★★	1	X			X				X				X				X	$160,000
Tower Ave, Tower Ave, N 16th St	46.719309,-92.103964	City of Superior	2-Way Stop	★★★★★	2	X			X					X		X		X	X or	X or		$727,000
Mesaba Ave, Mesaba Ave	46.785267,-92.10836	City of Duluth	2-Way Stop	★★★★★	1		X	X	X		X	X	X								X	$1,215,000
Railroad St, Railroad St, Harbor Dr	46.783758,-92.098405	City of Duluth	2-Way Stop	★★★★½	0				X	X		X							X			$472,000
Rice Lake Rd, Rice Lake Rd, E Skyline Pkwy	46.796809,-92.107038	City of Duluth	1-Way Stop	★★★★½	0	X			X										X		X	$484,000
Tower Ave, N 56th St, Tower Ave	46.672224,-92.104293	City of Superior	2-Way Stop	★★★★½	1				X			X	X	X		X	X or	X or	X or	X		$858,000
Tower Ave, Henry Cohen Dr	46.684543,-92.104201	City of Superior	2-Way Stop	★★★★½	2	X			X			X	X	X		X		X				$3,680,000
Hammond Ave, N 5th St, Hammond Ave, N 5th St	46.732539,-92.097857	City of Superior	1-Way Stop	★★★★	1				X						X	X			X or	X or	X	$288,000
E 2nd St - Hwy 53/2, E 2nd St - Hwy 53/2, 23rd Ave E	46.705584,-92.046012	City of Superior	2-Way Stop	★★★★	0								X		X	X		X	X or	X or		$322,000
Hammond Ave, Broadway St, Hammond Ave	46.726591,-92.097838	City of Superior	2-Way Stop	★★★★	1			X	X					X		X	X or	X or	X or	X or		$453,000
Tower Ave, Tower Ave, N 34th St, N 34th St	46.698911,-92.104079	City of Superior	2-Way Stop	★★★★	0				X			X		X		X			X or	X or		$648,000
E 2nd St - Hwy 53/2, Marina Dr, E 2nd St - Hwy 53/2	46.718679,-92.063054	City of Superior	2-Way Stop	★★★★	0		X		X	X		X	X		X	X			X or	X		$693,000
E 4th St, N 4th Ave E	46.793465,-92.097548	City of Duluth	2-Way Stop	★★★★	1	X	X or		X	X or				X		X	X		X or	X or	X	$711,000
E 2nd St - Hwy 53/2, 31st Ave E, E 2nd St - Hwy 53/2	46.697325,-92.035494	City of Superior	2-Way Stop	★★★★	0							X				X		X			X	$1,014,000
Belknap St, E 5th St, E 5th St, Belknap St	46.72148,-92.073535	City of Superior	2-Way Stop	★★★★	0				X	X		X						X				$1,025,000
E Superior St, N 14th Ave E, S 14th Ave E, E Superior St	46.800315,-92.08077	City of Duluth	2-Way Stop	★★★★	1			X	X			X	X	X		X	X		X or	X or		$1,081,000
Tower Ave, N 40th St	46.6917,-92.104146	City of Superior	2-Way Stop	★★★★	0							X		X	X	X			X or	X or		$1,185,000
Skyline Pkwy, Mesaba Ave, E 9th St, Mesaba Ave	46.793681,-92.10707	City of Duluth	2-Way Stop	★★★★	0		X		X		X	X									X	$1,213,000
E Superior St, 47th Ave E, 47th Ave E	46.82925,-92.029228	City of Duluth	2-Way Stop	★★★★	0	X		X	X			X					X		X or	X or		$3,482,000
Highway 53, Catlin Ave	46.733377,-92.087412	City of Superior	1-Way Stop	★★★½	0			X	X												X	$308,000
Tower Ave, N 58th St, Tower Ave	46.669482,-92.104311	City of Superior	2-Way Stop	★★★½	0			X	X							X	X or	X or	X or	X or		$353,000
Highway 53, Grand Ave, Grand Ave	46.733759,-92.093319	City of Superior	2-Way Stop	★★★½	0			X	X									X			X	$413,000
W Michigan St, W Superior St, W Michigan St	46.773974,-92.113991	City of Duluth	1-Way Stop	★★★½	NOT EVALUATED FOR A SAFETY PROJECT																	
Broadway St, Broadway St, Tower Ave, Tower Ave	46.726615,-92.103889	City of Superior	2-Way Stop	★★★½	1	X		X	X					X	X				X or	X or		$1,912,000
Woodland Ave, W Redwing St	46.850022,-92.081848	City of Duluth	2-Way Stop	★★★½	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																
Banks Ave, N 28th St, N 28th St	46.706216,-92.105571	City of Superior	2-Way Stop	★★★½	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																
Woodland Ave, Woodland Ave	46.810829,-92.078289	City of Duluth	2-Way Stop	★★★½	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																
N 6th Ave E, E 7th St	46.797353,-92.098371	City of Duluth	2-Way Stop	★★★½	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																
E 1st St, N 19th Ave E	46.805754,-92.075682	City of Duluth	2-Way Stop	★★★½	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																
N 1st Ave E, E 1st St, E 1st St	46.788585,-92.098036	City of Duluth	2-Way Stop	★★★½	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																
N 59th Ave W, N 59th Ave W, Cody St, Cody St	46.741309,-92.171944	City of Duluth	2-Way Stop	★★★½	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																
N 59th Ave W, N 59th Ave W, W Eighth St	46.744014,-92.171927	City of Duluth	2-Way Stop	★★★½	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																
London Rd, 45th Ave E	46.82422,-92.032798	City of Duluth	1-Way Stop	★★★½	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																
E 4th St, N 12th Ave E	46.801087,-92.087656	City of Duluth	2-Way Stop	★★★	0			X	X				X			X	X		X or	X or	X	$167,000
Highway 2, Highway 2, N 2nd Ave	46.741341,-92.222349	City of Proctor	2-Way Stop	★★★	0		X	X	X							X		X			X	$224,000
W 4th St, N 3rd Ave W	46.786766,-92.10627	City of Duluth	2-Way Stop	★★★	0			X	X				X	X		X	X		X or	X or	X	$267,000
E 4th St, N 3rd Ave E, E 4th St	46.792491,-92.098828	City of Duluth	2-Way Stop	★★★	1			X	X				X	X		X	X		X or	X or	X	$267,000
Highway 53, N 5th St	46.73254,-92.085315	City of Superior	1-Way Stop	★★★	0		X		X			X										$711,000
Broadway St, Broadway St, Ogden Ave, Ogden Ave	46.726606,-92.102351	City of Superior	2-Way Stop	★★★	1			X	X			X	X	X		X	X or	X or	X or	X or		$1,241,000
N 24th Ave W, S 24th Ave W, W Superior St, W Superior St	46.764095,-92.128014	City of Duluth	2-Way Stop	★★★	0			X	X			X		X		X	X or	X or	X or	X or	X	$1,255,000
E Superior St, N 43rd Ave E, N 43rd Ave E	46.82629,-92.036653	City of Duluth	2-Way Stop	★★★	1			X	X			X	X	X		X	X or	X or	X or	X or	X	$1,262,000

Safety Emphasis Area 3

Safety Projects - Prioritized by Risk

Signalized Intersections Along Multi-Lane Arterials

Signalized Intersection Name	Maintaining Agency	Intersection Location (Lat/Long)	Total Stars	Conduct Traffic Study	Install Median at Intersection	Reduce Lane Widths and Install Median	Realign Intersection to <20 deg. Skew	Install FYA Signal Indications	Consider Changing Left Turn Phasing to Prot/Perm or Prot Only	Install Left Turn Lanes	Complete Road Diet Evaluation to Install Left Turn Lanes	Complete Road Diet Evaluation to Install Left Turn Lanes and Medians	Improve Channelized Right Turn Lane Geometry	Improve Left Turn Lane Offset	Add "Prepare to Stop When Flashing Beacons	Install Enforcement Confirmation Lights	Update Corridor Signal Timing to Favor Slower Progression Speeds	Verify & Update Pedestrian Clearance Intervals	Install High-Visibility Crosswalks	Install LPI	Install Pedestrian Countdown Timer Signal Indications	Evaluate Suitability of Existing Lighting System	Install Lighting	Install Retroreflective Signal head Backplates	Install Traffic Signal Indications Over Each Lane for Mainline	Project Cost Estimate
MNTH 23 (Grand Ave) & MSAS 108, MUN 153 (Raleigh St)	City of Duluth	46.731269,-92.180057	★★★★★★★★★★			X	X		X		X							X		X		X		X		$1,840,000
MNTH 23 (Grand Ave) & River West Dr /Warkwick St	City of Duluth	46.714344,-92.203656	★★★★★★★½			X or			X			X or						X		X		X				$929,000
MNTH 23 (Grand Ave) & MUN 172 (72nd Ave W)	City of Duluth	46.725327,-92.188433	★★★★★★★½			X or			X			X or						X		X		X		X		$933,000
USTH 53 (Trinity Rd) & MSAS 198 (Anderson Rd)	City of Duluth	46.793185,-92.156289	★★★★★★★½			X		X	X					X	X or	X or		X	X	X		X		X		$525,000
CSAH 9 (4th St) at 6th Ave E	St. Louis County/Duluth	46.795357,-92.09511	★★★★★★★			X or		X	X			X or					X	X		X		X		X	X	$501,000
First Street and 46th Ave W	City of Duluth	46.744615,-92.1569984	★★★★★★★			X or		X	X			X or			X or	X or		X		X	X	X		X	X	$637,000
18th Ave E & E 5th St	Superior	46.708897,-92.055627	★★★★★★★			X or		X	X	X or		X or						X	X	X	X	X		X	X	$883,000
MNTH 23 (Grand Ave) & MSAS 101 (88th Ave W)	MnDOT/Duluth	46.697136,-92.218051	★★★★★★★			X or			X			X or						X		X		X		X		$933,000
USTH 53 (Miller Trunk Hwy) & CSAH 13 (Midway Rd)	MnDOT/County	46.852995,-92.280403	★★★★★★★										X		X or	X or		X	X	X		X		X		$118,000
USH 2/USH 53 (E 2nd) & 22nd Ave E	Superior	46.706586,-92.047341	★★★★★★★			X			X									X	X	X		X		X		$232,000
Arrowhead Road and Arlington Ave	City of Duluth	46.8222412,-92.1323428	★★★★★★★			X or			X						X or	X or		X		X		X				$240,000
USTH 53 (Trinity Rd) & CSAH 90 (Arlington Ave)	City of Duluth	46.78265,-92.138753	★★★★★★★			X		X	X					X	X or	X or		X		X		X		X		$513,000
USTH 53 (Miller Trunk Hwy) & CSAH 91 (Haines Rd)	MnDOT/County	46.814785,-92.174789	★★★★★★★				X		X				X	X			X	X		X		X		X		$1,309,000
USTH 53 (Miller Trunk Hwy) & MSAS 104, CSAH 32 (W Arrowhead Rd)	MnDOT/Hermantown	46.822112,-92.18676	★★★★★★★	X				X	X				X	X			X	X	X	X		X		X	X	$3,153,000
Superior Street and 27th Ave W	City of Duluth	46.7613776,-92.1317979	★★★★★★½			X or		X	X			X or					X	X		X	X	X		X	X	$512,000
I-35 & MSAS 191 (26th Ave E) & TH 61, MSAS 193 (London Rd)	City of Duluth	46.808919,-92.061389	★★★★★★½					X	X				X	X	X or	X or		X		X	X	X		X		$386,000
College Street and Kenwood Ave	City of Duluth	46.8167053,-92.1003188	★★★★★★½	X				X	X									X	X	X	X	X		X	X	$2,843,000
USH 53 (2nd St) & USH 2 (Belknap St)	WisDOT	46.722281,-92.068439	★★★★★★½	X										X				X		X		X				$2,897,000
STH 35 (Tower Ave) & N 28th St	Superior	46.706188,-92.104047	★★★★★★½	X				X	X					X				X	X	X	X	X		X	X	$3,095,000
STH 35 (Tower Ave) & N 21st St	Superior	46.713416,-92.103969	★★★★★★½	X				X	X					X				X	X	X	X	X		X	X	$3,095,000
TH 194 (Central Ent) & MSAS 198, M 535 (Anderson Rd)	City of Duluth	46.800664,-92.143421	★★★★★★½	X		X		X	X					X	X or	X or	X	X	X	X		X		X	X	$3,293,000
Summit Street and Woodland Ave	City of Duluth	46.817781,-92.077889	★★★★★★			X or		X	X			X or						X	X	X		X		X		$500,000
Clover Street and Woodland Ave	City of Duluth	46.8157372,-92.0780403	★★★★★★			X or		X	X			X or					X	X	X	X		X		X		$520,000
USTH 53 (Miller Trunk Hwy) & CSAH 48 (Lavaque Bypass Rd), MSAS 101 (Ugstad	MnDOT/County	46.93658,-92.238403	★★★★★★						X					X	X or	X or	X	X		X		X				$273,000
STH 35 (Tower Ave) & N 31st St	Superior	46.70253,-92.104136	★★★★★★					X	X					X				X	X	X		X	X	X	X	$447,000
STH 35 (Tower Ave) & N 37th St	Superior	46.695397,-92.104127	★★★★★★					X	X					X				X	X	X		X	X	X	X	$447,000
TH 194 (Mesaba Ave) & MSAS 127 (W 7th St)	MnDOT/Duluth	46.790914,-92.106795	★★★★★★					X	X				X	X			X	X		X		X		X	X	$575,000
TH 194 (Mesaba Ave) & MSAS 126 (W 3rd St)	City of Duluth	46.783745,-92.108303	★★★★★★					X	X	X							X	X		X		X		X		$855,000
USTH 53 (Miller Trunk Hwy) & CSAH 17, MSAS 103 (Stebner Rd)	MnDOT/Hermantown	46.827651,-92.195789	★★★★★★				X	X					X				X	X		X		X		X		$1,094,000
TH 194 & CSAH 4 (Mesaba Ave) & MSAS 192 (Central Ent)	MnDOT/Duluth	46.795888,-92.107092	★★★★★★			X		X	X	X			X		X or	X or	X	X		X		X		X	X	$1,362,000
TH 194 (Central Ent) & CSAH 90 (Arlington Ave)	City of Duluth	46.800452,-92.13214	★★★★★★	X		X		X	X								X	X		X		X		X	X	$3,029,000
TH 194 (Central Ent) & MSAS 205, M 494 (Basswood Ave)	City of Duluth	46.80047,-92.135306	★★★★★★	X		X		X	X								X	X	X	X		X		X	X	$3,041,000
Michigan Street and 27th Ave W	City of Duluth	46.760847,-92.131133	★★★★★½	X		X or		X	X			X or					X	X	X	X	X	X		X	X	$3,184,000
USTH 53 & CSAH 54 (Piedmont Ave)	City of Duluth	46.775111,-92.143167	★★★★★½					X	X						X or	X or		X		X		X		X	X	$194,000
Grand Ave and 46th Ave W	City of Duluth	46.7460826,-92.1592956	★★★★★½			X		X	X									X	X	X	X	X		X		$280,000
CSAH 9 (Woodland Ave) at W Arrowhead Rd	St. Louis County/Duluth	46.825768,-92.071347	★★★★★½			X			X				X		X or	X or	X	X		X		X				$390,000
TH 194 (Central Ent) & MSAS 182 (Pecan Ave)	City of Duluth	46.799477,-92.116405	★★★★★½						X				X	X			X	X		X		X		X	X	$464,000
USH 2/USH 53 (E 2nd) & 39th Ave E	Superior	46.689033,-92.025013	★★★★★½	X		X			X									X	X	X		X		X		$2,892,000
Arrowhead Road and Rice Lake Road (CSAH 4)	City of Duluth	46.822098,-92.12661	★★★★★½	X		X			X				X					X		X		X				$2,939,000
TH 53 and Lavaque	MnDOT/Hermantown	46.836657,-92.217085	★★★★★														X	X		X		X		X		$15,000
Arrowhead Road and Menard Drive	City of Duluth	46.8222438,-92.1843165	★★★★★		X													X		X		X				$205,000
St. Marie Street and Woodland Ave	City of Duluth	46.8222306,-92.0741843	★★★★★			X		X	X								X	X	X	X	X	X		X	X	$416,000
Ninth Street and 6th Ave E	City of Duluth	46.7987104,-92.1003168	★★★★★			X		X	X						X or	X or	X	X	X	X		X		X	X	$423,000
USTH 53 (Miller Trunk Hwy) & MSAS 107 (Loberg Ave)	MnDOT/Hermantown	46.81906,-92.181777	★★★★★	X									X				X					X		X		$2,735,000
Eighth Street and Woodland Ave	City of Duluth	46.8140462,-92.0780908	★★★★★	X		X			X						X or	X or	X	X		X		X				$2,888,000
USTH 53 (Trinity Rd) & MSAS 209, MUN 1414 (Mall Drive)	City of Duluth	46.801655,-92.154729	★★★★★	X				X	X					X			X	X		X		X		X		$2,936,000
Railroad Street and Canal Park Dr	City of Duluth	46.7850637,-92.0950474	★★★★★	NOT EVALUATED FOR A SAFETY PROJECT																						
US 2 at CSAH 14 (Boundary Ave)	MnDOT/St. Louis County	46.738127,-92.217107	★★★★★	NOT EVALUATED FOR A SAFETY PROJECT																						
Third Street and 6th Ave E	City of Duluth	46.7946977,-92.0938074	★★★★½					X	X		X						X	X	X	X	X	X		X	X	$336,000
USH 2/USH 53 (E 2nd) & 18th Ave E	Superior	46.71075,-92.052616	★★★★½							X				X				X	X	X	X		X		X		$659,000
TH 53 & MSAS 108 (Cirrus Dr), M166 (Sugar Maple Dr)	MnDOT/Hermantown	46.833594,-92.205486	★★★★½	X													X	X	X	X		X		X		$2,675,000
USTH 53 (Trinity Rd) & USTH 194 (Central Ent)	City of Duluth	46.804291,-92.153721	★★★★½	X									X				X	X		X		X		X		$2,963,000
Michigan Street and 5th Ave W	City of Duluth	46.7817011,-92.1038757	★★★★½	NOT EVALUATED FOR A SAFETY PROJECT																						
Second Street and Lake Ave	City of Duluth	46.7882795,-92.1005779	★★★★½	NOT EVALUATED FOR A SAFETY PROJECT																						
TH 194 (Mesaba Ave) & MSAS 129, 173 (W 1st St)	City of Duluth	46.780905,-92.108101	★★★★½	NOT EVALUATED FOR A SAFETY PROJECT																						
Third Street and 10th Ave E	City of Duluth	46.7984737,-92.0888588	★★★★½	NOT EVALUATED FOR A SAFETY PROJECT																						
Kenwood Ave and Cleveland Street	City of Duluth	46.8212826,-92.1002414	★★★★½	NOT EVALUATED FOR A SAFETY PROJECT																						

Safety Emphasis Area 4

Safety Projects - Prioritized by Risk

Urban Intersections Bike Ped Crashes

Road Name	Lat/Long	Maintaining Agency	TOTAL STARS	Conduct a Traffic Study	Install Sidewalk	Install pedestrian Curb Extensions	Install Median	Reduce Lane Width and Install Median	Install High-Visibility Crosswalks	Left Turn Calming	Extend Median through Crosswalk	Evaluate Suitability of Existing Lighting System	Install Intersection Lighting	Leading Pedestrian Interval	Install Pedestrian Countdown Timer Signal Indications	Verify/Update Pedestrian Crossing Times	Install RRFB	Install Pedestrian Hybrid Beacon	Install Raised Crosswalk	Install Raised Intersection	Install Bicycle Signal Heads	Bike Box (Two-Stage Turn)	Install Flexible Delineator Posts	Mark Bike Lanes Through Intersection	Use Green Pavement for Bike Lanes	Install Bike Lanes	Reduce Lane Width and Install Bike Lanes	Complete Road Diet Evaluation	Consider Bike Path or Multi-Use Path	Evaluate for Transit Improvements at Nearby Bus Stops	Project Cost Estimate
Tower Ave, N 31st St	46.702589,-92.104406	City of Superior	★★★★★★★★★						X			X		X	X	X												X		X	$ 502,000
Tower Ave, N 28th Ave, N 28th St, Tower Ave	46.706202,-92.104034	City of Superior	★★★★★★★★★	X					X			X		X	X	X														X	$ 2,725,000
S Lake Ave, W Superior St, N Lake Ave, E Superior St	46.786944,-92.098145	City of Duluth	★★★★★★★★½			X			X	X		X		X	X	X							X					X		X	$ 428,000
Tower Ave, Tower Ave, N 37th St, N 37th St	46.695387,-92.10411	City of Superior	★★★★★★★★½						X		X	X		X	X	X													X	X	$ 640,000
Belknap St, Hammond Ave	46.720626,-92.097883	City of Superior	★★★★★★★★½	X						X		X		X		X					X	X	X	X	X		X or	X or		X	$ 2,903,000
Tower Ave, N 21st St, N 21st St, Tower Ave	46.71342,-92.104006	City of Superior	★★★★★★★★½						X		X	X		X	X	X														X	$ 215,000
Tower Ave, Tower Ave, N 16th St	46.719309,-92.103964	City of Superior	★★★★★★★★½	X		X		X	X			X					X		X or	X or										X	$ 808,000
E 2nd St, N 3rd Ave E	46.79129,-92.096598	City of Duluth	★★★★★★★★						X			X																X		X	$ 217,000
Grand Ave, Grand Ave, N 40th Ave W, N 40th Ave W	46.751662,-92.15132	City of Duluth	★★★★★★★★				X or		X	X or		X		X	X	X														X	$ 273,000
E 2nd St - Hwy 53/2, 39th Ave E	46.68907,-92.024958	City of Superior	★★★★★★★★					X	X			X		X		X														X	$ 273,000
E 4th St, N 5th Ave E	46.794438,-92.09629	City of Duluth	★★★★★★★★					X or	X	X or		X		X	X	X														X	$ 280,000
Tower Ave, N 20th St	46.714713,-92.103983	City of Superior	★★★★★★★★			X	X		X		X	X					X and/or	X or	X and/or	X and/or										X	$ 564,000
Tower Ave, N 18th St	46.717022,-92.10396	City of Superior	★★★★★★★★	X		X	X		X			X					X and/or	X or	X and/or	X and/or										X	$ 981,000
E 2nd St, N 1st Ave E, N 1st Ave E	46.789237,-92.099117	City of Duluth	★★★★★★★½						X			X		X	X	X					X	X	X	X	X		X or	X or			$ 224,000
N 2nd Ave W, W 2nd St	46.786435,-92.102837	City of Duluth	★★★★★★★½						X			X		X	X	X					X	X	X	X	X		X or	X or			$ 224,000
N Lake Ave, E 2nd St, W 2nd St, N Lake Ave	46.786296,-92.100372	City of Duluth	★★★★★★★½					X	X			X		X	X	X					X	X	X	X	X		X or	X or		X	$ 473,000
E 9th St, N Central Entrance, N 6th Ave E	46.798692,-92.100577	City of Duluth	★★★★★★★½	X				X	X			X		X		X												X		X	$ 881,000
N Lake Ave, W 1st St, E 1st St	46.787635,-92.099302	City of Duluth	★★★★★★★½						X	X		X		X	X	X												X		X	$ 325,000
Belknap St, Lamborn Ave, Grand Ave, Belknap St	46.72062,-92.09344	City of Superior	★★★★★★★½							X		X		X		X					X	X	X	X	X		X or	X or		X	$ 251,000
Ogden Ave, Belknap St, Belknap St, Ogden Ave	46.720645,-92.102379	City of Superior	★★★★★★★½							X		X		X		X					X	X	X	X	X		X or	X or		X	$ 251,000
W Central Entrance, Basswood Ave	46.800474,-92.126306	City of Duluth	★★★★★★★½					X or		X or		X		X		X													X	X	$ 489,000
E Central Entrance, S Arlington Ave	46.800418,-92.132132	City of Duluth	★★★★★★★½					X or		X or		X		X		X													X	X	$ 489,000
Woodland Ave, Summit St	46.817772,-92.077898	City of Duluth	★★★★★★★½					X	X			X		X		X												X		X	$ 453,000
N 1st Ave E, S 1st Ave E, E Superior St, E Superior St	46.787872,-92.09695	City of Duluth	★★★★★★★½							X		X		X		X														X	$ 54,000
N 24th Ave W, N 24th Ave W, W 3rd St, W 3rd St	46.766138,-92.131292	City of Duluth	★★★★★★★½						X	X		X		X	X	X														X	$ 85,000
S 5th Ave W, N 5th Ave W, W Superior St, W Superior St	46.782185,-92.104402	City of Duluth	★★★★★★★½							X	X	X		X		X														X	$ 184,000
E Superior St, N 4th Ave E	46.790771,-92.093213	City of Duluth	★★★★★★★½			X			X	X		X					X and/or	X or	X and/or	X and/or										X	$ 405,000
E 2nd St - Hwy 53/2, E 2nd St - Hwy 53/2, E 3rd St	46.67769,-92.01047	City of Superior	★★★★★★★½		X			X	X			X					X and/or	X or	X and/or	X and/or											$ 548,000
Tower Ave, N 17th St	46.718164,-92.103965	City of Superior	★★★★★★★½			X	X		X			X					X and/or	X or	X and/or	X and/or											$ 553,000
Tower Ave, N 19th St	46.715859,-92.103961	City of Superior	★★★★★★★½			X	X		X			X					X and/or	X or	X and/or	X and/or											$ 553,000
Highway 53, Grand Ave, Grand Ave	46.733759,-92.093319	City of Superior	★★★★★★★½		X	X	X		X			X					X and/or	X or	X and/or	X and/or											$ 620,000
W 2nd St, N 3rd Ave W	46.785453,-92.104074	City of Duluth	★★★★★★★						X			X		X	X	X					X	X	X	X	X		X or	X or			$ 224,000
W 2nd St, N 4th Ave W, N 4th Ave W	46.784465,-92.105373	City of Duluth	★★★★★★★						X			X		X	X	X					X	X	X	X	X		X or	X or			$ 224,000
N 1st Ave W, W 2nd St, N 1st Ave W	46.787326,-92.101633	City of Duluth	★★★★★★★						X			X		X	X	X					X	X	X	X	X		X or	X or			$ 224,000
N 6th Ave E, E 4th St, N 6th Ave E	46.795355,-92.095123	City of Duluth	★★★★★★★					X				X		X														X		X	$ 429,000
N 6th Ave E, E 3rd St, N 6th Ave E, N 6th Ave E, E 3rd St	46.79488,-92.094027	City of Duluth	★★★★★★★					X	X			X		X	X	X												X		X	$ 460,000
E Central Entrance, Pecan Ave	46.799475,-92.116465	City of Duluth	★★★★★★★							X	X	X		X	X	X													X	X	$ 356,000
W Central Entrance, Mall Dr	46.802217,-92.148685	City of Duluth	★★★★★★★		X			X				X		X		X													X	X	$ 565,000
W Central Entrance, Anderson Rd/ W Myrtle St	46.800619,-92.143463	City of Duluth	★★★★★★★		X			X				X		X	X	X													X	X	$ 584,000
E Central Entrance, Blackman Ave	46.800081,-92.121644	City of Duluth	★★★★★★★					X	X				X				X and/or	X or	X and/or	X and/or									X	X	$ 756,000
Miller Trunk Hwy, W Central Entrance, US 53 (Trinity Rd), Joshua Ave	46.804276,-92.153697	City of Duluth	★★★★★★★	X	X						X	X		X		X													X		$ 3,040,000
US 53, Cottonwood Ave/Loberg Ave	46.805561,-92.156889	City of Duluth	★★★★★★★		X				X		X	X		X		X					X	X	X	X	X		X or		X or		$ 453,000
E St Marie St, Woodland Ave, W Saint Marie St	46.822148,-92.074099	City of Duluth	★★★★★★★					X	X			X		X	X	X													X		$ 420,000
Woodland Ave, Clover St	46.815825,-92.078254	City of Duluth	★★★★★★★					X	X			X		X	X	X													X		$ 420,000
N 3rd Ave W, S 3rd Ave W, W Superior St, W Superior St	46.784078,-92.101847	City of Duluth	★★★★★★★							X		X		X		X															$ 14,000
E Superior St, S 2nd Ave E, N 2nd Ave E, E Superior St	46.788881,-92.095628	City of Duluth	★★★★★★★							X		X		X		X														X	$ 54,000
E Superior St, S 3rd Ave E, N 3rd Ave E	46.789807,-92.094437	City of Duluth	★★★★★★★							X		X		X		X														X	$ 54,000
N 6th Ave W, S 6th Ave W, W Superior St	46.781205,-92.105671	City of Duluth	★★★★★★★							X		X		X		X														X	$ 54,000
W Superior St, S 1st Ave W, W Superior St, N 1st Ave W	46.78597,-92.09938	City of Duluth	★★★★★★★							X		X		X		X														X	$ 54,000
Maple Grove Rd, Burning Tree Rd, Burning Tree Rd	46.807567,-92.169205	City of Duluth	★★★★★★★								X	X		X		X														X	$ 184,000
W 1st St, S 46th Ave W, N 46th Ave W, Mike Colalillo Dr	46.744573,-92.157187	City of Duluth	★★★★★★★					X				X		X	X	X														X	$ 256,000
Central Ave, Ramsey St, Ramsey St	46.73891,-92.166567	City of Duluth	★★★★★★★					X or	X	X or		X		X	X	X														X	$ 280,000
N 59th Ave W, Grand Ave, S 59th Ave W, Grand Ave	46.736998,-92.171989	City of Duluth	★★★★★★★					X	X		X	X		X	X	X					X	X	X	X	X	X				X	$ 294,000
US 53, US 53, S Arlington Ave	46.782563,-92.138722	City of Duluth	★★★★★★★		X			X				X		X		X															$ 297,000
N Cental Ave, Grand Ave, Central Ave, Grand Ave	46.740958,-92.166553	City of Duluth	★★★★★★★					X	X			X		X		X					X	X	X	X	X	X				X	$ 322,000
Ramsey St, Grand Ave	46.739014,-92.169151	City of Duluth	★★★★★★★					X	X			X		X	X	X					X	X	X	X	X	X				X	$ 323,000
E Central Entrance, Rice Lake Rd, N Central Entrance, Mesaba Ave	46.795862,-92.107036	City of Duluth	★★★★★★★					X			X	X		X		X															$ 353,000
Hammond Ave, N 5th St, Hammond Ave, N 5th St	46.732539,-92.097857	City of Superior	★★★★★★★						X		X	X					X and/or	X and/or	X and/or	X and/or											$ 395,000
Haines Rd, Arrowhead Rd, Haines Rd, Arrowhead Rd	46.822086,-92.174837	City of Hermantown	★★★★★★★		X				X	X			X		X	X	X													X	$ 533,000
Winter St, Hammond Ave, Winter St	46.727879,-92.097828	City of Superior	★★★★★★★	X	X			X	X			X		X			X														$ 1,808,000
N 27th Ave W, W Superior St, W Superior St	46.761256,-92.13176	City of Duluth	★★★★★★★	X				X or		X or		X		X	X	X					X	X	X	X	X					X	$ 1,841,000
E 2nd St, N 2nd Ave E, N 2nd Ave E	46.790189,-92.097857	City of Duluth	★★★★★★½						X			X		X	X	X					X	X	X	X	X		X or	X or			$ 224,000
N Central Entrance, E 10th St	46.798724,-92.102459	City of Duluth	★★★★★★½	X				X	X			X					X and/or	X or	X and/or	X and/or								X		X	$ 1,108,000
Tower Ave, Tower Ave, Belknap St, Belknap St	46.720642,-92.103942	City of Superior	★★★★★★½							X		X		X		X					X	X	X	X	X		X or	X or			$ 211,000
Belknap St, Catlin Ave, Catlin Ave	46.720555,-92.087471	City of Superior	★★★★★★½							X		X		X		X					X	X	X	X	X		X or	X or		X	$ 251,000
Belknap St, Hughitt Ave	46.720639,-92.099447	City of Superior	★★★★★★½							X		X					X and/or	X or	X and/or	X and/or	X	X	X	X	X		X or	X or		X	$ 478,000
US 53, Maple Grove Rd	46.807792,-92.163401	City of Duluth	★★★★★★½		X							X		X		X													X		$ 323,000
US 53, Maple Burning Tree Rd	46.81089,-92.168446	City of Duluth	★★★★★★½		X				X		X	X		X		X													X		$ 416,000
Woodland Ave, Woodland Ave, E Kent Rd, E 8th St	46.813916,-92.078275	City of Duluth	★★★★★★½	X				X or		X or		X		X		X												X			$ 3,037,000
E Superior St, E Superior St, N 12th Ave E, S 12th Ave E	46.798389,-92.083292	City of Duluth	★★★★★★½							X		X		X		X														X	$ 54,000
N 4th Ave W, S 4th Ave W, W Superior St	46.783113,-92.103174	City of Duluth	★★★★★★½							X		X		X		X														X	$ 54,000
W 3rd St, N Lake Ave, E 3rd St	46.788962,-92.101451	City of Duluth	★★★★★★½					X	X			X		X	X	X															$ 240,000
Belknap St, Highway 53, E 2nd St - Hwy 53/2, Marina Dr	46.722237,-92.068388	City of Superior	★★★★★★½		X				X		X	X		X		X															$ 264,000
Tower Ave, Tower Ave, N 34th St, N 34th St	46.698911,-92.104079	City of Superior	★★★★★★½		X				X			X					X and/or	X or	X and/or	X and/or										X	$ 380,000
E Superior St, N 13th Ave E	46.799335,-92.092031	City of Duluth	★★★★★★½			X			X	X		X					X and/or	X or	X and/or	X and/or										X	$ 405,000
Tower Ave, N 40th St	46.6917,-92.104146	City of Superior	★★★★★★½		X				X		X	X					X and/or	X or	X and/or	X and/or											$ 478,000
Tower Ave, N 23rd St	46.710983,-92.104012	City of Superior	★★★★★★½					X	X			X					X and/or	X or	X and/or	X and/or										X	$ 500,000
Woodland Ave, Woodland Ave, E Oxford St	46.833266,-92.072396	City of Duluth	★★★★★★½					X or	X	X or		X					X and/or	X or	X and/or	X and/or										X	$ 506,000
Hammond Ave, N 7th St	46.730219,-92.097852	City of Superior	★★★★★★½			X		X	X			X					X and/or	X or	X and/or	X and/or											$ 560,000
Hammond Ave, N 6th St	46.731377,-92.097843	City of Superior	★★★★★★½	X		X		X	X			X					X and/or	X or	X and/or	X and/or										X	$ 2,148,000

Appendix N

Safety Projects Prioritized by Cost per Weighted Risk

Safety Projects - Prioritized by Cost per Weighted Risk

Safety Emphasis Area 1 (Segments)

Rural Two-Lane Undivided Roads With AADT Less Than 5,000

(Roads on the Functional Classification System)

Road Name	State	County	Municipality	Speed Limit	Number of KAB Crashes	Length (miles)	AADT	Total Stars	Edgeline And/or Centerline Marking Improvement	Shoulder Rumble strips	Centerline Rumble Strips	Provide 3 ft shoulder	Widen Shoulder to 3 ft	Safety Edge	Improve Side Slopes	Clear Zone Maintenance	Install barrier to delineate fixed object	Install barrier for non-recoverable slopes	See Curves Recommendations (# Of Curves in Segment)	Project Cost Estimate (No Overlap with Curves)	Project Cost Estimate (Including Costs for Curves)	Weighted Risk Factor	Segment: Prioritization ($ per Weighted Risk Factor)	Segment + Curve: Prioritization ($ per Weighted Risk Factor)
Schultz Rd	Minnesota	Saint Louis	City of Rice Lake	55	2	1.0	115	★★★½	X		X								0	$59,000	$59,000	7	$8,429	$8,429
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	30	0	1.2	3000	★★★★	X							X or	X or		2	$125,000	$130,000	8	$15,625	$16,250
Schultz Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	2.0	170	★★★½	X		X								0	$116,000	$116,000	7	$16,571	$16,571
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	50	1	0.3	364	★★★★★	X	X	X	X		X		X or	X or		1	$151,000	$169,000	10	$15,100	$16,900
Occidental Blvd	Minnesota	Saint Louis	City of Duluth	30	0	0.4	348	★★★★	X								X		2	$129,000	$136,000	8	$16,125	$17,000
CTH A	Wisconsin	Douglas	Township of Superior	55	2	0.7	970	★★★★½	X		X						X		1	$142,000	$183,000	9	$15,778	$20,333
Saginaw Rd	Minnesota	Saint Louis	Township of Solway	55	0	0.4	225	★★★★	X	X	X	X		X					2	$177,000	$185,000	8	$22,125	$23,125
CTH A	Wisconsin	Douglas	Township of Superior	40	1	1.3	730	★★★★½	X		X					X or	X or		2	$154,000	$274,000	9	$17,111	$30,444
Caribou Lake Rd	Minnesota	Saint Louis	Township of Grand Lake	40	2	0.6	499	★★★½	X	X	X	X		X		X or	X or		0	$297,000	$297,000	7	$42,429	$42,429
CTH U	Wisconsin	Douglas	Township of Lakeside	30	0	0.9	90	★★★★	X						X or			X or	5	$214,000	$462,000	8	$26,750	$57,750
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	40	0	0.7	1450	★★★★	X	X	X	X		X			X	X	3	$460,000	$475,000	8	$57,500	$59,375
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	55	0	0.2	364	★★★★	X	X	X	X		X					2	$89,000	$480,000	8	$11,125	$60,000
CTH K	Wisconsin	Douglas	Township of Parkland	55	0	1.8	1200	★★★★½	X	X	X		X	X					0	$556,000	$556,000	9	$61,778	$61,778
Becks Rd	Minnesota	Saint Louis	Township of Midway	55	1	1.1	670	★★★★½	X	X	X		X	X		X		X	2	$417,000	$581,000	9	$46,333	$64,556
CTH E	Wisconsin	Douglas	Township of Parkland	55	0	1.0	2000	★★★½	X	X	X	X		X		X	X		0	$459,000	$459,000	7	$65,571	$65,571
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	55	1	1.0	2800	★★★★	X	X	X	X		X		X or	X or		2	$549,000	$573,000	8	$68,625	$71,625
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	45	1	1.4	348	★★★★	X								X	X	16	$537,000	$617,000	8	$67,125	$77,125
S Chicago Ave	Wisconsin	Douglas	Village of Oliver	45	1	1.3	2300	★★★★½	X	X	X	X		X		X or	X or		3	$472,000	$747,000	9	$52,444	$83,000
Observation Rd	Minnesota	Saint Louis	City of Duluth	40	0	1.1	1100	★★★★	X	X	X	X		X			X		3	$613,000	$692,000	8	$76,625	$86,500
CTH E	Wisconsin	Douglas	Township of Parkland	55	0	1.1	1200	★★★★	X	X	X	X		X					1	$448,000	$710,000	8	$56,000	$88,750
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	30	0	1.7	1580	★★★★	X							X or	X or	X	6	$710,000	$758,000	8	$88,750	$94,750
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	45	1	3.6	2000	★★★★★	X		X						X		7	$788,000	$1,036,000	10	$78,800	$103,600
CTH K	Wisconsin	Douglas	Township of Parkland	55	0	2.5	850	★★★½	X	X	X		X	X					0	$753,000	$753,000	7	$107,571	$107,571
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	30	1	1.8	680	★★★½	X								X	X	11	$793,000	$852,000	7	$113,286	$121,714
CTH C	Wisconsin	Douglas	Township of Parkland	30	4	4.0	1000	★★★★	X	X	X		X	X					0	$1,211,000	$1,211,000	8	$151,375	$151,375
CTH E	Wisconsin	Douglas	Township of Parkland	45	1	2.8	670	★★★½	X	X	X	X		X					0	$1,113,000	$1,113,000	7	$159,000	$159,000
CTH 8	Minnesota	Saint Louis	Township of Grand Lake	30	0	0.8	120	★★★★	Segment Not Evaluated - Gravel Road										N/A					
McQuade Rd	Minnesota	Saint Louis	Township of Lakewood	40	2	0.4	345	★★★½	Segment Not Evaluated										N/A					
W Skyline	Minnesota	Saint Louis	Township of Midway	30	1	0.5	680	★★★½	Segment Not Evaluated										N/A					
Swan Lake Rd	Minnesota	Saint Louis	City of Hermantown	55	0	0.7	1400	★★★½	Segment Not Evaluated										N/A					
Lavaque Rd	Minnesota	Saint Louis	City of Hermantown	45	0	0.7	3500	★★★½	Segment Not Evaluated										N/A					
Culbertson Rd	Minnesota	Saint Louis	Township of Duluth	55	0	1.0	380	★★★½	Segment Not Evaluated										N/A					
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	55	1	2.0	2000	★★★½	Segment Not Evaluated										N/A					
W Calvary Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	2.0	1650	★★★½	Segment Not Evaluated										N/A					
CTH D	Wisconsin	Douglas	Township of Lakeside	55	1	2.5	1400	★★★½	Segment Not Evaluated										N/A					
CTH C	Wisconsin	Douglas	Township of Parkland	55	0	2.7	750	★★★½	Segment Not Evaluated										N/A					
CTH C	Wisconsin	Douglas	Township of Superior	30	0	3.7	430	★★★½	Segment Not Evaluated										N/A					
CTH W	Wisconsin	Douglas	Township of Superior	30	0	3.7	270	★★★½	Segment Not Evaluated										N/A					

Safety Emphasis Area 1 (Curves)

Safety Projects - Prioritized by Cost per Weighted Risk

Rural Two-Lane Undivided Roads
With AADT Less Than 5,000

(Roads on the Functional Classification System)

RoadName	State	County	Municipality	Lat/Long	Speed Limit (mph)	Curve Advisory Speed (mph)	Length (miles)	AADT	Total Stars	Curve Overlaps with a Tier 1 Segment?	Curve Overlaps with a Tier 2 Segment?	Edgeline And/or Centerline Marking Improvement	High Friction Surface Treatment	Re-evaluate Curve Signing	Install Chevrons	Install Night Arrows	Upgrade to Fluorescent signs	Install In-Lane curve warning pavement Markings	Shoulder Rumble strips	Centerline Rumble Strips	Provide 3 ft shoulder	Widen Shoulder to 3 ft	Safety Edge	Improve Side Slopes	Clear Zone Maintenance	Install barrier to delineate Fixed object	Install barrier for non-recoverable slopes	Install Flashing Beacons with Warning 'Stop Ahead' Signs	Realign Intersection to Correct Visual Trap	Reconstruct Triangle Intersection	Project Cost Estimate (No Overlap with Segments)	Project Cost Estimate (Assumes Standalone Proejcts for Each Curve)	Risk Prioritization Weight	Curve Cost Prioritization ($/Risk Weight)
Occidental Blvd	Minnesota	Saint Louis	City of Duluth	46°50'38.96"N, 92°0'37.28"W	30	20	0.4	348	★★★	Y	N				X		X						X								$3,000	$4,423	7.5	$590
CTH W	Wisconsin	Douglas	Township of Superior	46°33'7.90"N, 92°14'49.97"W	55	No Posting	3.7	270	★★★	N	N	Dirt/gravel road		X	X	X															$5,000	$5,000	7.5	$667
E McCuen St	Minnesota	Saint Louis	City of Duluth	46°39'22.28"N, 92°12'30.51"W	35	25	0.6	2300	★★★ ↑	N	N	X				X	X														$7,000	$7,000	8.75	$800
CTH W	Wisconsin	Douglas	Township of Superior	46°33'14.72"N, 92°14'41.78"W	55	No Posting	3.7	270	★★ ↑	N	N	Dirt/gravel road		X	X	X															$5,000	$5,000	6.25	$800
N 58th St	Wisconsin	Douglas	City of Superior	46°40'11.71"N, 92° 4'37.88"W	30	15	1.0	2000	★★★	N	N	X		X		X	X														$7,000	$7,000	7.5	$933
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'30.81"N, 92°13'1.44"W	30	15	0.2	4150	★★★	N	N	X		X	X	X	X						X								$8,000	$8,000	7.5	$1,067
Occidental Blvd	Minnesota	Saint Louis	City of Duluth	46°50'29.15"N, 92° 0'36.58"W	30	20	0.4	348	★★ ↑	Y	N	X			X	Saint Louis															$4,000	$8,999	6.25	$1,440
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°42'53.93"N, 92°13'10.82"W	30	No Posting	1.8	680	★★	N	Y	X		X	X	X							X								$5,000	$7,731	5	$1,546
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'31.91"N, 92° 0'49.93"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X															$5,000	$6,871	3.75	$1,832
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'54.58"N, 92° 0'37.47"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X															$5,000	$6,914	3.75	$1,844
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'37.43"N, 92° 0'50.40"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X															$5,000	$7,131	3.75	$1,902
CTH 8	Minnesota	Saint Louis	Township of Grand Lake	46°55'24.22"N, 92°24'46.07"W	55	No Posting	0.8	120	★★★ ↑	N	N	Dirt/gravel road																X			$18,000	$18,000	8.75	$2,057
CTH W	Wisconsin	Douglas	Township of Superior	46°32'43.85"N, 92°14'38.17"W	55	25	3.7	270	★★ ↑	N	N	Dirt/gravel road		X	X	X									X						$14,000	$14,000	6.25	$2,240
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'23.51"N, 92°13'11.14"W	30	No Posting	1.8	680	★ ↑	N	Y	X		X	X	X															$5,000	$8,697	3.75	$2,319
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'22.99"N, 92°13'17.74"W	30	No Posting	1.8	680	★ ↑	N	Y	X		X	X	X															$5,000	$9,326	3.75	$2,487
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°52'48.29"N, 92° 0'31.15"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X															$5,000	$9,850	3.75	$2,627
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	46°49'14.32"N, 92° 8'59.53"W	30	No Posting	1.2	3000	★ ↑	Y	N	X		X	X	X															$5,000	$10,311	3.75	$2,750
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'17.59"N, 92°13'10.82"W	30	No Posting	1.8	680	★ ↑	N	Y	X		X	X	X								X							$9,000	$12,360	3.75	$3,296
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'37.71"N, 92° 0'53.23"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X									X						$5,000	$12,586	3.75	$3,356
N 58th St	Wisconsin	Douglas	City of Superior	46°40'9.80"N, 92° 4'40.55"W	30	15	1.0	2000	★★ ↑	N	N	X		X	X		X									X					$21,000	$21,000	6.25	$3,360
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	46°47'22.90"N, 92°10'31.24"W	40	No Posting	1.0	2800	★★ ↑	Y	N	X			X													X			$19,000	$21,313	6.25	$3,410
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'38.94"N, 92° 0'53.12"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X										X					$5,000	$13,300	3.75	$3,547
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	46°47'22.55"N, 92°10'44.21"W	40	No Posting	1.0	2800	★	Y	N	X		X	X	X				X					X or		X or				$5,000	$9,563	2.5	$3,825
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'39.74"N, 92° 0'36.34"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X										X					$5,000	$14,549	3.75	$3,880
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°42'57.02"N, 92°13'20.75"W	30	No Posting	1.8	680	★ ↑	N	Y	X		X	X	X															$5,000	$14,927	3.75	$3,980
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'33.51"N, 92° 0'49.84"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X										X					$5,000	$15,270	3.75	$4,072
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'43.40"N, 92° 7'15.66"W	30	No Posting	1.7	1580	★★ ↑	Y	N	X		X	X	X											X				$5,000	$25,536	6.25	$4,086
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	46°48'27.56"N, 92°20'0.41"W	50	25	1.1	1466	★★★	N	N	X		X		X	X	X	X		X		X		X						$38,000	$38,000	7.5	$5,067
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'34.99"N, 92° 0'51.90"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X										X					$5,000	$19,205	3.75	$5,121
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'43.44"N, 92° 7'23.31"W	30	No Posting	1.7	1580	★★	Y	N	X		X	X	X												X			$23,000	$25,790	5	$5,158
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°48'43.37"N, 92° 5'26.53"W	30	15	0.7	1450	★★ ↑	Y	N	X		X	X	X											X				$5,000	$33,132	6.25	$5,301
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	46°54'1.71"N, 91°53'51.94"W	30	No Posting	0.3	364	★ ↑	Y	N	X																X			$18,000	$20,351	3.75	$5,427
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'14.71"N, 92° 0'38.94"W	30	No Posting	1.4	348	★★	Y	N	X		X	X	X										X					$5,000	$27,660	5	$5,532
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'2.51"N, 92° 0'43.88"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X										X					$5,000	$22,320	3.75	$5,952
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'28.76"N, 92° 0'46.21"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X										X					$5,000	$22,893	3.75	$6,105
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°48'30.26"N, 92° 5'37.26"W	30	No Posting	0.7	1450	★ ↑	Y	N	X		X	X	X											X				$5,000	$23,081	3.75	$6,155
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'16.37"N, 92° 0'45.02"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X										X					$5,000	$23,534	3.75	$6,276
S Chicago Ave	Wisconsin	Douglas	Village of Oliver	46°38'42.53"N, 92°11'32.99"W	55	25	1.3	2300	★★ ↑	N	Y	X		X	X	X		X		X							X				$35,000	$40,824	6.25	$6,532
Becks Rd	Minnesota	Saint Louis	Township of Midway	46°41'56.24"N, 92°16'47.16"W	50	No Posting	1.1	670	★★ ↑	Y	N	X		X	X	X			X	X		X	X					X			$23,000	$41,695	6.25	$6,671
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°51'22.24"N, 92° 0'48.34"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X										X					$5,000	$25,501	3.75	$6,800
Minnesota Ave	Minnesota	Saint Louis	City of Duluth	46°43'41.96"N, 92° 3'8.90"W	30	No Posting	1.0	1850	★★ ↑	N	N	X		X	X	X											X				$43,000	$43,000	6.25	$6,880
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'41.36"N, 92° 7'16.51"W	30	No Posting	1.7	1580	★ ↑	Y	N	X		X	X	X											X				$5,000	$27,208	3.75	$7,255
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	46°48'28.32"N, 92°20'19.68"W	50	25	1.1	1466	★★ ↑	N	N	X		X		X	X	X	X		X		X		X						$46,000	$46,000	6.25	$7,360
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'55.05"N, 92° 0'41.71"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X										X					$5,000	$27,937	3.75	$7,450
42nd Ave	Wisconsin	Douglas	City of Superior	46°39'29.00"N, 92° 3'59.28"W	55	35	0.5	970	★★ ↑	Y	N	X		X	X		X		X	X		X	X	X				X			$41,000	$46,926	6.25	$7,508
Maple Grove Rd	Minnesota	Saint Louis	Township of Solway	46°48'34.09"N, 92°20'15.47"W	50	25	1.1	1466	★★ ↑	N	N	X		X	X	X	X		X	X	X		X		X						$47,000	$47,000	6.25	$7,520
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°48'20.68"N, 92° 5'50.85"W	30	No Posting	0.7	1450	★ ↑	Y	N	X		X	X	X											X				$5,000	$28,605	3.75	$7,628
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'27.20"N, 92° 7'25.88"W	30	No Posting	1.7	1580	★	Y	N	X		X	X	X											X				$5,000	$19,671	2.5	$7,868
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	46°40'21.35"N, 92°17'27.23"W	40	25	2.0	2000	★★ ↑	N	N	X		X	X	X			X		X				X or	X or					$51,000	$51,000	6.25	$8,160
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'39.55"N, 91°59'15.54"W	45	No Posting	3.6	2000	★★	Y	N	X		X	X	X			X	X	X		X			X					$24,000	$41,424	5	$8,285
CTH A	Wisconsin	Douglas	Township of Superior	46°29'38.66"N, 92° 4'20.00"W	55	35	3.3	930	★★ ↑	N	N	X		X	X		X		X	X		X	X		X or	X or					$53,000	$53,000	6.25	$8,480
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'10.53"N, 92°13'11.58"W	30	No Posting	1.8	680	★★ ↑	N	Y	X		X	X	X							X					X			$5,000	$32,279	3.75	$8,608
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'56.39"N, 91°54'41.08"W	55	No Posting	0.9	90	★★ ↑	Y	N	X		X	X	X			X		X	X	X					X			$38,000	$55,337	6.25	$8,854
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	46°50'44.50"N, 92° 0'37.97"W	30	No Posting	1.4	348	★ ↑	Y	N	X		X	X	X										X					$5,000	$33,863	3.75	$9,030
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'20.41"N, 91°59'19.06"W	45	No Posting	3.6	2000	★★	Y	N	X		X	X	X			X	X	X		X			X					$26,000	$45,921	5	$9,184
St. Louis River Rd	Minnesota	Saint Louis	City of Hermantown	46°45'50.88"N, 92°14'59.42"W	45	No Posting	1.5	531	★★ ↑	N	N	X		X	X	X			X	X			X			X	X				$59,000	$59,000	6.25	$9,440
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°42'21.20"N, 92°13'21.94"W	30	No Posting	1.8	680	★★ ↑	N	Y	X		X	X	X										X					$5,000	$35,859	3.75	$9,562
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'40.46"N, 91°54'21.35"W	55	No Posting	0.9	90	★★ ↑	Y	N	X		X	X	X			X		X	X	X					X			$41,000	$60,097	6.25	$9,616
CTH A	Wisconsin	Douglas	Township of Superior	46°38'3.17"N, 92° 4'3.44"W	55	20	1.3	730	★★	Y	N	X		X	X	X		X	X	X	X		X	X or			X or				$48,000	$52,393	5	$10,479
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'29.00"N, 92° 0'20.38"W	45	No Posting	3.6	2000	★★	Y	N	X		X					X	X	X		X					X			$48,000	$52,809	5	$10,562
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'5.93"N, 92°13'12.19"W	30	No Posting	1.8	680	★	N	Y	X		X	X	X											X				$5,000	$28,407	2.5	$11,363
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	46°57'22.91"N, 91°53'59.42"W	55	30	1.3	380	★★★ ↑	N	N	X		X		X	X	X	X	X		X	X						X		$100,000	$100,000	8.75	$11,429
E Shilhon Rd	Minnesota	Saint Louis	Township of Duluth	46°57'22.89"N, 91°52'43.28"W	55	25	1.0	380	★★★	N	N	X		X		X	X	X	X		X		X			X					$91,000	$91,000	7.5	$12,133
Korkki Rd	Minnesota	Saint Louis	Township of Duluth	46°57'48.95"N, 91°52'43.39"W	55	25	2.0	380	★★ ↑	N	N	X		X		X	X	X	X			X	X	X or			X or				$78,000	$78,000	6.25	$12,480
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°43'13.88"N, 92°13'6.31"W	30	No Posting	1.8	680	★ ↑	N	Y	X		X	X	X											X				$5,000	$47,214	3.75	$12,590
Swan Lake Rd	Minnesota	Saint Louis	City of Hermantown	46°49'49.50"N, 92°11'2.04"W	55	30	0.7	1400	★★ ↑	N	N	X		X		X				X						X	X				$79,000	$79,000	6.25	$12,640
CTH A	Wisconsin	Douglas	Township of Superior	46°37'49.02"N, 92° 3'58.80"W	55	20	1.3	730	★★ ↑	Y	N	X		X	X	X	X			X	X		X				X				$72,000	$80,443	6.25	$12,871
Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°42'1.05"N, 92°13'38.55"W	30	No Posting	3.5	680	★ ↑	N	Y	X		X	X	X										X					$5,000	$49,618	3.75	$13,231
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'26.14"N, 91°59'19.72"W	45	No Posting	3.6	2000	★	Y	N	X		X	X	X			X	X	X		X			X					$20,000	$33,392	2.5	$13,357
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'54.45"N, 92° 7'39.55"W	30	No Posting	1.7	1580	★ ↑	Y	N	X		X	X	X											X				$5,000	$54,203	3.75	$14,454
CTH W	Wisconsin	Douglas	Township of Superior	46°33'17.08"N, 92°14'27.44"W	55	No Posting	3.7	270	★★ ↑	N	N	X		X	X	X			X	X		X	X				X				$95,000	$95,000	6.25	$15,200
Observation Rd	Minnesota	Saint Louis	City of Duluth	46°46'58.99"N, 92° 7'21.01"W	40	No Posting	1.1	1100	★ ↑	Y	N	X		X	X	X				X				X or			X or	X			$51,000	$57,115	3.75	$15,231
Observation Rd	Minnesota	Saint Louis	City of Duluth	46°47'12.19"N, 92° 7'19.38"W	40	35	1.1	1100	★★	Y	N	X		X	X	X			X	X	X										$5,000	$83,341	5	$16,668
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	46°42'12.21"N, 92°13'17.02"W	30	No Posting	1.8	680	★ ↑	N	Y	X		X	X	X										X					$5,000	$62,941	3.75	$16,784
Saginaw Rd	Minnesota	Saint Louis	Township of Solway	46°51'4.46"N, 92°25'35.71"W	40	No Posting	0.4	225	★ ↑	Y	N	X	X		X			X	X	X		X									$4,000	$64,305	3.75	$17,148
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'55.53"N, 91°54'34.61"W	55	No Posting	0.9	90	★★ ↑	Y	N	X		X	X	X			X		X	X	X					X			$72,000	$107,618	6.25	$17,219
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	46°54'3.49"N, 91°54'2.98"W	55	No Posting	0.2	364	★★★ ↑	Y	N	X	X	X	X	X			X	X	X		X					X			$140,000	$167,328	8.75	$19,123
S Chicago Ave	Wisconsin	Douglas	Village of Oliver	46°38'45.85"N, 92°11'45.41"W	55	25	1.3	2300	★ ↑	N	Y	X			X	X		X	X	X	X		X								$7,000	$72,841	3.75	$19,424
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'59.53"N, 91°54'46.40"W	55	20	0.9	90	★★	Y	N	X		X	X		X	X	X	X		X									$68,000	$100,500	5	$20,100
CTH U	Wisconsin	Douglas	Township of Lakeside	46°37'41.57"N, 91°54'24.91"W	55	No Posting	0.9	90	★	Y	N	X		X	X	X						X									$29,000	$50,947	2.5	$20,379
Industrial Rd	Minnesota	Saint Louis	Township of Grand Lake	46°53'37.03"N, 92°21'56.59"W	50	No Posting	0.1	1000	★★★ ↑	N	N	X	X	X	X	X			X	X		X						X			$185,000	$185,000	8.75	$21,143
CTH C	Wisconsin	Douglas	Township of Superior	46°35'25.04"N, 92° 7'58.90"W	55	15	3.7	430	★★★★	N	N	X	X	X	X		X	X	X			X							X		$214,000	$214,000	10	$21,400
Becks Rd	Minnesota	Saint Louis	Township of Midway	46°42'15.72"N, 92°17'31.69"W	50	40	1.1	670	★★★	Y	N	X	X	X		X	X		X	X		X	X								$141,000	$184,183	7.5	$24,558
Saginaw Rd	Minnesota	Saint Louis	Township of Solway	46°50'55.58"N, 92°25'26.71"W	40	No Posting	0.4	225	★	Y	N	X		X		X			X	X		X									$4,000	$65,650	2.5	$26,260
Observation Rd	Minnesota	Saint Louis	City of Duluth	46°47'9.32"N, 92° 8'2.30"W	40	No Posting	1.1	1100	★	Y	N	X	X	X		X			X	X		X		X or	X or		X				$23,000	$68,123	2.5	$27,249
W Tischer Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'49.13"N, 92° 0'19.37"W	40	20	2.0	870	★★★★	N	N	X	X	X	X	X	X		X	X		X	X or			X or		X			$274,000	$274,000	10	$27,400
Caribou Lake Rd	Minnesota	Saint Louis	Township of Solway	46°51'38.82"N, 92°19'21.75"W	55	No Posting	1.2	265	★★★	N	N	X	X	X	X	X			X	X		X		X or	X or		X				$211,000	$211,000	7.5	$28,133
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°50'48.98"N, 92° 0'9.51"W	45	No Posting	3.6	2000	★	Y	N	X		X	X	X			X	X		X			X						$42,000	$76,711	2.5	$30,684
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°51'23.67"N, 91°59'57.11"W	45	No Posting	3.6	2000	★	Y	N	X		X	X	X			X	X		X			X						$42,000	$76,782	2.5	$30,713
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	46°54'11.29"N, 91°54'12.54"W	55	15	0.3	364	★★★ ↑	Y	N	X	X	X		X			X			X		X or	X or			X			$251,000	$278,039	8.75	$31,776
Munger Shaw Rd	Minnesota	Saint Louis	Township of Grand Lake	46°54'46.80"N, 92°20'38.89"W	45	No Posting	3.4	1050	★★★	N	N	X		X		X	X			X								X			$240,000	$240,000	7.5	$32,000
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	46°52'50.82"N, 91°59'3.15"W	45	No Posting	3.6	2000	★	Y	N	X		X	X	X			X	X		X									$46,000	$84,695	2.5	$33,878
CTH C	Wisconsin	Douglas	Township of Superior	46°34'48.28"N, 92°12'6.64"W	55	20	3.2	430	★★★	N	N	X		X	X		X	X	X			X							X		$260,000	$260,000	7.5	$34,667
S Chicago Ave	Wisconsin	Douglas	Village of Oliver	46°38'53.05"N, 92°11'52.46"W	55	25	1.3	2300	★★ ↑	N	Y	X		X	X	X		X		X									X		$233,000	$238,568	6.25	$38,171
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	46°46'27.18"N, 92° 7'29.74"W	30	No Posting	1.7	1580	↑	Y	N	X		X	X	X			X	X		X			X	X					$5,000	$66,171	1.25	$52,936
CTH E	Wisconsin	Douglas	Township of Parkland	46°38'38.57"N, 91°59'46.42"W	45	40	1.1	1200	★★ ↑	Y	N	X		X	X	X			X	X	X		X			X					$262,000	$342,974	3.75	$91,460

Safety Emphasis Area 2

Safety Projects - Prioritized by Cost per Weighted Risk

Urban Intersections - Side Road Stop Control Angle Crashes

Road Name	Lat/Long	Maintaining Agency	Traffic Control	TOTAL STARS	Number of Angle KAB Crashes	Conduct a Traffic Study	Remove Vegetation or Obstructions to Improve Stop Sign Visibility	Restrict Parking Near the Intersection	Install Retroreflective Strips on Stop Sign Posts	Install Flashing Beacons with Warning 'Stop Ahead' Signs	Install Left Turn Lanes	Consider Installing Right Turn Lanes	Remove Obstructions to Increase Intersection Sight Distance	Install Pedestrian Curb Extensions	Extend Median Through Crosswalk	Install High-Visibility Crosswalk	Left Turn Calming	Reduce Lane Widths and Install Median	Install Raised Crosswalk	Install Raised Intersection	Install Stop Bar Pavement Markings on Side Road Approaches	Project Cost Estimate	Weighted Risk Factor	Prioritization ($ per Weighted Risk Factor)
Midway Rd, Old Miller Trunk Hwy	46.853476,-92.280423	Township of Canosia	2-Way Stop	★★★★★	1	X			X				X				X				X	$160,000	9.09	$17,600
E 4th St, N 12th Ave E	46.801087,-92.087656	City of Duluth	2-Way Stop	★★★	0			X	X				X			X	X		X or	X or	X	$167,000	5.45	$30,617
Hammond Ave, N 5th St, Hammond Ave, N 5th St	46.732539,-92.097857	City of Superior	1-Way Stop	★★★★	1				X						X	X			X or	X or	X	$288,000	7.27	$39,600
Highway 2, Highway 2, N 2nd Ave	46.741341,-92.222349	City of Proctor	2-Way Stop	★★★	0		X	X	X									X			X	$224,000	5.45	$41,067
E 2nd St - Hwy 53/2, E 2nd St - Hwy 53/2, 23rd Ave E	46.705584,-92.046012	City of Superior	2-Way Stop	★★★★	0								X		X	X		X	X or	X or		$322,000	7.27	$44,275
Highway 53, Catlin Ave	46.733377,-92.087412	City of Superior	1-Way Stop	★★★ ↓	0			X	X												X	$308,000	6.36	$48,400
W 4th St, N 3rd Ave W	46.786766,-92.10627	City of Duluth	2-Way Stop	★★★	0			X	X				X	X		X	X		X or	X or	X	$267,000	5.45	$48,950
E 4th St, N 3rd Ave E, E 4th St	46.792491,-92.098828	City of Duluth	2-Way Stop	★★★	1			X	X				X	X		X	X		X or	X or	X	$267,000	5.45	$48,950
Tower Ave, N 58th St, Tower Ave	46.669482,-92.104311	City of Superior	2-Way Stop	★★★ ↓	0			X	X							X	X or	X or	X or	X or		$353,000	6.36	$55,471
Railroad St, Railroad St, Harbor Dr	46.783758,-92.098405	City of Duluth	2-Way Stop	★★★★ ↓	0				X	X		X							X			$472,000	8.18	$57,689
Rice Lake Rd, Rice Lake Rd, E Skyline Pkwy	46.796809,-92.107038	City of Duluth	1-Way Stop	★★★★ ↓	0	X			X										X		X	$484,000	8.18	$59,156
Hammond Ave, Broadway St, Hammond Ave	46.726591,-92.097838	City of Superior	2-Way Stop	★★★★	1			X	X					X		X	X or	X or	X or	X or		$453,000	7.27	$62,288
Highway 53, Grand Ave, Grand Ave	46.733759,-92.093319	City of Superior	2-Way Stop	★★★ ↓	0			X	X									X			X	$413,000	6.36	$64,900
Tower Ave, Tower Ave, N 16th St	46.719309,-92.103964	City of Superior	2-Way Stop	★★★★★	2	X			X					X		X		X	X or	X or		$727,000	9.09	$79,970
Tower Ave, Tower Ave, N 34th St, N 34th St	46.698911,-92.104079	City of Superior	2-Way Stop	★★★★	0				X			X		X		X			X or	X or		$648,000	7.27	$89,100
E 2nd St - Hwy 53/2, Marina Dr, E 2nd St - Hwy 53/2	46.718679,-92.063054	City of Superior	2-Way Stop	★★★★	0		X		X	X		X	X		X	X			X or	X		$693,000	7.27	$95,288
E 4th St, N 4th Ave E	46.793465,-92.097548	City of Duluth	2-Way Stop	★★★★	1	X	X or		X	X or				X		X	X		X or	X or	X	$711,000	7.27	$97,763
Tower Ave, N 56th St, Tower Ave	46.672224,-92.104293	City of Superior	2-Way Stop	★★★★ ↓	1				X			X	X	X		X	X or	X or	X or	X		$858,000	8.18	$104,867
Grand Ave, S 63rd Ave W	46.733143,-92.177404	City of Duluth	2-Way Stop	★★★★★ ↓	1			X	X			X		X		X	X or	X or	X or	X or	X	$1,149,000	10	$114,900
Highway 53, N 5th St	46.73254,-92.085315	City of Superior	1-Way Stop	★★★	0		X		X			X										$711,000	5.45	$130,350
Mesaba Ave, Mesaba Ave	46.785267,-92.10836	City of Duluth	2-Way Stop	★★★★★	1		X	X	X		X	X	X								X	$1,215,000	9.09	$133,650
E 2nd St - Hwy 53/2, 31st Ave E, E 2nd St - Hwy 53/2	46.697325,-92.035494	City of Superior	2-Way Stop	★★★★	0							X				X		X			X	$1,014,000	7.27	$139,425
Belknap St, E 5th St, E 5th St, Belknap St	46.72148,-92.073535	City of Superior	2-Way Stop	★★★★	0				X	X		X						X				$1,025,000	7.27	$140,938
E Superior St, N 14th Ave E, S 14th Ave E, E Superior St	46.800315,-92.08077	City of Duluth	2-Way Stop	★★★★	1			X	X			X	X	X		X	X		X or	X or		$1,081,000	7.27	$148,638
Tower Ave, N 40th St	46.6917,-92.104146	City of Superior	2-Way Stop	★★★★	0							X		X	X	X			X or	X or		$1,185,000	7.27	$162,938
Skyline Pkwy, Mesaba Ave, E 9th St, Mesaba Ave	46.793681,-92.10707	City of Duluth	2-Way Stop	★★★★	0		X		X		X	X									X	$1,213,000	7.27	$166,788
Highway 53, E St	46.725675,-92.073523	City of Superior	2-Way Stop	★★★★★ ↓	1						X	X									X	$1,931,000	10	$193,100
Broadway St, Broadway St, Ogden Ave, Ogden Ave	46.726606,-92.102351	City of Superior	2-Way Stop	★★★	1			X	X			X	X	X		X	X or	X or	X or	X or		$1,241,000	5.45	$227,517
N 24th Ave W, S 24th Ave W, W Superior St, W Superior St	46.764095,-92.128014	City of Duluth	2-Way Stop	★★★	0			X	X			X		X		X	X or	X or	X or	X or	X	$1,255,000	5.45	$230,083
E Superior St, N 43rd Ave E, N 43rd Ave E	46.82629,-92.036653	City of Duluth	2-Way Stop	★★★	1			X	X			X	X	X		X	X or	X or	X or	X or	X	$1,262,000	5.45	$231,367
Broadway St, Broadway St, Tower Ave, Tower Ave	46.726615,-92.103889	City of Superior	2-Way Stop	★★★ ↓	1	X		X	X					X	X				X or	X or		$1,912,000	6.36	$300,457
E 2nd St - Hwy 53/2, E 2nd St - Hwy 53/2, E 3rd St	46.67769,-92.01047	City of Superior	2-Way Stop	★★★★★ ↓	2	X				X		X	X			X		X	X or	X or	X	$3,725,000	10	$372,500
Tower Ave, Henry Cohen Dr	46.684543,-92.104201	City of Superior	2-Way Stop	★★★★ ↓	2	X			X			X	X	X		X		X				$3,680,000	8.18	$449,778
E Superior St, 47th Ave E, 47th Ave E	46.82925,-92.029228	City of Duluth	2-Way Stop	★★★★	0	X		X	X			X					X		X or	X or		$3,482,000	7.27	$478,775
W Michigan St, W Superior St, W Michigan St	46.773974,-92.113991	City of Duluth	1-Way Stop	★★★ ↓	NOT EVALUATED FOR A SAFETY PROJECT																			
Woodland Ave, W Redwing St	46.850022,-92.081848	City of Duluth	2-Way Stop	★★★ ↓	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																		
Banks Ave, N 28th St, N 28th St	46.706216,-92.105571	City of Superior	2-Way Stop	★★★ ↓	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																		
Woodland Ave, Woodland Ave	46.810829,-92.078289	City of Duluth	2-Way Stop	★★★ ↓	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																		
N 6th Ave E, E 7th St	46.797353,-92.098371	City of Duluth	2-Way Stop	★★★ ↓	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																		
E 1st St, N 19th Ave E	46.805754,-92.075682	City of Duluth	2-Way Stop	★★★ ↓	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																		
N 1st Ave E, E 1st St, E 1st St	46.788585,-92.098036	City of Duluth	2-Way Stop	★★★ ↓	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																		
N 59th Ave W, N 59th Ave W, Cody St, Cody St	46.741309,-92.171944	City of Duluth	2-Way Stop	★★★ ↓	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																		
N 59th Ave W, N 59th Ave W, W Eighth St	46.744014,-92.171927	City of Duluth	2-Way Stop	★★★ ↓	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																		
London Rd, 45th Ave E	46.82422,-92.032798	City of Duluth	1-Way Stop	★★★ ↓	NOT EVALUATED	NOT EVALUATED FOR A SAFETY PROJECT																		

Safety Emphasis Area 3

Safety Projects - Prioritized by Cost per Weighted Risk

Signalized Intersections Along Multi-Lane Arterials

Signalized Intersection Name	Maintaining Agency	Intersection Location (Lat/Long)	Total Stars	Conduct Traffic Study	Install Median at Intersection	Reduce Lane Widths and Install Median	Realign Intersection to <20 deg. Skew	Install FYA Signal Indications	Consider Changing Left Turn Phasing to Prot/Perm or Prot Only	Install Left Turn Lanes	Complete Road Diet Evaluation to Install Left Turn Lanes	Complete Road Diet Evaluation to Install Left Turn Lanes and Medians	Improve Channelized Right Turn Lane Geometry	Improve Left Turn Lane Offset	Add "Prepare to Stop When Flashing Beacons	Install Enforcement Confirmation Lights	Update Corridor Signal Timing to Favor Slower Progression Speeds	Verify & Update Pedestrian Clearance Intervals	Install High-Visibility Crosswalks	Install LPI	Install Pedestrian Countdown Timer Signal Indications	Evaluate Suitability of Existing Lighting System	Install Lighting	Install Retroreflective Signal head Backplates	Install Traffic Signal Indications Over Each Lane for Mainline	Project Cost Estimate	Weighted Risk Factor	Prioritization ($ per Weighted Risk Factor)
TH 53 and Lavaque	MnDOT/Hermantown	46.836657,-92.217085	★★★★★														X	X		X		X		X		$15,000	5.6	$2,700
USTH 53 (Miller Trunk Hwy) & CSAH 13 (Midway Rd)	MnDOT/County	46.852995,-92.280403	★★★★★★★										X		X or	X or		X	X	X		X		X		$118,000	7.8	$15,171
USH 2/USH 53 (E 2nd) & 22nd Ave E	Superior	46.706586,-92.047341	★★★★★★★			X			X						X	X		X	X	X		X		X		$232,000	7.8	$29,829
Arrowhead Road and Arlington Ave	City of Duluth	46.8222412,-92.1323428	★★★★★★★			X or			X						X or	X or		X		X		X		X		$240,000	7.8	$30,857
USTH 53 & CSAH 54 (Piedmont Ave)	City of Duluth	46.775111,-92.143167	★★★★★ ↑					X	X						X or	X or		X		X		X		X	X	$194,000	6.1	$31,745
Arrowhead Road and Menard Drive	City of Duluth	46.8222438,-92.1843165	★★★★★		X													X		X		X				$205,000	5.6	$36,900
USTH 53 (Miller Trunk Hwy) & CSAH 48 (Lavaque Bypass Rd), MSAS 101 (Ugstad	MnDOT/County	46.83658,-92.238403	★★★★★★						X					X	X or	X or	X	X		X		X				$273,000	6.7	$40,950
Grand Ave and 46th Ave W	City of Duluth	46.7460826,-92.1592956	★★★★★ ↑			X		X	X									X	X	X	X	X		X		$280,000	6.1	$45,818
I-35 & MSAS 191 (26th Ave E) & TH 61, MSAS 193 (London Rd)	City of Duluth	46.808919,-92.061389	★★★★★★ ↑					X	X				X	X	X or	X or		X		X		X		X		$396,000	7.2	$53,446
USTH 53 (Trinity Rd) & MSAS 198 (Anderson Rd)	City of Duluth	46.793185,-92.156289	★★★★★★ ↑			X		X	X					X	X or	X or		X	X	X		X		X		$525,000	8.3	$63,000
CSAH 9 (Woodland Ave) at W Arrowhead Rd	St. Louis County/Duluth	46.825768,-92.071347	★★★★★ ↑			X			X				X		X or	X or	X	X		X		X				$390,000	6.1	$63,818
CSAH 9 (4th St) at 6th Ave E	St. Louis County/Duluth	46.795357,-92.09511	★★★★★★★			X or		X	X			X or					X	X		X		X		X	X	$501,000	7.8	$64,414
USTH 53 (Trinity Rd) & CSAH 90 (Arlington Ave)	City of Duluth	46.78255,-92.138753	★★★★★★★			X		X	X					X	X or	X or		X		X		X		X		$513,000	7.8	$65,957
STH 35 (Tower Ave) & N 31st St	Superior	46.70253,-92.104136	★★★★★★					X	X					X				X	X	X	X	X		X	X	$447,000	6.7	$67,050
STH 35 (Tower Ave) & N 37th St	Superior	46.695397,-92.104127	★★★★★★					X	X					X				X	X	X	X	X		X	X	$447,000	6.7	$67,050
Third Street and 6th Ave E	City of Duluth	46.7946977,-92.0938074	★★★★★ ↑					X	X		X							X	X	X	X	X		X	X	$336,000	5.0	$67,200
Superior Street and 27th Ave W	City of Duluth	46.7613776,-92.1317979	★★★★★★ ↑			X or		X	X			X or						X	X		X	X		X	X	$512,000	7.2	$70,892
St. Marie Street and Woodland Ave	City of Duluth	46.8222306,-92.0741843	★★★★★			X		X	X									X	X	X	X	X		X	X	$416,000	5.6	$74,880
Summit Street and Woodland Ave	City of Duluth	46.817781,-92.077889	★★★★★★			X or		X	X			X or							X	X		X		X		$500,000	6.7	$75,000
TH 194 (Central Ent) & MSAS 182 (Pecan Ave)	City of Duluth	46.799477,-92.116405	★★★★★ ↑						X				X	X				X				X		X	X	$464,000	6.1	$75,927
Ninth Street and 6th Ave E	City of Duluth	46.7987104,-92.1003168	★★★★★			X		X	X						X or	X or		X	X	X		X		X	X	$423,000	5.6	$76,140
Clover Street and Woodland Ave	City of Duluth	46.8157372,-92.0780403	★★★★★★			X or		X	X			X or						X	X	X	X	X		X		$520,000	6.7	$78,000
First Street and 46th Ave W	City of Duluth	46.744615,-92.1568984	★★★★★★★			X or		X	X			X or			X	X or			X	X	X	X		X	X	$637,000	7.8	$81,900
TH 194 (Mesaba Ave) & MSAS 127 (W 7th St)	MnDOT/Duluth	46.790914,-92.106795	★★★★★★					X	X				X	X				X		X		X		X	X	$575,000	6.7	$86,250
MNTH 23 (Grand Ave) & River West Dr/Warkwick St	City of Duluth	46.714344,-92.203656	★★★★★★★ ↑			X or			X			X or						X				X				$929,000	8.3	$111,480
MNTH 23 (Grand Ave) & MUN 172 (72nd Ave W)	City of Duluth	46.725327,-92.188433	★★★★★★★ ↑			X or			X			X or						X				X		X		$933,000	8.3	$111,960
18th Ave E & E 5th St	Superior	46.709897,-92.055627	★★★★★★★			X or		X	X	X or		X or						X		X		X		X	X	$883,000	7.8	$113,529
MNTH 23 (Grand Ave) & MSAS 101 (88th Ave W)	MnDOT/Duluth	46.697136,-92.218051	★★★★★★★			X or			X			X or										X				$933,000	7.8	$119,957
TH 194 (Mesaba Ave) & MSAS 126 (W 3rd St)	City of Duluth	46.783745,-92.108303	★★★★★★					X	X	X							X	X				X		X		$855,000	6.7	$128,250
USH 2/USH 53 (E 2nd) & 18th Ave E	Superior	46.71075,-92.052616	★★★★ ↑							X				X				X	X	X		X			X		$659,000	5.0	$131,800
USTH 53 (Miller Trunk Hwy) & CSAH 17, MSAS 103 (Stebner Rd)	MnDOT/Hermantown	46.827651,-92.195789	★★★★★★				X	X					X				X	X		X		X		X		$1,094,000	6.7	$164,100
USTH 53 (Miller Trunk Hwy) & CSAH 91 (Haines Rd)	MnDOT/County	46.814785,-92.174789	★★★★★★★				X			X				X				X	X			X					$1,309,000	7.8	$168,300
MNTH 23 (Grand Ave) & MSAS 108, MUN 153 (Raleigh St)	City of Duluth	46.731269,-92.180057	★★★★★★★★			X	X		X		X							X		X		X				$1,840,000	10	$184,000
TH 194 & CSAH 4 (Mesaba Ave) & MSAS 192 (Central Ent)	MnDOT/Duluth	46.795888,-92.107092	★★★★★★			X		X	X	X			X		X or	X or		X		X		X		X	X	$1,362,000	6.7	$204,300
College Street and Kenwood Ave	City of Duluth	46.8167053,-92.1003188	★★★★★★ ↑	X				X	X									X	X	X	X	X		X	X	$2,843,000	7.2	$393,646
USH 53 (2nd St) & USH 2 (Belknap St)	WisDOT	46.722281,-92.068439	★★★★★★ ↑	X										X				X		X		X				$2,897,000	7.2	$401,123
USTH 53 (Miller Trunk Hwy) & MSAS 104, CSAH 32 (W Arrowhead Rd)	MnDOT/Hermantown	46.822112,-92.18676	★★★★★★★	X				X	X				X	X			X	X	X	X		X		X	X	$3,153,000	7.8	$405,386
STH 35 (Tower Ave) & N 28th St	Superior	46.706188,-92.104047	★★★★★★ ↑	X				X	X					X				X	X	X	X	X		X	X	$3,095,000	7.2	$428,538
STH 35 (Tower Ave) & N 21st St	Superior	46.713416,-92.103969	★★★★★★ ↑	X				X	X					X				X	X	X	X	X		X	X	$3,095,000	7.2	$428,538
TH 194 (Central Ent) & CSAH 90 (Arlington Ave)	City of Duluth	46.800452,-92.13214	★★★★★★	X		X		X	X								X	X		X		X		X	X	$3,029,000	6.7	$454,350
TH 194 (Central Ent) & MSAS 198, M 535 (Anderson Rd)	City of Duluth	46.800664,-92.143421	★★★★★★ ↑	X		X		X	X					X	X or	X or		X	X	X		X		X	X	$3,293,000	7.2	$455,954
TH 194 (Central Ent) & MSAS 205, M 494 (Basswood Ave)	City of Duluth	46.80047,-92.135306	★★★★★★	X		X		X	X									X	X	X		X		X	X	$3,041,000	6.7	$456,150
USH 2/USH 53 (E 2nd) & 39th Ave E	Superior	46.689033,-92.025013	★★★★★ ↑	X		X			X										X	X		X		X		$2,892,000	6.1	$473,236
Arrowhead Road and Rice Lake Road (CSAH 4)	City of Duluth	46.822098,-92.12661	★★★★★ ↑	X		X			X					X					X			X				$2,939,000	6.1	$480,927
USTH 53 (Miller Trunk Hwy) & MSAS 107 (Loberg Ave)	MnDOT/Hermantown	46.81906,-92.181777	★★★★★	X										X			X					X		X		$2,735,000	5.6	$492,300
Eighth Street and Woodland Ave	City of Duluth	46.8140462,-92.0780908	★★★★★	X		X			X						X or	X or	X	X				X				$2,888,000	5.6	$519,840
Michigan Street and 27th Ave W	City of Duluth	46.760847,-92.131133	★★★★★★ ↑	X		X or		X	X			X or					X	X	X	X	X	X		X	X	$3,184,000	6.1	$521,018
USTH 53 (Trinity Rd) & MSAS 209, MUN 1414 (Mall Drive)	City of Duluth	46.801655,-92.154729	★★★★★	X				X	X					X			X	X		X		X		X		$2,936,000	5.6	$528,480
TH 53 & MSAS 108 (Cirrus Dr), M166 (Sugar Maple Dr)	MnDOT/Hermantown	46.833594,-92.205486	★★★★ ↑	X													X	X	X	X		X		X		$2,675,000	5.0	$535,000
USTH 53 (Trinity Rd) & USTH 194 (Central Ent)	City of Duluth	46.804291,-92.153721	★★★★ ↑	X										X			X	X		X		X		X		$2,963,000	5.0	$592,600
Railroad Street and Canal Park Dr	City of Duluth	46.7850637,-92.0950474	★★★★★	NOT EVALUATED FOR A SAFETY PROJECT																								
US 2 at CSAH 14 (Boundary Ave)	MnDOT/St. Louis County	46.738127,-92.217107	★★★★★	NOT EVALUATED FOR A SAFETY PROJECT																								
Michigan Street and 5th Ave W	City of Duluth	46.7817011,-92.1038757	★★★★ ↑	NOT EVALUATED FOR A SAFETY PROJECT																								
Second Street and Lake Ave	City of Duluth	46.7882795,-92.1005779	★★★★ ↑	NOT EVALUATED FOR A SAFETY PROJECT																								
TH 194 (Mesaba Ave) & MSAS 129, 173 (W 1st St)	City of Duluth	46.780905,-92.108101	★★★★ ↑	NOT EVALUATED FOR A SAFETY PROJECT																								
Third Street and 10th Ave E	City of Duluth	46.7984737,-92.0888588	★★★★ ↑	NOT EVALUATED FOR A SAFETY PROJECT																								
Kenwood Ave and Cleveland Street	City of Duluth	46.8212826,-92.1002414	★★★★ ↑	NOT EVALUATED FOR A SAFETY PROJECT																								

Safety Emphasis Area 4

Safety Projects - Prioritized by Cost per Weighted Risk

Urban Intersections
Bike Ped Crashes

Road Name	Lat/Long	Maintaining Agency	TOTAL STARS	High-Severity Crash History (Read Comment)	Conduct a Traffic Study	Install Sidewalk	Install pedestrian Curb Extensions	Install Median	Reduce Lane Width and Install Median	Install High-Visibility Crosswalks	Left Turn Calming	Extend Median through Crosswalk	Evaluate Suitability of Existing Lighting System	Install Intersection Lighting	Leading Pedestrian Interval	Install Pedestrian Countdown Timer Signal Indications	Verify/Update Pedestrian Crossing Times	Install RRFB	Install Pedestrian Hybrid Beacon	Install Raised Crosswalk	Install Raised Intersection	Install Bicycle Signal Heads	Bike Box (Two-Stage Turn)	Install Flexible Delineator Posts	Mark Bike Lanes Through Intersection	Use Green Pavement for Bike Lanes	Install Bike Lanes	Reduce Lane Width and Install Bike Lanes	Complete Road Diet Evaluation	Consider Bike Path or Multi-Use Path	Evaluate for Transit Improvements at Nearby Bus Stops	Project Cost Estimate	Weighted Risk Factor	Prioritization ($ per Weighted Risk Factor)
N 3rd Ave W, S 3rd Ave W, W Superior St, W Superior St	46.784078,-92.101847	City of Duluth	★★★★★★★	1/0							X		X		X		X														X	$ 14,000	7.8	$1,800
N 1st Ave E, S 1st Ave E, E Superior St, E Superior St	46.787872,-92.09695	City of Duluth	★★★★★★★	0/0							X		X		X		X														X	$ 54,000	8.3	$6,480
E Superior St, S 2nd Ave E, N 2nd Ave E, E Superior St	46.788881,-92.095628	City of Duluth	★★★★★★★	0/0							X		X		X		X														X	$ 54,000	7.8	$6,943
E Superior St, S 3rd Ave E, N 3rd Ave E	46.789807,-92.094437	City of Duluth	★★★★★★★	0/0							X		X		X		X														X	$ 54,000	7.8	$6,943
N 6th Ave W, S 6th Ave W, W Superior St	46.791205,-92.105671	City of Duluth	★★★★★★★	0/0							X		X		X		X														X	$ 54,000	7.8	$6,943
W Superior St, S 1st Ave W, W Superior St, N 1st Ave W	46.78597,-92.09938	City of Duluth	★★★★★★★	0/0							X		X		X		X														X	$ 54,000	7.8	$6,943
E Superior St, E Superior St, N 12th Ave E, S 12th Ave E	46.7883B9,-92.083292	City of Duluth	★★★★★★★	0/0							X		X		X		X														X	$ 54,000	7.2	$7,477
N 4th Ave W, S 4th Ave W, W Superior St	46.783113,-92.103174	City of Duluth	★★★★★★★	0/0							X		X		X		X														X	$ 54,000	7.2	$7,477
N 24th Ave W, N 24th Ave W, W 3rd St, W 3rd St	46.766138,-92.131292	City of Duluth	★★★★★★★	1/0					X		X		X		X	X	X														X	$ 85,000	8.3	$10,200
S 5th Ave W, N 5th Ave W, W Superior St, W Superior St	46.782185,-92.104402	City of Duluth	★★★★★★★	0/0							X	X	X		X		X														X	$ 184,000	8.3	$22,080
Tower Ave, N 21st St, N 21st St, Tower Ave	46.71342,-92.104006	City of Superior	★★★★★★★	0/1					X			X	X		X	X	X														X	$ 215,000	9.4	$22,765
Maple Grove Rd, Burning Tree Rd, Burning Tree Rd	46.807567,-92.169205	City of Duluth	★★★★★★★	0/0								X	X		X		X														X	$ 184,000	7.8	$23,657
E 2nd St, N 3rd Ave E	46.791129,-92.096598	City of Duluth	★★★★★★★	0/0						X			X																X		X	$ 217,000	8.9	$24,413
E 2nd St, N 1st Ave E, N 1st Ave E	46.789237,-92.099117	City of Duluth	★★★★★★★	1/0						X			X		X	X	X					X	X	X	X	X		X or	X or			$ 224,000	8.3	$26,880
N 2nd Ave W, W 2nd St	46.786435,-92.102837	City of Duluth	★★★★★★★	1/0						X			X		X	X	X					X	X	X	X	X		X or	X or			$ 224,000	8.3	$26,880
W 2nd St, N 3rd Ave W	46.785453,-92.104074	City of Duluth	★★★★★★★	0/0						X			X		X	X	X					X	X	X	X	X		X or	X or			$ 224,000	7.8	$28,800
W 2nd St, N 4th Ave W, N 4th Ave W	46.784465,-92.105373	City of Duluth	★★★★★★★	0/0						X			X		X	X	X					X	X	X	X	X		X or	X or			$ 224,000	7.8	$28,800
N 1st Ave W, W 2nd St, N 1st Ave W	46.787326,-92.101633	City of Duluth	★★★★★★★	0/1						X			X		X	X	X					X	X	X	X	X		X or	X or			$ 224,000	7.8	$28,800
Tower Ave, Tower Ave, Belknap St, Belknap St	46.720642,-92.103942	City of Superior	★★★★★★★	0/0							X		X		X		X					X	X	X	X	X		X or	X or			$ 211,000	7.2	$29,215
Belknap St, Lamborn Ave, Grand Ave, Belknap St	46.72062,-92.09344	City of Superior	★★★★★★★	0/0							X		X		X		X					X	X	X	X	X		X or	X or		X	$ 251,000	8.3	$30,120
Ogden Ave, Belknap St, Belknap St, Ogden Ave	46.720645,-92.102378	City of Superior	★★★★★★★	0/0							X		X		X		X					X	X	X	X	X		X or	X or		X	$ 251,000	8.3	$30,120
Grand Ave, Grand Ave, N 40th Ave W, N 40th Ave W	46.751662,-92.15132	City of Duluth	★★★★★★★	1/0			X or			X	X or		X		X	X	X														X	$ 273,000	8.9	$30,713
E 2nd St - Hwy 53/2, 39th Ave E	46.68907,-92.024958	City of Superior	★★★★★★★	0/0				X		X			X		X		X														X	$ 273,000	8.9	$30,713
E 2nd St, N 2nd Ave E, N 2nd Ave E	46.790189,-92.097857	City of Duluth	★★★★★★★	0/0						X			X		X		X					X	X	X	X	X		X or	X or			$ 224,000	7.2	$31,015
E 4th St, N 5th Ave E	46.794438,-92.09629	City of Duluth	★★★★★★★	0/0					X or		X or		X		X		X														X	$ 280,000	8.9	$31,500
W 1st St, S 46th Ave W, N 46th Ave W, Mike Colalillo Dr	46.744573,-92.157187	City of Duluth	★★★★★★★	0/0					X				X		X		X														X	$ 256,000	7.8	$32,914
W 3rd St, N Lake Ave, E 3rd St	46.788962,-92.101451	City of Duluth	★★★★★★★	0/1					X				X		X		X															$ 240,000	7.2	$33,231
Belknap St, Catlin Ave, Catlin Ave	46.720595,-92.087471	City of Superior	★★★★★★★	1/0							X		X		X		X					X	X	X	X	X		X or	X or		X	$ 251,000	7.2	$34,754
Central Ave, Ramsey St, Ramsey St	46.73891,-92.166567	City of Duluth	★★★★★★★	0/0					X or		X or		X		X		X														X	$ 280,000	7.8	$36,000
Belknap St, Highway 53, E 2nd St - Hwy 53/2, Marina Dr	46.722237,-92.068388	City of Superior	★★★★★★★	0/1		X				X			X		X		X															$ 264,000	7.2	$36,554
N 59th Ave W, Grand Ave, S 59th Ave W, Grand Ave	46.736998,-92.171989	City of Duluth	★★★★★★★	0/0					X		X		X		X		X					X	X	X	X	X	X				X	$ 294,000	7.8	$37,800
US 53, US 53, S Arlington Ave	46.782563,-92.138722	City of Duluth	★★★★★★★	0/0		X			X				X		X		X															$ 297,000	7.8	$38,186
N Lake Ave, W 1st St, E 1st St	46.787535,-92.099302	City of Duluth	★★★★★★★	0/0						X	X		X		X	X	X													X		$ 325,000	8.3	$39,000
N Central Ave, Grand Ave, Central Ave, Grand Ave	46.740858,-92.166553	City of Duluth	★★★★★★★	0/0					X	X			X		X		X					X	X	X	X	X	X				X	$ 322,000	7.8	$41,400
Ramsey St, Grand Ave	46.739014,-92.169151	City of Duluth	★★★★★★★	0/0					X	X			X		X	X	X					X	X	X	X	X	X				X	$ 323,000	7.8	$41,529
US 53, Maple Grove Rd	46.807792,-92.163401	City of Duluth	★★★★★★★	0/0		X							X		X		X													X		$ 323,000	7.2	$44,723
S Lake Ave, W Superior St, N Lake Ave, E Superior St	46.786944,-92.098145	City of Duluth	★★★★★★★★	1/2			X			X	X		X		X	X	X							X					X		X	$ 428,000	9.4	$45,318
E Central Entrance, Rice Lake Rd, N Central Entrance, Mesaba Ave	46.795862,-92.107036	City of Duluth	★★★★★★★	0/1					X			X	X		X		X															$ 353,000	7.8	$45,386
E Central Entrance, Pecan Ave	46.799475,-92.114465	City of Duluth	★★★★★★★	1/0								X	X		X	X	X														X	$ 356,000	7.8	$45,771
E Superior St, N 4th Ave E	46.79071,-92.093213	City of Duluth	★★★★★★★	1/0			X			X	X		X		X		X	X and/or	X or	X and/or	X and/or									X	$ 405,000	8.3	$48,600
Tower Ave, N 31st St	46.702589,-92.10406	City of Superior	★★★★★★★★	1/0						X			X		X	X	X													X	X	$ 502,000	10	$50,200
Hammond Ave, N 5th St, Hammond Ave, N 5th St	46.732539,-92.097857	City of Superior	★★★★★★★	1/0						X		X	X		X			X and/or	X and/or	X and/or	X and/or											$ 395,000	7.8	$50,786
Tower Ave, Tower Ave, N 34th St, N 34th St	46.698911,-92.104079	City of Superior	★★★★★★★	0/0		X				X			X		X			X and/or	X or	X and/or	X and/or										X	$ 380,000	7.2	$52,615
E St Marie St, Woodland Ave, W Saint Marie St	46.822148,-92.074099	City of Duluth	★★★★★★★	0/0					X	X			X		X	X	X													X		$ 420,000	7.8	$54,000
Woodland Ave, Clover St	46.815825,-92.078254	City of Duluth	★★★★★★★	0/0					X	X			X		X	X	X													X		$ 420,000	7.8	$54,000
Woodland Ave, Summit St	46.817772,-92.077898	City of Duluth	★★★★★★★	0/0					X	X			X		X		X													X		$ 453,000	8.3	$54,360
N 6th Ave E, E 4th St, N 6th Ave E	46.795355,-92.095123	City of Duluth	★★★★★★★	0/0					X				X		X		X													X		$ 420,000	7.8	$55,157
E Superior St, N 13th Ave E	46.799335,-92.082031	City of Duluth	★★★★★★★	1/0			X			X			X		X		X	X and/or	X or	X and/or	X and/or										X	$ 405,000	7.2	$56,077
N Lake Ave, E 2nd St, W 2nd St, N Lake Ave	46.788296,-92.100372	City of Duluth	★★★★★★★	0/0			X			X			X	X	X							X	X	X	X	X		X or	X or		X	$ 473,000	8.3	$56,760
US 53, Maple Burning Tree Rd	46.81089,-92.166446	City of Duluth	★★★★★★★	0/0		X				X			X		X															X		$ 416,000	7.2	$57,600
US 53, Cottonwood Ave/Loberg Ave	46.805561,-92.156889	City of Duluth	★★★★★★★	0/1		X				X		X	X		X							X	X	X	X	X		X or		X or		$ 453,000	7.8	$58,243
W Central Entrance, Basswood Ave	46.800474,-92.135306	City of Duluth	★★★★★★★	0/0					X or		X or		X		X		X														X	X	$ 489,000	8.3	$58,680
E Central Entrance, S Arlington Ave	46.800418,-92.132132	City of Duluth	★★★★★★★	0/0					X or		X or		X		X		X														X	X	$ 489,000	8.3	$58,680
N 6th Ave E, E 3rd St, N 6th Ave E, N 6th Ave E, E 3rd St	46.79468,-92.094027	City of Duluth	★★★★★★★	0/0					X	X			X		X	X	X													X	X	$ 440,000	7.8	$59,143
Tower Ave, N 20th St	46.714713,-92.103983	City of Superior	★★★★★★★★	0/0		X	X			X		X	X					X and/or	X or	X and/or	X and/or										X		$ 564,000	8.9	$63,450
E 2nd St - Hwy 53/2, E 2nd St - Hwy 53/2, E 3rd St	46.67769,-92.01047	City of Superior	★★★★★★★	0/0		X			X	X			X					X and/or	X or	X and/or	X and/or										X		$ 548,000	8.3	$65,760
Belknap St, Hughitt Ave	46.720639,-92.099447	City of Superior	★★★★★★★	0/0							X		X		X			X and/or	X or	X and/or	X and/or	X	X	X	X	X		X or	X or		X	$ 478,000	7.2	$66,185
Tower Ave, N 40th St	46.6917,-92.104146	City of Superior	★★★★★★★	0/0		X				X	X		X		X			X and/or	X or	X and/or	X and/or										X		$ 478,000	7.2	$66,185
Tower Ave, N 17th St	46.718164,-92.103965	City of Superior	★★★★★★★	0/0			X	X		X			X					X and/or	X or	X and/or	X and/or										X		$ 553,000	8.3	$66,360
Tower Ave, N 19th St	46.715859,-92.103961	City of Superior	★★★★★★★	0/0			X	X		X			X					X and/or	X or	X and/or	X and/or										X		$ 553,000	8.3	$66,360
Tower Ave, Tower Ave, N 37th St, N 37th St	46.6953B7,-92.10411	City of Superior	★★★★★★★	0/0						X		X	X		X															X	X	$ 640,000	9.4	$67,765
Haines Rd, Arrowhead Rd, Haines Rd, Arrowhead Rd	46.822086,-92.174837	City of Hermantown	★★★★★★★	0/0		X				X			X		X		X														X	X	$ 533,000	7.8	$68,529
Tower Ave, N 23rd St	46.710983,-92.104012	City of Superior	★★★★★★★	0/0					X	X			X					X and/or	X or	X and/or	X and/or										X		$ 500,000	7.2	$69,231
Woodland Ave, Woodland Ave, E Oxford St	46.833266,-92.072396	City of Duluth	★★★★★★★	0/0					X or	X	X or		X					X and/or	X or	X and/or	X and/or										X		$ 506,000	7.2	$70,062
W Central Entrance, Mall Dr	46.802217,-92.148685	City of Duluth	★★★★★★★	0/0		X			X				X		X		X	X and/or	X or	X and/or	X and/or										X	X	$ 565,000	7.8	$72,643
Highway 53, Grand Ave, Grand Ave	46.733759,-92.093319	City of Superior	★★★★★★★	0/0		X	X	X		X			X					X and/or	X or	X and/or	X and/or										X	X	$ 620,000	8.3	$74,400
W Central Entrance, Anderson Rd/ W Myrtle St	46.800619,-92.143463	City of Duluth	★★★★★★★	1/0		X			X				X		X	X	X												X	X	X	$ 584,000	7.8	$75,086
Hammond Ave, N 7th St	46.730219,-92.097852	City of Superior	★★★★★★★	0/0			X	X	X	X			X					X and/or	X or	X and/or	X and/or												$ 560,000	7.2	$77,538
Tower Ave, Tower Ave, N 16th St	46.719309,-92.103964	City of Superior	★★★★★★★★	0/3	X		X		X	X			X					X		X or	X or										X		$ 808,000	9.4	$85,553
E Central Entrance, Blackman Ave	46.800081,-92.121644	City of Duluth	★★★★★★★	1/0					X	X				X				X and/or	X or	X and/or	X and/or									X	X		$ 756,000	7.8	$97,200
E 9th St, N Central Entrance, N 6th Ave E	46.798692,-92.100577	City of Duluth	★★★★★★★	0/0	X				X	X					X		X													X	X		$ 881,000	8.3	$105,720
Tower Ave, N 18th St	46.717022,-92.10396	City of Superior	★★★★★★★★	1/1	X		X	X		X			X					X and/or	X or	X and/or	X and/or										X		$ 981,000	8.9	$110,363
N Central Entrance, E 10th St	46.798724,-92.102459	City of Duluth	★★★★★★★	0/0	X				X	X			X					X and/or	X or	X and/or	X and/or									X	X		$ 1,108,000	7.2	$153,415
Winter St, Hammond Ave, Winter St	46.727879,-92.097828	City of Superior	★★★★★★★	2/0	X	X			X	X			X		X		X															$ 1,808,000	7.8	$232,457
N 27th Ave W, W Superior St, W Superior St	46.761256,-92.13176	City of Duluth	★★★★★★★	2/0	X				X or		X or		X		X	X	X					X	X	X	X	X					X	$ 1,841,000	7.8	$236,700
Tower Ave, N 28th Ave, N 28th St, Tower Ave	46.706202,-92.104034	City of Superior	★★★★★★★★	1/2	X					X			X		X	X	X														X	$ 2,725,000	10	$272,500
Hammond Ave, N 6th St	46.731377,-92.097843	City of Superior	★★★★★★★	0/2	X		X		X	X			X					X and/or	X or	X and/or	X and/or										X	$ 2,148,000	7.2	$297,415
Belknap St, Hammond Ave	46.720626,-92.097883	City of Superior	★★★★★★★★	1/1	X						X		X		X		X					X	X	X	X	X		X or	X or		X	$ 2,903,000	9.4	$307,376
Miller Trunk Hwy, W Central Entrance, US 53 (Trinity Rd), Joshua Ave	46.834276,-92.153697	City of Duluth	★★★★★★★	0/2	X		X					X	X		X		X													X	X	$ 3,040,000	7.8	$390,857
Woodland Ave, Woodland Ave, E Kent Rd, E 8th St	46.813916,-92.078275	City of Duluth	★★★★★★★	1/2	X				X or		X or		X		X		X													X		$ 3,037,000	7.2	$420,508

Appendix O

Corridor-Wide Safety Projects

Corridor-Wide Intersection Safety Projects

Corridor Rank	Corridor	State	Limits	Length (Mi)	# of Intersections in Tier 1 or Tier 2 Locations	Total Cost	Weighted Risk Factor	Total Prioritization ($/Weight)	Notes
1	Superior St	MN	6th Ave W to 4th Ave E	0.9	9	$ 927,000	71.11	$ 14,000	The Lake Ae & Superior St intersection is included in the Lake Ave safety project
2	2nd St	MN	4th Ave W to 3rd Ave E	0.6	8	$ 2,034,000	64.44	$ 32,000	
3	Lake Ave	MN	Superior St to 3rd St	0.2	3	$ 993,000	25.00	$ 40,000	The Lake Ave & 2nd St intersection is included in the 2nd St corridor safety project
4	Grand Ave	MN	59th Ave to Central Ave	0.4	3	$ 939,000	23.33	$ 41,000	
5	4th St	MN	3rd Ave E to 5th Ave E	0.2	3	$ 1,258,000	21.62	$ 59,000	
6	46th Ave	MN	Mike Colalilo Dr/1st St to Grand Ave	0.2	2	$ 917,000	13.89	$ 67,000	
7	Superior St - 3	MN	12th Ave E to 14th Ave E	0.2	3	$ 1,540,000	21.72	$ 71,000	
8	6th Ave/Central Entrance Dr	MN	3rd St to 10th St	0.5	4	$ 3,648,000	49.44	$ 74,000	Construction planned for 2025, including converting the roadway from a 4-lane to a 3-lane typical section with ped improvements.
9	Woodland Ave	MN	Kent Rd/8th St to Oxford St	1.5	6	$ 6,115,000	68.89	$ 89,000	Construction occurred recently, from Snively Rd to Oxford (Northern Limits)
10	US 2/Belknap St	WI	STH 35/Tower Ave to Catlin Ave	1	6	$ 4,345,000	47.78	$ 91,000	
11	Tower Ave/Hwy 35	WI	58th St to 31st St	2.3	7	$ 9,240,000	84.49	$ 110,000	
12	CSAH 4/Mesaba Ave	MN	3rd St to Skyline Parkway	1	6	$ 5,855,000	52.32	$ 112,000	
13	Hammond Ave	WI	Broadway St to 5th St	0.4	5	$ 5,394,000	44.55	$ 122,000	
14	Tower Ave/Hwy 35 - 2	WI	28th St to Broadway St	1.5	9	$ 12,476,000	100.45	$ 125,000	The USH 2/Belknap St & STH 35/Tower Ave intersection is included in the USH 2/Belknap St safety project.
15	MNTH 23 (Grand Ave)	MN	88th Ave to 63rd Ave	3.2	5	$ 5,784,000	44.44	$ 131,000	
16	USTH 53/Miller Trunk Hwy - 2	MN	Midway Rd to Stebner Rd	4.6	5	$ 4,175,000	31.67	$ 132,000	
17	USH 53/2nd St - 2	WI	USH 2/Belknap St to Grand Ave	1.5	5	$ 7,046,000	50.96	$ 139,000	
18	USTH 53/Trinity Rd	MN	Piedmont Ave to Mall Dr	2.5	4	$ 4,168,000	27.78	$ 151,000	MnDOT identified portions of this corridor which have planned pavement and M/O projects in 2028 and 2029.
19	USH 53/2nd St	WI	3rd St/50th Ave to Marina Dr/9th Ave	3.8	7	$ 9,757,000	59.04	$ 166,000	
20	TH 194/Central Entrance	MN	USH 53/Trinity Rd to Pecan Ave	1.8	7	$ 15,808,000	87.22	$ 182,000	MnDOT identified majority of this corridor to have planned pavement/reconstruction projects in 2028 and 2029.
21	USTH 53/Miller Trunk Hwy	MN	CSAH 32 (Arrowhead Rd) to Loberg Ave/Cottonwood A	1.9	6	$ 8,389,000	43.33	$ 194,000	
22	Arrowhead Rd	MN	CSAH 90/Arlington Ave to Rice Lake Rd	0.4	2	$ 3,179,000	13.89	$ 229,000	
23	27th Ave	MN	Helm St/I-35 WB Ramps to 1st St	0.2	2	$ 3,696,000	13.33	$ 278,000	
24	Superior St - 2	MN	43rd Ave to 47th Ave	0.4	2	$ 4,744,000	12.73	$ 373,000	