

# Action Transmittal

Transportation Advisory Board



**Committee meeting date:** November 5, 2025

**Date:** October 29, 2025

## Action Transmittal: 2025-30

Scope Change Request – Carver County CSAH 40 HSIP Project

**To:** Technical Advisory Committee  
**From:** TAC Funding and Programming Committee  
**Prepared by:** Robbie King, Senior Planner, 651-602-1380

### Requested action

Carver County requests a scope change to reduce the length of its CSAH 40 improvements with full retention of federal funds.

### Recommended motion

Recommend that the Transportation Advisory Board approve Carver County's scope change request to reduce the length of its CSAH 40 improvement project and retain full federal funding.

### Background and purpose

In 2022, Carver County was awarded \$2,000,000 in Highway Safety Improvement Program (HSIP) funding to widen shoulders, provide a safety edge, and provide signing and pavement markings on County State Aid Highway (CSAH) 40 from CSAH 52 to CSAH 50 (SP# 010-640-017). The local match funding for this project is \$3,401,440 or 63% of a total project cost of \$5,401,440. The program year for this project is 2027.

The project currently is in preliminary design phase and through this work the county has identified issues north of Bevens Creek Bridge No. 10545 and south of CSAH 50 that has precipitated this request. In this area of the project, the following issues are present:

1. Presence of cultural and environmental elements
  - Prehistoric mound
  - Endangered butternut trees
  - A high potential zone for the endangered rusty patch bumble bee
2. Residential driveway connections requiring regrading may encroach on septic fields
  - In the area nearest the intersection of CSAH 50 and CSAH 40, residential driveway connections are steep in the existing condition and improvements would make those connections steeper.
  - Regrading is required to lessen the driveway grade, which may result in encroaching on existing septic drain fields in the area.
3. A 2022 study has identified a need to potentially realign CSAH 40 north of the Bevens Creek bridge to accommodate future corridor needs.

Carver County requests retention of its full federal funding amount to maintain project feasibility.

## Relationship to regional policy

Projects that receive funding through the Regional Solicitation and HSIP Solicitation processes are subject to the regional scope change policy. The purpose of this policy is to ensure that the project is designed and constructed according to the plans and intent described in the original application. The Scope Change Policy allows project sponsors to adjust their projects as needed while still providing substantially the same benefits described in their original project applications.

## Staff analysis

### Approval/Denial of the Scope Change

Scoring and Ranking: The [Scope Change Policy](#) directs the TAC Funding & Programming Committee to consider whether an HSIP project would have scored fewer points than the highest-scoring unfunded project. There are elements being added and removed from the scope in this request. However, added elements do not represent a significant improvement in the proposed scope. The highest-scoring unfunded project in the 2022 HSIP Proactive Category was awarded 385 points representing a 73-point gap between this unfunded project and the original Carver County CSAH 40 project scope. While staff interpret the removal of an intersection from this safety project to represent a minor reduction in score, the reduction would likely be far less than the 73-point gap. Staff does not see a rationale to deny the request based on scoring.

*Table 1: Scoring Analysis*

| Measure                   | Max Score   | Original Score | Scope Change | Notes |
|---------------------------|-------------|----------------|--------------|-------|
| Connection to SHSP        | 100         | 90             | 0            |       |
| Cost per Exposure         | 300         | 20             | 0            |       |
| Correctable F&A Crashes   | 100         | 0              | 0            |       |
| Crash Modification Factor | 200         | 138            | 0            |       |
| Part of a Plan            | 200         | 200            | 0            |       |
| Ped and Bike Safety       | 100         | 10             | 0            |       |
| <b>Total</b>              | <b>1000</b> | <b>458</b>     | -            |       |

\* 0 = no change

+ = small improvement, ++ = moderate improvement, +++ = large improvement

- = small diminishment, -- = moderate diminishment, --- = large diminishment



### Options for Funding

The original application budget is displayed in Table 2a below. Table 2b and table 2c provide two options to be considered for funding.

*Table 2a: Original Application Funding*

| Funding Source                       | Total              |
|--------------------------------------|--------------------|
| 2027 HSIP Award (Proactive Category) | \$2,000,000        |
| Local Match                          | \$3,401,440        |
| <b>Total</b>                         | <b>\$5,401,440</b> |

*Table 2b: Requested Scope Change Funding with Full Federal Funding Retained*

| Funding Source                              | Total              |
|---------------------------------------------|--------------------|
| 2027 HSIP Award (Proactive Category)        | \$2,000,000        |
| Original Local Match Funding                | \$3,401,440        |
| Local Match Cost Increase for new elements* | \$242,560          |
| <b>Total</b>                                | <b>\$5,644,000</b> |

\*Carver County's request includes new elements and results in an increase of \$242,560 covered by Carver County's local match.

*Table 2c: Scope Change Funding with Federal Funding Reduction*

| Funding Source                              | Total              |
|---------------------------------------------|--------------------|
| 2027 HSIP Award (Proactive Category)        | \$2,000,000        |
| Federal Funds Returned*                     | (\$280,000)        |
| Original Local Match Funding                | \$3,401,440        |
| Local Match Cost Increase for new elements^ | \$242,560          |
| <b>Total</b>                                | <b>\$5,364,000</b> |

\*Removed elements are valued at \$751,000 (2022 dollars) and represent 14% of the original project cost. Therefore, the federal funds recommended to be returned represent 14% of \$2M – the original federal fund award.

^ Carver County's request includes new elements and results in an increase of \$242,560 covered by Carver County's local match.

### Analysis of Funding Options

Carver County requests retention of its federal funding. Scope Change Policy directs the TAC Funding & Programming Committee to ensure that HSIP projects continue to maintain at least a 10% non-federal match. Table 2b shows funding with full federal funding retained and in this scenario Carver County's local match is 60% which is well above the 10% requirement.

Additionally, the [Scope Change Policy](#) directs the TAC Funding & Programming Committee to allow new eligible elements to be added to a project scope. However, federal funds cannot be shifted from removed elements to new project elements unless those removed elements are being done as part of some other programmed project. The elements removed in this scope change request are projected to be a part of a project within the next 15 years but are not yet programmed. Therefore, it can be argued that federal funds be removed proportional to the value of the removed elements as a percentage of the entire project. The value of the removed elements is estimated at \$751,000 or 14% of the total project cost, therefore the applicant may be directed to return \$280,000 (or 14% of \$2,000,000).

Given these two components, staff presents the following two options for discussion:

1. Retention of all federal funding because the applicant is overmatched.

2. The applicant return \$280,000 of the federal funds, which represents 14% of the original federal fund award. The return of 14% of the federal fund award is proportionate to the value of the removed elements.

### Committee comments and action

At its October 16, 2025, meeting the TAC Funding & Programming voted to recommend adoption of an amendment to the 2026-2029 TIP to reduce the length of Carver County's CSAH 40 improvement project and retain federal funds. Metropolitan Transportation Services staff clarified that the Scope Change Policy allows for the committee to use its discretion in deciding whether a project change necessitates returning federal funds proportionate to the value of the removed elements.

### Routing

| To                                  | Action Requested     | Date Completed<br>(Date Scheduled) |
|-------------------------------------|----------------------|------------------------------------|
| TAC Funding & Programming Committee | Review and recommend | October 16, 2025                   |
| Technical Advisory Committee        | Review and recommend | <i>November 5, 2025</i>            |
| Transportation Advisory Board       | Review and adopt     | <i>November 19, 2025</i>           |



### Options for Funding

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\*Removed elements are valued at \$751,000 (2022 dollars) and represent 14% of the original project cost. Therefore, the federal funds recommended to be returned represent 14% of \$2M – the original federal fund award.

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### Analysis of Funding Options

Carver County requests retention of its federal funding. Scope Change Policy directs the TAC Funding & Programming Committee to ensure that HSIP projects continue to maintain at least a 10% non-federal match. Table 2b shows funding with full federal funding retained and in this scenario Carver County's local match is 60% which is well above the 10% requirement.

Additionally, the [Scope Change Policy](#) directs the TAC Funding & Programming Committee to allow new eligible elements to be added to a project scope. However, federal funds cannot be shifted from removed elements to new project elements unless those removed elements are being done as part of some other programmed project. The elements removed in this scope change request are projected to be a part of a project within the next 15 years but are not yet programmed. Therefore, it can be argued that federal funds be removed proportional to the value of the removed elements as a percentage of the entire project. The value of the removed elements is estimated at \$751,000 or 14% of the total project cost, therefore the applicant may be directed to return \$280,000 (or 14% of \$2,000,000).

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1. Retention of all federal funding because the applicant is overmatched.
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## **Carver County Public Works**

Carver County Public Works

11360 US-212 • Cologne, MN 55322

Office: (952) 466-5200 • [www.carvercountymn.gov/departments/public-works](http://www.carvercountymn.gov/departments/public-works)

September 19<sup>th</sup>, 2025

Jim Kosluchar  
Chair, TAC Funding and Programing Committee  
Metropolitan Council  
390 Robert Street North  
Saint Paul, MN 55101-1805

Re: Scope Change Request to: S.P. 010-640-017 – CSAH 40 between CSAH 52 and CSAH 50

Dear Mr. Kosluchar,

Carver County respectfully requests that the Funding and Programing Committee consider the attached Scope Change request for the above referenced project.

In 2022, Carver County was awarded Highway Safety Improvement Program (HSIP) federal funding to widen shoulders, provide a safety edge, signing and pavement markings on County State Aid Highway (CSAH) 40 from CSAH 52 to CSAH 50. The 2024 – 2027 State Transportation Improvement Program (STIP) identifies \$2,000,000 in federal funding and \$3,401,440 in local match funding for a total of \$5,401,440. The program year for this project is 2027.

The project is currently completing the preliminary design phase and will begin final design in the Fall of 2025 and construction to begin in 2027.

This project has conducted efforts to document cultural and environmental elements in the project area. As of the time of writing this request, a prehistoric mound, endangered butternut trees and the high potential zone for the endangered rusty patch bumble bee are present North of Bevens Creek Bridge No. 10545.

The preliminary design conducted on the project has identified challenges, in the area where CSAH 40 approaches the CSAH 50 intersection, residential driveway connections are steep in the existing condition and would be made more steep to accommodate proposed improvements. These regrading efforts would result in potential encroachment on existing residential septic drain fields in the area.

In 2022 Carver County completed a study on CSAH 40, the study reviewed the corridor from Trunk Highway (TH) 25 to CSAH 11. The study reviewed, among other items, the realignment of CSAH 40 from North of Bevens Creek Bridge No. 10545 to beyond the CSAH 50 intersection. Land North of the CSAH 40 & CSAH 50 intersection has recently began administrative efforts to develop the farmland into a residential development, which will increase the AADT on the County network in this area. The realignment is expected to be completed within the next 15 years, though it has not programed at this time. If the realignment of CSAH 40 advances, this safety improvement project would address the safety concerns in this area while also avoiding undue impacts to the cultural, environmental and residential impacts listed above.

The remaining length of the CSAH 40 safety improvements are the primary components of the funding application, accounting for 87% of the project length. Those improvements will be completed in 2027. At this time, Carver County requests a scope change that would remove the planned improvements on CSAH 40 from Bevens Creek to CSAH 50. Those improvements are expected to be made redundant within the next 15 years and cause undue impacts to cultural, environmental and residential elements. Approval of this scope change request will allow for all portions of the project, as listed in the current project scope, to be completed for 2.9 miles of the originally scoped 3.3 mile corridor by the end of 2029, resulting in a safer corridor for motorists, cyclists and pedestrians.

The cost estimate as listed in the STIP is \$5,401,440 for the improvements, with County participation percentage of 63%. Due to the addition of curb and gutter to reduce project limits and spot reconstruction needs identified in preliminary design, these additions total to and estimated \$993,560. The cost estimate has been updated and is currently \$5,644,000 for the segment from CSAH 52 to Bevens Creek Bridge No. 10545 alone. The County is requesting that the total cost listed in the STIP to be revised to \$5,644,000 (Accounts for the removal of CSAH 40 from Bridge No. 10545 to CSAH 50. Value reflects costs in the year requested, 2022.). We are also requesting that the federal match remain unchanged in an effort to maintain project feasibility.

**Summary:**

- Carver County was awarded \$2,000,000 for safety improvements to CSAH 40 in San Francisco Township.
- There are sensitive cultural elements North of Bevens Creek Bridge No. 10545 including but not limited to prehistoric mounds
- There are sensitive environmental elements North of Bevens Creek Bridge No. 10545 including but not limited to rusty patch bumblebee high potential zone and endangered trees.
- There are sensitive residential elements North of Bevens Creek Bridge No. 10545 including but not limited to steep driveways, septic sewer components near preliminary design limits.
- Carver County conducted a study on CSAH 40 which identified realignment alternatives, this realignment effort is expected to be completed within the next 15 years.
- There has been a new development proposed North of the intersection of CSAH 40 and CSAH 50 which will increase travel demand and increase the need for the realignment of CSAH 40.
- Carver County is requesting that the CSAH 40 components from Bridge No. 10545 to CSAH 50 be removed from the STIP.
- Carver County is requesting that the total construction amount in the STIP be revised to \$5,644,000.
- Carver County is requesting that the federal funding amount remain as currently listed in the STIP.

Please contact me with any questions or concerns you have related to this request.

Sincerely,



Lucas Rubash, P.E.  
Design Engineer

CC: Colleen Brown, MnDOT Metro State Aid  
Lyndon Robjent, Carver County Public Works Division Director / County Engineer  
Darin Milke, Carver County Assistant Public Works Director/Deputy County Engineer

## FUNDING DATA FOR SCOPE CHANGE

### Original Application:

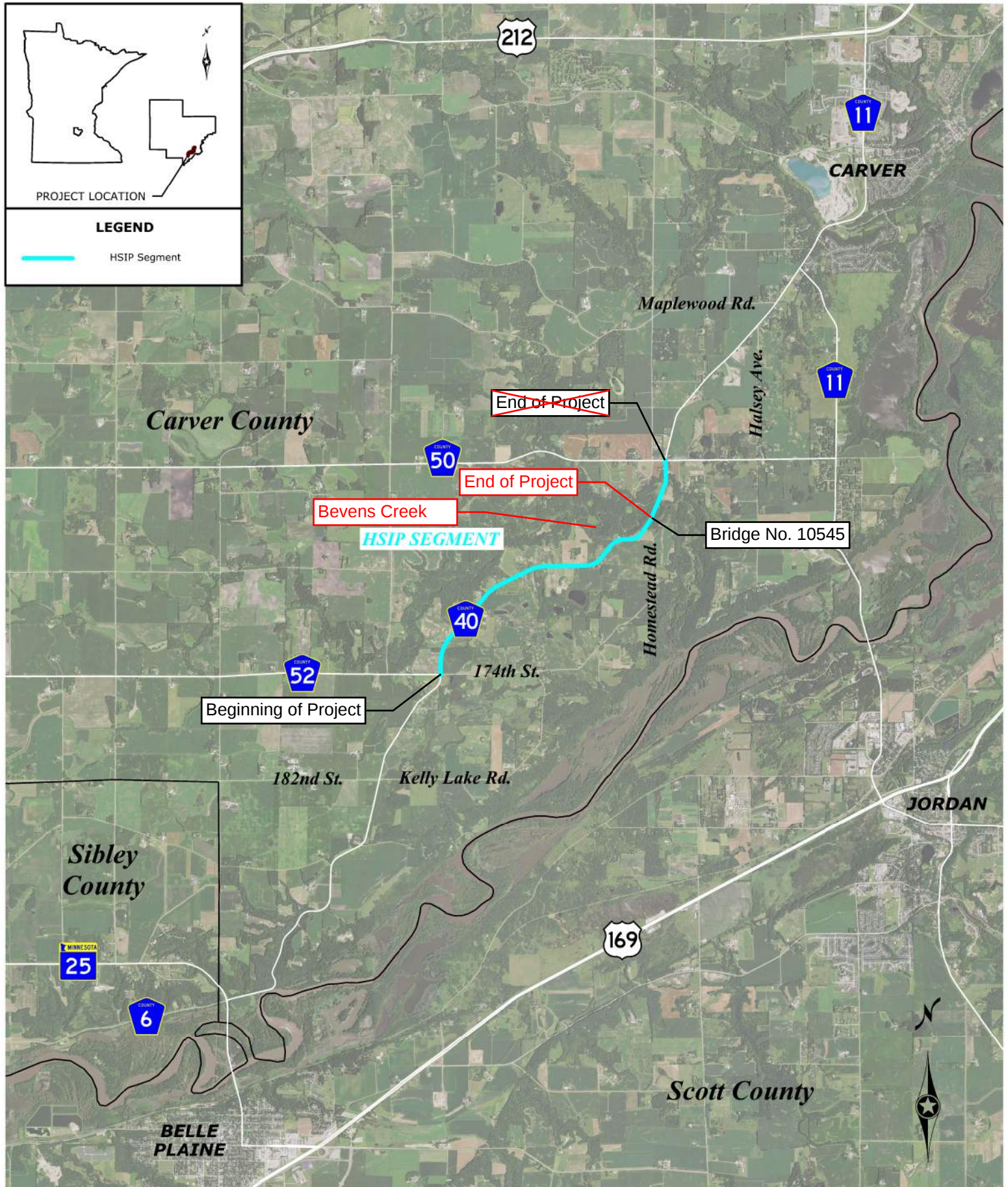
|                                                      |             |
|------------------------------------------------------|-------------|
| Regional Solicitation Year                           | 2022        |
| Application Funding Category                         | HSIP        |
| HSIP Solicitation                                    | Yes         |
| Application Total Project Cost                       | \$5,401,440 |
| Federal Award                                        | \$2,000,000 |
| Application Federal Percentage of Total Project Cost | 37%         |

| Project Elements Being Removed                                                                                     | Original Application Cost |
|--------------------------------------------------------------------------------------------------------------------|---------------------------|
| Widen shoulders, provide a safety edge, signing and pavement markings on CSAH 40 from Bridge No. 10545 to CSAH 50. | \$751,000                 |

| New Project Elements                                                                                                                                                                                     | Cost (Based on Year of Costs in Original Application) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Provide curb and gutter in large cut area from STA 353+79 to STA 365+75 to reduce limits in large cut area. Reconstruct section of CSAH 40 from STA 313+00 TO STA 345+00, need determined with GPR data. | \$993,560                                             |

### Current Funding vs. Proposed Funding:

|                                                                                                                                                                  |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Federal                                                                                                                                                          | \$2,000,000 |
| Local Match                                                                                                                                                      | \$3,644,000 |
| Total Project Cost                                                                                                                                               | \$5,644,000 |
| % Federal                                                                                                                                                        | 35%         |
| % Local                                                                                                                                                          | 65%         |
| Note:<br>- Includes added scope needs identified in preliminary design.<br>Spot reconstruction, storm water BMP, urban curb section to reduce project footprint. |             |



CSAH 40 - HSIP Application

*Project Location*



**ALLIANT**



## Metro District Highway Safety Improvement Program (HSIP)

Proactive Application for State Fiscal Years 2026 and 2027

*June 1, 2022*

**Applicant:** Carver County

**Project Name:** CSAH 40 Segment Safety Improvements

**Project Location:** CSAH 40 between CSAH 52 and CSAH 50, Carver County

## Federal HSIP Funding Application (Form 1)

**INSTRUCTIONS:** Complete and return completed application to Lars Impola, MnDOT, Metro District, 1500 West County Road B2, Roseville, Minnesota 55113. (651) 234-7820. **Applications must be received by 4:30 pm or postmarked on June 1, 2022.\*Be sure to complete and attach the Project Information form. (Form 2)**

### I. GENERAL INFORMATION

1. APPLICANT: Carver County

2. JURISDICTIONAL AGENCY (IF DIFFERENT): N/A

3. MAILING ADDRESS: 11360 Highway 212 West, Suite 1

CITY: Cologne

STATE: MN

ZIP CODE: 55322

4. COUNTY: Carver

5. CONTACT PERSON: Lyndon Robjent

TITLE: County Engineer

PHONE NO.  
(952) 466-5206

CONTACT E-MAIL ADDRESS: lrobjent@co.carver.mn.us

### II. PROJECT INFORMATION

6. PROJECT NAME: CSAH 40 Segment Safety Improvements

7. BRIEF PROJECT DESCRIPTION – Safety improvements along CSAH 40 between CSAH 50 and CSAH 52 including shoulder widening, installing safety edge, curve realignment and curve warning system, and enhanced signing and pavement markings.

8. HSIP PROJECT CATEGORY – Circle which project grouping in which you wish your project to be scored.



Proactive



Reactive

### III. PROJECT FUNDING

9. Are you applying or have you applied for funds from another source(s) to fund this project? Yes ☐ No ☒  
If yes, please identify the source(s):

10. FEDERAL AMOUNT\*: \$2,000,000

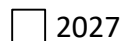
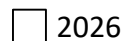
13. MATCH % OF PROJECT TOTAL: 59%

11. MATCH AMOUNT: \$2,910,400

14. SOURCE OF MATCH FUNDS: County Funds

12. PROJECT TOTAL: \$4,910,400

15. REQUESTED PROGRAM YEAR(S) : SEE NOTE BELOW\*\*



2026 2027 Either Year

16. SIGNATURE: 

17. TITLE: Public Works Director, County Engineer

**\*Would you accept a federal award that covers 80% of the total project cost if non-HSIP federal funds were awarded? YES**

**\*\*NOTE: If funding becomes available in 2023, 2024, or 2025 would this project be able to be advanced to meet this schedule? NO Which years would work? N/A**

## PROJECT INFORMATION (Form 2)

(To be used to assign State Project Number after project is selected)

Please fill in the following information as it pertains to your proposed project. Items that do not apply to your project, please label N/A. **Do not send this form to the State Aid Office. For project solicitation package only.**

COUNTY, CITY, or LEAD AGENCY Carver County

FUNCTIONAL CLASS OF ROAD Minor Arterial

ROAD SYSTEM CSAH (TH, CSAH, MSAS, CO. RD., TWP. RD., CITY STREET)

NAME OF ROAD CSAH 40 (Example: 1<sup>st</sup> Street, Main Avenue)

ZIP CODE WHERE MAJORITY OF WORK IS BEING PERFORMED 55315,  
56011

APPROXIMATE BEGIN CONSTRUCTION DATE (MO/YR) April 2026

APPROXIMATE END CONSTRUCTION DATE (MO/YR) October 2026

LOCATION: CSAH 40 from CSAH 52 to CSAH 50  
(DO NOT INCLUDE LEGAL DESCRIPTION)

TYPE OF WORK GRADE, AGG. BASE, BIT. RESURF., SIGNING, STRIPING, GUARDRAIL, CULVERT REPLACEMENT

(Examples: GRADE, AGG BASE, BIT BASE, BIT SURF, SIDEWALK, CURB AND GUTTER, STORM SEWER, SIGNALS, LIGHTING, GUARDRAIL, BIKE PATH, PED RAMPS, BRIDGE, PARK AND RIDE, ETC)

## Metro District Highway Safety Improvement Program (HSIP)

Proactive Application for State Fiscal Years 2026 and 2027

|           |                                                          |
|-----------|----------------------------------------------------------|
| Applicant | Carver County                                            |
| Project   | CSAH 40 Segment Safety Improvements (CSAH 52 to CSAH 50) |
| Date      | June 1, 2022                                             |

### Introduction

The scenic river views, rustic rolling terrain, and abundant curvature along County State Aid Highway 40 (CSAH 40) draw vehicles, bicyclists, and motorcyclists from around the region to enjoy the corridor experience. Located in southern Carver County within San Francisco Township, the 3.30-mile segment is identified in Carver County's Roadway Safety Plan (CRSP) as a High Priority Segment due to the high frequency of crashes, narrow substandard gravel shoulders, and extensive curvature. Both the three-year crash rate and the critical crash rate index exceed the statewide average.

CSAH 40 is functionally connected on both ends to principal arterials – US 169 on the south and US 212 on the north. It serves traffic from three growing rural communities – Belle Plaine, Jordan, and Carver. As a result, traffic volumes on CSAH 40 are expected to continue growing by approximately 2 percent annually, adding more urgency to this safety need. The project location is shown in **Attachment A**. CSAH 40 has varying speed limits between 35 and 55 miles per hour and a daily volume of 1,800 vehicles, shown in **Attachment B**.

The frequency of run off the road crashes underscores the relation of the crashes to geometric conditions of the roadway. Following a comprehensive segment safety evaluation and alternatives analysis, a package of improvements are proposed for this segment consistent with the CRSP recommendations.



*Existing conditions photographed above. This segment of CSAH 40 is a High Priority Segment in the Carver County Road Safety Plan based on crash frequency, narrow substandard shoulders and extensive curvature.*

## Safety Problem

Over the three-year analysis period (2019-2021), 18 crashes were reported along the CSAH 40 segment between CSAH 50 and CSAH 52. Of the 18 total crashes, nine were collisions with deer. Deer crashes have been removed from the crash analysis. Of the remaining nine total crashes, four crashes were minor injury (Type B), and five crashes were property damage only (Type O). The corresponding segment crash rate and K/A rate are shown in the table below. MnCMAT data for the intersection (2019-2021) is located in **Attachment C**.

### Carver CSAH 40 Segment Safety Analysis

#### Summary of Segment Crash Rates

| Segment Crash Analysis (2019-2021) |                                   | Rate Category              | Rate               |                  |
|------------------------------------|-----------------------------------|----------------------------|--------------------|------------------|
|                                    |                                   |                            | Crash <sup>5</sup> | K/A <sup>6</sup> |
| Traffic Control                    | 2-Lane Rural<br>1500 < ADT < 5000 | Intersection               | 1.38               | 0.00             |
| Total Crashes <sup>1</sup>         | 9                                 | State Average <sup>3</sup> | 0.44               | 2.61             |
| Total VMT <sup>2</sup>             | 6,504,300                         | Critical <sup>4</sup>      | 1.19               | 18.42            |
| K/A Crashes                        | 0                                 | Critical Index             | 1.17               | 0.00             |

1: Crash data obtained from MnCMAT2 and detailed crash narratives.

2: Calculated using AADT obtained from MnDOT's Traffic Mapping Application.

3: MnDOT's 2016-2020 Section Green Sheets were used to determine state average rates.

4: A confidence level of 99% was assumed for critical crash rate and 90% assumed for critical severity and K/A rates.

5: Crashes per million entering vehicles (crashes/MEV)

6: K/A crashes per 100 million entering vehicles (K/A crashes/100 MEV)

The observed three-year crash rate for the segment (1.38 crashes / MEV) is shown in red because it is higher than the statewide average for 2-Lane Rural roadways with ADT between 1,500 and 5,000 (0.44 crashes / MEV) as well as the critical crash rate (1.19 crashes / MEV), resulting in a critical crash rate index of 1.17. The critical crash rate index is shown in red if above 1.00, because a value exceeding 1.00 indicates that the intersection is operating outside of the statewide average and there may be a safety concern. No fatal (Type K) or serious injury (Type A) crashes occurred in the three-year analysis period. Therefore, the observed K/A crash rate is 0.00 crashes / 100 MEV resulting in a critical index of 0.00. One fatal (Type K) and one serious injury (Type A) crash occurred between 2012-2021.

All nine crashes reported in the 2019-2021 study period are classified as run-off-road crashes, with two crashes involving a motorcycle and one crash occurring at a curve. Previously, using MnCMAT data from 2007-2011, this segment was assigned a 3-star (out of 5) road departure risk ranking in the 2013 Carver County Road Safety Plan (CRSP), making it the sixth highest ranking segment in the county. The rural wooded landscape of this scenic byway continues to attract roadway users of different modes. However, the winding alignment, abundant curves, and substandard shoulder widths make this segment of CSAH 40 a safety hazard to its users. An excerpt from the CRSP is provided in **Attachment D**.

## Proposed Improvements

Proposed safety improvements along this segment of CSAH 40 are part of a corridor-wide effort by Carver County. Safety funding has already been secured for a 4.1-mile segment of CSAH 40 immediately south of the subject segment, while funding is still being sought for the remainder of the segments. The following safety improvements are being proposed for this segment of CSAH 40:

- Install centerline and shoulder rumble strips
- Widen shoulder
- Install safety edge treatment
- Enhanced curve warning
- Enhanced signing and striping
- Improved superelevation on horizontal curves
- Flattening of sub-standard horizontal curves

See **Attachment E** for the proposed typical section including these features.

### CMF Selection

Several Crash Modification Factors (CMFs) from the CMF Clearinghouse website were evaluated for applicability with the proposed CSAH 40 project. The following CMFs were selected:

- CMF ID 6371 for *Widen shoulders (paved) (0 to 8 ft)* (CMF = 0.92) – This CMF is applicable for run-off-road crash types resulting in Type K (fatal), Type A (serious injury) and Type B (Minor Injury) severities. CMF ID 6371 was found to be the most applicable CMF to quantify the safety benefit of shoulder widening for Type K, Type A, and Type B crashes based on the type of fix, roadway context, and AADT.
- CMF ID 6377 for *Widen shoulders (paved) (0 to 8 ft)* (CMF = 0.57) – This CMF comes from the same study as CMF ID 6371 and is applicable for run-off-road crashes resulting in Type O or property damage only (PDO). CMF ID 6377 was found to be the most applicable CMF to quantify the safety benefit of shoulder widening for Type O crashes based on the type of fix, roadway context, and AADT.
- CMF ID 9204 for *Install safety edge treatment* (CMF = 0.34) – This CMF is applicable for all crash types resulting in Type K (fatal), Type A (serious injury) and Type B (Minor Injury) severities. CMF ID 9204 was found to be the most applicable CMF to quantify the safety benefit of installing safety edge for Type K, Type A, and Type B crashes based on the type of fix, roadway context, and AADT.
- CMF ID 9266 for *Install safety edge treatment* (CMF = 0.87) – This CMF comes from the same study as CMF ID 9204 and is applicable for all crash types resulting in Type O or property damage only (PDO). CMF ID 9266 was found to be the most applicable CMF to quantify the safety benefit of installing safety edge for Type O crashes based on the type of fix, roadway context, and AADT.

Details on the selected CMFS can be found in **Attachment F**.



*The range of proposed segment improvements are intended to cost-effectively reduce crashes, in particular the large number of run-off road crashes.*

## Benefit-Cost

A HSIP benefit-cost worksheet was completed for the proposed safety improvements along this 3.30-mile segment of CSAH 40 utilizing CMF ID 6371 and 6377 (for widen shoulder), as well as CMF ID 9204 and 9266 (for install safety edge treatment). The selected CMFs and high-level cost estimate result in a benefit-cost ratio of **1.10**. The benefit-cost worksheet can be found in **Attachment G**.

## Policy and Standards Compliance

The proposed project will meet applicable policies, standards, and requirements as indicated below.

- Carver County adopted an [ADA Transition Plan](#) on February 18, 2014. The proposed project will comply with the Americans with Disabilities Act (ADA).
- The project applicant has sent written notification regarding the proposed project to all affected state and local units of government prior to submitting this application. Affected state and local units of government include:
  - San Francisco Township, sent May 13, 2022
- The proposed project will meet state aid standards.
- Rumble strips will be installed in accordance with Carver County's Rumble Strip Policy, located in **Attachment H**.

## Summary: Alignment with Qualifying and Prioritization Criteria

This project meets the HSIP proactive qualifying and prioritization criteria, as summarized below.

### Qualifying Criteria

| Criteria                                                              | How CSAH 40 Segment (CSAH 52-CSAH 50) Meets Criteria                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project originates from a road safety plan                            | 3-star road departure risk ranking in 2013 Carver County Road Safety Plan (CRSP) based on lane departure density, critical curve radius density and edge risk. <b>6<sup>th</sup> highest priority segment</b> in the County.                                                    |
| Low-cost solution to priority crash types                             | The proposed improvements address priority crash types using lower-cost solutions.                                                                                                                                                                                              |
| Cost-effective impacts at multiple locations or via corridor approach | The proposed improvements address issues on the 3.3-mile corridor segment, consistent with the understanding of the safety need. Carver County is also pursuing improvements on adjacent segments of the entire 10-mile CSAH 40 to accomplish a wholistic solution.             |
| Project is included in list of types to be considered                 | The proposed project includes multiple components consistent with the example project types for proactive funding: rumble strips (centerline and shoulder); safety edge treatments; chevron signs, curve warning signs, and sequential flashing beacons; and shoulder widening. |

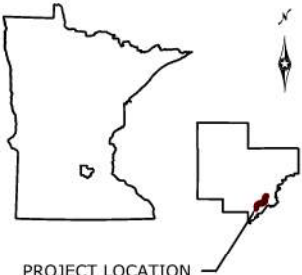
### Prioritization Criteria

| Criteria                                                 | How CSAH 40 Segment (CSAH 52-CSAH 50) Meets Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cost per user exposure                                   | The proposed improvements will be applied to a 3.3-mile corridor with 1800 AADT and an estimated cost of \$4,910,400.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Connection to 2020-2024 SHSP                             | The proposed improvements are intended to mitigate several issues that are a focus of the SHSP: <ul style="list-style-type: none"> <li>• Lane departures (a Core Focus Area) – all 9 crashes were run off the road</li> <li>• Motorcycles (a Strategic Focus Area) – 2 crashes were motorcycles</li> </ul>                                                                                                                                                                                                                              |
| Correctable Fatal and Serious Injury Crashes (2012-2021) | One Fatal (Type K) and one Serious Injury (Type A) were reported on the segment between 2012 and 2021. The proposed improvements are expected to improve safety as indicated by CMF, below.                                                                                                                                                                                                                                                                                                                                             |
| Crash reduction factor for the specific strategy         | The proposed project will include several safety improvements. The following features, identified by the corresponding Crash Modification Factors (CMFs) were utilized for the benefit-cost worksheet: <ul style="list-style-type: none"> <li>• CMF ID 6371 for widen shoulders (<b>CMF = 0.92</b>)</li> <li>• CMF ID 6377 for widen shoulders (<b>CMF = 0.57</b>)</li> <li>• CMF ID 9204 for install safety edge treatment (<b>CMF = 0.34</b>)</li> <li>• CMF ID 9266 for install safety edge treatment (<b>CMF = 0.87</b>)</li> </ul> |
| Part of a plan (safety plan or road safety audit)        | Segment has a 3-star road departure risk ranking in 2013 Carver County Road Safety Plan (CRSP) based on lane departure density, critical curve radius density and edge risk. <b>6<sup>th</sup> highest priority segment</b> in the County.                                                                                                                                                                                                                                                                                              |
| Pedestrian and bicycle safety elements                   | The CSAH 40 roadway is identified in the Carver County Comprehensive Plan as a future regional bikeway connecting the southwest portion of the County to extensive biking networks ( <b>Attachment I</b> ). This represents the importance of this roadway connection for all users. An eight-foot shoulder with four-foot paved and four-foot gravel will meet the minimum guidance for an on-road bicycle facility and will greatly improve conditions for bicyclists along the CSAH 40 corridor.                                     |

## Attachments

- A. Project Location Map
- B. Existing Conditions
- C. 2019-2021 MnCMAT Data
- D. County Road Safety Plan (CRSP) Excerpt
- E. Proposed Typical Sections
- F. Crash Modification Factors (CMFs)
- G. HSIP Benefit-Cost Worksheet
- H. Carver County Rumble Strip Policy
- I. Carver County Comprehensive Plan Excerpt: Planned Bikeways

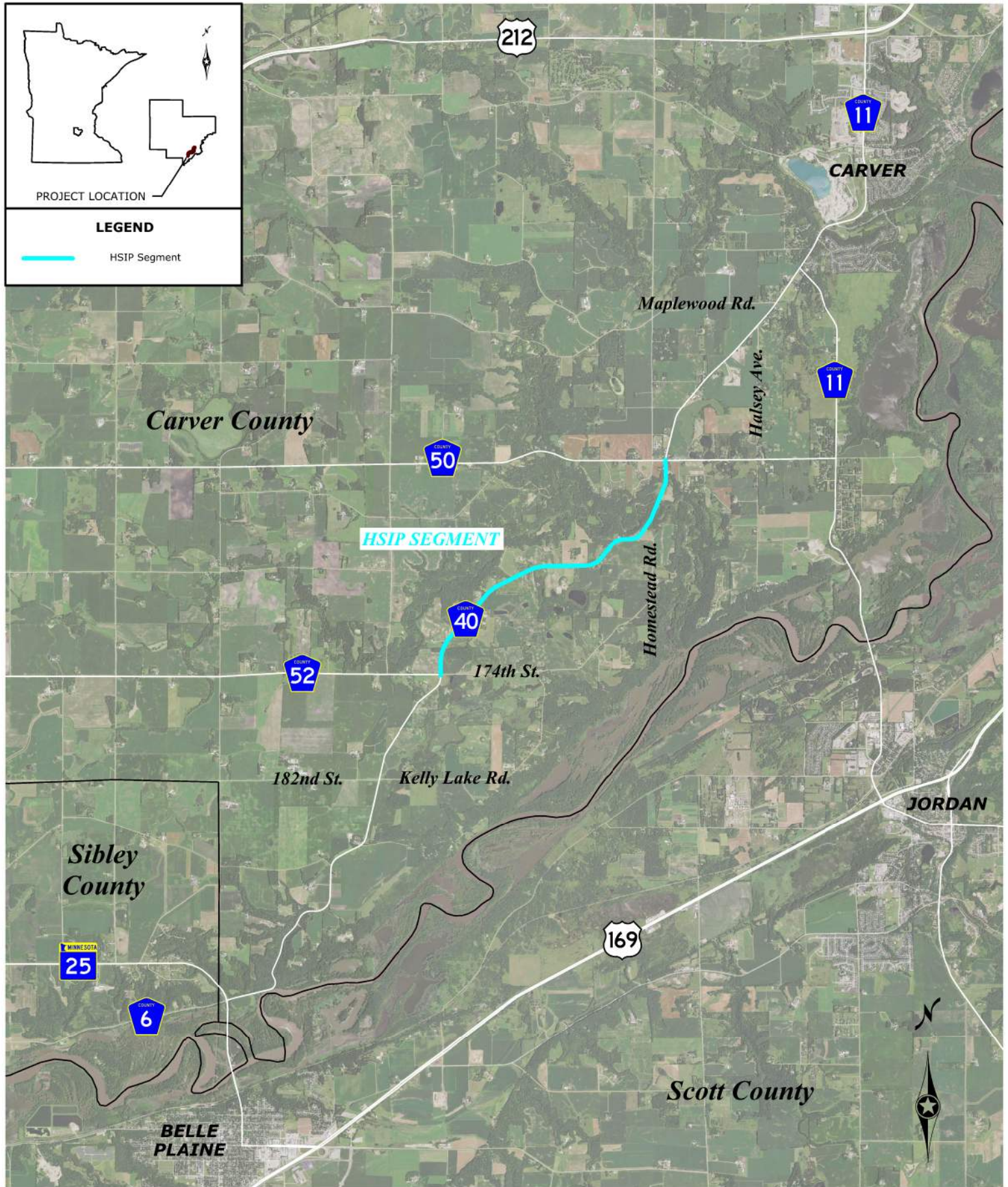
Attachment A:  
Project Location Map



PROJECT LOCATION

**LEGEND**

 HSIP Segment



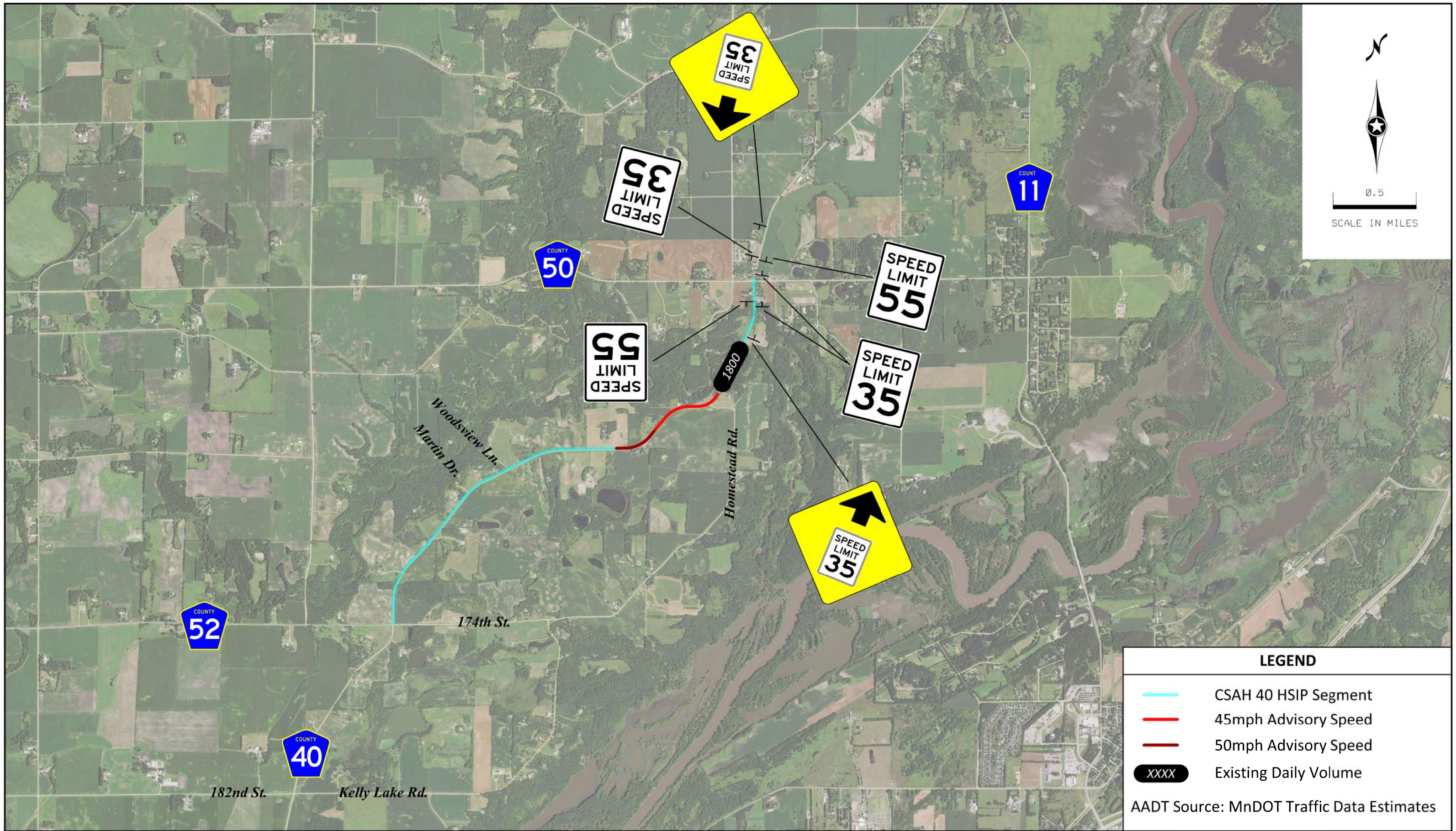
CSAH 40 - HSIP Application

*Project Location*



**ALLIANT**

Attachment B:  
Existing Conditions



Attachment C:  
2019-2021 MnCMAT Crash Data

| INCIDENTID | RTESYS | CODE | RTENUMBER | MEASURE | COUNTY_SPATIAL | CITY_NAME     | TOWNSHIP_NAME | MNDOT_DISTRICT_SPATIAL | STATE_PATROL_DIST_SPATIAL | TRIBAL_GOVERNMENT_SPATIAL | LOCALID  | ACCIDENT_NUMBER | CRASH_MONTH | CRASH_DAY | CRASH_YEAR | CRASH_DAYOFWEEK | CRASH_HOUR | DIVIDEDRDWYDIR | CRASHSEVERITY |
|------------|--------|------|-----------|---------|----------------|---------------|---------------|------------------------|---------------------------|---------------------------|----------|-----------------|-------------|-----------|------------|-----------------|------------|----------------|---------------|
| 819061     |        | 4    | 40        | 4.054   | 10             | San Francisco | M             |                        | 25                        |                           | 20019785 | 201930033       | 7           | 11        | 2020       | Sat             | 13         |                | 3             |
| 723992     |        | 4    | 40        | 4.097   | 10             | San Francisco | M             |                        | 25                        |                           | 19015575 | 191530108       | 6           | 2         | 2019       | Sun             | 19         |                | 3             |
| 835464     |        | 4    | 40        | 5.264   | 10             | San Francisco | M             |                        | 25                        |                           | 20023803 | 202280072       | 8           | 15        | 2020       | Sat             | 0          | 98             | 5             |
| 836835     |        | 4    | 40        | 5.341   | 10             | San Francisco | M             |                        | 25                        |                           | 20024713 | 202360064       | 8           | 23        | 2020       | Sun             | 0          | 98             | 5             |
| 841040     |        | 4    | 40        | 5.401   | 10             | San Francisco | M             |                        | 25                        |                           | 20027591 | 202600021       | 9           | 16        | 2020       | Wed             | 9          | 98             | 3             |
| 861070     |        | 4    | 40        | 5.843   | 10             | San Francisco | M             |                        | 25                        |                           | 20032921 | 203080124       | 11          | 3         | 2020       | Tue             | 18         | 98             | 5             |
| 703063     |        | 4    | 40        | 6.151   | 10             | San Francisco | M             |                        | 25                        |                           | 19009992 | 191000320       | 4           | 10        | 2019       | Wed             | 13         |                | 5             |
| 841038     |        | 4    | 40        | 6.199   | 10             | San Francisco | M             |                        | 25                        |                           | 20027579 | 202600020       | 9           | 16        | 2020       | Wed             | 6          | 98             | 5             |
| 910486     |        | 4    | 40        | 6.268   | 10             | San Francisco | M             |                        | 25                        |                           | 21014639 | 211510164       | 5           | 31        | 2021       | Mon             | 21         |                | 3             |
| 798265     |        | 4    | 40        | 6.544   | 10             | San Francisco | M             |                        | 25                        |                           | 20004740 | 200480021       | 2           | 17        | 2020       | Mon             | 7          |                | 5             |
| 860869     |        | 4    | 40        | 6.704   | 10             | San Francisco | M             |                        | 25                        |                           | 20032689 | 203070109       | 11          | 2         | 2020       | Mon             | 4          | 98             | 5             |
| 744909     |        | 4    | 40        | 6.86    | 10             | San Francisco | M             |                        | 25                        |                           | 19026394 | 192470027       | 9           | 4         | 2019       | Wed             | 10         | 98             | 5             |
| 697704     |        | 4    | 40        | 6.925   | 10             | San Francisco | M             |                        | 25                        |                           | 19007196 | 190730019       | 3           | 14        | 2019       | Thu             | 6          | 98             | 5             |
| 758979     |        | 4    | 40        | 7.005   | 10             | San Francisco | M             |                        | 25                        |                           | 19032903 | 193060026       | 11          | 2         | 2019       | Sat             | 7          |                | 3             |
| 902900     |        | 4    | 40        | 7.417   | 10             | San Francisco | M             |                        | 25                        |                           | 21011348 | 211190015       | 4           | 29        | 2021       | Thu             | 8          | 98             | 4             |
| 733716     |        | 4    | 40        | 7.471   | 10             | Dahlgren      | M             |                        | 25                        |                           | 19020498 | 191960151       | 7           | 15        | 2019       | Mon             | 18         | 98             | 4             |
| 746665     |        | 4    | 52        | 8.043   | 10             | San Francisco | M             |                        | 25                        |                           | 19027329 | 192540184       | 9           | 11        | 2019       | Wed             | 21         | S              | 5             |
| 820334     |        | 8    | 127       | 0.002   | 10             | San Francisco | M             |                        | 25                        |                           | 20020635 | 202000030       | 7           | 18        | 2020       | Sat             | 12         | 98             | 3             |

| INCIDENTID | NUMBERKILLED | NUMBEROFVEHICLES | MANNEROFCOLLISION | FIRSTHARMFULEVENT | RELATIONTOINTERSECTION | LIGHTCONDITION | WEATHERPRIMARY | WEATHERSECONDARY | RDWYSURFACE | WORKZONETYPE | ROADWAY_NAME | INTERSECTION_NAME | ROUTE_ID           | BASIC_TYPE | UNITYTYPE1 | VEHICLETYPEU1 | DIRECTIONU1 |
|------------|--------------|------------------|-------------------|-------------------|------------------------|----------------|----------------|------------------|-------------|--------------|--------------|-------------------|--------------------|------------|------------|---------------|-------------|
| 819061     | 0            | 1                |                   | 48                | 2                      | 1              | 2              |                  | 1           | 98           | CSAH 40      |                   | 0400006594550040-I | 3          | 2          | 31            | 1           |
| 723992     | 0            | 1                |                   | 48                | 2                      | 1              | 1              |                  | 1           | 98           | CSAH 40      |                   | 0400006594550040-I | 3          | 2          | 31            | 2           |
| 835464     | 0            | 1                |                   | 69                | 2                      | 6              | 2              |                  | 1           | 98           | CSAH 40      |                   | 0400006594550040-I | 3          | 1          | 2             | 1           |
| 836835     | 0            | 1                |                   | 70                | 2                      | 6              | 1              |                  | 1           | 98           | CSAH 40      |                   | 0400006594550040-I | 3          | 2          | 2             | 2           |
| 841040     | 0            | 1                |                   | 49                | 16                     | 1              | 2              |                  | 1           | 98           | CSAH 40      |                   | 0400006594550040-I | 3          | 2          | 2             | 2           |
| 861070     | 0            | 1                |                   | 16                | 2                      | 1              | 1              |                  | 1           | 98           | CSAH 40      |                   | 0400006594550040-I | 4          | 2          | 2             | 2           |
| 703063     | 0            | 1                |                   | 67                | 2                      | 1              | 4              |                  | 3           | 98           | CSAH 40      |                   | 0400006594550040-I | 3          | 2          | 2             | 1           |
| 841038     | 0            | 1                |                   | 16                | 2                      | 2              | 2              |                  | 1           | 98           | CSAH 40      |                   | 0400006594550040-I | 4          | 2          | 2             | 1           |
| 910486     | 0            | 1                |                   | 16                | 2                      | 3              | 1              |                  | 1           | 98           | CSAH 40      |                   | 0400006594550040-I | 4          | 2          | 31            | 1           |
| 798265     | 0            | 1                |                   | 16                | 2                      | 5              | 1              |                  | 1           | 98           | CSAH 40      |                   | 0400006594550040-I | 4          | 2          | 2             | 1           |
| 860869     | 0            | 1                |                   | 16                | 2                      | 6              | 1              |                  | 1           | 98           | CSAH 40      |                   | 0400006594550040-I | 4          | 2          | 2             | 2           |
| 744909     | 0            | 1                |                   | 89                | 2                      | 1              | 1              |                  | 1           | 98           | CSAH 40      |                   | 0400006594550040-I | 4          | 2          | 5             | 2           |
| 697704     | 0            | 1                |                   | 69                | 2                      | 6              | 6              |                  | 6           | 98           | CSAH 40      |                   | 0400006594550040-I | 3          | 2          | 2             | 1           |
| 758979     | 0            | 1                |                   | 69                | 2                      | 2              | 2              |                  | 5           | 98           | CSAH 40      |                   | 0400006594550040-I | 3          | 2          | 3             | 2           |
| 902900     | 0            | 2                | 5                 | 10                | 3                      | 1              | 1              |                  | 1           | 98           | CSAH 40      |                   | 0400006594550040-I | 10         | 2          | 4             | 1           |
| 733716     | 0            | 2                | 5                 | 10                | 3                      | 1              | 3              |                  | 2           | 98           | CSAH 40      |                   | 0400006594550040-I | 10         | 2          | 2             | 4           |
| 746665     | 0            | 1                |                   | 16                | 4                      | 6              | 3              |                  | 2           | 98           | CSAH 52      |                   | 0400006594550052-I | 4          | 2          | 4             | 2           |
| 820334     | 0            | 3                | 12                | 10                | 10                     | 1              | 2              |                  | 1           | 98           | 174TH ST     |                   | 0800006594550127-I | 7          | 2          | 4             | 2           |

| INCIDENTID | PRECRASHMANEUVERU1 | AGEU1 | SEXU1 | PHYSICALCONDITIONU1 | CONTRIBFACTOR1U1 | CONTRIBFACTOR2U1 | NONMOTORISTMANEUVERU1 | NONMOTORISTLOCATIONU1 | RDWYDESIGNU1 | TRAFFICCONTROLDEVICEU1 | SPEEDLIMITU1 | ALIGNMENTU1 | GRADEU1 | UNITTYPEU2 | VEHICLETYPEU2 | DIRECTIONU2 | PRECRASHMANEUVERU2 |
|------------|--------------------|-------|-------|---------------------|------------------|------------------|-----------------------|-----------------------|--------------|------------------------|--------------|-------------|---------|------------|---------------|-------------|--------------------|
| 819061     | 21                 | 27    | M     | 5                   | 99               |                  |                       |                       | 12           | 98                     | 55           | 12          | 21      |            |               |             |                    |
| 723992     | 32                 | 58    | M     | 5                   | 1                |                  |                       |                       | 12           | 9                      | 55           | 13          | 21      |            |               |             |                    |
| 835464     | 21                 |       |       |                     |                  |                  |                       |                       | 12           | 98                     | 55           | 13          | 21      |            |               |             |                    |
| 836835     | 27                 | 18    | M     | 5                   | 71               |                  |                       |                       | 14           | 9                      | 55           | 12          | 21      |            |               |             |                    |
| 841040     | 21                 | 16    | M     | 5                   | 99               |                  |                       |                       | 12           | 9                      | 55           | 12          | 21      |            |               |             |                    |
| 861070     | 21                 | 65    | F     | 5                   | 1                |                  |                       |                       | 12           | 9                      |              | 11          | 21      |            |               |             |                    |
| 703063     | 32                 | 21    | F     | 5                   | 1                |                  |                       |                       | 12           | 9                      | 55           | 12          | 23      |            |               |             |                    |
| 841038     | 21                 | 37    | M     | 5                   | 1                |                  |                       |                       | 12           | 9                      | 55           | 11          | 21      |            |               |             |                    |
| 910486     | 21                 | 22    | M     | 5                   | 1                |                  |                       |                       | 12           | 9                      | 55           | 13          | 21      |            |               |             |                    |
| 798265     | 21                 | 57    | M     | 5                   | 1                |                  |                       |                       | 12           | 9                      | 55           | 11          | 21      |            |               |             |                    |
| 860869     | 21                 | 29    | M     | 5                   | 1                |                  |                       |                       | 12           | 9                      | 55           | 11          | 23      |            |               |             |                    |
| 744909     | 21                 | 38    | F     | 5                   | 1                |                  |                       |                       | 12           | 9                      | 55           | 13          | 23      |            |               |             |                    |
| 697704     | 21                 | 40    | M     | 5                   | 1                |                  |                       |                       | 12           | 98                     | 50           | 12          | 24      |            |               |             |                    |
| 758979     | 21                 | 29    | M     | 5                   | 1                |                  |                       |                       | 12           | 9                      | 55           | 11          | 21      |            |               |             |                    |
| 902900     | 21                 | 49    | F     | 5                   | 1                |                  |                       |                       | 12           | 9                      | 45           | 11          | 22      | 2          | 2             | 4           | 21                 |
| 733716     | 21                 | 21    | M     | 5                   | 65               |                  |                       |                       | 12           | 20                     |              | 11          | 21      | 2          | 2             | 4           | 21                 |
| 746665     | 21                 | 18    | F     | 5                   | 1                |                  |                       |                       | 12           | 9                      | 55           | 11          | 21      |            |               |             |                    |
| 820334     | 24                 | 48    | F     | 5                   | 1                |                  |                       |                       | 12           | 9                      | 55           | 11          | 21      | 2          | 31            | 2           | 26                 |

| INCIDENTID | AGEU2 | SEXU2 | PHYSICALCONDITIONU2 | CONTRIBFACTOR1U2 | CONTRIBFACTOR2U2 | NONMOTORISTMANEUVERU2 | NONMOTORISTLOCATIONU2 | RDWYDESIGNU2 | TRAFFICCONTROLDEVICEU2 | SPEEDLIMITU2 | ALIGNMENTU2 | GRADEU2 | UNITTTYPEU3 | VEHICLETYPEU3 | DIRECTIONU3 | PRECRASHMANEUVERU3 | AGEU3 | SEXU3 |
|------------|-------|-------|---------------------|------------------|------------------|-----------------------|-----------------------|--------------|------------------------|--------------|-------------|---------|-------------|---------------|-------------|--------------------|-------|-------|
| 819061     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 723992     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 835464     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 836835     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 841040     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 861070     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 703063     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 841038     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 910486     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 798265     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 860869     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 744909     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 697704     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 758979     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 902900     | 52    | M     | 5                   | 2                |                  |                       |                       | 12           | 23                     | 45           | 11          | 21      |             |               |             |                    |       |       |
| 733716     | 30    | F     | 5                   | 1                |                  |                       |                       | 12           | 20                     |              | 11          | 21      |             |               |             |                    |       |       |
| 746665     |       |       |                     |                  |                  |                       |                       |              |                        |              |             |         |             |               |             |                    |       |       |
| 820334     | 42    | M     | 5                   | 1                |                  |                       |                       | 12           | 9                      | 55           | 11          | 21      | 2           | 31            | 2           | 26                 | 49    | M     |

| INCIDENTID | PHYSICALCONDITIONU3 | CONTRIBFACTOR1U3 | CONTRIBFACTOR2U3 | NONMOTORISTMANEUVERU3 | NONMOTORISTLOCATIONU3 | RDWYDESIGNU3 | TRAFFICCONTROLDEVICEU3 | SPEEDLIMITU3 | ALIGNMENTU3 | GRADEU3 | UNITTYPEU4 | VEHICLETYPEU4 | DIRECTIONU4 | PRECRASHMANEUVERU4 | AGEU4 | SEXU4 | PHYSICALCONDITIONU4 |
|------------|---------------------|------------------|------------------|-----------------------|-----------------------|--------------|------------------------|--------------|-------------|---------|------------|---------------|-------------|--------------------|-------|-------|---------------------|
| 819061     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 723992     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 835464     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 836835     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 841040     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 861070     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 703063     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 841038     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 910486     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 798265     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 860869     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 744909     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 697704     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 758979     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 902900     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 733716     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 746665     |                     |                  |                  |                       |                       |              |                        |              |             |         |            |               |             |                    |       |       |                     |
| 820334     | 5                   | 4                |                  |                       |                       | 12           | 9                      | 55           | 11          | 21      |            |               |             |                    |       |       |                     |

| INCIDENTID | CONTRIBFACTOR1U4 | CONTRIBFACTOR2U4 | NONMOTORISTMANEUVERU4 | NONMOTORISTLOCATIONU4 | RDWYDESIGNU4 | TRAFFICCONTROLDEVICEU4 | SPEEDLIMITU4 | ALIGNMENTU4 | GRADEU4 | UTMX        | UTMY        | LATITUDE    | LONGITUDE    | CRASH_DATE_TIME | STATUS   | STATUS_NOTE | AGENCY_ORI |
|------------|------------------|------------------|-----------------------|-----------------------|--------------|------------------------|--------------|-------------|---------|-------------|-------------|-------------|--------------|-----------------|----------|-------------|------------|
| 819061     |                  |                  |                       |                       |              |                        |              |             |         | 442510.8379 | 4948463.679 | 44.68724823 | -93.72548793 | 7/11/2020 13:46 | Accepted | Reportable  | MN0100000  |
| 723992     |                  |                  |                       |                       |              |                        |              |             |         | 442516.372  | 4948531.824 | 44.6878621  | -93.72542576 | 6/2/2019 19:00  | Accepted | Reportable  | MN0100000  |
| 835464     |                  |                  |                       |                       |              |                        |              |             |         | 443533.6385 | 4949995.256 | 44.70111631 | -93.71275088 | 8/15/2020 0:05  | Accepted | Reportable  | MN0100000  |
| 836835     |                  |                  |                       |                       |              |                        |              |             |         | 443645.793  | 4950049.581 | 44.70161416 | -93.71134131 | 8/23/2020 0:20  | Accepted | Reportable  | MN0100000  |
| 841040     |                  |                  |                       |                       |              |                        |              |             |         | 443731.2163 | 4950092.056 | 44.70200322 | -93.71026781 | 9/16/2020 9:45  | Accepted | Reportable  | MN0100000  |
| 861070     |                  |                  |                       |                       |              |                        |              |             |         | 444415.6492 | 4950235.866 | 44.70335115 | -93.70164475 | 11/3/2020 18:13 | Accepted | Reportable  | MN0100000  |
| 703063     |                  |                  |                       |                       |              |                        |              |             |         | 444906.1902 | 4950270.868 | 44.70370411 | -93.69545692 | 4/10/2019 13:15 | Accepted | Reportable  | MN0100000  |
| 841038     |                  |                  |                       |                       |              |                        |              |             |         | 444969.0762 | 4950316.206 | 44.70411706 | -93.69466805 | 9/16/2020 6:45  | Accepted | Reportable  | MN0100000  |
| 910486     |                  |                  |                       |                       |              |                        |              |             |         | 445041.8925 | 4950398.579 | 44.70486414 | -93.6937578  | 5/31/2021 21:15 | Accepted | Reportable  | MN0100000  |
| 798265     |                  |                  |                       |                       |              |                        |              |             |         | 445392.7989 | 4950630.999 | 44.70698315 | -93.68935337 | 2/17/2020 7:00  | Accepted | Reportable  | MN0100000  |
| 860869     |                  |                  |                       |                       |              |                        |              |             |         | 445625.4039 | 4950711.063 | 44.70772155 | -93.68642576 | 11/2/2020 4:32  | Accepted | Reportable  | MN0100000  |
| 744909     |                  |                  |                       |                       |              |                        |              |             |         | 445766.6238 | 4950917.957 | 44.70959466 | -93.6846651  | 9/4/2019 10:15  | Accepted | Reportable  | MN0100000  |
| 697704     |                  |                  |                       |                       |              |                        |              |             |         | 445816.9871 | 4951009.449 | 44.71042206 | -93.68403905 | 3/14/2019 6:55  | Accepted | Reportable  | MN0100000  |
| 758979     |                  |                  |                       |                       |              |                        |              |             |         | 445870.283  | 4951126.753 | 44.71148202 | -93.68337869 | 11/2/2019 7:25  | Accepted | Reportable  | MN0100000  |
| 902900     |                  |                  |                       |                       |              |                        |              |             |         | 446013.544  | 4951764.19  | 44.71723087 | -93.68163755 | 4/29/2021 8:42  | Accepted | Reportable  | MN0100000  |
| 733716     |                  |                  |                       |                       |              |                        |              |             |         | 446012.0188 | 4951850.57  | 44.71800833 | -93.68166594 | 7/15/2019 18:21 | Accepted | Reportable  | MN0100000  |
| 746665     |                  |                  |                       |                       |              |                        |              |             |         | 442513.598  | 4948580.509 | 44.68830013 | -93.72546623 | 9/11/2019 21:50 | Accepted | Reportable  | MN0100000  |
| 820334     |                  |                  |                       |                       |              |                        |              |             |         | 442521.4744 | 4948580.466 | 44.68830037 | -93.72536684 | 7/18/2020 12:30 | Accepted | Reportable  | MN0100000  |

| INCIDENTID | AGENCY_ORI_GROUP | NARRATIVE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 819061     | Sheriff          | Unit 1 was northbound on Co Rd 40, in a section of the road that curved left just south of 174th Street. The driver of Unit 1 lost control of the motorcycle and it ran off the road on the right side and flipped on to its side at the bottom of the ditch.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 723992     | Sheriff          | <p>Vehicle was going south on County road 40. Unit 1 was being driven by the driver but the vehicle was no his. Driver did not know how the cruise control on the motorcycle operated and had an issue turning it off while negotiating a turn. The driver then hit a patch of uneven dirt, and veered into the oncoming lane, and down a hill on the opposite shoulder. The driver was partially ejected in the process. The vehicle also flipped 180 degrees after hitting the shoulder.</p> <p>Ridgeview medical staff responded to the scene and transported the driver due to neck and wrist injuries. The extent of the injuries is unknown. Run number for Ridgeview is 6208.</p> <p>Unit 1 was towed by John's Mobile due to no one able to drive the vehicle away from the scene.</p>                                                   |
| 835464     | Sheriff          | <p>I was dispatched to a single vehicle crash that a passerby located. Deputy Possert and I arrived on scene. There was no one around. Deputies extensively checked that are and were unable to locate anyone. The crash occurred at a residence and the residence was vacant and unoccupied. Deputies were unable to locate the driver of V1 and unable to make contact with the registered owner of the vehicle. I was unable to locate any vehicle insurance information. There were items in the vehicle which had the names of the RC and a female. It was unknown how many people were in V1 when it crashed. There was little to no blood inside or outside the vehicle. The drivers side air bag went off.</p> <p>V1 was towed from the scene to Shakopee Towing.</p> <p>There were no witnesses to the crash or anyone in the area.</p> |
| 836835     | Sheriff          | Unit 1 was traveling southbound on County Road 40 near Woodsview Ln in Carver County. Unit 1 swerved off the roadway to the right to avoid deer in the roadway. Unit 1 left the roadway, entered the ditch and crashed through private agricultural/farm fencing. Unit 1 sustained disabling damage. The driver of unit 1 sustained no apparent injuries.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 841040     | Sheriff          | Vehicle was traveling southbound on County Road 40 when it ran off the road to the right, struck an driveway embankment, and rolled onto it's roof                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 861070     | Sheriff          | Vehicle 1 was traveling southbound Carver County Road 40 near 16625 County Road 40 in San Francisco County when it struck a deer. There were no injuries, and the vehicle drove away. There were no airbags deployed. The damage was moderate but functional.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 703063     | Sheriff          | <p>Unit 1 was driving NB on Co Rd 40, negotiating the "S" curves between Co Rd 52 and Co Rd 50, south of Homestead Rd. Unit 1 was following a second vehicle which quickly slowed for the turns. Unit 1 applied the break in response and began to veer off the road, running over an address post marker and mailbox. Unit 1 did not strike any other vehicles. There were no injuries to the driver of Unit 1. A private tow was called to impound the vehicle due to damage to the underside.</p> <p>The homeowners were not home, but I left my business card and case number for them to contact me. The mailbox and address post were removed from under Unit 1 and placed near the front door.</p>                                                                                                                                        |
| 841038     | Sheriff          | Vehicle was traveling northbound on County Road 40 near Homestead Road when a deer ran across the road from the west. Vehicle struck deer but deer ran off. Damage done to the front driver's side of the vehicle.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 910486     | Sheriff          | Unit 1 was traveling northbound on County Road 40 south of 16450 County Road 40 in San Francisco Township. Driver 1 stated that a deer ran across the roadway. Driver 1 was unable to avoid a collision with the deer. After striking the deer, Unit 1 ran off the roadway right. Driver 1 was picked up by a passerby. Driver 1 sustained moderate injuries and Unit 1 sustained moderate damage. No citations were issued.                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 798265     | Sheriff          | Unit 1 was northbound on CR 40, nearing Homestead Road, when according to its driver, a deer ran out from the right side ditch towards roadway. The deer struck the right side of Unit 1, damaging the front fender and front passenger door areas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 860869     | Sheriff          | Vehicle 1 was traveling Southbound Carver County Road 40 near Homestead Avenue, in San Francisco Township, when it ran into a deer. There was a considerable amount of damage to the front and driver side of the vehicle. No airbags were deployed, and driver was wearing his seat belt. Skelley towing out of Belle Plaine towed the vehicle away.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 744909     | Sheriff          | <p>Williams was traveling uphill on County Road 40 approaching Homestead Road when a male driver in possibly a white Ford Taurus, crossed the center lane into Williams lane. Williams said she drove into the ditch to avoid a head on collision.</p> <p>Williams was not injured and was able to drive her vehicle out of the ditch, but she did receive some damage to the right side of her van.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 697704     | Sheriff          | Vehicle 1 was traveling northbound on County Road 40. The road is downhill with a slight left curve. Running water from melting snow was crossing the road causing Vehicle 1 to hydroplane off into the right shoulder of the road. Vehicle 1 then struck a tree down in the ditch.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 758979     | Sheriff          | Unit 1 was southbound on Co Rd 40 and lost control when crossing the ice-covered overpass above a creek. Unit 1 swerved to the right, slid sideways down from the shoulder and rolled on to its roof up against several trees.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 902900     | Sheriff          | Vehicle 1 was traveling northbound on County Road 40 going through the intersection. Driver of Vehicle 2 stated he stopped for the stop sign on County Road 50, looked both ways, then pulled out into the intersection. vehicle 1 struck vehicle 2 in the intersection as Vehicle 2 was crossing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 733716     | Sheriff          | <p>Unit 1 was traveling West bound on CR 50 approaching the intersection at CR 40. Unit 2 Was headed southbound on CR 40 approaching the intersection at CR 50. Unit 1 had a stop sign and unit 2 did not. Unit 1 did not stop at the stop sign, striking unit 2 in a t-shaped manner.</p> <p>Unit 1 driver did not require medical attention. Unit 2 driver had a hurt hand, and minor face injuries, and was transported by a friend to the hospital after declining paramedic services.</p> <p>Unit 1 driver was cited for failure to stop at a stop sign and unit 2 driver was cited for driving with an expired status.</p> <p>Both vehicles were towed privately by Colony Plaza to an unknown destination. Neither vehicle was blocking. Both vehicles sustained heavy front end damage and were not able to be driven.</p>               |
| 746665     | Sheriff          | At approximately 2150 hours on 09/11/2019, Emily Elizabeth Berger DOB: 09/09/2001, was driving a 2005 blue in color Chevy Equinox, MN REG 790RPM, southbound on County Road 40 in San Francisco Township in the County of Carver towards her home in Belle Plaine. Emily stated she was travelling between 50-55 mph southbound on County Road 40 and when she was near the intersection of County Road 40 and County Road 52 a deer appeared from the east side of County Road 40. Emily stated she was unable to slow down or avoid hitting the deer. Emily stated her vehicle hit the deer causing damage to the front on the passenger side. Emily explained the damage to her car as "totaled" but the vehicle was able to be driven and was driven from the accident scene.                                                                |
| 820334     | Sheriff          | Vehicle 1 was stopped on County Road 40, waiting to make a left turn onto 174th St. Vehicle 2 was also slowed, or stopped, behind Vehicle 1. Vehicle 3 was the third vehicle in that line of vehicles. Vehicle 3 did not slow down in time and sideswiped Vehicle 2, then rear ending Vehicle 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

Attachment D:

County Road Safety Plan (CRSP) Excerpt

**Carver County**  
**Rural Segment Listing**

Analysis Years: 2007 - 2011

\*High Priority Segments Project Sheet Page Number

| Project Sheet Page* | Corridor | Route | #   | Start                     | End                     | Length (miles) | Lane Departure Crashes | ADT  | Lane Departure Density | Access Density | Curves w/ Critical Radius / Mile | Edge Risk Assessment |
|---------------------|----------|-------|-----|---------------------------|-------------------------|----------------|------------------------|------|------------------------|----------------|----------------------------------|----------------------|
| -                   | 10.01    | CSAH  | 10  | CSAH-10 BEGINS, WRIGHT CO | WATERTOWN CORP LIMIT    | 0.4            | 0                      | 1400 | 0.00                   | 15.0           | 0.00                             | 2                    |
| 17                  | 10.04    | CSAH  | 10  | WATERTOWN CORP LIMIT      | MNTH-7                  | 3.4            | 16                     | 3850 | 0.94                   | 11.2           | 1.76                             | 1                    |
| 7                   | 10.05    | CSAH  | 10  | MNTH-7                    | 66TH ST                 | 1.6            | 10                     | 4500 | 1.25                   | 11.3           | 0.00                             | 2                    |
| 4                   | 10.06    | CSAH  | 10  | 66TH ST                   | MNTH-5                  | 4.0            | 34                     | 6290 | 1.70                   | 13.5           | 0.75                             | 1                    |
| CL-1                | 10.08    | CSAH  | 10  | CSAH-59                   | CHASKA CORP LIMIT       | 7.1            | 36                     | 6570 | 1.01                   | 10.4           | 0.28                             | 1                    |
| -                   | 11.02    | CSAH  | 11  | SAN FRANCISCO TWSP        | SAN FRANCISCO TWSP      | 2.9            | 12                     | 2643 | 0.83                   | 6.2            | 1.03                             | 1                    |
| 1                   | 11.03    | CSAH  | 11  | SAN FRANCISCO TWSP        | CSAH-40 (SOUTH)         | 0.9            | 6                      | 2150 | 1.33                   | 16.7           | 2.22                             | 3                    |
| 15                  | 11.04    | CSAH  | 11  | CSAH-40 (SOUTH)           | CSAH-61                 | 2.8            | 14                     | 5803 | 1.00                   | 10.7           | 1.07                             | 1                    |
| -                   | 11.05    | CSAH  | 11  | CSAH-61                   | CSAH-14                 | 3.6            | 6                      | 2170 | 0.33                   | 15.0           | 0.00                             | 3                    |
| 8                   | 11.07    | CSAH  | 11  | MNTH-5 (WEST)             | MNTH-7, HENNEPIN CO     | 2.8            | 10                     | 2250 | 0.71                   | 9.6            | 1.79                             | 2                    |
| -                   | 20.01    | CSAH  | 20  | CSAH-20 BEGINS, MCLEOD CO | CSAH-33 (NORTH)         | 2.0            | 3                      | 1000 | 0.30                   | 9.0            | 0.00                             | 1                    |
| 5                   | 20.02    | CSAH  | 20  | CSAH-33 (SOUTH)           | MNTH-25                 | 5.2            | 13                     | 1025 | 0.50                   | 11.5           | 0.00                             | 3                    |
| 18                  | 20.04    | CSAH  | 20  | WATERTOWN CORP LIMIT      | CSAH-20 ENDS, HENN CO   | 2.9            | 8                      | 3350 | 0.55                   | 14.1           | 0.34                             | 1                    |
| -                   | 21.01    | CSAH  | 21  | MNTH-7                    | CSAH-21 ENDS, WRIGHT CO | 5.0            | 2                      | 720  | 0.08                   | 11.0           | 0.00                             | 1                    |
| -                   | 23.02    | CSAH  | 23  | 58TH ST                   | MNTH-7                  | 0.5            | 0                      | 630  | 0.00                   | 28.0           | 0.00                             | 1                    |
| 3                   | 24.02    | CSAH  | 24  | DREAM LANE                | CSAH-15                 | 2.7            | 11                     | 2800 | 0.81                   | 13.7           | 0.74                             | 2                    |
| -                   | 27.02    | CSAH  | 27  | WATERTOWN CORP LIMIT      | CSAH-27 ENDS, WRIGHT CO | 1.1            | 6                      | 1815 | 1.09                   | 10.0           | 0.91                             | 1                    |
| 10                  | 30.01    | CSAH  | 30  | CSAH-30 BEGINS, MCLEOD CO | CSAH-33 (SOUTH)         | 1.9            | 1                      | 1050 | 0.11                   | 11.6           | 0.53                             | 2                    |
| -                   | 30.03    | CSAH  | 30  | NEW GERMANY CORP LIMIT    | MAYER CORP LIMIT        | 2.2            | 5                      | 1705 | 0.45                   | 7.3            | 0.00                             | 2                    |
| -                   | 30.05    | CSAH  | 30  | MNTH-25 (SOUTH)           | CSAH-10                 | 3.9            | 12                     | 2450 | 0.62                   | 10.5           | 0.26                             | 3                    |
| -                   | 31.01    | CSAH  | 31  | CSAH-31 BEGINS, SIBLEY CO | CSAH-50 (EAST)          | 1.0            | 0                      | 310  | 0.00                   | 10.0           | 0.00                             | 1                    |
| -                   | 31.02    | CSAH  | 31  | CSAH-50 (WEST)            | CSAH-31                 | 2.5            | 3                      | 940  | 0.24                   | 10.0           | 0.00                             | 1                    |
| -                   | 32.01    | CSAH  | 32  | CSAH-30                   | MNTH-25                 | 5.5            | 4                      | 647  | 0.15                   | 11.8           | 0.36                             | 1                    |
| -                   | 32.02    | CSAH  | 32  | MNTH-25                   | CSAH-10                 | 3.4            | 5                      | 1375 | 0.29                   | 14.4           | 0.00                             | 2                    |
| -                   | 33.01    | CSAH  | 33  | CSAH-33 BEGINS, CARVER CO | CSAH-50 (EAST)          | 1.0            | 2                      | 390  | 0.40                   | 13.0           | 0.00                             | 1                    |
| 2                   | 33.02    | CSAH  | 33  | CSAH-50 (WEST)            | NORWOOD/YOUNG AMER CL   | 2.5            | 6                      | 600  | 0.48                   | 12.4           | 0.80                             | 3                    |
| -                   | 33.05    | CSAH  | 33  | MNTH-25                   | NEW GERMANY CL          | 8.2            | 20                     | 1388 | 0.49                   | 10.4           | 0.61                             | 1                    |
| -                   | 33.07    | CSAH  | 33  | NEW GERMANY CL            | CSAH-33 ENDS, WRIGHT CO | 6.0            | 9                      | 2013 | 0.30                   | 8.8            | 0.17                             | 1                    |
| -                   | 34.01    | CSAH  | 34  | CSAH-34 BEGINS, MCLEOD CO | MNTH-25                 | 4.7            | 0                      | 528  | 0.00                   | 11.5           | 0.00                             | 0                    |
| 11                  | 36.02    | CSAH  | 36  | COLOGNE CORP LIMIT        | USTH-212                | 1.3            | 5                      | 870  | 0.77                   | 8.5            | 0.77                             | 2                    |
| 6                   | 40.01    | CSAH  | 40  | CSAH-40 BEGINS, SIBLEY CO | EAST UNION              | 7.2            | 45                     | 983  | 1.25                   | 9.3            | 1.39                             | 3                    |
| 9                   | 40.03    | CSAH  | 40  | EAST UNION                | CSAH-11 (SOUTH)         | 2.1            | 4                      | 1550 | 0.32                   | 15.2           | 0.48                             | 2                    |
| -                   | 41.01    | CSAH  | 41  | CSAH-52                   | CSAH-36                 | 7.3            | 3                      | 220  | 0.08                   | 9.5            | 0.96                             | 1                    |
| 19                  | 43.01    | CSAH  | 43  | CSAH-50                   | CSAH-10 (EAST)          | 6.6            | 19                     | 1310 | 0.58                   | 13.2           | 0.45                             | 1                    |
| 12                  | 43.02    | CSAH  | 43  | CSAH-10 (WEST)            | TELLERS RD              | 1.7            | 1                      | 783  | 0.12                   | 14.1           | 1.76                             | 2                    |
| -                   | 50.01    | CSAH  | 50  | CSAH-50 BEGINS, MCLEOD CO | HAMBURG CORP LIMIT      | 1.9            | 2                      | 466  | 0.21                   | 10.5           | 0.00                             | 2                    |
| -                   | 50.03    | CSAH  | 50  | HAMBURG CORP LIMIT        | N JCT CSAH-51           | 5.2            | 7                      | 727  | 0.27                   | 10.2           | 0.38                             | 1                    |
| -                   | 50.04    | CSAH  | 50  | S JCT CSAH-51             | EAST UNION              | 8.0            | 5                      | 653  | 0.13                   | 12.4           | 0.00                             | 1                    |
| -                   | 50.06    | CSAH  | 50  | EAST UNION                | SAN FRANCISCO TWSP      | 0.7            | 1                      | 1400 | 0.29                   | 20.0           | 0.00                             | 2                    |
| -                   | 51.01    | CSAH  | 51  | CSAH-52                   | MNTH-5                  | 9.0            | 8                      | 734  | 0.18                   | 10.7           | 0.00                             | 1                    |
| -                   | 52.01    | CSAH  | 52  | CSAH-52 BEGINS, SIBLEY CO | CSAH-40                 | 8.0            | 1                      | 323  | 0.03                   | 11.9           | 0.00                             | 1                    |
| -                   | 53.01    | CSAH  | 53  | CSAH-53 BEGINS, SIBLEY CO | USTH-212                | 6.5            | 25                     | 1770 | 0.77                   | 8.2            | 0.15                             | 3                    |
| 16                  | 92.01    | CSAH  | 92  | MNTH-5                    | CSAH-92 ENDS, HENN CO   | 2.5            | 9                      | 5530 | 0.72                   | 7.2            | 0.80                             | 1                    |
| -                   | 122.01   | CNTY  | 122 | CSAH-33                   | CR-123                  | 5.9            | 9                      | 963  | 0.31                   | 12.5           | 0.00                             | 1                    |
| 13                  | 123.01   | CNTY  | 123 | MNTH-7                    | CR-122                  | 3.7            | 2                      | 245  | 0.11                   | 12.7           | 1.08                             | 2                    |
| -                   | 127.01   | CNTY  | 127 | CSAH-24                   | CSAH-20                 | 1.7            | 0                      | 275  | 0.00                   | 15.9           | 0.00                             | 2                    |
| -                   | 131.01   | CNTY  | 131 | USTH-212                  | CSAH-34                 | 1.7            | 0                      | 185  | 0.00                   | 11.8           | 0.00                             | 2                    |
| -                   | 133.01   | CNTY  | 133 | CSAH-20                   | CR-133 ENDS, WRIGHT CO  | 0.5            | 0                      | 180  | 0.00                   | 18.0           | 0.00                             | 3                    |
| 14                  | 135.01   | CNTY  | 135 | CSAH-33                   | CSAH-32                 | 3.7            | 1                      | 244  | 0.05                   | 12.7           | 0.81                             | 2                    |
| -                   | 140.01   | CNTY  | 140 | MNTH-284                  | CSAH-11 (WEST)          | 7.2            | 14                     | 748  | 0.39                   | 15.8           | 0.28                             | 2                    |
| -                   | 151.01   | CNTY  | 151 | CR-151 BEGINS, SIBLEY CO  | CSAH-52                 | 1.0            | 0                      | 150  | 0.00                   | 9.0            | 0.00                             | 2                    |
| -                   | 151.02   | CNTY  | 151 | MNTH-5                    | CSAH-32                 | 2.1            | 0                      | 665  | 0.00                   | 11.4           | 0.00                             | 2                    |
| -                   | 152.01   | CNTY  | 152 | CSAH-51                   | CSAH-53                 | 3.0            | 0                      | 194  | 0.00                   | 9.3            | 0.00                             | 1                    |
| -                   | 153.01   | CNTY  | 153 | CSAH-50                   | MNTH-284                | 7.0            | 4                      | 201  | 0.10                   | 10.0           | 0.14                             | 2                    |
| -                   | 155.01   | CNTY  | 155 | CSAH-92                   | MNTH-7                  | 2.8            | 6                      | 233  | 0.43                   | 10.7           | 1.07                             | 2                    |

200.0 425

Critical % No Passing

**Edge Risk Legend**

- 3 -- Risky - NEITHER shoulder or good clear zone
- 2 -- Either a shoulder OR good clear zone
- 1 -- BOTH shoulder and a good clear zone

**Critical ADT Range -Lane Departure**

Min 3,000  
Max 10,000,000

**Critical Radius**

|                                     | Access      | Lane Departure | Curves      |
|-------------------------------------|-------------|----------------|-------------|
| Total                               | 2286        | 425            | 83          |
| Total Mileage                       | 200.0       | 200.0          | 200.0       |
| Years                               |             | 5              |             |
| <b>Average Density (Total/Mile)</b> | <b>11.4</b> | <b>0.43</b>    | <b>0.42</b> |

Carver County  
Rural Segment Prioritization - Road Departure Priority

Analysis Years: 2007 - 2011

| #  |          |       |     |                               |     |        |       |           |                        |                |                               |           | Totals | Tiebreakers |      |
|----|----------|-------|-----|-------------------------------|-----|--------|-------|-----------|------------------------|----------------|-------------------------------|-----------|--------|-------------|------|
|    | Corridor | Route | #   | Start                         | End | Length | ADT   | ADT Range | Lane Departure Density | Access Density | Curve Critical Radius Density | Edge Risk |        | Edge Risk   | ADT  |
| 1  | 11.03    | CSAH  | 11  | SAN FRA CSAH-40 (SOUTH)       |     | 0.9    | 2,150 |           | ★                      | ★              | ★                             | ★         | ★★★★   | 3           | 2150 |
| 2  | 33.02    | CSAH  | 33  | CSAH-50 NORWOOD/YOUNG AME     |     | 2.5    | 600   |           | ★                      | ★              | ★                             | ★         | ★★★★   | 3           | 600  |
| 3  | 24.02    | CSAH  | 24  | DREAM L CSAH-15               |     | 2.7    | 2,800 |           | ★                      | ★              | ★                             | ★         | ★★★★   | 2           | 2800 |
| 4  | 10.06    | CSAH  | 10  | 66TH ST MNTH-5                |     | 4.0    | 6,290 | ★         | ★                      | ★              | ★                             |           | ★★★★   | 1           | 6290 |
| 5  | 20.02    | CSAH  | 20  | CSAH-33 MNTH-25               |     | 5.2    | 1,025 |           | ★                      | ★              |                               | ★         | ★★★    | 3           | 1025 |
| 6  | 40.01    | CSAH  | 40  | CSAH-40 EAST UNION            |     | 7.2    | 983   |           | ★                      |                | ★                             | ★         | ★★★    | 3           | 983  |
| 7  | 10.05    | CSAH  | 10  | MNTH-7 66TH ST                |     | 1.6    | 4,500 | ★         | ★                      |                |                               | ★         | ★★★★   | 2           | 4500 |
| 8  | 11.07    | CSAH  | 11  | MNTH-5 (MNTH-7, HENNEPIN CO   |     | 2.8    | 2,250 |           | ★                      |                | ★                             | ★         | ★★★★   | 2           | 2250 |
| 9  | 40.03    | CSAH  | 40  | EAST UN CSAH-11 (SOUTH)       |     | 2.1    | 1,550 |           |                        | ★              | ★                             | ★         | ★★★★   | 2           | 1550 |
| 10 | 30.01    | CSAH  | 30  | CSAH-30 CSAH-33 (SOUTH)       |     | 1.9    | 1,050 |           |                        |                | ★                             | ★         | ★★★★   | 2           | 1050 |
| 11 | 36.02    | CSAH  | 36  | COLOGN USTH-212               |     | 1.3    | 870   |           | ★                      |                | ★                             | ★         | ★★★★   | 2           | 870  |
| 12 | 43.02    | CSAH  | 43  | CSAH-10 TELLERS RD            |     | 1.7    | 783   |           |                        | ★              | ★                             | ★         | ★★★★   | 2           | 783  |
| 13 | 123.01   | CNTY  | 123 | MNTH-7 CR-122                 |     | 3.7    | 245   |           |                        | ★              | ★                             | ★         | ★★★★   | 2           | 245  |
| 14 | 135.01   | CNTY  | 135 | CSAH-33 CSAH-32               |     | 3.7    | 244   |           |                        | ★              | ★                             | ★         | ★★★★   | 2           | 244  |
| 15 | 11.04    | CSAH  | 11  | CSAH-40 CSAH-61               |     | 2.8    | 5,803 | ★         | ★                      |                | ★                             |           | ★★★★   | 1           | 5803 |
| 16 | 92.01    | CSAH  | 92  | MNTH-5 CSAH-92 ENDS, HENN C   |     | 2.5    | 5,530 | ★         | ★                      |                | ★                             |           | ★★★★   | 1           | 5530 |
| 17 | 10.04    | CSAH  | 10  | WATERT(MNTH-7                 |     | 3.4    | 3,850 | ★         | ★                      |                | ★                             |           | ★★★★   | 1           | 3850 |
| 18 | 20.04    | CSAH  | 20  | WATERT(CSAH-20 ENDS, HENN C   |     | 2.9    | 3,350 | ★         | ★                      | ★              |                               |           | ★★★★   | 1           | 3350 |
| 19 | 43.01    | CSAH  | 43  | CSAH-50 CSAH-10 (EAST)        |     | 6.6    | 1,310 |           |                        | ★              | ★                             | ★         | ★★★★   | 1           | 1310 |
| 20 | 30.05    | CSAH  | 30  | MNTH-25 CSAH-10               |     | 3.9    | 2,450 |           | ★                      |                |                               | ★         | ★★     | 3           | 2450 |
| 21 | 11.05    | CSAH  | 11  | CSAH-61 CSAH-14               |     | 3.6    | 2,170 |           |                        | ★              |                               | ★         | ★★     | 3           | 2170 |
| 22 | 53.01    | CSAH  | 53  | CSAH-53 USTH-212              |     | 6.5    | 1,770 |           | ★                      |                |                               | ★         | ★★     | 3           | 1770 |
| 23 | 133.01   | CNTY  | 133 | CSAH-20 CR-133 ENDS, WRIGHT ( |     | 0.5    | 180   |           |                        | ★              |                               | ★         | ★★     | 3           | 180  |
| 24 | 30.03    | CSAH  | 30  | NEW GEFMAYER CORP LIMIT       |     | 2.2    | 1,705 |           | ★                      |                |                               | ★         | ★★     | 2           | 1705 |
| 25 | 10.01    | CSAH  | 10  | CSAH-10 WATERTOWN CORP LIM    |     | 0.4    | 1,400 |           |                        | ★              |                               | ★         | ★★     | 2           | 1400 |
| 26 | 50.06    | CSAH  | 50  | EAST UN SAN FRANCISCO TWSP    |     | 0.7    | 1,400 |           |                        | ★              |                               | ★         | ★★     | 2           | 1400 |
| 27 | 32.02    | CSAH  | 32  | MNTH-25 CSAH-10               |     | 3.4    | 1,375 |           |                        | ★              |                               | ★         | ★★     | 2           | 1375 |
| 28 | 140.01   | CNTY  | 140 | MNTH-28 CSAH-11 (WEST)        |     | 7.2    | 748   |           |                        | ★              |                               | ★         | ★★     | 2           | 748  |
| 29 | 151.02   | CNTY  | 151 | MNTH-5 CSAH-32                |     | 2.1    | 665   |           |                        | ★              |                               | ★         | ★★     | 2           | 665  |
| 30 | 127.01   | CNTY  | 127 | CSAH-24 CSAH-20               |     | 1.7    | 275   |           |                        | ★              |                               | ★         | ★★     | 2           | 275  |
| 31 | 155.01   | CNTY  | 155 | CSAH-92 MNTH-7                |     | 2.8    | 233   |           |                        |                | ★                             | ★         | ★★     | 2           | 233  |
| 32 | 131.01   | CNTY  | 131 | USTH-21(CSAH-34               |     | 1.7    | 185   |           |                        | ★              |                               | ★         | ★★     | 2           | 185  |
| 33 | 10.08    | CSAH  | 10  | CSAH-59 CHASKA CORP LIMIT     |     | 7.1    | 6,570 | ★         | ★                      |                |                               |           | ★★     | 1           | 6570 |
| 34 | 11.02    | CSAH  | 11  | SAN FRA SAN FRANCISCO TWSP    |     | 2.9    | 2,643 |           | ★                      |                | ★                             |           | ★★     | 1           | 2643 |
| 35 | 27.02    | CSAH  | 27  | WATERT(CSAH-27 ENDS, WRIGHT   |     | 1.1    | 1,815 |           | ★                      |                | ★                             |           | ★★     | 1           | 1815 |
| 36 | 33.05    | CSAH  | 33  | MNTH-25 NEW GERMANY CL        |     | 8.2    | 1,388 |           | ★                      |                | ★                             |           | ★★     | 1           | 1388 |
| 37 | 50.01    | CSAH  | 50  | CSAH-50 HAMBURG CORP LIMIT    |     | 1.9    | 466   |           |                        |                |                               | ★         | ★      | 2           | 466  |
| 38 | 153.01   | CNTY  | 153 | CSAH-50 MNTH-284              |     | 7.0    | 201   |           |                        |                |                               | ★         | ★      | 2           | 201  |
| 39 | 151.01   | CNTY  | 151 | CR-151 B CSAH-52              |     | 1.0    | 150   |           |                        |                |                               | ★         | ★      | 2           | 150  |
| 40 | 122.01   | CNTY  | 122 | CSAH-33 CR-123                |     | 5.9    | 963   |           |                        | ★              |                               |           | ★      | 1           | 963  |
| 41 | 50.04    | CSAH  | 50  | S JCT CSEAST UNION            |     | 8.0    | 653   |           |                        | ★              |                               |           | ★      | 1           | 653  |
| 42 | 32.01    | CSAH  | 32  | CSAH-30 MNTH-25               |     | 5.5    | 647   |           |                        | ★              |                               |           | ★      | 1           | 647  |
| 43 | 23.02    | CSAH  | 23  | 58TH ST MNTH-7                |     | 0.5    | 630   |           |                        | ★              |                               |           | ★      | 1           | 630  |
| 44 | 33.01    | CSAH  | 33  | CSAH-33 CSAH-50 (EAST)        |     | 1.0    | 390   |           |                        | ★              |                               |           | ★      | 1           | 390  |
| 45 | 52.01    | CSAH  | 52  | CSAH-52 CSAH-40               |     | 8.0    | 323   |           |                        | ★              |                               |           | ★      | 1           | 323  |
| 46 | 41.01    | CSAH  | 41  | CSAH-52 CSAH-36               |     | 7.3    | 220   |           |                        |                | ★                             |           | ★      | 1           | 220  |
| 47 | 34.01    | CSAH  | 34  | CSAH-34 MNTH-25               |     | 4.7    | 528   |           |                        | ★              |                               |           | ★      | 0           | 528  |
| 48 | 33.07    | CSAH  | 33  | NEW GEFCSAH-33 ENDS; WRIGHT   |     | 6.0    | 2,013 |           |                        |                |                               |           | ★      | 1           | 2013 |
| 49 | 20.01    | CSAH  | 20  | CSAH-20 CSAH-33 (NORTH)       |     | 2.0    | 1,000 |           |                        |                |                               |           | ★      | 1           | 1000 |
| 50 | 31.02    | CSAH  | 31  | CSAH-50 CSAH-31               |     | 2.5    | 940   |           |                        |                |                               |           | ★      | 1           | 940  |
| 51 | 51.01    | CSAH  | 51  | CSAH-52 MNTH-5                |     | 9.0    | 734   |           |                        |                |                               |           | ★      | 1           | 734  |
| 52 | 50.03    | CSAH  | 50  | HAMBUR N JCT CSAH-51          |     | 5.2    | 727   |           |                        |                |                               |           | ★      | 1           | 727  |
| 53 | 21.01    | CSAH  | 21  | MNTH-7 CSAH-21 ENDS, WRIGHT   |     | 5.0    | 720   |           |                        |                |                               |           | ★      | 1           | 720  |
| 54 | 31.01    | CSAH  | 31  | CSAH-31 CSAH-50 (EAST)        |     | 1.0    | 310   |           |                        |                |                               |           | ★      | 1           | 310  |
| 55 | 152.01   | CNTY  | 152 | CSAH-51 CSAH-53               |     | 3.0    | 194   |           |                        |                |                               |           | ★      | 1           | 194  |

Total Stars -- 7 21 28 21 29  
% That Gets Star -- 13% 38% 51% 38% 53%

|       | #  | %    | Mileage | %    |
|-------|----|------|---------|------|
| ★★★★★ | 0  | 0%   | 0.0     | 0%   |
| ★★★★  | 4  | 7%   | 10.1    | 5%   |
| ★★★   | 15 | 27%  | 49.4    | 25%  |
| ★★    | 17 | 31%  | 56.0    | 28%  |
| ★     | 11 | 20%  | 50.8    | 25%  |
|       | 8  | 15%  | 33.7    | 17%  |
|       | 55 | 100% | 200.0   | 100% |

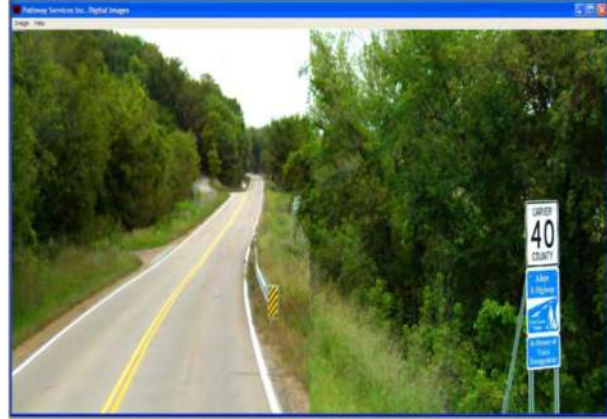
Stars  
ADT Range - If segment has an ADT in the range of most at risk ADT based on ATP totals. (> 3000)  
Lane Departure Density - If segment has higher road departure density than the county average (0.43).  
Access Density - If segment has access density greater than the county average (11.4).  
Curve Critical Radius Density - If segment has higher density of curves with critical radius than the county average (0.42).  
Edge Risk Assessment - Edge risk of 2 or 3, based on assessment of roadway edge and clear zone.

# CSAH 40 from CSAH-40 BEGINS, SIBLEY CO to EAST UNION Project

Agency: Carver County

## Roadway Data

Type: CSAH  
 Number: 40  
Verbal  
 Start: CSAH-40 BEGINS, SIBLEY CO  
 End: EAST UNION  
 City/Rural: Rural  
 County: Carver  
 ATP: Metro  
 ADT: 983  
 Facility Type: 2-Lane  
 Lane Width: 12  
 Speed Limit: 55  
 Shoulder Width: 2-3'  
 Shoulder Type: gravel  
 Length (miles): 7.2  
 Rumble Installed: no



## Crash Data

2007-2011 MnCMAT Crash Data

5 years

|                             | Total | Lane Dept | K+A  |
|-----------------------------|-------|-----------|------|
| Crashes                     | 57    | 45        | 14   |
| Density (per mile per year) | 1.58  | 1.25      | 0.39 |
| Rate (per MVM)              | 4.41  | 3.48      | 1.08 |

## Ranking Criteria

|                               | Value | Critical | Road Departure<br>Risk Ranking |
|-------------------------------|-------|----------|--------------------------------|
| ADT Range                     | 983   | > 3,000  |                                |
| Lane Departure Density        | 1.25  | 0.43     | ★                              |
| Access Density                | 9.3   | 11.40    |                                |
| Curve Critical Radius Density | 1.39  | 0.42     | ★                              |
| Edge Risk                     | 3     | 2 or 3   | ★                              |
|                               |       |          | ★ ★ ★                          |

## Short List of Strategies Considered

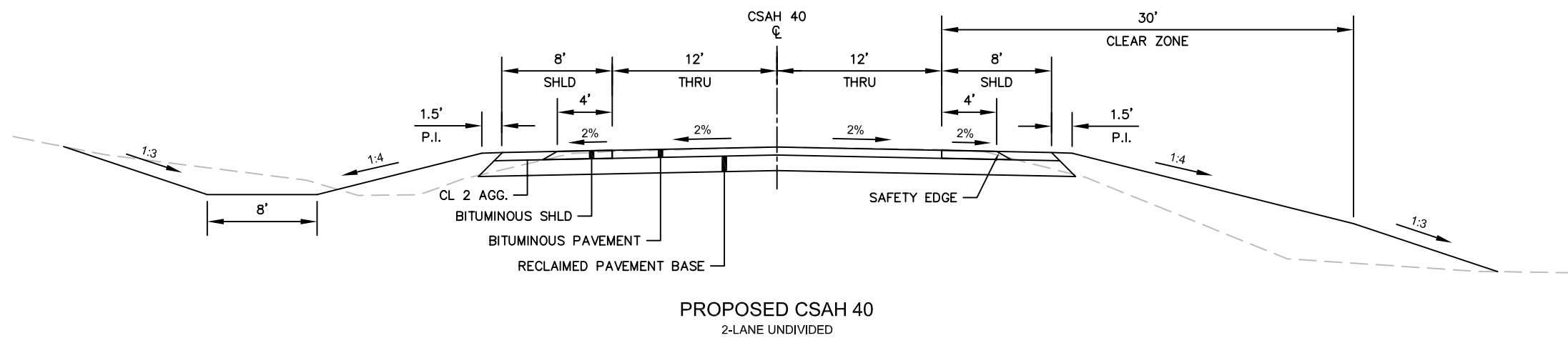
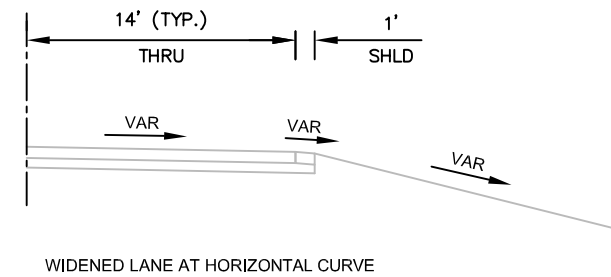
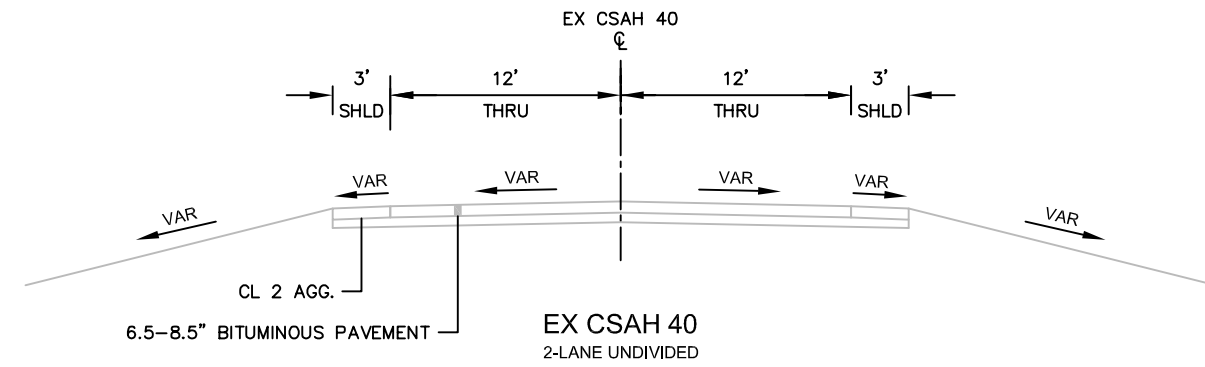
| Description                          | Type      | Cost per mi | Mileage | Cost      | Notes - County preference to use 2' shoulder paving and rumble strips instead of rumble stripEs. |
|--------------------------------------|-----------|-------------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 2' Shoulder Pave+RS+Safety Wedge     | Proactive | \$40,000    | 7.2     | \$288,000 |                                                                                                  |
| Rumble Strip                         | Proactive | \$3,000     | 0.0     | \$0       |                                                                                                  |
| Rumble StripE                        | Proactive | \$3,500     | 0.0     | \$0       |                                                                                                  |
| 6" Edge Lines                        | Proactive | \$650       | 0.0     | \$0       |                                                                                                  |
| Ground In Wet-Reflective Markings    | Proactive | \$8,500     | 0.0     | \$0       |                                                                                                  |
| Center Line Rumble Strip             | Proactive | \$3,000     | 0.0     | \$0       |                                                                                                  |
| 4' Buffer w/Centerline Rumble Strips | Proactive | \$150,000   | 0.0     | \$0       |                                                                                                  |
| 12' Painted Median w/Left Turn Lanes | Proactive | \$500,000   | 0.0     | \$0       |                                                                                                  |

## Implementation Cost

|                                         |                           |                  |
|-----------------------------------------|---------------------------|------------------|
|                                         | Federal Funds             | \$259,200        |
| Local Match (10% of Total project cost) |                           | \$28,800         |
|                                         | <b>Total Project Cost</b> | <b>\$288,000</b> |

Attachment E:

Proposed Typical Sections



DRAFT 4/8/2021

Attachment F:

Crash Modification Factors (CMFs)



# CMF / CRF Details

CMF ID: 6371

Widen shoulder (paved) (from 0 to 8 ft)

Description:

Prior Condition: No paved shoulder

Category: Shoulder treatments

Study: [Safety Effects of Shoulder Paving for Rural and Urban Interstate, Multilane, and Two-Lane Highways, Li et al., 2013](#)

|                      |                                                                                                    |
|----------------------|----------------------------------------------------------------------------------------------------|
|                      |                                                                                                    |
| Star Quality Rating: | <div><div><div></div></div><div><div>✖</div>Score</div></div> <a href="#">[View score details]</a> |

| Crash Modification Factor (CMF) |      |
|---------------------------------|------|
| Value:                          | 0.92 |
| Adjusted Standard Error:        |      |
| Unadjusted Standard Error:      | 0.01 |

| Crash Reduction Factor (CRF) |                                                       |
|------------------------------|-------------------------------------------------------|
| Value:                       | 8 (This value indicates a <b>decrease</b> in crashes) |
| Adjusted Standard Error:     |                                                       |
| Unadjusted Standard Error:   | 1                                                     |

| Applicability                           |                                                         |
|-----------------------------------------|---------------------------------------------------------|
| Crash Type:                             | Fixed object,Head on,Run off road,Sideswipe             |
| Crash Severity:                         | A (serious injury),B (minor injury),C (possible injury) |
| Roadway Types:                          | Not specified                                           |
| Number of Lanes:                        | 2                                                       |
| Road Division Type:                     |                                                         |
| Speed Limit:                            |                                                         |
| Area Type:                              | Rural                                                   |
| Traffic Volume:                         |                                                         |
| Time of Day:                            | All                                                     |
| If countermeasure is intersection-based |                                                         |
| Intersection Type:                      |                                                         |
| Intersection Geometry:                  |                                                         |
| Traffic Control:                        |                                                         |
| Major Road Traffic Volume:              |                                                         |
| Minor Road Traffic Volume:              |                                                         |
| Development Details                     |                                                         |
| Date Range of Data Used:                | 2000 to 2006                                            |
| Municipality:                           |                                                         |
| State:                                  | IL                                                      |
| Country:                                | USA                                                     |
| Type of Methodology Used:               | 2                                                       |

|                          |  |
|--------------------------|--|
| <b>Sample Size Used:</b> |  |
|--------------------------|--|

| <b>Other Details</b> |  |
|----------------------|--|
|----------------------|--|

|                                           |    |
|-------------------------------------------|----|
| <b>Included in Highway Safety Manual?</b> | No |
|-------------------------------------------|----|

|                                     |             |
|-------------------------------------|-------------|
| <b>Date Added to Clearinghouse:</b> | Mar-11-2015 |
|-------------------------------------|-------------|

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Comments:</b> | Crash type is "Run-off-road right, then head-on and sideswiped with a vehicle in the opposite direction; Run-off-road right, then sideswiped with a vehicle in the same direction of multilane highways; Run-off-road right, then collided with fixed object on the right; Run-off-road right, then collided with fixed object on the left; Run-off-road right, then overturned in road or roadside involving single vehicle; and Run-off-road right, then overturned in road or roadside involving multiple vehicles" The number of crashes in the after period were not reported in this study, however, they have been recorded as 300 to give 10 points as a benefit of doubt for one or more of the following: (1) number of miles/sites in the reference/treatment group, (2) number of crashes in the references/treatment group, (3) reporting AADTs for the aggregate dataset but not for the disaggregate dataset used for CMF development. |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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## CMF / CRF Details

**CMF ID: 6377**

**Widen shoulder (paved) (from 0 to 8 ft)**

**Description:**

**Prior Condition:** No paved shoulder

**Category:** Shoulder treatments

**Study:** [\*Safety Effects of Shoulder Paving for Rural and Urban Interstate, Multilane, and Two-Lane Highways, Li et al., 2013\*](#)

**Star Quality Rating:**



[\[View score details\]](#)

### Crash Modification Factor (CMF)

**Value:**

0.57

**Adjusted Standard Error:**

**Unadjusted Standard Error:**

0.03

### Crash Reduction Factor (CRF)

**Value:**

43 (This value indicates a **decrease** in crashes)

**Adjusted Standard Error:**

|                                   |   |
|-----------------------------------|---|
| <b>Unadjusted Standard Error:</b> | 3 |
|-----------------------------------|---|

| <b>Applicability</b>       |                                             |
|----------------------------|---------------------------------------------|
| <b>Crash Type:</b>         | Fixed object,Head on,Run off road,Sideswipe |
| <b>Crash Severity:</b>     | 0 (property damage only)                    |
| <b>Roadway Types:</b>      | Not specified                               |
| <b>Number of Lanes:</b>    | 2                                           |
| <b>Road Division Type:</b> |                                             |
| <b>Speed Limit:</b>        |                                             |
| <b>Area Type:</b>          | Rural                                       |
| <b>Traffic Volume:</b>     |                                             |
| <b>Time of Day:</b>        | All                                         |

| <i>If countermeasure is intersection-based</i> |  |
|------------------------------------------------|--|
| <b>Intersection Type:</b>                      |  |
| <b>Intersection Geometry:</b>                  |  |
| <b>Traffic Control:</b>                        |  |
| <b>Major Road Traffic Volume:</b>              |  |
| <b>Minor Road Traffic Volume:</b>              |  |

| <b>Development Details</b>      |              |
|---------------------------------|--------------|
| <b>Date Range of Data Used:</b> | 2000 to 2006 |
| <b>Municipality:</b>            |              |
| <b>State:</b>                   | IL           |

|                                  |     |
|----------------------------------|-----|
| <b>Country:</b>                  | USA |
| <b>Type of Methodology Used:</b> | 2   |
| <b>Sample Size Used:</b>         |     |

| Other Details                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Included in Highway Safety Manual?</b> | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Date Added to Clearinghouse:</b>       | Mar-11-2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Comments:</b>                          | Crash type is "Run-off-road right, then head-on and sideswiped with a vehicle in the opposite direction; Run-off-road right, then sideswiped with a vehicle in the same direction of multilane highways; Run-off-road right, then collided with fixed object on the right; Run-off-road right, then collided with fixed object on the left; Run-off-road right, then overturned in road or roadside involving single vehicle; and Run-off-road right, then overturned in road or roadside involving multiple vehicles" The number of crashes in the after period were not reported in this study, however, they have been recorded as 300 to give 10 points as a benefit of doubt for one or more of the following: (1) number of miles/sites in the reference/treatment group, (2) number of crashes in the references/treatment group, (3) reporting AADTs for the aggregate dataset but not for the disaggregate dataset used for CMF development. |

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## CMF / CRF Details

CMF ID: 9204

### Install safety edge treatment

**Description:** The safety edge is a low-cost treatment that is implemented in conjunction with pavement resurfacing and is intended to help minimize drop-off-related crashes.

**Prior Condition:** Drop-off pavement edge

**Category:** Shoulder treatments

**Study:** [Development Of Crash Modification Factors For The Application Of The Safetyedge Treatment On Two-Lane Rural Roads, Donnell et al., 2017](#)

Star Quality Rating:



[\[View score details\]](#)

### Crash Modification Factor (CMF)

Value:

0.343

Adjusted Standard Error:

Unadjusted Standard Error:

0.091

### Crash Reduction Factor (CRF)

Value:

65.7 (This value indicates a **decrease** in crashes)

|                                   |     |
|-----------------------------------|-----|
| <b>Adjusted Standard Error:</b>   |     |
| <b>Unadjusted Standard Error:</b> | 9.1 |

| <b>Applicability</b>       |                                                        |
|----------------------------|--------------------------------------------------------|
| <b>Crash Type:</b>         | All                                                    |
| <b>Crash Severity:</b>     | K (fatal),A (serious injury),B (minor injury)          |
| <b>Roadway Types:</b>      | Principal Arterial Other                               |
| <b>Number of Lanes:</b>    | 2                                                      |
| <b>Road Division Type:</b> |                                                        |
| <b>Speed Limit:</b>        |                                                        |
| <b>Area Type:</b>          | Rural                                                  |
| <b>Traffic Volume:</b>     | 107 to 8368 <i>Annual Average Daily Traffic (AADT)</i> |
| <b>Time of Day:</b>        | Not specified                                          |

| <b><i>If countermeasure is intersection-based</i></b> |  |
|-------------------------------------------------------|--|
| <b>Intersection Type:</b>                             |  |
| <b>Intersection Geometry:</b>                         |  |
| <b>Traffic Control:</b>                               |  |
| <b>Major Road Traffic Volume:</b>                     |  |
| <b>Minor Road Traffic Volume:</b>                     |  |

| <b>Development Details</b>      |              |
|---------------------------------|--------------|
| <b>Date Range of Data Used:</b> | 2008 to 2014 |
| <b>Municipality:</b>            |              |

|                                  |    |
|----------------------------------|----|
| <b>State:</b>                    | PA |
| <b>Country:</b>                  |    |
| <b>Type of Methodology Used:</b> | 2  |
| <b>Sample Size Used:</b>         |    |

| Other Details                             |                                                                  |
|-------------------------------------------|------------------------------------------------------------------|
| <b>Included in Highway Safety Manual?</b> | No                                                               |
| <b>Date Added to Clearinghouse:</b>       | Jun-17-2018                                                      |
| <b>Comments:</b>                          | Excludes intersection-related crashes and animal-related crashes |

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# CMF / CRF Details

CMF ID: 9226

## Install safety edge treatment

**Description:** The safety edge is a low-cost treatment that is implemented in conjunction with pavement resurfacing and is intended to help minimize drop-off-related crashes.

**Prior Condition:** *No Prior Condition(s)*

**Category:** Shoulder treatments

**Study:** [Development Of Crash Modification Factors For The Application Of The Safetyedge Treatment On Two-Lane Rural Roads, Donnell et al., 2017](#)

| Star Quality Rating  |                                                                                                                                    |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Star Quality Rating: | <div><div><div></div><div></div><div></div><div></div><div></div></div><div>Stars</div></div> <a href="#">[View score details]</a> |

| Crash Modification Factor (CMF) |       |
|---------------------------------|-------|
| Value:                          | 0.866 |
| Adjusted Standard Error:        |       |
| Unadjusted Standard Error:      | 0.066 |

| Crash Reduction Factor (CRF) |                                                          |
|------------------------------|----------------------------------------------------------|
| Value:                       | 13.4 (This value indicates a <b>decrease</b> in crashes) |
| Adjusted Standard Error:     |                                                          |
| Unadjusted Standard Error:   | 6.6                                                      |

| Applicability                                  |                          |
|------------------------------------------------|--------------------------|
| Crash Type:                                    | Run off road             |
| Crash Severity:                                | All                      |
| Roadway Types:                                 | Principal Arterial Other |
| Number of Lanes:                               |                          |
| Road Division Type:                            |                          |
| Speed Limit:                                   |                          |
| Area Type:                                     | Rural                    |
| Traffic Volume:                                |                          |
| Time of Day:                                   | Not specified            |
| <i>If countermeasure is intersection-based</i> |                          |
| Intersection Type:                             |                          |
| Intersection Geometry:                         |                          |
| Traffic Control:                               |                          |
| Major Road Traffic Volume:                     |                          |
| Minor Road Traffic Volume:                     |                          |

| Development Details      |                    |
|--------------------------|--------------------|
| Date Range of Data Used: | 2005 to 2014       |
| Municipality:            |                    |
| State:                   | FL, IA, NC, OH, PA |
| Country:                 |                    |

|                                  |   |
|----------------------------------|---|
| <b>Type of Methodology Used:</b> | 2 |
| <b>Sample Size Used:</b>         |   |

| Other Details                             |                                                                                                                                                                                                                                                          |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Included in Highway Safety Manual?</b> | No                                                                                                                                                                                                                                                       |
| <b>Date Added to Clearinghouse:</b>       | Jun-17-2018                                                                                                                                                                                                                                              |
| <b>Comments:</b>                          | Excludes intersection-related crashes and animal-related crashes. Includes only right-side encroachments for IA, FL, NC, and OH, and encroachments for both sides of the road in PA. Only includes sites with a with travel lane surface width 16-20 ft. |

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Attachment G:

HSIP Benefit-Cost Worksheet

**Traffic Safety Benefit-Cost Calculation**

Highway Safety Improvement Program (HSIP) Reactive Project

**A. Roadway Description**

|          |                                        |          |     |        |        |
|----------|----------------------------------------|----------|-----|--------|--------|
| Route    | CSAH 40                                | District | M   | County | Carver |
| Begin RP | N/A                                    | End RP   | N/A | Miles  | 3.300  |
| Location | Carver CSAH 40 from CSAH 52 to CSAH 50 |          |     |        |        |

**B. Project Description**

|                      |                                               |                       |      |  |  |
|----------------------|-----------------------------------------------|-----------------------|------|--|--|
| Proposed Work        | Widen shoulder, install safety edge treatment |                       |      |  |  |
| Project Cost*        | \$4,910,400                                   | Installation Year     | 2026 |  |  |
| Project Service Life | 20 years                                      | Traffic Growth Factor | 2.0% |  |  |

\* exclude Right of Way from Project Cost

**C. Crash Modification Factor**

|      |                              |            |                                                                                      |
|------|------------------------------|------------|--------------------------------------------------------------------------------------|
| 0.92 | Fatal (K) Crashes            | Reference  | CMF ID 6371 and 6377 for widen shoulders (paved) (0 to 8 ft)                         |
| 0.92 | Serious Injury (A) Crashes   |            |                                                                                      |
| 0.92 | Moderate Injury (B) Crashes  | Crash Type | Run-off-road crashes, ID 6371 for Type K, A, and B crashes and ID 6377 for O crashes |
|      | Possible Injury (C) Crashes  |            |                                                                                      |
| 0.57 | Property Damage Only Crashes |            | <a href="http://www.CMFclearinghouse.org">www.CMFclearinghouse.org</a>               |

**D. Crash Modification Factor (optional second CMF)**

|      |                              |            |                                                                                            |
|------|------------------------------|------------|--------------------------------------------------------------------------------------------|
| 0.34 | Fatal (K) Crashes            | Reference  | CMF ID 9204 and 9266 for install safety edge treatment                                     |
| 0.34 | Serious Injury (A) Crashes   |            |                                                                                            |
| 0.34 | Moderate Injury (B) Crashes  | Crash Type | All crash types, ID 9204 for Type K, A, and B crashes and ID 9266 for all crash severities |
| 0.87 | Possible Injury (C) Crashes  |            |                                                                                            |
| 0.87 | Property Damage Only Crashes |            | <a href="http://www.CMFclearinghouse.org">www.CMFclearinghouse.org</a>                     |

**E. Crash Data**

|                |                   |             |            |         |
|----------------|-------------------|-------------|------------|---------|
| Begin Date     | 1/1/2019          | End Date    | 12/31/2021 | 3 years |
| Data Source    |                   |             |            |         |
| Crash Severity | CMF ID 6371, 6377 | CMF ID 9204 |            |         |
| K crashes      |                   |             |            |         |
| A crashes      |                   |             |            |         |
| B crashes      | 4                 | 4           |            |         |
| C crashes      |                   |             |            |         |
| PDO crashes    | 5                 | 5           |            |         |

**F. Benefit-Cost Calculation**

|                                                                                                                 |                         |                         |
|-----------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------|
| \$5,396,865                                                                                                     | Benefit (present value) | <b>B/C Ratio = 1.10</b> |
| \$4,910,400                                                                                                     | Cost                    |                         |
| <i>Proposed project expected to reduce 2 crashes annually, 0 of which involving fatality or serious injury.</i> |                         |                         |

## F. Analysis Assumptions

| Crash Severity | Crash Cost  |
|----------------|-------------|
| K crashes      | \$1,500,000 |
| A crashes      | \$750,000   |
| B crashes      | \$230,000   |
| C crashes      | \$120,000   |
| PDO crashes    | \$13,000    |

Link: [mndot.gov/planning/program/appendix\\_a.html](http://mndot.gov/planning/program/appendix_a.html)

Real Discount Rate: 0.7% Default

Traffic Growth Rate: 2.0% Revised

Project Service Life: 20 years Revised

## G. Annual Benefit

| Crash Severity | Crash Reduction | Annual Reduction | Annual Benefit |
|----------------|-----------------|------------------|----------------|
| K crashes      | 0.00            | 0.00             | \$0            |
| A crashes      | 0.00            | 0.00             | \$0            |
| B crashes      | 2.95            | 0.98             | \$226,013      |
| C crashes      | 0.00            | 0.00             | \$0            |
| PDO crashes    | 2.82            | 0.94             | \$12,220       |

**\$238,233**

## H. Amortized Benefit

| Year | Crash Benefits | Present Value |
|------|----------------|---------------|
| 2026 | \$238,233      | \$238,233     |
| 2027 | \$242,998      | \$241,309     |
| 2028 | \$247,858      | \$244,424     |
| 2029 | \$252,815      | \$247,579     |
| 2030 | \$257,871      | \$250,776     |
| 2031 | \$263,029      | \$254,013     |
| 2032 | \$268,289      | \$257,292     |
| 2033 | \$273,655      | \$260,614     |
| 2034 | \$279,128      | \$263,978     |
| 2035 | \$284,711      | \$267,386     |
| 2036 | \$290,405      | \$270,838     |
| 2037 | \$296,213      | \$274,334     |
| 2038 | \$302,137      | \$277,876     |
| 2039 | \$308,180      | \$281,463     |
| 2040 | \$314,344      | \$285,097     |
| 2041 | \$320,631      | \$288,777     |
| 2042 | \$327,043      | \$292,505     |
| 2043 | \$333,584      | \$296,281     |
| 2044 | \$340,256      | \$300,106     |
| 2045 | \$347,061      | \$303,981     |
| 0    | \$0            | \$0           |
| 0    | \$0            | \$0           |
| 0    | \$0            | \$0           |
| 0    | \$0            | \$0           |
| 0    | \$0            | \$0           |
| 0    | \$0            | \$0           |
| 0    | \$0            | \$0           |
| 0    | \$0            | \$0           |
| 0    | \$0            | \$0           |
| 0    | \$0            | \$0           |
| 0    | \$0            | \$0           |

**Total = \$5,396,865**

NOTE:

This calculation relies on the real discount rate, which accounts

|   |     |     |                                                            |
|---|-----|-----|------------------------------------------------------------|
| 0 | \$0 | \$0 | <i>for inflation. No further discounting is necessary.</i> |
| 0 | \$0 | \$0 |                                                            |

Attachment H:

Carver County Rumble Strip Policy



# *Carver County*

## *Division of Public Works*

### **RUMBLE STRIP POLICY**

**Adopted by the Carver County Board of Commissioners on March 19, 2013.**

#### **PURPOSE**

The following Policy has been established to provide uniformity and consistency in the application and installation of edge line and centerline rumble strips on Carver County's rural roadway system. This policy weighs the safety benefit with the noise nuisance associated with rumble strips, and defines when rumble strips will be used on the County roadway system.

#### **BACKGROUND**

In response to an overrepresentation of road departure and head-on crashes along the rural county highway system in Minnesota, Carver County completed a Roadway Safety Plan in 2013 which identifies a variety of potential mitigation strategies (as documented in the NCHRP 500 Series reports on implementation of AASHTO's ***Strategic Highway Safety Plan*** and in the Federal Highway Administration's Technical Memorandum on Consideration and Implementation of Proven Safety Countermeasures). Current safety-related guidance suggests that the first step in addressing road departure crashes and head-on crashes involves considering the deployment of techniques and features along road edges and centerlines that help keep vehicles on the roadway and in the appropriate lane. The techniques include enhancing pavement markings, enhancing delineation of highway curves, constructing wider or paved shoulders, providing a safety wedge as part of bituminous paving projects, installing median and barriers, and installing edge line and centerline rumble strips. Considering implementation costs and estimated effectiveness, the use of rumble strips has been selected as a targeted strategy for reducing the occurrence of road departure and head-on crashes along segments of rural county highways.

It is Carver County's long-term goal to reduce road departure and head-on crashes along all county highways utilizing the most appropriate technique. Given that the Carver County system includes approximately 270 miles of roadway, implementation costs are extremely high. This will require using a phased approach to construct and install the edge line and centerline improvements over several years, as funding permits.

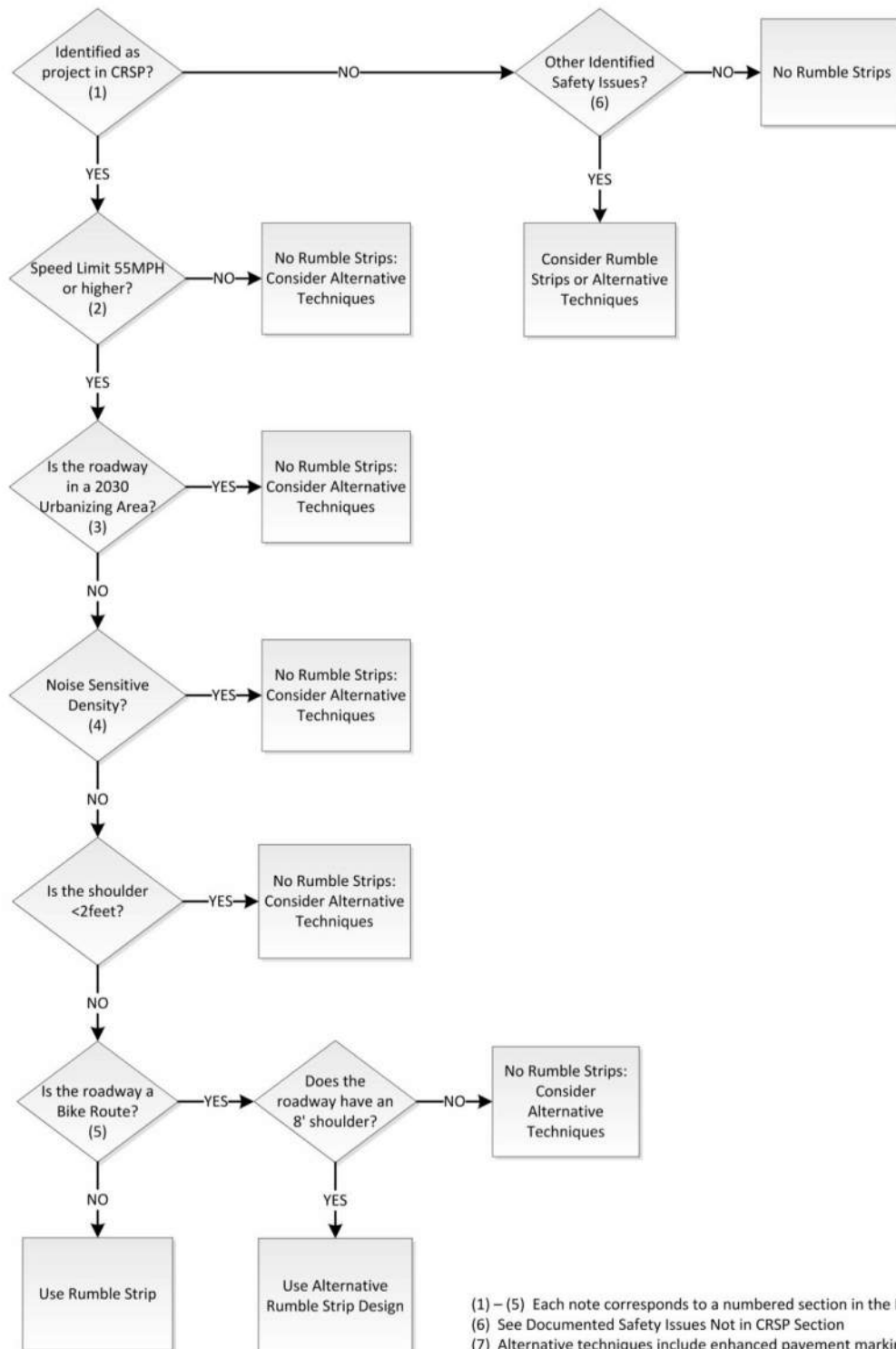
#### **POLICY**

Carver County will periodically evaluate the rural county highway system, based on the County Road Safety Plan, traffic volumes, road departure crashes, bike use, shoulder characteristics, land use, and residential density, and will establish a priority for implementation of rumble strips consistent with the following flowchart and criteria.



# Carver County Division of Public Works

## RUMBLE STRIP POLICY FLOW CHART





# *Carver County*

## *Division of Public Works*

Carver County's approach to implementing edge line enhancements will include two basic components:

1. Including safety strategies in traditional maintenance and regular construction projects.
2. Adding safety strategies by undertaking stand-alone projects that capitalize on securing state and federal highway safety improvement funds.

### **POLICY CRITERIA**

Rumble strips in the travelled way have several potential pitfalls that should be considered carefully in any decision to implement them, including the following:

- Noise that may disturb nearby residents
- Potential loss-of-control problems for motorcyclists and bicyclists
- Difficulties created for snowplow operations
- Inappropriate driver responses, such as using the opposing travel lanes to drive around the rumble strips

With this policy Carver County is trying to balance the safety benefit of rumble strips with the noise nuisance for nearby residence utilizing the following criteria:

1. If the segment of roadway has been identified in the County Road Safety Plan as a candidate for rumble strip installation. These projects have been chosen based on roadway ADT, density of lane departure crashes, access density, curve critical radius density, and edge line risk.
2. Rumble strips will not be installed if the posted speed limit is less than 55mph.
3. Rumble strips will not be installed if the segment is within a 2030 urbanizing area as determined by the Carver County Comprehension Plan.
4. If rumble strips are considered for a roadway the design will allow for a break in the rumble strips within 650 feet of a residence (see Noise Sensitive Density Guidelines Section below). A segment of rumble strips will only be installed if it is at least a 1320 foot (1/4 mile) continuous segment. Each segment will be analyzed to determine if the allowable rumble strip installation areas are worthwhile for the segment.
5. If the segment falls within an actively used Bicycle route, it will then be analyzed for existing shoulder widths and a possible alternative rumble strip design will be chosen (see Bicycle Design Guidelines Section below).



# *Carver County*

## *Division of Public Works*

### BICYCLE DESIGN GUIDELINES

For locations designated as bike routes or routes with regular bike traffic, also consider:

- At locations with paved shoulder, moving the rumble to the outside edge of the paved shoulder to provide space for the bicyclist to move between the roadway lane and shoulder without having to run over the rumbles
- At locations without shoulders, consider bike-friendly designs (such as 48-foot grooves with a 12-foot skip) or adding a narrow paved shoulder, moving the edge line to 11 feet, and adding the rumbles to the outside edge of the shoulder.

### NOISE SENSITIVE DENSITY GUIDELINES

*The National Cooperative Highway Research Program (NCHRP) Report 641, Guidance for the Design and Application of Shoulder and Centerline Rumble Strips*, states that terminating rumble strips 656 feet prior to a residential or urban area results in tolerable noise impacts. The report also states that a recent survey of residence show the majority of people find the external noise produced from centerline rumble strips to be acceptable or tolerable and that the potential driver safety outweighed the effect of the external noise.

### DOCUMENTED SAFETY ISSUES NOT IN COUNTY ROAD SAFETY PLAN

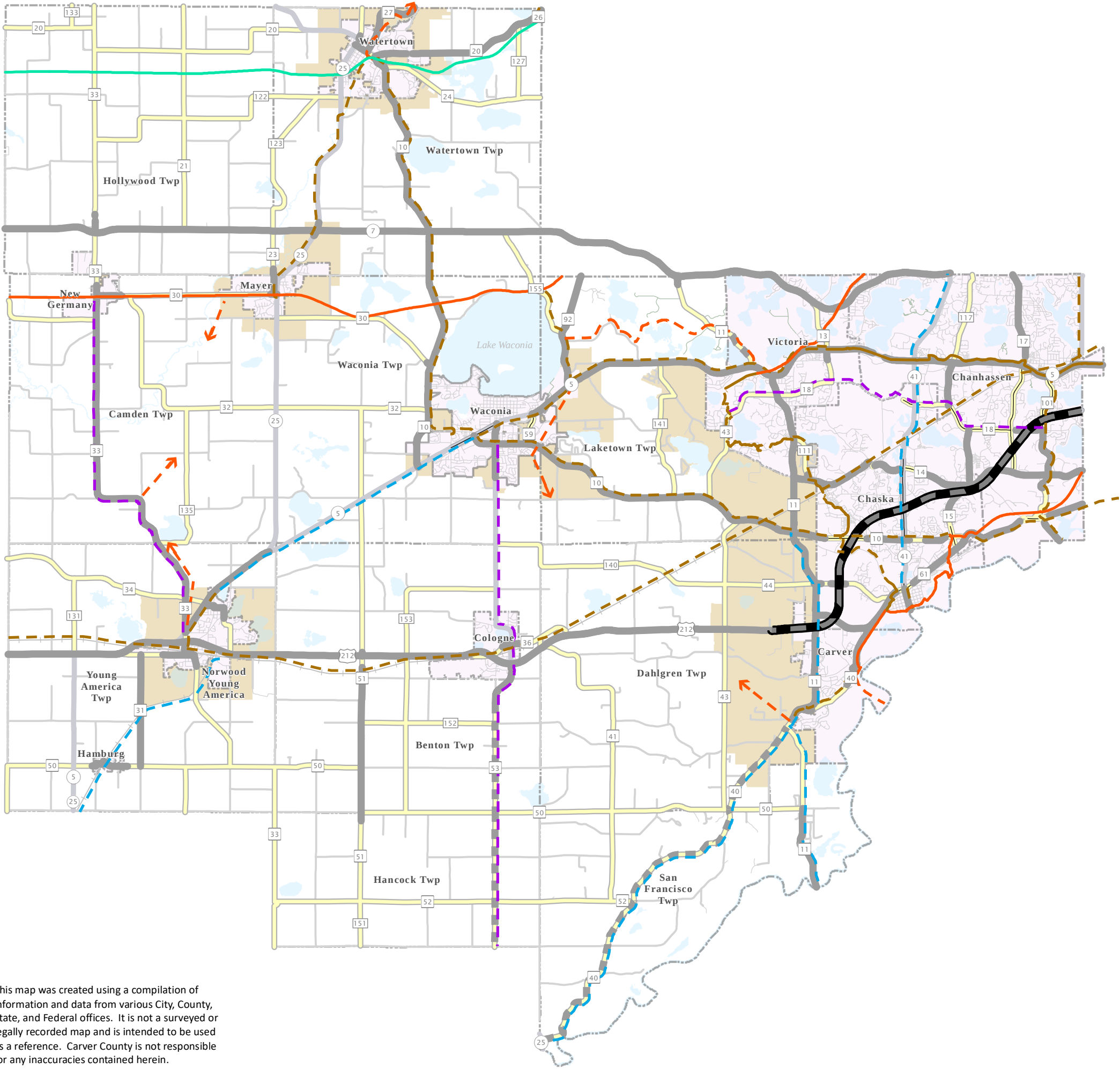
Carver County Public Works will also consider utilizing rumble strips along a segment of roadway if there is a documented safety problem. If this occurs, proper public involvement will be the main part of the project scope.

Attachment I:

Carver County Comprehensive Plan Excerpt: Planned Bikeways

# Existing and Planned On or Off-Road Bike Facilities

Figure 4.23



## Legend

### Trails

- Existing Destination State Trail
- Existing Destination Regional Trail
- Existing Linking Regional Trail

### Future Trails

- Future Destination Trail
- Future Linking Trail
- Future Local Trail
- Proposed Regional Linking Trail

### Bicycles Prohibited

### Bicycle Facilities

- Paved Road Shoulders Greater Than 4 Feet
- Shoulder Widening Projects - Resulting in Paved Shoulder Greater Than 4 Feet

### Existing Roadway Network

- 2 Lane County Road
- 4 Lane County Road
- 2 Lane Trunk Highway
- 4 Lane Trunk Highway

### City/Township Boundary

- Existing City
- City Growth Areas 2040

0 1 2 4 Miles



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