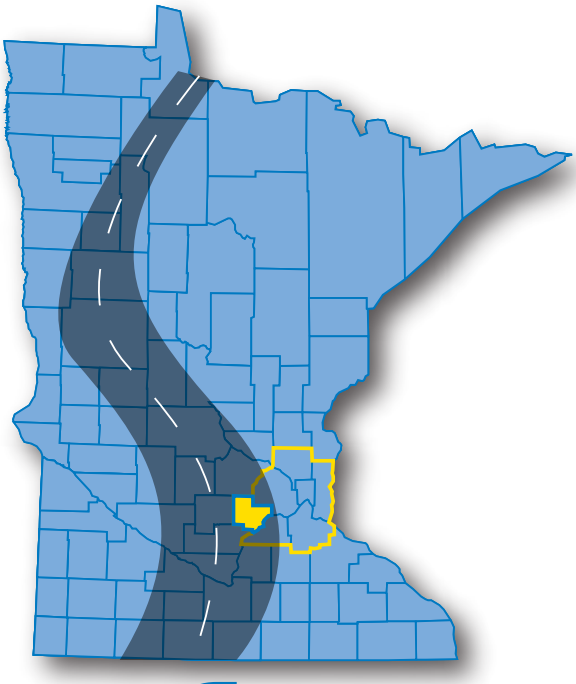
Carver County

COUNTY ROADWAY



Safety PLAN

Moving Toward **ZERO** Deaths

July 2013

CARVER COUNTY

Prepared by:
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MINNESOTA DEPARTMENT OF TRANSPORTATION

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Appendices

LIST OF ACRONYMS

"A-Injury" Crash – Serious Injury Crash
AASHTO - American Association of State Highway and Transportation Officials
AC – Alcohol Concentration
ADT – Average Daily Traffic
ATP – Area Transportation Partnerships
CEA – Critical Emphasis Area
CHSP – Comprehensive Highway Safety Plan
CME – Crash Modification Factors
County – Carver County
CPS – Child Passenger Safety
CR – County Road
CRSP – County Roadway Safety Plan
CSAH – County State-Aid Highway
DPS – Department of Public Safety
DWI – Driving While Intoxicated
EMS – Emergency Medical Service
FHWA – Federal Highway Administration
GDL – Graduated Driver's License
HMVMT – Hundred Million Vehicle Miles Travelled
HSIP – Highway Safety Improvement Program
"K" Severity Crash – Fatal crash
MnDOT – Minnesota Department of Transportation
MnMUTCD – Minnesota Manual on Uniform Traffic Control Devices
MSAS –Municipal State Aid System Highway
NCHRP - National Cooperative Highway Research Program
NETS – Network of Employers for Traffic Safety
NHTSA – National Highway Traffic Safety Administration
OTS – Office of Traffic Safety
Plan – Safety Plan for Carver County; County Roadway Safety Plan
SAFETEA-LU – Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SHSP – Strategic Highway Safety Plan
TH – Trunk Highway
TZD – Toward Zero Deaths

Executive Summary

This Safety Plan for Carver County (Plan) was prepared as part of the Minnesota statewide highway safety planning process. The Plan was data driven, with a goal to reduce severe crashes (defined as those involving fatalities and serious injuries) by documenting at-risk locations, identifying effective low-cost safety improvement strategies, and better positioning Carver County (County) to compete for available safety funds. The Plan includes a description of the connection to safety planning efforts at the national, State (through Minnesota's Strategic Highway Safety Plan and the Highway Safety Improvement Program), and regional (all counties in the Metro Area) levels.

This Plan was commissioned by the Minnesota Department of Transportation (MnDOT) as a tool to assist counties in submitting proactive low-cost systematic safety projects for MnDOT to fund as part of the Highway Safety Improvement Program (HSIP). This Plan is not intended to be a complete safety plan for Carver County, because there are other safety improvement strategies that are considered high-cost or low-cost that are also effective, but cannot be systematically applied across a county road system. While this Plan addresses many of the safety concerns at high risk locations within the County, other equally important projects likely exist that the County will identify after this report is complete.

Specifically, this Carver County Safety Plan includes the following:

- A description of the Safety Emphasis Areas.
- Identification of a short list of high-priority, low-cost Safety Strategies.
- Documentation of at-risk locations along the County's highway system that are considered candidates for safety investment. At-risk locations include roadway segments, horizontal curves, and intersections with multiple severe crashes or with roadway geometry and traffic characteristics similar to other locations in Minnesota where severe crashes have occurred.
- Development of over $6 million of suggested safety projects. These projects represent the application of high-priority safety strategies at the at-risk locations.
- Discussion of behavioral crash statistics, potential safety strategies and current statewide resources available for implementation of behavioral safety strategies.

The information in this Plan is consistent with best practices in safety planning as presented in guidance prepared by the Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO), and the National Cooperative Highway Research Program (NCHRP). This information is provided to Carver County in an effort to reduce the number of severe crashes on the County's highway system; it is understood that the final decision to implement any of the suggested projects resides with Carver County officials.

It should also be noted that the rankings of County roadway facilities are based on a comparison to documented risk factors. There is no expectation or requirement that Carver County pursue safety projects in the exact ranking order. The ranking suggests a general priority, and it is understood that actual project development decisions will be made by County staff based on consideration of economic, social, and political issues, as well as in coordination with other projects already in the County's Capital Improvement Program.

It should also be noted that some of the at-risk locations and suggested safety projects involve the intersection of a County roadway and a State trunk highway. It is acknowledged that the County does not have the authority to implement projects on the State's right-of-way. The County is encouraged to coordinate with MnDOT to pursue a partnership that identifies a path toward implementation. This Plan (1) does NOT set requirements or mandates, (2) is NOT a standard, and (3) is neither intended to be nor does it establish a legal standard of care.

To help reduce the potential exposure to claims of negligence associated with motor vehicle crashes on Carver County's highway system, the following three key points should be considered:

1. Federal law (23 U.S.C. Section 409) established that information generated as part of the statewide safety planning process is considered privileged and unavailable to the public. The privileged status includes crash data where value/detail has been added by analysts during the safety planning process (for example, computation of crash rates, disaggregation of crashes by type or severity, and documentation of contributing factors), the lists of at-risk locations, and information supporting the development and evaluation of potential safety projects. The federal law and the privileged status of the safety information was upheld by the U.S. Supreme Court in the case of Pierce County (Washington) v. Guillen (see Appendix I).

2. Minnesota tort law provides for discretionary immunity for decisions made by agency officials when there is documentation of the decision and evidence of consideration of social, economic, and political issues. To help establish immunity for decisions relative to moving forward with developing any of the suggested safety improvement projects, the County Engineer is encouraged to prepare a memo/plan of action for the County Board. This document would identify the projects selected for implementation, as well as those projects that were dismissed and the reasons that they were not chosen. A sample is provided in Appendix I.

3. Minnesota tort law also provides for official immunity for decisions made by agency staff where there is written documentation of the thought process supporting project development and implementation.

Regarding the expected life of this Plan, the shelf life of this document is limited (as with any transportation plan). This is because the distribution of crashes can change over time, just as roadway and traffic conditions change, contributing to the occurrence of crashes. This Plan contains over $6 million of potential safety projects, which could provide Carver County with a sufficient backlog of projects for up to 5 years. As a result, Carver County is encouraged to consider periodically updating this Safety Plan.

1.0 Introduction

1.1 Background

The Minnesota Department of Transportation (MnDOT), Area Transportation Partnerships (ATP) representatives, and Carver County (County) representatives have prepared this County Roadway Safety Plan (CRSP or Plan) as part of a comprehensive effort to reduce the number of fatal and life-changing injury crashes that occur on County highway systems. Eight ATPs were created by MnDOT to emphasize greater public involvement and coordination in preparing transportation plans and programs—including developing system planning and capital investment documents such as the CRSPs (see Figure 1-1).

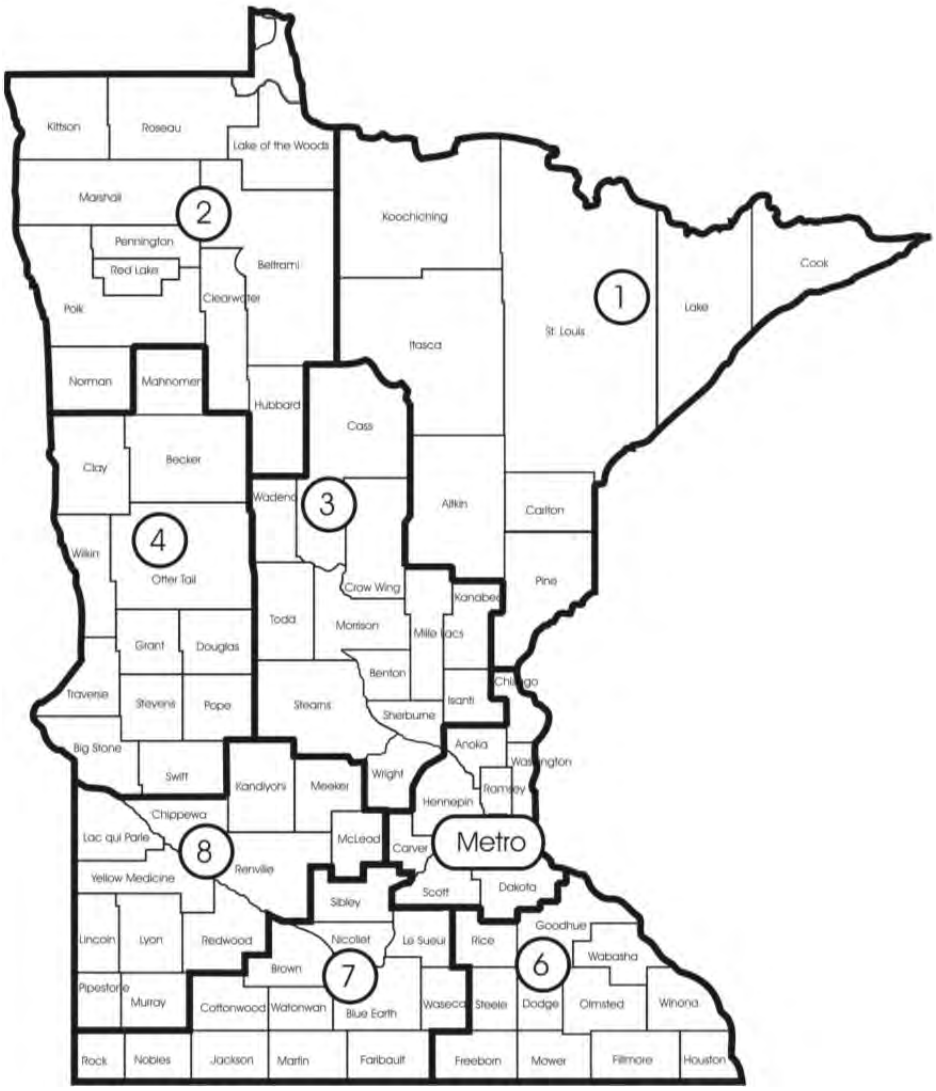


Figure 1-1
Minnesota's Eight Area Transportation Partnerships

The primary objectives of this CRSP are to identify a specific set of safety-oriented projects that implements specific strategies at specific locations, and to have these projects directly linked to the causation factors associated with the most severe crashes on the county's system of highways. These safety projects are intended to be comprehensive from the perspective of including both proactive projects developed through a system-wide risk assessment process and reactive projects developed through a site analysis process focused on high-crash locations.

This approach acknowledges that the counties in the Metro ATP have participated in a safety improvement program administered by MnDOT and the Metropolitan Council for a number of years and that their staff has experience in developing safety projects. However, this safety program has historically been almost exclusively directed toward funding reactive projects developed through site analysis. To provide the counties with a more comprehensive approach to highway safety, this Plan documents (1) the reactive projects developed by county staff and (2) the proactive projects identified through the systemic risk assessment.

It is MnDOT's intention that the Metro ATP's highway safety improvement program (HSIP) be comprehensive in nature, directing safety funds toward both the reactive and proactive projects. As a result, the proactive projects included in this Plan are intended to supplement and not replace reactive projects.

The traffic safety priorities identified in this CRSP are the result of a data-driven analysis of the more than 210,000 crashes that occurred in the Metro ATP over the 5-year period between 2007 and 2011. The primary objectives of this CRSP are to identify a specific set of safety-oriented projects (implementing specific strategies at specific locations) and to have these projects directly linked to the causation factors associated with the most severe crashes on the county highways within the ATP.

1.2 Traffic Safety – A National Perspective

Fatal and life-changing crashes are a major public health issue in the United States. In 2011, approximately 32,600 people were killed in traffic crashes—an average of 90 people killed every day—and an additional 2.5 million people were injured.

As shown in Figures 1-2 and 1-3, traffic fatalities and the fatality rate decreased significantly and steadily in the 1970s and 1980s. Since 1990, the overall national traffic fatality rate has slowly declined; the current rate is approximately 1.13 fatalities per hundred million vehicle miles travelled (HMVMT) (see Figure 1-3), near the National Goal of 1 fatality per 100 million vehicle-miles traveled, set by AASHTO in 2003.

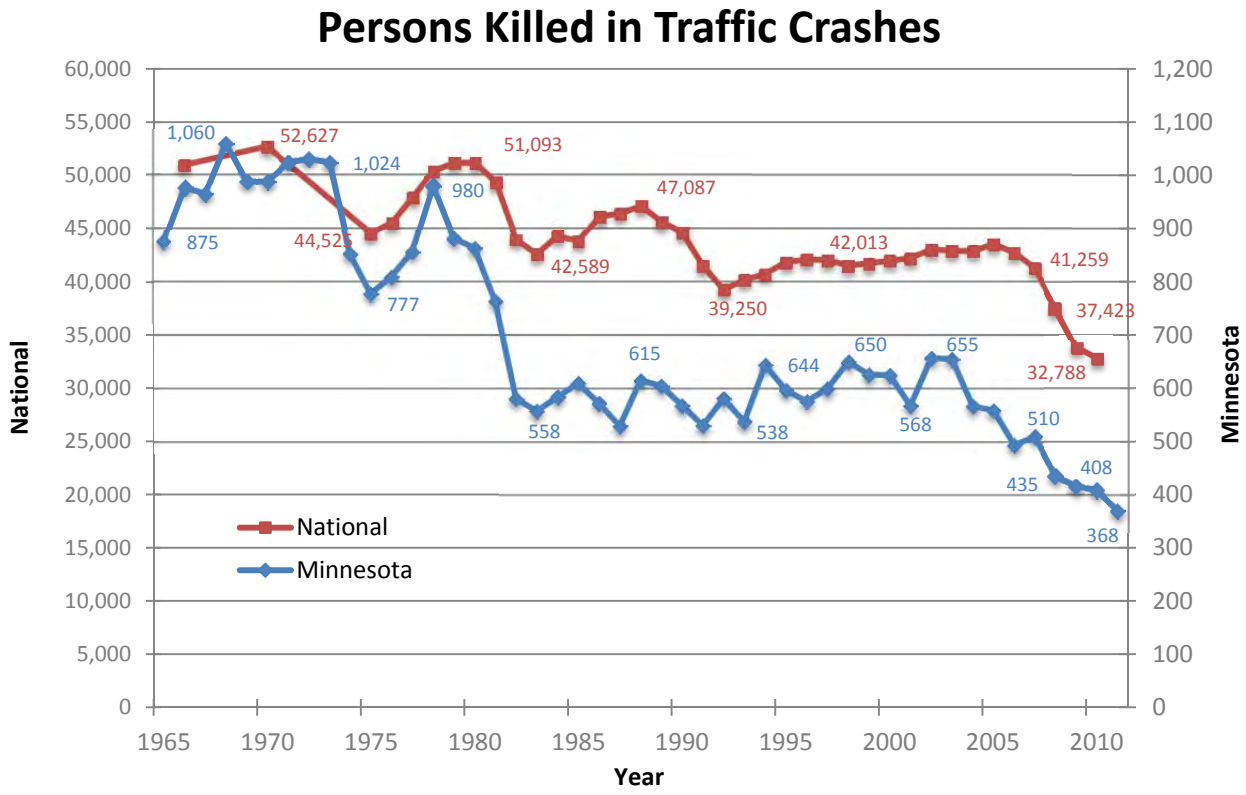


Figure 1-2
Trend in Traffic Fatalities in United States and Minnesota

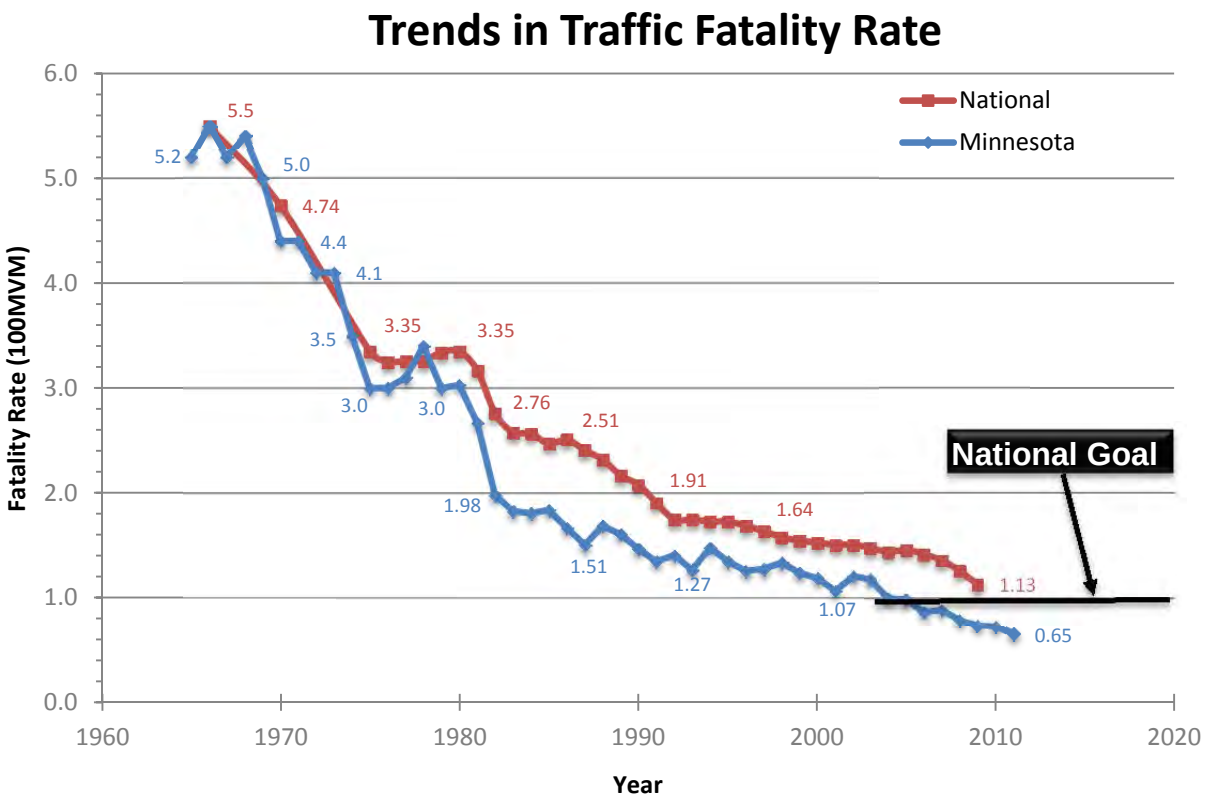


Figure 1-3
Trend in Traffic Fatality Rate in United States and Minnesota

1.2.1 AASHTO's Strategic Highway Safety Plan and Critical Emphasis Areas

In the late 1990s, the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA) conducted an evaluation of national efforts to reduce the number of traffic-related fatalities associated with the ongoing HSIP. Both AASHTO and FHWA concluded that the states' efforts had not been sufficiently effective in lowering the number of fatal crashes, and two key factors were identified: (1) the states' efforts were not focused on the primary factors causing the fatal crashes, and (2) this resulted in implementation of safety projects that were not derived from a data-driven mapping process that directly links crash causation to effective mitigative strategies.

In response, AASHTO and FHWA created a recommended safety program development process that included disaggregating system-wide crash data into 22 categories (critical emphasis areas) divided into drivers, special users, vehicles, highways, emergency services, and management. The objective of this first step is to help agencies identify the safety priorities for their systems using related specific crash data. In addition, the identification of safety emphasis areas will help reduce the universe of possible safety strategies for all types of crashes to a short list of strategies specific to the safety emphasis areas.

FHWA and AASHTO have renewed their focus on the most severe crashes—including fatal and life-changing crashes—using a data-driven process. The agencies have also placed a renewed emphasis on the Four Es—Education, Enforcement, Engineering, and Emergency Medical Service (EMS). Those involved with the Four Es are encouraged to set new goals, and determine new ways to measure progress.

FHWA and AASHTO have set a goal to reduce the number of traffic fatalities by 1,000 each year for the next 20 years. FHWA has determined that this goal will be reached only by partnering with individual states. Partnering will lead to more successful project implementation and will result in programs that target the factors contributing to the greatest number of fatal and severe crashes.

AASHTO published a nationally focused Strategic Highway Safety Plan (SHSP) in 1997; this plan was updated in 2004. The SHSP focused on 22 specific highway safety challenges, or Critical Emphasis Areas (CEAs), that are divided into the six parts or categories listed in Table 1-1.

TABLE 1-1
AASHTO State Highway Safety Plan Critical Emphasis Areas

Part 1: Drivers	**Part 4: Highways**
1. Instituting Graduated Licensing for Young Drivers	14. Reducing Vehicle-Train Crashes
2. Ensuring Drivers are Licensed and Fully Competent	15. Keeping Vehicles on the Roadway
3. Sustaining Proficiency in Older Drivers	16. Minimizing the Consequences of Leaving the Road
4. Curbing Aggressive Driving	17. Improving the Design and Operation of Highway Intersections
5. Reducing Impaired Driving	18. Reducing Head-On and Across-Median Crashes
6. Keeping Drivers Alert	19. Designing Safer Work Zones
7. Increasing Driver Safety Awareness	**Part 5: Emergency Medical Services**
8. Increasing Seat Belt Usage	20. Enhancing Emergency Medical Capabilities to Increase Survivability
Part 2: Special Users	**Part 6: Management**
9. Making Walking and Street Crossing Safe	21. Improving Information and Decision Support Systems
10. Ensuring Safer Bicycle Travel	22. Creating More Effective Processes and Safety Management Systems
Part 3: Vehicles	
11. Improving Motorcycle Safety and Increasing Motorcycle Awareness	
12. Making Truck Travel Safer	
13. Increasing Safety Enhancements in Vehicles	

Source: AASHTO SHSP, 1997 and 2004.

The SHSP noted that individual state efforts had not effectively lowered the number of fatal crashes and that state efforts were not focused on primary factors that caused fatal crashes. Many state projects being implemented were not always based on the results of a data-driven mapping process that linked crash causation to effective mitigation strategies. The SHSP recommended developing a safety programming process that included disaggregation of system-wide crash data into the 22 CEAs.

Disaggregating crash data helps agencies identify their safety priorities based on crash analysis for their transportation system. This step also reduces the universe of safety strategies to those specifically associated with an agency's specific system (see Section 3.2 for more information

about safety strategies). Finally, crash data disaggregation and identification of CEAs help agencies select the most effective strategies for reducing crashes and determining where limited highway and safety improvement funds should be invested for the most positive results.

1.3 Minnesota's Comprehensive Safety Planning Efforts

Similar to the national trends, Minnesota experienced a significant reduction in traffic fatalities and the fatal crash rate from the mid-1970s through the 1980s (see Figures 1-2 and 1-3). Between 1980 and 2000, while the number of traffic fatalities increased slightly, the fatal crash rate decreased because the number of vehicle-miles increased. Since the year 2000, the number of traffic fatalities and the fatal crash rate has dropped by over 40 percent.

AASHTO's SHSP was used as the basis for developing the Minnesota's SHSP. MnDOT in cooperation with the Minnesota Department of Public Safety developed the Minnesota Comprehensive Highway Safety Plan (CHSP) in December 2004. The CHSP identified the following:

- A unified approach for addressing traffic fatalities in Minnesota
- Key crash types to target (CEAs)
- High-priority strategies intended to form the focus of future programs and projects.

The CHSP was updated in 2007 to comply with federal legislative requirements set forth in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which is the current federal law governing surface transportation programs. As the name suggests, SAFETEA-LU contains several important safety requirements, including the development of state SHSPs. The CHSP was renamed the Minnesota SHSP. The Minnesota SHSP established a new traffic safety goal—to reduce the number of annual traffic fatalities to 400 or fewer by 2010. The original traffic safety goal set in the 2004 CHSP was to reduce annual traffic fatalities to 500 by 2008; this goal was achieved when 494 fatalities were recorded in 2008. Minnesota has made steady progress in reducing the number of traffic fatalities. The goal of reaching fewer than 400 annual fatalities by 2010 was not achieved; however, the goal was achieved in 2011, when there were 368 traffic fatalities. The current goal is fewer than 350 annual traffic fatalities by 2014.

1.3.1 Crashes on County State-Aid Highway and County Roads

Minnesota's County State-Aid Highway (CSAH) and County Road (CR) transportation system encompasses more than 50,000 miles of roadway out of 134,000 miles statewide. Approximately one-half of statewide traffic fatalities occur on this system, making rural local roads perhaps the most at-risk part of the state's entire system. In response, the Minnesota SHSP identified the proactive and systemic deployment of low-cost strategies to cost effectively address the high frequency, although very low density, of severe crashes across many miles of rural roadways. The overrepresentation of severe and fatal crashes on the local roadways is reflected in the metro counties. This reinforces the importance of implementing a safety program that focuses on the local, in addition to the state, system of highways.

As noted earlier, both FHWA and MnDOT have adopted a focus of addressing traffic fatalities and life-changing injuries, and this includes a heavy focus on rural areas. However, shifting from a focus on reducing the overall number of crashes to reducing the number of most severe crashes poses some challenges. The random, widely distributed nature of severe crashes makes it difficult to identify specific at-risk locations based only on crash statistics.

1.3.2 Minnesota's State Highway Critical Emphasis Areas

This process was first conducted in Minnesota during the preparation of the SHSP and resulted in identifying the following statewide safety emphasis areas:

- Driver Behaviors – Younger Drivers, Older Drivers, Aggressive Drivers, Impaired Drivers, and Non-belted Drivers
- Highways – Road Departure and Intersections

Based on an updated state crash analysis, MnDOT reviewed the number of fatalities related to each of the AASHTO CEAs summarized in Table 1-1. This analysis identified the number of fatalities in each CEA along with the percentage represented of the total number of crashes (see Table 1-2).

TABLE 1-2
SUMMARY OF MINNESOTA'S STATE HIGHWAY 2006–2010 FATALITIES BY AASHTO'S CRITICAL EMPHASIS AREA

	Emphasis Area	Minnesota Fatalities[a]	Percent
Part 1: Drivers	Instituting Graduated Licensing for Young Drivers	448 fatalities involved a driver under 21	20%
	Ensuring Drivers are Licensed and Fully Competent	198 fatalities involved a driver with an invalid license	9%
	Sustaining Proficiency in Older Drivers	454 fatalities involved a driver over 64	20%
	Curbing Aggressive Driving	563 fatalities involved a speeding driver	25%
	Reducing Impaired Driving	779 fatalities were alcohol related	34%
	Keeping Drivers Alert	361 fatalities involved an inattentive driver	16%
	Increasing Driver Safety Awareness	-- Not Quantifiable --	
	Increasing Seat Belt Usage and Improving Airbag Effectiveness	792 vehicle occupant fatalities were not using a restraint device[b]	47%
Part 2: Special Users	Making Walking and Street Crossing Safer	168 pedestrian fatalities	7%
	Ensuring Safer Bicycle Travel	44 bicyclists fatalities	2%
Part 3: Vehicles	Improving Motorcycle Safety and Increasing Motorcycle Awareness	289 motorcyclists fatalities	13%
	Making Truck Travel Safer	410 fatalities involving heavy vehicles	18%
	Increasing Safety Enhancements in Vehicles	-- Not Quantifiable --	
Part 4: Highways	Reducing Vehicle-Train Crashes	21 fatalities involving a collision with a train	1%
	Keeping Vehicles on the Roadway	686 single vehicle run-off the road fatalities	30%
	Minimizing the Consequences of Leaving the Road	Top 5 most harmful events for single vehicle run -off the road fatalities were: - Overturn/Rollover (51%) - Collision with a tree/shrubbery (17%) - Collision with an embankment/ditch/curb (11%) - Collision with a utility pole (3%) - Collision with sign/structure post (3%)	
	Improving the Design and Operation of Highway Intersections	848 fatalities at an intersection	37%
	Reducing Head-On and Across-Median Crashes	515 head-on and across-median fatalities	23%
	Designing Safer Work Zones	41 work zone fatalities	2%
Part 5: EMS	Enhancing Emergency Medical Capabilities to Increase Survivability	In 2007, the average response time (time of crash to arrival hospital) was 47.4 minutes for 85 rural fatal crashes. For 42 urban fatal crashes, the average response time was 37.0 minutes. [c]	
Part 6: Manage-ment	Improving Information and Decision Support Systems	-- Not Quantifiable --	
	Creating More Effective Processes and Safety Management Systems	-- Not Quantifiable --	

[a] Source: Minnesota Crash Records (2006–2010); not including fatalities due to the I-35W Bridge collapse.
[b] Between 2006 and 2010, there were 1,691 vehicle occupant fatalities.
[c] Information regarding EMS response times was from *Traffic Safety Facts 2007* (Source: NHTSA).
Note: Between 2006 and 2010, there were 2,073 fatal crashes that resulted in 2,279 fatalities.

Based on the results shown in Table 1-2, the top ten Safety Emphasis Areas for the MnDOT state transportation system are documented in Table 1-3.

TABLE 1-3
MnDOT State Highway Top Ten Safety Emphasis Areas

Top 10 Safety Emphasis Areas (Based on 2006-2010 MN Data)	Related Fatalities		Rank	CEAs included in 2007 MN SHSP
	Number	%		
Increasing Seat Belt Usage and Improving Airbag Effectiveness	792	47%	**1**	✓
Improving the Design and Operation of Highway Intersections	848	37%	**2**	✓
Reducing Impaired Driving	779	34%	**3**	✓
Keeping Vehicles on the Roadway (combined with Minimizing the Consequences of Leaving the Road)	686	30%	**4**	✓
Curbing Aggressive Driving	563	25%	**5**	✓
Instituting Graduated Licensing for Young Drivers	448	20%	**6**	✓
Reducing Head-On and Across-Median Crashes	515	23%	**7**	✓
Sustaining Proficiency in Older Drivers	454	20%	**8**	
Making Truck Travel Safer	410	18%	**9**	
Keeping Drivers Alert	361	16%	**10**	
Increasing Driver Safety Awareness				✓
Improving Information and Decision Support Systems				✓

Source: Minnesota Crash Records; not including fatalities due to the I-35W Bridge collapse.
2006–2010: 2,073 fatal crashes; 2,279 fatalities; 1,691 vehicle occupant fatalities

1.3.3 Minnesota's Comprehensive Safety Planning Efforts: Proactive and Reactive Projects

In the Minneapolis-St. Paul metro area, local agencies have been invited to participate in the Region's HSIP for more than 30 years. Until 2009, the HSIP was primarily focused on directing safety investments toward reactive projects developed through a site analysis technique based on identifying locations with a high frequency of crashes. In 2009, in response to MnDOT's CRSP initiative, a proactive component was added to the HSIP to fund projects developed through a systemic risk assessment process and identified in the CRSP.

This comprehensive approach that includes both proactive and reactive projects on the county system of roadways is consistent with the goals in Minnesota's SHSP and Toward Zero Deaths (TZD) program to address severe crashes on all roads.

Safety program managers have determined that in the metro ATP, 30 percent of the HSIP funds will be directed toward proactive projects and 70 percent will go toward reactive projects. The development of the suggested proactive projects and a summary listing by project type is identified in Chapter 4, along with a summary of the reactive projects identified by county staff.

1.4 County Roadway Safety Plan Project Approach

Figure 1-5 shows the approach used to develop the CRSPs during Phase IV for counties included in the metro area. Beginning with the crash analyses for each county and concluding with these CRSP reports, this process is the culmination of nearly 1 year of MnDOT and concerned counties working together.

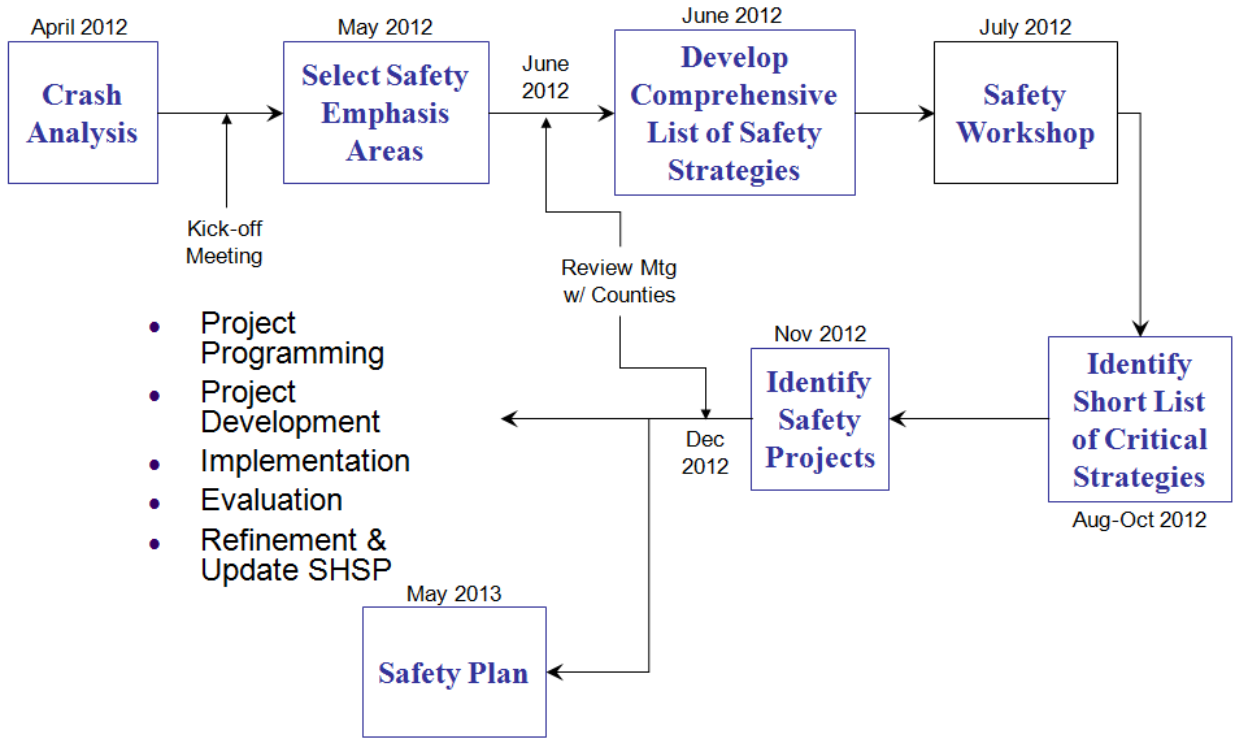


Figure 1-5
CRSP Project Approach

2.0 Carver County Emphasis Areas and Crash Overview

The first step in the process was to conduct a crash analysis overview for each county and the Metro ATP as a whole.

2.1 Carver County Safety Emphasis Areas

Section 1.2 described the development of AASHTO's CEAs, and it also described how this process was applied to the State of Minnesota, thereby identifying statewide CEAs. An identical process was followed in Carver County, resulting in the distribution of severe crashes among AASHTO's 22 CEAs (Table 2-1). This process revealed where crashes were overrepresented based on a comparison to statewide averages or where a large enough number of crashes represented an opportunity to substantially reduce crashes. As a result, the following CEAs were identified as priorities for safety investments:

- Driver Behavior – Young drivers, aggressive drivers, and unbelted vehicle occupants
- Highways – Intersections and lane departure crashes

In conclusion, focusing on these safety emphasis areas represents the greatest potential to significantly reduce the number of severe crashes in Carver County. Strategies to reduce crashes depend on whether a CEA is infrastructure-based or driver behavior-based. Infrastructure-based emphasis areas refer to characteristics of the area in which crashes occur. The results of the crash data analysis for the Metro ATP and Carver County in relation to AASHTO's 22 CEAs are shown in Table 2-1.

Driver behavior-based emphasis areas refer to motorist characteristics or actions that contribute to crashes. Because driver behavior is tied to laws made at the national and state levels, agencies generally have less ability to address driver behavior-based CEAs. The most effective approach to addressing driver behavior-based CEAs is to focus on public education, law enforcement, and cooperation and collaboration with other county departments, agencies, and schools. Generally, more opportunities exist for counties to address infrastructure-based CEAs, because many of the associated strategies can be implemented as separate roadway improvement projects, or along with other planned improvements. Specific infrastructure- and driver behavior-based strategies presented to the participants of safety workshops held for the Metro ATP counties are provided in Section 3.3.

TABLE 2-1
Metro ATP Critical Emphasis Areas, Based on Crash Data Analysis

Emphasis Area		Statewide %	Metro ATP* (CSAH/CR)		Carver County (CSAH/CR)	
Drivers	Young drivers (under 21)	**24%**	**26%**	**(357)**	**27%**	**(13)**
	Unlicensed drivers	8%	7%	(100)	2%	(1)
	Older drivers (over 64)	14%	12%	(162)	8%	(4)
	Aggressive driving and speeding-related	20%	15%	(206)	25%	(12)
	Drug and alcohol-related	**26%**	**18%**	**(249)**	25%	(12)
	Inattentive, distracted, asleep drivers	20%	**21%**	**(290)**	15%	(7)
	Safety awareness	- -	- -		- -	
	Unbelted vehicle occupants	**25%**	14%	(199)	**29%**	**(14)**
Special Users	Pedestrians crashes	8%	11%	(153)	2%	(1)
	Bicycle crashes	4%	6%	(86)	4%	(2)
Vehicles	Motorcycles crashes	16%	16%	(223)	**29%**	**(14)**
	Heavy vehicle crashes	10%	7%	(97)	2%	(1)
	Safety enhancements	- -	- -		- -	
Highways	Train-vehicle collisions	0%	0%	(1)	0%	(0)
	Lane departure crashes	**42%**	**30%**	**(410)**	**63%**	**(30)**
	Consequences of leaving road	- -	- -		- -	
	Intersection crashes	**42%**	**58%**	**(793)**	**33%**	**(16)**
	Work zone crashes	2%	2%	(22)	0%	(0)
EMS	Enhancing emergency capabilities	- -	- -		- -	
Management	Information and decision support systems	- -	- -		- -	
	More effective processes	- -	- -		- -	

* Anoka, Carver, Dakota, Ramsey, Scott, and Washington Counties.

DPS Crash Data Records, 2006 to 2010 – Severe Crashes

Top 5 Emphasis Areas by jurisdictions

Note: Numbers in this table exceed total crash numbers because one crash may be categorized into multiple emphasis areas. For example, one crash may involve a young driver at an intersection and therefore be included in both of these emphasis areas.

2.2 Carver County Crash Overview

2.2.1 Minnesota Crash Mapping Analysis Tool

An overview of crashes was completed using Minnesota's Crash Mapping Analysis Tool to provide Carver County with a detailed definition of the highway-related crash types that represent both the greatest need for safety investment and the greatest opportunity to reduce severe crashes. The data was sorted using the 70 pieces of information provided for each crash, including route, reference point, day/date/time, severity, crash causation, road characteristics, and driver condition.

2.2.2 Crash Data Sets

For Carver County, a set of data covering 5 years (2007-2011) of crash records was used for the crash analysis; this data set includes 4,855 crashes. In safety analysis, it is recommended that more than 1 year of data be included to reduce the possibility of examining an unusual year. It is also important to include as many years as necessary to produce a data set that will provide statistically reliable results although not including conditions that may have changed (e.g., reconstructed roads, addition of STOP signs, and changed speed limits). For Carver County, it was concluded that a data set covering 5 years with 4,500 severe crashes on the county road system would be sufficient to provide the desired level of statistical reliability.

The Carver County data set includes 4,855 crashes on all road systems; of these, 101 were fatal or serious injury crashes. Disaggregating the severe crashes by area (within city limits versus outside city limits) and then by crash type category (intersection versus segment crashes) results in the following distribution (see Figure 2-1):

- 46 percent occurred on the CSAH/CR system (47 crashes)
    - 32 percent (15 crashes) were inside city limits; 20 percent of the urban crashes (3 crashes) were pedestrian- or bicycle-related
- Of the non-pedestrian/bicycle crashes, 50 percent were intersection-related and the pedominanat type of crash was right-angle at thru-STOP intersections
    - 62 percent of the signalized intersection crashes were right angle crashes; 46 percent of the thru-STOP intersection crashes were also right-angle crashes
- Of the crashes that occurred outside city limits, 69 percent (22 crashes) were lane departure (either run off road or head on crashes)

This review shows that severe crashes at intersections and severe road departure crashes are overrepresented in Carver County. These results indicate a need to focus the next level of analysis on the following high-priority crash types:

1) Right Angle Crashes (intersection-related)
2) Run Off Road Crashes (on segments and specifically on curves)
3) Pedestrian/Bicycle Crashes

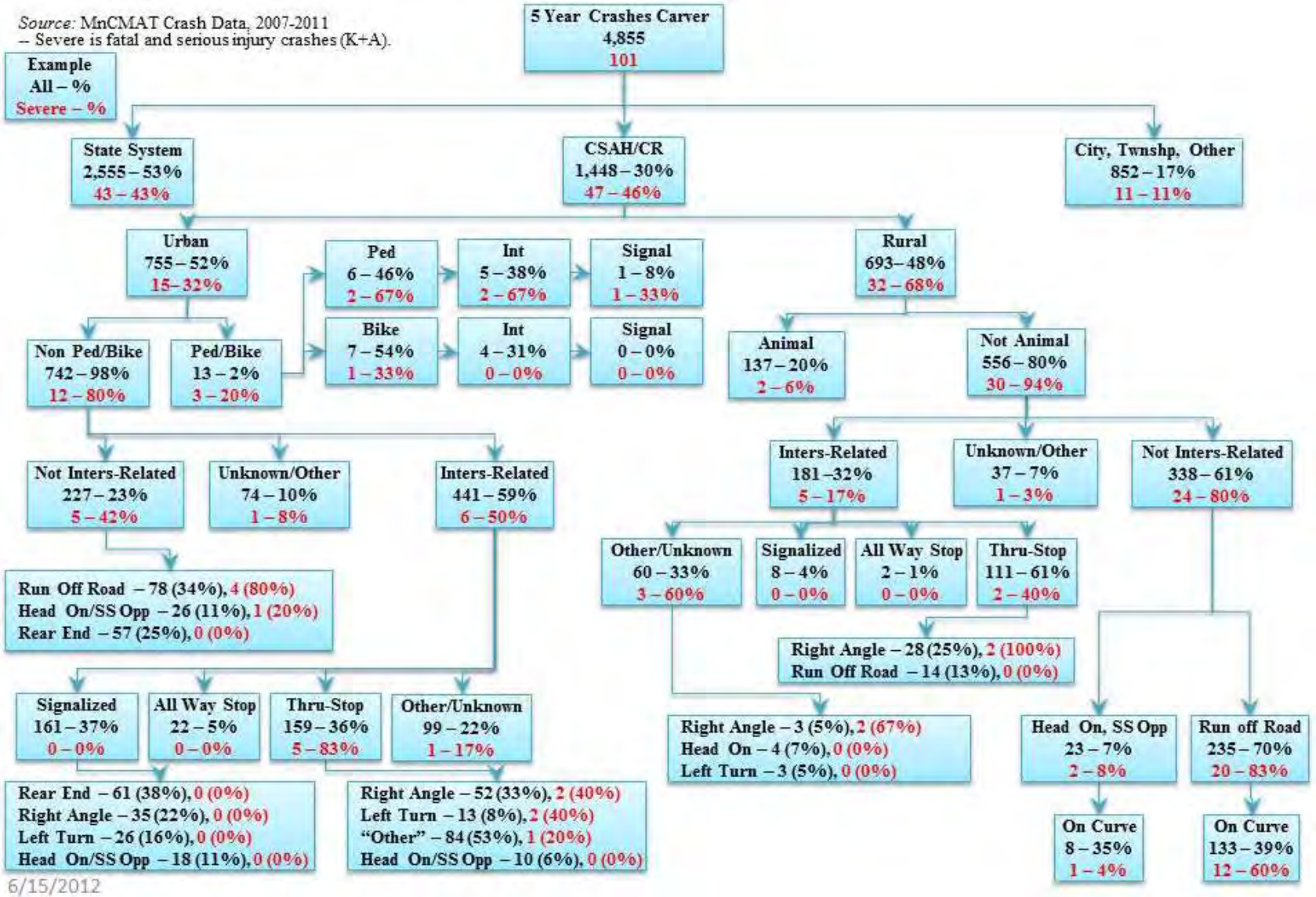


Figure 2-1
Carver County Crash Data Overview

2.3 Metro ATP Crash Risk Factors

For each of the priority crash types—right angle, pedestrians/bicycles, and run off the road—a more detailed crash analysis was conducted to document two key items: (1) to identify any locations where these priority crash types occur at a rate of one or more per year—if so, these places would be considered high crash locations; and (2) to identify basic roadway and traffic characteristics of the locations with crashes. These characteristics are not considered causative factors within this study. Instead, these characteristics are used to determine the risk of a particilar location to experience a severe crash based on overrepresentation of particular characteristics at locations with severe crashes. This information was then used to evaluate the remainder of Carver County's road system where the presence of these characteristics is used to prioritize candidates for safety investment. The intersections considered were county intersections with state roads, county roads, or municipal state-aid road. The risk factors analysis used crash data for all counties in the Metro ATP to provide a larger data set of crashes for comparing crash characteristics.

2.3.1 Urban Intersections – Right Angle Crashes at Signals

A right angle crash is the most common type of severe crash at urban intersections. In addition, based on all crashes in the Metro ATP, 75 percent of the right angle crashes occur at signalized intersections (see Figure 2-2).

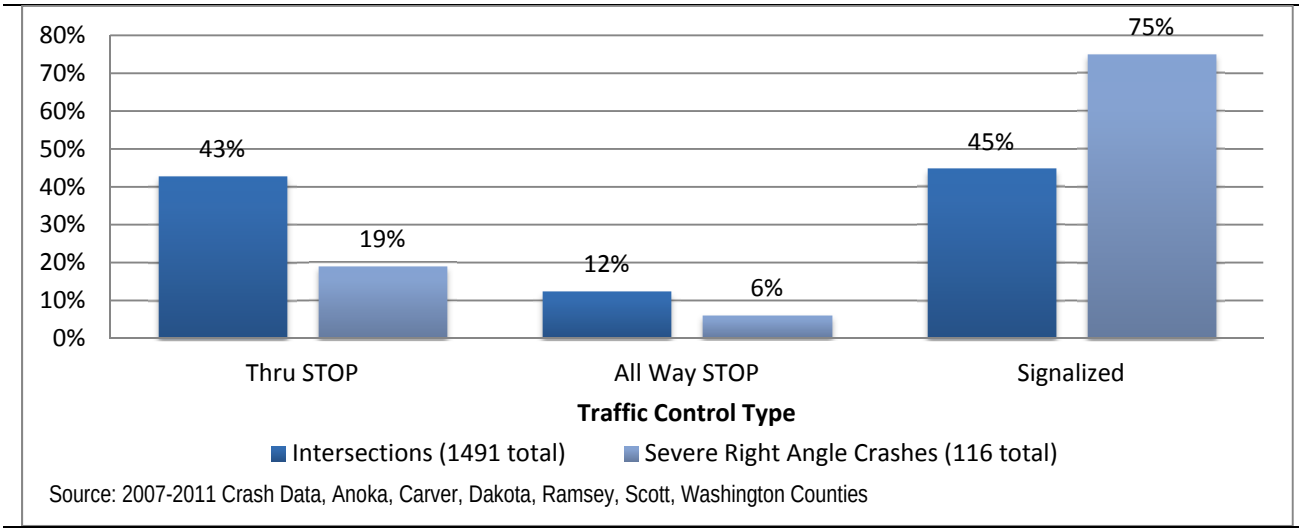


Figure 2-2
Type of Traffic Control – Severe Right Angle Crashes

More than 1,491 intersections with 668 signalized intersections in the Metro ATP were reviewed as part of this process. The average severe crash density is 0.08 severe crash per intersection per year. This low density supports assessing an intersection's risk based on characteristics of locations with severe crashes. Four risk factors were used to prioritize intersections as well as corridors for potential project development. The four risk factors for right angle crashes at signalized intersections are as follows:

- **Major Approach Speed Limit** – 49 percent of the severe right angle crashes at signalized intersections occurred on corridors with 40-mph-or-less speed limits on a major roadway. An intersection was considered to have a higher risk of severe right

angle crashes if the major roadway speed limit was 40 mph or less. These intersections received a star (★).

- **Major Entering Daily Traffic** – Higher volumes of vehicles entering at an intersection was considered a risk factor. Severe crashes are overrepresented at intersections with 17,500 vehicles or more entering; 45 percent of the intersections with this level of volume accounted for 54 percent of the severe right angle crashes (see Figure 2-3). Locations with 17,500 or more entering vehicles received a star.
- **Previous Severe Right Angle Crash** – Intersections with a previous right angle crash history received a star.
- **Configuration** – A comparison of the configuration of the major roadway based on whether it was divided or undivided showed an overrepresentation of right angle crashes on divided roadways; 87 percent of the severe right angle crashes at signalized intersections in Carver, Dakota, Scott, and Washington Counties occurred on divided roadways (see Figure 2-4). Intersections with a divided roadway received a star.

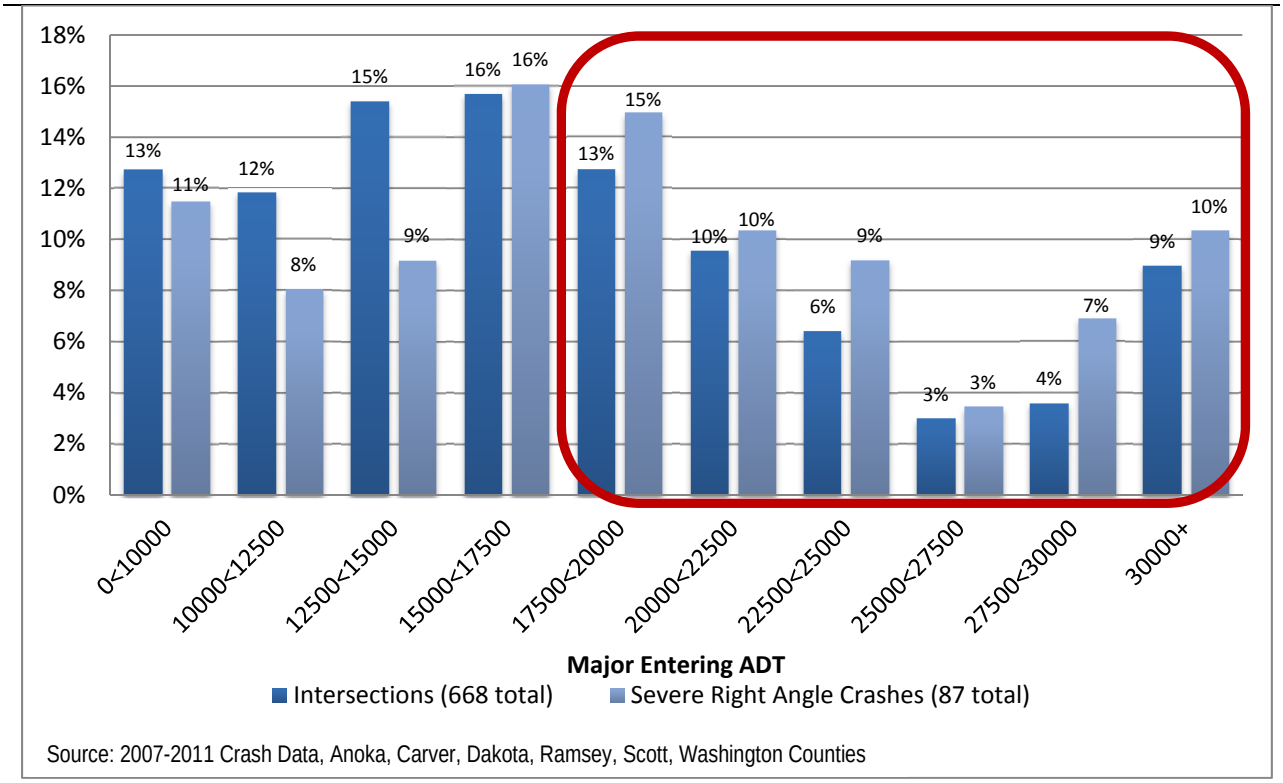


Figure 2-3
Average Daily Traffic of Major Roadway – Severe Right Angle Crashes at Signalized Intersections

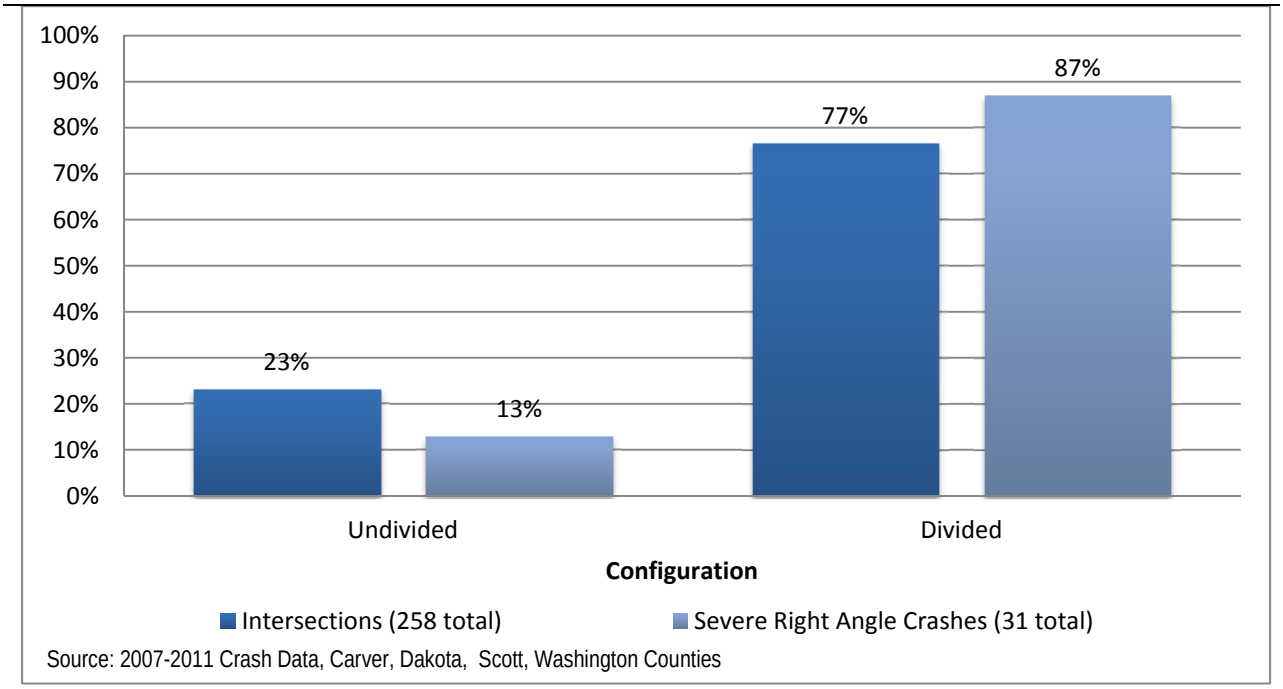


Figure 2-4
Roadway Configuration – Severe Right Angle Crashes at Signalized Intersections

Table 2-2 summarizes the results of the prioritization of signalized intersections for right angle crash risk assessment. Of the 30 signalized intersections evaluated, 16 (53 percent) had two or more stars and were considered high-priority signalized intersections for right angle crashes. Details of the signalized intersection analysis for right angle crashes are included in Appendix A.

Table 2-2
Summary of Carver County Right angle Crash Prioritization

	# of Signalized Intersections	% of Signalized Intersections
★★★★	0	0%
★★★	3	10%
★★	13	43%
★	11	37%
-	3	10%
	30	**100%**

2.3.2 Urban Intersections – Pedestrian/Bicycle Crashes at Signals

Similar analysis was completed for pedestrian and bicycle crashes at intersections, with 82 percent of the intersection crashes in the Metro ATP occurring at signalized intersections (see Figure 2-5). Risk factors based on intersection characteristics of locations with severe pedestrian and bicycle crashes were developed to prioritize all intersections in the Metro ATP.

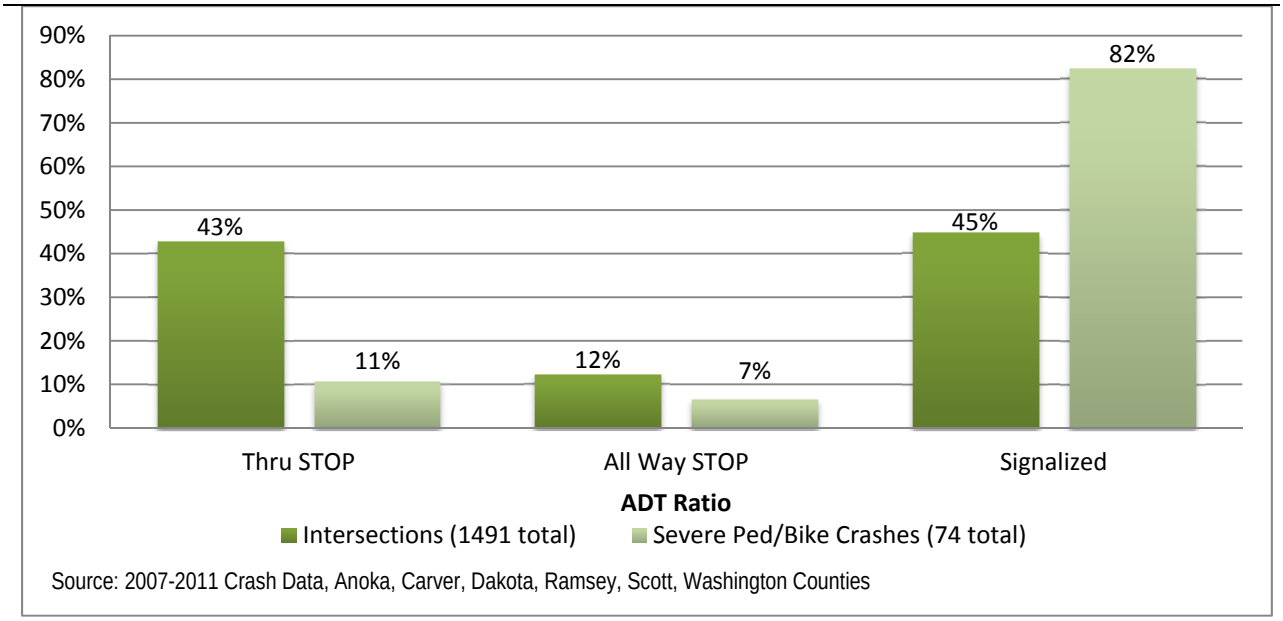


Figure 2-5
Type of Traffic Control – Severe Pedestrian/Bicyclist Crashes at Intersections

There were seven risk factors for pedestrian and bicycle crashes at signalized intersections, and a star is given to an intersection for each factor. These seven risk factors are as follows:

- **Daily Volume of Entering Vehicles:** While only 45 percent of the intersections had daily entering traffic volumes of over 17,500, 59 percent of the severe pedestrian and bicycle crashes occurred at intersections with these volumes (see Figure 2-6). Signalized intersections with daily entering vehicle volumes of over 17,500 vehicles were given a star.
- **Number of Major Approach Lanes:** The more lanes of traffic that are on the approaches of an intersection, the longer that pedestrians or bicyclists crossing the intersection are exposed to vehicles. Signalized intersections with four or more lanes of approach (including turn lanes) were given a star.
- **Major Approach Speed Limit:** While only 46 percent of the intersections were located on roadways with 40-mph-or-less speed limits, 65 percent of the severe pedestrian and bicycle crashes occurred on roadways with these speeds (see Figure 2-7). Signalized intersections with 40–mph-or-less speed limits on a major roadway were given a star.
- **Bus Stop Presence:** While only 49 percent of the signalized intersections had a bus stop directly adjacent to the intersections, these intersections accounted for 69 percent of the severe pedestrian crashes at signalized intersections. Intersections with a bus stop were given a star.
- **Pedestrian Generator Located in Quadrant:** 61 percent of the severe pedestrian and bicycle crashes at signalized intersections had adjacent land uses that were likely to generate pedestrian traffic (such as a bar or gas station). With only 46 percent of the intersections having these characteristics, it is still considered a risk factor, and intersections were given a star (see Figure 2-8).

- **Parking Presence:** If parking existed on any approach to a signalized intersection, it was given a star. See Figure 2-8 for the comparison of severe pedestrian and bicycle crashes with parking present. Intersections with parking were given a star.
- **Previous Severe Pedestrian/Bicycle Crash:** Intersections with a previous pedestrian or bicycle crash history received a star.

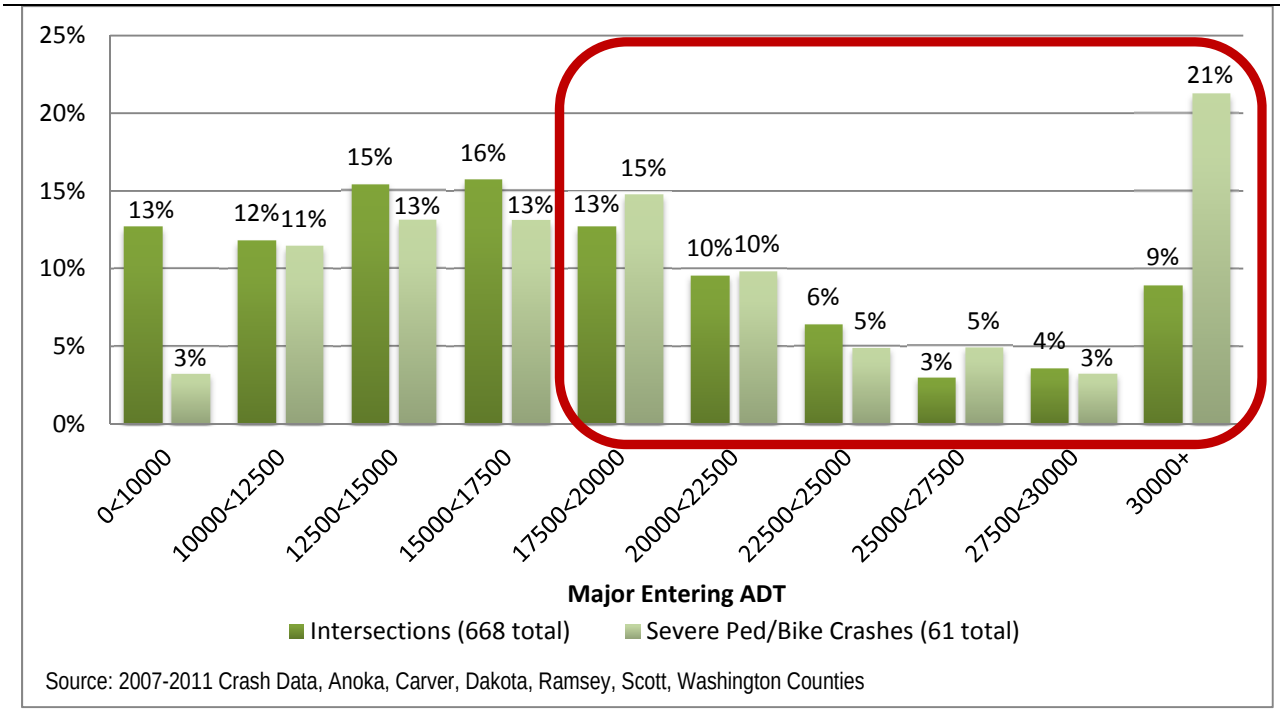


Figure 2-6
Average Daily Traffic of Major Roadway – Severe Pedestrian/Bicyclist Crashes at Signalized Intersections

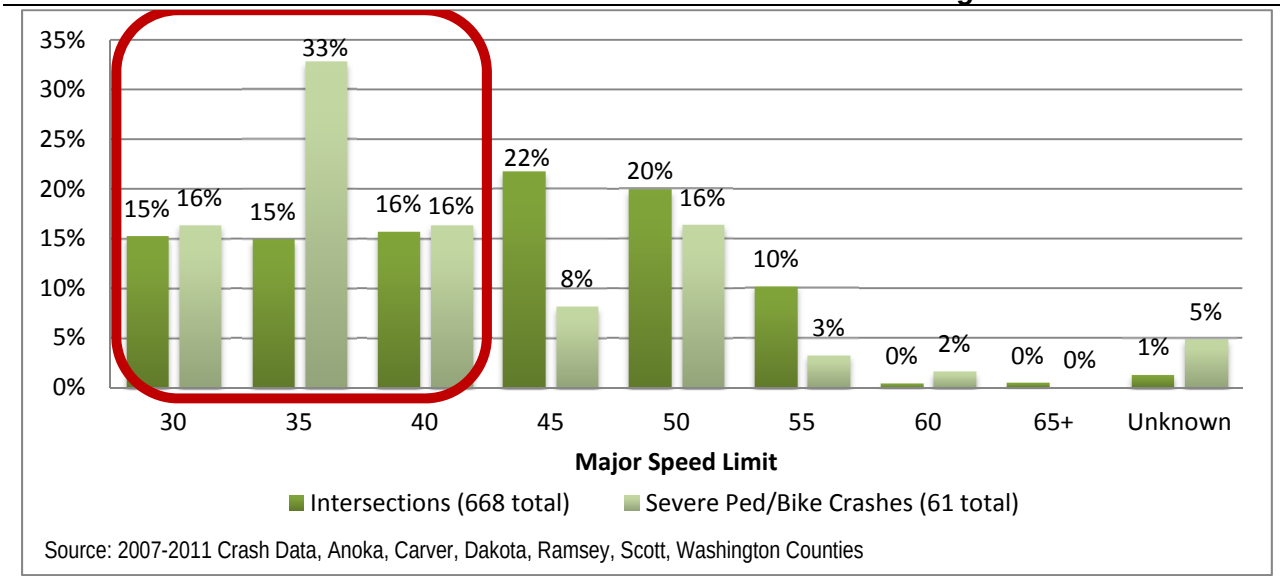


Figure 2-7
Speed Limit of Major Roadway – Severe Pedestrian/Bicyclist Crashes at Signalized Intersections

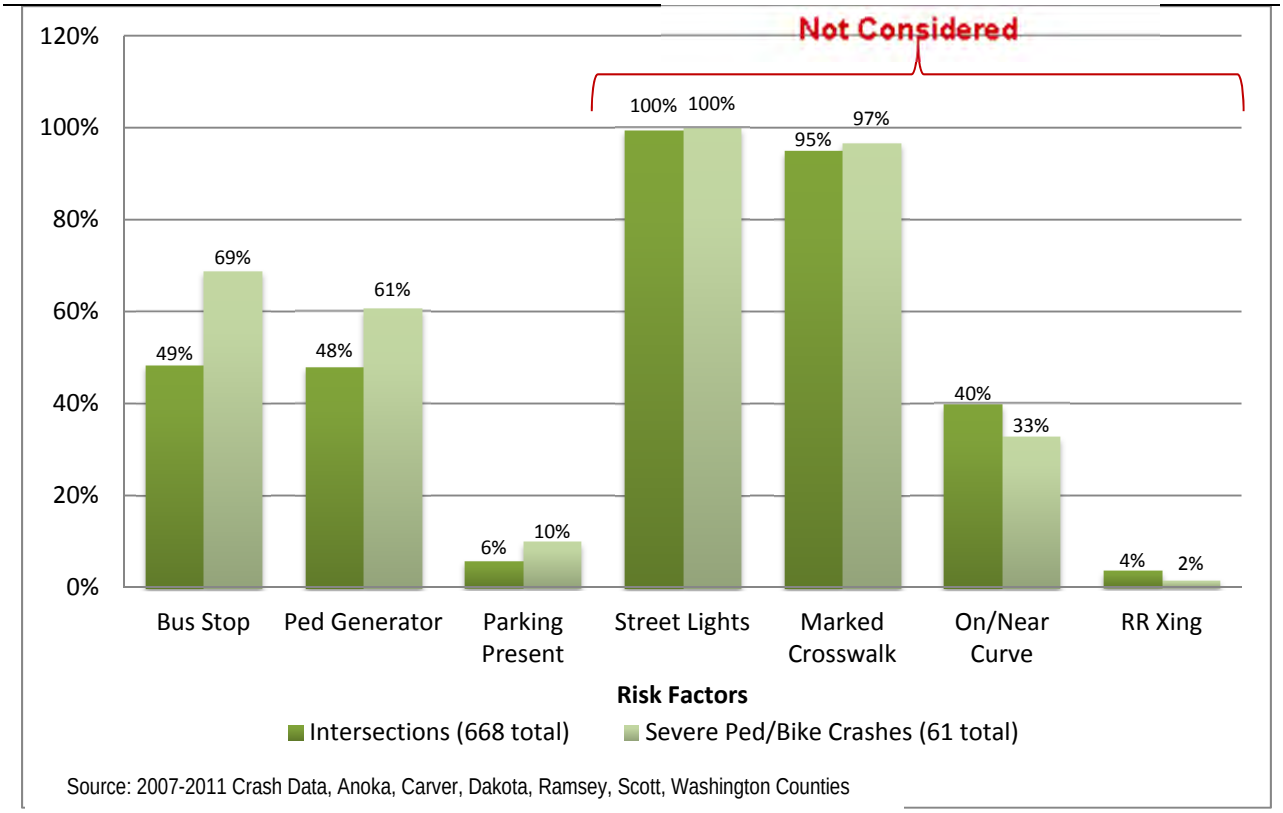


Figure 2-8
Potential Risk Factors at Signalized Intersections for Severe Pedestrian/Bicycle Crashes

Risk indicators that were determined not to be relevant ("not considered"; see Figure 2-8) included street lighting, marked crosswalks, curves, and railroad crossings near the intersections. These indicators were dropped from further consideration because no clear correlation existed at intersections with pedestrian and bicycle crashes.

Table 2-3 summarizes the results of the prioritization of signalized intersections for pedestrian and bicycle crash risk assessment. Of the 30 signalized intersections evaluated, 40 (47 percent) had two or more stars and were considered high priority. Complete results of the pedestrian/bicycle intersection analysis are included in Appendix B.

Table 2-3
Summary of Carver County Pedestrian/Bicycle Crash Prioritization

	# of Signalized Intersections	Percent of Signalized Intersections
★★★★★★★	0	0%
★★★★★★	0	0%
★★★★★	0	0%
★★★★	1	3%
★★★	4	13%
★★	9	30%
★	13	43%
-	3	10%
TOTAL	30	100%

2.3.3 Urban Segments – Rear End and Head On Crashes

There were five risk factors for rear end and head on crashes on urban segments, and a star is given to a segment for each factor. The highest priority segments received the most stars. These five risk factors are:

- **Daily Volume of Entering Vehicles:** Both rear end and head on crashes were overrepresented in corridors with ADT volumes greater than 10,000 vehicles per day as shown in Figure 2-9. Corridors with daily vehicle volumes of more than 10,000 vehicles were given a star.
- **Number of Lanes:** With 71 percent of the severe rear end crashes and head on crashes occurring on corridors with four or more lanes, corridors with four or more lanes were given a star.
- **Access Density:** Over 79 percent of the severe rear end and sideswipe passing crashes occur on corridors that have between 15 and 60 access points per mile, while only 66 percent of the corridor miles are within this range of access density (see Figure 2-10). Corridors with access density between 15 and 60 access points per mile received a star.
- **Corridor Speed:** 44 percent of the severe rear end crashes occurred on corridors with speeds at 40 mph or less, providing the most opportunity for crash reductions. Segments with a speed limit of 40 mph or less receive a star.
- **Previous Severe Crash:** Corridors with a previous rear end, sideswipe, or head on crash history received a star.

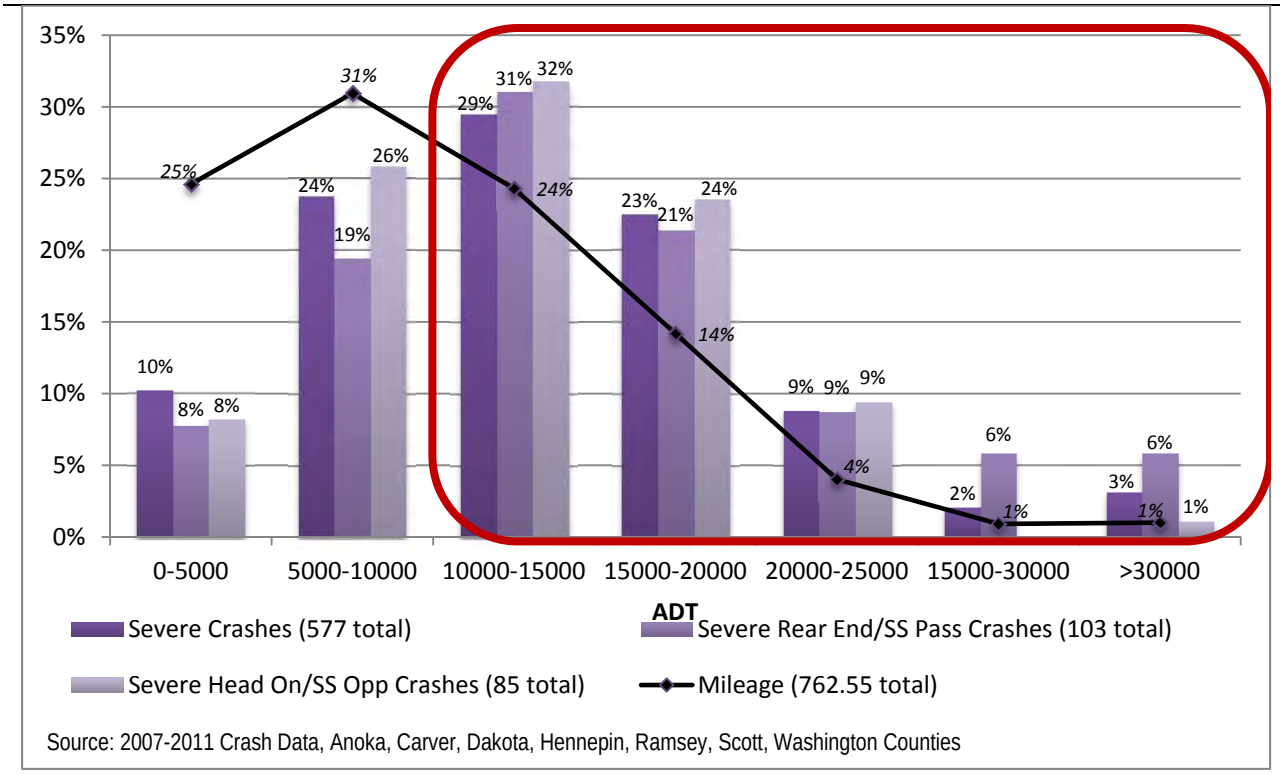


Figure 2-9
Daily Traffic Volumes – Severe Rear End/Sideswipe Passing and Head On Crashes on Urban Segments

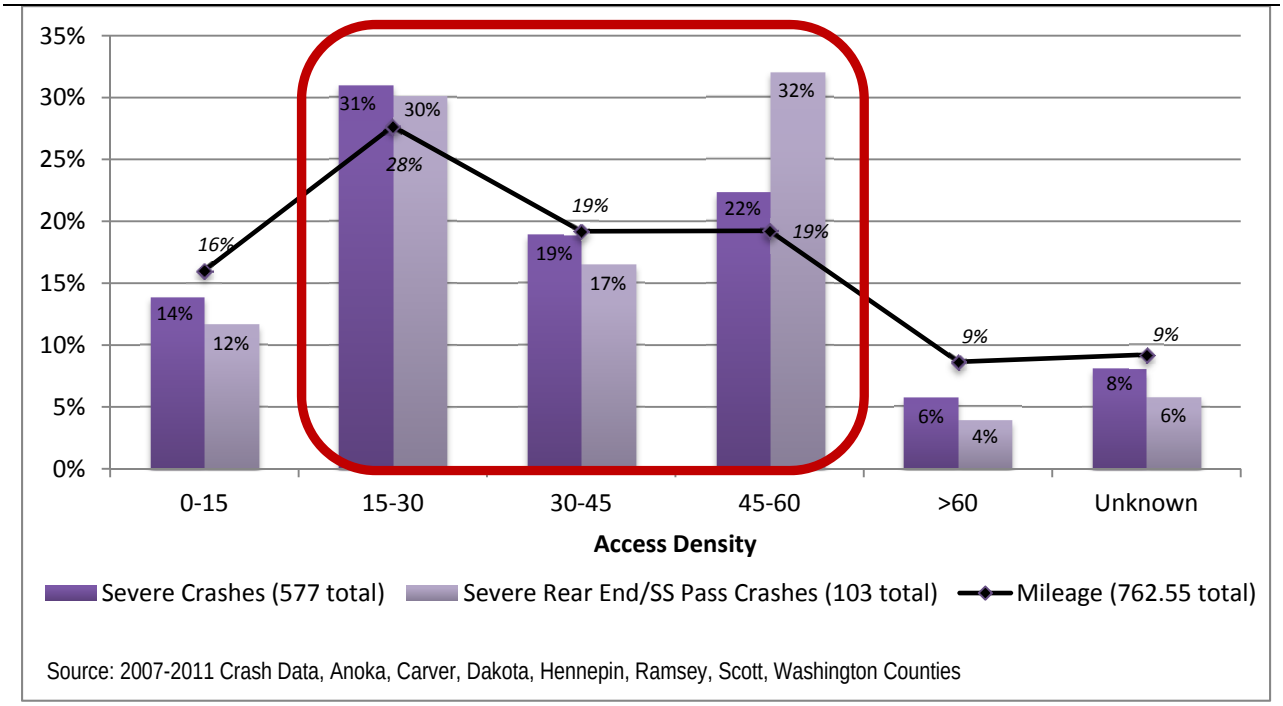


Figure 2-10
Access Density – Severe Rear End and Sideswipe Passing Crashes on Urban Segments

Table 2-4 summarizes the results of the prioritization of urban corridors for rear end and head on risk assessment. Complete results of the urban corridor analysis are included in Appendix C. Of the 66.8 miles of urban corridors analyzed, 32.0 miles (48 percent) were considered high priority with two or more stars.

Table 2-4
Summary of Carver County Rear End and Head On Segment Prioritization

	# of Segments	Percentage of Segments	Miles	Percentage of Segments
★★★★★	0	0%	0.0	0%
★★★★	0	0%	0.0	0%
★★★	5	12%	9.8	15%
★★	21	50%	25.0	37%
★	12	29%	22.2	33%
-	4	10%	9.8	15%
	42	100%	66.8	100%

2.3.4 Rural Segments – Lane Departure Crashes

There are 200 miles of rural paved highway in Carver County's system. Reviewing the crash data, the predominant type of crash on these roads was lane departure crashes, including run off the road and head on crashes.

The five risk factors for lane departure crashes are as follows:

- **Average Daily Traffic (ADT) Range:** Figure 2-11 illustrates that 32 percent of the rural system in the Metro ATP has an ADT of more than 3,000. These segments also experience a high number of severe head on or sideswipe opposing (75 percent) and

road departure crashes (45 percent). Roadways in Carver County with more than 3,000 ADT received a star.

- **Access Density:** Carver County's rural roadways average approximately 11.4 access points per mile (which includes field entrances, commercial entrances, and so on). Roadways experiencing a higher access density received a star.

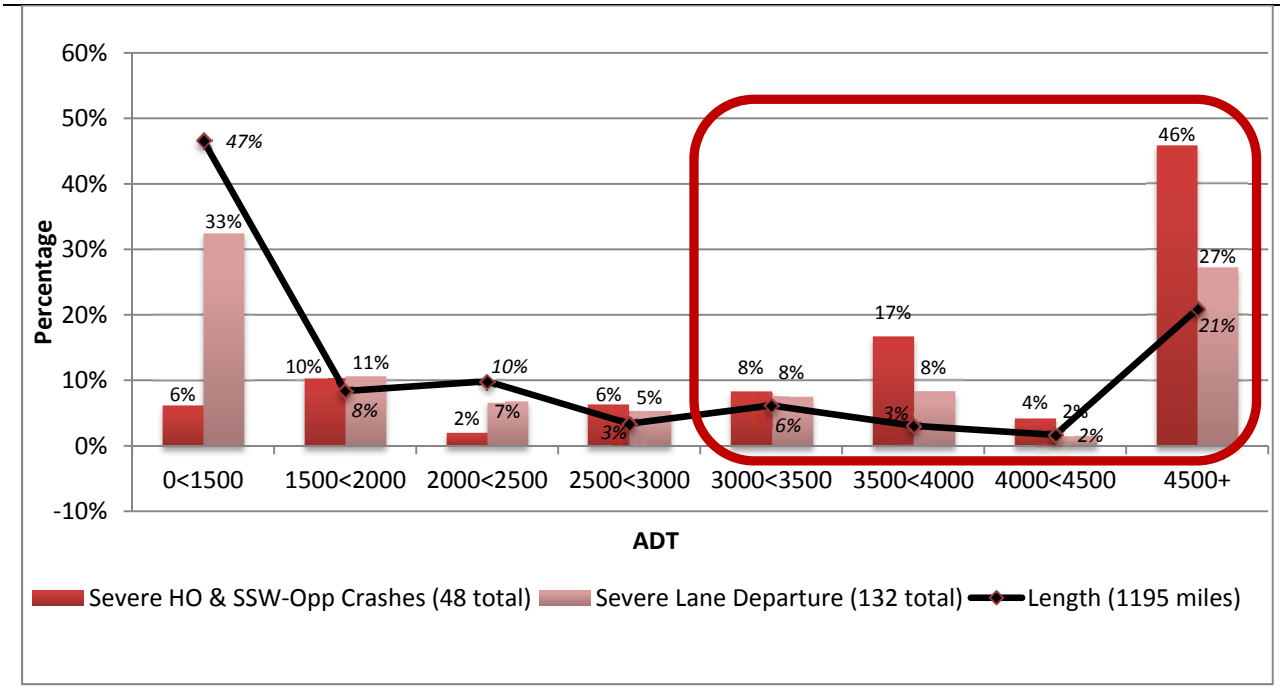


Figure 2-11
Metro ATP CSAH/CR Mileage and Lane Departure Crashes by ADT

- **Lane Departure Density:** Carver County rural paved segments had an average of 0.43 lane departure crashes per mile per year. Any segment experiencing a lane departure density higher than the average received a star.
- **Curve Critical Radius Density:** With curve-related road departure accounting for 50 percent of the severe road departure crashes in Carver County, curves are an important factor in identifying risk. Based on a review of almost 20,000 curves within Minnesota in the first three phases of the County Road Safety Plan process, curves with a radius between 500 and 1,200 feet experienced 58 percent of the severe crashes (see Figure 2-12). An average density of these types of curves was computed for the segments in Carver County (0.42 curves per mile), and any segments with a higher than average density received a star.
- **Edge Risk Assessment:** A rating system was developed to categorize the risk level of vehicles leaving the travel lane. Roads with a usable shoulder and reasonable clear zone received a rating of 1. Roads with little or no usable shoulder but with a reasonable clear zone received a rating of 2, as did roads with a usable shoulder but with fixed objects in the clear zone. Roads with no usable shoulder and fixed objects in the clear zone received a rating of 3. Examples of these edge risks are shown in Figure 2-13.

Roads were evaluated by analysts via MnDOT's video log to determine the rating. Roads with a rating of 2 or 3 received a star.

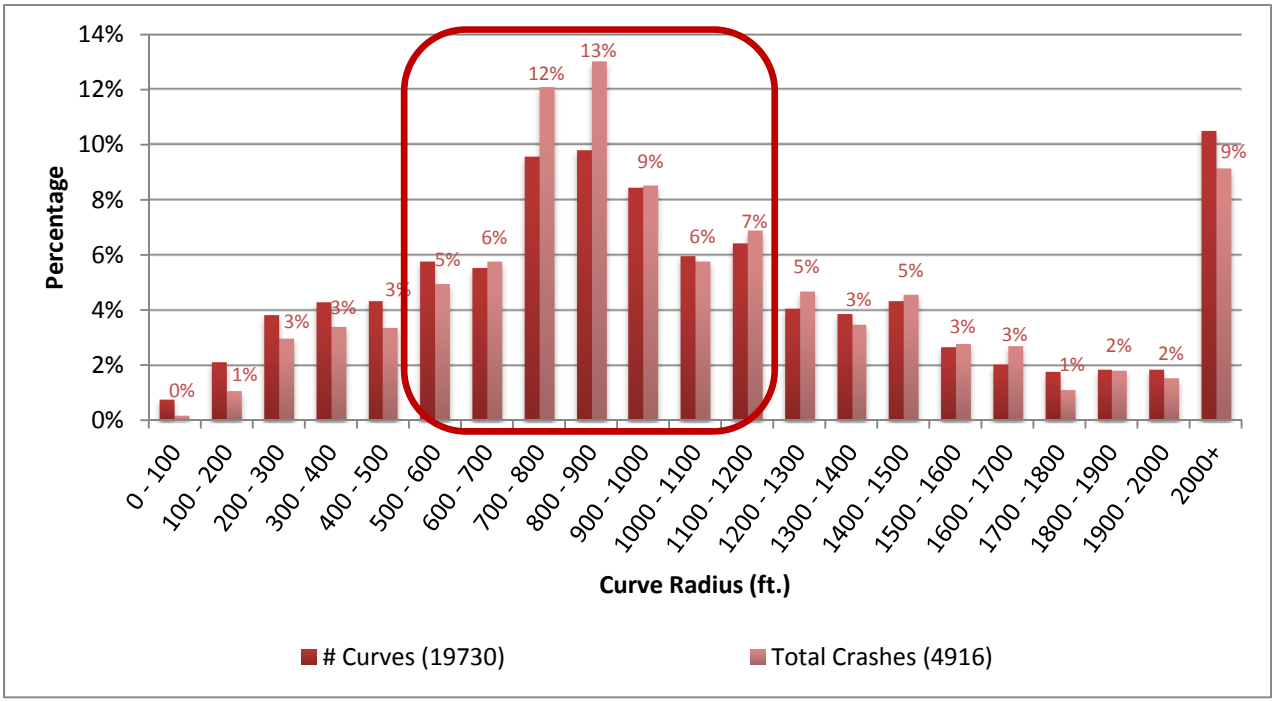


Figure 2-12
Severe Crashes on Curves and Curve Radius
CRSP Phases I through III

1 – Usable Shoulder, Reasonable Clear Zone

2 – No Usable Shoulder, Reasonable Clear Zone

2 – Usable Shoulder, Roadside with Fixed Obstacles

3 – No Usable Shoulder, Roadside with Fixed Obstacles

Figure 2-13
Sample Edge Risk Assessment Photos

The complete data set used for the rural highway segment analysis is provided in Appendix D. Table 2-5 summarizes the results of the prioritization of segments for lane departure.

TABLE 2-5
Summary of Carver County Prioritized Segments

Lane Departure Prioritization				
Segment Ranking	**# of Segments**	**% of Segments**	**Miles**	**% of Miles**
★★★★★	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%

Analysis completed on the data resulted in the priority ranking of these corridors for future improvements. High-priority segments were those receiving three or more stars. Complete results of the segment analysis are included in Appendix D.

2.3.5 Rural Segments – Curve Crashes

The detailed crash analysis also included horizontal curves (a subset of the rural highway system) because emerging research indicates that horizontal curves with certain characteristics contribute to the overall frequency of road departure crashes. The 200 miles of rural Carver County highways contain 168 horizontal curves; the total length of these curves is 21 miles, which is 11 percent of the county highway system mileage. However, approximately 60 percent of severe road departure crashes occur on horizontal curves in the Metro ATP (see Table 2-7). As a result, horizontal curves were identified as an at-risk element of Carver County's rural highway system.

TABLE 2-7
Crashes on Metro ATP Rural CSAH/CR System

	Rural Road Departure Crashes	**Rural Road Departure Crashes On Horizontal Curves**	**% of Crashes on Horizontal Curves**
All Crashes	689	320	46%
Severe Crashes (K+A)	50	30	60%

Note:
K+A = Fatal crash and serious injury crash

An analysis was completed to prioritize horizontal curves based on the relative degree of risk, as was done for rural highway segments. The analysis of crashes related to curves in Carver County resulted in the following data:

- Crashes occurred on 70 of the 168 (roughly 42 percent) horizontal curves on Carver County's CSAH/CR system.

- Three fatal crashes occurred on these curves during the 5-year study period.
- Only one curve experienced multiple severe crashes during the 5-year study period; this indicates that these crashes occur randomly across the system, and that the presence of a severe crash is not sufficient to identify the risk associated with horizontal curves.

This information supports the idea that traditional methods of assigning safety risk based on the number of crashes would not effectively address the overrepresentation of severe and fatal crashes on horizontal curves. Too few crashes occur on these curves to serve as a reliable indicator of the relative degree of risk. As a result, the CRSP team used a relatively new technique to assess the risk of curves that included the following information:

- Characteristics of curves in Carver County where crashes had previously occurred, as well as available information from similar analyses for neighboring Minnesota counties
- Results from *Cost-Benefit Analysis of In-Vehicle Technologies and Infrastructure Changes to Avoid Crashes Along Curves and Shoulders*, which was compiled by the University of Minnesota and CH2M HILL in June 2009

Based on a review of these sources, five roadway features were found to increase the level of risk at individual curves and were used in the prioritization process of rural curves. The five risk factors for crashes on curves include the following:

- **Curve Radius:** Shorter curve radii result in higher overall crash density; however, 58 percent of the severe crashes within Minnesota occurred on curves with a 500- to 1,200-foot radius (see Figure 2-12). This relationship is similar to that found in MnDOT and other national research. Another factor that supports establishing a 1,200-foot radius as the upper limit for the range of at-risk curves is that this radii approximates a 55 mph design speed based on Table 3-3.02A in MnDOT's Road Design Manual. It was decided that curves with a design speed of 60 mph or greater should not be identified as candidates for safety investment. Therefore, curves with a radius between 500 and 1,200 feet received a star.
- **Traffic Volumes:** A range of volumes in each system is overrepresented relative to the frequency of curve-related crashes. In the Metro ATP, curves in the volume range between 600 and 1,800 vehicles per day accounted for 56 percent of severe crashes on curves (see Figure 2-14). Curves with an ADT between 600 and 1,800 vehicles per day received a star.
- **Intersection in the Curve:** The presence of an intersection in the curve increased the level of crash risk; therefore, these curves received a star.
- **Visual Trap:** The presence of a visual trap increased the level of crash risk. A visual trap exists when a crest vertical curve occurs prior to the beginning of the horizontal curve, or when a minor road, tree line, or line of utility poles continues on a tangent (see Figure 2-15). These curves received a star.
- **Crash Experience:** If a severe crash occurred on a curve during the 5-year study period, the curve received a star.

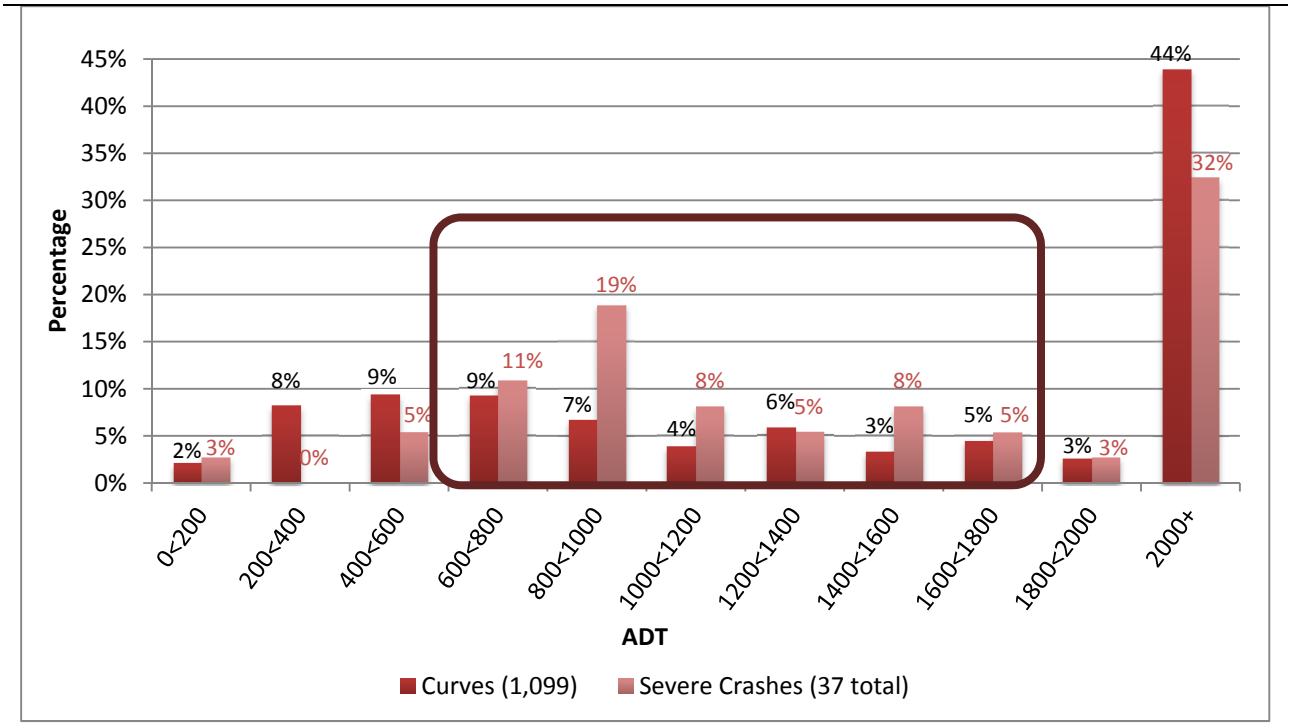


Figure 2-14
Metro ATP Severe Crashes on Curves and Curve ADT

Figure 2-15
Example of a Visual Trap

Complete results of the data analysis and prioritization ranking can be found in Appendix E. In summary, no curve in Carver County received five stars. Sixteen curves (10 percent) received a high-priority ranking of three stars or more. Table 2-8 summarizes the prioritization of the curves.

TABLE 2-8
Summary of Carver County Prioritized Curves

Curve Ranking	# of Curves	% of Curves	Chevroned	% of Chevroned
★★★★★	0	0%	0	0%
★★★★	3	2%	3	100%
★★★	13	8%	5	38%
★★	42	25%	13	31%
★	70	42%	11	16%
-	40	24%	5	13%
	168	100%	37	22%

2.3.6 Rural Thru-STOP Intersections – Right Angle Crashes

The detailed intersection analysis shows seven fatal and severe injury crashes on Carver County's rural CSAH/CR system at thru-STOP or yield-controlled intersections. However, considering the Metro ATP level, there were 46 fatal and severe rural CSAH/CR system crashes at thru-STOP or yield-controlled intersections. The most severe type of crash occurring at these intersections is a right angle crash. Given that 69 of these intersections across Carver County were analyzed, a prioritization process is needed to focus the County's efforts in implementing safety projects. The prioritization process assesses an intersection's risk exposure for seven factors, and one star is given to an intersection for each risk factor. The highest priority intersections received the most stars. In cases where intersections received the same number of stars, crash costs were used to break ties and determine priority. The seven risk factors are as follows:

- **Geometry of Intersection:** Previous research has shown that skewed intersections have a higher risk of crashes. If an intersection has a skewed approach of greater than 15 degrees, it received a star.
- **Geometry of Roadway:** Previous research has shown that intersections located on or near a horizontal curve are subject to a higher level of risk. Intersections located on or near horizontal curves received a star.
- **Commercial Development in Quadrants:** Previous research has shown that intersections with commercial development located in one or more of the intersection quadrants have a higher level of risk. Private residences or farms were not included in this category. Intersections with commercial development in a quadrant received a star.
- **Distance to Previous STOP Sign:** Previous research has shown that drivers lose attention when traveling for longer distances without a STOP sign. Therefore, intersections with minor leg approaches without a STOP sign within 5 miles received a star.
- **ADT Ratio:** Intersections on the County system with an ADT ratio between 0.2 and 0.6 received a star.

- **Railroad Crossing on Minor Approach:** Intersections on or near a railroad line are subject to an increased level of risk because drivers must navigate the railroad tracks while approaching the intersection. Therefore, if an intersection has a railroad crossing on one of the minor leg approaches, the intersection received a star.
- **Crash History:** If a right-angle crash had occurred at an intersection during the 5-year study period, the intersection received a star.

Table 2-8 summarizes the results of the prioritized intersection analysis.

TABLE 2-8
Summary of Carver County Prioritized Intersections

Intersection Ranking	# of Intersections	% of Intersections
★★★★★★★	0	0%
★★★★★★	0	0%
★★★★★	1	1%
★★★★	3	4%
★★★	10	14%
★★	21	30%
★	25	36%
-	9	13%
	69	100%

Complete results of the rural thru-stop intersection analysis are included in Appendix F. All intersections with two or more stars (51 percent) were considered high priority and were assigned a proposed safety project.

3.0 Carver County Priority Safety Strategies

3.1 Background

A variety of strategies are available to address each CEA by assisting state and local agencies in reducing traffic-related fatalities and serious injuries. The National Cooperative Highway Research Program (NCHRP) has developed a series of guides that correspond to the 22 CEAs published in AASHTO's SHSP. This effort is part of the NCHRP Project 17-18(3); Report 500 series. Each guide includes a description of the problem, strategies for addressing the problem, and model implementation processes. To assist practitioners in assessing the safety strategies, the guides assign the following categories:

- **Proven:** These strategies have been used in multiple locations with multiple studies, and demonstrate effectiveness.
- **Tried:** These strategies have been implemented in many locations; however, no rigorous evaluations have been completed to determine effectiveness.
- **Experimental:** These strategies represent ideas that are considered to be effective; however, the ideas have not been widely implemented or evaluated.

3.2 Initial/Comprehensive List of Potential Strategies

NCHRP safety strategies were the basis for identifying safety strategies for the Metro ATP counties. For the CRSP process, the team sought to identify viable safety strategies for the top CEAs (see Section 2.1 and Table 2-1). Although the process sought safety strategies to address only the highest priority emphasis areas, too many strategies were available for stakeholders to consider during workshops. Given this constraint, the CRSP team reviewed the full range of safety strategies and performed an initial screening based on cost and effectiveness. For example, the NCHRP report lists more than 70 potential strategies to address unsignalized intersection safety. The screening conducted by the CRSP team narrowed the list to 17 strategies considered to be the most applicable in the Metro ATP. All strategies listed in Tables 3-1 through 3-14 were discussed at workshops (see Section 3.3). The strategies considered to be the highest priority were then recommended to Carver County staff.

Each infrastructure strategy includes information on the relative cost to implement or operate, along with the typical timeframe for implementation. Relative costs were separated into three categories:

- Low – less than $10,000 (per mile or location)
- Medium – between $10,000 and $100,000 (per mile or location)
- High – more than $100,000 per mile or location

The typical timeframe to implement the strategy was also separated into three categories:

- Short – less than 1 year to implement
- Medium – between 1 and 2 years to implement
- Long – more than 2 years to implement

Behavioral strategies also include information on the expected impact of the strategy based on current practice and results. Strategies with high impact have been shown to have influence on driver behavior.

TABLE 3-1
Infrastructure Strategies Addressing Intersection Crashes at Unsignalized Intersections Considered at Safety Workshops

Objectives	Strategies	Relative Cost to Implement and Operate	Effectiveness	Typical Timeframe for Implementation
17.1 A Reduce the frequency and severity of intersection conflicts through geometric design improvements	17.1 A1—Restrict or eliminate turning maneuvers by providing channelization or closing median openings	Low	Tried	Short
	17.1 A2—Realign intersection approaches to reduce or eliminate intersection skew	High	Proven	Medium
17.1 B Improve sight distance at unsignalized intersections	17.1 B1 -- Clear sight triangle on approaches and in medians by clearing grub, eliminating parking, etc	Low	Tried	Short
	17.1 B2 -- Change horizontal and/or vertical alignment of approaches to provide more sight distance	High	Tried	Long
	17.1 B3 -- Eliminate parking that restricts sight distance	Low	Tried	Short
17.1 C Improve availability of gaps in traffic and assist drivers in judging gap sizes at unsignalized intersections	17.1 C1 -- Provide an automated real-time system to inform drivers of crossing conflicts and the suitability of available gaps for making turning and crossing maneuvers	Low to Moderate*	Experimental	Medium
17.1 D Improve driver awareness of intersections as viewed from the intersection approach	17.1 D1 -- Improve visibility of intersections by providing enhanced signing and delineation (stop bar, larger regulatory signs, light-emitting diode stop signs, etc)	Low	Tried	Short
	17.1 D2 -- Improve visibility of intersections by providing lighting	Low to Moderate*	Proven	Medium
	17.1 D3 -- Install splitter islands on the minor-road approach to an intersection	Low to Moderate*	Tried	Medium
	17.1 D4 -- Provide a stop bar (or provide a wider stop bar) on minor-road approaches	Low	Tried	Short
	17.1 D5 -- Install larger regulatory and warning signs at intersections	Low	Tried	Short
	17.1 D6 -- Provide pavement markings with supplementary messages, such as STOP AHEAD	Low	Tried	Short
	17.1 D7 -- Install flashing beacons at stop-controlled intersections	Low	Tried	Short
	**17.1 D8 -- Add Dynamic Warning Signs	Moderate	Tried	Short
17.1 E Choose appropriate intersection traffic control to minimize crash frequency and severity	17.1 E1 -- Provide all-way stop control at appropriate intersections	Low	Proven	Short
	17.1 E2 -- Provide roundabouts at appropriate locations	High	Proven	Long

TABLE 3-2
Infrastructure Strategies Addressing Intersection Crashes at Signalized Intersections Considered at Safety Workshops

Objectives	Strategies	Relative Cost to Implement and Operate	Effectiveness	Typical Timeframe for Implementation
17.2 A Reduce frequency and severity of intersection conflicts through traffic control and operational improvements	17.2 A1 -- Optimize clearance intervals	Low	Proven	Short
	17.2 A2 -- Employ signal coordination along a corridor or route	Low*	Proven	Medium
	17.2 A3 -- Employ emergency vehicle preemption	Moderate	Proven	Medium
	**17.2 A4 -- Upgrade Signal Hardware -- 12" lenses, overhead indications, backplates	Moderate	Proven	Medium
17.2 B Improve driver awareness of intersections and signal control	17.2 B1 -- Improve visibility of intersections on approach(es)	Low	Tried	Short
	17.2 B2 -- Improve visibility of signals and signs at intersections	Low	Tried	Short
17.2 C Improve driver compliance with traffic control devices	17.2 C1 -- Supplement conventional enforcement of red-light running with Enforcement lights	Low	Tried	Short

TABLE 3-3
Infrastructure Strategies Addressing Pedestrian Crashes on Urban Roadways Considered at Safety Workshops

Objectives	Strategies	Relative Cost to Implement and Operate	Effectiveness	Typical Timeframe for Implementation
9.1 A Reduce Pedestrian Exposure to Vehicular Traffic	9.1 A1 -- Provide Sidewalks/Walkways and Curb Ramps	Moderate to High	Proven	Long
	9.1 A2 -- Install or Upgrade Traffic and Pedestrian Signals	Moderate to High	Varies	Medium
	9.1 A3 -- Construct Pedestrian Refuge Islands and Raised Medians	Moderate to High	Proven	Medium
	9.1 A4 -- Provide Full/Partial Diverters & Street Closure	Moderate to High	Proven	Medium
	9.1 A5 -- Install Overpasses/Underpasses	Moderate to High	Proven	Long
	**9.1 A6 -- Install Countdown Timers	Low	Tried	Medium
	**9.1 A7 -- Install Advance Walk Interval	Low	Tried	Short
9.1 B Improve Sight Distance and/or Visibility Between Motor Vehicles and Pedestrians	9.1 B1 -- Provide Crosswalk Enhancements	Low	Varies	Short
	9.1 B2 -- Implement Lighting/Crosswalk Illumination Measures	Moderate to High	Proven	Medium
	9.1 B3 -- Eliminate Screening by Physical Objects	Low	Tried	Short
	9.1 B4 -- Signals to Alert Motorists That Pedestrians are crossing -- HAWK Signal	Moderate	Tried / Experimental	Medium
	**9.1 B5 -- Construct Curb Extensions	Moderate	Tried	Medium to Long

TABLE 3-4
Infrastructure Strategies Addressing Bicycle Crashes on Urban Roadways Considered at Safety Workshops

Objectives	Strategies	Relative Cost to Implement and Operate	Effectiveness	Typical Timeframe for Implementation
A Reduce bicycle crashes at intersections	A1 -- Improve visibility at intersections	Moderate / High	Tried	Long
	A2 -- Improve signal timing and detection	Low / Moderate	Tried	Short
	A3 -- Improve signing	Low	Tried	Short
	A4 -- Improve pavement markings at intersections	Low	Tried	Short
	A5 -- Improve intersections geometry	High	Tried	Long
	A6 -- Restrict right turn on red (RTOR) movements	Low	Experimental	Short
	A7 -- Provide an overpass or underpass	High	Tried	Long
	A8 -- Addition of Bike Boxes	Low	Tried	Short
B Reduce bicycle crashes along roadways	B1 -- Provide safe bicycle facilities for parallel travel -- On/Off Road Facilities, Shoulders, Dedicated	Low to High	Tried	Long
C Reduce motor vehicle speeds	C1 -- Implement traffic calming techniques	Moderate to High	Proven	Long

TABLE 3-5
Infrastructure Safety Strategies Addressing Lane Departure Crashes Considered at Safety Workshops

Objectives	Strategies	Relative Cost to Implement and Operate	Effectiveness	Typical Timeframe for Implementation
15.1 A Keep vehicles from encroaching on the roadside	15.1 A1 -- Provide enhanced shoulder or delineation and marking for sharp curves	Low	Tried/Proven	Short
	15.1 A2 -- Provide enhanced pavement markings (Embedded Wet Reflective Markings)	Low	Tried	Short
	15.1 A3 -- Provide skid-resistance pavement surfaces	Moderate	Proven	Medium
	15.1 A8 -- Apply shoulder treatments *Eliminate shoulder drop-offs *Safety edge *Widen and/or pave shoulders	Moderate*	Experimental/ Proven	Medium
15.1 B Minimize the likelihood of crashing into an object or overturning if the vehicle travels off the shoulder	15.1 B1—Design safer slopes and ditches to prevent rollovers	Moderate to High*	Proven	Medium
	15.1 B2—Remove/relocate objects in hazardous locations	Moderate to High	Proven	Medium
15.1 C Reduce the severity of the crash	15.1 C1 -- Review design of roadside hardware	Moderate to High	Tried	Medium
	15.1 C2 -- Upgrade design and application of barrier and attenuation systems	Moderate to High	Tried	Medium

TABLE 3-6
Infrastructure Strategies Addressing Head-On Crashes on Urban Roadways Considered at Safety Workshops

Objectives	Strategies	Relative Cost to Implement and Operate	Effectiveness	Typical Timeframe for Implementation
18.1 A Keep vehicles from encroaching into opposite lane	18.1 A1—Install centerline rumble strips for two-lane roads	Low	Tried	Short
	18.1 A2—Install profiled thermoplastic strips for centerlines	Low	Tried	Short
	18.1 A3—Provide wider cross sections on two-lane roads	Moderate to High	Experimental	Long
	18.1 A4—Provide center two-way left-turn lanes for four- and two-lane roads	Moderate	Tried	Short
	18.1 A5—Reallocate total two-lane roadway width (lane and shoulder) to include a narrow “buffer median”	Low	Tried	Medium
18.1 B Minimize the likelihood of crashing into an oncoming vehicle	18.1 B1—Use alternating passing lanes or four-lane sections at key locations (Swedish "2+1")	Moderate to High	Tried	Medium
	18.1 B2—Install cable median barriers for medians on multilane roads	Moderate	Tried	Medium

TABLE 3-7
Infrastructure Strategies Addressing Rear End Crashes on Urban Roadways Considered at Safety Workshops

Objectives	Strategies	Relative Cost to Implement and Operate	Effectiveness	Typical Timeframe for Implementation
17.1 A Improve management of access near unsignalized intersections	17.1 A1 -- Implement driveway closure/relocations	Moderate	Tried	Medium
	17.1 A2 -- Implement driveway turn restrictions	Low	Tried	Short
17.1 B Reduce the frequency and severity of intersection conflicts through geometric design improvements	17.1 B1 -- Provide left-turn lanes	Moderate	Proven	Medium
	17.1 B2 -- Provide acceleration lanes	Moderate	Tried	Medium
	17.1 B3 -- Provide right-turn lanes	Moderate	Proven	Medium
	17.1 B4 -- 4-lane to TWLT conversion	Moderate	Proven	Medium
	17.1 B5 -- Reduce speed along segment -- Dynamic Speed Feedback Sign	Low	Tried	Short

TABLE 3-8
Behavior-based Safety Strategies Addressing Impaired Crashes Considered at Safety Workshops

Objectives	Strategies	Programs & Tactics	Effectiveness	Impact
5.1 A Eliminate Drinking and Driving	5.1 A2—Require responsible beverage service policies for alcohol servers and retailers	Advocate for server training and strong management support	Proven	Medium
	5.1 A4—Employ screening and brief interventions	These do not need to be in health care settings. A screening and brief intervention could be very effective after a DWI arrest (traumatic event)	Tried	Medium
	5.1 A5—Support community programs for alternative transportation*	Safe Cab is a partnership between beer distributors, bar owners and community program in Isanti County.	Tried	Medium
5.1 B Enforce DWI Laws	5.1 B1—Conduct Regular Well-Publicized DWI Saturations*	A saturation is a multi-agency, multi-squad car enforcement effort. These agencies and cars enforce the same community or roadway with the number of squad cars proportionate to the community size.	Proven	High
	5.1 B3—Conduct education and awareness campaign of the targeted enforcement of Zero Tolerance Laws for Drivers Under Age 21*	Publicizing is best done through community events for the local media and a public education campaign in the community about the enforcement. High visibility enforcement is when multiple jurisdictions and/or multiple squads are out at the same time patrolling in brightly colored vests and signage about the enforcement.	Proven	Low
5.1 D Control High-BAC and Repeat Offenders	5.1 D3—Monitor convicted DWI offenders closely	DWI courts or intensive supervision programs	Proven	Low

TABLE 3-9
Behavior-based Safety Strategies Addressing Unbelted Vehicle Occupant Crashes Considered at Safety Workshops

Objectives	Strategies	Programs & Tactics*	Effectiveness	Impact
8.1 A Maximize use of occupant restraints by all vehicle occupants	*8.1 A1 Conduct highly publicized enforcement campaigns to maximize restraint use. Specifically, night time belt enforcement saturation.	Publicizing is best done through community events for the local media and a public education campaign in the community about the enforcement. High visibility enforcement is when multiple jurisdictions and/or multiple squads are out at the same time patrolling in brightly colored vests and signage about the enforcement. Methods for night time enforcement include having multi-agency and multiple squad cars in well lit areas where slow moving vehicles are passing and conducting for a limited time slot.	Proven	High
	6.1 D3 Encourage employers to 1) offer education programs to employees and to 2) enact traffic safety policies with clear consequences for failure to comply.	Utilize materials and policy statements designed for employers by Network of Employers for Traffic Safety	Proven	
8.1 B Ensure that restraints, especially child and infant restraints, are properly used	8.1 B2 Conduct high-profile "child restraint inspection" events at multiple community locations.	N/A	Proven	Low
	8.1 B3 Train advocates to check for proper child restraint use.	N/A	Tried	Low

TABLE 3-10
Behavior-based Safety Strategies Addressing Young Drivers at Safety Workshops

Objectives	Strategies	Programs & Tactics	Effectiveness	Impact
1.1B Publicize, enforce, and adjudicate laws pertaining to young drivers	1B—Publicize and conduct a high visibility enforcement, graduated driver's license (GDL) restrictions, cell and texting laws, underage drinking and driving, and seatbelt laws	Publicizing is best done through community events for the local media and a public education campaign in the community about the enforcement. High visibility enforcement is when multiple jurisdictions and/or multiple squads are out at the same time patrolling in areas frequented by teen drivers in brightly colored vests and signage about the enforcement.	Proven	High
1.1C Assist parents in managing their teens' driving	1C.1—Engage parents through outreach programs designed to educate parents about teen driving risks, driving tips for their teens, facilitate parental supervision and management of young drivers, encourage selection of safer vehicles for young drivers.		Tried	Medium

TABLE 3-11
Behavior-based Safety Strategies Addressing Distracted Driving at Safety Workshops

Objectives	Strategies	Programs & Tactics	Effectiveness	Impact
Objective 6.1 C Increase driver awareness of the risks of drowsy and distracted driving and promote driver focus	*6.1 C2—Conduct high visibility enforcement for existing statutes to deter distracted and drowsy driving	Publicizing is best done through community events for the local media and a public education campaign in the community about the enforcement. High visibility enforcement is when multiple jurisdictions and/or multiple squads are out at the same time patrolling in brightly colored vests and signage about the enforcement.	Experimental	High
	6.1 D3—Encourage employers to 1) offer fatigue management programs to employees working nighttime or rotating shifts and to 2) enact traffic safety policies with clear consequences for failure to comply.	Utilize materials and policy statements designed for employers by Network of Employers for Traffic Safety	Proven	Medium

TABLE 3-12
Behavior-based Safety Strategies Addressing Pedestrian and Bicycle Crashes at Safety Workshops

Objectives	Strategies	Effectiveness
C Reduce motor vehicle speeds	C2 -- Implement speed enforcement	Tried
D Improve safety awareness and behavior	D1 -- Provide bicyclist skill education	Tried
	D2 -- Improve enforcement of bicycle-related laws	Tried
E -- Increase use of bicycle safety equipment	E1 -- Increase use of bicycle helmets	Proven
	E2 -- Increase rider and bicycle conspicuity	Tried
9.1 C -- Improve Pedestrian and Motorist Safety Awareness and Behavior	9.1 C1 -- Provide Education, Outreach and Training	Moderate
	9.1 C2 -- Implement Enforcement Campaigns	Moderate

TABLE 3-13
Behavior-based Safety Strategies Addressing Aggressive Driving at Safety Workshops

Objectives	Strategies	Programs & Tactics	Effectiveness	Impact
4.1 A Deter aggressive driving in specific populations, including those with a history of such behavior, and at specific locations	4.1 A1- Publicize and conduct high visibility targeted enforcement of speeding and aggressive driving	Publicizing is best done through community events for the local media and a public education campaign in the community about the enforcement. High visibility enforcement is when multiple jurisdictions and/or multiple squads are out at the same time patrolling in brightly colored vests and signage about the enforcement.	Tried	High
	4.1 A3- Impose sanctions against repeat offenders		Experimental	Unknown

TABLE 3-14
Behavior-based Safety Strategies Addressing Young Drivers at Safety Workshops

Objectives	Strategies	Programs & Tactics	Effectiveness	Impact
11.1 B Reduce the number of motorcycle crashes due to rider impairment	*Publicize and conduct a high visibility enforcement of all laws pertaining to motorcycle riding.	Publicizing is best done through community events for the local media and a public education campaign in the community about the enforcement. High visibility enforcement is when multiple jurisdictions and/or multiple squads are out at the same time patrolling in brightly colored vests and signage about the enforcement. Methods for night time enforcement include having multi-agency and multiple squad cars in well lit areas where slow moving vehicles are passing and conducting for a limited time slot.	Proven	High
	5.1 A4-Employ Screening and Brief Interventions	Motorcycle DWI Detection Guide or Detection of DWI Motorcyclists	Proven	Medium
11.1 C Reduce the number of motorcycle crashes due to unlicensed or untrained motorcycle riders	11.1 C2 Ensure that licensing and rider training programs adequately teach and measure skills and behaviors required for crash avoidance.	*Training courses provided around the state at Motorcycle Safety Center training sites.	Tried	Low
	11.1 C3 Identify and remove barriers to obtaining a motorcycle endorsement.	*Licensing laws: Motorcycle Skills Testing Program- From our own survey of participants, we found that approximately 1/3 would not have bothered to obtain their endorsement if it wasn't for this program.	Tried	Medium
11.1 D Increase visibility of riders	11.1 D1 Increase the awareness of the benefit of high-visibility clothing *Rider conspicuity: NHTSA's guidelines for motorcycle safety programs recommend that states educate riders on how to be more conspicuous to other drivers, and we have good resources via www.highviz.org .	Publicizing is best done through the local media and a public education campaign in the community.	Experimental	Low
11.1 E Reduce the severity of motorcycle crashes	11.1 E1 Increase the use of FMVSS 218 compliant helmets.	Pass statewide legislation requiring helmets for all riders.	Proven	High

3.3 Metro ATP Meetings and Safety Strategies Workshops

A series of meetings was conducted with Carver County during the project. The following are summaries of the various meetings.

3.3.1 Project Kickoff Meeting

On April 30, 2012, representatives from the Metro ATP met by video conference for a CRSP project kickoff meeting. Counties participating in Phase IV of the CRSP are listed in Figure 3-1.

Metro ATP

- Anoka
- **Carver**
- Dakota
- Ramsey
- Scott
- Washington

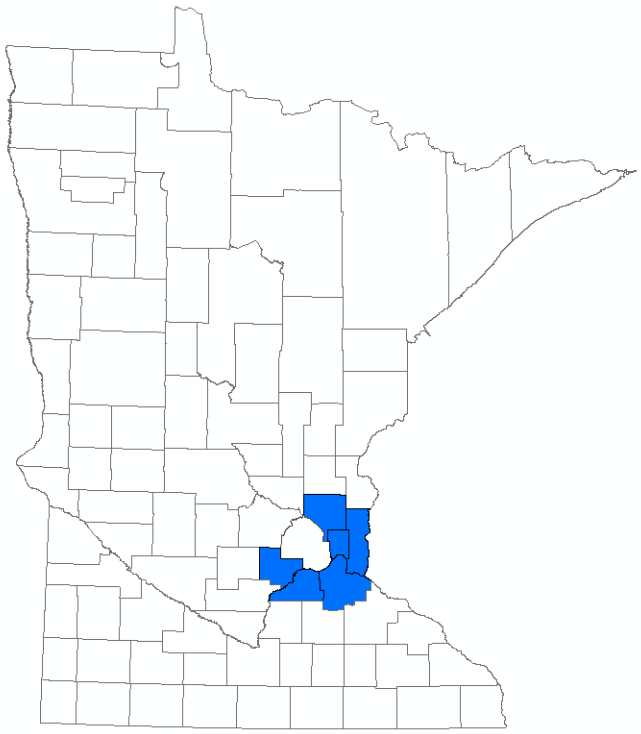


Figure 3-1
CRSP Metro ATP Kickoff Meeting Participants (April 30, 2012)

3.3.2 Safety Strategies Workshops

Three safety planning workshops were held for counties located within the Metro ATP during July and August 2012. The primary focus of the safety workshops was to discuss and prioritize safety strategies. Specifically, meeting participants prioritized safety strategies for the top five CEAs for the Metro ATP. Table 3-15 lists the counties that participated in each of the three workshops.

TABLE 3-15
Metro ATP Safety Workshop Schedule and Participating Counties

Date	Participating Counties
July 30, 2012 Arden Hills, MN	Anoka Ramsey
August 1, 2012 Chaska, MN	**Carver** Scott
August 9, 2012 West St. Paul, MN	Dakota Washington

Carver County participated in a safety planning workshop on August 1, 2012, at the Minnesota Landscape Arboretum in Chaska, Minnesota. A total of 36 stakeholders participated in the workshop. In addition to participants from Carver and Scott County, representatives from MnDOT and the Minnesota Department of Public Safety also attended. A complete roster of workshop attendees is located in Appendix G. All safety workshops included the following agenda:

8:30 – 9:00	Registration and Coffee
9:00 – 9:10	Introduction
9:10 – 9:30	County Safety Reviews
9:30 – 9:50	Law Enforcement
9:50 – 10:00	Local Safety Advocate
10:00 – 10:30	Background Information/Desired Outcomes
10:30 – 12:00	Breakout Sessions—Prioritize Strategies
12:00 – 1:00	Lunch
1:00 – 2:15	Breakout Sessions—Prioritize Strategies (cont'd.)
2:15 – 2:45	Report Back/Final Presentation
2:45 – 3:00	Wrap-up

Photos from the safety workshop attended by Carver County representatives are shown in Figure 3-2.

Figure 3-2
Photos from August 1, 2012, Metro ATP Safety Workshop

At each of the safety workshops, participants prioritized safety strategies. Workshops began with MnDOT and Department of Public Safety (DPS) representatives conducting an education session on the safety planning process and the crash data that support safety strategies. Workshop participants were then asked to help the County prioritize the safety strategies.

Participants were divided into two groups: infrastructure and driver behavior. Each group was tasked with prioritizing the strategies and identifying those with the highest priority. Typically, the list was narrowed down to ten strategies for each group. Participants were then given dots to place on their preferred safety strategies, with the option of placing all dots on one strategy or distributing the dots across multiple strategies. The voting results of the August 1, 2012, workshop and the cumulative totals of all workshops held within the Metro ATP are provided in Appendix G.

Table 3-16 summarizes the Metro ATP's top five infrastructure safety strategies based on votes received at all three workshops. Table 3-17 summarizes the top five driver behavior safety strategies based on votes received at all three workshops. Tables 3-16 and 3-17 also provide the voting results from the August 1, 2012, workshop.

TABLE 3-16
Top Five Infrastructure Safety Strategies Voting Results (8/1/12 Workshop)

Strategy	Carver/Scott Workshop	All Metro Workshops
1. Provide roundabouts at appropriate locations	16	26
2. Apply Shoulder Treatments, widen and/or pave shoulders	13	47
3. Implement Driveway Closure/relocations and turn restrictions	12	22
4. Install centerline rumble strips for two-lane roads	5	10
5. Install Countdown Timers and Advance Walk Interval	4	16

TABLE 3-17
Top Five Driver Behavior Safety Strategies Voting Results (8/1/12 Workshop)

Strategy	Carver/Scott Workshop	All Metro Workshops
1. Publicize and conduct high visibility enforcement of campaigns to maximize restraint use Regular, well-publicized DWI saturations	13	27
2. Publicize and conduct high visibility enforcement of GDL, cell and texting laws, underage drinking and driving and seatbelts programs	9	28
3. Engage parents through outreach programs to educate parents about teen driving risks	5	24
4. Conduct education and awareness campaign for targeted enforcement of Zero Tolerance Laws for drivers under age 21	5	7
5. Conduct regular well-publicized DWI saturations	3	25

The voting results from the workshop assisted in the establishment of the final list of strategies. The infrastructure strategies were applied to specific locations based on risk assessment analysis summarized in Chapter 4 to create county specific projects. More information on the behavioral strategies, including resources and examples, are included in Chapter 5."

3.3.3 County Safety Review Meeting

Project review meetings for the Metro ATP counties were held in November 2012, beginning with a webinar held on November 19, 2012. During these meetings, the CRSP process, the facility prioritization process, and the project development process were reviewed. Prior to attending this meeting, the CRSP team completed the prioritization of at-risk locations and generated a list of projects for review and feedback by the county engineer.

4.0 Carver County Safety Projects

4.1 Carver County Proactive Project Decision Process

One of the key objectives of Carver County's safety planning effort involved identifying low-cost safety-related projects focused on the County's documented safety emphasis areas and target crash types. These emphasis areas account for the greatest number of severe crashes occurring on the County's highway system. Mitigating the factors that contribute to these crashes will assist the County in achieving TZD.

Developing low-cost safety projects is based on applying high-priority strategies at the most at-risk locations identified during the detailed analysis of the County's system of highways. The high-priority safety strategies, described in Section 3, consist of the following improvements:

- Mitigations for right angle crashes at intersections
- Mitigations for pedestrian/bicycle crashes at intersections
- Mitigations for rear end crashes on segments

The focus on low-cost strategies is based on the determination that although these are the most common types of severe crashes along Carver County's system, there are no specific locations where a majority of severe crashes occur. Therefore, the improvements must be implemented at as many locations as possible to have any measurable effect.

The suggested low-cost safety projects are described in the following sections. The costs assigned to each project are planning level estimates and do not include right-of-way or some other supplemental costs such as signal revisions or replacement for 3-lane conversion projects. Because of funding limitations, all potential projects would not be completed in 1 year. The actual schedule for implementing individual projects will necessitate securing funding from the State's HSIP. The safety planning process that Carver County followed is consistent with Minnesota's SHSP. Also, several of the high-priority safety strategies are among those recommended for the state system in the State's Strategic Plan. Therefore, Carver County could successfully secure HSIP funding.

It is not expected or required that Carver County pursue safety projects in the suggested ranking order. The ranking suggests general priorities, given that actual project development decisions will be made by Carver County staff based on economic, social, and political issues and in coordination with other pavement and reconstruction projects that are part of the County's Capital Improvement Program projects.

Many project details are still undetermined, including general project termini. Carver County's Transportation Department will determine specific project details (such as termini and exceptions) as decisions regarding implementation of specific projects are made. These decisions may require that the Transportation Department coordinate with various municipal departments, the public, and possibly other county departments.

4.1.1 Strategy Effectiveness and Expected Crash Reductions

The ability of the selected strategies to reduce crashes is based on review of the Crash Modification Factors (CMF) Clearinghouse. The CMF Clearinghouse, hosted by the FHWA, is a compilation of documented research. To assist Clearinghouse users, the CMFs are given a quality rating based upon (1) the standard error of the CMF value, and (2) the design, potential biases, data source, and sample size of the study used to develop the CMF. The higher the quality rating, the more reliable

the CMF. Table 4-1 provides a summary of the crash reduction factors that were found in the Clearinghouse; most factors reported are based on research that was assigned with higher quality ratings. The source of the CMFs is included in Appendix H.

Table 4-1
Proposed Strategies Effectiveness and Crash Reduction Factors

Strategy	Crash Reduction Factor[a]
Urban	
Conversions (3-lane/5-lane)	30% to 50%
Access Management	5% to 31%
Signal - Confirmation Lights	25% to 84% reduction in violations
Pedestrian/Bike - Advanced Walk	Up to 60% ped/vehicle crashes
Pedestrian/Bike - Countdown Timers	25% ped/vehicle crashes
Pedestrian/Bike - Curb Extensions	Increase in vehicles yielding to pedestrians
Pedestrian/Bike - Median Refuge Island	46% in vehicle/pedestrian crashes
Rural Segments	
6-inch Latex Edge Line	10% to 45% all rural serious crashes
Rumble Strip/stripE	20% run off road crashes
2-ft Paved Shoulder + Rumble Strip	20% to 30% run off road crashes
Centerline Rumble Strip	40% head on/sideswipe crashes
4-ft Buffer	Under Evaluation[b]
12-ft Buffer with Left Turn Lanes	50% all crashes / 100% head-on crashes[c]
Rural Curves	
Chevrons	20% to 30%
Edgeline Rumble Strip	20% run off road crashes
2-ft Paved Shoulder + Rumble Strip	20% to 30% run off road crashes
Rural Intersections	
Roundabout	20% - 50% All Crashes / 60% - 90% right angle
RCI, or J-Turn	17% all crashes / 100% angle crashes
Mainline Dynamic Warning Sign	50% all crashes / 75% severe right angle crashes
Intersection Lighting	25% to 40% nighttime crashes
Upgrade Signs and Markings	40% upgrade of all signs and marking / 15% for STOP AHEAD marking
Clear Sight Triangle	37% serious injury crashes[d]

[a] Crash reduction factors based on review of CMF Clearinghouse and other published research
[b] MnDOT experience on TH 12 in Long Lake
[c] MnDOT experience on TH 5 in Lake Elmo
[d] Reduction based on increasing sight distance triangle
Note: TH = Trunk Highway

4.1.2 Urban Intersections – Right Angle Crash Projects

Right angle crashes are the most common type of severe crash at signalized intersections. However, a review of Carver County's signalized intersections found no high crash locations with an average of one severe crash per year, and 94 percent of intersections with no severe right angle crashes. This indicates that severe crashes are random in nature and scattered around the system.

Signalized intersections were analyzed, and projects recommended, by corridors in order to discourage implementing strategies at just one or two high priority intersections along a corridor if the remaining intersections have the same characteristics. To prioritize Carver County

corridors with signalized intersections, the analysis focused on corridors with multiple high-priority intersections based on the risk assessment discussed in Chapter 3.

Strategies were selected based on a screening process. Research suggests the following approach to signal hardware:

- Check clearance intervals (the yellow portion and all red portions of the signal cycle): These are checked by County staff and meet national guidelines.
- Check hardware: Checked via video log and county design records; almost all intersections were found to have overhead indications, and most of these have background shields and 12-inch lenses.

The conclusion is that the primary contributing factor to right angle crashes is likely intentional red-light running. Apparently drivers have no fear of red-light running because they have not experienced the consequences associated with enforcement. Local law enforcement officers indicate that they lack the staffing needed to safely monitor red-light running (one officer would be needed to observe the infraction, and one would be needed to issue the citation).

However, new technology has been developed that allows one officer to monitor intersections from the departure side; these “confirmation lights” (Figure 4-1) consist of a small blue light mounted to the back side of the traffic signal mast arm. The lights are wired into the red light circuitry so that the blue light comes on at the same time as the red light for approaching traffic. Although the lights are virtually invisible to the general public, trained law enforcement officers can see the lights clearly. This strategy is being used increasingly in states that do not allow the use of cameras for enforcement. Law enforcement officials acknowledge that red-light running is a concern, and they support using the new strategy.

Confirmation lights were one of the most favored infrastructure strategies at the metro safety workshops (supplemented by conventional enforcement of red-light running with confirmation lights). Because of the low cost, which allows a wide implementation, confirmation lights were selected as the suggested mitigation strategy at signalized intersections. Usage requires that local law enforcement provide added levels of enforcement; the estimated cost is $1,000 per intersection for two approaches (typically along the mainline).

Figure 4-1
Confirmation Lights

As shown in Figure 4-2, the projects suggested to address right angle crashes were confirmation lights at signalized intersections, and access control along corridors at unsignalized intersections. Corridors were selected where multiple intersections along the corridor were high priority based on the risk analysis (see Section 2.3). A total of 33 confirmation lights are suggested at $1,000 per intersection for two approaches. The suggested locations for these strategies are listed in Table 4-2. A project sheet summarizing the locations and proposed project for each corridor is included in Appendix A.

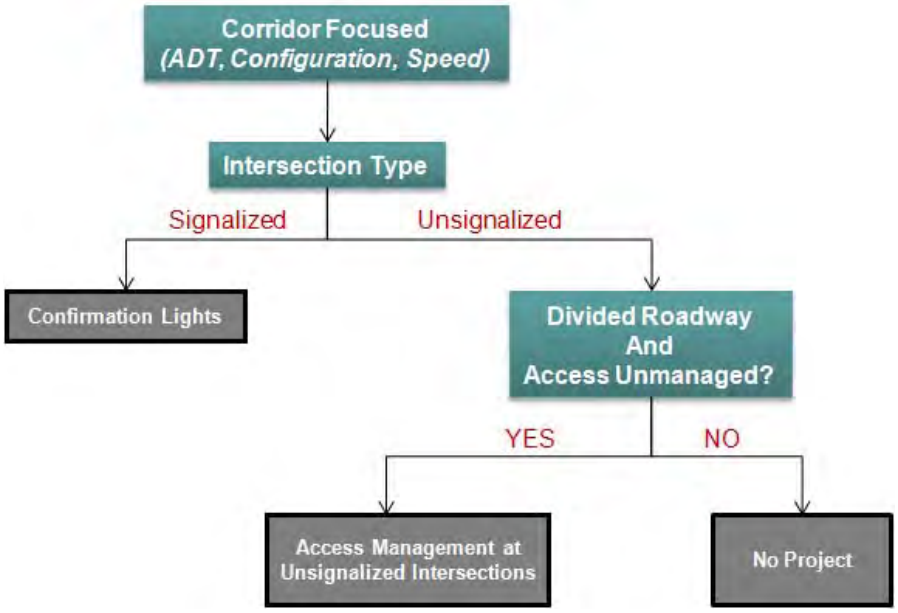


Figure 4-2
Right angle Project Decision Tree

TABLE 4-2
Summary of Confirmation Light Projects to Address Right Angle Crashes on Carver County Roads

Corridor	Street Name	First Intersection	Last Intersection	Confirmation Lights	Access Management (miles)	Cost ($)
1	Bavaria Rd/CSAH 13	MNTH 5	MNTH 7	2	-	$2,000
2	Lyman Blvd/CSAH 18	MNTH 41	CSAH 101	7	-	$7,000
3	Pioneer Tr/CSAH 14	MNTH 41	Great Plains Blvd/MNTH 101	8	-	$8,000
4	13th St/CSAH 10	MNTH 5	Main St/CSAH 59	3	-	$3,000
5	Powers Blvd/CSAH 17	Lake Dr	Pleasant View Rd	2	-	$2,000
6	Main St/CSAH 59	MNTH 5	CSAH 10	3	-	$3,000
7	Chaska Blvd/CSAH 61	MNTH 41	CSAH 101	5	-	$5,000
Other*				3	-	$3,000
			TOTAL	**33**	**0.0**	**$33,000**

*Includes high priority intersections not included as part of a corridor.

4.1.3 Urban Intersections – Pedestrian/Bicycle Projects

The suggested pedestrian and bicycle mitigation strategies were selected based on cost and effectiveness. As with right angle crashes, severe pedestrian and bicycle crashes are scattered around Carver County's system. This places a priority on low-cost strategies that can be widely implemented. A decision tree (Figure 4-3) shows the process used to develop the suggested projects for particular intersection types. For signalized intersections, two project types were suggested:

- **Implementing advance walk:** Advance walk cycles have been implemented in several large metropolitan areas with great success. Pedestrians are provided with a few extra seconds, only if the pedestrian button is pushed, to begin their walk cycle before the traffic gets a green indication. This lets pedestrians establish themselves in the crosswalk before cars move. This strategy can be implemented at basically no cost; the controller simply needs to be re-timed. Although re-timing traffic signals to incorporate the advance walk into the cycle signal would incur expenses for staff time, this safety strategy could be implemented without using HSIP funds.
- **Adding pedestrian countdown timers:** The project includes adding pedestrian countdown timers (if not already present) to the existing infrastructure at a cost of $10,000 per intersection.

Neither the advance walk nor the countdown timers have yet been proven effective because these technologies have not been subjected to rigorous statistical evaluations. However, recent research shows crash reductions associated with both strategies.

For unsignalized intersections, adding medians is a proven way of reducing pedestrian and bicycle crashes. Medians provide pedestrians a refuge when crossing traffic, requiring navigation of only one traffic direction at a time. Medians have been suggested only where a painted median already exists. The cost of adding a median is estimated at $10,000 per leg of the intersection.

Curb extensions are suggested at $15,000 per corner and are suggested only where curb parking already exists (providing the roadway width necessary to accommodate the extension). A curb extension shortens the time that a pedestrian is exposed to oncoming traffic and provides drivers with a better view of pedestrians waiting to cross the traffic. Curb extensions are also considered to be an effective pedestrian safety strategy.

Seven corridors were identified as candidates to implement suggested pedestrian and bicycle mitigation (Table 4-3). A project sheet summarizing the location and proposed project is included in Appendix B.

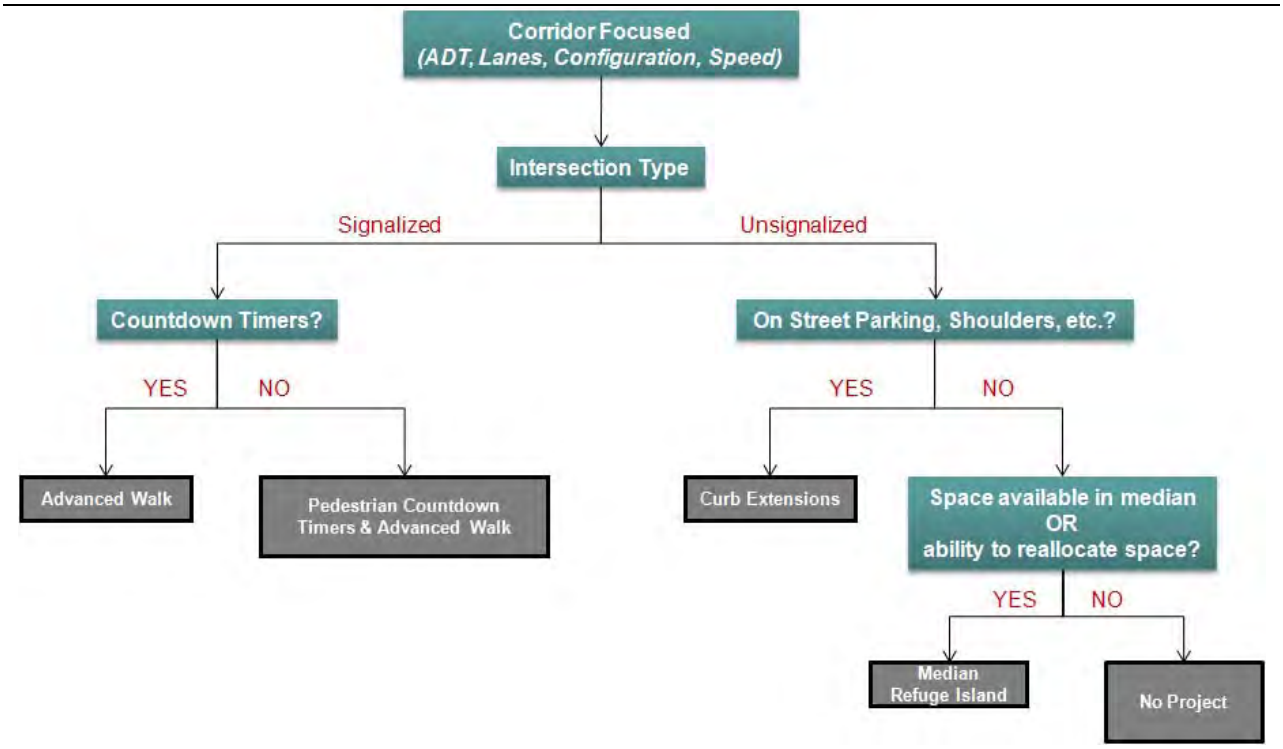


Figure 4-3
Pedestrian/Bicycle Project Decision Tree

TABLE 4-3
Carver County Pedestrian/Bicycle Projects Summary

Corridor	Street Name	First Intersection	Last Intersection	Signals (Countdown Timers and/or Advanced Walk)	Curb Extension	Median	Total Cost
1	Bavaria Rd/CSAH 13	MNTH 5	MNTH 7	2	0	0	$20,000
2	Chaska Blvd/CSAH 61	MNTH 41	CSAH 101	5	0	0	$50,000
3	Pioneer Tr/CSAH 14	MNTH 41	MNTH 101	8	0	0	$80,000
4	Lyman Blvd/CSAH 18	MNTH 41	CSAH 101	7	0	0	$70,000
5	Powers Blvd/CSAH 17	Lake Dr	Pleasant View Rd	2	0	0	$20,000
6	13th St/CSAH 10	MNTH 5	CSAH 59	3	0	0	$30,000
7	Main St/CSAH 59	MNTH 5	CSAH 10	3	0	0	$30,000
Other*				5	0	0	$50,000
			TOTALS	**35**	**0**	**0**	**$350,000**

*Includes high priority intersections not included as part of a corridor.

4.1.4 Urban Segments – Rear End and Head On Projects

Severe rear end crashes away from intersections were also identified as a target crash type. There is no concentration of these crashes; more than 90 percent of Carver County's corridors had **no** severe rear end or head on crashes, and no corridors had three severe crashes during the 5-year study period.

The suggested safety strategy to mitigate these crashes involves converting the undivided roadways to include two-way left-turn lanes. Costs for 3-lane conversions are estimated at $17,000 per mile with $22,000 per mile assumed for 5-lane conversion that includes surface preparation and the application of new latex paint. A decision tree (Figure 4-4) provides an overview of the process used to develop the suggested projects for particular segments. 22 corridors (Table 4-4) are considered candidates for safety investment. Two-way left turn lanes are an appropriate strategy on 4 of the 22 corridors. A project sheet summarizing the locations and proposed project for each corridor is included in Appendix C.

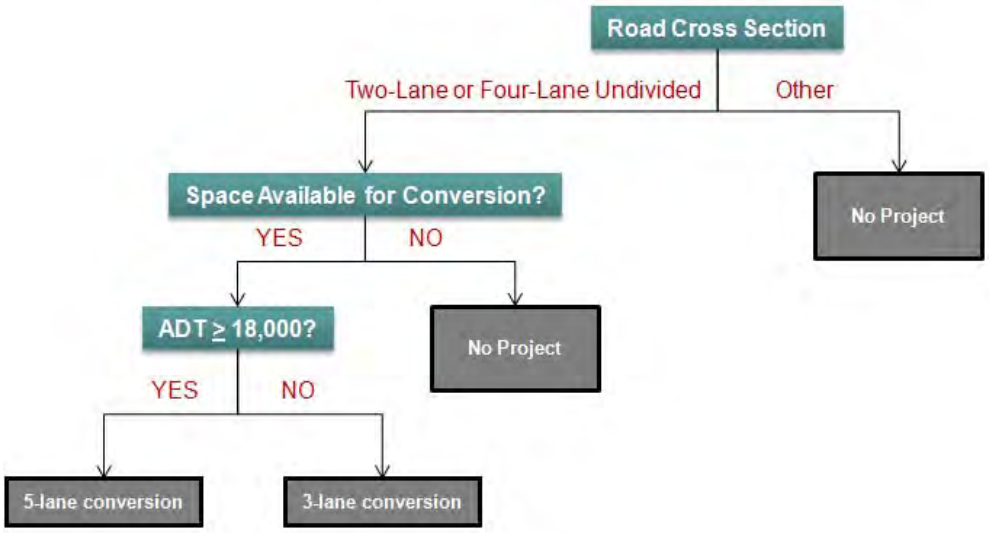


Figure 4-4
Rear End and Head On Project Decision Tree

TABLE 4-4
Carver County Rear End and Head On Projects Summary

Corridor	Start	End	3-Lane Conv (miles)	Project Cost ($)
CSAH 101*	LYMAN BLVD/CSAH 18	MNTH-5	-	-
CSAH 18*	MNTH-41	OLD MNTH-101	-	-
CSAH 17*	MNTH-5	HENN CO	-	-
CSAH 10	MNTH-25 (SOUTH)	WATERTOWN CL	1.0	$17,085
CSAH 59*	CSAH-57	CSAH-10	-	-
CSAH 14*	CSAH-11	MNTH-41	-	-

TABLE 4-4
Carver County Rear End and Head On Projects Summary

Corridor	Start	End	3-Lane Conv (miles)	Project Cost ($)
CSAH 15*	CSAH-61	CSAH-18 (SOUTH)	-	-
CSAH 57*	MNTH-5	CSAH-59	-	-
CSAH 31	USTH-212	CSAH-33	0.7	$11,968
CSAH 61*	CSAH-11	MNTH-41	-	-
CSAH 33	NORWOOD/YOUNG AM CL	USTH-212	0.8	$13,600
CNTY 117*	MNTH-5	HENN CO	-	-
CSAH 34*	MNTH-25	USTH-212	-	-
CSAH 15*	CSAH-18 (NORTH)	MNTH-5	-	-
CSAH 36*	USTH-212	COLOGNE CL	-	-
CSAH 10*	MNTH-5	CSAH-59	-	-
CSAH 30	CSAH-33 (NORTH)	NEW GERMANY CL	0.5	$8,500
CSAH 27*	CSAH-10	WATERTOWN CL	-	-
CSAH 10*	WATERTOWN CL	MNTH-25 (NORTH)	-	-
CSAH 30*	MAYER CL	MNTH-25 (NORTH)	-	-
CSAH 50*	HAMBURG CL	HAMBURG CL	-	-
CSAH 33*	USTH-212	MNTH-25	-	-
			3.0	**$51,153**

* Existing roadway geometry at this location does not allow for a 3-lane conversion.

4.1.5 Rural Highway Segments – Lane Departure Projects

Seven types of projects were considered for implementation on each of the high-priority rural highway segments (see Figure 4-5). The project types and costs are as follows:

- **2-Foot Shoulder Paving + Safety Wedge + Rumble Strip:** Install 2 feet of shoulder paving, typically over an existing 2-foot gravel shoulder, along with a rumble strip and a safety wedge. Installing no more than 6 miles of this strategy was suggested within a single year because of HSIP funding constraints. Estimated Cost: $40,000 per mile.
- **Rumble Strip:** Install a rumble strip on paved shoulders. Estimated Cost: $3,000 per mile.

- **Rumble StripE (Edgeline or Centerline):** Install a rumble stripE on road edges or along the centerline. A rumble stripE differs from a rumble strip in that the white fog line is painted over the grooves. A rumble stripE allows for better retroreflectivity during wet conditions, because a vehicle's headlights will be reflected by the beads on the sides of the grooves. This strategy does not require paved shoulders but is limited only to segments with either a paved shoulder or 12-foot lane. Estimated Cost: $3,500 per mile.

- **6-Inch Wet Reflective Epoxy in Grooves:** Install a 6-inch wet reflective epoxy marking within a groove. A contractor must cut a 20-mil groove in the edge of the pavement, and then install a wet reflective marking within the groove. The wet reflective beads in the marking reflect light during wet conditions, and they better delineate road edges for driving in wet conditions. The groove protects the more expensive marking from damage by snow plows. This strategy's higher cost and unproven (based on the NCHRP definition of widely deployed and subject to a rigorous statistical evaluation) safety benefits limit its use only to noise-sensitive areas or Amish localities where edge line rumble strips are not feasible. Estimated Cost: $8,500 per mile.

Figure 4-5
Segment Safety Strategies Considered for Deployment

- **6-Inch Latex Marking (Edgeline or Centerline):** Install a 6-inch latex marking along the edgeline or centerline, typically along ultra-low volume (ADT less than 600 vehicles per day) roadways. Estimated Cost: $650 per mile.

- **4-Foot Buffer:** This technique involves widening the roadway to create a 4-foot-wide buffer area (with rumble strips) between the opposing lanes. This technique does not provide a physical barrier to separate the lanes; it merely provides additional space so that an errant vehicle has room to recover before entering the opposing lane. Estimated Cost: $150,000 per mile.

- **12-Foot Buffer:** This technique involves widening the existing roadway to create a 12-foot-wide buffer between the opposing lanes. As with the 4-Foot Buffer, there is no barrier to prevent errant vehicles from entering the opposing lane; the buffer merely provides a recovery space. In areas with no intersections, the center 12 feet is marked out with paint; in the vicinity of intersections, the markings transition into left-turn lanes. This technique addresses head on crashes in two ways: by providing the buffer, and by prohibiting passing

maneuvers. This 12-foot buffer with painted left-turn lanes has been used in many places, including MNTH 5 in Lake Elmo. No crash reduction factor has been developed; however, the project in Lake Elmo resulted in a 100 percent reduction in head on crashes and a 56 percent reduction in rear end and sideswipe crashes. Estimated Cost: $500,000 per mile.

A decision tree (Figure 4-6) was developed to support a consistent approach for developing safety projects. This tool allows counties to choose between five types of pavement edge and centerline treatments based on factors that include traffic volume and adjacent land use. Where traffic volumes are low, 6-Inch Latex Marking is the suggested treatment. Where the adjacent land use is considered noise sensitive (in high-density residential areas, parks, and so on), 6-Inch Wet Reflective Epoxy in Grooves is the suggested treatment. On higher volume roadways with ADT greater than 600 vehicles per day and few noise-sensitive land uses, the suggested treatments are either rumble strips or stripEs, depending on the segment's lane width. For high-priority segments with traffic volumes between 3,000 and 8,000 vehicles per day, centerline rumbles, 4-foot buffers, or 12-foot buffers were the proposed projects.

Table 4-5 summarizes the high-priority segments and suggested strategies, including 30.3 miles of 2-foot shoulder paving+safety wedge+rumble strip, 13.4 miles of rumble strip, 19.8 miles of ground in wet reflective edgline, 17.0 miles of centerline rumbles, and 7.1 miles of 4-foot buffer.

A project form was completed for each high-priority segment, including a description of the segment, brief crash history, ranking factors, a picture from the Video Log, and the identified strategy. Project forms for all high-priority segments are included in Appendix D.

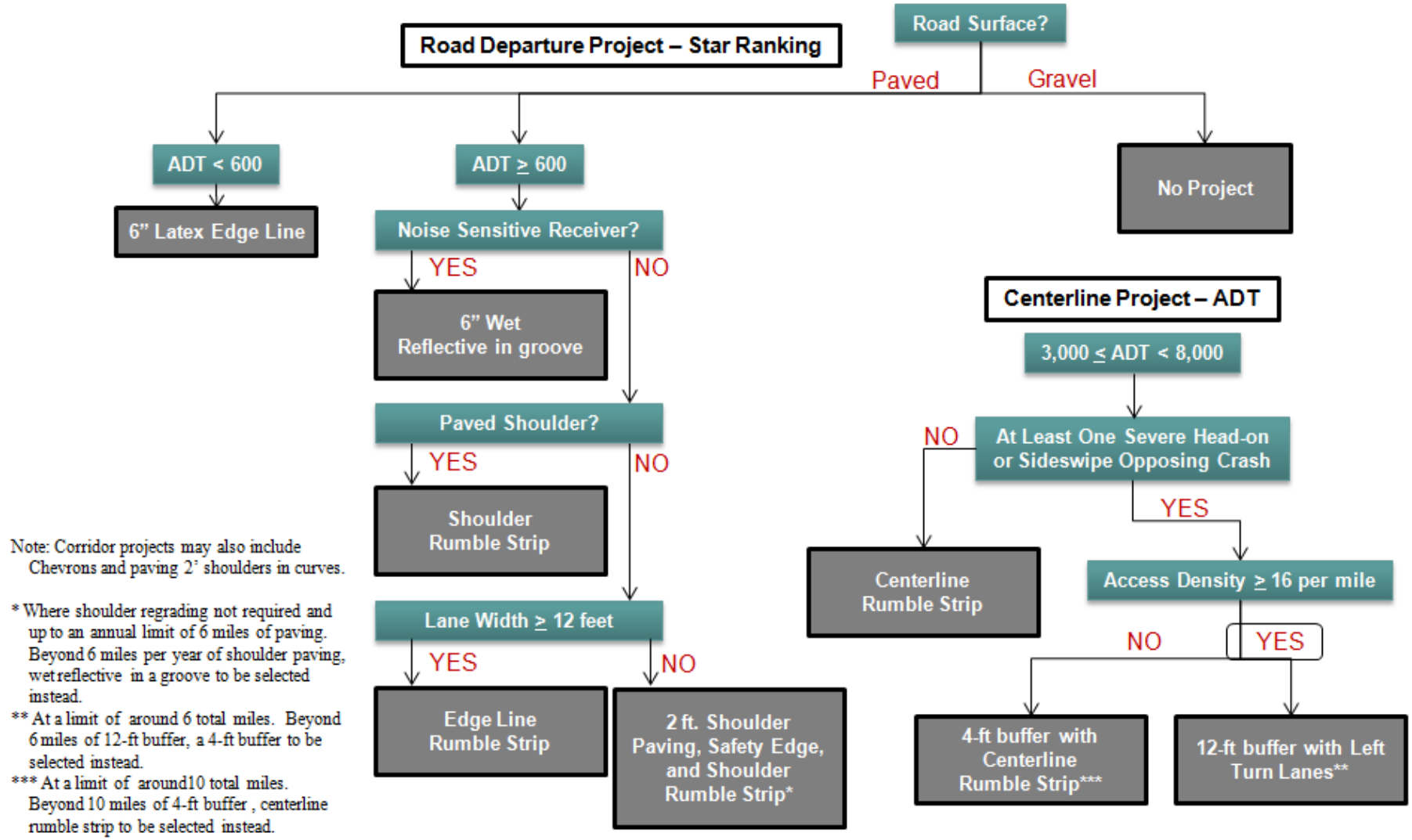


Figure 4-6
Segment Safety Strategies Decision Tree

TABLE 4-5
Carver County Segment Project Summary

Rank	Corridor #	Route #	Start	End	Length	Ranking	2' Shoulder Pave+RS + Safety Edge	Rumble		6" Edge-line	6" Wet Reflective Epoxy in Grooves	Centerline		Buffer		Project Cost
								Strip	StripE			Rumble Strip	6" Latex	4-ft	12-ft	
1	11.03	CSAH 11	SAN FRANCISCO TWSP	CSAH-40 (SOUTH)	0.9	★★★★	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$2,700
2	33.02	CSAH 33	CSAH-50 (WEST)	NORWOOD/YOUNG AMER	2.5	★★★★	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$100,000
3	24.02	CSAH 24	DREAM LN	CSAH-15	2.7	★★★★	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$108,000
4	10.06	CSAH 10	66TH ST	MNTH-5	4.0	★★★★	0.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	$68,000
5	20.02	CSAH 20	CSAH-33	MNTH-25	5.2	★★★	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$208,000
6	40.01	CSAH 40	SIBLEY CO	EAST UNION	7.2	★★★	7.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$288,000
7	10.05	CSAH 10	MNTH-7	66TH ST	1.6	★★★	0.0	0.0	0.0	0.0	1.6	1.6	0.0	0.0	0.0	$18,400
8	11.07	CSAH 11	MNTH-5	MNTH-7	2.8	★★★	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$112,000
9	40.03	CSAH 40	EAST UNION	CSAH-11	2.1	★★★	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$6,300
10	30.01	CSAH 30	MCLEOD CO	CSAH-33	1.9	★★★	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$76,000
11	36.02	CSAH 36	COLOGNE CL	USTH-212	1.3	★★★	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$3,900
12	43.02	CSAH 43	CSAH-10	TELLERS RD	1.7	★★★	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$68,000
13	123.01	CNTY 123	MNTH-7	CR-122	3.7	★★★	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	$31,450
14	135.01	CNTY 135	CSAH-33	CSAH-32	3.7	★★★	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	$31,450
15	11.04	CSAH 11	CSAH-40	CSAH-61	2.8	★★★	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	$23,800
16	92.01	CSAH 92	MNTH-5	HENN CO	2.5	★★★	0.0	2.5	0.0	0.0	0.0	2.5	0.0	0.0	0.0	$15,000
17	10.04	CSAH 10	WATERTOWN CL	MNTH-7	3.4	★★★	3.4	0.0	0.0	0.0	0.0	3.4	0.0	0.0	0.0	$146,200
18	20.04	CSAH 20	WATERTOWN CL	HENN CO	2.9	★★★	2.9	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	$124,700
19	43.01	CSAH 43	CSAH-50	CSAH-10	6.6	★★★	0.0	6.6	0.0	0.0	0.0	6.6	0.0	0.0	0.0	$39,600
20	10.08	CSAH 10	CSAH-59	CHASKA CL	7.1	★★	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	0.0	$1,065,000
				TOTAL (miles)			**30.3**	**13.4**	**0.0**	**0.0**	**19.8**	**17.0**	**0.0**	**7.1**	**0.0**	**$2,536,500**

Note: The final decision to submit any project to compete for HSIP funding and, if successful, to pursue project development are the responsibility of the County Engineer.

USTH = U.S. Trunk Highway

4.1.6 Rural Segments – Curve Projects

Curves were nominated for a project in these three cases:

- For high-priority curves and those in close proximity (for uniformity and cost effectiveness)
- For curves located on high-priority segments and having a radius between 500 and 1,200 feet
- For currently installed chevrons where the signs need to be updated

Curves identified for a project may receive one or all of the following:

- **2-Foot Shoulder Paving + Safety Wedge + Rumble Strip:** Estimated Cost: $40,000 per mile.
- **Chevrons:** Install chevrons for guiding vehicles in both directions of travel. Estimated Cost: $3,300 per curve (see Figure 2-10 for a typical chevron installation).
- **Advance Warning Sign and Speed Advisory Plaque:** Estimated Cost: $800 per curve.

Curves were screened for compliance with the new Minnesota Manual on Uniform Traffic Control Devices (MnMUTCD) requirement regarding traffic signs at horizontal curves. Under this requirement, a curve is required to have an advance horizontal alignment warning sign if the daily traffic is greater than 1,000 vehicles per day and if speed differentials (between speed limit and advisory speed) meet certain thresholds. A horizontal alignment sign and speed advisory plaque are recommended when the speed differential is 5 mph, and they are required if the speed differential is at least 10 mph. Curve radius was used to estimate whether individual curves meet the speed differential requirements for advance warning signs and advisory speed plaques. The estimated advisory speed (assuming a 55 mph speed limit, 6 percent superelevation, and a friction factor consistent with the MnDOT Design Manual) based on the curve radius is as follows:

- 900 to 1,100 ft – 50 mph
- 700 to 900 ft – 45 mph
- 500 to 700 ft – 40 mph
- 300 to 500 ft – 35 mph
- Under 300 ft – 30 mph or slower

For this analysis, no suggested advisory speed is provided for curves with a radius under 300 feet; these curves should be investigated further by the County to determine the appropriate advisory speed. Additionally, it is recommended that the County complete its own ball-bank indicator assessment of all curves to determine whether their curves meet the MnMUTCD requirement and to verify suggested advisory speeds.

If a curve was not selected as a project candidate through the CRSP risk assessment process, although the curve has an ADT greater than 1,000 vehicles per day and a radius under 1,100 feet, the curve was flagged for the County to determine the need for additional signs based on MnMUTCD guidance. In Carver County, all curves that met the volume and estimated speed differential criteria had a project assigned.

In all, 86 curves were identified for projects at a total cost of $489,237. A project form has been completed for each high-priority curve on a segment-by-segment basis; the project form describes the segment, lists the curves on the segment, describes ranking criteria, and provides estimated project costs. Project forms for all high-priority curves can be found in Appendix E.

In addition to the analysis completed as part of the CRSP process, it is understood that Carver County has completed an inventory and analysis of all curves in the county and has generated their own set of recommendations for each curve. Results from the Carver County analysis were not included in this report.

4.1.7 Rural Thru-STOP Intersection Projects

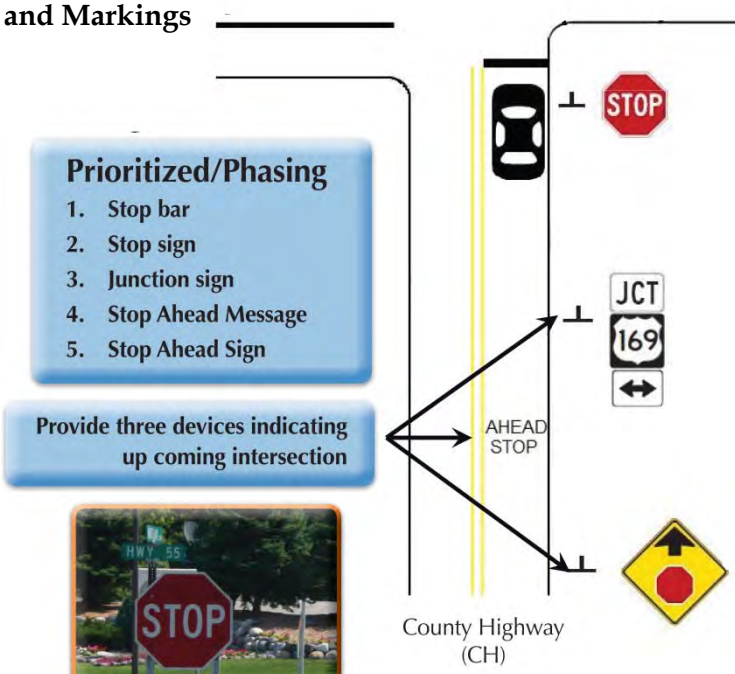
Several project types were considered for implementation on each of the high-priority rural thru-STOP intersections. Intersection strategies are suggested for use based on two primary factors: (1) the ability to mitigate the most common type of severe crash at rural, thru-STOP intersections, and (2) the results of the prioritization exercise with safety partners. The project types and estimated costs are listed below and are shown in Figure 4-7:

- **Roundabout:** Construct a roundabout in lieu of the thru-STOP intersection. This strategy is proven effective, as evidenced with an 80 to 100 percent reduction in right angle crashes. An intersection must have experienced multiple severe right angle crashes and meet volume thresholds to be a candidate for installing a traffic signal. Estimated Cost: $1,000,000 per intersection.
- **Directional Median:** On mainline divided roadways, close the median for minor leg crossings and left-turn maneuvers, and build turnarounds downstream of the intersection. This is considered a proven strategy; initial studies in Minnesota and other states have found an 80 to 90 percent reduction in right angle crashes using this strategy. Estimated Cost: $750,000 per intersection.
- **Mainline Dynamic Warning Sign:** Install loop detectors on the minor leg approaches and a dynamic flashing sign on the major leg approaches. When a vehicle approaches on a minor leg, the loop detectors send a signal to flashers that warn drivers on the mainline of a vehicle at the upcoming minor intersection. Although considered an experimental strategy, initial evaluations in other states indicate a 25 to 35 percent reduction in right angle crashes. Estimated Cost: $50,000 per intersection.
- **Street Lights:** Install destination-style streetlights at the intersection. Counties were given the opportunity to choose between one or two streetlights. Some counties chose two street lights at all intersections, some chose one light at all intersections, and others chose a tiered approach with one light at T-intersections and two lights at four-leg intersections. This is considered a proven strategy with 25 to 35 percent reduction in crashes. Estimated Cost: $6,000 for one street light per intersection, or $12,000 for two street lights.
- **Upgraded Signs and Markings:** Install a standard set of signs and pavement markings on the minor intersection approaches. Actual project may include some or all of the items shown in Figure 4-7 based on detailed field assessment. This is considered a proven strategy; however, initial evaluations in other states indicate a 25 percent reduction in right angle crashes. Estimated cost of the entire layout is $1,850 per minor leg approach. If a county has already upgraded signs at an intersection, the estimated cost for pavement markings is $700 per minor leg approach.
- **Clearing and Grubbing:** Improve sight distance at intersections by clearing and grubbing adjacent right-of-way. Estimated Cost: $2,450 per approach.

A decision tree was developed (Figure 4-8) to ensure a consistent approach for proposed rural intersection project implementation. A project form was completed for each high-priority intersection; the project form includes an intersection description, a brief crash history, ranking criteria, an aerial photograph, and the identified strategy. Project forms for all high-priority intersections are located in Appendix F.

Directional Median

Upgraded Signs and Markings



Project may include some or all of the items based on detailed field assessment.

Source: MnDOT Dist 3-13 County RSA – CH2M HILL 2006

Roundabout

Figure 4-7
Intersection Safety Strategies Considered for Deployment

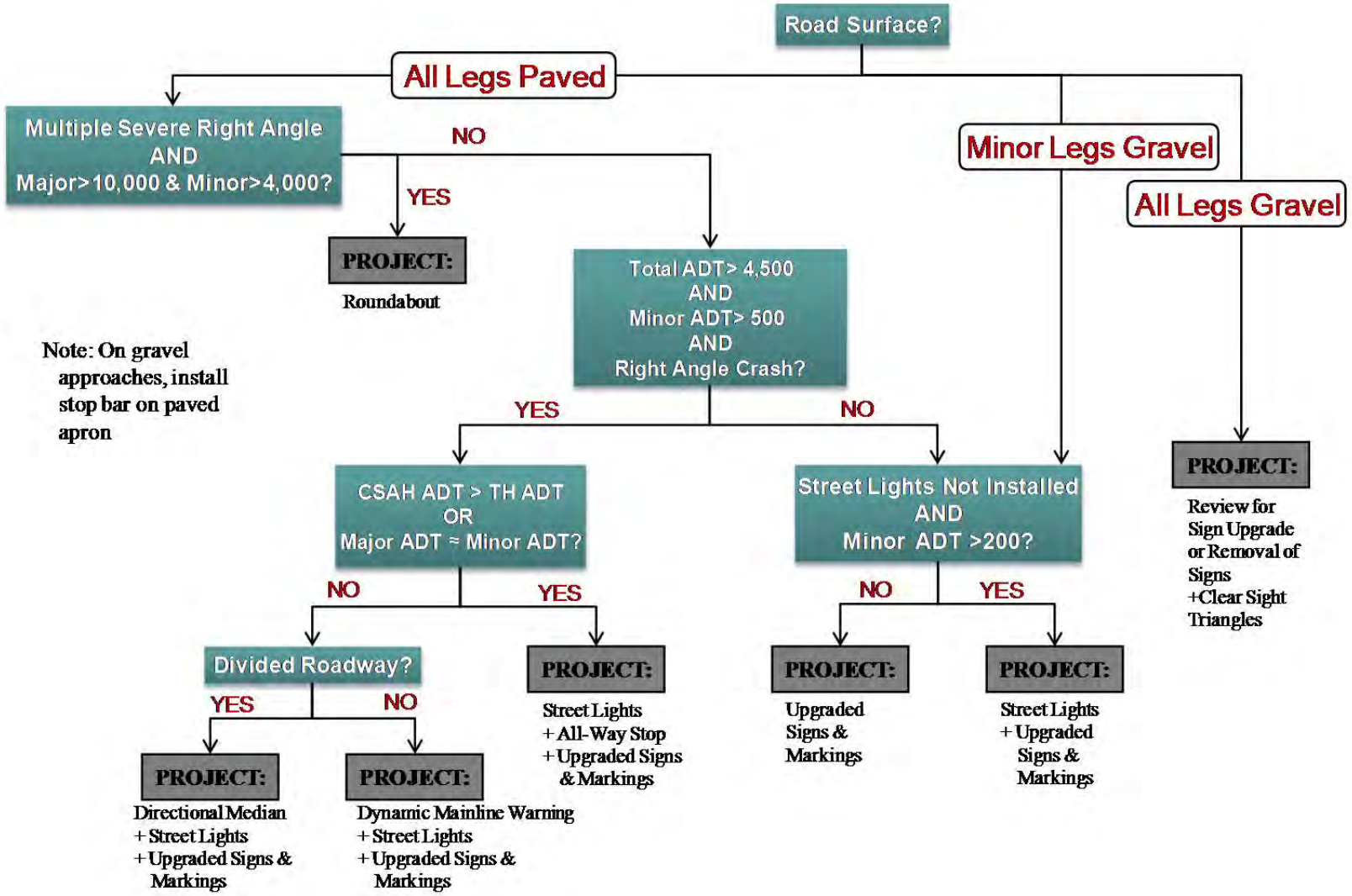


Figure 4-8
Intersection Project Identification Decision Tree

The evaluation process used to develop a project for each of the high-priority intersections considered the volume of traffic at the intersection, the geometry on the major approaches, and history of right angle crashes. The base project suggests making the lowest level of investment (to upgrade signs and markings on the minor approach) at intersections with very low volumes on the minor approaches (under 200 vehicles per day). The base project for intersections with more than 200 vehicles per day on the minor approach also included installation of a destination-style streetlight. Increased levels of investment are suggested at intersections with higher volumes and the occurrence of right angle crashes. This may include a dynamic mainline warning sign, a directional median where the major road is divided, or a roundabout at intersections where the volumes meet the traffic volume warrants in the MnMUTCD for signalization.

Table 4-6 summarizes the 35 high-priority intersections and suggested safety strategies, which include two directional medians, six mainline dynamic warning signs, 34 streetlight installations, and 33 sign and marking upgrades.

Some of the at-risk locations and suggested safety projects involve the intersection of a County roadway and a State trunk highway. In these cases, the County does not have the authority to implement projects on the State's right-of-way. The County is encouraged to coordinate with MnDOT to identify a path toward implementation.

TABLE 4-6
Carver County Intersection Project Summary

Rank	Intersection ID	#	Description	Risk Ranking	Round-about	Directional Median	Mainline Dynamic Warning Sign	Install Street Lights	Signs & Marking	Review Signs & Clearing/ Grubbing	Project Cost ($)
1	33.07	CSAH 33	CSAH 33 AND MNTH 7	★★★★★	-	-	-	X	X	-	$15,700
2	33.05	CSAH 33	CSAH 33 AND CSAH 34	★★★★	-	-	-	X	X	-	$15,700
3	34.03	CSAH 34	CSAH 34 AND USTH 212 WBL	★★★★	-	-	X	X	X	-	$65,700
4	20.05	CSAH 20	CSAH 20 AND MNTH 25	★★★★	-	-	-	X	X	-	$7,850
5	40.01	CSAH 40	CSAH 40 AND MNTH 25; T-340	★★★	-	X	-	X	X	-	$765,700
6	23.02	CSAH 23	CSAH 23 AND MNTH 7; CR 123	★★★	-	-	-	X	X	-	$15,700
7	31.05	CSAH 31	CSAH 31 AND USTH 212 WBL	★★★	-	-	X	X	X	-	$57,850
8	41.03	CSAH 41	CSAH 41 AND USTH 212 EBL	★★★	-	-	-	X	X	-	$15,700
9	51.04	CSAH 51	CSAH 51 AND MNTH 5; CR 151	★★★	-	-	X	X	X	-	$65,700
10	11.13	CSAH 11	CSAH 11 AND MNTH 7	★★★	-	-	-	X	-	-	$6,000
11	20.06	CSAH 20	CSAH 20 AND CR 127	★★★	-	-	-	X	X	-	$7,850
12	30.03	CSAH 30	CSAH 30 AND CSAH 32	★★★	-	-	-	X	X	-	$7,850
13	33.06	CSAH 33	CSAH 33 AND 110TH ST T-181 CR 135	★★★	-	-	-	X	X	-	$15,250
14	43.01	CSAH 43	CSAH 43 AND CSAH-50	★★★	-	-	-	X	X	-	$15,250
15	51.03	CSAH 51	CSAH 51 AND USTH 212	★★	-	X	-	X	X	-	$765,700
16	43.02	CSAH 43	CSAH 43 AND USTH 212	★★	-	-	X	X	X	-	$65,700
17	11.07	CSAH 11	CSAH 11 AND MARSH LAKE RD	★★	-	-	X	X	X	-	$65,250
18	40.03	CSAH 40	CSAH 40 AND CSAH 50	★★	-	-	-	X	X	-	$15,700
19	10.18	CSAH 10	CSAH 10 AND CSAH 43 (EAST)	★★	-	-	-	X	X	-	$7,850
20	36.04	CSAH 36	CSAH 36 AND USTH 212 WBL	★★	-	-	-	X	X	-	$7,850
21	10.19	CSAH 10	CSAH 10 AND CSAH 11*	★★	-	-	-	-	-	-	$0

TABLE 4-6
Carver County Intersection Project Summary

Rank	Intersection ID	#	Description	Risk Ranking	Round-about	Directional Median	Mainline Dynamic Warning Sign	Install Street Lights	Signs & Marking	Review Signs & Clearing/ Grubbing	Project Cost ($)
22	36.01	CSAH 36	CSAH 36 AND USTH 212 EBL	★★	-	-	-	X	X	-	$7,850
23	36.03	CSAH 36	CSAH 36 AND CSAH 41	★★	-	-	-	X	X	-	$15,250
24	40.02	CSAH 40	CSAH 40 AND CSAH 52	★★	-	-	-	X	X	-	$15,250
25	52.03	CSAH 52	CSAH 52 AND CSAH 53	★★	-	-	-	X	X	-	$15,700
26	50.06	CSAH 50	CSAH 50 AND CSAH 53	★★	-	-	-	X	X	-	$15,700
27	92.01	CSAH 92	CSAH 92 AND MNTH 5	★★	-	-	-	X	X	-	$7,850
28	34.02	CSAH 34	CSAH 34 AND MNTH 25	★★	-	-	-	X	X	-	$15,700
29	131.01	CNTY 131	CNTY 131 AND USTH 212 EBL	★★	-	-	X	X	X	-	$65,700
30	20.03	CSAH 20	CSAH 20 AND CSAH 33 (SOUTH)	★★	-	-	-	X	X	-	$15,700
31	20.07	CSAH 20	CSAH 20 AND CR 26	★★	-	-	-	X	X	-	$7,850
32	34.01	CSAH 34	CSAH 34 AND CR 131	★★	-	-	-	X	X	-	$7,850
33	52.02	CSAH 52	CSAH 52 AND SIBLEY CO CSAH 5	★★	-	-	-	X	X	-	$7,850
34	92.02	CSAH 92	CSAH 92 AND CR 155	★★	-	-	-	X	X	-	$7,850
35	122.01	CNTY 122	CNTY 122 AND CR 123	★★	-	-	-	X	X	-	$7,850
			TOTAL		**0**	**2**	**6**	**34**	**33**	**0**	**$2,219,800**

Note: The final decision to submit any project to compete for HSIP funding and, if successful, to pursue project development are the responsibility of the County Engineer.
* Intersection is now signalized – no project assigned

4.2 Carver County Reactive Projects

Carver County has not completed enough analysis to date, to identify reactive projects.

4.3 County Nominated Projects

As part of the CRSP process Carver County has provided a list of County nominated projects to be included in the plan. County nominated projects are summarized in the tables below.

The county nominated project includes the following intersection improvements, as shown in Table 4-7.

Table 4-7
Carver County - County Nominated Projects

Urban Right Angle Intersections		
Location	**Improvement**	**Estimated Cost**
CSAH 13 AND MNTH-5	Flashing Yellow Arrow	$10,000
CSAH 13 AND MNTH-7	Flashing Yellow Arrow	$10,000
CSAH 14 AND MNTH-41	Flashing Yellow Arrow	$10,000
CSAH 14 AND COMMERCIAL ENTRANCE	Flashing Yellow Arrow	$10,000
CSAH 14 AND HUNDERTMARK RD	Flashing Yellow Arrow	$10,000
CSAH 14 AND ORIOLE LN	Flashing Yellow Arrow	$10,000
CSAH 14 AND ACORN RD	Flashing Yellow Arrow	$10,000
CSAH 14 AND AUDOBON RD CSAH-15	Flashing Yellow Arrow	$10,000
CSAH 14 AND BLUFF CREEK DR	Flashing Yellow Arrow	$10,000
CSAH 14 AND MNTH-101	Flashing Yellow Arrow	$10,000
CSAH 10 AND MNTH-5	Flashing Yellow Arrow	$10,000
CSAH 10 AND MARKETPLACE DR	Flashing Yellow Arrow	$10,000
CSAH 10 AND MAIN ST E CSAH-59 SBL	Flashing Yellow Arrow	$10,000
CSAH 17 AND MNTH-5 EB	Flashing Yellow Arrow	$10,000
CSAH 17 AND 78TH ST W MSAS-113	Flashing Yellow Arrow	$10,000
CSAH 59 AND MNTH-5 WBL	Flashing Yellow Arrow	$10,000
CSAH 59 AND AIRPORT RD	Flashing Yellow Arrow	$10,000
CSAH 10 AND MAIN ST E CSAH-59 SBL	Flashing Yellow Arrow	$10,000
CSAH 61 AND MNTH-41	Flashing Yellow Arrow	$10,000
CSAH 61 AND WALNUT ST MSAS-118	Flashing Yellow Arrow	$10,000
CSAH 15 AND CHASKA BLVD CSAH-61	Flashing Yellow Arrow	$10,000
CSAH 61 AND MNTH-101; OLD USTH-212	Flashing Yellow Arrow	$10,000
CSAH 61 AND CSAH-101	Flashing Yellow Arrow	$10,000

Table 4-7
Carver County - County Nominated Projects

CSAH 10 AND MNTH-41	Flashing Yellow Arrow	$10,000
CSAH 15 AND MNTH-5; CR-117	Flashing Yellow Arrow	$10,000
CSAH 101 AND MNTH-5	Flashing Yellow Arrow	$10,000
	Urban Right Angle Total	**$260,000**

Urban Pedestrian/Bicycle Intersections		
Location	**Improvement**	**Estimated Cost**
South of Park Rd on Powers Blvd	HAWK Signal	$50,000
Bavaria Rd/CSAH 13 from MNTH 5 to MNTH 7	Retiming signal for advanced walk (2)	$1,000
Chaska Blvd/CSAH 61 from MNTH 41 to CSAH 101	Retiming signal for advanced walk (5)	$2,500
Pioneer Tr/CSAH 14 from MNTH 41 to MNTH 101	Retiming signal for advanced walk (8)	$4,000
Lyman Blvd/CSAH 18 from MNTH 41 to CSAH 101	Retiming signal for advanced walk (7)	$3,500
Powers Blvd/CSAH 17 from Lake Dr from Pleasant View Rd	Retiming signal for advanced walk (2)	$1,000
13th St/CSAH 10 from MNTH 5 to CSAH 59	Retiming signal for advanced walk (3)	$1,500
Main St/CSAH 59 from MNTH 5 to CSAH 10	Retiming signal for advanced walk (3)	$1,500
Other*	Retiming signal for advanced walk (5)	$2,500
	Urban Pedestrian/Bicycle Total	**$67,500**

Rural Intersection Projects

Location	**Improvement**	**Estimated Cost**
CSAH 10 AND CSAH-43 (WEST)	Install Street Lights	$6,000
CSAH 32 AND CR-135	Install Street Lights	$6,000
CSAH 20 AND CSAH-33 (NORTH)	Install Street Lights	$6,000
CSAH 50 AND S JCT CSAH-51; 158TH ST T-8	Install Street Lights	$12,000
CSAH 31 AND CSAH 50 (WEST); VERA AVE T-50	Install Street Lights	$12,000
CSAH 31 AND CSAH-50 (EAST); UPTON RD T-66	Install Street Lights	$12,000
CSAH 10 AND CR-141 (new CR)	Install Street Lights	$6,000
CSAH 24 AND CR-127	Install Street Lights	$6,000
CSAH 41 AND CSAH-50	Install Street Lights	$12,000
CSAH 50 AND CSAH-10; ZEBRA AVE T-37	Install Street Lights	$12,000
CSAH 50 AND N JCT CSAH-51; 150TH ST T-167	Install Street Lights	$12,000
CSAH 21 AND CR-122	Install Street Lights	$12,000
CSAH 32 AND QUAAS AVE T-91 CR-151	Install Street Lights	$12,000

Table 4-7
Carver County - County Nominated Projects

CSAH 33 AND CSAH-50 (EAST)	Install Street Lights	$12,000
CSAH 33 AND CR-122	Install Street Lights	$6,000
CSAH 51 AND CSAH-52; CR-151 SEG #1	Install Street Lights	$12,000
CSAH 52 AND SIBLEY CO CSAH-5 (WEST)	Install Street Lights	$6,000
CSAH 53 AND CR-152 MAPLEWOOD RD T-173	Install Street Lights	$12,000
CNTY 151 AND SIBLEY CO T-158 & CSAH-60	Install Street Lights	$12,000
CSAH 20 AND CSAH-21	Install Street Lights	$12,000
CSAH 11 AND GUERNSEY AVE; CR-140	Install Street Lights	$6,000
CSAH 41 AND CSAH 52	Install Street Lights	$6,000
CSAH 20 AND CR-133	Install Street Lights	$6,000
CSAH 31 AND SIBLEY CO T-150 & CSAH 16	Install Street Lights	$12,000
CSAH 50 AND CR-153 PAUL AVE T-97	Install Street Lights	$12,000
CSAH 51 AND 142ND ST T-172 CR-152	Install Street Lights	$12,000
CNTY 152 AND CR-153	Install Street Lights	$12,000
CSAH 33 AND CSAH-50 (WEST); TACOMA AVE T-67	Install Street Lights	$12,000
CSAH 43 AND CR-140	Install Street Lights	$12,000
	Rural Intersections Total	**$288,000**
	COUNTY NOMINATED TOTAL	**$615,500**

*Includes high priority intersections not included as part of a corridor.

4.4 Conclusion: Suggested Infrastructure-related Safety Projects

The safety planning process for Carver County resulted in the identification of target crash types; urban intersection right angle crashes, urban pedestrian/bicycle crashes, urban rear end and head on crashes, rural lane departure crashes, rural road departure crashes on curves, and rural intersection right angle crashes with an estimated implementation cost of $5,869,937 (Table 4-8). Figures 4-9 through 4-12 show the locations and types of the proposed projects for Carver County.

TABLE 4-8
Carver County Project Summary

	Number of Locations	Estimated Implementation Cost
COUNTY PROACTIVE PROJECTS		
URBAN LOCATIONS		

TABLE 4-8
Carver County Project Summary

	Number of Locations	Estimated Implementation Cost
Red Light Confirmation Lights and Access Management (see Figure 4-9)	7 corridors	$33,000
Pedestrian Improvements (Countdown Timers, Advanced Walk, Medians, Curb Extensions and Sidewalks) **(see Figure 4-9)**	7 corridors	$350,000
Conversion to Two Way Left Turn Lane (see Figure 4-9)	4 corridors	$51,153
RURAL LOCATIONS		
Rural Segments Projects (see Figure 4-10)	20 corridors	$2,536,500
Rural Curves Projects (see Figure 4-11)	86 curves	$489,237
Rural Intersection Projects (see Figure 4-12)	35 intersections	$2,219,800
	TOTAL PROACTIVE PROJECTS	**$5,679,690**
COUNTY NOMINATED PROJECTS		
Urban Right Angle Intersections (see Table 4-7)	26 Intersections	$260,000

TABLE 4-8
Carver County Project Summary

	Number of Locations	Estimated Implementation Cost
Urban Pedestrian/Bicycle Intersections (see Table 4-7)	7 corridors and 6 intersections	$67,500
Rural Intersection Projects (see Table 4-7)	29 intersections	$288,000
TOTAL COUNTY NOMINATED PROJECTS		**$615,500**
GRAND TOTAL PROJECTS		***$6,295,190***

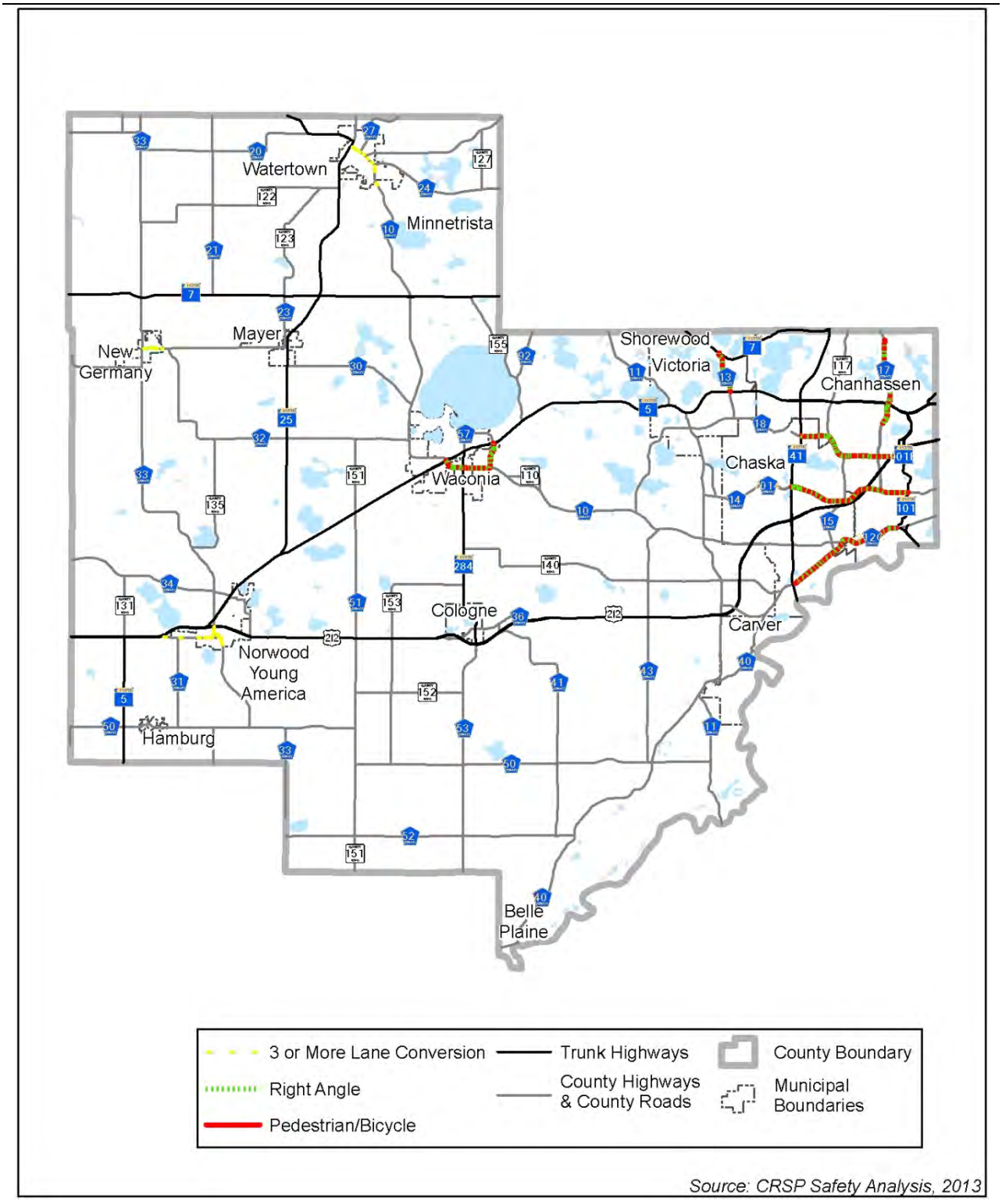


Figure 4-9
Urban Project Corridors

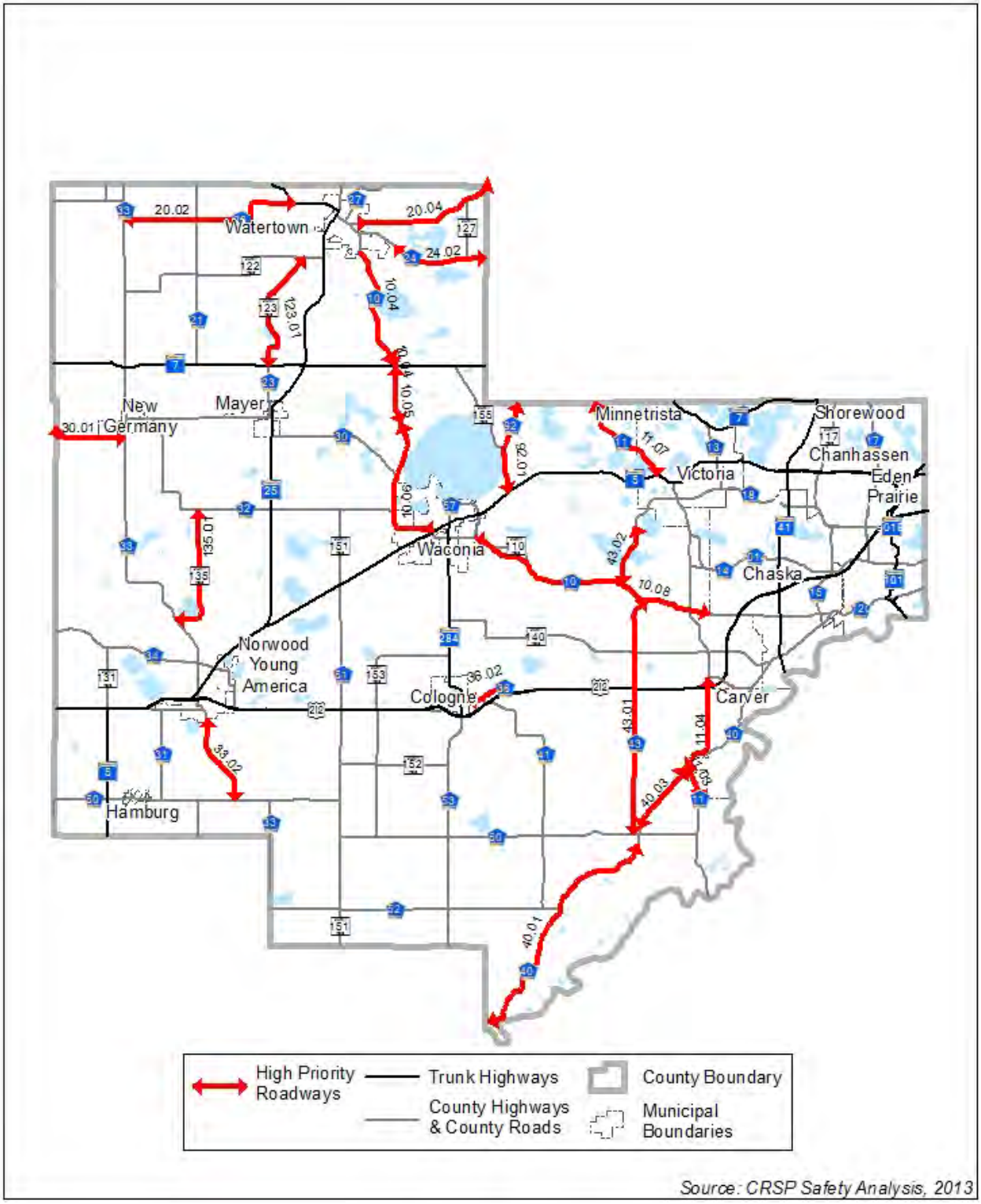


Figure 4-10
Rural Segment Projects

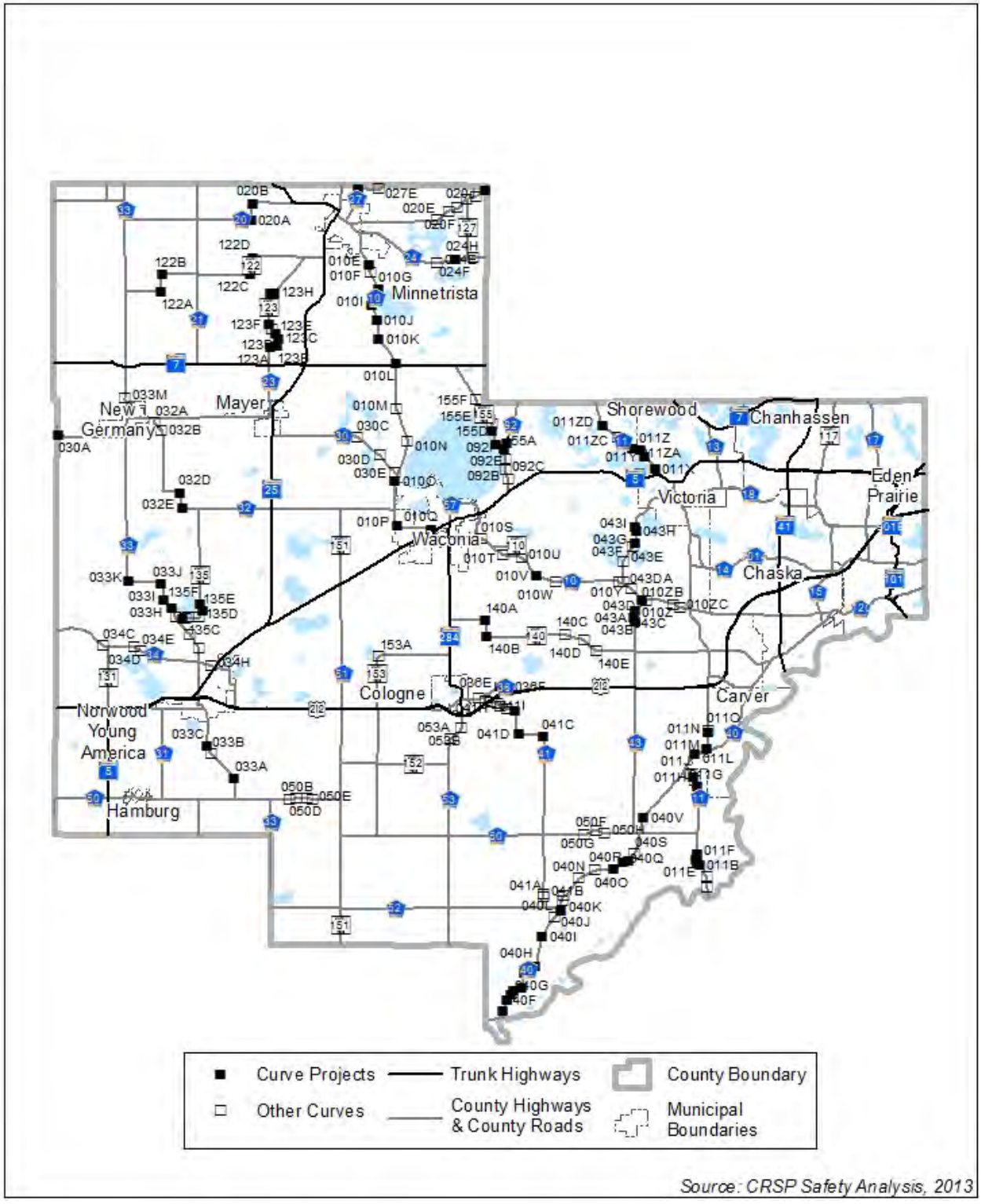


Figure 4-11
Rural Curve Projects

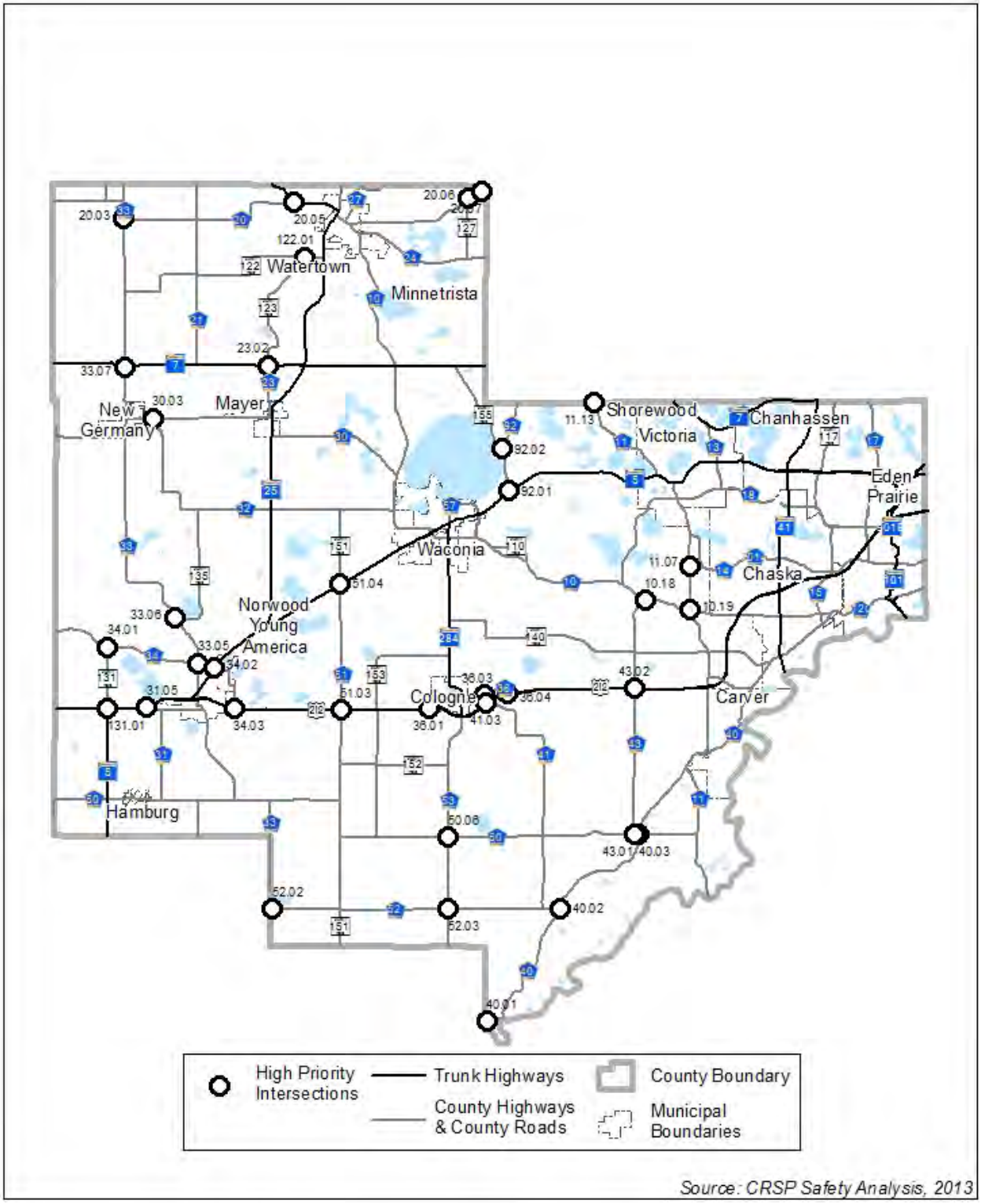


Figure 4-12
Rural Intersection Projects

5.0 Behavioral Strategies

5.1 Why is Driver Behavior Important to Include in a County Plan?

Traffic crashes are the leading killer of Minnesotans ages 1 to 34. Each year, more than 350 people are killed on our roads, and 30,000 are injured. These deaths and injuries are all preventable and predictable. In most cases, unsafe driver behavior is the primary contributing factor for crashes. Traffic crashes can be prevented—and the severity of crashes that do happen can be reduced—if motorists buckle up, drive at safe speeds, pay attention, and plan ahead to avoid impaired driving.

The most effective method to encourage these safe driving behaviors is to apply enforcement efforts along with educational outreach. Research indicates that education alone is not effective, and enforcement alone will not sustain changes in driver behavior.

At the foundation of Minnesota and the nation's traffic crash issues is a complacency toward driving—there is little outrage about the deaths, and serious action is not taken to prevent them. The public seems to accept that these crashes will always occur. The challenge is to sculpt and foster a new driving culture in which Minnesotans practice and promote safe driving, and join in the vision that these tragedies are preventable.

5.2 Metro Area Behavioral Data

The data presented in this chapter are specifically for the Metro Area Transportation Partnership, and this is the same data presented at each of the County Safety Plan Workshops in the metro area. The data suggest that contributing factors for this region most often are inexperienced drivers, impaired driving, failure to use seat belts, speeding, and distracted driving.

5.2.1 Teenage Drivers

Traffic crashes are the leading killer of Minnesota teens. Teenage drivers' inexperience behind the wheel puts them at significantly higher risk for fatal and serious injury crashes. Also contributing to these crashes are low seat belt compliance rates, risk-taking behind the wheel, and distractions such as other passengers in the vehicle (see Figures 5-1 through 5-4). Most significantly, teen drivers are still developing their decision-making and judgment skills, and this process continues until they reach their early 20s.

There have been legislative efforts to support safe teen driving. The Graduated Driver's License (GDL) law helps newly licensed teen drivers hone their driving skills during the first year of licensure by minimizing exposure to two high-risk situations: carrying multiple teen passengers, and driving late at night. New teen drivers are also banned from all cell phone use while driving.

Parents are crucial factors in developing safe teen drivers. Parents need to continue to monitor and train teen drivers even after licensure, reinforce state laws, set reasonable rules and limits specific to their teen driver, and be role models for safety behind the wheel.

5.2.2 Alcohol-related Crashes

Each year, alcohol-related deaths account for one-third of the state's total death count, and more than 30,000 motorists are arrested for driving while intoxicated (DWI) annually. Young adult males are the primary offenders and those most often killed in alcohol-related crashes. In

the metro area, motorists ages 21 to 29 have the highest level of involvement in alcohol-related fatal and serious injury crashes.

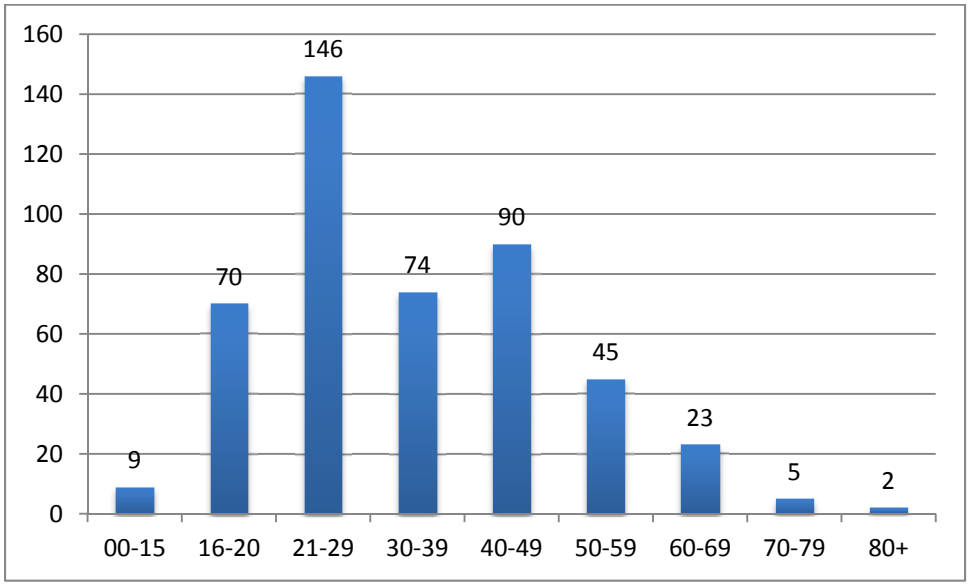


Figure 5-1
2007-2011 Alcohol-related Fatalities and Severe Injuries by Age in Metro Area

Alcohol-related fatalities and severe injuries typically occur on the weekends, at night, and in the early morning hours, and most often during the summer months. The majority of the alcohol-related crashes in the metro area are on CSAHs and local roads.

5.2.3 Seat Belts

Each year, more than half of the state's vehicle occupant fatalities are unbelted. Minnesota's seat belt compliance rate hit a daytime record high of 93 percent in 2011 following the 2009 passing of the primary seat belt law . Data reveal, however, that belt use in fatal and severe crashes is lower at night—for example, 75 percent of drinking drivers killed in crashes were not buckled up. Belt use is generally lower on local and township roads in the metro area. The groups with the lowest seat belt use rates are mostly teens and young adults (see Figure 5-2). Males have a lower seat belt use rate than females.

5.2.4 Unsafe and Illegal Speeding, and Aggressive Driving

Illegal or unsafe speed is a leading factor in fatal crashes. Aggressive driving behavior (speeding, tailgating, running lights, unsafely changing lanes, and so on) is primarily a young driver issue. Speed-related fatalities and serious injuries typically occur on weekend evenings and early mornings. The drivers are most often males, 21 to 29 years of age.

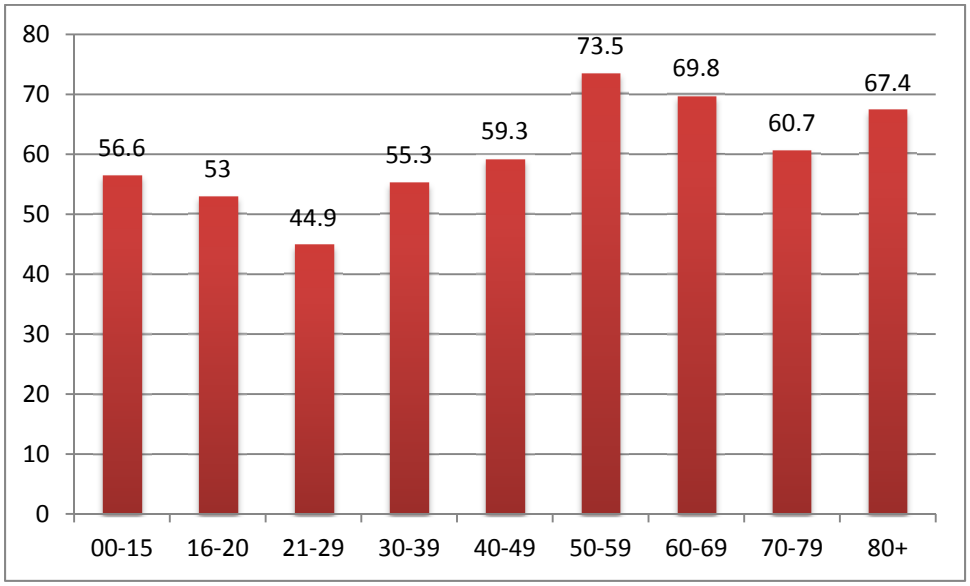


Figure 5-2
2007-2011 Percentage of Fatalities and Severe Injuries that were Belted during Crash by Age in Metro Area

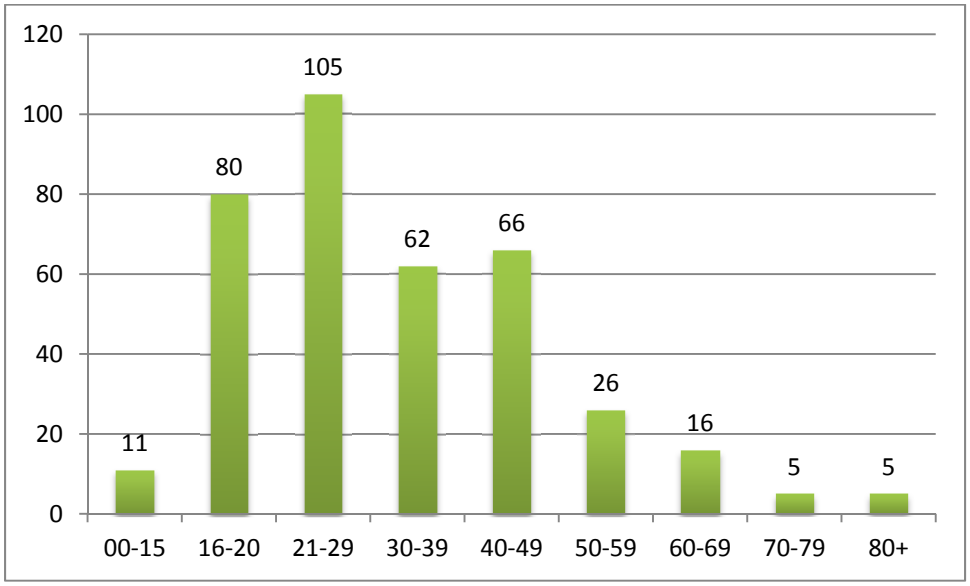


Figure 5-3
2007-2011 Speed-related Fatalities and Severe Injuries by Age in Metro Area

5.2.5 Distracted/Inattentive Driving

A range of distractions occur in a vehicle—including daydreaming, conversations, cell phone use/texting, reaching for items, eating, grooming, and more. Each year, distracted driving accounts for at least one-quarter of all crashes, resulting in 70 deaths and 270 serious injuries—these numbers are low because it is a challenge for law enforcement to determine "distraction" as a crash factor.

While much focus of distraction is on teens/young adults, new studies show that adults are just as active on cell phones and texting behind the wheel. In Minnesota, it is illegal for drivers to read/compose/send texts or e-mails, or access the Web on a wireless device while the vehicle is in motion or is part of traffic—including while stopped in traffic or at a traffic signal. Distraction is primarily a daytime concern, and women are disproportionately represented in inattention-related fatal and serious injury crashes (see Figure 5-4).

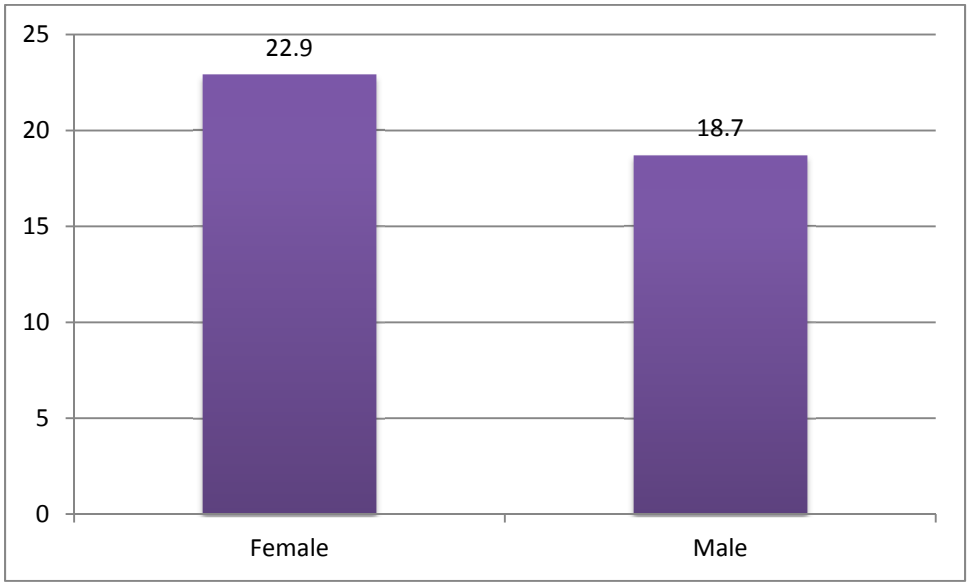


Figure 5-4
2007-2011 Percentage of Fatalities and Severe Injuries that were Inattention-Related by Gender in Metro Area

5.3 Driver Behavior Change Strategies: Proven, Experimental, and Tried

The Minnesota Department of Public Safety Office of Traffic Safety created a list of driver behavior change strategies that could be implemented by all communities. The strategies included were based on the research provided by the NCHRP 500 Series and the NHTSA-produced Countermeasures that Work, 5th edition. The strategies were chosen to address each of the most prevalent contributing factors to fatal and severe injuries on Minnesota roads, which are outlined below. Based on research, each strategy was rated for effectiveness in addressing an issue and for the impact on the problem when implemented.

5.3.1 Traffic Safety Policy

State-level legislative efforts to improve traffic safety have been researched and proven effective in many states (see Table 5-1). Local community groups can advocate for laws by contacting local legislators or educating community members about the benefits of proposed legislation and current laws. If the laws exist, it is important to maintain and enforce them. To

stay involved in traffic safety policy efforts, advocates should support law enforcement in enforcing laws, as well as voice support for enforcement initiatives to the local government such as city council or county commissioners.

Table 5-1
Potential Strategies to Consider for State Legislation

Strategy	Contributing Factor	Effectiveness	Impact
Require ignition interlocks as a condition for license reinstatement	Impaired	Proven	High
Suspend driver's license administratively upon arrest	Impaired	Proven	High
Eliminate diversion programs and plea bargains	Impaired	Tried	High
Pass statewide legislation requiring helmets for all motorcycle riders	Motorcycle	Proven	High
Pass statewide legislation identifying licensing requirements for all motorcycle riders	Motorcycle	Tried	Low
Pass statewide legislation requiring helmets for all bicyclists	Bicyclists	Tried	Low
Impose sanctions against repeat offenders for speed	Speed	Experimental	Unknown

5.3.2 Worksite Policy

Many Minnesota employers have implemented policies for employees that support traffic safety regarding seat belt use, safe speed, no alcohol, and no cell phone use (see Table 5-2). Policies can offer protection to employees, employee's families, and the employer. Employee productivity and employer liability are the main reasons employers focus on traffic safety policies. In the liquor establishment setting, a policy requiring responsible beverage service training is helpful in protecting the establishment from liability.

Table 5-2
Potential Strategies to Consider for Worksites

Strategy	Contributing Factor	Effectiveness	Impact
Encourage employers to offer fatigue management programs to employees working nighttime or rotating shifts	Distraction	Proven	Medium
Encourage employers to enact traffic safety policies with clear consequences for failure to comply	Distraction/Seat Belts/Alcohol	Proven	Medium
Require responsible beverage service policies for alcohol servers and retailers	Impaired	Proven	Medium

5.4 Behavior Change Strategies—High-visibility Enforcement of Traffic Laws

5.4.1 What is High-visibility Enforcement?

High-visibility enforcement employs a multiple jurisdictional and/or multiple squad approach to saturate specific corridors. The efforts use electronic or static signage on officer-saturated traffic corridors (for example, to alert motorists when they enter a "DWI Arrest Zone"). Participating officers also wear "DWI Enforcement" reflective gear to increase enforcement visibility. This enforcement strategy can be used to enforce laws pertaining to DWI, seat belt use, speeding, and aggressive driving.

Which laws are enforced?

- Publicize and conduct high-visibility targeted enforcement of laws pertaining to speeding and aggressive driving.
- Conduct highly publicized enforcement campaigns to maximize restraint use (specifically, nighttime belt enforcement saturation).
- Conduct ongoing, well-publicized DWI saturations.

Who are potential partners?

- Local law enforcement (State Patrol, county sheriff, city police)
- Community partners (coalitions or county public health educators, school officials, parents)
- Local media (newspaper, radio, cable/TV)

How is it done?

- Public education outreach and enforcement activities are coordinated. A wide range of media will be used for public education. Signs in the community will advertise that an enforcement campaign is taking place.
- Craft and issue a news release for the media; officers or community members can conduct interviews and offer ride-a-longs; conduct live, call-in radio talk shows; hold a kickoff news conference with many officers and squads present, as well as ambulances/fire trucks and families of crash victims.
- Community efforts include writing letters to the editor during the same time period, as well as distributing posters, coasters, window clings, and other promotional items with the enforcement message to local businesses and schools. Communities should be creative in how they promote traffic safety.
- The enforcement could include officers wearing highly visible vests, big orange signs on the roadside that announce the enforcement, and changeable message signs (banks or other businesses often will place a message on their sign advertising the enforcement). Use three or more squad cars on a small corridor or area looking for the same thing—such as seat belt non-use or impaired driving. Table 5-3 shows examples of high-visibility enforcement strategies.

Table 5-3
High-visibility Enforcement Strategies

Strategies	Contributing Factor	Effectiveness	Impact
Conduct highly publicized enforcement campaigns to maximize restraint use—specifically, nighttime belt enforcement saturation	Seat Belts	Proven	High
Conduct on-going well-publicized DWI saturations	Impaired	Proven	High
Publicize and conduct high-visibility targeted enforcement of speeding and aggressive driving	Speed	Tried	High
Publicize enhanced enforcement of bicycle laws, and publicize bicycle helmet usage	Young Drivers/ Riders	Tried	High

Table 5-3
High-visibility Enforcement Strategies

Strategies	Contributing Factor	Effectiveness	Impact
Conduct high-visibility enforcement of existing statutes to deter distracted and drowsy driving	Distraction	Experimental	High
Motorcyclist rider conspicuity campaigns—publicizing is best done through the local media and a public education campaign in the community	Motorcycle	Tried	Low
Conduct education and awareness campaign of the targeted enforcement of Zero Tolerance Laws for Drivers Under Age 21	Young Drivers	Proven	Low

5.4.2 Community Training

To effectively address driver behavior, communities should provide training opportunities for motorcycle riders, child passenger safety advocates, bicyclists, and parents. The training provides updated safety information or practices to different groups of stakeholders (see Table 5-4). Community trainings bring the traffic topic to the foreground and provide an opportunity for questions and answers by those receiving the information or skills.

Table 5-4
Community Training Strategies

Strategies	Contributing Factor	Effectiveness	Impact
Training courses provided for motorcycle riders around the state at Motorcycle Safety Center training sites	Motorcycle	Tried	Medium
Publicize use of bicycle helmets with bicyclists	Young Bicyclists	Tried	Low
Engage parents through outreach programs designed to educate parents about these topics: • teen driving risks • driving tips for their teens • parental supervision • managing young drivers • selecting safer vehicles for young drivers	Young Drivers	Tried	Medium
Conduct high-profile “child restraint inspection” events at multiple community locations	Seat Belts	Proven	Low
Train child passenger safety advocates to check for proper child restraint use	Seat Belts	Tried	Low

5.4.3 Community Program Development

Developing community programs to address impaired driving can be useful in multiple settings (see Table 5-5). In liquor establishments, promotion of enforcement efforts and alternative transportation options (such as buses, cabs, and light rail) can be effective in deterring impaired driving. Intensive supervision of DWI offenders can help with accountability and reducing recidivism. Finally, interventions in the emergency department or in jail, when appropriate, may be effective in directing individuals to chemical health services.

Table 5-5
Program Development Strategies

Strategies	Contributing Factor	Effectiveness	Impact
Support community programs for alternative transportation-partnership among beer distributors, bar owners, and community program	Impaired	Tried	Medium
Monitor convicted DWI offenders closely(DWI courts or intensive supervision programs)	Impaired	Proven	Low
Employ screening and brief interventions	Impaired	Tried	Medium

5.5 Call for Innovative and New Ideas from the Community

These innovative ideas proposed from County Highway Safety Plan workshops have not been evaluated or studied; however, these ideas have the potential to be effective strategies in changing driver behavior. Each of these ideas has strengths and limitations. The DPS Office of Traffic Safety (OTS) provided the following comments, which can be considered for each idea.

Law Enforcement and Traffic Citations

"Administrative citations could be an option to giving out state citations. Law enforcement may be more likely to issue an administrative citation, as it costs the offender less money. This part of the state has historically had a lower median income and this may have an effect on the number of citations and warnings issued."

OTS encourages thoughtful consideration before communities adopt administrative citations. The benefit of the administrative citation is that it is less expensive and may lead to officers giving a citation, rather than a warning, for lower speed violations. However, there are concerns. Administrative citations would not allow for identifying high-risk drivers having multiple citations, as the administrative citation does not go on the driving record.

Seat Belt Citation Cost

"Lower the cost of seat belt citations. Law enforcement may be deterred from writing seat belt citations, because of the high cost and low median income in this area of the state."

Research has demonstrated that it often takes several citations to change the behavior of a driver.

Car Technology Legislation

"Pass legislation to require vehicle companies to build their vehicles with new technologies incorporated. Examples of these technologies are: phones automatically turning off when the vehicle is started, ignition interlocks, locking out max speeds, smart keys, GPS navigating the vehicle, and exterior vehicle sensors."

OTS supports the use of car technology to improve safety, although OTS does not have a comment on specific legislation.

Distraction Legislation

"Pass legislation to pass a hands-free law. This means no dialing, texting, or e-mailing would be legal. The current law allows drivers 18 years and over dial cell phones when driving. Therefore it is difficult for law enforcement to know whether the driver is making a call or texting. The use of new technology to curb texting and cell phone use while driving could be helpful. One

example shared was applications that disable cell phones when going over five miles per hour (*www.eyesuup.com*)."

OTS is concerned with endorsing hands-free cell phone use while driving, because the cognitive distraction still exists. While hands-free cell phone usage is a step in the right direction, it is still not safe while driving a vehicle.

Technology and Law Enforcement

"Information sharing between state, county, and local law enforcement agencies could be improved with technology. This means updating the technology so that all citations are computerized in a central database which is accessible by all law enforcement across the state."

OTS believes this would be an expensive and time-consuming undertaking. It would require a significant amount of cooperation from all law enforcement agencies in Minnesota to build and transition to using a new system.

Teens—High-visibility Enforcement Waves around High Schools

"Law enforcement issuing citations to teens around the school they attend may have a ripple effect and get the message out that there is a strong possibility that they may get cited if they break traffic laws. It is important to note that education along with targeted enforcement is a proven strategy."

OTS greatly supports high-visibility efforts around locations where young drivers are present. OTS encourages law enforcement to partner with local schools to combine awareness efforts with the enforcement.

Peer Education in Schools

"Implement peer driven programs in schools that promote safe driving."

OTS encourages traffic safety awareness and education efforts, as long as they are conducted in conjunction with law enforcement efforts.

Parents and Driver's Education

"Parent involvement in driver's education should be mandatory. Parents should be required to attend an initial meeting before their teen begins driver's education, similar to the mandatory sports meetings that they have to attend to participate in high school sports."

OTS encourages communities to commit to providing parent education opportunities to learn about how to work with and manage their teen drivers.

5.6 Barriers to Implementing Behavior Change Strategies

During the planning process, it is important to consider the barriers to implementing driver-behavior-based strategies. These barriers will vary according to the proposed strategy to be implemented.

One of the most cited barriers to implementing many strategies is the political environment. This barrier is most evident when implementing new law enforcement efforts. County and local law enforcement agencies are governed by elected boards. Sometimes targeted law enforcement is considered to infringe on people's rights or is viewed as a revenue stream for the city or county. Alcohol compliance checks and liquor server training can also be quite controversial, especially in small, rural communities.

Another significant barrier is funding sources for overtime traffic enforcement and other traffic safety programs. The state does issue a limited amount of grant funds for traffic safety coalitions and for overtime enforcement. Not all areas make use of these funds, and in some cases departments are not able to find staff willing to take the overtime hours. This is particularly evident in smaller communities with limited staff. Furthermore, some communities do not feel traffic safety is a top priority, even though the data points to traffic crashes as a primary cause of death.

One solution is to educate those with authority or in political positions. It is important to use data to back up the request for the community to focus on changing driver behavior. Rarely are crashes actual "accidents." Most crashes could have been prevented if drivers in each community had followed safe driving practices.

5.7 Resources for Implementing Effective Behavior Change Strategies

The focus of all traffic safety efforts needs to be data driven. All strategies used to change driver behavior begin with identifying the local problem areas. Find county-specific fact sheets on various topics and comprehensive *Minnesota Motor Vehicle Crash Facts* reports at the OTS website: https://dps.mn.gov/divisions/ots/, and click on "Crash Data and Reports." Use this information to choose strategies to implement in your community and to better localize your news items for media/outreach. Actionable intervention strategies are described below for a community concerned with traffic safety, specifically with the issues of young drivers, impaired driving, seat belt use, speed, and distraction.

The following information is available for each intervention strategy:

- Description of the activity
- Time and funding needed to implement
- Barriers to implementing the strategy in the community
- Potential partners in the community
- Specific actions to support the strategy
- Contact information regarding what is being implemented in your county

Almost all of these interventions are being implemented throughout the state. The programs and contacts at OTS are a great place to start in pursuing any of these methods to change driver behavior.

5.8 Actionable Interventions for Communities Concerned with Traffic Safety

For communities concerned with traffic safety—specifically with the issues of young drivers, impaired driving, seat belt use, speed, and distraction—the following pages include fact sheets for each of the actionable intervention strategies described below,.

- Driving Behavior Safety and Enforcement Messages
- High-visibility Enforcement (young drivers, impairment, belts, speed, and distraction)
- Community Support for Law Enforcement Efforts (young drivers, alcohol, belts, speed, and distraction)

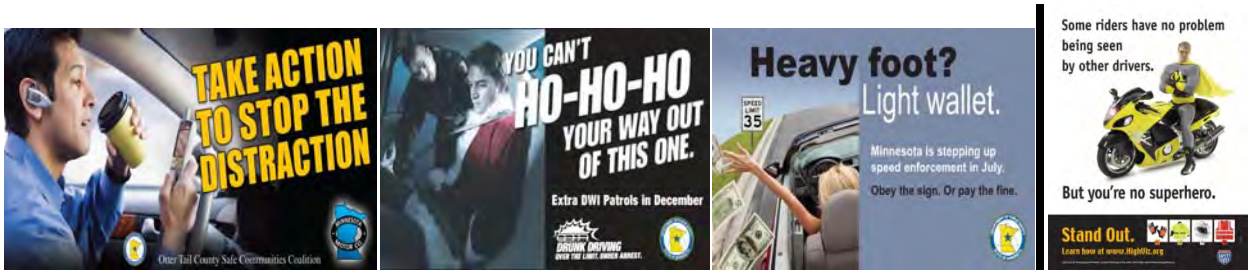
- Community Traffic Safety Coalitions
- Regional Partnerships
- Worksite Education and Policy (young drivers, alcohol, belts, speed, and distraction)
- Child Passenger Safety – Technician Training and Community Clinics (belts)
- Working with Parents of Young Drivers (young drivers)
- Mock Crash at Local School (young drivers)
- Crash Video Targeted to Minnesota Youth (young drivers)
- Alternative Rides Home (impairment)
- Intensive Supervision of DWI Offenders (impairment)
- Reducing Impaired Driving- Ignition Interlock (impairment)
- Motorcycle Initiatives (motorcyclists, impairment, speed, and distraction)

Driving Behavior and Safety Enforcement Messages

Driver behavior change strategies will use public outreach or messaging as part of the implementation process. These are messages developed by the NHTSA that Minnesota adopts. The following taglines should be repeated at the community level for a strong and coherent message:

- Buckle Up. Click it or Ticket.
- Drive at Safe Speeds—Obey the Sign or Pay the Fine.
- Drunk Driving. Over the Limit, Under Arrest.
- Always have a plan for a safe and sober ride.

Educational Materials Available



Promote Safe Driving Behavior and Ongoing Enforcement Efforts in the Community

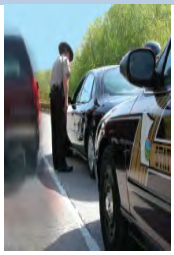
Description

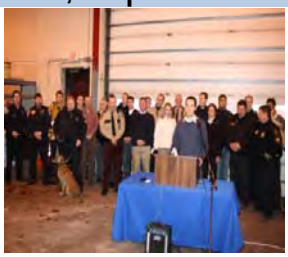
Partners are encouraged to post and distribute these materials at businesses and locations that deliver to teens/young adults (fast food restaurants, bars, convenience stores, and so on). Items include bar coasters, brochures, flyers, posters, window clings, and other materials to promote enforcement in the community. Use these items in combination with added enforcement. Public service announcements (for TV, radio, and print) are also available to download at https://dps.mn.gov/divisions/ots/ and click on "Public Service Announcements."

Funding

Free resources for promoting law enforcement and traffic safety efforts are available at no charge through the OTS website at https://dps.mn.gov/divisions/ots/, and click on "Resource Catalog."

Enforcement Focus: Speed, Seatbelts, Impaired Driving, Distracted Driving




Description

High-visibility enforcement is defined as multiple jurisdictions and/or multiple squads being relatively close on a single roadway, often using brightly colored vests and enforcement signs. Enforcement effort lengths can vary. Publicizing is done through community events for the local media and a public education campaign (including posters and letters to the editor) in the community about the enforcement. OTS funds TZD Enforcement Grants focusing on alcohol impairment, seat belts, speeding, aggressive driving, and distracted driving.

Time

Example for an agency grant - total hours working TZD Enforcement Waves: 489 hours

- October Belt Wave: 66 hours
- December DWI Wave: 78 hours
- April Young Drivers Seatbelt: 37 hours
- Distracted Driving Day: 11 hours
- Memorial Day Belt Wave: 66 hours
- Speed Waves: 106 hours
- Ted Foss Move Over Law Enforcement: 6 hours
- Labor Day DWI Wave: 116 hours
- Outside of Wave: 3 hours

Funding

For information on funding and opportunities for getting involved in enforcement projects, go to the OTS website https://dps.mn.gov/divisions/ots/.

Who is currently working on this in your county?

To find out more about this effort or related activities occurring in your county, go to https://dps.mn.gov/divisions/ots/ or contact Bruce Johnson at bruce.a.johnson@state.mn.us.

Barriers to Success

- Low public awareness and low public support for enforcement
- Low support for enforcement from community leadership (mayors, business owners, city council or county commissions, school boards)

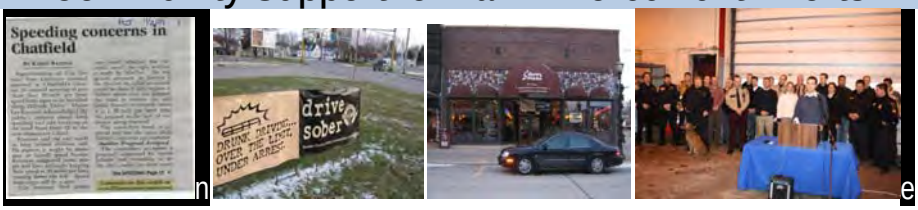
Potential Agency Partners

- Minnesota State Patrol, county sheriff's offices, city police departments
- Regional partners and neighboring counties

Specific Actions a County Could Take to Support Strategy

- Write letters to the editor during pre-media efforts in support of law enforcement giving citations.
- Assist in identifying locations with high crash involvement for targeted enforcement.
- Discuss the enforcement with local government officials and/or attend and speak at a kickoff press conference.
- Order materials with enforcement messages from the OTS website and post in the community.

Community Support for Law Enforcement Efforts



Description: Letters to the Editor in the Local Paper

Letters to the editor from community members representing perspectives of first responders, families of victims, police chiefs/sheriffs, and community stakeholders give the perception that the community, not only law enforcement and safety advocates, values traffic enforcement efforts. The purpose is to address a traffic safety issue brought to light by a crash or to send a message during an enforcement effort. Letters can be originals or from a template.

Elected officials (sheriffs, judges, and township/county boards) have influence on enforcement and implementation of sanctions related to driving offenses. A community group could ask those running for public office what their position is on traffic safety-related items. This could be tied to a letter to the editor or part of a larger traffic safety effort led by local public health or community coalition advocates. A newspaper commentary from a county judge could discuss views on the primary seat belt law and its importance.

Time

This effort requires time to write the letter(s) and submit to your local publication.

Funding

Free template letters, talking points, and data for counties are on the OTS website at https://dps.mn.gov/divisions/ots/.

Who is currently working on this in your county?

To find out more about this effort or other activities occurring in your county, go to https://dps.mn.gov/divisions/ots/.

Barriers to Success

- Low public support for enforcement
- Lack of support from local business owners for traffic safety
- Low support for enforcement from community leadership (mayors, business owners, city council or county commissions, school boards)

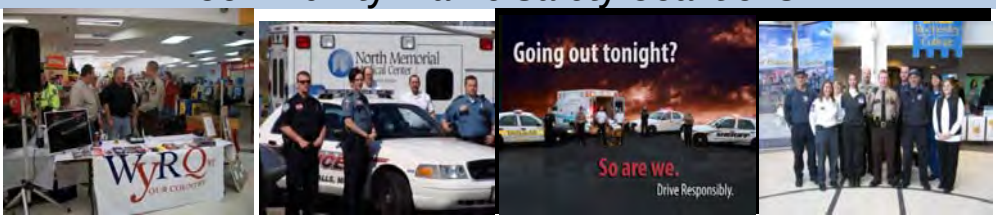
Potential Agency Partners

- Minnesota State Patrol, county sheriff's offices, city police departments
- School administrators
- Judges and attorneys
- Community members impacted by traffic crashes
- County public health educators
- County engineers

Specific Actions a County Could Take to Support Strategy

- Write a letter to the editor in support of law enforcement efforts.
- Order materials with enforcement messages from the OTS website and post in your community.

Community Traffic Safety Coalitions



Description: *TZD Safe Roads Grant Program*

TZD Safe Roads incorporates three elements: developing local coalitions of diverse community partnerships that focus on traffic safety, implementing fatal review committees that analyze community traffic deaths, and identifying practices and strategies that might have prevented the traffic deaths.

TZD Safe Roads grants focus on connecting crash data and statewide efforts with local collaborations and activities. It uses research and evaluation studies that point to the activities and best practices that have the greatest impact in reducing traffic deaths and serious crashes.

Time

The time involved would include applying for the grant, setting up and holding meetings, and following up on activities in the community. The coalition members' time is typically donated by their employers if it is during the normal business day.

Funding

Funding ranges from $5,000 to $28,000 per year. A community may apply to the TZD Safe Roads Program each year for funding to support a coalition coordinator position and basic materials for activities. The request for proposals can be found on the OTS website at https://dps.mn.gov/divisions/ots/.

Who is currently working on this in your county?

To find out more about this effort or other activities occurring in your county, go to https://dps.mn.gov/divisions/ots/ or contact Gordy Pehrson at gordy.pehrson@state.mn.us.

Barriers to Success

- Low public support for traffic safety
- Lack of awareness of the target groups that are overrepresented in the data
- Funding and time for coordination
- Lack of continuity of effort because of staff turnover

Potential Agency Partners

- Minnesota State Patrol, county sheriff's offices, city police departments
- School administrators or community members impacted by traffic crashes
- Judges and attorneys
- County public health or county engineers
- Regional partners and neighboring counties

Specific Actions a County Could Take to Support Strategy

- Call a meeting with several community members who have an interest in traffic safety. Typical options are law enforcement, ambulance or hospital staff, school administrators, driver's education instructors, and public health educators.

- Allow time for you or your staff to attend and support coalition meetings and events.

Regional Partnerships for Traffic Safety

Description: Regional Partnerships for Traffic Safety

The role of the regional steering committees in the TZD effort is to work with local partners to reduce deaths and serious injuries on local roadways. This can be accomplished by reaching out to the counties and communities within the region to create awareness of current traffic crash trends, as well as presenting evidence-based solutions to prevent crashes (for engineering, enforcement, education, and emergency medical services). The steering committee can gather key stakeholders to create an action plan to implement regional traffic safety projects.

Time

The time involved would include attending steering committee meetings once per month, assisting in community-level activities in the region, and contributing to the planning and attending the spring workshop in your region.

Funding

The primary funding for each region comes from the following sources: the Minnesota Department of Transportation; Office of Traffic, Safety and Technology; the operations budget in each district; and the DPS OTS.

Who is currently working on this in your county?

To find out more about this effort or other activities occurring in your county, go to www.minnesotatzd.org.

Barriers to Success

- Low public support for enforcement
- Lack of support from local business owners for traffic safety
- Low support for enforcement from community leadership (mayors, business owners, city council or county commissions, school boards)

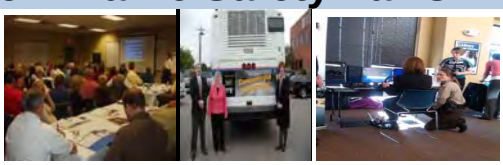
Potential Agency Partners

- Minnesota State Patrol, county sheriff's offices, city police departments
- School administrators
- Judges and attorneys
- Community members impacted by traffic crashes
- County public health
- County engineers

Specific Actions a County Could Take to Support Strategy

- Attend your regional workshop as a traffic safety stakeholder and encourage your colleagues to attend.
- Contact your regional coordinator to be added to the mailing list for e-mail and event updates.
- Contact your regional coordinator to be added to the steering committee.
- Offer your skills to a project that the region is undertaking. Examples include workshop planning, seatbelt use observation studies, or speaking at a media event.

Worksite Policy on Traffic Safety Laws



Description: *Network of Employers for Traffic Safety (NETS)*
NETS is a non-profit, public-private partnership dedicated to reducing traffic deaths and injuries within our nation's workforce. Resources for employers in the community are available through NETS. Businesses in the community can be encouraged to establish traffic safety policies for their employees, and they can also proactively educate their staff about key traffic safety messages. The NETS Program offers tools such as brochures, sample policies/procedures, and interactive website (www.minnesotasafetycouncil.org/nets/), and lectures to help initiate and enforce traffic safety programs in businesses.

Time
The amount of time to implement worksite strategies can vary from 5 minutes to 5 hours. Examples of strategies include forwarding e-mails about an upcoming enforcement effort to all employees or placing a poster in the break room, organizing a lunch presentation for staff on traffic safety, or placing banners in employee parking lots.

Funding
Promotional materials and newsletters are free, and staff are available to give presentations through NETS and OTS.

Who is currently working on this in your county?
For more information on worksites involved in NETS in your county, traffic safety programs, or model policies with education materials, contact Lisa Kons at 800-444-9150 or go to kons@minnesotasafetycouncil.org or https://dps.mn.gov/divisions/ots/.

Barriers to Success

- Lack of support for traffic safety from human resources or leadership at worksite
- Low public support for worksite policies
- Lack of enforcement of worksite policies
- Low public support for enforcement
- Low support for enforcement from community leadership (mayor, business owners, city council, county commissions, school boards)

Potential Agency Partners

- Chambers of commerce
- Service clubs in the community (Rotary, Lions)
- County sheriff ‘s offices
- County public health

Specific Actions a County Could Take to Support Strategy

- Forward OTS media release e-mails about the upcoming enforcement effort to all employees.
- Order posters or banners from the OTS website and place them in the break room or employee parking lots.
- Contact NETS to organize a lunch presentation for staff or a booth at an employee health fair.
- Bring a sample distracted driving policy to your human resource department.

Child Passenger Safety

Description: Car Seat Clinics and Technician Training
Use car seat clinics to educate new or expecting parents. Clinics require at least one, but ideally six, child passenger safety (CPS) technicians to be available for appointments with families. A CPS technician must receive training to be able to provide the following:

- One-on-one CPS awareness education to families
- Presentations on traffic safety for parent classes, community groups, and so on
- Safety seat inspections at a clinic or by appointment
- Instruction for daycare / foster care CPS classes

Time
To become a CPS Technician, a 32-hour course must be taken, which is typically done in three or four days. A clinic can be run as often as needed and is usually run by appointment. Each appointment takes 30 to 45 minutes.

Funding
Upcoming classes and clinics are listed at www.buckleupkids.state.mn.us.

Who is currently working on this in your county?
To find out more about this effort or other activities occurring in your county, go to http://www.buckleupkids.state.mn.us/ or contact Heather Darby at heather.darby@state.mn.us.

Barriers to Success

- Low employer support for technicians to keep up their certifications by working at clinics
- Shift in job duties may make clinic attendance difficult
- Technicians may find it difficult to stay certified because of time commitments
- Lack of funds set aside for the program
- Low support for enforcement of CPS laws from community leadership (mayor, business owners, city council or county commissions, school boards)

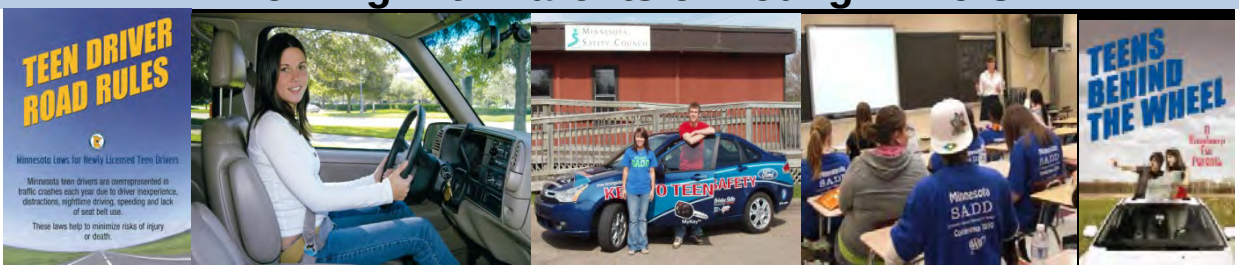
Potential Agency Partners

- Minnesota State Patrol, county sheriff's offices, city police departments
- County public health
- Hospitals
- EMS child passenger safety advisory board

Specific Actions a County Could Take to Support Child Passenger Safety

- Encourage CPS training, especially for law enforcement; support CPS as part of employee duties.
- Allow training time for instructors and technicians.
- Encourage community members to become instructors to keep area technicians current.

Working with Parents of Young Drivers



Description*:* Information and Tools for Parents

There are many ways the traffic safety community can reach out to and involve parents in their teen's driving. The first step is to offer basic information on the risks and the laws that impact new drivers. The second step is to empower parents to work with their teen consistently, create driving contracts, monitor, and if needed, withdraw the teen's license.

Information for Parents from Local School

A simple way to get information to parents is by posting information on teen driving laws on the school Web site. Some communities have mailed out letters from the school resource officer to parents highlighting risks to teens and laws for new drivers. For teen driving laws, see the "Teen Drivers" page on the OTS Web site at www.dps.mn.us/ots.

Parent Class through Driver Education Programs

Experts agree that more effective parental involvement holds significant promise for further reducing teen crashes. Implementing a parental education module in driver education programs across the state can enhance parental awareness of teen driver safety issues. For parent education curriculum content ideas, see the "Teen Drivers" page on the OTS Web site at https://dps.mn.gov/divisions/ots/, or contact Gordy Pehrson at gordy.pehrson@state.mn.us.

Teen-Parent Contract and Teen Driving Skills Checklist

Provide tools to high schools and driver schools in your areas to encourage parents to set limits with their teen driver, and to closely monitor their teen's driving skills. For teen driving tools, see the "Teen Drivers" page on the OTS Web site at https://dps.mn.gov/divisions/ots/.

Teenage Monitoring Systems

Technology is being used to assist parents in monitoring youth driving behavior. Intense monitoring of teenage driving with electronic devices is becoming a popular approach to young driver safety issues, whether used as a tool to support GDL laws or in collaboration between teens and parents about the importance of safe driving. Several technologies are in development (e.g., University of Minnesota, www.humanfirst.umn.edu, Iowa), and some are already commercially available through insurance companies (American Family, www.drivecam.com). Various options are available for implementation as part of an insurance program, a field trial, or a parent buying an application for a teen's Smartphone. For studies on this technology, go to http://www.drivecam.com/our-markets/family/testimonials-and-research-proof.

Withdrawal of Parental Consent/Voluntary Surrender Form (PS33061)

Parents can use this form to legally cancel a teen's license until they are 18 years old. Educate your community about this item, because many parents do not know about this option. Encourage parents to have a discussion with their teen about the privilege of driving and to make a teen/parent contract. The parent needs to set the expectations about wearing a seat belt, putting the cell phone out of reach, obeying the laws about speed, and focusing while driving. If expectations are not met, the form can be used as the consequence. For a copy of the form, go to https://dps.mn.gov/divisions/dvs/forms-documents/Pages/default.aspx and click on "Withdrawal of Parental Consent (PS33061)".

Time
The time for these activities can range from 1 hour to create a letter to the editor or a letter to parents, to 8 to 10 hours monthly for staffing and supporting a parent program for driver education.

Funding
Free resources for parent driver education class and parent tools are available from OTS. Funding may be needed for instructor time and facilities in which to hold a parent class. If letters are mailed, the mailing costs could be shared with a local insurance company, or with the school if the letter accompanies another mailing. The cost of the Drive Cam program may be higher (see Web site).

Who is currently working on this in your county?
To find out more about this effort or other activities occurring in your county, go to https://dps.mn.gov/divisions/ots/, or contact Gordy Pehrson at gordy.pehrson@state.mn.us.

Barriers to Success

- Lack of parent awareness for risks, laws, and tools to use with teen
- Competing interests from parents (e.g., work commitments and other children's activities)
- Lack of support from school administration or teachers
- High expense and time-intensive program (specific to Drive Cam)

Potential Agency Partners

- School administration and staff
- Local insurance companies
- Driver's education instructors
- Parents
- County public health
- Minnesota State Patrol, county sheriff's offices, city police departments

Specific Actions a County Could Take to Support Strategy

- Coordinate a mailing of parent letters to parents with teen driving information. It is common to share costs with the school if the letter accompanies another mailing.
- Facilitate parent education classes with the driver education programs in your county.
- Make parents aware of the Withdrawal of Parental Consent/Voluntary Surrender form by explaining its purpose at parent/student events (such as sports meetings and school conferences).

- Write a letter to the editor to make parents aware of teen driving risks, laws, and the important role parents play in developing a safe driver.
- Encourage high-visibility enforcement near popular teen hangouts and schools, and during periods of greater risk (prom, graduation, Fourth of July, and during late summer before school starts).

Mock Traffic Crash at Local Schools

Description: Mock Crash Guide

A mock crash simulates an emergency response to a crash scene. Mock crashes are usually conducted for groups of students at high schools or colleges. The goal is to educate teenagers and young adults about the dangers of impaired driving and the importance of wearing seat belts. Community groups can organize this event with law enforcement, emergency services personnel, and schools. A comprehensive guide is available to help guide and organize this event. It is a good idea to hold any mock crash events in October or May, as this will support statewide seat belt enforcement efforts.

Time

Time investment can vary depending on the role; however, the planning process takes 3 to 5 months. Preparation during the day of the event can take 4 to 5 hours, and the event itself takes at least 1 hour.

Funding

Funding for a mock crash generally includes food and beverage for volunteers, staff time from the school involved and the community volunteers, and minimal supply costs.

Who is currently working on this in your county?

Many local high schools may be hosting a mock crash each year, or every other year. Contact local principals in your county or local driver's education instructors. To find out more about this effort or other activities occurring in your county, go to https://dps.mn.gov/divisions/ots/, or contact Gordy Pehrson at gordy.pehrson@state.mn.us. For up-to-date contact lists for high school student groups or driver's education instructors, contact Gordy Pehrson at gordy.pehrson@state.mn.us.

Barriers to Success

- Lack of community support for event
- Difficulty in school scheduling or with the weather

Potential Agency Partners

- EMS in the community or county public health educators
- Minnesota State Patrol, county sheriff's offices, city police departments
- School administration and staff, coaches, parents, or driver's education instructors

Specific Actions a County Could Take to Support Strategy

- Coordinate an event with teachers, coaches, or driver's education instructors by connecting with other traffic safety stakeholders and the local high school, technical school, or college.
- Invite parents to attend teen driving events.

- Write a letter to the editor afterward to give the event more publicity.
- Encourage high-visibility enforcement near popular teen hangouts and schools, and during periods of greater risk (prom, graduation, Fourth of July, and during late summer before school starts).

Crash Video Targeted to Minnesota Youth

Description: How to Save a Life Video or Young Forever

How to Save a Life and *Young Forever* videos were created by the Minnesota State Patrol and feature tragic stories from teens and young adults involved in fatal or serious injury crashes in Minnesota. The video features hard-hitting, graphic images of crash scenes along with relevant music tracks. The video must be presented by a state trooper, and it is good to show the video at high schools, teen driver–parent awareness classes, and community groups. To bring this video to your community, contact your local State Patrol District.

Time
The program and video run for 60 minutes in a classroom or auditorium setting.

Funding
The program is offered for free through the Minnesota State Patrol.

Who is currently working on this in your county?
If you would like a trooper to present *Young Forever* to your group, contact the Minnesota State Patrol District near you. For a list of Minnesota State Patrol Districts, click on "District Index" at https://dps.mn.gov/divisions/msp/contact/Pages/district-index.aspx. For more specific questions, please contact Lt. Eric Roeske at eric.roeske@state.mn.us.

Barriers to Success

- Lack of awareness of film availability
- Availability of state patrol troopers to give presentation with the video
- Availability of time in the school schedule for presentation

Potential Agency Partners

- Minnesota State Patrol
- Driver's education instructors
- School administration and staff
- Coaches and parents
- County public health educators
- Regional partners and neighboring counties

Specific Actions a County Could Take to Support Strategy

- Coordinate a video and presentation with teachers, coaches, or driver's education instructors by contacting the State Patrol District for your county at www.patrol.dps.mn.gov.
- Write a letter to the editor afterward to give the presentation more publicity in the community.
- Encourage high-visibility enforcement near popular teen hangouts and schools, and during periods of greater risk (prom, graduation, Fourth of July, and during late summer before school starts).

Alternative Rides Home

Description: Safe Ride Guide

Many communities provide alternative transportation services as a strategy for preventing impaired driving. The goal is to provide information about alternative transportation or safe ride programs to those interested in providing similar services. With a solid understanding of the elements necessary to build strong safe ride programs, interested stakeholders can create an effective local program that provides a valuable service while reducing impaired driving in their communities. *The Safe Ride Guide* is available on www.minnesotatzd.org.

Time
Program development can take 3 months, and creating the system and getting users adjusted to the model can take 1 year. It will help to have a coalition coordinator or community member with several hours of availability per week to work on logistics and to call meetings to communicate with stakeholders.

Funding
The amount of funding needed can vary from $300 to $800 per month to print, advertise, and pay for coordination time. In some programs, the local beer distributor pays a portion, the bar owners pay a portion, and the rider pays a portion of each ride.

Who is currently working on this in your county?
In 2011, these counties were working to develop Safe Ride programs: Isanti, Kanabec, Pine, Wright, Sherburne, and Otter Tail. To find out more about this effort or other activities occurring in your county, go to https://dps.mn.gov/divisions/ots/, or contact Jean Ryan at jean.m.ryan@state.mn.us .

Barriers to Success

- Low public awareness of program
- Lack of alternative transport
- Lack of support for program from enforcement
- Lack of early involvement from liquor establishment owners
- Lack of funding

Potential Agency Partners

- Local liquor establishment owners and workers and local beer distributors
- Local judges and attorneys
- Minnesota State Patrol, county sheriff's offices, city police departments

Specific Actions a County Could Take to Support Strategy

- Write letters to the editor during pre-media efforts in support of DWI law enforcement efforts.

- Assist with identifying liquor establishments or beer distributors interested in participating.
- Discuss the program with local government officials.
- Advertise the program to your colleagues and friends.
- Encourage law enforcement to partner with bars involved in the program to handle issues as they arise.

Intensive Supervision Programs for DWI Offenders

Description: DWI Courts

A DWI Court is a team-based approach that seeks to enhance public safety through the reduction of DWI recidivism by providing effective chemical dependency evaluation and treatment, intensive supervision, and offender accountability. A DWI Court team requires judicial leadership, prosecutors, defense attorneys, probation and law enforcement officers, a case management worker, and a network of relevant and supportive community resources to work with repeat DWI offenders who have substance abuse issues. The DWI Courts follow these ten guiding principles: (1) Target the population by identifying a subset of the DWI offender population for inclusion in the DWI court program; (2) Perform a clinical assessment of the impaired-driving offender; (3) Develop a treatment plan; (4) Supervise the offender; (5) Forge agency, organization, and community partnerships; (6) Take a judicial leadership role; (7) Develop case management strategies; (8) Address transportation issues; (9) Evaluate the program; and (10) Create a sustainable program.

Time
Court time takes 2 to 4 hours per week for all team members. Probation and DWI Court Program Coordinators require additional time for their responsibilities.

Funding
OTS provides grants to assist new DWI courts that average $92,000 annually. For more information on DWI Courts, go to http://www.mncourts.gov/?page=626.

Who is currently working on this in your county?
In 2011, there were 10 DWI Courts in Minnesota located in Beltrami, Cass, Crow Wing, Hennepin, Itasca, Lake of the Woods, Ottertail, Ramsey, Roseau, and South St. Louis County.

To find out more about this effort or other activities occurring in your county, go to https://dps.mn.gov/divisions/ots/, or contact Jody Oscarson at jody.oscarson@state.mn.us.

Barriers to Success

- Lack of funding
- Difficulty in finding replacement for team members

Potential Partners

- State Court Administration Office
- Bureau of Indian Affairs
- City councils or county boards
- County attorneys

Specific Actions a County Could Take to Support Strategy

- Write a letter to the editor in support of DWI courts.
- Secure funding to support the program.
- Write a letter to city council members/county boards in support of DWI courts.
- Write a letter to your senator or representative in support of DWI courts.

Reducing Impaired Driving in the Community

Description: Community Promotion of Ignition Interlock

Ignition interlock is a breath-testing system installed on a motor vehicle that is designed to prevent an individual from driving impaired. To start the vehicle, a driver is required to blow into a tube that measures their alcohol concentration (AC) level. In Minnesota, if the device detects alcohol at a 0.02 AC level or above, the vehicle will not start. The device also requires the driver to provide additional breath samples randomly while they are driving to ensure that the person driving the car is not impaired. Research has demonstrated that recidivism (re-offense) rates are reduced 64 percent while ignition interlock is installed. However, once it is removed, recidivism rates return to the pre-installation level. Therefore, it is important that DWI offenders also participate in programs that will change long-term drinking and driving behavior.

Time
Time on ignition interlock can range from 90 days to six years.

Funding
Participants pay for the ignition interlock device. The cost is approximately $100 per month, or $3 to $4 per day. Service providers are required to offer ignition interlock at a reduced rate for those who the Department of Public Safety has determined to be indigent.

Who is currently working on this in your county?
To find out more about this effort or other activities occurring in your county, go to https://dps.mn.gov/divisions/ots/, or contact Jean Ryan at jean.m.ryan@state.mn.us.

Barriers to Success

- Low participation by DWI offenders
- Minimal consequences for driving illegally compared to the cost of reinstating driving privileges
- Misperceptions about ignition interlock (for example, drivers can use a balloon to start their vehicle, or ignition interlock is being “soft” on impaired drivers).
- Lack of understanding of public safety benefits of ignition interlock

Potential Agency Partners

- Minnesota State Patrol, county sheriff’s offices, city police departments
- County public health educators
- Prosecuting attorneys
- Defense attorneys
- District court judges

Specific Actions a County Could Take to Support Strategy

- Educate judicial partners on the benefits of ignition interlock and encourage usage.
- Educate the community on the benefits of ignition interlock and how it can be used to enhance public safety.

Motorcycle Training

Description: Minnesota Motorcycle Safety Center

The Minnesota Motorcycle Safety Center offers a complete motorcycle safety package to accomplish this mission by providing high-quality motorcycle safety education and training through on-cycle and classroom rider training courses; media relations, events, campaigns, and informational materials; and third-party skills testing for motorcycle license endorsement through the Basic Rider Course and evening motorcycle testing project at select Driver and Vehicle Service Exam Stations.

The Minnesota Motorcycle Safety Center relies on the support of the motorcycling community, dealers, clubs, and motorcycle rights organizations. These groups serve as partners for events such as the annual Washout, rider training course promotion, education, and outreach. Information is available at www.motorcyclesafety.state.mn.us.

Time
Courses take between one-half day during the week and full days on the weekend.

Funding
Costs of seminars and courses can range from $20 to $160.

Who is currently working on this in your county?
To find out more about this effort or other activities occurring in your county, go to https://dps.mn.gov/divisions/ots/, or contact Bill Shaffer at William.shaffer@state.mn.us. A list of course offerings in Minnesota can be found at http://cfapp.southcentral.edu/motorcycle/.

Barriers to Success

- Low social support for training, helmets, and high-visibility gear
- Lack of understanding the benefits of receiving training
- Lack of awareness of training options

Potential Agency Partners

- Motorcycling community
- Dealers
- Clubs
- Motorcycle rights organizations
- Minnesota State Patrol, county sheriff's offices, city police departments
- Regional partners and neighboring counties

Specific Actions a County Could Take to Support Strategy

- Educate and encourage motorcycle riders to get trained and licensed.
- Educate the community to become more aware of motorcycles on the roads.


Rider Training Locations in Minnesota
800-407-6677
International Falls
Thief River Falls
East Grand Forks
Bemidji
Eveleth
Grand Rapids
Moorhead
Detroit Lakes
Duluth
Brainerd
Fergus Falls
Staples
Alexandria
St. Cloud
Anoka
Willmar
White Bear Lake
Brooklyn Park
St. Paul
Hutchinson
Rosemount
Eden Prairie
Marshall
Red Wing
North Mankato
Pipestone
Rochester
Winona
Luverne
Worthington
Albert Lea

5.9 Minnesota Department of Public Safety Office of Traffic Safety Programs and Staff Contacts

- **Toward Zero Deaths (TZD) Safe Roads Community Coalitions:** Public health groups and other advocates partner with law enforcement to promote enforcement and traffic safety messages locally.
- **Communications/Educational Outreach/Paid Media:** Deliver messages to media outlets via news releases, advisories, interviews, and so on; provide tools and materials for communities to promote messages locally; and conduct year-long advertising targeting key demographics.
- **TZD Enforcement:** Provide federally funded statewide, aggressive, overtime traffic safety enforcement along with education.
- **DWI Courts and Court Monitoring:** Use intensive supervision methods with DWI offenders.
- **Alternative Rides Home Programs:** Offer programs that create safe transportation options in rural areas to prevent impaired driving.
- **Worksite Policies and Training:** Provide tools for employers to educate employees and to enforce traffic safety policies .
- **Motorcycle Safety Training Centers:** Provide information on rider training, licensing, and public education.

Minnesota Department of Public Safety Office of Traffic Safety
(https://dps.mn.gov/divisions/ots/)

Appendix A

Urban Intersections – Right Angle Crashes

Carver County
Urban Intersection Listing
Analysis Years: 2007 - 2011

Int #	Sys	Num	Street Name	Intersection Description	Major ADT	Configuration	Major Speed Limit	Total Severe Right Angle Crash	Crash Cost
61.04	CSAH	61	Chaska Blvd	CSAH 61 AND MNTH-41	18,100	Undivided	30	0	$ 956,000
57.01	CSAH	57	Olive St	CSAH 57 AND MNTH-5; MNTH-284	14,900	Undivided	40	0	$ 838,000
17.05	CSAH	17	Powers Blvd	CSAH 17 AND 78TH ST W MSAS-113	13,000	Divided	40	0	$ 635,000
61.05	CSAH	61	Chaska Blvd	CSAH 61 AND WALNUT ST M-34 MSAS-118	7,200	Undivided	30	0	$ 223,000
11.11	CSAH	11	Victoria Dr	CSAH 11 AND ARBORETUM DR MNTH-5 (EAST)	15,500	Undivided	30	0	$ 218,000
10.22	CSAH	10	Engler Blvd	CSAH 10 AND MNTH-41	19,100	Divided	40	0	$ 1,766,000
18.02	CSAH	18	Lyman Blvd	CSAH 18 AND MNTHH-41	16,600	Undivided	55	0	$ 984,000
61.11	CSAH	61	Flying Cloud Dr	CSAH 61 AND CSAH-101	20,400	Undivided	55	0	$ 822,000
17.04	CSAH	17	Powers Blvd	CSAH 17 AND ARBORETUM BLVD MNTH-5 EB	30,000	Divided	55	0	$ 800,000
13.04	CSAH	13	Rolling Acres Rd	CSAH 13 AND MNTH-7; SMITHTOWN RD MSAS-111	18,000	Undivided	55	0	$ 441,000
11.04	CSAH	11	Jonathan Carver Pkwy	CSAH 11 AND CHASKA BLVD OLD USTH-212	6,500	Undivided	55	0	$ 436,000
13.03	CSAH	13	Bavaria Rd	CSAH 13 AND ARBORETUM BLVD MNTH-5	23,500	Undivided	45	0	$ 333,000
101.01	CSAH	101	Great Plains Blvd	CSAH 101 AND LYMAN BLVD; OLD MNTH-101; MSAS-112	7,900	Divided	40	0	$ 194,000
15.06	CSAH	15	Galpin Blvd	CSAH 15 AND ARBORETUM BLVD MNTH-5; CR-117	26,500	Divided	55	0	$ 175,000
101.03	CSAH	101	Market Blvd	CSAH 101 AND MNTH-5	35,000	Divided	55	0	$ 1,569,000
10.12	CSAH	10	Waconia Pkwy S	CSAH 10 AND MNTH-5	14,100	Divided	55	0	$ 1,494,000
14.06	CSAH	14	Pioneer Tr	CSAH 14 AND MNTH-41 CHESTNUT ST	16,600	Divided	55	0	$ 1,477,000
14.07	CSAH	14	Pioneer Tr	CSAH 14 AND HUNDERTMARK RD; MSAS-108	13,700	Divided	45	0	$ 1,186,000
15.03	CSAH	15	Audubon Rd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (SOUTH)	11,300	Divided	40	0	$ 862,000
33.03	CSAH	33	Reform St	CSAH 33 AND USTH-212 EBL; NORWOOD YOUNG AMERICA CL	10,500	Divided	55	0	$ 680,000
59.03	CSAH	59	Main St	CSAH 59 AND MNTH-5 WBL	15,100	Divided	55	0	$ 581,000
15.01	CSAH	15	Audubon Rd	CSAH 15 AND CHASKA BLVD CSAH-61; AUDUBON RD MSAS-116	7,200	Divided	50	0	$ 478,000
61.10	CSAH	61	Flying Cloud Dr	CSAH 61 AND MNTH-101; OLD USTH-212	8,500	Undivided	55	0	$ 405,000
14.10	CSAH	14	Pioneer Tr	CSAH 14 AND GREAT PLAINS BLVD MNTH-101	6,000	Undivided	55	0	$ 378,000
14.08	CSAH	14	Pioneer Tr	CSAH 14 AND AUDOBON RD CSAH-15	13,700	Undivided	45	0	$ 374,000
10.23	CSAH	10	Engler Blvd	CSAH 10 AND AUDOBON BLVD CSAH-15	6,700	Undivided	45	0	$ 36,000
15.02	CSAH	15	Audubon Rd	CSAH 15 AND BUTTERNUT DR M-312 BLUFF CRK DR EB MSAS-125	6,700	Undivided	50	0	$ -
17.01	CSAH	17	Powers Blvd	CSAH 17 AND LYMAN BLVD CSAH-18	7,800	Divided	50	0	$ 1,452,000
15.04	CSAH	15	Galpin Blvd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (NORTH)	7,000	Divided	45	0	$ 299,000
10.15	CSAH	10	13th Street	CSAH 10 AND MAIN ST E CSAH-59 SBL; MSAS-117 SBL	5,500	Divided	50	0	$ -

	Min	Max
Entering ADT	17500	5000000
Major Approach Speed Limit	45	55

Carver County

Urban Right Angle Intersection Prioritization

Analysis Years: 2007 - 2011

Rank	Int #	Sys	#	Street Name	Intersection Description	Major ADT	Configuration	Major Speed Limit	Severe Right Angle Crash	Priority	Crash Cost
1	101.03	CSAH	101	Market Blvd	CSAH 101 AND MNTH-5	★	★	★		★★★	$ 1,569,000
2	17.04	CSAH	17	Powers Blvd	CSAH 17 AND ARBORETUM BLVD MNTH-5 EB	★	★	★		★★★	$ 800,000
3	15.06	CSAH	15	Galpin Blvd	CSAH 15 AND ARBORETUM BLVD MNTH-5; CR-117	★	★	★		★★★	$ 175,000
4	10.22	CSAH	10	Engler Blvd	CSAH 10 AND MNTH-41	★	★			★★	$ 1,766,000
5	10.12	CSAH	10	Waconia Pkwy S	CSAH 10 AND MNTH-5		★	★		★★	$ 1,494,000
6	14.06	CSAH	14	Pioneer Tr	CSAH 14 AND MNTH-41 CHESTNUT ST		★	★		★★	$ 1,477,000
7	17.01	CSAH	17	Powers Blvd	CSAH 17 AND LYMAN BLVD CSAH-18		★	★		★★	$ 1,452,000
8	14.07	CSAH	14	Pioneer Tr	CSAH 14 AND HUNDERTMARK RD; MSAS-108		★	★		★★	$ 1,186,000
9	61.11	CSAH	61	Flying Cloud Dr	CSAH 61 AND CSAH-101	★		★		★★	$ 822,000
10	33.03	CSAH	33	Reform St	CSAH 33 AND USTH-212 EBL; NORWOOD YOUNG AMERICA CL		★	★		★★	$ 680,000
11	59.03	CSAH	59	Main St	CSAH 59 AND MNTH-5 WBL		★	★		★★	$ 581,000
12	15.01	CSAH	15	Audubon Rd	CSAH 15 AND CHASKA BLVD CSAH-61; AUDUBON RD MSAS-116		★	★		★★	$ 478,000
13	13.04	CSAH	13	Rolling Acres Rd	CSAH 13 AND MNTH-7; SMITHTOWN RD MSAS-111	★		★		★★	$ 441,000
14	13.03	CSAH	13	Bavaria Rd	CSAH 13 AND ARBORETUM BLVD MNTH-5	★		★		★★	$ 333,000
15	15.04	CSAH	15	Galpin Blvd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (NORTH)		★	★		★★	$ 299,000
16	10.15	CSAH	10	13th Street	CSAH 10 AND MAIN ST E CSAH-59 SBL; MSAS-117 SBL		★	★		★★	$ -
17	18.02	CSAH	18	Lyman Blvd	CSAH 18 AND MNTHH-41			★		★	$ 984,000
18	61.04	CSAH	61	Chaska Blvd	CSAH 61 AND MNTH-41	★				★	$ 956,000
19	15.03	CSAH	15	Audubon Rd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (SOUTH)		★			★	$ 862,000
20	17.05	CSAH	17	Powers Blvd	CSAH 17 AND 78TH ST W MSAS-113		★			★	$ 635,000
21	11.04	CSAH	11	Jonathan Carver Pkwy	CSAH 11 AND CHASKA BLVD OLD USTH-212			★		★	$ 436,000
22	61.10	CSAH	61	Flying Cloud Dr	CSAH 61 AND MNTH-101; OLD USTH-212			★		★	$ 405,000
23	14.10	CSAH	14	Pioneer Tr	CSAH 14 AND GREAT PLAINS BLVD MNTH-101			★		★	$ 378,000
24	14.08	CSAH	14	Pioneer Tr	CSAH 14 AND AUDOBON RD CSAH-15			★		★	$ 374,000
25	101.01	CSAH	101	Great Plains Blvd	CSAH 101 AND LYMAN BLVD; OLD MNTH-101; MSAS-112		★			★	$ 194,000
26	10.23	CSAH	10	Engler Blvd	CSAH 10 AND AUDOBON BLVD CSAH-15			★		★	$ 36,000
27	15.02	CSAH	15	Audubon Rd	CSAH 15 AND BUTTERNUT DR M-312 BLUFF CRK DR EB MSAS-12			★		★	$ -
28	57.01	CSAH	57	Olive St	CSAH 57 AND MNTH-5; MNTH-284						$ 838,000
29	61.05	CSAH	61	Chaska Blvd	CSAH 61 AND WALNUT ST M-34 MSAS-118						$ 223,000
30	11.11	CSAH	11	Victoria Dr	CSAH 11 AND ARBORETUM DR MNTH-5 (EAST)						$ 218,000
					Total Stars --	8	16	22	0		
					% That Gets Star --	27%	53%	73%	0%		

	Totals #	%
★★★★	0	0%
★★★	3	10%
★★	13	43%
★	11	37%
-	3	10%
	30	100%

Stars

If intersection has a major entering ADT >= 17,500 vpd
If intersection configuration is divided
If intersection major approach speed is 45 mph to 55 mph
If intersection has a severe right angle crash

Carver County Urban Intersection Right Angle Projects

Intersection	Segment	Intersection	Street Name	Description	Traffic Control	Major ADT	Configuration	Major	Severe Right	Total Stars	High Priority	Proximity	Roundabout	Confirmation Lights	Confirmation Lights	Notes
1	1	13.03	Bavaria Rd	CSAH 13 AND ARBORETUM BLVD MNTH-5	SIGNALIZED	26200	Undivided	45	0	★★	x			1	$1,000	County Nominated - FYA ($10,000)
2	1	13.04	Rolling Acres Rd	CSAH 13 AND MNTH-7; SMITHTOWN RD MSAS-111	SIGNALIZED	20,925	Undivided	55	0	★★	x			1	$1,000	County Nominated - FYA ($10,000)
3	2	18.02	Lyman Blvd	CSAH 18 AND MNTHH-41	SIGNALIZED	18,850	Undivided	55	0	★		x		1	$1,000	-
4	2	15.04	Galpin Blvd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (NORTH)	SIGNALIZED	7,902	Divided	45	0	★★	x			1	$1,000	-
5	2	18.HS	Lyman Blvd	CSAH 18 AND CHANHASSEN HIGH SCHOOL N ENTRANCE	SIGNALIZED	7,337	Divided	40	0			x		1	$1,000	-
6	2	18.Haze	Lyman Blvd	CSAH 18 AND CHANHASSEN HIGH SCHOOL S ENTRANCE	SIGNALIZED	8,174	Divided	40	0			x		1	$1,000	-
7	2	15.03	Audubon Rd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (SOUTH)	SIGNALIZED	13,837	Divided	40	0	★		x		1	$1,000	-
8	2	18.03	Lyman Blvd	CSAH 18 AND AUDOBON RD MSAS-106	THRU STOP	11,500	Undivided	40	0			x			-	-
9	2	17.01	Powers Blvd	CSAH 17 AND LYMAN BLVD CSAH-18	SIGNALIZED	14,200	Divided	50	0	★★	x			1	$1,000	-
10	2	18.04	Lyman Blvd	CSAH 18 AND CROSSROADS BLVD M-611; OLD MNTH-101	THRU STOP	4,739	Undivided	50	0			x			-	-
11	2	101.01	Great Plains Blvd	CSAH 101 AND LYMAN BLVD; OLD MNTH-101; MSAS-112	SIGNALIZED	10,500	Divided	40	0	★		x		1	$1,000	-
12	3	14.06	Pioneer Tr	CSAH 14 AND MNTH-41 CHESTNUT ST	SIGNALIZED	28650	Divided	55	0	★★	x			1	$1,000	County Nominated - FYA ($10,000)
13	3	14.065	Pioneer Tr	CSAH 14 AND COMMERCIAL ENTRANCE	SIGNALIZED	13774	Divided	45	0			x		1	$1,000	County Nominated - FYA ($10,000)
14	3	14.07	Pioneer Tr	CSAH 14 AND HUNDERTMARK RD; MSAS-108	SIGNALIZED	17437	Divided	45	0	★★	x			1	$1,000	County Nominated - FYA ($10,000)
15	3	14.Oriole	Pioneer Tr	CSAH 14 AND ORIOLE LN	SIGNALIZED	14374	Undivided	45	0			x		1	$1,000	County Nominated - FYA ($10,000)
16	3	14.Acorn	Pioneer Tr	CSAH 14 AND ACORN RD	SIGNALIZED	14374	Undivided	45	0			x		1	$1,000	County Nominated - FYA ($10,000)
17	3	14.08	Pioneer Tr	CSAH 14 AND AUDOBON RD CSAH-15	SIGNALIZED	18700	Undivided	45	0	★		x		1	$1,000	County Nominated - FYA ($10,000)
18	3	14.Bluff	Pioneer Tr	CSAH 14 AND BLUFF CREEK DR	SIGNALIZED	7987	Undivided	45	0			x		1	$1,000	County Nominated - FYA ($10,000)
19	3	14.09	Pioneer Tr	CSAH 14 AND POWERS BLVD CSAH-17	THRU STOP	5800	Divided	50	0			x			-	-
20	3	14.1	Pioneer Tr	CSAH 14 AND GREAT PLAINS BLVD MNTH-101	SIGNALIZED	8200	Undivided	55	0	★		x		1	$1,000	County Nominated - FYA ($10,000)
21	4	10.12	Waconia Pkwy S	CSAH 10 AND MNTH-5	SIGNALIZED	19900	Divided	55	0	★★	x			1	$1,000	County Nominated - FYA ($10,000)
22	4	10.Market	13th Street	CSAH 10 AND MARKETPLACE DR	SIGNALIZED	8137	Divided	40	0			x		1	$1,000	County Nominated - FYA ($10,000)
23	4	10.13	13th Street	CSAH 10 AND INDUSTRIAL BLVD MSAS-114 M-101	THRU STOP	7925	Divided	40	0			x			-	-
24	4	10.14	13th Street	CSAH 10 AND ENTER ROUNDABOUT WITH MNTH-284	ROUNDABOUT	9000	Divided	45	1			x			-	-
25	4	10.15	13th Street	CSAH 10 AND MAIN ST E CSAH-59 SBL; MSAS-117 SBL	SIGNALIZED	11000	Divided	50	0	★★	x			1	$1,000	County Nominated - FYA ($10,000)
26	5	17.02	Powers Blvd	CSAH 17 AND LAKE DR MSAS-107	THRU STOP	11875	Divided	45	0			x			-	-
27	5	17.03	Powers Blvd	CSAH 17 AND PARK RD MSAS-127	THRU STOP	12387	Divided	45	0			x			-	-
28	5	17.04	Powers Blvd	CSAH 17 AND ARBORETUM BLVD MNTH-5 EB	SIGNALIZED	40050	Divided	55	0	★★★	x			1	$1,000	County Nominated - FYA ($10,000)
29	5	17.05	Powers Blvd	CSAH 17 AND 78TH ST W MSAS-113	SIGNALIZED	20650	Divided	40	0	★		x		1	$1,000	County Nominated - FYA ($10,000)
30	5	17.06	Powers Blvd	CSAH 17 AND TECUMSEH LA M-101; KERBER BLVD MSAS-101	THRU STOP	10262	Undivided	50	0			x			-	-
31	5	17.07	Powers Blvd	CSAH 17 AND LAKE LUCY RD; MSAS-101 M-308	THRU STOP	10512	Undivided	50	0			x			-	-
32	5	17.08	Powers Blvd	CSAH 17 AND PLEASANT VIEW RD MSAS-109	THRU STOP	9375	Undivided	45	0			x			-	-
33	6	59.03	Main St	CSAH 59 AND MNTH-5 WBL	SIGNALIZED	20300	Divided	55	0	★★	x			1	$1,000	County Nominated - FYA ($10,000)
34	6	59.Airport	Main St	CSAH 59 AND AIRPORT RD	SIGNALIZED	6174	Divided	40	0			x		1	$1,000	County Nominated - FYA ($10,000)
35	6	10.15	13th Street	CSAH 10 AND MAIN ST E CSAH-59 SBL; MSAS-117 SBL	SIGNALIZED	11000	Divided	50	0	★★	x			1	$1,000	County Nominated - FYA ($10,000)
36	7	61.04	Chaska Blvd	CSAH 61 AND MNTH-41	SIGNALIZED	25250	Undivided	30	0	★		x		1	$1,000	County Nominated - FYA ($10,000)
37	7	61.05	Chaska Blvd	CSAH 61 AND WALNUT ST M-34 MSAS-118	SIGNALIZED	8837	Undivided	30	0			x		1	$1,000	County Nominated - FYA ($10,000)
38	7	61.06	Chaska Blvd	CSAH 61 AND CROSSTOWN BLVD MSAS-104	THRU STOP	8400	Undivided	45	0			x			-	-
39	7	61.07	Chaska Blvd	CSAH 61 AND ZEMBLE ST MSAS-111	THRU STOP	7725	Undivided	50	0			x			-	-
40	7	15.01	Audubon Rd	CSAH 15 AND CHASKA BLVD CSAH-61; AUDUBON RD MSAS-116	SIGNALIZED	9875	Divided	50	0	★★	x			1	$1,000	County Nominated - FYA ($10,000)
41	7	10.24	Engler Blvd	CSAH 10 AND FLYING CLOUD DR; CHASKA BLVD; CSAH-61	THRU STOP	5600	Divided	50	0			x			-	-
42	7	61.08	Flying Cloud Dr	CSAH 61 AND SOUGHTON DR MSAS-124	THRU STOP	7525	Undivided	50	0			x			-	-
43	7	61.09	Flying Cloud Dr	CSAH 61 AND BLUFF CREEK DR MSAS-104	THRU STOP	8900	Undivided	55	0			x			-	-
44	7	61.1	Flying Cloud Dr	CSAH 61 AND MNTH-101; OLD USTH-212	SIGNALIZED	10825	Undivided	55	0	★		x		1	$1,000	County Nominated - FYA ($10,000)
45	7	61.11	Flying Cloud Dr	CSAH 61 AND CSAH-101	SIGNALIZED	19500	Undivided	55	0	★★	x			1	$1,000	County Nominated - FYA ($10,000)
46	Other	10.22	Engler Blvd	CSAH 10 AND MNTH-41	SIGNALIZED	26450	Divided	40	0	★★	x			1	$1,000	County Nominated - FYA ($10,000)
47	Other	15.06	Galpin Blvd	CSAH 15 AND ARBORETUM BLVD MNTH-5; CR-117	SIGNALIZED	31,475	Divided	55	0	★★★	x			1	$1,000	County Nominated - FYA ($10,000)
48	Other	101.03	Market Blvd	CSAH 101 AND MNTH-5	SIGNALIZED	43,850	Divided	55	0	★★★	x			1	$1,000	County Nominated - FYA ($10,000)

Intersections on Bavaria Rd (CSAH 13) from MNTH 5 to MNTH 7

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Severe Right Angle Crash	Total Stars	Confirmation Lights	Notes
13.03	Bavaria Rd	CSAH 13 AND ARBORETUM BLVD MNTH-5	SIGNALIZED	26,200	Undivided	45	0	★★	1	County Nominated - FYA ($10,000)
13.04	Rolling Acres Rd	CSAH 13 AND MNTH-7; SMITHTOWN RD MSAS-111	SIGNALIZED	20,925	Undivided	55	0	★★	1	County Nominated - FYA ($10,000)

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Intersection Configuration	Divided
Major Speed Limit	≥ 45

Intersections are selected for project on a corridor basis, if corridor:
- meets two of the criteria

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Confirmation Lights	Proactive	$1,000	per two approaches	2	$2,000
Unsignalized and Divided Access Management*	Proactive	$300,000	per mile	0	$0
County Nominated Project	-	$20,000	lump sum	1	$20,000
*Corridor includes miles of divided roadway where access management may be considered.					$22,000

Implementation Cost

Federal Funds	$19,800
Local Match (10% of Total project cost)	$2,200
Total Project Cost	**$22,000**

2007-2011 MnCMAT Crash Data

Right Angle Crashes @ Signals Emphasis Area

Intersections on Lyman Blvd (CSAH 18) from MNTH 41 to CSAH 101

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Severe Right Angle Crash	Total Stars	Confirmation Lights	Notes
18.02	Lyman Blvd	CSAH 18 AND MNTHH-41	SIGNALIZED	18,850	Undivided	55	0	★	1	-
15.04	Galpin Blvd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (NORTH)	SIGNALIZED	7,902	Divided	45	0	★★	1	-
18.HS	Lyman Blvd	CSAH 18 AND CHANHASSEN HIGH SCHOOL N ENTRANCE	SIGNALIZED	7,337	Divided	40	0		1	-
18.Haze	Lyman Blvd	CSAH 18 AND CHANHASSEN HIGH SCHOOL S ENTRANCE	SIGNALIZED	8,174	Divided	40	0		1	-
15.03	Audubon Rd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (SOUTH)	SIGNALIZED	13,837	Divided	40	0	★	1	-
18.03	Lyman Blvd	CSAH 18 AND AUDOBON RD MSAS-106	THRU STOP	11,500	Undivided	40	0		0	-
17.01	Powers Blvd	CSAH 17 AND LYMAN BLVD CSAH-18	SIGNALIZED	14,200	Divided	50	0	★★	1	-
18.04	Lyman Blvd	CSAH 18 AND CROSSROADS BLVD M-611; OLD MNTH-101	THRU STOP	4,739	Undivided	50	0		0	-
101.01	Great Plains Blvd	CSAH 101 AND LYMAN BLVD; OLD MNTH-101; MSAS-112	SIGNALIZED	10,500	Divided	40	0	★	1	-

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Intersection Configuration	Divided
Major Speed Limit	≥ 45

Intersections are selected for project on a corridor basis, if corridor:
- meets two of the criteria

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Confirmation Lights	Proactive	$1,000	per two approaches	7	$7,000
Unsignalized and Divided Access Management*	Proactive	$300,000	per mile	0	$0
County Nominated Project	-	$0	lump sum	0	$0
*Corridor includes miles of divided roadway where access management may be considered.					$7,000

Implementation Cost

Federal Funds	$6,300
Local Match (10% of Total project cost)	$700
Total Project Cost	**$7,000**

2007-2011 MnCMAT Crash Data

Right Angle Crashes @ Signals Emphasis Area

Intersections on Pioneer Tr (CSAH 14) from MNTH 41 to Great Plains Blvd (MNTH 101)

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Severe Right Angle Crash	Total Stars	Confirmation Lights	Notes
14.06	Pioneer Tr	CSAH 14 AND MNTH-41 CHESTNUT ST	SIGNALIZED	28,650	Divided	55	0	★★	1	County Nominated - FYA ($10,000)
14.065	Pioneer Tr	CSAH 14 AND COMMERCIAL ENTRANCE	SIGNALIZED	13,774	Divided	45	0		1	County Nominated - FYA ($10,000)
14.07	Pioneer Tr	CSAH 14 AND HUNDERTMARK RD; MSAS-108	SIGNALIZED	17,437	Divided	45	0	★★	1	County Nominated - FYA ($10,000)
14.Oriole	Pioneer Tr	CSAH 14 AND ORIOLE LN	SIGNALIZED	14,374	Undivided	45	0		1	County Nominated - FYA ($10,000)
14.Acorn	Pioneer Tr	CSAH 14 AND ACORN RD	SIGNALIZED	14,374	Undivided	45	0		1	County Nominated - FYA ($10,000)
14.08	Pioneer Tr	CSAH 14 AND AUDOBON RD CSAH-15	SIGNALIZED	18,700	Undivided	45	0	★	1	County Nominated - FYA ($10,000)
14.Bluff	Pioneer Tr	CSAH 14 AND BLUFF CREEK DR	SIGNALIZED	7,987	Undivided	45	0		1	County Nominated - FYA ($10,000)
14.09	Pioneer Tr	CSAH 14 AND POWERS BLVD CSAH-17	THRU STOP	5,800	Divided	50	0		0	-
14.1	Pioneer Tr	CSAH 14 AND GREAT PLAINS BLVD MNTH-101	SIGNALIZED	8,200	Undivided	55	0	★	1	County Nominated - FYA ($10,000)

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Intersection Configuration	Divided
Major Speed Limit	≥ 45

Intersections are selected for project on a corridor basis, if corridor:
- meets two of the criteria

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Confirmation Lights	Proactive	$1,000	per two approaches	8	$8,000
Unsignalized and Divided Access Management*	Proactive	$300,000	per mile	0	$0
County Nominated Project	-	$80,000	lump sum	1	$80,000
*Corridor includes miles of divided roadway where access management may be considered.					$88,000

Implementation Cost

Federal Funds	$79,200
Local Match (10% of Total project cost)	$8,800
Total Project Cost	**$88,000**

2007-2011 MnCMAT Crash Data

Intersections on 13th St (CSAH 10) from MNTH 5 to Main St

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Severe Right Angle Crash	Total Stars	Confirmation Lights	Notes
10.12	Waconia Pkwy S	CSAH 10 AND MNTH-5	SIGNALIZED	19,900	Divided	55	0	★★	1	County Nominated - FYA ($10,000)
10.Market	13th Street	CSAH 10 AND MARKETPLACE DR	SIGNALIZED	8,137	Divided	40	0		1	County Nominated - FYA ($10,000)
10.13	13th Street	CSAH 10 AND INDUSTRIAL BLVD MSAS-114 M-101	THRU STOP	7,925	Divided	40	0		0	-
10.14	13th Street	CSAH 10 AND ENTER ROUNDABOUT WITH MNTH-284	ROUNDABOUT	9,000	Divided	45	1		0	-
10.15	13th Street	CSAH 10 AND MAIN ST E CSAH-59 SBL; MSAS-117 SBL	SIGNALIZED	11,000	Divided	50	0	★★	1	County Nominated - FYA ($10,000)

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Intersection Configuration	Divided
Major Speed Limit	≥ 45

Intersections are selected for project on a corridor basis, if corridor:
- meets two of the criteria

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Confirmation Lights	Proactive	$1,000	per two approaches	3	$3,000
Unsignalized and Divided Access Management*	Proactive	$300,000	per mile	0	$0
County Nominated Project	-	$30,000	lump sum	1	$30,000
					$33,000

*Corridor includes miles of divided roadway where access management may be considered.

Implementation Cost

Federal Funds	$29,700
Local Match (10% of Total project cost)	$3,300
Total Project Cost	**$33,000**

2007-2011 MnCMAT Crash Data

Right Angle Crashes @ Signals Emphasis Area

Intersections on Powers Blvd (CSAH 17) from Lake Dr to Pleasant View Rd

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Severe Right Angle Crash	Total Stars	Confirmation Lights	Notes
17.02	Powers Blvd	CSAH 17 AND LAKE DR MSAS-107	THRU STOP	11,875	Divided	45	0		0	-
17.03	Powers Blvd	CSAH 17 AND PARK RD MSAS-127	THRU STOP	12,387	Divided	45	0		0	-
17.04	Powers Blvd	CSAH 17 AND ARBORETUM BLVD MNTH-5 EB	SIGNALIZED	40,050	Divided	55	0	★★★	1	County Nominated - FYA ($10,000)
17.05	Powers Blvd	CSAH 17 AND 78TH ST W MSAS-113	SIGNALIZED	20,650	Divided	40	0	★	1	County Nominated - FYA ($10,000)
17.06	Powers Blvd	CSAH 17 AND TECUMSEH LA M-101; KERBER BLVD MSAS-101	THRU STOP	10,262	Undivided	50	0		0	-
17.07	Powers Blvd	CSAH 17 AND LAKE LUCY RD; MSAS-101 M-308	THRU STOP	10,512	Undivided	50	0		0	-
17.08	Powers Blvd	CSAH 17 AND PLEASANT VIEW RD MSAS-109	THRU STOP	9,375	Undivided	45	0		0	-

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Intersection Configuration	Divided
Major Speed Limit	≥ 45

Intersections are selected for project on a corridor basis, if corridor:
- meets two of the criteria

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Confirmation Lights	Proactive	$1,000	per two approaches	2	$2,000
Unsignalized and Divided Access Management*	Proactive	$300,000	per mile	0	$0
County Nominated Project	-	$20,000	lump sum	1	$20,000
*Corridor includes miles of divided roadway where access management may be considered.					$22,000

Implementation Cost

Federal Funds	$19,800
Local Match (10% of Total project cost)	$2,200
Total Project Cost	**$22,000**

2007-2011 MnCMAT Crash Data

Intersections on Main St (CSAH 59) from MNTH 5 to CSAH 10

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Severe Right Angle Crash	Total Stars	Confirmation Lights	Notes
59.03	Main St	CSAH 59 AND MNTH-5 WBL	SIGNALIZED	20,300	Divided	55	0	★★	1	County Nominated - FYA ($10,000)
59.Airport	Main St	CSAH 59 AND AIRPORT RD	SIGNALIZED	6,174	Divided	40	0		1	County Nominated - FYA ($10,000)
10.15	13th Street	CSAH 10 AND MAIN ST E CSAH-59 SBL; MSAS-117 SBL	SIGNALIZED	11,000	Divided	50	0	★★	1	County Nominated - FYA ($10,000)

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Intersection Configuration	Divided
Major Speed Limit	≥ 45

Intersections are selected for project on a corridor basis, if corridor:
- meets two of the criteria

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Confirmation Lights	Proactive	$1,000	per two approaches	3	$3,000
Unsignalized and Divided Access Management*	Proactive	$300,000	per mile	0	$0
County Nominated Project	-	$30,000	lump sum	1	$30,000
*Corridor includes miles of divided roadway where access management may be considered.					$33,000

Implementation Cost

Federal Funds	$29,700
Local Match (10% of Total project cost)	$3,300
Total Project Cost	**$33,000**

2007-2011 MnCMAT Crash Data

Intersections on Chaska Blvd (CSAH 61) from MNTH 41 to CSAH 101

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Severe Right Angle Crash	Total Stars	Confirmation Lights	Notes
61.04	Chaska Blvd	CSAH 61 AND MNTH-41	SIGNALIZED	25,250	Undivided	30	0	★	1	County Nominated - FYA ($10,000)
61.05	Chaska Blvd	CSAH 61 AND WALNUT ST M-34 MSAS-118	SIGNALIZED	8,837	Undivided	30	0		1	County Nominated - FYA ($10,000)
61.06	Chaska Blvd	CSAH 61 AND CROSSTOWN BLVD MSAS-104	THRU STOP	8,400	Undivided	45	0		0	-
61.07	Chaska Blvd	CSAH 61 AND ZEMBLE ST MSAS-111	THRU STOP	7,725	Undivided	50	0		0	-
15.01	Audubon Rd	CSAH 15 AND CHASKA BLVD CSAH-61; AUDUBON RD MSAS-116	SIGNALIZED	9,875	Divided	50	0	★★	1	County Nominated - FYA ($10,000)
10.24	Engler Blvd	CSAH 10 AND FLYING CLOUD DR; CHASKA BLVD; CSAH-61	THRU STOP	5,600	Divided	50	0		0	-
61.08	Flying Cloud Dr	CSAH 61 AND SOUGHTON DR MSAS-124	THRU STOP	7,525	Undivided	50	0		0	-
61.09	Flying Cloud Dr	CSAH 61 AND BLUFF CREEK DR MSAS-104	THRU STOP	8,900	Undivided	55	0		0	-
61.1	Flying Cloud Dr	CSAH 61 AND MNTH-101; OLD USTH-212	SIGNALIZED	10,825	Undivided	55	0	★	1	County Nominated - FYA ($10,000)
61.11	Flying Cloud Dr	CSAH 61 AND CSAH-101	SIGNALIZED	19,500	Undivided	55	0	★★	1	County Nominated - FYA ($10,000)

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Intersection Configuration	Divided
Major Speed Limit	≥ 45

Intersections are selected for project on a corridor basis, if corridor:
- meets two of the criteria

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Confirmation Lights	Proactive	$1,000	per two approaches	5	$5,000
Unsignalized and Divided Access Management*	Proactive	$300,000	per mile	0	$0
County Nominated Project	-	$50,000	lump sum	1	$50,000
					$55,000

*Corridor includes miles of divided roadway where access management may be considered.

Implementation Cost

Federal Funds	$49,500
Local Match (10% of Total project cost)	$5,500
Total Project Cost	**$55,000**

2007-2011 MnCMAT Crash Data

Non-Corridor Specific High Priority Intersections

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Severe Right Angle Crash	Total Stars	Confirmation Lights	Notes
10.22	Engler Blvd	CSAH 10 AND MNTH-41	SIGNALIZED	26,450	Divided	40	0	★★	1	County Nominated - FYA ($10,000)
15.06	Galpin Blvd	CSAH 15 AND ARBORETUM BLVD MNTH-5; CR-117	SIGNALIZED	31,475	Divided	55	0	★★★	1	County Nominated - FYA ($10,000)
101.03	Market Blvd	CSAH 101 AND MNTH-5	SIGNALIZED	43,850	Divided	55	0	★★★	1	County Nominated - FYA ($10,000)

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Intersection Configuration	Divided
Major Speed Limit	≥ 45

Intersections are selected for project on a corridor basis, if corridor:
- meets two of the criteria

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Confirmation Lights	Proactive	$1,000	per two approaches	3	$3,000
Unsignalized and Divided Access Management*	Proactive	$300,000	per mile	0	$0
County Nominated Project	-	$30,000	lump sum	1	$30,000
*Corridor includes miles of divided roadway where access management may be considered.					$33,000

Implementation Cost

Federal Funds	$29,700
Local Match (10% of Total project cost)	$3,300
Total Project Cost	**$33,000**

2007-2011 MnCMAT Crash Data

Appendix B

Urban Intersections – Pedestrian/Bicycle Crashes

Carver County

Urban Pedestrian/Bike Intersection Listing

Analysis Year: 2007 - 2011

													Anoka/Ramsey	Anoka/Ramsey
Int #	Sys	Num	Street Name	Intersection Description	Major ADT	Configuration	Approach Lanes	Major Speed Limit	Bus Stop	Ped Gen	Total Severe Ped/Bike Crash	Parking Present	Crash Cost
10.12	CSAH	10	Waconia Pkwy S	CSAH 10 AND MNTH-5	14,100	Divided	6	55	No	Yes	0	-	$ 1,494,000
10.15	CSAH	10	13th Street	CSAH 10 AND MAIN ST E CSAH-59 SBL; MSAS-117 SBL	5,500	Divided	6	50	No	No	0	-	$ -
10.22	CSAH	10	Engler Blvd	CSAH 10 AND MNTH-41	19,100	Divided	7	40	No	No	0	-	$ 1,766,000
10.23	CSAH	10	Engler Blvd	CSAH 10 AND AUDOBON BLVD CSAH-15	6,700	Undivided	6	45	No	No	0	-	$ 36,000
11.04	CSAH	11	Jonathan Carver Pkwy	CSAH 11 AND CHASKA BLVD OLD USTH-212	6,500	Undivided	6	55	No	Yes	0	-	$ 436,000
11.11	CSAH	11	Victoria Dr	CSAH 11 AND ARBORETUM DR MNTH-5 (EAST)	15,500	Undivided	6	30	No	Yes	0	-	$ 218,000
13.03	CSAH	13	Bavaria Rd	CSAH 13 AND ARBORETUM BLVD MNTH-5	23,500	Undivided	6	45	No	No	0	-	$ 333,000
13.04	CSAH	13	Rolling Acres Rd	CSAH 13 AND MNTH-7; SMITHTOWN RD MSAS-111	18,000	Undivided	6	55	No	No	0	-	$ 441,000
14.06	CSAH	14	Pioneer Tr	CSAH 14 AND MNTH-41 CHESTNUT ST	16,600	Divided	8	55	No	Yes	0	-	$ 1,477,000
14.07	CSAH	14	Pioneer Tr	CSAH 14 AND HUNDERTMARK RD; MSAS-108	13,700	Divided	7	45	No	Yes	0	-	$ 1,186,000
14.08	CSAH	14	Pioneer Tr	CSAH 14 AND AUDOBON RD CSAH-15	13,700	Undivided	6	45	No	No	0	-	$ 374,000
14.10	CSAH	14	Pioneer Tr	CSAH 14 AND GREAT PLAINS BLVD MNTH-101	6,000	Undivided	6	55	No	No	0	-	$ 378,000
15.01	CSAH	15	Audubon Rd	CSAH 15 AND CHASKA BLVD CSAH-61; AUDUBON RD MSAS-116	7,200	Divided	6	50	No	Yes	0	-	$ 478,000
15.02	CSAH	15	Audubon Rd	CSAH 15 AND BUTTERNUT DR M-312 BLUFF CRK DR EB MSAS-12	6,700	Undivided	6	50	No	No	0	-	$ -
15.03	CSAH	15	Audubon Rd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (SOUTH)	11,300	Divided	9	40	No	No	0	-	$ 862,000
15.04	CSAH	15	Galpin Blvd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (NORTH)	7,000	Divided	8	45	No	No	0	-	$ 299,000
15.06	CSAH	15	Galpin Blvd	CSAH 15 AND ARBORETUM BLVD MNTH-5; CR-117	26,500	Divided	8	55	No	Yes	0	-	$ 175,000
17.01	CSAH	17	Powers Blvd	CSAH 17 AND LYMAN BLVD CSAH-18	7,800	Divided	8	50	No	No	0	-	$ 1,452,000
17.04	CSAH	17	Powers Blvd	CSAH 17 AND ARBORETUM BLVD MNTH-5 EB	30,000	Divided	8	55	No	Yes	0	-	$ 800,000
17.05	CSAH	17	Powers Blvd	CSAH 17 AND 78TH ST W MSAS-113	13,000	Divided	8	40	No	Yes	1	-	$ 635,000
18.02	CSAH	18	Lyman Blvd	CSAH 18 AND MNTHH-41	16,600	Undivided	6	55	No	Yes	0	-	$ 984,000
33.03	CSAH	33	Reform St	CSAH 33 AND USTH-212 EBL; NORWOOD YOUNG AMERICA CL	10,500	Divided	8	55	No	Yes	0	-	$ 680,000
57.01	CSAH	57	Olive St	CSAH 57 AND MNTH-5; MNTH-284	14,900	Undivided	6	40	No	Yes	0	Minor N leg	$ 838,000
59.03	CSAH	59	Main St	CSAH 59 AND MNTH-5 WBL	15,100	Divided	6	55	No	Yes	0	-	$ 581,000
61.04	CSAH	61	Chaska Blvd	CSAH 61 AND MNTH-41	18,100	Undivided	6	30	No	Yes	0	-	$ 956,000
61.05	CSAH	61	Chaska Blvd	CSAH 61 AND WALNUT ST M-34 MSAS-118	7,200	Undivided	6	30	No	Yes	0	Minor N leg	$ 223,000
61.10	CSAH	61	Flying Cloud Dr	CSAH 61 AND MNTH-101; OLD USTH-212	8,500	Undivided	6	55	No	No	0	-	$ 405,000
61.11	CSAH	61	Flying Cloud Dr	CSAH 61 AND CSAH-101	20,400	Undivided	4	55	No	No	0	-	$ 822,000
101.01	CSAH	101	Great Plains Blvd	CSAH 101 AND LYMAN BLVD; OLD MNTH-101; MSAS-112	7,900	Divided	8	40	No	Yes	0	-	$ 194,000
101.03	CSAH	101	Market Blvd	CSAH 101 AND MNTH-5	35,000	Divided	9	55	No	No	0	-	$ 1,569,000

	Min	Max
Entering ADT	17500	5000000
Major Approach Lanes	4	
Major Approach Speed Limit	0	40

Carver County

Urban Pedestrian/Bike Intersection Prioritization

Analysis Year: 2007 - 2011

Rank	Int #	Sys	#	Street Name	Intersection Description	Major ADT	Configuration	Major Speed Limit	Bus Stop	Ped Gen	Severe Ped/Bike Crash	Priority	Crash Cost
1	61.04	CSAH	61	Chaska Blvd	CSAH 61 AND MNTH-41	★	★	★		★		★★★★	$ 956,000
2	57.01	CSAH	57	Olive St	CSAH 57 AND MNTH-5; MNTH-284		★	★		★		★★★	$ 838,000
3	17.05	CSAH	17	Powers Blvd	CSAH 17 AND 78TH ST W MSAS-113			★		★	★	★★★	$ 635,000
4	61.05	CSAH	61	Chaska Blvd	CSAH 61 AND WALNUT ST M-34 MSAS-118		★	★		★		★★★	$ 223,000
5	11.11	CSAH	11	Victoria Dr	CSAH 11 AND ARBORETUM DR MNTH-5 (EAST)		★	★		★		★★★	$ 218,000
6	10.22	CSAH	10	Engler Blvd	CSAH 10 AND MNTH-41	★		★				★★	$ 1,766,000
7	18.02	CSAH	18	Lyman Blvd	CSAH 18 AND MNTHH-41		★			★		★★	$ 984,000
8	61.11	CSAH	61	Flying Cloud Dr	CSAH 61 AND CSAH-101	★	★					★★	$ 822,000
9	17.04	CSAH	17	Powers Blvd	CSAH 17 AND ARBORETUM BLVD MNTH-5 EB	★				★		★★	$ 800,000
10	13.04	CSAH	13	Rolling Acres Rd	CSAH 13 AND MNTH-7; SMITHTOWN RD MSAS-111	★	★					★★	$ 441,000
11	11.04	CSAH	11	Jonathan Carver Pkwy	CSAH 11 AND CHASKA BLVD OLD USTH-212		★			★		★★	$ 436,000
12	13.03	CSAH	13	Bavaria Rd	CSAH 13 AND ARBORETUM BLVD MNTH-5	★	★					★★	$ 333,000
13	101.01	CSAH	101	Great Plains Blvd	CSAH 101 AND LYMAN BLVD; OLD MNTH-101; MSAS-112			★		★		★★	$ 194,000
14	15.06	CSAH	15	Galpin Blvd	CSAH 15 AND ARBORETUM BLVD MNTH-5; CR-117	★				★		★★	$ 175,000
15	101.03	CSAH	101	Market Blvd	CSAH 101 AND MNTH-5	★						★	$ 1,569,000
16	10.12	CSAH	10	Waconia Pkwy S	CSAH 10 AND MNTH-5					★		★	$ 1,494,000
17	14.06	CSAH	14	Pioneer Tr	CSAH 14 AND MNTH-41 CHESTNUT ST					★		★	$ 1,477,000
18	14.07	CSAH	14	Pioneer Tr	CSAH 14 AND HUNDERTMARK RD; MSAS-108					★		★	$ 1,186,000
19	15.03	CSAH	15	Audubon Rd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (SOUTH)			★				★	$ 862,000
20	33.03	CSAH	33	Reform St	CSAH 33 AND USTH-212 EBL; NORWOOD YOUNG AMERICA CL					★		★	$ 680,000
21	59.03	CSAH	59	Main St	CSAH 59 AND MNTH-5 WBL					★		★	$ 581,000
22	15.01	CSAH	15	Audubon Rd	CSAH 15 AND CHASKA BLVD CSAH-61; AUDUBON RD MSAS-116					★		★	$ 478,000
23	61.10	CSAH	61	Flying Cloud Dr	CSAH 61 AND MNTH-101; OLD USTH-212		★					★	$ 405,000
24	14.10	CSAH	14	Pioneer Tr	CSAH 14 AND GREAT PLAINS BLVD MNTH-101		★					★	$ 378,000
25	14.08	CSAH	14	Pioneer Tr	CSAH 14 AND AUDOBON RD CSAH-15		★					★	$ 374,000
26	10.23	CSAH	10	Engler Blvd	CSAH 10 AND AUDOBON BLVD CSAH-15		★					★	$ 36,000
27	15.02	CSAH	15	Audubon Rd	CSAH 15 AND BUTTERNUT DR M-312 BLUFF CRK DR EB MSAS-1		★					★	$ -
28	17.01	CSAH	17	Powers Blvd	CSAH 17 AND LYMAN BLVD CSAH-18								$ 1,452,000
29	15.04	CSAH	15	Galpin Blvd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (NORTH)								$ 299,000
30	10.15	CSAH	10	13th Street	CSAH 10 AND MAIN ST E CSAH-59 SBL; MSAS-117 SBL								$ -
					Total Stars --	8	14	8	0	16	1		
					% That Gets Star --	27%	47%	27%	0%	53%	3%		

	Totals #	%
★★★★★★	0	0%
★★★★★	0	0%
★★★★	1	3%
★★★	4	13%
★★	9	30%
★	13	43%
-	3	10%
	30	100%

Stars
If intersection has a major entering ADT greater than or equal to 17,500 vpd
If intersection configuration is undivided
If intersection major approach speed is less than or equal to 40 mph
If intersection has a bus stop in a quadrant
If intersection has a pedestrian generator in a quadrant
If intersection has a severe pedestrian/bike crash

Carver County Urban Intersection Ped/Bike Projects

Intersection	Segment	Intersection	Street Name	Description	Traffic Control	Major ADT	Configuration	Major	Bus	Ped	Parking	Severe Ped/Bike	Total Stars	High Priority	Proximity	Advanced Walk	Countdown Timers	Curb Extensions	Median	No Project/Review	Advanced Walk	Countdown Timers	Curb Extensions	Median
1	1	13.03	Bavaria Rd	CSAH 13 AND ARBORETUM BLVD MNTH-5	SIGNALIZED	19,500	Undivided	45	No	No	-	0	★★	x		1	1				$0	$10,000	-	-
2	1	13.04	Rolling Acres Rd	CSAH 13 AND MNTH-7; SMITHTOWN RD MSAS-111	SIGNALIZED	16,200	Undivided	55	No	No	-	0	★★	x		1	1				$0	$10,000	-	-
3	2	61.04	Chaska Blvd	CSAH 61 AND MNTH-41	SIGNALIZED	17,550	Undivided	30	No	Yes	-	0	★★★★	x		1	1				$0	$10,000	-	-
4	2	61.05	Chaska Blvd	CSAH 61 AND WALNUT ST M-34 MSAS-118	SIGNALIZED	7,200	Undivided	30	No	Yes	Minor N leg	0	★★★	x		1	1				$0	$10,000	-	-
5	2	61.06	Chaska Blvd	CSAH 61 AND CROSSTOWN BLVD MSAS-104	THRU STOP	7,200	Undivided	45	No	Yes	Minor N leg	0			x						-	-	-	-
6	2	61.07	Chaska Blvd	CSAH 61 AND ZEMBLE ST MSAS-111	THRU STOP	7,200	Undivided	50	No	No	-	0			x						-	-	-	-
7	2	15.01	Audubon Rd	SAH 15 AND CHASKA BLVD CSAH-61; AUDUBON RD MSAS-11	SIGNALIZED	5,275	Divided	50	No	Yes	-	0	★		x	1	1				$0	$10,000	-	-
8	2	10.24	Engler Blvd	CSAH 10 AND FLYING CLOUD DR; CHASKA BLVD; CSAH-61	THRU STOP	3,750	Divided	50	No	No	-	0			x						-	-	-	-
9	2	61.08	Flying Cloud Dr	CSAH 61 AND SOUGHTON DR MSAS-124	THRU STOP	6,600	Undivided	50	No	No	-	0			x						-	-	-	-
10	2	61.09	Flying Cloud Dr	CSAH 61 AND BLUFF CREEK DR MSAS-104	THRU STOP	7,250	Undivided	55	No	No	-	0			x						-	-	-	-
11	2	61.1	Flying Cloud Dr	CSAH 61 AND MNTH-101; OLD USTH-212	SIGNALIZED	8,500	Undivided	55	No	No	-	0	★		x	1	1				$0	$10,000	-	-
12	2	61.11	Flying Cloud Dr	CSAH 61 AND CSAH-101	SIGNALIZED	15,250	Undivided	55	No	No	-	0	★★	x		1	1				$0	$10,000	-	-
13	3	14.06	Pioneer Tr	CSAH 14 AND MNTH-41 CHESTNUT ST	SIGNALIZED	16,350	Divided	55	No	Yes	-	0	★		x	1	1				$0	$10,000	-	-
14	3	14.065	Pioneer Tr	CSAH 14 AND COMMERCIAL ENTRANCE	SIGNALIZED	13,100	Divided	45	No	Yes	-	0			x	1	1				$0	$10,000	-	-
15	3	14.07	Pioneer Tr	CSAH 14 AND HUNDERTMARK RD; MSAS-108	SIGNALIZED	13,400	Divided	45	No	Yes	-	0	★		x	1	1				$0	$10,000	-	-
16	3	14.Oriole	Pioneer Tr	CSAH 14 AND ORIOLE LN	SIGNALIZED	13,700	Undivided	45	No	No	-	0			x	1	1				$0	$10,000	-	-
17	3	14.Acorn	Pioneer Tr	CSAH 14 AND ACORN RD	SIGNALIZED	13,700	Undivided	45	No	No	-	0			x	1	1				$0	$10,000	-	-
18	3	14.08	Pioneer Tr	CSAH 14 AND AUDOBON RD CSAH-15	SIGNALIZED	11,400	Undivided	45	No	No	-	0	★		x	1	1				$0	$10,000	-	-
19	3	14.Bluff	Pioneer Tr	CSAH 14 AND BLUFF CREEK DR	SIGNALIZED	6,000	Undivided	45	No	No	-	0			x	1	1				$0	$10,000	-	-
20	3	14.09	Pioneer Tr	CSAH 14 AND POWERS BLVD CSAH-17	THRU STOP	4,350	Divided	50	No	No	-	0			x						-	-	-	-
21	3	14.1	Pioneer Tr	CSAH 14 AND GREAT PLAINS BLVD MNTH-101	SIGNALIZED	5,325	Undivided	55	No	No	-	0	★		x	1	1				$0	$10,000	-	-
22	4	18.02	Lyman Blvd	CSAH 18 AND MNTHH-41	SIGNALIZED	15,350	Undivided	55	No	Yes	-	0	★★	x		1	1				$0	$10,000	-	-
23	4	15.04	Galpin Blvd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (NORTH)	SIGNALIZED	5,975	Divided	45	No	No	-	0			x	1	1				$0	$10,000	-	-
24	4	18.HS	Lyman Blvd	CSAH 18 AND CHANHASSEN HIGH SCHOOL N ENTRANCE	SIGNALIZED	7,000	Divided	40	No	No	-	0			x	1	1				$0	$10,000	-	-
25	4	18.Haze	Lyman Blvd	CSAH 18 AND CHANHASSEN HIGH SCHOOL S ENTRANCE	SIGNALIZED	7,500	Divided	40	No	No	-	0			x	1	1				$0	$10,000	-	-
26	4	15.03	Audubon Rd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (SOUTH)	SIGNALIZED	9,150	Divided	40	No	No	-	0	★		x	1	1				$0	$10,000	-	-
27	4	18.03	Lyman Blvd	CSAH 18 AND AUDOBON RD MSAS-106	THRU STOP	10,050	Undivided	40	No	No	-	0			x						-	-	-	-
28	4	17.01	Powers Blvd	CSAH 17 AND LYMAN BLVD CSAH-18	SIGNALIZED	7,600	Divided	50	No	No	-	0			x	1	1				$0	$10,000	-	-
29	4	18.04	Lyman Blvd	CSAH 18 AND CROSSROADS BLVD M-611; OLD MNTH-101	THRU STOP	4,400	Undivided	50	No	No	-	0			x						-	-	-	-
30	4	101.01	Great Plains Blvd	CSAH 101 AND LYMAN BLVD; OLD MNTH-101; MSAS-112	SIGNALIZED	6,950	Divided	40	No	Yes	-	0	★★	x		1	1				$0	$10,000	-	-
31	5	17.02	Powers Blvd	CSAH 17 AND LAKE DR MSAS-107	THRU STOP	10,600	Divided	45	No	No	-	0			x						-	-	-	-
32	5	17.03	Powers Blvd	CSAH 17 AND PARK RD MSAS-127	THRU STOP	10,600	Divided	45	No	Yes	-	0			x						-	-	-	-
33	5	17.04	Powers Blvd	CSAH 17 AND ARBORETUM BLVD MNTH-5 EB	SIGNALIZED	28,250	Divided	55	No	Yes	-	0	★★	x		1	1				$0	$10,000	-	-
34	5	17.05	Powers Blvd	CSAH 17 AND 78TH ST W MSAS-113	SIGNALIZED	10,850	Divided	40	No	Yes	-	1	★★★	x		1	1				$0	$10,000	-	-
35	5	17.06	Powers Blvd	CSAH 17 AND TECUMSEH LA M-101; KERBER BLVD MSAS-10	THRU STOP	8,700	Undivided	50	No	No	Minor legs	0			x						-	-	-	-
36	5	17.07	Powers Blvd	CSAH 17 AND LAKE LUCY RD; MSAS-101 M-308	THRU STOP	8,500	Undivided	50	No	No	Minor legs	0			x						-	-	-	-
37	5	17.08	Powers Blvd	CSAH 17 AND PLEASANT VIEW RD MSAS-109	THRU STOP	8,300	Undivided	45	No	No	Minor E leg	0			x						-	-	-	-
38	6	10.12	Waconia Pkwy S	CSAH 10 AND MNTH-5	SIGNALIZED	12,050	Divided	55	No	Yes	-	0	★		x	1	1				$0	$10,000	-	-
39	6	10.Market	13th Street	CSAH 10 AND MARKETPLACE DR	SIGNALIZED	7,800	Divided	40	No	Yes	-	0			x	1	1				$0	$10,000	-	-
40	6	10.13	13th Street	CSAH 10 AND INDUSTRIAL BLVD MSAS-114 M-101	THRU STOP	6,650	Divided	40	No	Yes	Minor legs	0			x						-	-	-	-
41	6	10.14	13th Street	CSAH 10 AND ENTER ROUNDABOUT WITH MNTH-284	ROUNDABOUT	3,500	Divided	45	No	Yes	-	0			x						-	-	-	-
42	6	10.15	13th Street	CSAH 10 AND MAIN ST E CSAH-59 SBL; MSAS-117 SBL	SIGNALIZED	5,500	Divided	50	No	No	-	0			x	1	1				$0	$10,000	-	-
43	7	59.03	Main St	CSAH 59 AND MNTH-5 WBL	SIGNALIZED	15,000	Divided	55	No	Yes	-	0	★		x	1	1				$0	$10,000	-	-
44	7	59.Airport	Main St	CSAH 59 AND AIRPORT RD	SIGNALIZED	5,500	Divided	40	No	Yes	-	0			x	1	1				$0	$10,000	-	-
45	7	10.15	13th Street	CSAH 10 AND MAIN ST E CSAH-59 SBL; MSAS-117 SBL	SIGNALIZED	5,500	Divided	50	No	No	-	0			x	1	1				$0	$10,000	-	-
46	Other	57.01	Olive St	CSAH 57 AND MNTH-5; MNTH-284	SIGNALIZED	14,500	Undivided	40	No	Yes	Minor N leg	0	★★★	x		1	1				$0	$10,000	-	-
47	Other	11.11	Victoria Dr	CSAH 11 AND ARBORETUM DR MNTH-5 (EAST)	SIGNALIZED	15,300	Undivided	30	No	Yes	-	0	★★★	x		1	1				$0	$10,000	-	-
48	Other	10.22	Engler Blvd	CSAH 10 AND MNTH-41	SIGNALIZED	18,600	Divided	40	No	No	-	0	★★	x		1	1				$0	$10,000	-	-
49	Other	11.04	Jonathan Carver Pkwy	CSAH 11 AND CHASKA BLVD OLD USTH-212	SIGNALIZED	3750	Undivided	55	No	Yes	-	0	★★	x		1	1				$0	$10,000	-	-
50	Other	15.06	Galpin Blvd	CSAH 15 AND ARBORETUM BLVD MNTH-5; CR-117	SIGNALIZED	26,500	Divided	55	No	Yes	-	0	★★	x		1	1				$0	$10,000	-	-

Intersections on Bavaria Rd (CSAH 13) from MNTH 5 to MNTH 7

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Bus Stop	Ped Generator	Severe Ped/Bike Crash	Total Stars	Advanced Walk	Countdown Timers	Curb Extensions	Median Refuge Island
13.03	Bavaria Rd	CSAH 13 AND ARBORETUM BLVD MNTH-5	SIGNALIZED	19,500	Undivided	45	No	No	0	★★	1	1	0	0
13.04	Rolling Acres Rd	CSAH 13 AND MNTH-7; SMITHTOWN RD MSAS-111	SIGNALIZED	16,200	Undivided	55	No	No	0	★★	1	1	0	0

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Configuration	Undivided
Major Speed Limit	≤ 40
Bus Stop	Yes
Ped Generator	Yes
Severe Ped/Bike Crash	> 0

Intersections are selected for project on a corridor basis, if corridor:
- meets the first three criteria and has multiple signalized intersections.

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Advanced Walk	Proactive	$0	per intersection	2	$0
Countdown Timers	Proactive	$10,000	per intersection	2	$20,000
Curb Extensions	Proactive	$15,000	per corner	0	$0
Median Refuge Island	Proactive	$10,000	per side	0	$0
County Nominated Project	-	$1,000	lump sum	0	$0
					$20,000

Notes - County nominated project to include cost for advanced walk signal timing.

Implementation Cost

Federal Funds	$18,000
Local Match (10% of Total project cost)	$2,000
Total Project Cost	**$20,000**

Intersections on Chaska Blvd (CSAH 61) from MNTH 41 to CSAH 101

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Bus Stop	Ped Generator	Severe Ped/Bike Crash	Total Stars	Advanced Walk	Countdown Timers	Curb Extensions	Median Refuge Island
61.04	Chaska Blvd	CSAH 61 AND MNTH-41	SIGNALIZED	17,550	Undivided	30	No	Yes	0	★★★★	1	1	0	0
61.05	Chaska Blvd	CSAH 61 AND WALNUT ST M-34 MSAS-118	SIGNALIZED	7,200	Undivided	30	No	Yes	0	★★★	1	1	0	0
61.06	Chaska Blvd	CSAH 61 AND CROSSTOWN BLVD MSAS-104	THRU STOP	7,200	Undivided	45	No	Yes	0		0	0	0	0
61.07	Chaska Blvd	CSAH 61 AND ZEMBLE ST MSAS-111	THRU STOP	7,200	Undivided	50	No	No	0		0	0	0	0
15.01	Audubon Rd	CSAH 15 AND CHASKA BLVD CSAH-61; AUDUBON RD MSAS-116	SIGNALIZED	5,275	Divided	50	No	Yes	0	★	1	1	0	0
10.24	Engler Blvd	CSAH 10 AND FLYING CLOUD DR; CHASKA BLVD; CSAH-61	THRU STOP	3,750	Divided	50	No	No	0		0	0	0	0
61.08	Flying Cloud Dr	CSAH 61 AND SOUGHTON DR MSAS-124	THRU STOP	6,600	Undivided	50	No	No	0		0	0	0	0
61.09	Flying Cloud Dr	CSAH 61 AND BLUFF CREEK DR MSAS-104	THRU STOP	7,250	Undivided	55	No	No	0		0	0	0	0
61.1	Flying Cloud Dr	CSAH 61 AND MNTH-101; OLD USTH-212	SIGNALIZED	8,500	Undivided	55	No	No	0	★	1	1	0	0
61.11	Flying Cloud Dr	CSAH 61 AND CSAH-101	SIGNALIZED	15,250	Undivided	55	No	No	0	★★	1	1	0	0

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Configuration	Undivided
Major Speed Limit	≤ 40
Bus Stop	Yes
Ped Generator	Yes
Severe Ped/Bike Crash	> 0

Intersections are selected for project on a corridor basis, if corridor:
- meets the first three criteria and has multiple signalized intersections.

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Advanced Walk	Proactive	$0	per intersection	5	$0
Countdown Timers	Proactive	$10,000	per intersection	5	$50,000
Curb Extensions	Proactive	$15,000	per corner	0	$0
Median Refuge Island	Proactive	$10,000	per side	0	$0
County Nominated Project	-	$2,500	lump sum	0	$0
					$50,000

Notes - County nominated project to include cost for advanced walk signal timing.

Implementation Cost

Federal Funds	$45,000
Local Match (10% of Total project cost)	$5,000
Total Project Cost	**$50,000**

2007-2011 MnCMAT Crash Data

Intersections on Pioneer Trail (CSAH 14) from MNTH 41 to MNTH 101

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Bus Stop	Ped Generator	Severe Ped/Bike Crash	Total Stars	Advanced Walk	Countdown Timers	Curb Extensions	Median Refuge Island
14.06	Pioneer Tr	CSAH 14 AND MNTH-41 CHESTNUT ST	SIGNALIZED	16,350	Divided	55	No	Yes	0	★	1	1	0	0
14.065	Pioneer Tr	CSAH 14 AND COMMERCIAL ENTRANCE	SIGNALIZED	13,100	Divided	45	No	Yes	0		1	1	0	0
14.07	Pioneer Tr	CSAH 14 AND HUNDERTMARK RD; MSAS-108	SIGNALIZED	13,400	Divided	45	No	Yes	0	★	1	1	0	0
14.Oriole	Pioneer Tr	CSAH 14 AND ORIOLE LN	SIGNALIZED	13,700	Undivided	45	No	No	0		1	1	0	0
14.Acorn	Pioneer Tr	CSAH 14 AND ACORN RD	SIGNALIZED	13,700	Undivided	45	No	No	0		1	1	0	0
14.08	Pioneer Tr	CSAH 14 AND AUDOBON RD CSAH-15	SIGNALIZED	11,400	Undivided	45	No	No	0	★	1	1	0	0
14.Bluff	Pioneer Tr	CSAH 14 AND BLUFF CREEK DR	SIGNALIZED	6,000	Undivided	45	No	No	0		1	1	0	0
14.09	Pioneer Tr	CSAH 14 AND POWERS BLVD CSAH-17	THRU STOP	4,350	Divided	50	No	No	0		0	0	0	0
14.1	Pioneer Tr	CSAH 14 AND GREAT PLAINS BLVD MNTH-101	SIGNALIZED	5,325	Undivided	55	No	No	0	★	1	1	0	0

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Configuration	Undivided
Major Speed Limit	≤ 40
Bus Stop	Yes
Ped Generator	Yes
Severe Ped/Bike Crash	> 0

Intersections are selected for project on a corridor basis, if corridor:
- meets the first three criteria and has multiple signalized intersections.

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Advanced Walk	Proactive	$0	per intersection	8	$0
Countdown Timers	Proactive	$10,000	per intersection	8	$80,000
Curb Extensions	Proactive	$15,000	per corner	0	$0
Median Refuge Island	Proactive	$10,000	per side	0	$0
County Nominated Project	-	$4,000	lump sum	0	$0
					$80,000

Notes - County nominated project to include cost for advanced walk signal timing.

Implementation Cost

Federal Funds	$72,000
Local Match (10% of Total project cost)	$8,000
Total Project Cost	**$80,000**

Intersections on Lyman Blvd (CSH 18) from MNTH 41 to CSAH 101

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Bus Stop	Ped Generator	Severe Ped/Bike Crash	Total Stars	Advanced Walk	Countdown Timers	Curb Extensions	Median Refuge Island
18.02	Lyman Blvd	CSAH 18 AND MNTHH-41	SIGNALIZED	15,350	Undivided	55	No	Yes	0	★★	1	1	0	0
15.04	Galpin Blvd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (NORTH)	SIGNALIZED	5,975	Divided	45	No	No	0		1	1	0	0
18.HS	Lyman Blvd	CSAH 18 AND CHANHASSEN HIGH SCHOOL N ENTRANCE	SIGNALIZED	7,000	Divided	40	No	No	0		1	1	0	0
18.Haze	Lyman Blvd	CSAH 18 AND CHANHASSEN HIGH SCHOOL S ENTRANCE	SIGNALIZED	7,500	Divided	40	No	No	0		1	1	0	0
15.03	Audubon Rd	CSAH 15 AND LYMAN BLVD CSAH-18 EBL (SOUTH)	SIGNALIZED	9,150	Divided	40	No	No	0	★	1	1	0	0
18.03	Lyman Blvd	CSAH 18 AND AUDOBON RD MSAS-106	THRU STOP	10,050	Undivided	40	No	No	0		0	0	0	0
17.01	Powers Blvd	CSAH 17 AND LYMAN BLVD CSAH-18	SIGNALIZED	7,600	Divided	50	No	No	0		1	1	0	0
18.04	Lyman Blvd	CSAH 18 AND CROSSROADS BLVD M-611; OLD MNTH-101	THRU STOP	4,400	Undivided	50	No	No	0		0	0	0	0
101.01	Great Plains Blvd	CSAH 101 AND LYMAN BLVD; OLD MNTH-101; MSAS-112	SIGNALIZED	6,950	Divided	40	No	Yes	0	★★	1	1	0	0

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Configuration	Undivided
Major Speed Limit	≤ 40
Bus Stop	Yes
Ped Generator	Yes
Severe Ped/Bike Crash	> 0

Intersections are selected for project on a corridor basis, if corridor:
- meets the first three criteria and has multiple signalized intersections.

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Advanced Walk	Proactive	$0	per intersection	7	$0
Countdown Timers	Proactive	$10,000	per intersection	7	$70,000
Curb Extensions	Proactive	$15,000	per corner	0	$0
Median Refuge Island	Proactive	$10,000	per side	0	$0
County Nominated Project	-	$3,500	lump sum	0	$0
					$70,000

Notes - County nominated project to include cost for advanced walk signal timing.

Implementation Cost

Federal Funds	$63,000
Local Match (10% of Total project cost)	$7,000
Total Project Cost	**$70,000**

2007-2011 MnCMAT Crash Data

Intersections on Powers Blvd (CSAH 17) from Lake Dr to Pleasant View Rd

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Bus Stop	Ped Generator	Severe Ped/Bike Crash	Total Stars	Advanced Walk	Countdown Timers	Curb Extensions	Median Refuge Island
17.02	Powers Blvd	CSAH 17 AND LAKE DR MSAS-107	THRU STOP	10,600	Divided	45	No	No	0		0	0	0	0
17.03	Powers Blvd	CSAH 17 AND PARK RD MSAS-127	THRU STOP	10,600	Divided	45	No	Yes	0		0	0	0	0
17.04	Powers Blvd	CSAH 17 AND ARBORETUM BLVD MNTH-5 EB	SIGNALIZED	28,250	Divided	55	No	Yes	0	★★	1	1	0	0
17.05	Powers Blvd	CSAH 17 AND 78TH ST W MSAS-113	SIGNALIZED	10,850	Divided	40	No	Yes	1	★★★	1	1	0	0
17.06	Powers Blvd	CSAH 17 AND TECUMSEH LA M-101; KERBER BLVD MSAS-101	THRU STOP	8,700	Undivided	50	No	No	0		0	0	0	0
17.07	Powers Blvd	CSAH 17 AND LAKE LUCY RD; MSAS-101 M-308	THRU STOP	8,500	Undivided	50	No	No	0		0	0	0	0
17.08	Powers Blvd	CSAH 17 AND PLEASANT VIEW RD MSAS-109	THRU STOP	8,300	Undivided	45	No	No	0		0	0	0	0

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Configuration	Undivided
Major Speed Limit	≤ 40
Bus Stop	Yes
Ped Generator	Yes
Severe Ped/Bike Crash	> 0

Intersections are selected for project on a corridor basis, if corridor:
- meets the first three criteria and has multiple signalized intersections.

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Advanced Walk	Proactive	$0	per intersection	2	$0
Countdown Timers	Proactive	$10,000	per intersection	2	$20,000
Curb Extensions	Proactive	$15,000	per corner	0	$0
Median Refuge Island	Proactive	$10,000	per side	0	$0
County Nominated Project	-	$51,000	lump sum	1	$51,000
					$71,000

Notes - HAWK Signal South of TH 5 on Powers Blvd for crossing at Park Rd. County nominated project to include cost for advanced walk signal timing.

Implementation Cost

Federal Funds	$63,900
Local Match (10% of Total project cost)	$7,100
Total Project Cost	**$71,000**

2007-2011 MnCMAT Crash Data

Intersections on 13th St (CSAH 10) from MNTH 5 to CSAH 59

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Bus Stop	Ped Generator	Severe Ped/Bike Crash	Total Stars	Advanced Walk	Countdown Timers	Curb Extensions	Median Refuge Island
10.12	Waconia Pkwy S	CSAH 10 AND MNTH-5	SIGNALIZED	12,050	Divided	55	No	Yes	0	★	1	1	0	0
10.Market	13th Street	CSAH 10 AND MARKETPLACE DR	SIGNALIZED	7,800	Divided	40	No	Yes	0		1	1	0	0
10.13	13th Street	CSAH 10 AND INDUSTRIAL BLVD MSAS-114 M-101	THRU STOP	6,650	Divided	40	No	Yes	0		0	0	0	0
10.14	13th Street	CSAH 10 AND ENTER ROUNDABOUT WITH MNTH-284	ROUNDABOUT	3,500	Divided	45	No	Yes	0		0	0	0	0
10.15	13th Street	CSAH 10 AND MAIN ST E CSAH-59 SBL; MSAS-117 SBL	SIGNALIZED	5,500	Divided	50	No	No	0		1	1	0	0

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Configuration	Undivided
Major Speed Limit	≤ 40
Bus Stop	Yes
Ped Generator	Yes
Severe Ped/Bike Crash	> 0

Intersections are selected for project on a corridor basis, if corridor:
- meets the first three criteria and has multiple signalized intersections.

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Advanced Walk	Proactive	$0	per intersection	3	$0
Countdown Timers	Proactive	$10,000	per intersection	3	$30,000
Curb Extensions	Proactive	$15,000	per corner	0	$0
Median Refuge Island	Proactive	$10,000	per side	0	$0
County Nominated Project	-	$1,500	lump sum	0	$0
					$30,000

Notes - County nominated project to include cost for advanced walk signal timing.

Implementation Cost

Federal Funds	$27,000
Local Match (10% of Total project cost)	$3,000
Total Project Cost	**$30,000**

Intersections on Main St (CSAH 59) from MNTH 5 to CSAH 10

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Bus Stop	Ped Generator	Severe Ped/Bike Crash	Total Stars	Advanced Walk	Countdown Timers	Curb Extensions	Median Refuge Island
59.03	Main St	CSAH 59 AND MNTH-5 WBL	SIGNALIZED	15,000	Divided	55	No	Yes	0	★	1	1	0	0
59.Airport	Main St	CSAH 59 AND AIRPORT RD	SIGNALIZED	5,500	Divided	40	No	Yes	0		1	1	0	0
10.15	13th Street	CSAH 10 AND MAIN ST E CSAH-59 SBL; MSAS-117 SBL	SIGNALIZED	5,500	Divided	50	No	No	0		1	1	0	0

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Configuration	Undivided
Major Speed Limit	≤ 40
Bus Stop	Yes
Ped Generator	Yes
Severe Ped/Bike Crash	> 0

Intersections are selected for project on a corridor basis, if corridor:
- meets the first three criteria and has multiple signalized intersections.

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Advanced Walk	Proactive	$0	per intersection	3	$0
Countdown Timers	Proactive	$10,000	per intersection	3	$30,000
Curb Extensions	Proactive	$15,000	per corner	0	$0
Median Refuge Island	Proactive	$10,000	per side	0	$0
County Nominated Project	-	$1,500	lump sum	0	$0
					$30,000

Notes - County nominated project to include cost for advanced walk signal timing.

Implementation Cost

Federal Funds	$27,000
Local Match (10% of Total project cost)	$3,000
Total Project Cost	**$30,000**

Non-Corridor Specific High Priority Intersections

Agency: Carver County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Configuration	Major Speed Limit	Bus Stop	Ped Generator	Severe Ped/Bike Crash	Total Stars	Advanced Walk	Countdown Timers	Curb Extensions	Median Refuge Island
57.01	Olive St	CSAH 57 AND MNTH-5; MNTH-284	SIGNALIZED	14,500	Undivided	40	No	Yes	0	★★★	1	1	0	0
11.11	Victoria Dr	CSAH 11 AND ARBORETUM DR MNTH-5 (EAST)	SIGNALIZED	15,300	Undivided	30	No	Yes	0	★★★	1	1	0	0
10.22	Engler Blvd	CSAH 10 AND MNTH-41	SIGNALIZED	18,600	Divided	40	No	No	0	★★	1	1	0	0
11.04	ɔnathan Carver Pkv	CSAH 11 AND CHASKA BLVD OLD USTH-212	SIGNALIZED	3,750	Undivided	55	No	Yes	0	★★	1	1	0	0
15.06	Galpin Blvd	CSAH 15 AND ARBORETUM BLVD MNTH-5; CR-117	SIGNALIZED	26,500	Divided	55	No	Yes	0	★★	1	1	0	0

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Configuration	Undivided
Major Speed Limit	≤ 40
Bus Stop	Yes
Ped Generator	Yes
Severe Ped/Bike Crash	> 0

Intersections are selected for project on a corridor basis, if corridor:
- meets the first three criteria and has multiple signalized intersections.

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Advanced Walk	Proactive	$0	per intersection	5	$0
Countdown Timers	Proactive	$10,000	per intersection	5	$50,000
Curb Extensions	Proactive	$15,000	per corner	0	$0
Median Refuge Island	Proactive	$10,000	per side	0	$0
County Nominated Project	-	$2,500	lump sum	0	$0
					$50,000

Notes - County nominated project to include cost for advanced walk signal timing.

Implementation Cost

Federal Funds	$45,000
Local Match (10% of Total project cost)	$5,000
Total Project Cost	**$50,000**

2007-2011 MnCMAT Crash Data

Appendix C

Urban Segments – Rear End and Head On Crashes

Carver County
Urban Segment Listing
Analysis Years: 2007 - 2011

Int #	Sys	Num	Street Name	Start	End	Length	ADT	Major Approach Lanes	Access Density	Major Speed Limit	Total Severe Rear End / Sideswipe / Head On Crash	Crash Cost
10.02	CSAH	10	Jefferson Ave	/ATERTOWN CORP LIMIT	MNTH-25 (NORTH)	0.3	1,400	2	30	40	0	$ 139,000
10.03	CSAH	10	Waconia Rd	MNTH-25 (SOUTH)	WATERTOWN CORP LIMIT	1.5	5,700	2	43	30-40	1	$ 2,440,000
10.07	CSAH	10	E 13th St	MNTH-5	CSAH-59	1.3	5,845	2	15	35-40	0	$ 242,000
10.09	CSAH	10	Engler Blvd	CHASKA CORP LIMIT	MNTH-41	2.0	9,350	2 3	11	45	1	$ 6,315,000
10.10	CSAH	10	Engler Blvd	MNTH-41	CSAH-61	1.4	6,160	2	12	40-50-40	0	$ 1,125,000
11.06	CSAH	11	CR 11	CSAH-14	MNTH-5 (EAST)	2.4	5,448	2	31	55-50-45-30	0	$ 3,552,000
13.01	CSAH	13	Rolling Acres Rd	CSAH-18	MNTH-7	1.9	6,810	2	29	45	0	$ 1,877,000
14.01	CSAH	14	Pioneer Tr	CSAH-11	MNTH-41	2.8	4,540	2 4	11	50-35-40	0	$ 2,950,000
14.02	CSAH	14	Pioneer Tr	MNTH-41	CSAH-14 ENDS, HENN CO	4.3	7,793	2	16	45	0	$ 4,399,000
15.01	CSAH	15	CR 15	CSAH-61	CSAH-18 (SOUTH)	2.9	5,502	4 2	14	45-50-40	1	$ 2,487,000
15.02	CSAH	15	Galpin Blvd	CSAH-18 (NORTH)	MNTH-5	1.0	3,985	2 4	15	45	0	$ 462,000
17.01	CSAH	17	Powers Blvd	CSAH-14	MNTH-5	2.5	8,540	4	8	45	0	$ 2,909,000
17.02	CSAH	17	Powers Blvd	MNTH-5	CSAH-17 ENDS, HENN CO	2.1	8,721	2	15	40-45	2	$ 2,593,000
18.01	CSAH	18	CR 18	CSAH-11	CSAH-13	1.3	3,170	2	9	40-45	0	$ 720,000
18.03	CSAH	18	Lyman Blvd	MNTH-41	OLD MNTH-101	3.2	7,108	2 4	12	45-40-50	1	$ 3,798,000
20.03	CSAH	20	CR 20	CSAH-10	WATERTOWN CORP LIMIT	1.2	3,700	2	11	No VL	0	$ 115,000
23.01	CSAH	23	Bluejay Ave	CSAH-30	58th ST	0.9	660	2	26	30	0	$ -
24.01	CSAH	24	CR 24	CSAH-10	DREAM LANE	1.1	3,000	2	13	45	0	$ 354,000
27.01	CSAH	27	White Ave	CSAH-10	WATERTOWN CORP LIMIT	0.6	1,930	2	30	30	0	$ 160,000
30.02	CSAH	30	Broadway St	CSAH-33 (NORTH)	NEW GERMANY CORP LIMIT	0.5	1,400	2	48	30	0	$ 227,000
30.04	CSAH	30	CR 30	MAYER CORP LIMIT	MNTH-25 (NORTH)	1.3	2,665	2	15	45-30	0	$ 139,000
31.03	CSAH	31	Elm St	USTH-212	CSAH-33	1.6	1,109	2	40	50-30	0	$ 1,114,000
33.03	CSAH	33	CR 33	ORWOOD/YOUNG AMER (	USTH-212	0.8	1,082	2	49	30	0	$ 955,000
33.04	CSAH	33	CR 33	USTH-212	MNTH-25	0.2	3,800	2	35	30	0	$ 12,000
33.06	CSAH	33	State Ave	NEW GERMANY CL	NEW GERMANY CL	1.0	1,850	2	30	30	0	$ -
34.02	CSAH	34	CR 34	MNTH-25	USTH-212	1.6	879	2	47	30	0	$ 517,000
36.01	CSAH	36	Lake St	USTH-212	COLOGNE CORP LIMIT	1.2	728	2	31	45-30	0	$ 380,000
40.02	CSAH	40	CR 40	EAST UNION	EAST UNION	0.5	1,375	2	26	35	0	$ -
40.05	CSAH	40	Main St	CSAH-11 (NORTH)	CHASKA BLVD CSAH-61	2.8	2,113	2	11	50-30-50	0	$ 1,701,000
43.03	CSAH	43	Church Lake Blvd	TELLERS RD	CSAH-11	1.7	1,254	2	22	45	0	$ 448,000
50.02	CSAH	50	Park Ave	HAMBURG CORP LIMIT	HAMBURG CORP LIMIT	1.0	1,147	2	51	30	0	$ 12,000
50.05	CSAH	50	CR 50	EAST UNION	EAST UNION	0.4	1,600	2	43	35	0	$ -
50.07	CSAH	50	CR 50	SAN FRANCISCO TWSP	CSAH-11	0.8	1,400	2	16	55	0	$ 548,000
57.01	CSAH	57	Olive St	MNTH-5	CSAH-59	0.5	3,300	2	54	30	0	$ 1,204,000
59.01	CSAH	59	Main St	CSAH-57	CSAH-10	1.7	4,850	2 4	35	30-40	0	$ 635,000
61.01	CSAH	61	Chaska Blvd	CSAH-11	MNTH-41	2.5	5,813	2	18	45-30	0	$ 977,000
61.02	CSAH	61	Flying Cloud Blvd	MNTH-41	CSAH-61 ENDS, HENN CO	4.7	6,965	2	13	45-50-55	0	$ 3,620,000
101.01	CSAH	101	101	/MAN BLVD; OLD MNTH-10	MNTH-5	1.3	10,385	4	14	40	0	$ 4,042,000
111.01	CNTY	111	Shady Oak Dr	CSAH-14	CSAH-11	1.1	740	2	17	50	0	$ 160,000
117.01	CNTY	117	Galpin Blvd	MNTH-5	CR-117 ENDS, HENN CO	2.1	4,925	2	20	40-50	0	$ 716,000
122.02	CNTY	122	30th St	CR-123	MNTH-25	0.5	850	2	18	55	0	$ 103,000
140.03	CNTY	140	CR 140	CHASKA CORP LIMIT	CSAH-61	2.3	1,100	2	24	55-40	0	$ -
						66.8						

	Min	Max
Entering ADT	10000	5000000
Major Approach Lanes	4	
Access Density	15	60
Major Approach Speed Limit	0	40

Carver County
Urban Segment Prioritization
Analysis Years: 2007 - 2011

Rank	Int #	Sys	#	Street Name	Start	End	ADT	Major Approach Lanes	Access Density	Speed Limit	Severe Rear End Sideswipe or Head on Crash	Priority	Crash Cost
												Tiebreakers	
1	101.01	CSAH	101	101.00	LYMAN BLVD; OLD MNTH-101	MNTH-5	★	★		★		★★★	$4,042,000
2	18.03	CSAH	18	Lyman Blvd	MNTH-41	OLD MNTH-101		★		★	★	★★★	$3,798,000
3	17.02	CSAH	17	Powers Blvd	MNTH-5	CSAH-17 ENDS, HENN CO			★	★	★	★★★	$2,593,000
4	10.03	CSAH	10	Waconia Rd	MNTH-25 (SOUTH)	WATERTOWN CORP LIMIT			★	★	★	★★★	$2,440,000
5	59.01	CSAH	59	Main St	CSAH-57	CSAH-10		★	★	★		★★★	$635,000
6	14.01	CSAH	14	Pioneer Tr	CSAH-11	MNTH-41		★		★		★★	$2,950,000
7	15.01	CSAH	15	CR 15	CSAH-61	CSAH-18 (SOUTH)		★			★	★★	$2,487,000
8	57.01	CSAH	57	Olive St	MNTH-5	CSAH-59			★	★		★★	$1,204,000
9	31.03	CSAH	31	Elm St	USTH-212	CSAH-33			★	★		★★	$1,114,000
10	61.01	CSAH	61	Chaska Blvd	CSAH-11	MNTH-41			★	★		★★	$977,000
11	33.03	CSAH	33	CR 33	NORWOOD/YOUNG AMER CL	USTH-212			★	★		★★	$955,000
12	117.01	CNTY	117	Galpin Blvd	MNTH-5	CR-117 ENDS, HENN CO			★	★		★★	$716,000
13	34.02	CSAH	34	CR 34	MNTH-25	USTH-212			★	★		★★	$517,000
14	15.02	CSAH	15	Galpin Blvd	CSAH-18 (NORTH)	MNTH-5		★	★			★★	$462,000
16	36.01	CSAH	36	Lake St	USTH-212	COLOGNE CORP LIMIT			★	★		★★	$380,000
17	10.07	CSAH	10	E 13th St	MNTH-5	CSAH-59			★	★		★★	$242,000
18	30.02	CSAH	30	Broadway St	CSAH-33 (NORTH)	NEW GERMANY CORP LIMIT			★	★		★★	$227,000
19	27.01	CSAH	27	White Ave	CSAH-10	WATERTOWN CORP LIMIT			★	★		★★	$160,000
20	10.02	CSAH	10	Jefferson Ave	WATERTOWN CORP LIMIT	MNTH-25 (NORTH)			★	★		★★	$139,000
21	30.04	CSAH	30	CR 30	MAYER CORP LIMIT	MNTH-25 (NORTH)			★	★		★★	$139,000
22	50.02	CSAH	50	Park Ave	HAMBURG CORP LIMIT	HAMBURG CORP LIMIT			★	★		★★	$12,000
23	33.04	CSAH	33	CR 33	USTH-212	MNTH-25			★	★		★★	$12,000
24	50.05	CSAH	50	CR 50	EAST UNION	EAST UNION			★	★		★★	$0
25	33.06	CSAH	33	State Ave	NEW GERMANY CL	NEW GERMANY CL			★	★		★★	$0
26	40.02	CSAH	40	CR 40	EAST UNION	EAST UNION			★	★		★★	$0
27	23.01	CSAH	23	Bluejay Ave	CSAH-30	58th ST			★	★		★★	$0
28	10.09	CSAH	10	Engler Blvd	CHASKA CORP LIMIT	MNTH-41					★	★	$6,315,000
29	14.02	CSAH	14	Pioneer Tr	MNTH-41	CSAH-14 ENDS, HENN CO			★			★	$4,399,000
30	11.06	CSAH	11	CR 11	CSAH-14	MNTH-5 (EAST)			★			★	$3,552,000
31	17.01	CSAH	17	Powers Blvd	CSAH-14	MNTH-5		★				★	$2,909,000
32	13.01	CSAH	13	Rolling Acres Rd	CSAH-18	MNTH-7			★			★	$1,877,000
33	10.10	CSAH	10	Engler Blvd	MNTH-41	CSAH-61				★		★	$1,125,000
34	18.01	CSAH	18	CR 18	CSAH-11	CSAH-13				★		★	$720,000
35	50.07	CSAH	50	CR 50	SAN FRANCISCO TWSP	CSAH-11			★			★	$548,000
36	43.03	CSAH	43	Church Lake Blvd	TELLERS RD	CSAH-11			★			★	$448,000
37	111.01	CNTY	111	Shady Oak Dr	CSAH-14	CSAH-11			★			★	$160,000
38	122.02	CNTY	122	30th St	CR-123	MNTH-25			★			★	$103,000
39	140.03	CNTY	140	CR 140	CHASKA CORP LIMIT	CSAH-61			★			★	$0
40	61.02	CSAH	61	Flying Cloud Blvd	MNTH-41	CSAH-61 ENDS, HENN CO							$3,620,000
41	40.05	CSAH	40	Main St	CSAH-11 (NORTH)	CHASKA BLVD CSAH-61							$1,701,000
42	24.01	CSAH	24	CR 24	CSAH-10	DREAM LANE							$354,000
43	20.03	CSAH	20	CR 20	CSAH-10	WATERTOWN CORP LIMIT							$115,000
						Total Stars --	1	7	30	26	5		
						% That Gets Star --	2%	17%	71%	62%	12%		

	Totals #	%
★★★★★★	0	0%
★★★★★	0	0%
★★★★	0	0%
★★★	5	12%
★★	21	50%
★	12	29%
-	4	10%
	42	100%

Stars

If segment has a major entering ADT greater than or equal to 10000 vpd.
If segment has lanes greater than or equal to 4.
If segment has an access density between 15 60.
If segment has a speed less than or equal to 40 mph.
If segment has at least 1 severe rear end or sideswipe or head on crash.

CSAH 10 from MNTH-25 (SOUTH) to WATERTOWN CORP LIMIT Project

Agency: Carver County

Roadway Data

Type:	CSAH
Number:	10
	Verbal
Start:	MNTH-25 (SOUTH)
End:	WATERTOWN CORP LIMIT
City/Rural:	Urban
County:	Carver
ATP:	Metro
ADT:	5700
Lanes:	2
Access Density	43
Speed Limit:	30-40
Length (miles):	1.5

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Dat 5 years

	K+A
Total	1
Rear End	0
Sideswipe Passing	0
Head On	1
Sideswipe Opposing	0
	1

Ranking Criteria

	Value	Critical	Star Ranking
ADT:	5,700	≥ 10,000	
Major Approach Lanes:	2.00	≥ 4	
Access Density:	43	15 - 60	★
Speed Limit:	30-40	≤ 40	★
Severe Rear End / Sideswipe / Head On Crashes:	1	≥ 1	★
.			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost	Notes -
2-Lane to 3-Lane Conversion	Proactive	$17,000	1.0	$17,085	
4-Lane to 5-Lane Conversion	Proactive	$22,000	0.0	$0	

Implementation Cost

Federal Funds	$15,377
Local Match (10% of Total project cost)	$1,709
Total Project Cost	**$17,085**

CSAH 31 from USTH-212 to CSAH-33 Project

Agency: Carver County

Roadway Data

Type:	CSAH
Number:	31
	Verbal
Start:	USTH-212
End:	CSAH-33
City/Rural:	Urban
County:	Carver
ATP:	Metro
ADT:	1109
Lanes:	2
Access Density	40
Speed Limit:	50-30
Length (miles):	1.6

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Dat 5 years

	K+A
Total	0
Rear End	0
Sideswipe Passing	0
Head On	0
Sideswipe Opposing	0
	0

Ranking Criteria

	Value	Critical	Star Ranking
ADT:	1,109	≥ 10,000	
Major Approach Lanes:	2.00	≥ 4	
Access Density:	40	15 - 60	★
Speed Limit:	50-30	≤ 40	★
Severe Rear End / Sideswipe / Head On Crashes:	0	≥ 1	
.			★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost	Notes
2-Lane to 3-Lane Conversion	Proactive	$17,000	0.7	$11,968	Urban section has parking
4-Lane to 5-Lane Conversion	Proactive	$22,000	0.0	$0	

Implementation Cost

Federal Funds	$10,771
Local Match (10% of Total project cost)	$1,197
Total Project Cost	**$11,968**

CSAH 33 from NORWOOD/YOUNG AMER CL to USTH-212 Project

Agency: Carver County

Roadway Data

Type:	CSAH
Number:	33
	Verbal
Start:	NORWOOD/YOUNG AMER CL
End:	USTH-212
City/Rural:	Urban
County:	Carver
ATP:	Metro
ADT:	1082
Lanes:	2
Access Density	48.75
Speed Limit:	30
Length (miles):	0.8

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Dat 5 years

	K+A
Total	0
Rear End	0
Sideswipe Passing	0
Head On	0
Sideswipe Opposing	0
	0

Ranking Criteria

	Value	Critical	Star Ranking
ADT:	1,082	≥ 10,000	
Major Approach Lanes:	2.00	≥ 4	
Access Density:	48.75	15 - 60	★
Speed Limit:	30	≤ 40	★
Severe Rear End / Sideswipe / Head On Crashes:	0	≥ 1	
.			★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost	Notes
2-Lane to 3-Lane Conversion	Proactive	$17,000	0.8	$13,600	On street parking present
4-Lane to 5-Lane Conversion	Proactive	$22,000	0.0	$0	

Implementation Cost

Federal Funds	$12,240
Local Match (10% of Total project cost)	$1,360
Total Project Cost	**$13,600**

CSAH 30 from CSAH-33 (NORTH) to NEW GERMANY CORP LIMIT Project

Agency: Carver County

Roadway Data

Type:	CSAH
Number:	30
	Verbal
Start:	CSAH-33 (NORTH)
End:	NEW GERMANY CORP LIMIT
City/Rural:	Urban
County:	Carver
ATP:	Metro
ADT:	1400
Lanes:	2
Access Density	48
Speed Limit:	30
Length (miles):	0.5

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Dat 5 years

	K+A
Total	0
Rear End	0
Sideswipe Passing	0
Head On	0
Sideswipe Opposing	0
	0

Ranking Criteria

	Value	Critical	Star Ranking
ADT:	1,400	≥ 10,000	
Major Approach Lanes:	2.00	≥ 4	
Access Density:	48	15 - 60	★
Speed Limit:	30	≤ 40	★
Severe Rear End / Sideswipe / Head On Crashes:	0	≥ 1	
.			★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2-Lane to 3-Lane Conversion	Proactive	$17,000	0.5	$8,500
4-Lane to 5-Lane Conversion	Proactive	$22,000	0.0	$0

Notes - City project scheduled for 2013. Total reconstruction. On street parking present

Implementation Cost

Federal Funds	$7,650
Local Match (10% of Total project cost)	$850
Total Project Cost	**$8,500**

Appendix D

Rural Segments – Lane Departure Crashes

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 Assesment
-	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					

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 % No Passing

	Access	Lane Departure	Critical Radius Curves
Total	2286	425	83
Total Mileage	200.0	200.0	200.0
Years		5	
Average Density (Total/Mile)	**11.4**	**0.43**	**0.42**

Carver County

Rural Segment Prioritization - Road Departure Priority

Analysis Years: 2007 - 2011

#	Corridor	Route	#	Start	End	Length	ADT	ADT Range	Lane Departure Density	Access Density	Curve Critical Radius Density	Edge Risk	Totals	Tiebreakers	
														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 GEF	MAYER 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 CS	EAST 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 GEF	CSAH-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.

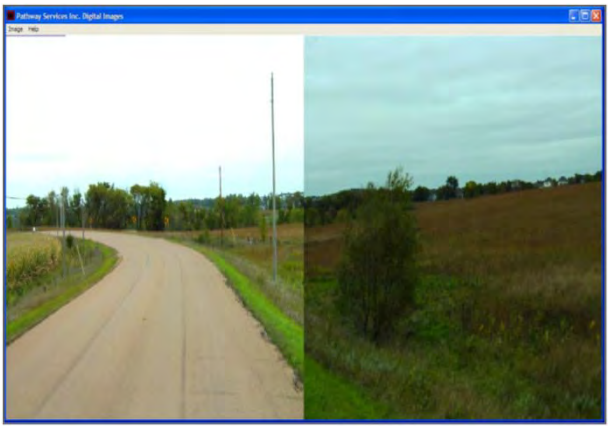
CSAH 11 from SAN FRANCISCO TWSP to CSAH-40 (SOUTH) Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 11

Verbal
Start: SAN FRANCISCO TWSP
End: CSAH-40 (SOUTH)
City/Rural: Rural
County: Carver
ATP: Metro
ADT: 2150
Facility Type: 2-Lane
Lane Width: 12
Speed Limit: 55
Shoulder Width: 6'
Shoulder Type: 5' paved, 1' gravel
Length (miles): 0.9
Rumble Installed: no



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	7	6	0
Density (per mile per year)	1.56	1.33	0.00
Rate (per MVM)	1.98	1.70	0.00

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	2,150	> 3,000	
Lane Departure Density	1.33	0.43	★
Access Density	16.7	11.40	★
Curve Critical Radius Density	2.22	0.42	★
Edge Risk	3	2 or 3	★
			★★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	0.0	$0
Rumble Strip	Proactive	$3,000	0.9	$2,700
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

Notes - Carver Co. may revise project to ground in wet-reflective edge treatment.

Implementation Cost

Federal Funds	$2,430
Local Match (10% of Total project cost)	$270
Total Project Cost	**$2,700**

CSAH 33 from CSAH-50 (WEST) to NORWOOD/YOUNG AMER CL Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 33

	Verbal
Start:	CSAH-50 (WEST)
End:	NORWOOD/YOUNG AMER CL
City/Rural:	Rural
County:	Carver
ATP:	Metro
ADT:	600
Facility Type:	2-Lane
Lane Width:	12
Speed Limit:	55
Shoulder Width:	2'
Shoulder Type:	gravel
Length (miles):	2.5
Rumble Installed:	no

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	8	6	1
Density (per mile per year)	0.64	0.48	0.08
Rate (per MVM)	2.92	2.19	0.37

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	600	> 3,000	
Lane Departure Density	0.48	0.43	★
Access Density	12.4	11.40	★
Curve Critical Radius Density	0.80	0.42	★
Edge Risk	3	2 or 3	★
			★★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	2.5	$100,000
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

Notes - County preference to use 2' shoulder paving and rumble strips instead of rumble stripEs.

Implementation Cost

Federal Funds	$90,000
Local Match (10% of Total project cost)	$10,000
Total Project Cost	**$100,000**

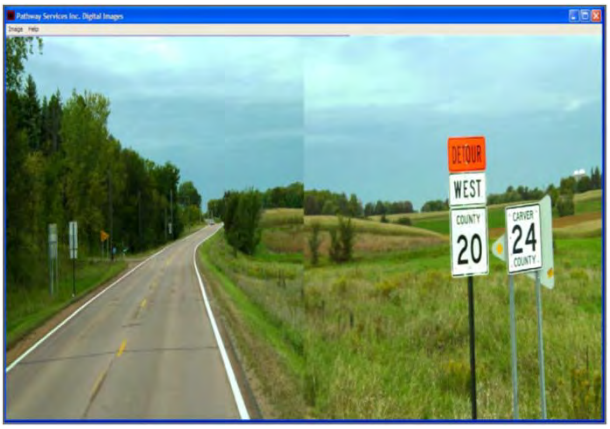
CSAH 24 from DREAM LANE to CSAH-15 Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 24

	Verbal
Start:	DREAM LANE
End:	CSAH-15
City/Rural:	Rural
County:	Carver
ATP:	Metro
ADT:	2800
Facility Type:	2-Lane
Lane Width:	12
Speed Limit:	55
Shoulder Width:	2'
Shoulder Type:	gravel
Length (miles):	2.7
Rumble Installed:	no



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	20	11	2
Density (per mile per year)	1.48	0.81	0.15
Rate (per MVM)	1.45	0.80	0.14

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	2,800	> 3,000	
Lane Departure Density	0.81	0.43	★
Access Density	13.7	11.40	★
Curve Critical Radius Density	0.74	0.42	★
Edge Risk	2	2 or 3	★
			★★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	2.7	$108,000
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

Notes - County preference to use 2' shoulder paving and rumble strips instead of rumble stripEs.

Implementation Cost

Federal Funds	$97,200
Local Match (10% of Total project cost)	$10,800
Total Project Cost	**$108,000**

CSAH 10 from 66TH ST to MNTH-5 Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 10

Verbal

Start: 66TH ST
End: MNTH-5
City/Rural: Rural
County: Carver
ATP: Metro
ADT: 6290
Facility Type: 2-Lane
Lane Width: 12
Speed Limit: 55
Shoulder Width: varies'
Shoulder Type: varies
Length (miles): 4.0
Rumble Installed: no

Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Lane Dept	K+A
Crashes	115	34	0
Density (per mile per year)	5.75	1.70	0.00
Rate (per MVM)	2.50	0.74	0.00

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	6,290	> 3,000	★
Lane Departure Density	1.70	0.43	★
Access Density	13.5	11.40	★
Curve Critical Radius Density	0.75	0.42	★
Edge Risk	1	2 or 3	
			★★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	0.0	$0
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	8.0	$68,000
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

Notes - Noise Sensitive Segment. Carver Co. preference to use ground in wet-reflective centerline treatment. Total reconstruction from 66th St. to CSAH 30 in 2014.

Implementation Cost

Federal Funds	$61,200
Local Match (10% of Total project cost)	$6,800
Total Project Cost	**$68,000**

CSAH 20 from CSAH-33 (SOUTH) to MNTH-25 Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 20

	Verbal
Start:	CSAH-33 (SOUTH)
End:	MNTH-25
City/Rural:	Rural
County:	Carver
ATP:	Metro
ADT:	1025
Facility Type:	2-Lane
Lane Width:	12
Speed Limit:	55
Shoulder Width:	2'
Shoulder Type:	gravel
Length (miles):	5.2
Rumble Installed:	no

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	20	13	0
Density (per mile per year)	0.77	0.50	0.00
Rate (per MVM)	2.06	1.34	0.00

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	1,025	> 3,000	
Lane Departure Density	0.50	0.43	★
Access Density	11.5	11.40	★
Curve Critical Radius Density	0.00	0.42	
Edge Risk	3	2 or 3	★
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	5.2	$208,000
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

Notes - County preference to use 2' shoulder paving and rumble strips instead of rumble stripEs.

Implementation Cost

Federal Funds	$187,200
Local Match (10% of Total project cost)	$20,800
Total Project Cost	**$208,000**

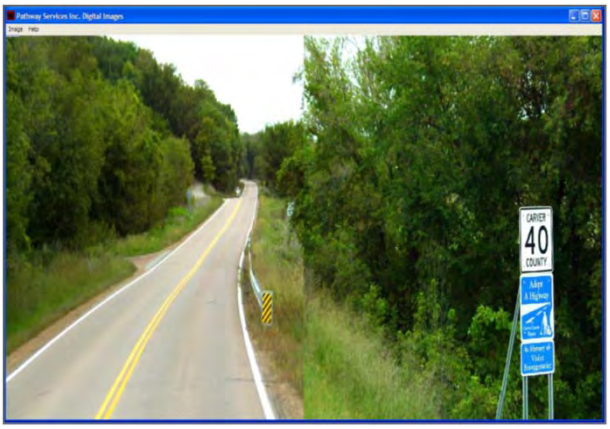
CSAH 40 from CSAH-40 BEGINS, SIBLEY CO to EAST UNION Project

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 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
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

Notes - County preference to use 2' shoulder paving and rumble strips instead of rumble stripEs.

Implementation Cost

Federal Funds	$259,200
Local Match (10% of Total project cost)	$28,800
Total Project Cost	**$288,000**

CSAH 10 from MNTH-7 to 66TH ST Project

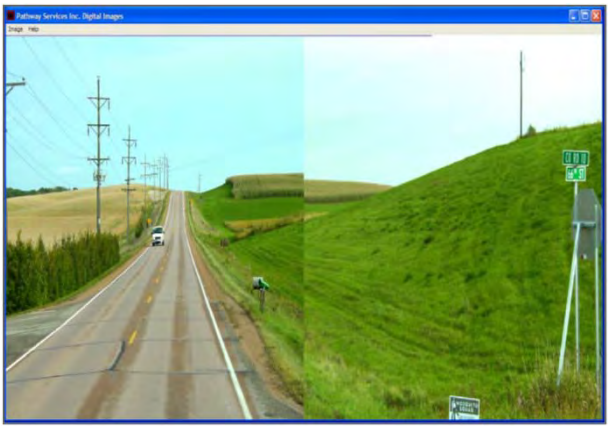
Agency: Carver County

Roadway Data

Type: CSAH
Number: 10

Verbal

Start: MNTH-7
End: 66TH ST
City/Rural: Rural
County: Carver
ATP: Metro
ADT: 4500
Facility Type: 2-Lane
Lane Width: 12
Speed Limit: 55
Shoulder Width: 4'
Shoulder Type: gravel
Length (miles): 1.6
Rumble Installed: no



Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Lane Dept	K+A
Crashes	31	10	1
Density (per mile per year)	3.88	1.25	0.13
Rate (per MVM)	2.36	0.76	0.08

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	4,500	> 3,000	★
Lane Departure Density	1.25	0.43	★
Access Density	11.3	11.40	
Curve Critical Radius Density	0.00	0.42	
Edge Risk	2	2 or 3	★
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	0.0	$0
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	1.6	$13,600
Center Line Rumble Strip	Proactive	$3,000	1.6	$4,800
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

Notes - Total reconstruction scheduled for 2015.

Implementation Cost

Federal Funds	$16,560
Local Match (10% of Total project cost)	$1,840
Total Project Cost	**$18,400**

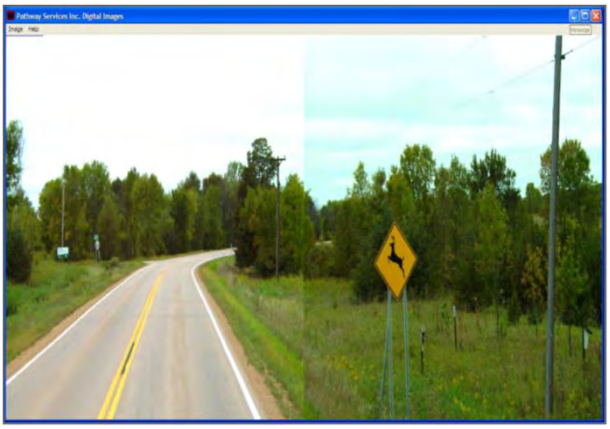
CSAH 11 from MNTH-5 (WEST) to MNTH-7, HENNEPIN CO Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 11

Verbal
Start: MNTH-5 (WEST)
End: MNTH-7, HENNEPIN CO
City/Rural: Rural
County: Carver
ATP: Metro
ADT: 2250
Facility Type: 2-Lane
Lane Width: 11.5
Speed Limit: 55
Shoulder Width: 3'
Shoulder Type: gravel
Length (miles): 2.8
Rumble Installed: no



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	10	10	0
Density (per mile per year)	0.71	0.71	0.00
Rate (per MVM)	0.87	0.87	0.00

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	2,250	> 3,000	
Lane Departure Density	0.71	0.43	★
Access Density	9.6	11.40	
Curve Critical Radius Density	1.79	0.42	★
Edge Risk	2	2 or 3	★
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost	Notes -
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	2.8	$112,000	
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	$100,800
Local Match (10% of Total project cost)	$11,200
Total Project Cost	**$112,000**

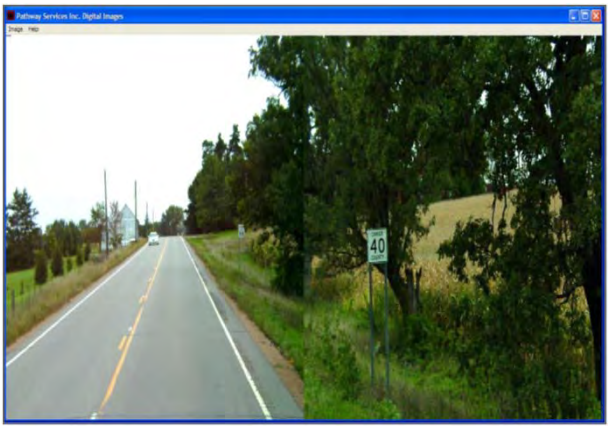
CSAH 40 from EAST UNION to CSAH-11 (SOUTH) Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 40

	Verbal
Start:	EAST UNION
End:	CSAH-11 (SOUTH)
City/Rural:	Rural
County:	Carver
ATP:	Metro
ADT:	1550
Facility Type:	2-Lane
Lane Width:	12
Speed Limit:	55
Shoulder Width:	3'
Shoulder Type:	paved
Length (miles):	2.1
Rumble Installed:	no



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	7	4	0
Density (per mile per year)	0.67	0.38	0.00
Rate (per MVM)	1.18	0.67	0.00

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	1,550	> 3,000	
Lane Departure Density	0.32	0.43	
Access Density	15.2	11.40	★
Curve Critical Radius Density	0.48	0.42	★
Edge Risk	2	2 or 3	★
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	0.0	$0
Rumble Strip	Proactive	$3,000	2.1	$6,300
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

Notes - County preference to use 2' shoulder paving and rumble strips instead of rumble stripEs. Since shoulder is already paved, rumble strips selected as project.

Implementation Cost

Federal Funds	$5,670
Local Match (10% of Total project cost)	$630
Total Project Cost	**$6,300**

CSAH 30 from CSAH-30 BEGINS, MCLEOD CO to CSAH-33 (SOUTH) Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 30

Verbal
Start: CSAH-30 BEGINS, MCLEOD CO
End: CSAH-33 (SOUTH)
City/Rural: Rural
County: Carver
ATP: Metro
ADT: 1050
Facility Type: 2-Lane
Lane Width: 12
Speed Limit: 55
Shoulder Width: 2'
Shoulder Type: gravel
Length (miles): 1.9
Rumble Installed: no

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	9	1	0
Density (per mile per year)	0.95	0.11	0.00
Rate (per MVM)	2.47	0.27	0.00

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	1,050	> 3,000	
Lane Departure Density	0.11	0.43	
Access Density	11.6	11.40	★
Curve Critical Radius Density	0.53	0.42	★
Edge Risk	2	2 or 3	★
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	1.9	$76,000
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

Notes - County preference to use 2' shoulder paving and rumble strips instead of rumble stripEs.

Implementation Cost

Federal Funds	$68,400
Local Match (10% of Total project cost)	$7,600
Total Project Cost	**$76,000**

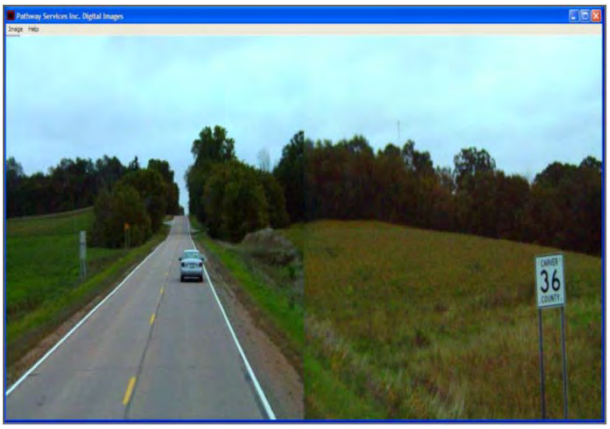
CSAH 36 from COLOGNE CORP LIMIT to USTH-212 Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 36

	Verbal
Start:	COLOGNE CORP LIMIT
End:	USTH-212
City/Rural:	Rural
County:	Carver
ATP:	Metro
ADT:	870
Facility Type:	2-Lane
Lane Width:	10
Speed Limit:	55
Shoulder Width:	4'
Shoulder Type:	paved
Length (miles):	1.3
Rumble Installed:	no



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	11	5	0
Density (per mile per year)	1.69	0.77	0.00
Rate (per MVM)	5.33	2.42	0.00

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	870	> 3,000	
Lane Departure Density	0.77	0.43	★
Access Density	8.5	11.40	
Curve Critical Radius Density	0.77	0.42	★
Edge Risk	2	2 or 3	★
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	0.0	$0
Rumble Strip	Proactive	$3,000	1.3	$3,900
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

Notes - Carver Co. may revise project to ground in wet-reflective edge treatment.

Implementation Cost

Federal Funds	$3,510
Local Match (10% of Total project cost)	$390
Total Project Cost	**$3,900**

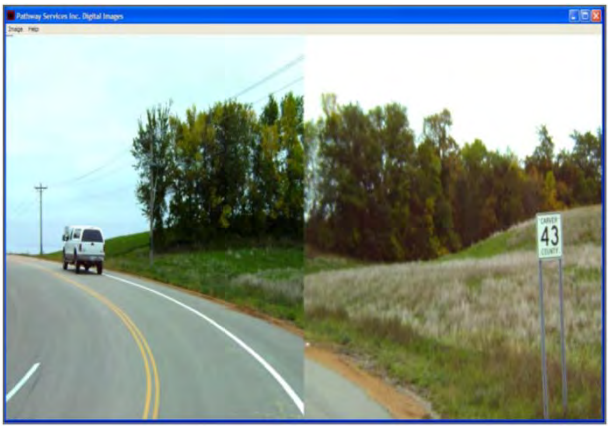
CSAH 43 from CSAH-10 (WEST) to TELLERS RD Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 43

	Verbal
Start:	CSAH-10 (WEST)
End:	TELLERS RD
City/Rural:	Rural
County:	Carver
ATP:	Metro
ADT:	783
Facility Type:	2-Lane
Lane Width:	12
Speed Limit:	45
Shoulder Width:	6'
Shoulder Type:	gravel
Length (miles):	1.7
Rumble Installed:	no



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	1	1	0
Density (per mile per year)	0.12	0.12	0.00
Rate (per MVM)	0.41	0.41	0.00

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	783	> 3,000	
Lane Departure Density	0.12	0.43	
Access Density	14.1	11.40	★
Curve Critical Radius Density	1.76	0.42	★
Edge Risk	2	2 or 3	★
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	1.7	$68,000
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

Notes - County preference to use 2' shoulder paving and rumble strips instead of rumble stripEs.

Implementation Cost

Federal Funds	$61,200
Local Match (10% of Total project cost)	$6,800
Total Project Cost	**$68,000**

CNTY 123 from MNTH-7 to CR-122 Project

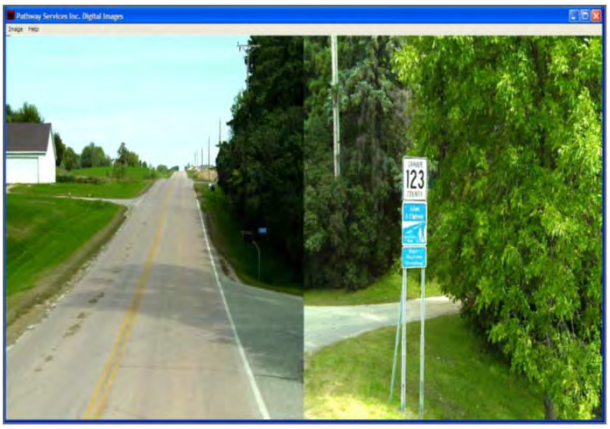
Agency: Carver County

Roadway Data

Type: CNTY
Number: 123

Verbal

Start: MNTH-7
End: CR-122
City/Rural: Rural
County: Carver
ATP: Metro
ADT: 245
Facility Type: 2-Lane
Lane Width: 12
Speed Limit: 55
Shoulder Width: 0-2'
Shoulder Type: gravel
Length (miles): 3.7
Rumble Installed: no



Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Lane Dept	K+A
Crashes	2	2	1
Density (per mile per year)	0.11	0.11	0.05
Rate (per MVM)	1.21	1.21	0.60

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	245	> 3,000	
Lane Departure Density	0.11	0.43	
Access Density	12.7	11.40	★
Curve Critical Radius Density	1.08	0.42	★
Edge Risk	2	2 or 3	★
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	0.0	$0
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	3.7	$31,450
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

Notes - Roadway has existing 6" edgeline. Carver Co. would like to upgrade to ground in wet-reflective.

Implementation Cost

Federal Funds	$28,305
Local Match (10% of Total project cost)	$3,145
Total Project Cost	**$31,450**

CNTY 135 from CSAH-33 to CSAH-32 Project

Agency: Carver County

Roadway Data

Type: CNTY
Number: 135
Verbal
Start: CSAH-33
End: CSAH-32
City/Rural: Rural
County: Carver
ATP: Metro
ADT: 244
Facility Type: 2-Lane
Lane Width: 12
Speed Limit: 55
Shoulder Width: 3-4'
Shoulder Type: gravel
Length (miles): 3.7
Rumble Installed: no

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	2	1	1
Density (per mile per year)	0.11	0.05	0.05
Rate (per MVM)	1.22	0.61	0.61

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	244	> 3,000	
Lane Departure Density	0.05	0.43	
Access Density	12.7	11.40	★
Curve Critical Radius Density	0.81	0.42	★
Edge Risk	2	2 or 3	★
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	0.0	$0
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	3.7	$31,450
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

Notes - Roadway has existing 6" edgeline. Carver Co. would like to upgrade to ground in wet-reflective.

Implementation Cost

Federal Funds	$28,305
Local Match (10% of Total project cost)	$3,145
Total Project Cost	**$31,450**

CSAH 11 from CSAH-40 (SOUTH) to CSAH-61 Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 11

	Verbal
Start:	CSAH-40 (SOUTH)
End:	CSAH-61
City/Rural:	Rural
County:	Carver
ATP:	Metro
ADT:	5803
Facility Type:	2-Lane
Lane Width:	12
Speed Limit:	55
Shoulder Width:	10'
Shoulder Type:	paved
Length (miles):	2.8
Rumble Installed:	no

Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Lane Dept	K+A
Crashes	35	14	0
Density (per mile per year)	2.50	1.00	0.00
Rate (per MVM)	1.18	0.47	0.00

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	5,803	> 3,000	★
Lane Departure Density	1.00	0.43	★
Access Density	10.7	11.40	
Curve Critical Radius Density	1.07	0.42	★
Edge Risk	1	2 or 3	
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	0.0	$0
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	2.8	$23,800
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

Notes - Roadway has existing 6" edgeline. Carver Co. would like to upgrade to ground in wet-reflective.

Implementation Cost

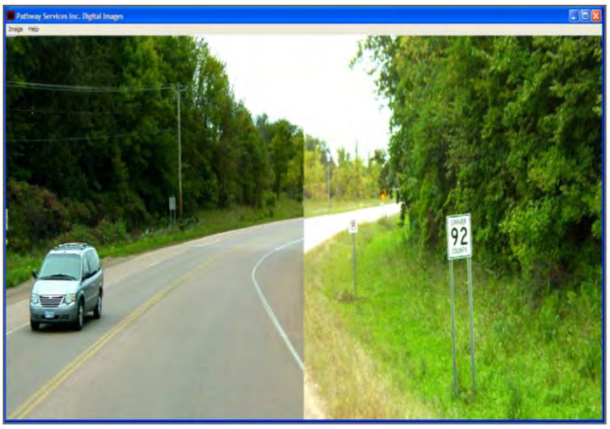
Federal Funds	$21,420
Local Match (10% of Total project cost)	$2,380
Total Project Cost	**$23,800**

CSAH 92 from MNTH-5 to CSAH-92 ENDS, HENN CO Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 92
Verbal
Start: MNTH-5
End: CSAH-92 ENDS, HENN CO
City/Rural: Rural
County: Carver
ATP: Metro
ADT: 5530
Facility Type: 2-Lane
Lane Width: 12
Speed Limit: 55
Shoulder Width: 8-12'
Shoulder Type: paved/gravel
Length (miles): 2.5
Rumble Installed: no



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	17	9	0
Density (per mile per year)	1.36	0.72	0.00
Rate (per MVM)	0.67	0.36	0.00

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	5,530	> 3,000	★
Lane Departure Density	0.72	0.43	★
Access Density	7.2	11.40	
Curve Critical Radius Density	0.80	0.42	★
Edge Risk	1	2 or 3	
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	0.0	$0
Rumble Strip	Proactive	$3,000	2.5	$7,500
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	2.5	$7,500
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

Notes - Carver Co. may revise project to ground in wet-reflective edge treatment.

Implementation Cost

Federal Funds	$13,500
Local Match (10% of Total project cost)	$1,500
Total Project Cost	**$15,000**

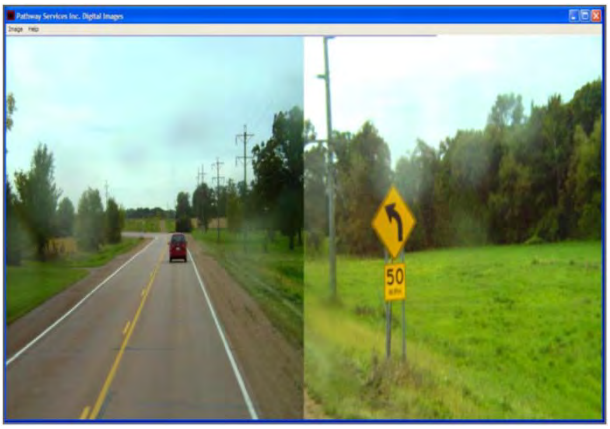
CSAH 10 from WATERTOWN CORP LIMIT to MNTH-7 Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 10

Verbal
Start: WATERTOWN CORP LIMIT
End: MNTH-7
City/Rural: Rural
County: Carver
ATP: Metro
ADT: 3850
Facility Type: 2-Lane
Lane Width: 12
Speed Limit: 55
Shoulder Width: 8'
Shoulder Type: gravel
Length (miles): 3.4
Rumble Installed: no



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	27	16	0
Density (per mile per year)	1.59	0.94	0.00
Rate (per MVM)	1.13	0.67	0.00

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	3,850	> 3,000	★
Lane Departure Density	0.94	0.43	★
Access Density	11.2	11.40	
Curve Critical Radius Density	1.76	0.42	★
Edge Risk	1	2 or 3	
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	3.4	$136,000
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	3.4	$10,200
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

Notes - County preference to use 2' shoulder paving and rumble strips instead of rumble stripEs.

Implementation Cost

Federal Funds	$131,580
Local Match (10% of Total project cost)	$14,620
Total Project Cost	**$146,200**

CSAH 20 from WATERTOWN CORP LIMIT to CSAH-20 ENDS, HENN CO Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 20

Verbal
Start: WATERTOWN CORP LIMIT
End: CSAH-20 ENDS, HENN CO
City/Rural: Rural
County: Carver
ATP: Metro
ADT: 3350
Facility Type: 2-Lane
Lane Width: 12
Speed Limit: 55
Shoulder Width: 8'
Shoulder Type: paved
Length (miles): 2.9
Rumble Installed: no

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	14	8	0
Density (per mile per year)	0.97	0.55	0.00
Rate (per MVM)	0.79	0.45	0.00

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	3,350	> 3,000	★
Lane Departure Density	0.55	0.43	★
Access Density	14.1	11.40	★
Curve Critical Radius Density	0.34	0.42	
Edge Risk	1	2 or 3	
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	2.9	$116,000
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	2.9	$8,700
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

Notes - County preference to use 2' shoulder paving and rumble strips instead of rumble stripEs.

Implementation Cost

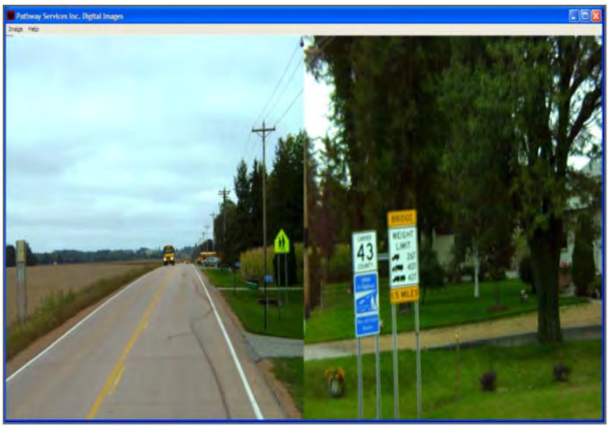
Federal Funds	$112,230
Local Match (10% of Total project cost)	$12,470
Total Project Cost	**$124,700**

CSAH 43 from CSAH-50 to CSAH-10 (EAST) Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 43
Verbal
Start: CSAH-50
End: CSAH-10 (EAST)
City/Rural: Rural
County: Carver
ATP: Metro
ADT: 1310
Facility Type: 2-Lane
Lane Width: 12
Speed Limit: 55
Shoulder Width: 4'
Shoulder Type: paved/gravel
Length (miles): 6.6
Rumble Installed: no



Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Lane Dept	K+A
Crashes	40	19	0
Density (per mile per year)	1.21	0.58	0.00
Rate (per MVM)	2.54	1.20	0.00

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	1,310	> 3,000	
Lane Departure Density	0.58	0.43	★
Access Density	13.2	11.40	★
Curve Critical Radius Density	0.45	0.42	★
Edge Risk	1	2 or 3	
			★★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	0.0	$0
Rumble Strip	Proactive	$3,000	6.6	$19,800
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	6.6	$19,800
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

Notes - Carver Co. may revise project to ground in wet-reflective edge treatment.

Implementation Cost

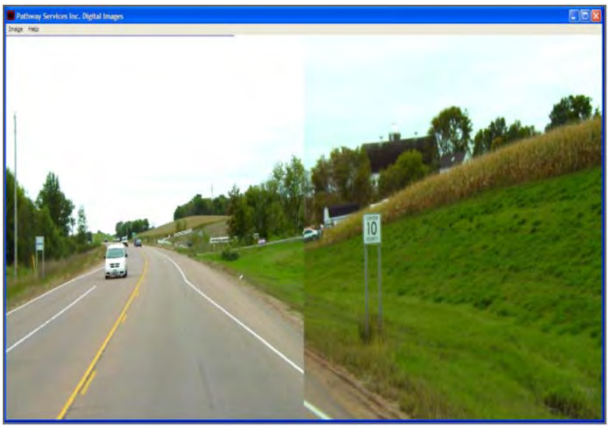
Federal Funds	$35,640
Local Match (10% of Total project cost)	$3,960
Total Project Cost	**$39,600**

CSAH 10 from CSAH-59 to CHASKA CORP LIMIT Project

Agency: Carver County

Roadway Data

Type: CSAH
Number: 10
Verbal
Start: CSAH-59
End: CHASKA CORP LIMIT
City/Rural: Rural
County: Carver
ATP: Metro
ADT: 6570
Facility Type: 2-Lane
Lane Width: 12
Speed Limit: 55
Shoulder Width: 10'
Shoulder Type: paved
Length (miles): 7.1
Rumble Installed: yes



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Lane Dept	K+A
Crashes	86	36	3
Density (per mile per year)	2.42	1.01	0.08
Rate (per MVM)	1.01	0.42	0.04

Ranking Criteria

	Value	Critical	Road Departure Risk Ranking
ADT Range	6,570	> 3,000	★
Lane Departure Density	1.01	0.43	★
Access Density	10.4	11.40	
Curve Critical Radius Density	0.28	0.42	
Edge Risk	1	2 or 3	
			★★

Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost
2' Shoulder Pave+RS+Safety Wedge	Proactive	$40,000	0.0	$0
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	7.1	$1,065,000
12' Painted Median w/Left Turn Lanes	Proactive	$500,000	0.0	$0

Notes - Segment meets criteria for Centerline Project. Carver Co. preference to use ground in wet-reflective centerline treatments.

Implementation Cost

Federal Funds	$958,500
Local Match (10% of Total project cost)	$106,500
Total Project Cost	**$1,065,000**

Appendix E

Rural Segments – Curve Crashes

Carver County Curves

Analysis Years: 2007 - 2011

Curve Count	ID	Corridor	Segment	Start	End	Curve Advisory Sign	Speed Advisory Sign	Chevrons	Crashes: Total	Total Severe	K	A	B	C	PDO	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Speed Limit	Risk Ranking	High Priority Segment + Radius	Proximity or Existing Chevrons	Project Candidate
1	10E	10.04	CSAH 10	WATERTOWN CORP LIMIT	MNTH-7	yes	no	no	1	-	-	-	-	-	1	980	3,850	no	no	55	★	x	-	Yes
2	10F	10.04	CSAH 10	WATERTOWN CORP LIMIT	MNTH-7	yes	50	no	-	-	-	-	-	-	-	1253	3,850	no	no	55		-	-	-
3	10G	10.04	CSAH 10	WATERTOWN CORP LIMIT	MNTH-7	yes	50	no	2	-	-	-	-	-	2	921	3,850	yes	no	55	★★	x	-	Yes
4	10I	10.04	CSAH 10	WATERTOWN CORP LIMIT	MNTH-7	yes	50	no	3	-	-	-	1	-	2	877	3,850	yes	no	55	★★	x	-	Yes
5	10J	10.04	CSAH 10	WATERTOWN CORP LIMIT	MNTH-7	yes	no	no	-	-	-	-	-	-	-	1121	3,850	no	no	55	★	x	-	Yes
6	10K	10.04	CSAH 10	WATERTOWN CORP LIMIT	MNTH-7	yes	50	yes	2	-	-	-	-	-	2	713	3,850	yes	yes	55	★★★	x	x	Yes
7	10L	10.04	CSAH 10	WATERTOWN CORP LIMIT	MNTH-7	yes	no	no	-	-	-	-	-	-	-	755	3,850	no	no	55	★	x	-	Yes
8	10M	10.05	CSAH 10	MNTH-7	66TH ST	yes	no	no	-	-	-	-	-	-	-	2712	4,500	no	no	55		-	-	-
9	10N	10.06	CSAH 10	66TH ST	MNTH-5	yes	no	no	3	-	-	-	-	1	2	1899	4,700	no	no	55		-	-	-
10	10O	10.06	CSAH 10	66TH ST	MNTH-5	yes	no	no	3	-	-	-	-	1	2	1183	7,100	no	no	55	★	x	-	Yes
11	10P	10.06	CSAH 10	66TH ST	MNTH-5	yes	45	yes	5	-	-	-	1	1	3	807	6,800	no	yes	55	★★	x	x	Yes
12	10Q	10.06	CSAH 10	66TH ST	MNTH-5	no	no	no	4	-	-	-	-	1	3	511	7,900	no	no	55	★	x	-	Yes
13	10S	10.08	CSAH 10	CSAH-59	CHASKA CORP LIMIT	no	no	no	-	-	-	-	-	-	-	2251	5,500	yes	no	55	★	-	-	-
14	10T	10.08	CSAH 10	CSAH-59	CHASKA CORP LIMIT	yes	no	no	-	-	-	-	-	-	-	2081	5,500	yes	no	55	★	-	-	-
15	10U	10.08	CSAH 10	CSAH-59	CHASKA CORP LIMIT	yes	no	no	-	-	-	-	-	-	-	1897	5,500	yes	no	55	★	-	-	-
16	10V	10.08	CSAH 10	CSAH-59	CHASKA CORP LIMIT	yes	no	no	1	-	-	-	-	-	1	1012	5,500	no	no	55	★	x	-	Yes
17	10W	10.08	CSAH 10	CSAH-59	CHASKA CORP LIMIT	yes	no	no	-	-	-	-	-	-	-	2631	5,500	no	no	55		-	-	-
18	10X	10.08	CSAH 10	CSAH-59	CHASKA CORP LIMIT	yes	no	no	3	-	-	-	1	1	1	2639	5,500	yes	no	55	★	-	-	-
19	10Y	10.08	CSAH 10	CSAH-59	CHASKA CORP LIMIT	yes	no	no	-	-	-	-	-	-	-	2226	6,800	no	no	55		-	-	-
20	10Z	10.08	CSAH 10	CSAH-59	CHASKA CORP LIMIT	yes	no	no	1	-	-	-	1	-	-	919	6,800	no	no	55	★	x	-	Yes
21	102B	10.08	CSAH 10	CSAH-59	CHASKA CORP LIMIT	no	no	no	-	-	-	-	-	-	-	1998	7,700	no	no	55		-	-	-
22	102C	10.08	CSAH 10	CSAH-59	CHASKA CORP LIMIT	yes	no	no	-	-	-	-	-	-	-	1979	7,700	no	no	55		-	-	-
23	11A	11.02	CSAH 11	SAN FRANCISCO TWSP	SAN FRANCISCO TWSP	no	no	no	-	-	-	-	-	-	-	1391	2,800	no	no	55		-	-	-
24	11B	11.02	CSAH 11	SAN FRANCISCO TWSP	SAN FRANCISCO TWSP	yes	no	no	-	-	-	-	-	-	-	881	2,800	no	no	55	★	-	-	-
25	11C	11.02	CSAH 11	SAN FRANCISCO TWSP	SAN FRANCISCO TWSP	yes	40	yes	1	-	-	-	1	-	-	596	2,800	no	no	55	★	-	x	Yes
26	11D	11.02	CSAH 11	SAN FRANCISCO TWSP	SAN FRANCISCO TWSP	yes	40	yes	-	-	-	-	-	-	-	483	2,800	no	no	55		-	x	Yes
27	11E	11.02	CSAH 11	SAN FRANCISCO TWSP	SAN FRANCISCO TWSP	yes	40	yes	1	-	-	-	-	-	1	1404	2,800	no	no	55		-	x	Yes
28	11F	11.02	CSAH 11	SAN FRANCISCO TWSP	SAN FRANCISCO TWSP	yes	40	yes	3	-	-	-	-	2	1	521	2,800	no	no	55	★	-	x	Yes
29	11G	11.03	CSAH 11	SAN FRANCISCO TWSP	CSAH-40 (SOUTH)	yes	no	yes	1	-	-	-	-	-	1	1068	2150	no	no	55	★	x	x	Yes
30	11H	11.03	CSAH 11	SAN FRANCISCO TWSP	CSAH-40 (SOUTH)	yes	no	no	2	-	-	-	-	2	-	1234	2,150	no	no	55		-	-	-
31	11I	11.03	CSAH 11	SAN FRANCISCO TWSP	CSAH-40 (SOUTH)	yes	no	no	-	-	-	-	-	-	-	927	2,150	no	no	55	★	x	-	Yes
32	11J	11.03	CSAH 11	SAN FRANCISCO TWSP	CSAH-40 (SOUTH)	yes	no	no	4	-	-	-	1	3	-	1463	2,150	no	no	55		-	-	-
33	11L	11.04	CSAH 11	CSAH-40 (SOUTH)	CSAH-61	no	no	no	-	-	-	-	-	-	-	996	3,900	no	no	55	★	x	-	Yes
34	11M	11.04	CSAH 11	CSAH-40 (SOUTH)	CSAH-61	yes	no	no	-	-	-	-	-	-	-	926	4,450	no	no	55	★	x	-	Yes
35	11N	11.04	CSAH 11	CSAH-40 (SOUTH)	CSAH-61	no	no	no	1	-	-	-	-	1	-	920	4,450	no	no	55	★	x	-	Yes
36	11O	11.04	CSAH 11	CSAH-40 (SOUTH)	CSAH-61	no	no	no	-	-	-	-	-	-	-	2171	4,450	no	no	55		-	-	-
37	11X	11.07	CSAH 11	MNTH-5 (WEST)	MNTH-7, HENNEPIN CO	yes	no	yes	1	-	-	-	-	-	1	823	2,250	no	no	55	★	x	x	Yes
38	11Y	11.07	CSAH 11	MNTH-5 (WEST)	MNTH-7, HENNEPIN CO	yes	no	no	2	-	-	-	1	-	1	1062	2,250	no	no	55	★	x	-	Yes
39	11Z	11.07	CSAH 11	MNTH-5 (WEST)	MNTH-7, HENNEPIN CO	yes	no	no	1	-	-	-	1	-	-	717	2,250	no	no	55	★	x	-	Yes
40	11ZA	11.07	CSAH 11	MNTH-5 (WEST)	MNTH-7, HENNEPIN CO	yes	no	no	-	-	-	-	-	-	-	797	2,250	no	no	55	★	x	-	Yes
41	11ZB	11.07	CSAH 11	MNTH-5 (WEST)	MNTH-7, HENNEPIN CO	yes	no	no	-	-	-	-	-	-	-	1434	2,250	yes	no	55	★	-	-	-
42	11ZC	11.07	CSAH 11	MNTH-5 (WEST)	MNTH-7, HENNEPIN CO	yes	no	no	-	-	-	-	-	-	-	1388	2,250	no	no	55		-	-	-
43	11ZD	11.07	CSAH 11	MNTH-5 (WEST)	MNTH-7, HENNEPIN CO	yes	no	no	-	-	-	-	-	-	-	765	2,250	no	no	55	★	x	-	Yes
44	20A	20.02	CSAH 20	CSAH-33 (SOUTH)	MNTH-25	yes	25	yes	3	-	-	-	-	-	3	291	1,050	yes	yes	55	★★★	-	x	Yes
45	20B	20.02	CSAH 20	CSAH-33 (SOUTH)	MNTH-25	yes	25	yes	2	-	-	-	1	-	1	323	1,050	yes	yes	55	★★★	-	x	Yes
46	20E	20.04	CSAH 20	WATERTOWN CORP LIMIT	CSAH-20 ENDS, HENN CO	yes	no	no	-	-	-	-	-	-	-	1796	3,350	yes	no	55	★	-	-	-
47	20F	20.04	CSAH 20	WATERTOWN CORP LIMIT	CSAH-20 ENDS, HENN CO	yes	no	no	-	-	-	-	-	-	-	1788	3,350	no	no	55		-	-	-
48	20G	20.04	CSAH 20	WATERTOWN CORP LIMIT	CSAH-20 ENDS, HENN CO	yes	no	no	2	-	-	-	-	1	1	1657	3,350	no	no	55		-	-	-
49	20H	20.04	CSAH 20	WATERTOWN CORP LIMIT	CSAH-20 ENDS, HENN CO	yes	no	no	1	-	-	-	-	-	1	1524	3,350	yes	no	55	★	-	-	-
50	20I	20.04	CSAH 20	WATERTOWN CORP LIMIT	CSAH-20 ENDS, HENN CO	yes	no	no	-	-	-	-	-	-	-	1555	3,350	no	no	55		-	-	-
51	20J	20.04	CSAH 20	WATERTOWN CORP LIMIT	CSAH-20 ENDS, HENN CO	yes	40	no	-	-	-	-	-	-	-	1098	3,350	no	no	55	★	x	-	Yes
52	24D	24.02	CSAH 24	DREAM LANE	CSAH-15	yes	45	yes	5	-	-	-	-	2	3	989	3,000	yes	no	55	★★	x	x	Yes
53	24E	24.02	CSAH 24	DREAM LANE	CSAH-15	yes	no	no	1	-	-	-	1	-	-	1504	3,000	no	no	55		-	-	-
54	24F	24.02	CSAH 24	DREAM LANE	CSAH-15	no	no	no	1	-	-	-	-	1	-	1105	3,000	no	no	55	★	x	-	Yes
55	24H	24.02	CSAH 24	DREAM LANE	CSAH-15	no	no	no	-	-	-	-	-	-	-	2396	3,000	no	no	55		-	-	-
56	27B	27.02	CSAH 27	WATERTOWN CORP LIMIT	CSAH-27 ENDS, WRIGHT CO	yes	no	no	-	-	-	-	-	-	-	1266	1,600	no	no	55	★	-	-	-
57	27C	27.02	CSAH 27	WATERTOWN CORP LIMIT	CSAH-27 ENDS, WRIGHT CO	yes	no	no	5	-	-	-	1	-	4	880	1,600	yes	no	55	★★★	-	-	Yes
58	27E	27.02	CSAH 27	WATERTOWN CORP LIMIT	CSAH-27 ENDS, WRIGHT CO	yes	no	no	-	-	-	-	-	-	-	1480	2,250	no	no	55		-	-	-
59	30A	30.01	CSAH 30	CSAH-30 BEGINS, MCLEOD CO	CSAH-33 (SOUTH)	yes	no	yes	1	-	-	-	-	-	1	695	1,050	no	no	55	★★	x	x	Yes
60	30C	30.05	CSAH 30	MNTH-25 (SOUTH)	CSAH-10	yes	50	no	2	-	-	-	1	1	-	1420	2,450	yes	no	55	★	-	-	-
61	30D	30.05	CSAH 30	MNTH-25 (SOUTH)	CSAH-10	no	no	no	-	-	-	-	-	-	-	1790	2,450	no	no	55		-	-	-
62	30E	30.05	CSAH 30	MNTH-25 (SOUTH)	CSAH-10	no	no	no	-	-	-	-	-	-	-	986	2,450	no	no	55	★	-	-	-
63	32A	32.01	CSAH 32	CSAH-30	MNTH-25	yes	no	no	1	-	-	-	-	1	-	1426	455	no	no	55		-	-	-
64	32B	32.01	CSAH 32	CSAH-30	MNTH-25	yes	no	no	-	-	-	-	-	-	-	1691	455	no	no	55		-	-	-
65	32D	32.01	CSAH 32	CSAH-30	MNTH-25	yes	no	no	-	-	-	-	-	-	-	641	550	yes	yes	55	★★★	-	-	Yes
66	32E	32.01	CSAH 32	CSAH-30	MNTH-25	yes	no	no	-	-	-	-	-	-	-	631	550	no	yes	55	★★	-	X	Yes
67	33A	33.02	CSAH 33	CSAH-50 (WEST)	NORWOOD/YOUNG AMER CL	yes	no	no	2	-	-	-	-	-	2	659	600	no	no	55	★★	x	-	Yes
68	33B	33.02	CSAH 33	CSAH-50 (WEST)	NORWOOD/YOUNG AMER CL	yes	no	no	-	-	-	-	-	-	-	1701	600	no	no	55	★	-	-	-
69	33C	33.02	CSAH 33	CSAH-50 (WEST)	NORWOOD/YOUNG AMER CL	yes	no	no	-	-	-	-	-	-	-	832	600	no	no	55	★★	x	-	Yes
70	33E	33.05	CSAH 33	MNTH-25	NEW GERMANY CL	yes	no	no	-	-	-	-	-	-	-	1374	1,650	no	no	55	★	-	-	-
71	33F	33.05	CSAH 33	MNTH-25	NEW GERMANY CL	yes	no	no	1	-	-	-	-	1	-	1189	1,650	no	no	55	★★	-	-	-
72	33G	33.05	CSAH 33	MNTH-25	NEW GERMANY CL	yes	no	no	-	-	-	-	-	-	-	1564	1,650	yes	no	55	★★	-	-	-
73	33H	33.05	CSAH 33	MNTH-25	NEW GERMANY CL	yes	no	no	2	-	-	-	1	-	1	924	1,400	yes	no	55	★★★	-	-	Yes
74	33I	33.05	CSAH 33	MNTH-25	NEW GERMANY CL	yes	no	yes	4	-	-	-	-	1	3	863	1,400	no	no	55	★★	-	x	Yes
75	33J	33.05	CSAH 33	MNTH-25	NEW GERMANY CL	yes	no	yes	2	-	-	-	-	-	2	881	1,200	yes	yes	55	★★★★	-	x	Yes
76	33K	33.05	CSAH 33	MNTH-25	NEW GERMANY CL	yes	no	yes	4	-	-	-	1	-	3	828	1,200	yes	yes	55	★★★★	-	x	Yes
77	33M	33.07	CSAH 33	NEW GERMANY CL	CSAH-33 ENDS; WRIGHT CO	yes	no	no	1	-	-	-	1	-	-	721	1,750	no	no	55	★★	-	-	-
78	34C	34.01	CSAH 34	CSAH-34 BEGINS, MCLEOD CO	MNTH-25	yes	no	no	-	-	-	-	-	-	-	1345	470	no	no	55		-	-	-
79	34D	34.01	CSAH 34	CSAH-34 BEGINS, MCLEOD CO	MNTH-25	yes	no	no	-	-	-	-	-	-	-	1814	540	no	no	55		-	-	-
80	34E	34.01	CSAH 34	CSAH-34 BEGINS, MCLEOD CO	MNTH-25	yes	no	no	1	-	-	-	-	-	1	1745	540	no	no	55		-	-	-
81	34H	34.01	CSAH 34	CSAH-34 BEGINS, MCLEOD CO	MNTH-25	no	no	no	1	-	-	-	-	-	1	2230	600	no	no	55	★	-	-	-
82	36D	36.02	CSAH 36	COLOGNE CORP LIMIT	USTH-212	yes	no	no	-	-	-	-	-	-	-	1805	980	no	no	55	★	-	-	-
83	36E	36.02	CSAH 36	COLOGNE CORP LIMIT	USTH-212	yes	no	no	2	-	-	-	-	-	2	1001	760	no	no	55	★★	x	-	Yes
84	36F	36.02	CSAH 36	COLOGNE CORP LIMIT	USTH-212	no	no	no	1	-	-	-	-	-	1	363	760	no	no	55	★	-	-	-

Carver County Curves

Analysis Years: 2007 - 2011

Curve Count	ID	Corridor	Segment	Start	End	Curve Advisory Sign	Speed Advisory Sign	Chevrons	Crashes: Total	Total Severe	K	A	B	C	PDO	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Speed Limit	Risk Ranking	High Priority Segment + Radius	Proximity or Existing Chevrons	Project Candidate
85	40A	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	30	yes	6	2	1	1	2	1	1	296	960	no	no	55	★★	-	x	Yes
86	40B	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	30	yes	2	1	-	1	1	-	-	481	960	no	no	55	★★	-	x	Yes
87	40C	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	no	no	2	-	-	-	-	1	1	817	960	no	no	55	★★	x	-	Yes
88	40D	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	no	no	no	-	-	-	-	-	-	-	680	960	no	no	55	★★	x	-	Yes
89	40E	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	35	yes	-	-	-	-	-	-	-	487	960	no	no	55	★	-	x	Yes
90	40F	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	35	yes	1	-	-	-	1	-	-	698	960	no	no	55	★★	x	x	Yes
91	40G	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	no	yes	2	-	-	-	1	1	-	737	960	yes	no	55	★★★	x	x	Yes
92	40H	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	no	yes	2	-	-	-	-	-	2	800	1,000	yes	no	55	★★★	x	x	Yes
93	40I	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	no	no	2	1	1	-	1	-	-	955	1,000	no	no	55	★★★	x	-	Yes
94	40J	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	no	no	3	1	-	1	-	-	2	1365	1,000	no	no	55	★★	-	-	-
95	40K	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	no	no	-	-	-	-	-	-	-	735	1,000	no	no	55	★★	x	-	Yes
96	40L	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	no	no	1	-	-	-	-	-	1	1311	990	no	no	55	★	-	-	-
97	40M	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	no	no	-	-	-	-	-	-	-	1572	990	no	no	55	★	-	-	-
98	40N	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	no	no	3	1	-	1	-	1	1	1598	990	no	no	55	★★	-	-	-
99	40O	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	no	no	-	-	-	-	-	-	-	1757	990	no	no	55	★	-	-	-
100	40P	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	45	no	-	-	-	-	-	-	-	1050	990	no	no	55	★★	x	-	Yes
101	40Q	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	no	no	-	-	-	-	-	-	-	1021	990	no	no	55	★★	x	-	Yes
102	40R	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	yes	no	yes	1	-	-	-	-	-	1	734	990	yes	yes	55	★★★★	x	x	Yes
103	40S	40.01	CSAH 40	CSAH-40 BEGINS, SIBLEY CO	EAST UNION	no	no	no	2	-	-	-	-	1	1	1544	1,200	no	no	55	★	-	-	-
104	40V	40.03	CSAH 40	EAST UNION	CSAH-11 (SOUTH)	yes	no	no	-	-	-	-	-	-	-	1164	1,550	no	no	55	★★	x	-	Yes
105	41A	41.01	CSAH 41	CSAH-52	CSAH-36	yes	no	no	-	-	-	-	-	-	-	1243	195	no	no	55	-	-	-	-
106	41B	41.01	CSAH 41	CSAH-52	CSAH-36	yes	no	no	-	-	-	-	-	-	-	816	190	no	no	55	★	-	-	-
107	41C	41.01	CSAH 41	CSAH-52	CSAH-36	yes	no	no	-	-	-	-	-	-	-	676	190	no	no	55	★	-	X	Yes
108	41D	41.01	CSAH 41	CSAH-52	CSAH-36	yes	no	no	1	1	1	-	-	-	-	643	190	no	no	55	★★	-	X	Yes
109	41E	41.01	CSAH 41	CSAH-52	CSAH-36	yes	no	no	-	-	-	-	-	-	-	619	475	yes	yes	55	★★★	-	-	Yes
110	41F	41.01	CSAH 41	CSAH-52	CSAH-36	yes	no	no	-	-	-	-	-	-	-	868	475	no	no	55	★	-	-	-
111	41G	41.01	CSAH 41	CSAH-52	CSAH-36	yes	no	no	-	-	-	-	-	-	-	1485	475	no	no	55	-	-	-	-
112	41H	41.01	CSAH 41	CSAH-52	CSAH-36	yes	no	no	-	-	-	-	-	-	-	959	475	no	no	55	★	-	-	-
113	41I	41.01	CSAH 41	CSAH-52	CSAH-36	yes	no	no	-	-	-	-	-	-	-	675	475	no	no	55	★	-	-	-
114	41J	41.01	CSAH 41	CSAH-52	CSAH-36	no	no	no	-	-	-	-	-	-	-	292	200	no	no	55	-	-	-	-
115	43A	43.01	CSAH 43	CSAH-50	CSAH-10 (EAST)	yes	no	no	-	-	-	-	-	-	-	1022	0	yes	no	55	★★	x	-	Yes
116	43B	43.01	CSAH 43	CSAH-50	CSAH-10 (EAST)	yes	no	no	-	-	-	-	-	-	-	815	0	no	no	55	★	x	-	Yes
117	43C	43.01	CSAH 43	CSAH-50	CSAH-10 (EAST)	yes	no	no	1	-	-	-	1	-	-	698	0	yes	yes	55	★★★	x	-	Yes
118	43D	43.01	CSAH 43	CSAH-50	CSAH-10 (EAST)	yes	20	no	-	-	-	-	-	-	-	304	0	no	no	55	-	-	-	-
119	43DA	43.02	CSAH 43	CSAH-10 (WEST)	TELLERS RD	no	no	no	-	-	-	-	-	-	-	226	780	no	no	45	★	-	-	-
120	43E	43.02	CSAH 43	CSAH-10 (WEST)	TELLERS RD	yes	no	no	-	-	-	-	-	-	-	1209	780	no	no	45	★	-	-	-
121	43F	43.02	CSAH 43	CSAH-10 (WEST)	TELLERS RD	yes	no	no	-	-	-	-	-	-	-	1290	780	no	no	45	★	-	-	-
122	43G	43.02	CSAH 43	CSAH-10 (WEST)	TELLERS RD	yes	no	no	-	-	-	-	-	-	-	874	790	yes	no	45	★★★	x	-	Yes
123	43H	43.02	CSAH 43	CSAH-10 (WEST)	TELLERS RD	yes	no	no	-	-	-	-	-	-	-	702	790	no	no	45	★★	x	-	Yes
124	43I	43.02	CSAH 43	CSAH-10 (WEST)	TELLERS RD	yes	no	no	-	-	-	-	-	-	-	755	790	yes	no	45	★★★	x	-	Yes
125	50B	50.03	CSAH 50	HAMBURG CORP LIMIT	N JCT CSAH-51	yes	no	no	-	-	-	-	-	-	-	1504	680	no	no	55	★	-	-	-
126	50C	50.03	CSAH 50	HAMBURG CORP LIMIT	N JCT CSAH-51	yes	no	no	-	-	-	-	-	-	-	2118	680	no	no	55	★	-	-	-
127	50D	50.03	CSAH 50	HAMBURG CORP LIMIT	N JCT CSAH-51	yes	no	no	1	-	-	-	-	1	-	1005	680	no	no	55	★★	-	-	-
128	50E	50.03	CSAH 50	HAMBURG CORP LIMIT	N JCT CSAH-51	yes	no	no	-	-	-	-	-	-	-	1019	680	no	no	55	★★	-	-	-
129	50F	50.04	CSAH 50	S JCT CSAH-51	EAST UNION	yes	no	no	1	-	-	-	1	-	-	1982	830	no	no	55	★	-	-	-
130	50G	50.04	CSAH 50	S JCT CSAH-51	EAST UNION	yes	no	no	2	-	-	-	-	-	2	1769	830	no	no	55	★	-	-	-
131	50H	50.04	CSAH 50	S JCT CSAH-51	EAST UNION	yes	no	no	1	-	-	-	-	1	-	1788	830	no	no	55	★	-	-	-
132	53A	53.01	CSAH 53	CSAH-53 BEGINS, SIBLEY CO	USTH-212	yes	no	no	1	-	-	-	-	-	1	1245	1,850	yes	no	55	★	-	-	-
133	53B	53.01	CSAH 53	CSAH-53 BEGINS, SIBLEY CO	USTH-212	yes	no	no	1	-	-	-	-	-	1	1170	1,950	yes	no	55	★★	-	-	-
134	92B	92.01	CSAH 92	MNTH-5	CSAH-92 ENDS, HENN CO	yes	no	no	-	-	-	-	-	-	-	2450	5,900	yes	no	55	★	-	-	-
135	92C	92.01	CSAH 92	MNTH-5	CSAH-92 ENDS, HENN CO	yes	no	no	-	-	-	-	-	-	-	1267	5,500	no	no	55		-	-	-
136	92D	92.01	CSAH 92	MNTH-5	CSAH-92 ENDS, HENN CO	yes	no	no	-	-	-	-	-	-	-	2202	5,500	no	no	55		-	-	-
137	92E	92.01	CSAH 92	MNTH-5	CSAH-92 ENDS, HENN CO	yes	no	no	2	-	-	-	-	-	2	922	5,400	yes	no	55	★★	x	-	Yes
138	92F	92.01	CSAH 92	MNTH-5	CSAH-92 ENDS, HENN CO	yes	no	no	-	-	-	-	-	-	-	1192	5,400	no	no	55	★	x	-	Yes
139	122A	122.01	CNTY 122	CSAH-33	CR-123	yes	30	yes	-	-	-	-	-	-	-	313	195	no	no	55		-	x	Yes
140	122B	122.01	CNTY 122	CSAH-33	CR-123	yes	30	yes	2	-	-	-	1	1	-	323	195	yes	yes	55	★★	-	x	Yes
141	122C	122.01	CNTY 122	CSAH-33	CR-123	yes	30	yes	-	-	-	-	-	-	-	350	380	no	no	55		-	x	Yes
142	122D	122.01	CNTY 122	CSAH-33	CR-123	yes	30	yes	4	-	-	-	-	-	4	338	380	yes	yes	55	★★	-	x	Yes
143	123A	123.01	CNTY 123	MNTH-7	CR-122	yes	30	yes	-	-	-	-	-	-	-	219	245	yes	yes	55	★★	-	x	Yes
144	123B	123.01	CNTY 123	MNTH-7	CR-122	yes	no	yes	-	-	-	-	-	-	-	634	245	no	no	55	★	x	x	Yes
145	123C	123.01	CNTY 123	MNTH-7	CR-122	yes	no	no	-	-	-	-	-	-	-	686	245	no	no	55	★	x	-	Yes
146	123D	123.01	CNTY 123	MNTH-7	CR-122	yes	no	no	-	-	-	-	-	-	-	1128	245	no	no	55	★	x	-	Yes
147	123E	123.01	CNTY 123	MNTH-7	CR-122	yes	no	no	-	-	-	-	-	-	-	1350	245	no	no	55		-	-	-
148	123F	123.01	CNTY 123	MNTH-7	CR-122	yes	no	yes	-	-	-	-	-	-	-	576	245	no	no	55	★	x	x	Yes
149	123G	123.01	CNTY 123	MNTH-7	CR-122	yes	30	yes	-	-	-	-	-	-	-	279	245	no	yes	55	★	-	x	Yes
150	123H	123.01	CNTY 123	MNTH-7	CR-122	yes	30	yes	-	-	-	-	-	-	-	368	245	yes	yes	55	★★	-	x	Yes
151	135A	135.01	CNTY 135	CSAH-33	CSAH-32	yes	40	no	-	-	-	-	-	-	-	1086	290	no	no	55	★	x	-	Yes
152	135B	135.01	CNTY 135	CSAH-33	CSAH-32	yes	40	no	-	-	-	-	-	-	-	1207	290	no	no	55		-	-	-
153	135C	135.01	CNTY 135	CSAH-33	CSAH-32	yes	40	no	-	-	-	-	-	-	-	486	290	no	no	55		-	-	-
154	135D	135.01	CNTY 135	CSAH-33	CSAH-32	yes	25	no	-	-	-	-	-	-	-	90	290	yes	yes	55	★★	-	-	-
155	135E	135.01	CNTY 135	CSAH-33	CSAH-32	yes	40	no	-	-	-	-	-	-	-	896	250	no	no	55	★	x	-	Yes
156	135F	135.01	CNTY 135	CSAH-33	CSAH-32	yes	40	yes	-	-	-	-	-	-	-	797	250	no	no	55	★	x	-	Yes
157	140A	140.01	CNTY 140	MNTH-284	CSAH-11 (WEST)	yes	30	yes	3	-	-	-	-	-	3	366	530	yes	yes	55	★★	-	x	Yes
158	140B	140.01	CNTY 140	MNTH-284	CSAH-11 (WEST)	yes	30	yes	1	-	-	-	-	-	1	362	530	yes	no	55	★	-	x	Yes
159	140C	140.01	CNTY 140	MNTH-284	CSAH-11 (WEST)	no	no	no	-	-	-	-	-	-	-	1810	740	yes	no	55	★★	-	-	-
160	140D	140.01	CNTY 140	MNTH-284	CSAH-11 (WEST)	yes	no	no	-	-	-	-	-	-	-	1105	740	no	no	55	★★	-	-	-
161	140E	140.01	CNTY 140	MNTH-284	CSAH-11 (WEST)	yes	50	no	2	-	-	-	-	-	2	870	740	no	no	55	★★	-	-	-
162	153A	153.01	CNTY 153	CSAH-50	MNTH-284	yes	40	no	-	-	-	-	-	-	-	554	250	yes	no	55	★★	-	-	-
163	155A	155.01	CNTY 155	CSAH-92	MNTH-7	yes	30	yes	1	-	-	-	-	-	1	463	305	no	no	55		-	x	Yes
164	155B	155.01	CNTY 155	CSAH-92	MNTH-7	yes	40	yes	-	-	-	-	-	-	-	1183	305	no	no	55	★	-	x	Yes
165	155C	155.01	CNTY 155	CSAH-92	MNTH-7	yes	40	no	-	-	-	-	-	-	-	653	305	no	no	55	★	-	-	-
166	155D	155.01	CNTY 155	CSAH-92	MNTH-7	yes	45	no	-	-	-	-	-	-	-	1231	305	no	no	55		-	X	Yes
167	155E	155.01	CNTY 155	CSAH-92	MNTH-7	yes	30	yes	-	-	-	-	-	-	-	528	185	yes	no	55	★★	-	x	Yes
168	155F	155.01	CNTY 155	CSAH-92	MNTH-7	yes	no	no	-	-	-	-	-	-	-	1870	185	no	no	55		-	-	-
									141	7	3	4	#	29	81	83	56				16	54	41	86

Stars	Total #	Total %
★★★★★	0	0%
★★★★	3	2%
★★★	13	8%
★★	42	25%
★	70	42%
	40	24%
	168	100%

70

Critical Ranges	Min	Max
Radius	500	1,200
ADT	600	1,800

Curves on CSAH 20 from CSAH-33 (SOUTH) to MNTH-25

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
20A	0	0	291	1050	yes	yes	★★★	x	-	Chevron	Outside	Inside/Outside	x	Inspect Curve
20B	0	0	323	1050	yes	yes	★★★	x	-	Chevron	Outside	Inside/Outside	x	35

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	2	$6,600
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.1 miles	$3,279
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	2	$1,600
Rumble Strip	Proactive	$3,000 per mile	.2 miles	$532
				$12,011

Implementation Cost

Federal Funds	$10,810
Local Match (10% of Total project cost)	$1,201
Total Project Cost	**$12,011**

2007-2011 MnCMAT Crash Data

Curves on CSAH 41 from CSAH-52 to CSAH-36

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
41A	0	0	1243	195	no	no		-	-	-	-	-	-	-
41B	0	0	816	190	no	no	★	-	-	-	-	-	-	-
41C	0	0	676	190	no	no	★	X	-	Chevron	Inside/Outside	Inside/Outside	x	40
41D	1	0	643	190	no	no	★★	X	-	Chevron	Inside/Outside	Inside/Outside	x	40
41E	0	0	619	475	yes	yes	★★★	-	-	Chevron	Inside/Outside	Inside/Outside	x	40
41F	0	0	868	475	no	no	★	-	-	-	-	-	-	-
41G	0	0	1485	475	no	no		-	-	-	-	-	-	-
41H	0	0	959	475	no	no	★	-	-	-	-	-	-	-
41I	0	0	675	475	no	no	★	-	-	-	-	-	-	-
41J	0	0	292	200	no	no		-	-	-	-	-	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	3	$9,900
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.5 miles	$19,703
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	3	$2,400
Rumble Strip	Proactive	$3,000 per mile	.5 miles	$1,598
				$33,600

Implementation Cost

Federal Funds	$30,240
Local Match (10% of Total project cost)	$3,360
Total Project Cost	**$33,600**

2007-2011 MnCMAT Crash Data

Curves on CSAH 10 from 66TH ST to MNTH-5

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
10N	0	0	1899	4700	no	no		-	-	-	-	-	-	-
10O	0	0	1183	7100	no	no	★	-	x	Chevron	-	Inside/Outside	-	-
10P	0	0	807	6800	no	yes	★★	x	x	Chevron	-	Inside	x	45
10Q	0	0	511	7900	no	no	★	-	x	Chevron	-	Inside/Outside	x	40

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	3	$9,900
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.0 miles	$0
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	2	$1,600
Rumble Strip	Proactive	$3,000 per mile	.3 miles	$864
				$12,364

Implementation Cost

Federal Funds	$11,128
Local Match (10% of Total project cost)	$1,236
Total Project Cost	**$12,364**

2007-2011 MnCMAT Crash Data

Curves on CSAH 10 from CSAH-59 to CHASKA CORP LIMIT

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
10S	0	0	2251	5500	yes	no	★	-	-	-	-	-	-	-
10T	0	0	2081	5500	yes	no	★	-	-	-	-	-	-	-
10U	0	0	1897	5500	yes	no	★	-	-	-	-	-	-	-
10V	0	0	1012	5500	no	no	★	-	x	Chevron	-	Inside/Outside	x	50
10W	0	0	2631	5500	no	no		-	-	-	-	-	-	-
10X	0	0	2639	5500	yes	no	★	-	-	-	-	-	-	-
10Y	0	0	2226	6800	no	no		-	-	-	-	-	-	-
10Z	0	0	919	6800	no	no	★	-	x	Chevron	-	Inside/Outside	x	50
10ZB	0	0	1998	7700	no	no		-	-	-	-	-	-	-
10ZC	0	0	1979	7700	no	no		-	-	-	-	-	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	2	$6,600
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.0 miles	$0
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	2	$1,600
Rumble Strip	Proactive	$3,000 per mile	.3 miles	$830
				$9,030

Implementation Cost

Federal Funds	$8,127
Local Match (10% of Total project cost)	$903
Total Project Cost	**$9,030**

2007-2011 MnCMAT Crash Data

Curves on CSAH 33 from MNTH-25 to NEW GERMANY CL

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
33E	0	0	1374	1650	no	no	★	-	-	-	-	-	-	-
33F	0	0	1189	1650	no	no	★★	-	-	-	-	-	-	-
33G	0	0	1564	1650	yes	no	★★	-	-	-	-	-	-	-
33H	0	0	924	1400	yes	no	★★★	-	-	Chevron	-	-	x	50
33I	0	0	863	1400	no	no	★★	x	-	Chevron	Outside	Inside/Outside	x	45
33J	0	0	881	1200	yes	yes	★★★★	x	-	Chevron	Outside	Inside/Outside	x	45
33K	0	0	828	1200	yes	yes	★★★★	x	-	Chevron	Outside	Inside/Outside	x	45

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	4	$13,200
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.3 miles	$10,252
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	4	$3,200
Rumble Strip	Proactive	$3,000 per mile	.6 miles	$1,663
				$28,315

Implementation Cost

Federal Funds	$25,483
Local Match (10% of Total project cost)	$2,831
Total Project Cost	**$28,315**

2007-2011 MnCMAT Crash Data

Curves on CSAH 10 from WATERTOWN CORP LIMIT to MNTH-7

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
10E	0	0	980	3850	no	no	★	-	x	Chevron	Outside	Inside/Outside	x	50
10F	0	0	1253	3850	no	no		-	-	-	-	-	-	-
10G	0	0	921	3850	yes	no	★★	-	x	Chevron	Outside	Inside/Outside	x	50
10I	0	0	877	3850	yes	no	★★	-	x	Chevron	Outside	Inside/Outside	x	45
10J	0	0	1121	3850	no	no	★	-	x	Chevron	Outside	Inside/Outside	-	-
10K	0	0	713	3850	yes	yes	★★★	x	x	-	Outside	Inside/Outside	-	-
10L	0	0	755	3850	no	no	★	-	x	-	-	-	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	4	$13,200
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.3 miles	$12,781
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	3	$2,400
Rumble Strip	Proactive	$3,000 per mile	.7 miles	$2,073
				$30,454

Implementation Cost

Federal Funds	$27,408
Local Match (10% of Total project cost)	$3,045
Total Project Cost	**$30,454**

2007-2011 MnCMAT Crash Data

Curves on CSAH 11 from SAN FRANCISCO TWSP to SAN FRANCISCO TWSP

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
11A	0	0	1391	2800	no	no		-	-	-	-	-	-	-
11B	0	0	881	2800	no	no	★	-	-	-	-	-	-	-
11C	0	0	596	2800	no	no	★	x	-	Chevron	-	Inside/Outside	-	-
11D	0	0	483	2800	no	no		x	-	Chevron	-	Inside/Outside	-	-
11E	0	0	1404	2800	no	no		x	-	-	-	Inside/Outside	-	-
11F	0	0	521	2800	no	no	★	x	-	Chevron	-	Inside/Outside	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	3	$9,900
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.0 miles	$0
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	0	$0
Rumble Strip	Proactive	$3,000 per mile	.3 miles	$902
				$10,802

Implementation Cost

Federal Funds	$9,722
Local Match (10% of Total project cost)	$1,080
Total Project Cost	**$10,802**

2007-2011 MnCMAT Crash Data

Curves on CSAH 11 from SAN FRANCISCO TWSP to CSAH-40 (SOUTH)

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
11G	0	0	1068	2150	no	no	★	x	x	Chevron	-	Inside/Outside	x	50
11H	0	0	1234	2150	no	no		-	-	-	-	-	-	-
11I	0	0	927	2150	no	no	★	-	x	Chevron	-	Inside/Outside	x	50
11J	0	0	1463	2150	no	no		-	-	-	-	-	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	2	$6,600
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.0 miles	$0
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	2	$1,600
Rumble Strip	Proactive	$3,000 per mile	.2 miles	$597
				$8,797

Implementation Cost

Federal Funds	$7,917
Local Match (10% of Total project cost)	$880
Total Project Cost	**$8,797**

2007-2011 MnCMAT Crash Data

Curves on CSAH 11 from CSAH-40 (SOUTH) to CSAH-61

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
11L	0	0	996	3900	no	no	★	-	x	Chevron	-	Inside/Outside	x	50
11M	0	0	926	4450	no	no	★	-	x	Chevron	-	Inside/Outside	x	50
11N	0	0	920	4450	no	no	★	-	x	Chevron	-	Inside/Outside	x	50
11O	0	0	2171	4450	no	no		-	-	-	-	-	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	3	$9,900
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.0 miles	$0
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	3	$2,400
Rumble Strip	Proactive	$3,000 per mile	.4 miles	$1,329
				$13,629

Implementation Cost

Federal Funds	$12,266
Local Match (10% of Total project cost)	$1,363
Total Project Cost	**$13,629**

2007-2011 MnCMAT Crash Data

Curves on CSAH 11 from MNTH-5 (WEST) to MNTH-7, HENNEPIN CO

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
11X	0	0	823	2250	no	no	★	x	x	Chevron	-	Inside/Outside	x	45
11Y	0	0	1062	2250	no	no	★	-	x	Chevron	Inside	Inside/Outside	x	50
11Z	0	0	717	2250	no	no	★	-	x	Chevron	-	Inside/Outside	x	45
11ZA	0	0	797	2250	no	no	★	-	x	Chevron	Inside	Inside/Outside	x	45
11ZB	0	0	1434	2250	yes	no	★	-	-	-	-	-	-	-
11ZC	0	0	1388	2250	no	no		-	-	-	-	-	-	-
11ZD	0	0	765	2250	no	no	★	-	x	Chevron	Outside	Inside/Outside	x	45

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	5	$16,500
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.1 miles	$4,617
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	5	$4,000
Rumble Strip	Proactive	$3,000 per mile	.5 miles	$1,562
				$26,679

Implementation Cost

Federal Funds	$24,011
Local Match (10% of Total project cost)	$2,668
Total Project Cost	**$26,679**

2007-2011 MnCMAT Crash Data

Curves on CNTY 122 from CSAH-33 to CR-123

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
122A	0	0	313	195	no	no		x	-	Chevron	Outside	Inside/Outside	x	35
122B	0	0	323	195	yes	yes	★★	x	-	Chevron	Outside	Inside/Outside	x	35
122C	0	0	350	380	no	no		x	-	Chevron	Outside	Inside/Outside	x	35
122D	0	0	338	380	yes	yes	★★	x	-	Chevron	Outside	Inside/Outside	x	35

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	4	$13,200
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.2 miles	$7,318
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	4	$3,200
Rumble Strip	Proactive	$3,000 per mile	.4 miles	$1,187
				$24,905

Implementation Cost

Federal Funds	$22,415
Local Match (10% of Total project cost)	$2,491
Total Project Cost	**$24,905**

2007-2011 MnCMAT Crash Data

Curves on CNTY 123 from MNTH-7 to CR-122

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
123A	0	0	219	245	yes	yes	★★	x	-	Chevron	-	Inside/Outside	x	Inspect Curve
123B	0	0	634	245	no	no	★	x	x	Chevron	Outside	Inside/Outside	x	40
123C	0	0	686	245	no	no	★	-	x	Chevron	Outside	Inside/Outside	x	40
123D	0	0	1128	245	no	no	★	-	x	Chevron	Outside	Inside/Outside	-	-
123E	0	0	1350	245	no	no		-	-	-	-	-	-	-
123F	0	0	576	245	no	no	★	x	x	Chevron	Outside	Inside/Outside	x	40
123G	0	0	279	245	no	yes	★	x	-	Chevron	Outside	Inside/Outside	x	Inspect Curve
123H	0	0	368	245	yes	yes	★★	x	-	Chevron	Outside	Inside/Outside	x	35

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Chevrons	Proactive	$3,300	per curve	7	$23,100
Arrow Board Only	Proactive	$500	per curve	0	$0
Shoulder Paving	Proactive	$37,000	per mile	.2 miles	$8,297
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800	per curve	6	$4,800
Rumble Strip	Proactive	$3,000	per mile	.5 miles	$1,535
					$37,733

Implementation Cost

Federal Funds	$33,959
Local Match (10% of Total project cost)	$3,773
Total Project Cost	**$37,733**

2007-2011 MnCMAT Crash Data

Curves on CNTY 135 from CSAH-33 to CSAH-32

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
135A	0	0	1086	290	no	no	★	-	x	Chevron	Outside	Inside/Outside	x	50
135B	0	0	1207	290	no	no		-	-	-	-	-	-	-
135C	0	0	486	290	no	no		-	-	-	-	-	-	-
135D	0	0	90	290	yes	yes	★★	-	-	-	-	-	-	-
135E	0	0	896	250	no	no	★	-	x	Chevron	Outside	Inside/Outside	x	45
135F	0	0	797	250	no	no	★	x	x	Chevron	Outside	Inside/Outside	x	45

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	3	$9,900
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.2 miles	$5,988
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	3	$2,400
Rumble Strip	Proactive	$3,000 per mile	.3 miles	$971
				$19,259

Implementation Cost

Federal Funds	$17,334
Local Match (10% of Total project cost)	$1,926
Total Project Cost	**$19,259**

2007-2011 MnCMAT Crash Data

Curves on CNTY 140 from MNTH-284 to CSAH-11 (WEST)

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
140A	0	0	366	530	yes	yes	★★	x	-	Chevron	Outside	Inside/Outside	x	35
140B	0	0	362	530	yes	no	★	x	-	Chevron	Outside	Inside/Outside	x	35
140C	0	0	1810	740	yes	no	★★	-	-	-	-	-	-	-
140D	0	0	1105	740	no	no	★★	-	-	-	-	-	-	-
140E	0	0	870	740	no	no	★★	-	-	-	-	-	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	2	$6,600
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.1 miles	$4,008
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	2	$1,600
Rumble Strip	Proactive	$3,000 per mile	.2 miles	$650
				$12,858

Implementation Cost

Federal Funds	$11,572
Local Match (10% of Total project cost)	$1,286
Total Project Cost	**$12,858**

2007-2011 MnCMAT Crash Data

Curves on CNTY 155 from CSAH-92 to MNTH-7

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
155A	0	0	463	305	no	no		x	-	Chevron	-	Inside/Outside	x	35
155B	0	0	1183	305	no	no	★	x	-	Chevron	-	Inside/Outside	-	-
155C	0	0	653	305	no	no	★	-	-	-	-	Inside/Outside	-	-
155D	0	0	1231	305	no	no		X	-	-	-	Inside/Outside	-	-
155E	0	0	528	185	yes	no	★★	x	-	Chevron	-	Inside/Outside	x	40
155F	0	0	1870	185	no	no		-	-	-	-	-	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	3	$9,900
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.0 miles	$0
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	2	$1,600
Rumble Strip	Proactive	$3,000 per mile	.5 miles	$1,549
				$13,049

Implementation Cost

Federal Funds	$11,744
Local Match (10% of Total project cost)	$1,305
Total Project Cost	**$13,049**

2007-2011 MnCMAT Crash Data

Curves on CSAH 20 from WATERTOWN CORP LIMIT to CSAH-20 ENDS, HENN CO

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
20E	0	0	1796	3350	yes	no	★	-	-	-	-	-	-	-
20F	0	0	1788	3350	no	no		-	-	-	-	-	-	-
20G	0	0	1657	3350	no	no		-	-	-	-	-	-	-
20H	0	0	1524	3350	yes	no	★	-	-	-	-	-	-	-
20I	0	0	1555	3350	no	no		-	-	-	-	-	-	-
20J	0	0	1098	3350	no	no	★	-	x	Chevron	-	Inside/Outside	x	50

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	1	$3,300
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.0 miles	$0
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	1	$800
Rumble Strip	Proactive	$3,000 per mile	.1 miles	$189
				$4,289

Implementation Cost

Federal Funds	$3,861
Local Match (10% of Total project cost)	$429
Total Project Cost	**$4,289**

2007-2011 MnCMAT Crash Data

Curves on CSAH 24 from DREAM LANE to CSAH-15

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
24D	0	0	989	3000	yes	no	★★	x	x	Chevron	Outside	Inside/Outside	x	50
24E	0	0	1504	3000	no	no		-	-	-	-	-	-	-
24F	0	0	1105	3000	no	no	★	-	x	Chevron	Outside	Inside/Outside	-	-
24H	0	0	2396	3000	no	no		-	-	-	-	-	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	2	$6,600
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.1 miles	$2,817
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	1	$800
Rumble Strip	Proactive	$3,000 per mile	.2 miles	$457
				$10,674

Implementation Cost

Federal Funds	$9,606
Local Match (10% of Total project cost)	$1,067
Total Project Cost	**$10,674**

2007-2011 MnCMAT Crash Data

Curves on CSAH 27 from WATERTOWN CORP LIMIT to CSAH-27 ENDS, WRIGHT CO

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
27B	0	0	1266	1600	no	no	★	-	-	-	-	-	-	-
27C	0	0	880	1600	yes	no	★★★	-	-	Chevron	-	Inside/Outside	x	45
27E	0	0	1480	2250	no	no		-	-	-	-	-	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Chevrons	Proactive	$3,300	per curve	1	$3,300
Arrow Board Only	Proactive	$500	per curve	0	$0
Shoulder Paving	Proactive	$37,000	per mile	.0 miles	$0
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800	per curve	1	$800
Rumble Strip	Proactive	$3,000	per mile	.3 miles	$835
					$4,935

Implementation Cost

Federal Funds	$4,442
Local Match (10% of Total project cost)	$494
Total Project Cost	**$4,935**

2007-2011 MnCMAT Crash Data

Curves on CSAH 30 from CSAH-30 BEGINS, MCLEOD CO to CSAH-33 (SOUTH)

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
30A	0	0	695	1050	no	no	★★	x	x	Chevron	-	Inside/Outside	x	40

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	1	$3,300
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.0 miles	$0
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	1	$800
Rumble Strip	Proactive	$3,000 per mile	.2 miles	$589
				$4,689

Implementation Cost

Federal Funds	$4,220
Local Match (10% of Total project cost)	$469
Total Project Cost	**$4,689**

2007-2011 MnCMAT Crash Data

Curves on CSAH 32 from CSAH-30 to MNTH-25

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
32A	0	0	1426	455	no	no		-	-	-	-	-	-	-
32B	0	0	1691	455	no	no		-	-	-	-	-	-	-
32D	0	0	641	550	yes	yes	★★★	-	-	Chevron	Outside	Inside/Outside	x	40
32E	0	0	631	550	no	yes	★★	X	-	Chevron	Outside	Inside/Outside	x	40

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	2	$6,600
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.2 miles	$6,955
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	2	$1,600
Rumble Strip	Proactive	$3,000 per mile	.4 miles	$1,128
				$16,283

Implementation Cost

Federal Funds	$14,655
Local Match (10% of Total project cost)	$1,628
Total Project Cost	**$16,283**

2007-2011 MnCMAT Crash Data

Curves on CSAH 33 from CSAH-50 (WEST) to NORWOOD/YOUNG AMER CL

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
33A	0	0	659	600	no	no	★★	-	x	Chevron	Inside/Outside	Inside/Outside	x	40
33B	0	0	1701	600	no	no	★	-	-	-	-	-	-	-
33C	0	0	832	600	no	no	★★	-	x	Chevron	Inside/Outside	Inside/Outside	x	45

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	2	$6,600
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.2 miles	$6,118
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	2	$1,600
Rumble Strip	Proactive	$3,000 per mile	.2 miles	$496
				$14,815

Implementation Cost

Federal Funds	$13,333
Local Match (10% of Total project cost)	$1,481
Total Project Cost	**$14,815**

2007-2011 MnCMAT Crash Data

Curves on CSAH 36 from COLOGNE CORP LIMIT to USTH-212

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
36D	0	0	1805	980	no	no	★	-	-	-	-	-	-	-
36E	0	0	1001	760	no	no	★★	-	x	Chevron	Outside	Inside/Outside	x	50
36F	0	0	363	760	no	no	★	-	-	-	-	-	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Chevrons	Proactive	$3,300	per curve	1	$3,300
Arrow Board Only	Proactive	$500	per curve	0	$0
Shoulder Paving	Proactive	$37,000	per mile	.1 miles	$4,188
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800	per curve	1	$800
Rumble Strip	Proactive	$3,000	per mile	.2 miles	$679
					$8,967

Implementation Cost

Federal Funds	$8,070
Local Match (10% of Total project cost)	$897
Total Project Cost	**$8,967**

2007-2011 MnCMAT Crash Data

Curves on CSAH 40 from CSAH-40 BEGINS, SIBLEY CO to EAST UNION

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
40A	1	1	296	960	no	no	★★	x	-	Chevron	Outside	Inside/Outside	x	Inspect Curve
40B	0	1	481	960	no	no	★★	x	-	Chevron	Outside	Inside/Outside	x	35
40C	0	0	817	960	no	no	★★	-	x	Chevron	Outside	Inside/Outside	x	45
40D	0	0	680	960	no	no	★★	-	x	Chevron	Inside/Outside	Inside/Outside	x	40
40E	0	0	487	960	no	no	★	x	-	Chevron	Inside/Outside	Inside/Outside	x	35
40F	0	0	698	960	no	no	★★	x	x	Chevron	Inside/Outside	Inside/Outside	x	40
40G	0	0	737	960	yes	no	★★★	x	x	Chevron	Outside	Inside/Outside	x	45
40H	0	0	800	1000	yes	no	★★★	x	x	Chevron	Outside	Inside/Outside	x	45
40I	1	0	955	1000	no	no	★★★	-	x	Chevron	Outside	Inside/Outside	x	50
40J	0	1	1365	1000	no	no	★★	-	-	-	-	-	-	-
40K	0	0	735	1000	no	no	★★	-	x	Chevron	Outside	Inside/Outside	x	45
40L	0	0	1311	990	no	no	★	-	-	-	-	-	-	-
40M	0	0	1572	990	no	no	★	-	-	-	-	-	-	-
40N	0	1	1598	990	no	no	★★	-	-	-	-	-	-	-
40O	0	0	1757	990	no	no	★	-	-	-	-	-	-	-
40P	0	0	1050	990	no	no	★★	-	x	Chevron	-	Inside/Outside	x	50
40Q	0	0	1021	990	no	no	★★	-	x	Chevron	-	Inside/Outside	x	50
40R	0	0	734	990	yes	yes	★★★★	x	x	Chevron	-	Inside/Outside	x	45
40S	0	0	1544	1200	no	no	★	-	-	-	-	-	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	13	$42,900
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.7 miles	$26,755
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	13	$10,400
Rumble Strip	Proactive	$3,000 per mile	1.6 miles	$4,656
				$84,712

Implementation Cost

Federal Funds	$76,241
Local Match (10% of Total project cost)	$8,471
Total Project Cost	**$84,712**

Curves on CSAH 40 from EAST UNION to CSAH-11 (SOUTH)

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
40V	0	0	1164	1550	no	no	★★	-	x	Chevron	-	Inside/Outside	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	1	$3,300
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.0 miles	$0
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	0	$0
Rumble Strip	Proactive	$3,000 per mile	.1 miles	$300
				$3,600

Implementation Cost

Federal Funds	$3,240
Local Match (10% of Total project cost)	$360
Total Project Cost	**$3,600**

2007-2011 MnCMAT Crash Data

Curves on CSAH 43 from CSAH-50 to CSAH-10 (EAST)

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
43A	0	0	1022	0	yes	no	★★	-	x	Chevron	-	Inside/Outside	x	50
43B	0	0	815	0	no	no	★	-	x	Chevron	-	Inside/Outside	x	45
43C	0	0	698	0	yes	yes	★★★	-	x	Chevron	-	Inside/Outside	x	40
43D	0	0	304	0	no	no		-	-	-	-	-	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Chevrons	Proactive	$3,300 per curve	3	$9,900
Arrow Board Only	Proactive	$500 per curve	0	$0
Shoulder Paving	Proactive	$37,000 per mile	.0 miles	$0
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800 per curve	3	$2,400
Rumble Strip	Proactive	$3,000 per mile	.3 miles	$803
				$13,103

Implementation Cost

Federal Funds	$11,792
Local Match (10% of Total project cost)	$1,310
Total Project Cost	**$13,103**

2007-2011 MnCMAT Crash Data

Curves on CSAH 43 from CSAH-10 (WEST) to TELLERS RD

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
43DA	0	0	226	780	no	no	★	-	-	-	-	-	-	-
43E	0	0	1209	780	no	no	★	-	-	-	-	-	-	-
43F	0	0	1290	780	no	no	★	-	-	-	-	-	-	-
43G	0	0	874	790	yes	no	★★★	-	x	Chevron	Outside	Inside/Outside	x	45
43H	0	0	702	790	no	no	★★	-	x	Chevron	Outside	Inside/Outside	x	45
43I	0	0	755	790	yes	no	★★★	-	x	Chevron	Outside	Inside/Outside	x	45

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Chevrons	Proactive	$3,300	per curve	3	$9,900
Arrow Board Only	Proactive	$500	per curve	0	$0
Shoulder Paving	Proactive	$37,000	per mile	.2 miles	$5,620
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800	per curve	3	$2,400
Rumble Strip	Proactive	$3,000	per mile	.3 miles	$911
					$18,832

Implementation Cost

Federal Funds	$16,948
Local Match (10% of Total project cost)	$1,883
Total Project Cost	**$18,832**

2007-2011 MnCMAT Crash Data

Curves on CSAH 92 from MNTH-5 to CSAH-92 ENDS, HENN CO

Agency: Carver County

Curve Data

Curve ID	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity or Existing Chevrons	High Priority Segment + Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
92B	0	0	2450	5900	yes	no	★	-	-	-	-	-	-	-
92C	0	0	1267	5500	no	no		-	-	-	-	-	-	-
92D	0	0	2202	5500	no	no		-	-	-	-	-	-	-
92E	0	0	922	5400	yes	no	★★	-	x	Chevron	-	Inside/Outside	x	50
92F	0	0	1192	5400	no	no	★	-	x	Chevron	Inside/Outside	Inside/Outside	-	-

*Curve numbering not consecutive, as some curves may have been removed from further analysis because a large radius, located on a gravel road, etc

**Curves with radius greater than 1,200 feet did not receive a new or replacement chevron project.

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	600 to 1800
Intersection on Curve	Yes
Visual Trap	Yes

Curves are selected for project if:
- 3 or more ★s
- x in Proximity or Existing Chevron column
- x in High Priority Segment + Critical Radius column

Short List of Strategies Considered

Description	Type	Unit Cost		Quantity	Total cost
Chevrons	Proactive	$3,300	per curve	2	$6,600
Arrow Board Only	Proactive	$500	per curve	0	$0
Shoulder Paving	Proactive	$37,000	per mile	.1 miles	$2,709
Advance Warning Sign/Speed Advisory Plaque	Proactive	$800	per curve	1	$800
Rumble Strip	Proactive	$3,000	per mile	.2 miles	$745
					$10,855

Implementation Cost

Federal Funds	$9,769
Local Match (10% of Total project cost)	$1,085
Total Project Cost	**$10,855**

2007-2011 MnCMAT Crash Data

Appendix F

Rural Intersections Crashes

Carver County
Rural Intersection Listing
Analysis Years: 2007 - 2011

Int #	Sys	Num	Intersection Description	Skew	On/Near Curve	Development	RR Xing	ADT	Previous STOP (>5mi)	Right Angle Crash	Ratio (Min/Maj)	Crash Cost
10.16	CSAH	10	CSAH 10 AND CR-141 (new CR)	No	Yes	No	No	5527	No	0	0.01	$ 12,000
10.17	CSAH	10	CSAH 10 AND CSAH-43 (WEST)	No	Yes	No	No	6540	No	0	0.13	$ 227,000
10.18	CSAH	10	CSAH 10 AND CSAH 43 (EAST)	No	Yes	No	No	8050	No	0	0.22	$ 227,000
10.19	CSAH	10	CSAH 10 AND GUERNSEY AVE CSAH 11	No	No	No	No	11925	Yes	0	0.31	$ 160,000
11.06	CSAH	11	CSAH 11 AND GUERNSEY AVE; CR-140	No	No	No	No	1725	No	0	0.76	$ 24,000
11.07	CSAH	11	CSAH 11 AND MARSH LAKE RD T-162 VICTORIC DR CSAH 14	Yes	No	No	No	5277	No	2	0.18	$ 399,000
11.13	CSAH	11	CSAH 11 AND MNTH 7; HENNEPIN CO LINE	Yes	Yes	No	No	15475	No	1	0.16	$ 24,000
20.01	CSAH	20	CSAH 20 AND CR-133	No	No	No	No	2090	No	0	0.09	$ 12,000
20.02	CSAH	20	CSAH 20 AND CSAH-33 (NORTH)	No	No	No	No	3400	No	2	0.83	$ 194,000
20.03	CSAH	20	CSAH 20 AND CSAH 33 (SOUTH)	No	No	No	No	2552	Yes	0	0.26	$ -
20.04	CSAH	20	CSAH 20 AND CSAH-21	No	No	No	No	1665	No	0	0.62	$ 160,000
20.05	CSAH	20	CSAH 20 AND MNTH 25	Yes	Yes	No	No	3625	Yes	0	0.34	$ 103,000
20.06	CSAH	20	CSAH 20 AND CR 127	Yes	Yes	No	No	3488	Yes	0	0.08	$ -
20.07	CSAH	20	CSAH 20 AND CR 26	No	Yes	No	No	3665	Yes	0	0.19	$ -
21.01	CSAH	21	CSAH 21 AND MNTH-7	No	No	No	No	8560	Yes	0	0.09	$ 939,000
21.02	CSAH	21	CSAH 21 AND CR-122	No	No	No	No	1040	No	0	0.48	$ -
23.02	CSAH	23	CSAH 23 AND MNTH 7; CR 123	No	Yes	No	No	8342	Yes	2	0.04	$ 987,000
24.01	CSAH	24	CSAH 24 AND CR-127	No	Yes	No	No	2738	No	0	0.11	$ 12,000
30.03	CSAH	30	CSAH 30 AND CSAH 32	No	Yes	No	No	1578	Yes	0	0.34	$ -
31.01	CSAH	31	CSAH 31 AND SIBLEY CO T-150 & CSAH 16	No	No	No	No	364	No	0	0.17	$ -
31.02	CSAH	31	CSAH 31 AND CSAH-50 (EAST); UPTON RD T-66	No	No	No	No	802	No	0	0.29	$ 12,000
31.03	CSAH	31	CSAH 31 AND CSAH 50 (WEST); VERA AVE T-50	No	No	No	No	1407	No	0	0.55	$ 24,000
31.05	CSAH	31	CSAH 31 AND USTH 212 WBL	No	Yes	No	No	12270	Yes	3	0.06	$ 738,000
32.01	CSAH	32	CSAH 32 AND CR-135	No	No	No	No	707.5	No	0	0.38	$ 227,000
32.02	CSAH	32	CSAH 32 AND MNTH-25; W LIM WACONIA TWP	No	No	No	No	2505	No	2	0.76	$ 218,000
32.03	CSAH	32	CSAH 32 AND QUAAS AVE T-91 CR-151	No	No	No	No	1732	No	0	0.26	$ -
33.01	CSAH	33	CSAH 33 AND CSAH-50 (EAST)	No	No	No	No	1037	No	0	0.27	$ -
33.05	CSAH	33	CSAH 33 AND CSAH 34	No	Yes	No	No	2295	Yes	7	0.33	$ 1,551,000
33.06	CSAH	33	CSAH 33 AND 110TH ST T-181 CR 135	Yes	Yes	No	No	1697	Yes	0	0.11	$ -
33.07	CSAH	33	CSAH 33 AND MNTH 7	No	Yes	Yes	No	10125	Yes	2	0.25	$ 218,000
33.08	CSAH	33	CSAH 33 AND CR-122	No	No	No	No	2398	Yes	0	0.08	$ -
34.01	CSAH	34	CSAH 34 AND CR 131	No	Yes	No	No	597.5	No	0	0.37	$ -
34.02	CSAH	34	CSAH 34 AND MNTH 25	No	Yes	No	No	6990	Yes	0	0.08	$ 36,000
34.03	CSAH	34	CSAH 34 AND USTH 212 WBL	Yes	Yes	No	No	11470	Yes	1	0.06	$ 254,000
36.01	CSAH	36	CSAH 36 AND USTH 212 EBL	No	Yes	No	No	10420	Yes	0	0.04	$ 160,000
36.03	CSAH	36	CSAH 36 AND MARKET AVE T-19 CSAH 41	Yes	Yes	No	No	997	No	0	0.15	$ 160,000
36.04	CSAH	36	CSAH 36 AND USTH 212 WBL	No	Yes	No	No	12080	Yes	0	0.06	$ 218,000
40.01	CSAH	40	CSAH 40 AND MNTH 25; T-340	No	Yes	No	No	5245	Yes	2	0.19	$ 1,451,000
40.02	CSAH	40	CSAH 40 AND CSAH 52 174TH ST T-127	No	Yes	No	No	1172	Yes	0	0.18	$ 136,000
40.03	CSAH	40	CSAH 40 AND CSAH 50	No	Yes	No	No	2975	Yes	0	0.86	$ 263,000
41.01	CSAH	41	CSAH 41 AND CSAH 52	No	No	No	No	392.5	No	0	0.68	$ 24,000
41.02	CSAH	41	CSAH 41 AND CSAH-50	No	No	No	No	942.5	No	0	0.26	$ 12,000
41.03	CSAH	41	CSAH 41 AND USTH 212 EBL	No	Yes	No	No	12038	Yes	2	0.03	$ 354,000
43.01	CSAH	43	CSAH 43 AND CSAH-50; NATHAN CR T-514	No	Yes	No	No	2002	Yes	0	0.38	$ -
43.02	CSAH	43	CSAH 43 AND USTH 212	No	No	No	No	13300	Yes	7	0.13	$ 1,199,000
50.01	CSAH	50	CSAH 50 AND CSAH-10; ZEBRA AVE T-37	No	No	No	No	714.5	No	0	0.48	$ 12,000
50.02	CSAH	50	CSAH 50 AND MNTH-5	No	No	No	No	4343	Yes	0	0.14	$ 239,000
50.03	CSAH	50	CSAH 50 AND N JCT CSAH-51; 150TH ST T-167	No	No	No	No	1127	No	0	0.48	$ 12,000
50.04	CSAH	50	CSAH 50 AND S JCT CSAH-51; 158TH ST T-8	No	No	No	No	759.5	No	0	0.43	$ 136,000
50.05	CSAH	50	CSAH 50 AND CR-153 PAUL AVE T-97	No	No	No	No	482	No	0	0.19	$ -
50.06	CSAH	50	CSAH 50 AND CSAH 53	No	No	No	No	2388	Yes	0	0.29	$ 103,000
51.01	CSAH	51	CSAH 51 AND CSAH-52; CR-151 SEG #1	No	No	No	No	600	Yes	0	0.79	$ -
51.02	CSAH	51	CSAH 51 AND 142ND ST T-172 CR-152	No	No	No	No	949.5	No	0	0.13	$ -
51.03	CSAH	51	CSAH 51 AND USTH 212	No	No	No	No	12195	Yes	2	0.10	$ 1,920,000
51.04	CSAH	51	CSAH 51 AND MNTH 5; CR 151	Yes	No	No	No	6980	Yes	3	0.12	$ 175,000
52.01	CSAH	52	CSAH 52 AND SIBLEY CO CSAH-5 (WEST)	No	No	No	No	555	Yes	0	0.78	$ -
52.02	CSAH	52	CSAH 52 AND SIBLEY CO CSAH 5 (EAST)	No	Yes	No	No	555	Yes	0	0.78	$ -
52.03	CSAH	52	CSAH 52 AND CSAH 53	No	No	No	No	1898	Yes	0	0.20	$ 136,000
53.01	CSAH	53	CSAH 53 AND CR-152 MAPLEWOOD RD T-173	No	No	No	No	2032	Yes	0	0.07	$ -
92.01	CSAH	92	CSAH 92 AND MNTH 5	No	Yes	No	No	18050	No	0	0.39	$ 91,000
92.02	CSAH	92	CSAH 92 AND CR 155	Yes	Yes	No	No	5603	No	0	0.06	$ -
122.01	CNTY	122	CNTY 122 AND CR 123	Yes	No	No	No	847.5	No	0	0.34	$ -
131.01	CNTY	131	CNTY 131 AND USTH 212 EBL; MNTH 5 & 25	No	No	No	No	13,068	Yes	1	0.19	$ 12,000
140.01	CNTY	140	CNTY 140 AND MNTH-284; 110TH ST T-178	No	No	No	No	4,392	Yes	0	0.07	$ 251,000
151.01	CNTY	151	CNTY 151 AND SIBLEY CO T-158 & CSAH-60	No	No	No	No	217	No	0	0.33	$ -
152.01	CNTY	152	CNTY 152 AND CR-153	No	No	No	No	390	No	0	0.93	$ -
153.01	CNTY	153	CNTY 153 AND USTH-212	No	No	No	No	10,645	Yes	0	0.02	$ 239,000
153.02	CNTY	153	CNTY 153 AND MN-284; 118TH ST T-177	No	No	No	No	4,252	No	0	0.04	$ 103,000
155.01	CNTY	155	CNTY 155 AND MNTH-7	Yes	No	No	No	10,293	No	0	0.02	$ 148,000

Carver County
Rural Intersection Prioritization
Analysis Years: 2007 - 2011

Rank	Int #	Sys	#	Intersection Description	Skew	On/Near Curve	Development	RR Xing	Previous STOP (>5mi)	Right Angle Crash	Ratio (Min/Maj)	Priority	Crash Cost
1	33.07	CSAH	33	CSAH 33 AND MNTH 7		★	★		★	★	★	★★★★★	$ 218,000
2	33.05	CSAH	33	CSAH 33 AND CSAH 34		★			★	★	★	★★★★	$ 1,551,000
3	34.03	CSAH	34	CSAH 34 AND USTH 212 WBL	★	★			★	★		★★★★	$ 254,000
4	20.05	CSAH	20	CSAH 20 AND MNTH 25	★	★			★		★	★★★★	$ 103,000
5	40.01	CSAH	40	CSAH 40 AND MNTH 25; T-340		★			★	★		★★★	$ 1,451,000
6	23.02	CSAH	23	CSAH 23 AND MNTH 7; CR 123		★			★	★		★★★	$ 987,000
7	31.05	CSAH	31	CSAH 31 AND USTH 212 WBL		★			★	★		★★★	$ 738,000
8	41.03	CSAH	41	CSAH 41 AND USTH 212 EBL		★			★	★		★★★	$ 354,000
9	51.04	CSAH	51	CSAH 51 AND MNTH 5; CR 151	★				★	★		★★★	$ 175,000
10	11.13	CSAH	11	CSAH 11 AND MNTH 7; HENNEPIN CO LINE	★	★				★		★★★	$ 24,000
11	20.06	CSAH	20	CSAH 20 AND CR 127	★	★			★			★★★	$ -
12	30.03	CSAH	30	CSAH 30 AND CSAH 32		★			★		★	★★★	$ -
13	33.06	CSAH	33	CSAH 33 AND 110TH ST T-181 CR 135	★	★			★			★★★	$ -
14	43.01	CSAH	43	CSAH 43 AND CSAH-50; NATHAN CR T-514		★			★		★	★★★	$ -
15	51.03	CSAH	51	CSAH 51 AND USTH 212					★	★		★★	$ 1,920,000
16	43.02	CSAH	43	CSAH 43 AND USTH 212					★	★		★★	$ 1,199,000
17	11.07	CSAH	11	CSAH 11 AND MARSH LAKE RD T-162 VICTORIC DR CSAH 14	★					★		★★	$ 399,000
18	40.03	CSAH	40	CSAH 40 AND CSAH 50		★			★			★★	$ 263,000
19	10.18	CSAH	10	CSAH 10 AND CSAH 43 (EAST)		★					★	★★	$ 227,000
20	36.04	CSAH	36	CSAH 36 AND USTH 212 WBL		★			★			★★	$ 218,000
21	10.19	CSAH	10	CSAH 10 AND GUERNSEY AVE CSAH 11					★		★	★★	$ 160,000
22	36.01	CSAH	36	CSAH 36 AND USTH 212 EBL		★			★			★★	$ 160,000
23	36.03	CSAH	36	CSAH 36 AND MARKET AVE T-19 CSAH 41	★	★						★★	$ 160,000
24	40.02	CSAH	40	CSAH 40 AND CSAH 52 174TH ST T-127		★			★			★★	$ 136,000
25	52.03	CSAH	52	CSAH 52 AND CSAH 53					★		★	★★	$ 136,000
26	50.06	CSAH	50	CSAH 50 AND CSAH 53					★		★	★★	$ 103,000
27	92.01	CSAH	92	CSAH 92 AND MNTH 5		★					★	★★	$ 91,000
28	34.02	CSAH	34	CSAH 34 AND MNTH 25		★			★			★★	$ 36,000
29	131.01	CNTY	131	CNTY 131 AND USTH 212 EBL; MNTH 5 & 25					★	★		★★	$ 12,000
30	20.03	CSAH	20	CSAH 20 AND CSAH 33 (SOUTH)					★		★	★★	$ -
31	20.07	CSAH	20	CSAH 20 AND CR 26		★			★			★★	$ -
32	34.01	CSAH	34	CSAH 34 AND CR 131		★					★	★★	$ -
33	52.02	CSAH	52	CSAH 52 AND SIBLEY CO CSAH 5 (EAST)		★			★			★★	$ -
34	92.02	CSAH	92	CSAH 92 AND CR 155	★	★						★★	$ -
35	122.01	CNTY	122	CNTY 122 AND CR 123	★						★	★★	$ -
36	21.01	CSAH	21	CSAH 21 AND MNTH-7					★			★	$ 939,000
37	140.01	CNTY	140	CNTY 140 AND MNTH-284; 110TH ST T-178					★			★	$ 251,000
38	50.02	CSAH	50	CSAH 50 AND MNTH-5					★			★	$ 239,000
39	153.01	CNTY	153	CNTY 153 AND USTH-212					★			★	$ 239,000
40	10.17	CSAH	10	CSAH 10 AND CSAH-43 (WEST)		★						★	$ 227,000
41	32.01	CSAH	32	CSAH 32 AND CR-135							★	★	$ 227,000
42	32.02	CSAH	32	CSAH 32 AND MNTH-25; W LIM WACONIA TWP						★		★	$ 218,000
43	20.02	CSAH	20	CSAH 20 AND CSAH-33 (NORTH)						★		★	$ 194,000
44	155.01	CNTY	155	CNTY 155 AND MNTH-7	★							★	$ 148,000
45	50.04	CSAH	50	CSAH 50 AND S JCT CSAH-51; 158TH ST T-8							★	★	$ 136,000
46	31.03	CSAH	31	CSAH 31 AND CSAH 50 (WEST); VERA AVE T-50							★	★	$ 24,000
47	31.02	CSAH	31	CSAH 31 AND CSAH-50 (EAST); UPTON RD T-66							★	★	$ 12,000
48	10.16	CSAH	10	CSAH 10 AND CR-141 (new CR)		★						★	$ 12,000
49	24.01	CSAH	24	CSAH 24 AND CR-127		★						★	$ 12,000
50	41.02	CSAH	41	CSAH 41 AND CSAH-50							★	★	$ 12,000
51	50.01	CSAH	50	CSAH 50 AND CSAH-10; ZEBRA AVE T-37							★	★	$ 12,000
52	50.03	CSAH	50	CSAH 50 AND N JCT CSAH-51; 150TH ST T-167							★	★	$ 12,000
53	21.02	CSAH	21	CSAH 21 AND CR-122							★	★	$ -
54	32.03	CSAH	32	CSAH 32 AND QUAAS AVE T-91 CR-151							★	★	$ -
55	33.01	CSAH	33	CSAH 33 AND CSAH-50 (EAST)							★	★	$ -
56	33.08	CSAH	33	CSAH 33 AND CR-122					★			★	$ -
57	51.01	CSAH	51	CSAH 51 AND CSAH-52; CR-151 SEG #1					★			★	$ -
58	52.01	CSAH	52	CSAH 52 AND SIBLEY CO CSAH-5 (WEST)					★			★	$ -
59	53.01	CSAH	53	CSAH 53 AND CR-152 MAPLEWOOD RD T-173					★			★	$ -
60	151.01	CNTY	151	CNTY 151 AND SIBLEY CO T-158 & CSAH-60							★	★	$ -
61	20.04	CSAH	20	CSAH 20 AND CSAH-21									$ 160,000
62	153.02	CNTY	153	CNTY 153 AND MN-284; 118TH ST T-177									$ 103,000
63	11.06	CSAH	11	CSAH 11 AND GUERNSEY AVE; CR-140									$ 24,000
64	41.01	CSAH	41	CSAH 41 AND CSAH 52									$ 24,000
65	20.01	CSAH	20	CSAH 20 AND CR-133									$ 12,000
66	31.01	CSAH	31	CSAH 31 AND SIBLEY CO T-150 & CSAH 16									$ -
67	50.05	CSAH	50	CSAH 50 AND CR-153 PAUL AVE T-97									$ -
68	51.02	CSAH	51	CSAH 51 AND 142ND ST T-172 CR-152									$ -
69	152.01	CNTY	152	CNTY 152 AND CR-153									$ -
				Total Stars --	11	28	1	0	35	15	24		
				% That Gets Star --	16%	41%	1%	0%	51%	22%	35%		

	Totals #	%
★★★★★★★	0	0%
★★★★★★	0	0%
★★★★★	1	1%
★★★★	3	4%
★★★	10	14%
★★	21	30%
★	25	36%
-	9	13%
	69	100%

Stars

Skew -	If intersection is skewed at an angle of 15 degrees or greater.
On/Near Curve -	If intersection is on or within 1,000 feet of curve.
Development -	If intersection aerial shows a commercial development with access near intersection.
RR Xing -	If intersection has a railroad crossing on any approach within 500 feet.
Previous STOP (>5 mi) -	If vehicles approaching the stop control have not had a previous stop along the roadway within 5 miles
Total Crashes -	If intersection has at least 1 crash.
Ratio (Min/Maj) -	If intersection has an ADT ratio in the range of 0.2 to 0.6.

CSAH 33 AND MNTH 7

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 10125
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 8100
Minor ADT: 2025

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	5	2	0
Rate (per MVM)	0.3	0.1	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	Yes	Yes	★
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.25	0.2 - 0.6	★
Total Crashes	2	>0	★
			★★★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$15,700.00

Notes - Mainline dynamic warning sign being installed by MnDOT in 2013. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs per intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$14,130
Local Match (10% of Total project cost)	$1,570
Total Project Cost	**$15,700**

CSAH 33 AND CSAH 34

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 2295
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 1725
Minor ADT: 570

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	9	7	2
Rate (per MVM)	2.1	1.7	0.5

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.33	0.2 - 0.6	★
Total Crashes	7	>0	★
			★★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$15,700.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$14,130
Local Match (10% of Total project cost)	$1,570
Total Project Cost	**$15,700**

CSAH 34 AND USTH 212 WBL

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 11470
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 10800
Minor ADT: 670

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	8	1	0
Rate (per MVM)	0.4	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	Yes	Yes	★
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.06	0.2 - 0.6	
Total Crashes	1	>0	★
			★★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	1	$50,000.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$65,700.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$59,130
Local Match (10% of Total project cost)	$6,570
Total Project Cost	**$65,700**

CSAH 20 AND MNTH 25

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 3625
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 3100
Minor ADT: 1050

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	2	0	0
Rate (per MVM)	0.3	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	Yes	Yes	★
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.34	0.2 - 0.6	★
Total Crashes	0	>0	
			★★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	1	$350.00
Upgrade Junction Sign	$350	per sign	1	$350.00
Upgrade Stop Ahead Sign	$450	per sign	1	$450.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	1	$250.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$7,850.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$7,065
Local Match (10% of Total project cost)	$785
Total Project Cost	**$7,850**

CSAH 40 AND MNTH 25; T-340

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 5245
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 4425
Minor ADT: 820

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	10	2	1
Rate (per MVM)	1.0	0.2	0.1

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.19	0.2 - 0.6	
Total Crashes	2	>0	★
			★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	1	$750,000.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$765,700.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$689,130
Local Match (10% of Total project cost)	$76,570
Total Project Cost	**$765,700**

CSAH 23 AND MNTH 7; CR 123

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 8342
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 8000
Minor ADT: 342

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	8	2	1
Rate (per MVM)	0.5	0.1	0.1

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.04	0.2 - 0.6	
Total Crashes	2	>0	★
			★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$15,700.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$14,130
Local Match (10% of Total project cost)	$1,570
Total Project Cost	**$15,700**

CSAH 31 AND USTH 212 WBL

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 12270
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 11900
Minor ADT: 740

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	7	3	0
Rate (per MVM)	0.3	0.1	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.06	0.2 - 0.6	
Total Crashes	3	>0	★
			★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	1	$50,000.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	1	$350.00
Upgrade Junction Sign	$350	per sign	1	$350.00
Upgrade Stop Ahead Sign	$450	per sign	1	$450.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	1	$250.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$57,850.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$52,065
Local Match (10% of Total project cost)	$5,785
Total Project Cost	**$57,850**

CSAH 41 AND USTH 212 EBL

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 12038
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 11700
Minor ADT: 338

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	6	2	0
Rate (per MVM)	0.3	0.1	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.03	0.2 - 0.6	
Total Crashes	2	>0	★
			★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$15,700.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$14,130
Local Match (10% of Total project cost)	$1,570
Total Project Cost	**$15,700**

CSAH 51 AND MNTH 5; CR 151

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 6980
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 6250
Minor ADT: 730

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	8	3	0
Rate (per MVM)	0.6	0.2	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	Yes	Yes	★
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.12	0.2 - 0.6	
Total Crashes	3	>0	★
			★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	1	$50,000.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$65,700.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$59,130
Local Match (10% of Total project cost)	$6,570
Total Project Cost	**$65,700**

CSAH 11 AND MNTH 7; HENNEPIN CO LINE

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 15475
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 14350
Minor ADT: 2250

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	2	1	0
Rate (per MVM)	0.1	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	Yes	Yes	★
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.16	0.2 - 0.6	
Total Crashes	1	>0	★
			★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$6,000.00

Notes - Roundabout to be installed in 2013, no project assigned. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$5,400
Local Match (10% of Total project cost)	$600
Total Project Cost	**$6,000**

CSAH 20 AND CR 127

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 3488
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 3350
Minor ADT: 275

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	Yes	Yes	★
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.08	0.2 - 0.6	
Total Crashes	0	>0	
			★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	1	$350.00
Upgrade Junction Sign	$350	per sign	1	$350.00
Upgrade Stop Ahead Sign	$450	per sign	1	$450.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	1	$250.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$7,850.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$7,065
Local Match (10% of Total project cost)	$785
Total Project Cost	**$7,850**

CSAH 30 AND CSAH 32

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 1578
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 1350
Minor ADT: 455

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.34	0.2 - 0.6	★
Total Crashes	0	>0	
			★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	1	$350.00
Upgrade Junction Sign	$350	per sign	1	$350.00
Upgrade Stop Ahead Sign	$450	per sign	1	$450.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	1	$250.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$7,850.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$7,065
Local Match (10% of Total project cost)	$785
Total Project Cost	**$7,850**

CSAH 33 AND 110TH ST T-181 CR 135

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 1697
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 1525
Minor ADT: 172

Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	Yes	Yes	★
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.11	0.2 - 0.6	
Total Crashes	0	>0	
			★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$15,250.00

Notes - W leg gravel beyond paved apron. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$13,725
Local Match (10% of Total project cost)	$1,525
Total Project Cost	**$15,250**

CSAH 43 AND CSAH-50; NATHAN CR T-514

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 2002
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 1450
Minor ADT: 552

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.38	0.2 - 0.6	★
Total Crashes	0	>0	
			★★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$15,250.00

Notes - S leg gravel beyond paved apron. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$13,725
Local Match (10% of Total project cost)	$1,525
Total Project Cost	**$15,250**

CSAH 51 AND USTH 212

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 12195
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 11100
Minor ADT: 1095

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	12	2	2
Rate (per MVM)	0.5	0.1	0.1

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.10	0.2 - 0.6	
Total Crashes	2	>0	★
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	1	$750,000.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$765,700.00

Notes - Turn lanes installed in 2010. Reevaluate in future and determine if additional countermeasures are needed. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

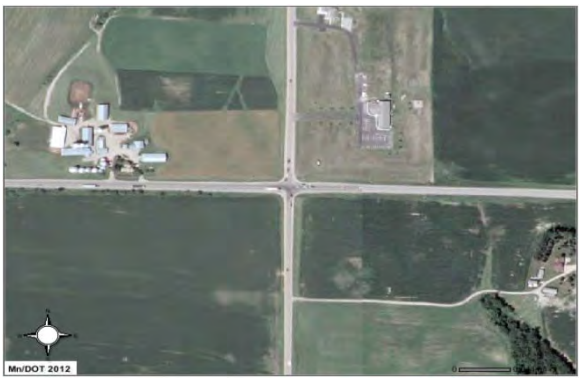
Federal Funds	$689,130
Local Match (10% of Total project cost)	$76,570
Total Project Cost	**$765,700**

CSAH 43 AND USTH 212

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 13300
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 11800
Minor ADT: 1500



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	20	7	0
Rate (per MVM)	0.8	0.3	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.13	0.2 - 0.6	
Total Crashes	7	>0	★
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	1	$50,000.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$65,700.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$59,130
Local Match (10% of Total project cost)	$6,570
Total Project Cost	**$65,700**

CSAH 11 AND MARSH LAKE RD T-162 VICTORIC DR CSAH 14

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 5277
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 4475
Minor ADT: 802

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	6	2	0
Rate (per MVM)	0.6	0.2	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	Yes	Yes	★
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.18	0.2 - 0.6	
Total Crashes	2	>0	★
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	1	$50,000.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$65,250.00

Notes - W leg gravel beyond paved apron. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$58,725
Local Match (10% of Total project cost)	$6,525
Total Project Cost	**$65,250**

CSAH 40 AND CSAH 50

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 2975
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 1600
Minor ADT: 1375

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	5	0	0
Rate (per MVM)	0.9	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.86	0.2 - 0.6	
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$15,700.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$14,130
Local Match (10% of Total project cost)	$1,570
Total Project Cost	**$15,700**

CSAH 10 AND CSAH 43 (EAST)

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 8050
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 7250
Minor ADT: 1600

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	2	0	0
Rate (per MVM)	0.1	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.22	0.2 - 0.6	★
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	1	$350.00
Upgrade Junction Sign	$350	per sign	1	$350.00
Upgrade Stop Ahead Sign	$450	per sign	1	$450.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	1	$250.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$7,850.00

Notes - Private driveway offset to NW. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$7,065
Local Match (10% of Total project cost)	$785
Total Project Cost	**$7,850**

CSAH 36 AND USTH 212 WBL

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 12080
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 11700
Minor ADT: 760

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	5	0	0
Rate (per MVM)	0.2	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.06	0.2 - 0.6	
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	1	$350.00
Upgrade Junction Sign	$350	per sign	1	$350.00
Upgrade Stop Ahead Sign	$450	per sign	1	$450.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	1	$250.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$7,850.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$7,065
Local Match (10% of Total project cost)	$785
Total Project Cost	**$7,850**

CSAH 10 AND GUERNSEY AVE CSAH 11

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 11925
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 9100
Minor ADT: 2825

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	3	0	0
Rate (per MVM)	0.1	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.31	0.2 - 0.6	★
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	0	$0.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$0.00

Notes - Intersection is now signalized. No project assigned.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$0
Local Match (10% of Total project cost)	$0
Total Project Cost	**$0**

CSAH 36 AND USTH 212 EBL

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 10420
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 10200
Minor ADT: 440

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	3	0	0
Rate (per MVM)	0.2	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.04	0.2 - 0.6	
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	1	$350.00
Upgrade Junction Sign	$350	per sign	1	$350.00
Upgrade Stop Ahead Sign	$450	per sign	1	$450.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	1	$250.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$7,850.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$7,065
Local Match (10% of Total project cost)	$785
Total Project Cost	**$7,850**

CSAH 36 AND MARKET AVE T-19 CSAH 41

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 997
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 870
Minor ADT: 127

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	3	0	0
Rate (per MVM)	1.6	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	Yes	Yes	★
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.15	0.2 - 0.6	
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$15,250.00

Notes - N leg gravel beyond paved apron. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$13,725
Local Match (10% of Total project cost)	$1,525
Total Project Cost	**$15,250**

CSAH 40 AND CSAH 52 174TH ST T-127

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 1172
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 995
Minor ADT: 177

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	1	0	0
Rate (per MVM)	0.5	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.18	0.2 - 0.6	
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$15,250.00

Notes - E leg gravel beyond paved apron. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$13,725
Local Match (10% of Total project cost)	$1,525
Total Project Cost	**$15,250**

CSAH 52 AND CSAH 53

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 1898
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 1575
Minor ADT: 323

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	1	0	0
Rate (per MVM)	0.3	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.20	0.2 - 0.6	★
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$15,700.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$14,130
Local Match (10% of Total project cost)	$1,570
Total Project Cost	**$15,700**

CSAH 50 AND CSAH 53

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 2388
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 1850
Minor ADT: 538

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	2	0	0
Rate (per MVM)	0.5	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.29	0.2 - 0.6	★
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$15,700.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$14,130
Local Match (10% of Total project cost)	$1,570
Total Project Cost	**$15,700**

CSAH 92 AND MNTH 5

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 18050
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 15100
Minor ADT: 5900

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	1	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.39	0.2 - 0.6	★
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	1	$350.00
Upgrade Junction Sign	$350	per sign	1	$350.00
Upgrade Stop Ahead Sign	$450	per sign	1	$450.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	1	$250.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$7,850.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$7,065
Local Match (10% of Total project cost)	$785
Total Project Cost	**$7,850**

CSAH 34 AND MNTH 25

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 6990
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 6450
Minor ADT: 540

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	3	0	0
Rate (per MVM)	0.2	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.08	0.2 - 0.6	
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$15,700.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$14,130
Local Match (10% of Total project cost)	$1,570
Total Project Cost	**$15,700**

CNTY 131 AND USTH 212 EBL; MNTH 5 & 25

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 13068
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 10950
Minor ADT: 2118

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	1	1	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.19	0.2 - 0.6	
Total Crashes	1	>0	★
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	1	$50,000.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$65,700.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$59,130
Local Match (10% of Total project cost)	$6,570
Total Project Cost	**$65,700**

CSAH 20 AND CSAH 33 (SOUTH)

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 2552
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 2025
Minor ADT: 527

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.26	0.2 - 0.6	★
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	2	$700.00
Upgrade Junction Sign	$350	per sign	2	$700.00
Upgrade Stop Ahead Sign	$450	per sign	2	$900.00
Upgrade Stop Ahead Marking	$450	per marking	2	$900.00
Upgrade Stop Bar	$250	per marking	2	$500.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$15,700.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$14,130
Local Match (10% of Total project cost)	$1,570
Total Project Cost	**$15,700**

CSAH 20 AND CR 26

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 3665
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 3350
Minor ADT: 630

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.19	0.2 - 0.6	
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost	Notes -
Roundabout	$1,000,000	per intersection	0	$0.00	
Directional Median	$750,000	per intersection	0	$0.00	
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00	
Installing Street Lights	$6,000	per street light	1	$6,000.00	
Upgrade Stop Sign	$350	per sign	1	$350.00	
Upgrade Junction Sign	$350	per sign	1	$350.00	
Upgrade Stop Ahead Sign	$450	per sign	1	$450.00	
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00	
Upgrade Stop Bar	$250	per marking	1	$250.00	
Review Signs and CST	$2,450	per intersection	0	$0.00	
				$7,850.00	

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$7,065
Local Match (10% of Total project cost)	$785
Total Project Cost	**$7,850**

CSAH 34 AND CR 131

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 598
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 505
Minor ADT: 185

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.37	0.2 - 0.6	★
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	1	$350.00
Upgrade Junction Sign	$350	per sign	1	$350.00
Upgrade Stop Ahead Sign	$450	per sign	1	$450.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	1	$250.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$7,850.00

Notes - Intersection does not meet volume criteria for intersection lighting. Street lights were included as a county nominated project.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$7,065
Local Match (10% of Total project cost)	$785
Total Project Cost	**$7,850**

CSAH 52 AND SIBLEY CO CSAH 5 (EAST)

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 555
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 400
Minor ADT: 310

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.78	0.2 - 0.6	
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	1	$350.00
Upgrade Junction Sign	$350	per sign	1	$350.00
Upgrade Stop Ahead Sign	$450	per sign	1	$450.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	1	$250.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$7,850.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$7,065
Local Match (10% of Total project cost)	$785
Total Project Cost	**$7,850**

CSAH 92 AND CR 155

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 5603
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 5450
Minor ADT: 305

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	Yes	Yes	★
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.06	0.2 - 0.6	
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	1	$350.00
Upgrade Junction Sign	$350	per sign	1	$350.00
Upgrade Stop Ahead Sign	$450	per sign	1	$450.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	1	$250.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$7,850.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$7,065
Local Match (10% of Total project cost)	$785
Total Project Cost	**$7,850**

CNTY 122 AND CR 123

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 848
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 725
Minor ADT: 245

Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	Yes	Yes	★
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.34	0.2 - 0.6	★
Total Crashes	0	>0	
			★★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	1	$350.00
Upgrade Junction Sign	$350	per sign	1	$350.00
Upgrade Stop Ahead Sign	$450	per sign	1	$450.00
Upgrade Stop Ahead Marking	$450	per marking	1	$450.00
Upgrade Stop Bar	$250	per marking	1	$250.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$7,850.00

Notes - Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

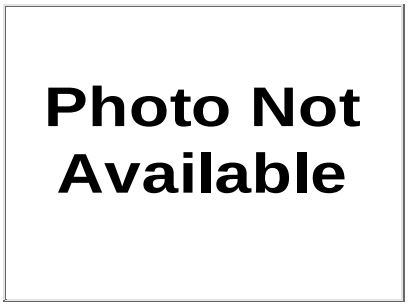
Federal Funds	$7,065
Local Match (10% of Total project cost)	$785
Total Project Cost	**$7,850**

CSAH 10 AND CSAH-43 (WEST)

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 6540
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 6150
Minor ADT: 780



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	2	0	0
Rate (per MVM)	0.2	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.13	0.2 - 0.6	
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$6,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$5,400
Local Match (10% of Total project cost)	$600
Total Project Cost	**$6,000**

CSAH 32 AND CR-135

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 708
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 595
Minor ADT: 225

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Angle	K+A
Crashes	2	0	0
Rate (per MVM)	1.5	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.38	0.2 - 0.6	★
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$6,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$5,400
Local Match (10% of Total project cost)	$600
Total Project Cost	**$6,000**

CSAH 20 AND CSAH-33 (NORTH)

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 3400
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 2400
Minor ADT: 2000

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Angle	K+A
Crashes	3	2	0
Rate (per MVM)	0.5	0.3	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.83	0.2 - 0.6	
Total Crashes	2	>0	★
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$6,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$5,400
Local Match (10% of Total project cost)	$600
Total Project Cost	**$6,000**

CSAH 50 AND S JCT CSAH-51; 158TH ST T-8

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 760
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 530
Minor ADT: 230

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Angle	K+A
Crashes	1	0	0
Rate (per MVM)	0.7	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.43	0.2 - 0.6	★
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

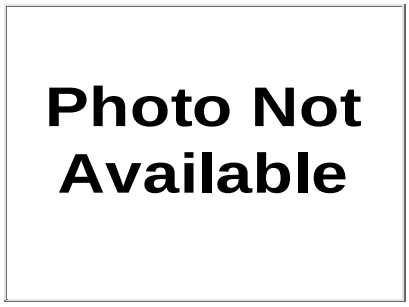
Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 31 AND CSAH 50 (WEST); VERA AVE T-50

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 1407
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 910
Minor ADT: 497



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	2	0	0
Rate (per MVM)	0.8	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.55	0.2 - 0.6	★
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 31 AND CSAH-50 (EAST); UPTON RD T-66

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 802
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 620
Minor ADT: 182

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	1	0	0
Rate (per MVM)	0.7	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.29	0.2 - 0.6	★
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

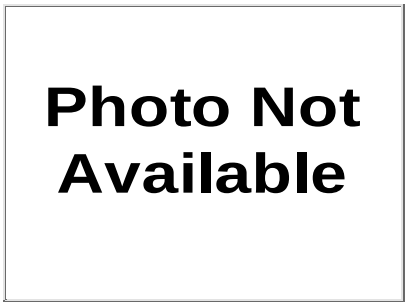
Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 10 AND CR-141 (new CR)

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 5527
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 5500
Minor ADT: 54



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	1	0	0
Rate (per MVM)	0.1	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.01	0.2 - 0.6	
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$6,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

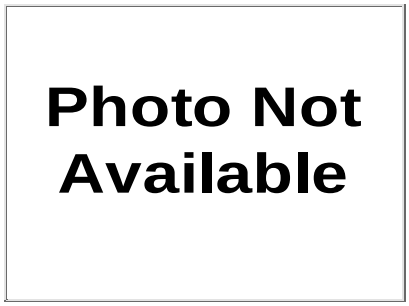
Federal Funds	$5,400
Local Match (10% of Total project cost)	$600
Total Project Cost	**$6,000**

CSAH 24 AND CR-127

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 2738
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 2600
Minor ADT: 275



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	1	0	0
Rate (per MVM)	0.2	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	Yes	Yes	★
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.11	0.2 - 0.6	
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$6,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$5,400
Local Match (10% of Total project cost)	$600
Total Project Cost	**$6,000**

CSAH 41 AND CSAH-50

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 943
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 750
Minor ADT: 193

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Angle	K+A
Crashes	1	0	0
Rate (per MVM)	0.6	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.26	0.2 - 0.6	★
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

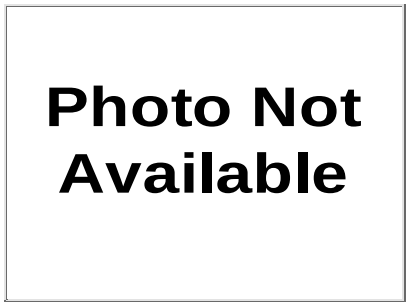
Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 50 AND CSAH-10; ZEBRA AVE T-37

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 715
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 483
Minor ADT: 232



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	1	0	0
Rate (per MVM)	0.8	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.48	0.2 - 0.6	★
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 50 AND N JCT CSAH-51; 150TH ST T-167

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 1127
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 760
Minor ADT: 367

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Angle	K+A
Crashes	1	0	0
Rate (per MVM)	0.5	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.48	0.2 - 0.6	★
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

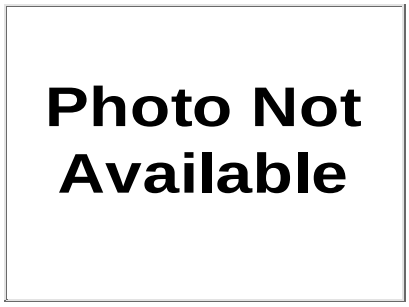
Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 21 AND CR-122

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 1040
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 705
Minor ADT: 335



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.48	0.2 - 0.6	★
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 32 AND QUAAS AVE T-91 CR-151

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 1732
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 1375
Minor ADT: 357

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.26	0.2 - 0.6	★
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

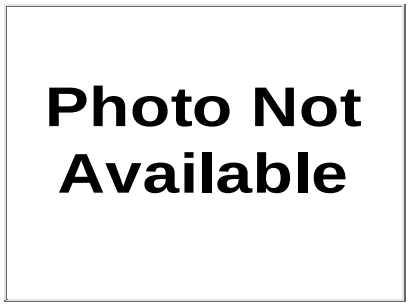
Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 33 AND CSAH-50 (EAST)

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 1037
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 815
Minor ADT: 222



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.27	0.2 - 0.6	★
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

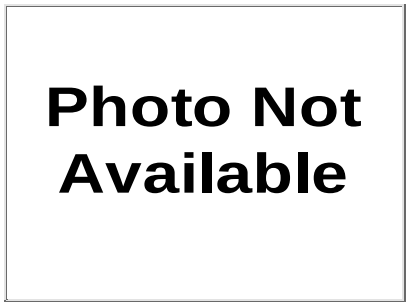
Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 33 AND CR-122

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 2398
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 2300
Minor ADT: 195



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.08	0.2 - 0.6	
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$6,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$5,400
Local Match (10% of Total project cost)	$600
Total Project Cost	**$6,000**

CSAH 51 AND CSAH-52; CR-151 SEG #1

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 600
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 335
Minor ADT: 265

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.79	0.2 - 0.6	
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

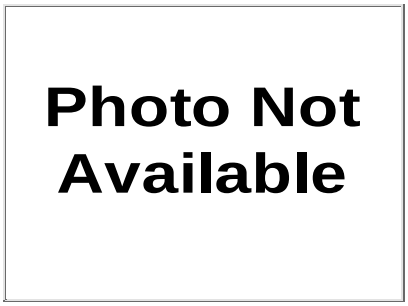
Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 52 AND SIBLEY CO CSAH-5 (WEST)

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 555
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 400
Minor ADT: 310



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.78	0.2 - 0.6	
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$6,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

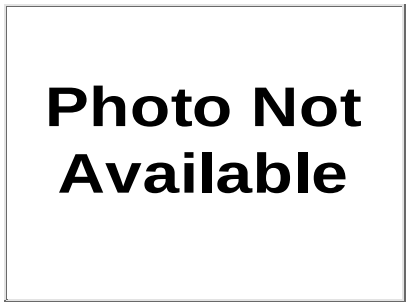
Federal Funds	$5,400
Local Match (10% of Total project cost)	$600
Total Project Cost	**$6,000**

CSAH 53 AND CR-152 MAPLEWOOD RD T-173

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 2032
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 1900
Minor ADT: 132



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	Yes	Yes	★
Volume Ratio	0.07	0.2 - 0.6	
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

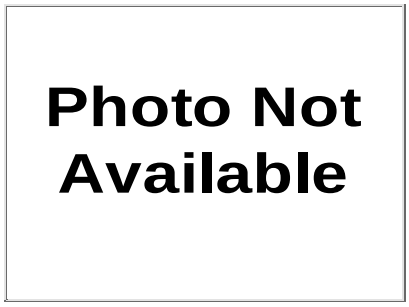
Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CNTY 151 AND SIBLEY CO T-158 & CSAH-60

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 217
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 163
Minor ADT: 54



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.33	0.2 - 0.6	★
Total Crashes	0	>0	
			★

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 20 AND CSAH-21

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 1665
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 1025
Minor ADT: 640

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	3	0	0
Rate (per MVM)	1.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.62	0.2 - 0.6	
Total Crashes	0	>0	

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 11 AND GUERNSEY AVE; CR-140

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 1725
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 1250
Minor ADT: 950

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	2	0	0
Rate (per MVM)	0.6	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.76	0.2 - 0.6	
Total Crashes	0	>0	

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$6,000.00

Notes - County nominated intersection lighting project.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$5,400
Local Match (10% of Total project cost)	$600
Total Project Cost	**$6,000**

CSAH 41 AND CSAH 52

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 393
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 293
Minor ADT: 200

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	2	0	0
Rate (per MVM)	2.8	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.68	0.2 - 0.6	
Total Crashes	0	>0	

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$6,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

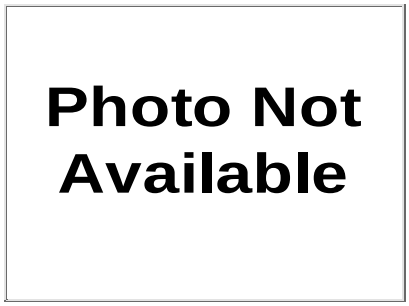
Federal Funds	$5,400
Local Match (10% of Total project cost)	$600
Total Project Cost	**$6,000**

CSAH 20 AND CR-133

Agency: Carver County

Intersection Data

Configuration: T
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 2090
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 2000
Minor ADT: 180



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	1	0	0
Rate (per MVM)	0.3	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.09	0.2 - 0.6	
Total Crashes	0	>0	

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	1	$6,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$6,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

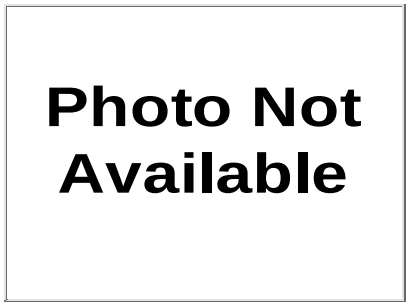
Federal Funds	$5,400
Local Match (10% of Total project cost)	$600
Total Project Cost	**$6,000**

CSAH 31 AND SIBLEY CO T-150 & CSAH 16

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 364
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 310
Minor ADT: 54



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.17	0.2 - 0.6	
Total Crashes	0	>0	

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

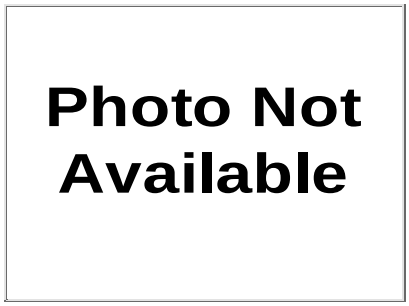
Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 50 AND CR-153 PAUL AVE T-97

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 482
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 405
Minor ADT: 77



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.19	0.2 - 0.6	
Total Crashes	0	>0	

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

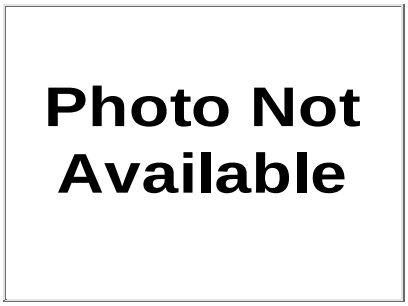
Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 51 AND 142ND ST T-172 CR-152

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 950
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 840
Minor ADT: 110



Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.13	0.2 - 0.6	
Total Crashes	0	>0	

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CNTY 152 AND CR-153

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 390
Traffic Control Device: THRU STOP
Street Lights: NO
Flashers: NO
Major ADT: 203
Minor ADT: 188

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	No	Yes	
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	No	Yes	
Distance from previous STOP	No	Yes	
Volume Ratio	0.93	0.2 - 0.6	
Total Crashes	0	>0	

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 33 AND CSAH-50 (WEST); TACOMA AVE T-67

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 1112
Traffic Control Device: ALL WAY STOP
Street Lights: NO
Flashers: NO
Major ADT: 785
Minor ADT: 327

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data — 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	N/A	Yes	N/A
On/Near Curve	N/A	Yes	N/A
Development	N/A	Yes	N/A
Near RR Crossing	N/A	Yes	N/A
Distance from previous STOP	N/A	Yes	N/A
Volume Ratio	N/A	0.2 - 0.6	N/A
Total Crashes	N/A	>0	N/A
			N/A

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

CSAH 43 AND CR-140

Agency: Carver County

Intersection Data

Configuration: X
Configuration (2): Undivided
True Mile: 0.00
Urban/Rural: Rural
County: Carver
ATP: Metro
Entering ADT: 2295
Traffic Control Device: ALL WAY STOP
Street Lights: NO
Flashers: NO
Major ADT: 1425
Minor ADT: 870

Photo Not Available

Crash Data

2007-2011 MnCMAT Crash Data 5 years

	Total	Angle	K+A
Crashes	0	0	0
Rate (per MVM)	0.0	0.0	0.0

Ranking Criteria

	Value	Critical	Risk Ranking
Skew	N/A	Yes	N/A
On/Near Curve	N/A	Yes	N/A
Development	N/A	Yes	N/A
Near RR Crossing	N/A	Yes	N/A
Distance from previous STOP	N/A	Yes	N/A
Volume Ratio	N/A	0.2 - 0.6	N/A
Total Crashes	N/A	>0	N/A
			N/A

Short List of Strategies Considered

Description		Unit Cost	Units	Cost
Roundabout	$1,000,000	per intersection	0	$0.00
Directional Median	$750,000	per intersection	0	$0.00
Mainline Dynamic Warning Sign	$50,000	per intersection	0	$0.00
Installing Street Lights	$6,000	per street light	2	$12,000.00
Upgrade Stop Sign	$350	per sign	0	$0.00
Upgrade Junction Sign	$350	per sign	0	$0.00
Upgrade Stop Ahead Sign	$450	per sign	0	$0.00
Upgrade Stop Ahead Marking	$450	per marking	0	$0.00
Upgrade Stop Bar	$250	per marking	0	$0.00
Review Signs and CST	$2,450	per intersection	0	$0.00
				$12,000.00

Notes - County nominated intersection lighting project. Intersection lighting is currently installed, but may be inadequate. Carver County will determine lighting needs by intersection and provide documentation for upgrade when applying for funds.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Implementation Cost

Federal Funds	$10,800
Local Match (10% of Total project cost)	$1,200
Total Project Cost	**$12,000**

Appendix G

Safety Workshop Information

County Road Safety Plans - Phase IV
Safety Strategies Workshop Attendees

ATP: Metro **August 1, 2012**
Workshop Group: C (Carver, Scott, MnDOT & Others,)
Location: MN Landscape Arboretum, Chaska, MN **Attendees: 36**

	Name	County	Representing
1	Rich Revering	Scott County	Elko New Market
2	Angela Trutnam	Scott County	Shakopee Police
3	George Silvernis	Scott County	New Market TWP Supervisor
4	Mark NcNeill	Scott County	City of Shakopee
5	Mike Sehiltz	Scott County	City of Savage
6	Dean Opatz	Scott County	SCSO
7	Leslie Vermillion	Scott County	Scott County Comm
8	Craig Jenson	Scott County	Scott County
9	Marty Schoritz	Scott County	Scott County Planning Dept.
10	Lyndon Robjent	Carver County	Carver County
11	Gayle Degler	Carver County	Carver County
12	Sharon Sims	Carver County	Carver County
13	Luayn Murphy	Carver County	City of Mayer
14	Katy Boone	Carver County	Carver County
15	Eric Johnson	Carver County	Carver County
16	Crystal Paumen	Carver County	City of Watertown
17	Kate Miner	Carver County	Carver County
18	Marcee Shauchnessy	Carver County	Carver County
19	Kreg Schmidt	Carver County	Waconia, Norwood Young America, Cologne
20	Bill Weckman	Carver County	Carver County
21	Paul Oehme	Carver County	Chanhassen
22	Bill Monk	Carver County	Chaska
23	Ken Carlson	Carver County	Carver County
24	Dan Boyum	Carver County	Carver County
25	George Putahl	Carver County	Carver County Sheriff
26	Scott A. Sawah	Carver County	Carver County Eng.
27	Tom Workman	Carver County	Carver County
28	Randy Maluchnic	Carver County	Carver County Commissioner
29	Jim Olson	Carver County	Carver County Sheriff
30	Gina Mittero	MnDOT & Others	MnDOT Metro
31	David Sheen	MnDOT & Others	MnDOT Traffic
32	Gordy Pehrson	MnDOT & Others	MN DPS/OTS
33	Diane Langenbach	MnDOT & Others	MnDOT Metro
34	Peter Buchen	MnDOT & Others	MnDOT OTST
35	Tiffani Nielson	MnDOT & Others	State Patrol
36	Judy Jacobs	MnDOT & Others	T2D Regional Coordination

INFRASTRUCTURE BASED SAFETY STRATEGIES

Signalized Intersection Safety Strategies -- Right Angle Crashes

Objectives	Strategies	Metro A (Anoka/Ramsey)			Metro B (Dakota/Washington)			Metro C (Scott/Carver)			All Metro		
		Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total
17.2 C -- Improve driver compliance with traffic control devices	17.2 C2 -- Supplement conventional enforcement of red-light running with confirmation lights	21	19	40	6	4	10	3	0	3	30	23	**53**

Unsignalized Intersection Safety Strategies -- Right Angle Crashes

Objectives	Strategies	Metro A			Metro B			Metro C			All Metro		
		Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total
17.1 A -- Reduce the frequency and severity of intersection conflicts	17.1 A1 -- Restrict or eliminate turning maneuvers by providing channelization or closing median openings	0	0	0	6	4	10	8	4	12	14	8	**22**
17.1 B -- Improve sight distance at unsignalized intersections	17.1 B1 -- Clear sight triangle on stop- or yield-controlled approaches to intersections and/or medians of divided highways	0	0	0	0	2	2	0	0	0	0	2	2
	17.1 B3 -- Eliminate parking that restricts sight distance	3	0	3	0	0	0	0	0	0	3	0	3
17.1 C -- Improve availability of gaps in traffic and assist drivers in judging gap sizes at unsignalized intersections	17.1 C1 -- Provide an automated real-time system to inform drivers of suitability of available gaps for making turning and crossing maneuvers	1	1	2	0	0	0	0	0	0	1	1	2
17.1 D -- Improve driver awareness of intersections as viewed from the intersection approach	17.1 D2 -- Improve visibility of intersections by providing lighting	3	1	4	3	0	3	0	0	0	6	1	7
	17.1 D4 -- Provide a stop bar (or provide a wider stop bar) on minor-road approaches	1	1	2	0	1	1	0	0	0	1	2	3
	17.1 D5 -- Install larger regulatory and warning signs at intersections				0	0	0						
	17.1 D6 -- Provide pavement markings with supplementary messages, such as STOP AHEAD												
	17.1 D7 -- Install flashing beacons at stop-controlled intersections				0	0	0						
	**17.1 D8 -- Add Dynamic Warning Signs	0	0	0	0	0	0	0	0	0	0	0	0
17.1 E -- Choose appropriate intersection traffic control to minimize crash frequency and severity	17.1 E1 -- Provide all-way stop control at appropriate intersections	0	0	0	0	0	0	0	0	0	0	0	0
	17.1 E2 -- Provide roundabouts at appropriate locations	9	1	10	0	0	0	9	7	16	18	8	**26**

Head On Safety Strategies

Objectives	Strategies	Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total
18.1 A -- Keep vehicles from enchroaching into opposite lane	18.1 A1—Install centerline rumble strips for two-lane roads	3	1	4	1	0	1	5	0	5	9	1	10
	18.1 A2—Install profiled thermoplastic strips for centerlines	0	0	0	0	0	0						
	18.1 A3—Provide wider cross sections on two-lane roads	0	0	0	0	0	0	0	0	0	0	0	0
	18.1 A4—Provide center two-way left-turn lanes for four- and two-lane roads	0	0	0	2	0	2	0	0	0	2	0	2
	18.1 A5—Reallocate total two-lane roadway width (lane and shoulder) to include a narrow “buffer median”	0	0	0				0	0	0			

Pedestrian Safety Strategies

Objectives	Strategies	Metro A			Metro B			Metro C			All Metro		
		Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total
9.1 A -- Reduce Pedestrian Exposure to Vehicular Traffic	9.1 A3 -- Construct Pedestrian Refuge Islands and Raised Medians	2	5	7	2	2	4	0	0	0	4	7	11
	9.1 A4 -- Provide Full/Partial Diverters & Street Closure												
	**9.1 A6 -- Install Countdown Timers	8	4	12	0	0	0	3	1	4	11	5	16
	**9.1 A7 -- Install Advance Walk Interval												
9.1 B -- Improve Sight Distance and/or Visibility Between Motor Vehicles and Pedestrians	9.1 B4 -- Signals to Alert Motorists That Pedestrians are crossing -- HAWK Signal	3	1	4	2	0	2	1	0	1	6	1	7

Bicycle Strategies

Objectives	Strategies	Metro A			Metro B			Metro C			All Metro		
		Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total
A -- Reduce bicycle crashes at intersections	A1 -- Improve visibility at intersections	5	8	13	0	0	0	0	0	0	5	8	13
	A2 -- Improve signal timing and detection												
	A3 -- Improve signing												
	A4 -- Improve pavement markings at intersections												
	A5 -- Improve intersections geometry												

Rear End Crash Strategies

Objectives	Strategies	Metro A			Metro B			Metro C			All Metro		
		Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total
17.1 A -- Improve management of access near unsignalized intersections	17.1 A1 -- Implement driveway closure/relocations	20	0	20	0	0	0	0	0	0	20	0	20
	17.1 A2 -- Implement driveway turn restrictions												
17.1 B -- Reduce the frequency and severity of intersection conflicts through geometric design improvements	17.1 B1 -- Provide left-turn lanes	30	3	33	3	0	3	0	0	0	33	3	**36**
	17.1 B2 -- Provide acceleration lanes				0	0	0	0	0	0			
	17.1 B3 -- Provide right-turn lanes				0	0	0	0	0	0			
	**17.1 B4 -- 4-lane to TWLT conversion	0	0	0	1	1	2	0	0	0	1	1	2
	**17.1 B5 -- Reduce speed along segment -- Dynamic Speed Feedback Sign	1	0	1	0	0	0	3	2	5	4	2	6

Road Departure Strategies

Objectives	Strategies	Metro A			Metro B			Metro C			All Metro		
		Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total	Infr.	Beh.	Total
15.1 A -- Keep vehicles from encroaching on the roadside	15.1 A1 -- Provide enhanced shoulder or delineation and marking for sharp curves	4	0	4	2	0	2	1	0	1	7	0	7
	15.1 A2 -- Provide enhanced pavement markings (Embedded Wet Reflective Markings)	4	0	4	2	0	2	3	0	3	9	0	9
	15.1 A4 -- Apply shoulder treatments -- Eliminate shoulder drop-offs, Shoulder wedge, Widen and/or pave shoulders	25	4	29	2	3	5	8	5	13	35	12	**47**

DRIVER BEHAVIOR BASED STRATEGIES

Impaired Driving Strategies

Objectives	Strategies	Effectiveness	*Programs and Tactics	Metro A			Metro B			Metro B			All Metro		
				Infra.	Beh	Total	Infra.	Beh	Total	Infra.	Beh	Total	Infra.	Beh	Total
5.1 B-Enforce DWI Laws	*5.1 B1-Conduct Regular Well-Publicized DWI Saturations	Proven	A Saturation is a multi-agency, multi-squad car enforcement effort. These agencies and cars enforce the same community or roadway with the number of squad cars proportionate to the community size.	11	8	19	0	3	3	0	3	3	11	14	**25**
	*5.1 B3-Conduct education and awareness campaign of the targeted enforcement of Zero Tolerance Laws for Drivers Under Age 21	Proven	Publicizing is best done through community events for the local media and a public education campaign in the community about the enforcement. High visibility enforcement is when multiple jurisdictions and/or multiple squads are out at the same time patrolling in brightly colored vests and signage about the enforcement.	0	2	2	0	0	0	1	4	5	1	6	7

Young Driver & Bicycles Strategies

Objectives	Strategies	Effectiveness	*Programs and Tactics	Metro A			Metro B			Metro B			All Metro		
				Infra.	Beh	Total	Infra.	Beh	Total	Infra.	Beh	Total	Infra.	Beh	Total
1.1B Publicize, enforce, and adjudicate laws pertaining to young drivers	1B -- Publicize and conduct a high visibility enforcement GDL restrictions, cell and texting laws, underage drinking and driving and seatbelt laws	Proven	Publicizing is best done through community events for the local media and a public education campaign in the community about the applicable laws, parental involvement and the enforcement. High visibility enforcement is when multiple jurisdictions and/or multiple squads are out at the same time patrolling in areas frequented by teen drivers in brightly colored vests and signage about the enforcement.	11	7	18	0	1	1	5	4	9	16	12	**28**
1.1C Assist parents in managing their teens' driving	1C.1-- Engage parents through outreach programs designed to educate parents about teen driving risks, driving tips for their teens, facilitate parental supervision and management of young drivers, encourage selection of safer vehicles for young drivers, with safety as a priority over convenience.	Tried		3	2	5	6	8	14	1	4	5	10	14	**24**
	Legislartive changes to require: - curricuum standards, continuing education for trainers, consolidation of government oversight			0	0	0	9	5	14	0	0	0	9	5	14

Aggressive Driving Strategies

Objectives	Strategies	Effectiveness	*Programs and Tactics	Metro A			Metro B			Metro B			All Metro		
				Infra.	Beh	Total	Infra.	Beh	Total	Infra.	Beh	Total	Infra.	Beh	Total
4.1 A- Deter aggressive driving in specific populations, including those with a history of such behavior, and at specific locations	4.1 A1- Publicize and conduct high visibility targeted enforcement of speeding and aggressive driving	Tried	Publicizing is best done through community events for the local media and a public education campaign in the community about the enforcement. High visibility enforcement is when multiple jurisdictions and/or multiple squads are out at the same time patrolling in brightly colored vests and signage about the enforcement.	8	4	12	7	6	13	1	1	2	16	11	**27**

Motorcycle Safety Strategies

Objectives	Strategies	Effectiveness	*Programs and Tactics	Metro A			Metro B			Metro B			All Metro		
				Infra.	Beh	Total	Infra.	Beh	Total	Infra.	Beh	Total	Infra.	Beh	Total
11.1 E Reduce the severity of motorcycle crashes	11.1 E1 Increase the use of FMVSS 218 compliant helmets.	Proven	Pass statewide legislation requiring helmets for all riders.	2	0	2	1	1	2	0	0	0	3	1	4

Seatbelt Usage Strategies

Objectives	Strategies	Effectiveness	*Programs and Tactics	Metro A			Metro B			Metro B			All Metro		
				Infra.	Beh	Total	Infra.	Beh	Total	Infra.	Beh	Total	Infra.	Beh	Total
8.1 A- Maximize use of occupant restraints by all vehicle occupants	*8.1 A1- Conduct highly publicized enforcement campaigns to maximize restraint use. Specifically, night time belt enforcement saturation.	Proven	Publicizing is best done through community events for the local media and a public education campaign in the community about the enforcement. High visibility enforcement is when multiple jurisdictions and/or multiple squads are out at the same time patrolling in brightly colored vests and signage about the enforcement. Methods for night time enforcement include having multi-agency and multiple squad cars in well lit areas where slow moving vehicles are passing and conducting for a limited time slot.	3	3	6	5	3	8	8	5	13	16	11	**27**

Distracted Driving Strategies

Objectives	Strategies	Effectiveness	*Programs and Tactics	Metro A			Metro B			Metro B			All Metro		
				Infra.	Beh	Total	Infra.	Beh	Total	Infra.	Beh	Total	Infra.	Beh	Total
Objective 6.1 C—Increase driver awareness of the risks of drowsy and distracted driving and promote driver focus	*6.1 C2—Conduct high visibility enforcement for existing statutes to deter distracted and drowsy driving	Experimental	Publicizing is best done through community events for the local media and a public education campaign in the community about the enforcement. High visibility enforcement is when multiple jurisdictions and/or multiple squads are out at the same time patrolling in brightly colored vests and signage about the enforcement.	6	9	15	5	2	7	0	0	0	11	11	22

Appendix H

CMF Clearinghouse Sources

Sources of Crash Reduction Information

Conversions (3-lane/5-lane)

- Persaud, B., Lana, B., Lyon, C., and Bhim, R. "Comparison of empirical Bayes and full Bayes approaches for before–after road safety evaluations ." Accident Analysis & Prevention, Vol. 42, Issue 1, pp. 38-43 (2010).
- Gates, T. J., Noyce, D. A., Talada, V., and Hill, L., "The Safety and Operational Effects of "Road Diet" Conversion in Minnesota." 2007 TRB 86th Annual Meeting: Compendium of Papers CD-ROM, Vol. TRB#07-1918, Washington, D.C., (2007).

Access Management

- FHWA-SA-12-006. F*HWA Proven Safety Countermeasures Brief - Corridor Access Management*
- Minnesota Local Road Research Board, Report 1998-27. S*tatistical Relationship Between Vehicular Crashes and Highway Access*. August 1998.
- Mauga, T. and Kaseko, M., "Modeling and Evaluating the Safety Impacts of Access Management (AM) Features in the Las Vegas Valley." Presented at the 89th Annual Meeting of the Transportation Research Board, Washington, D.C., (2010).
- Maze, Tom, and David Plazak. *Access Management Awareness Program: Phase II Summary Report.* Center for Transportation Research and Education, Iowa State University, December 1997.

SIGNAL - Confirmation Lights

- LRRB Update - OPERA Spotlight: New technology helps police enforce red-light running
- FHWA-SA-09-005 - Red-Signal Enforcement Lights

PED/BIKE - Advanced Walk

- Transportation Research Board. 2009. *Safety Effectiveness of Leading Pedestrian Intervals Using the Empirical Bayes Method*. (http://144.171.11.39/view/2009/C/881112
- Chen L, Chen C, Ewing R, McKnight CE, Srinivasan R, Roe M. *Safety countermeasures and crash reduction in New York city—experience and lessons learned*. Accid Anal Prev. 2012 May 31.

PED/BIKE - Countdown Timers

- Transportation Research Board. 2007. *Evaluation of Pedestrian and Driver Behavior at Countdown Pedestrian Signals in Peoria, Illinois*. Available at: <http://144.171.11.39/view.aspx?id=800890>.
- Markowitz, F., Sciortino, S., Fleck, J., Lucero, Y., Bond M. 2006. *Pedestrian Countdown Signals: Experience with an Extensive Pilot Installation*. ITE Journal.

PED/BIKE - Curb Extensions

- Johnson, Randal. *Pedestrian Safety Impacts of Curb Extensions: A Case Study*. FHWA-OR-DF-06-01, July 2005.
- Federal Highway Administration. 2005. *Pedestrian Safety Impacts of Curb Extensions: A Case Study*. <http://contextsensitivesolutions.org/content/reading/impacts_curb_ext/>. September, 2012.
- Zegeer, C.V., and m.J. Cynecki. "*Evaluation of Countermeasures Related to RTOR Accidents that involve Pedestrians.*" In *Transportation Research Record 1059*. Washington, DC: TRB, NRC, 1986.

PED/BIKE - Median Refuge Island

- Zegeer, C. V., Stewart, R., Huang, H., and Lagerwey, P., "Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations: Executive Summary and Recommended Guidelines." FHWA-RD-01-075, McLean, Va., Federal Highway Administration, (2002).

6" Latex Edge Line

- Potts, I.B., J.M. Hutton, D.W. Harwood, C.D. Bokenkroger, and M.K. Curtit. Benefit/Cost Evaluation of MoDOT's Total Striping and Delineation Program. TRB 89th Annual Meeting Compendium of Papers CD-ROM. Washington, D.C., 2010.

Rumble Strip/stripE

- *Synthesis on the Effectiveness of Rumble Strips*, Minnesota Local Road Research Board, Report 200207, 2007.
- Torbic, D. J., Hutton, J. M., Bokenkroger, C. D., Bauer, K. M., Harwood, D. W., Gilmore, D. K., Dunn, D. K., Ronchetto, J. J., Donnell, E. T., Sommer III, H. J., Garvey, P., Persaud, B., and Lyon, C. "Guidance for the Design and Application of Shoulder and Centerline Rumble Strips." Transportation Research Board, Washington D.C., (2009).
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Appendix I

Sample County Responses

LINCOLN COUNTY HIGHWAY DEPARTMENT

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Road Safety Audit - Lincoln County, MN

PLAN OF ACTION

March 2008

In 2007 SRF Consulting Group, Inc. under took a Road Safety Audit study for Lincoln County, MN. The Final Report was produced in January 2008.

On June 26, 2007 a Kick off Meeting was held at the Lincoln County Highway Department in Ivanhoe, Minnesota. The agenda and attendance list are attached.

A Stakeholder Meeting was held on July 30, 2007 at the Lincoln County Highway Department in Ivanhoe, Minnesota. A copy of the attendance list and list of study sites are attached. Discussion about history at each location gave background for the team that did the field reviews.

Following the field review a Safety Audit Follow-up Meeting was also held at the Lincoln County Highway Department on August 2, 2007.

On November 8, 2007 the Final Meeting for the Lincoln County Road Safety Audit was held in the Assembly Room, Lincoln County Courthouse, 319 North Rebecca Street in Ivanhoe, Minnesota. The Agenda and attendance list information is attached.

Plan of Action:

Lincoln County will work to insure driver safety as a result of the Road Safety Audit by the following actions/goals:

1. Insure proper advisory speeds for curves by working with the Minnesota Department of Transportation, testing the curves and installing appropriate advisory speed signs.
2. Curve warnings will be reviewed and chevrons will be installed when funding allows.
3. Appropriate size STOP and STOP AHEAD signs will be reviewed when replacements are needed. STOP AHEAD (symbol type) signs will be used when old signs are replaced. Double STOP signs may be used to get driver attention at sites where failure to stop is a problem.
4. Size of curve Advisory Speed signs will be studied and applied if appropriate.
5. Efforts will be made to repaint striping on all routes to properly delineate roadways.
6. A Distance plaque below “School Bus Stop Ahead” signs will be used to show how far ahead the bus stop is located.
7. Horizontal and vertical curve alignments will be reviewed and degree of curvature reduced when feasible with future reconstruction.
8. Guardrails on County Roads will be eliminated or replaced with guardrail that meets current MnDOT standards when road reconstruction occurs.
9. Warning signs will be reviewed for accuracy when replacements are necessary; including size of signs.
10. Speed zone studies by the Minnesota Department of Transportation will be requested for sites where a safet speed may be considered warranted.
11. Lincoln County will continue to work with the Minnesota Department of Transportation and railroad owner(s) to install proper warnings for at-grade railroad crossings.
12. Rumble strips will be maintained for reasonable warning; getting driver attention for STOP and YIELD conditions.
13. Use of STOP bars will be considered at intersections where there is apparent failure to stop.

Lincoln County has applied for safety funds to address safety at county road intersections throughout the county; using reflective can-delineators which are attached to Stop or Yield sign supports. It is a low cost method to help drivers locate side road locations. Also, District 8 Counties applied for safety funds to help address run off road incidents: 6” edgelines on high risk rural routes and chevrons for horizontal curves.

23 U.S.C. § 409 : US Code - Section 409: Discovery and admission as evidence of certain reports and surveys

Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data

Pierce County, Washington v. Guillen

Supreme Court of the United States, 2003
123 U.S. 720

Brief Fact Summary

The Court addressed whether 23 U.S.C. section 409, which protects information "compiled or collected" in connection with certain federal highway safety programs from being discovered or admitted in certain federal or state trials, is a valid exercise of Congress's authority under the Constitution.

Rule of Law and Holding

This Court lacks jurisdiction to hear the tort portion of the case but has jurisdiction to hear the Public Disclosure Act portion. Certain state-court judgments can be treated as final for jurisdictional purposes even though further proceedings are to take place in the state courts.

Edited Opinion

Note: The following opinion was edited by CVN Law School staff. © 2008 Courtroom Connect, Inc.

JUSTICE THOMAS delivered the opinion of the Court.

We address in this case whether 23 U. S. C. § 409, which protects information "compiled or collected" in connection with certain federal highway safety programs from being discovered or admitted in certain federal or state trials, is a valid exercise of Congress' authority under the Constitution.

Beginning with the Highway Safety Act of 1966, Congress has endeavored to improve the safety of our Nation's highways by encouraging closer federal and state cooperation with respect to road improvement projects. To that end, Congress has adopted several programs to assist the States in identifying highways in need of improvements and in funding those improvements. Of relevance to this case is the Hazard Elimination Program (Program) which provides state and local governments with funding to improve the most dangerous sections of their roads. To be eligible for funds under the Program, a state or local government must undertake a thorough evaluation of its public roads. Specifically, § 152(a)(1) requires them to "conduct and systematically maintain an engineering survey of all public roads to identify hazardous locations, sections, and elements, including roadside obstacles and unmarked or poorly marked roads, which may constitute a danger to motorists, bicyclists, and pedestrians, assign priorities for the correction of such

locations, sections, and elements, and establish and implement a schedule of projects for their improvement."

Not long after the adoption of the Program, the Secretary of Transportation reported to Congress that the States objected to the absence of any confidentiality with respect to their compliance measures. According to the Secretary's report, the States feared that diligent efforts to identify roads eligible for aid under the Program would increase the risk of liability for accidents that took place at hazardous locations before improvements could be made. In 1983, concerned that the States' reluctance to be forthcoming and thorough in their data collection efforts undermined the Program's effectiveness, the United States Department of Transportation (DOT) recommended the adoption of legislation prohibiting the disclosure of information compiled in connection with the Program.

To address the concerns expressed by the States and the DOT, in 1987, Congress adopted 23 U. S. C. § 409, which provided:"Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled for the purpose of identifying[,] evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 152 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be admitted into evidence in Federal or State court or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data."

The proper scope of § 409 became the subject of some dispute among the lower courts. Some state courts, for example, concluded that § 409 addressed only the admissibility of relevant documents at trial and did not apply to pretrial discovery. According to these courts, although information compiled for § 152 purposes would be inadmissible at trial, it nevertheless remained subject to discovery. Other state courts reasoned that § 409 protected only materials actually generated by a governmental agency for § 152 purposes, and documents collected by that agency to prepare its § 152 funding application remained both admissible and discoverable.

As amended, § 409 now reads:

"Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 152 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data."

Ignacio Guillen's wife, Clementina Guillen-Alejandre, died on July 5, 1996, in an automobile accident at the intersection of 168th Street East and B Street East (168/B intersection), in Pierce County, Washington. Several months before the accident, petitioner had requested § 152 funding for this intersection, but the request had been denied. Petitioner renewed its application for funding on April 3, 1996, and the second request was approved on July 26, 1996, only three weeks after the accident occurred.

Beginning on August 16, 1996, counsel for respondents sought to obtain from petitioner information about accidents that had occurred at the 168/B intersection.1 Petitioner declined to provide any responsive information, asserting that any relevant documents were protected by § 409. After informal efforts failed to resolve this discovery dispute, respondents turned to the Washington courts.

While the appeal in the PDA action was pending, respondents filed a separate action, asserting that petitioner had been negligent in failing to install proper traffic controls at the 168/B intersection. In connection with the tort action, respondents served petitioner with interrogatories seeking information regarding accidents that had occurred at the 168/B intersection. Petitioner refused to comply with the discovery request, once again relying on § 409. Respondents successfully sought an order to compel, and petitioner moved for discretionary appellate review of the trial judge's interlocutory order.

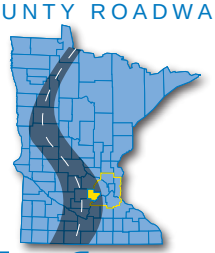
Having determined that § 409 protects only information compiled or collected for § 152 purposes, and does not protect information compiled or collected for purposes unrelated to § 152, as held by the agencies that compiled or collected that information, we now consider whether § 409 is a proper exercise of Congress' authority under the Constitution. We conclude that it is.

It is well established that the Commerce Clause gives Congress authority to "regulate the use of the channels of interstate commerce." In addition, under the Commerce Clause, Congress "is empowered to regulate and protect the instrumentalities of interstate commerce, or persons or things in interstate commerce, even though the threat may come only from intrastate activities." As already discussed, Congress adopted § 152 to assist state and local governments in reducing hazardous conditions in the Nation's channels of commerce. That effort was impeded, however, by the States' reluctance to comply fully with the requirements of § 152, as such compliance would make state and local governments easier targets for negligence actions by providing would-be plaintiffs a centralized location from which they could obtain much of the evidence necessary for such actions. In view of these circumstances, Congress could reasonably believe that adopting a measure eliminating an unforeseen side effect of the information-gathering requirement of § 152 would result in more diligent efforts to collect the relevant information, more candid discussions of hazardous locations, better informed decisionmaking, and, ultimately, greater safety on our Nation's roads.

Consequently, both the original § 409 and the 1995 amendment can be viewed as legislation aimed at improving safety in the channels of commerce and increasing protection for the instrumentalities of interstate commerce. As such, they fall within Congress' Commerce Clause power. Accordingly, the judgment of the Washington Supreme Court is reversed, and the case is remanded for further proceedings not inconsistent with this opinion.

It is so ordered.

COUNTY ROADWAY



Safety PLAN

Moving Toward ZERO Deaths

MINNESOTA DEPARTMENT OF TRANSPORTATION