



# Road Safety Audits & Identifying Roadway Safety Improvements

# Montana Comprehensive Highway Safety Plan (CHSP)

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## Montana Comprehensive Highway Safety Plan

Amended 2010



### State of Montana Department of Transportation



*in cooperation with:*

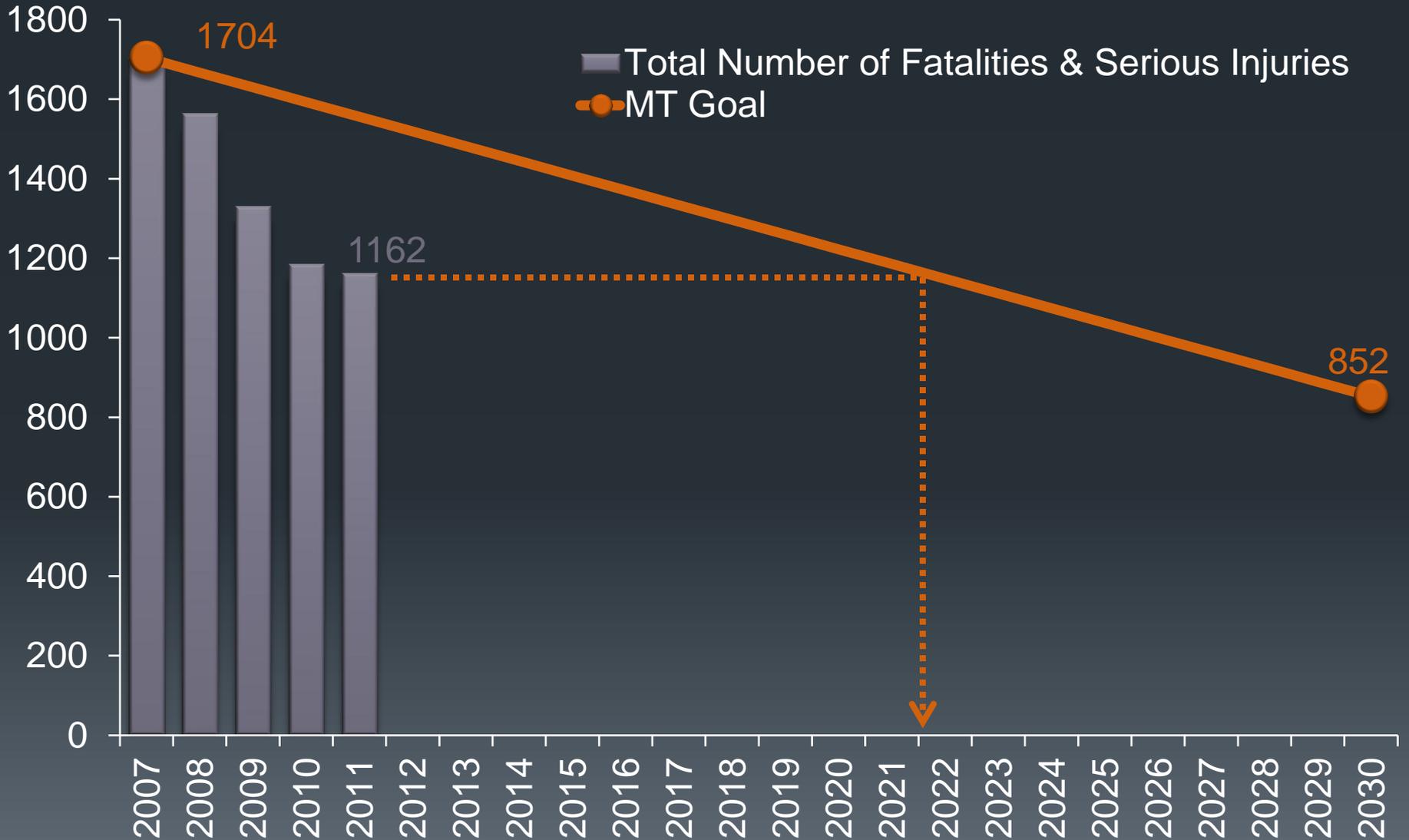
Federal Highway Administration  
National Highway Traffic Safety Administration  
Blackfeet Tribe  
Confederated Salish and Kootenai Tribes  
Crow Tribe  
Chippewa Cree Tribe  
Little Shell Tribe  
Northern Cheyenne Tribe  
Fort Peck Tribes  
Montana Highway Patrol  
Montana Motor Vehicle Division  
Montana Office of Public Instruction  
Montana Department of Justice  
Montana Department of Revenue  
Office of the Court Administrator  
Federal Motor Carrier Administration  
Montana Metropolitan Planning Organizations  
Montana Department of Public Health and Human Services

*prepared by:*

Cambridge Systematics, Inc.

- Initiated in 2006 and amended in 2010
- Collaborative and data driven
- Vision: “All Highway Users Arrive Safely at their Destination”

# Comprehensive Highway Safety Plan - Goal <sup>3</sup>

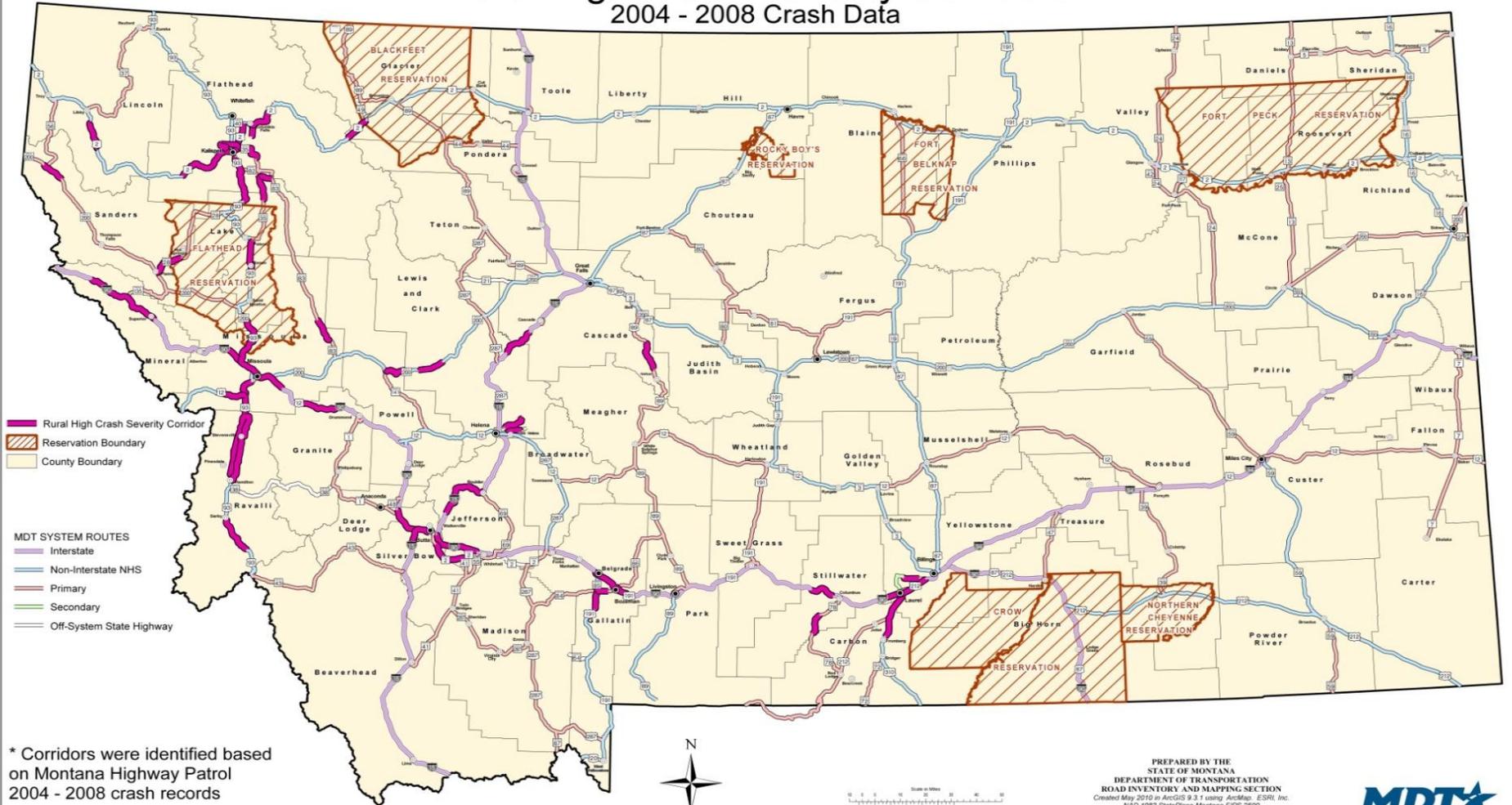


# CHSP High Crash Corridor/High Crash Location EA Strategies

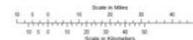
- Upgrade safety management software.
- High crash corridor sign evaluation.
- Review of best practices.
- **Implement and Evaluate Corridor Safety Audit Process**
  - Conduct two Road Safety Audits on high crash corridors annually.

# CHSP Emphasis Area - High Crash Severity Corridors

## Rural High Crash Severity Corridors 2004 - 2008 Crash Data



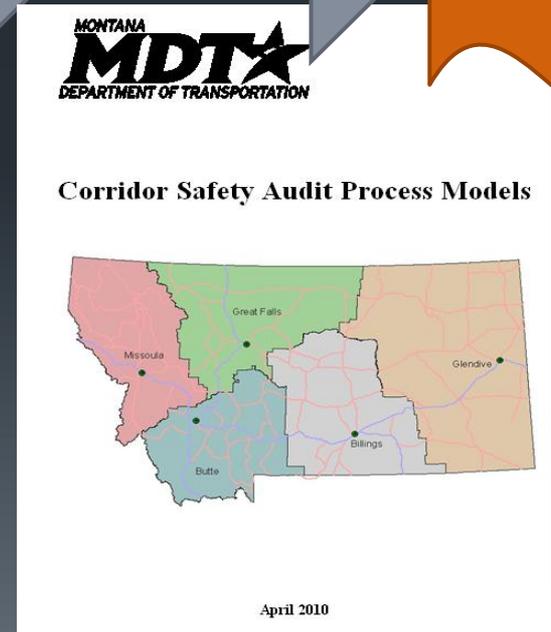
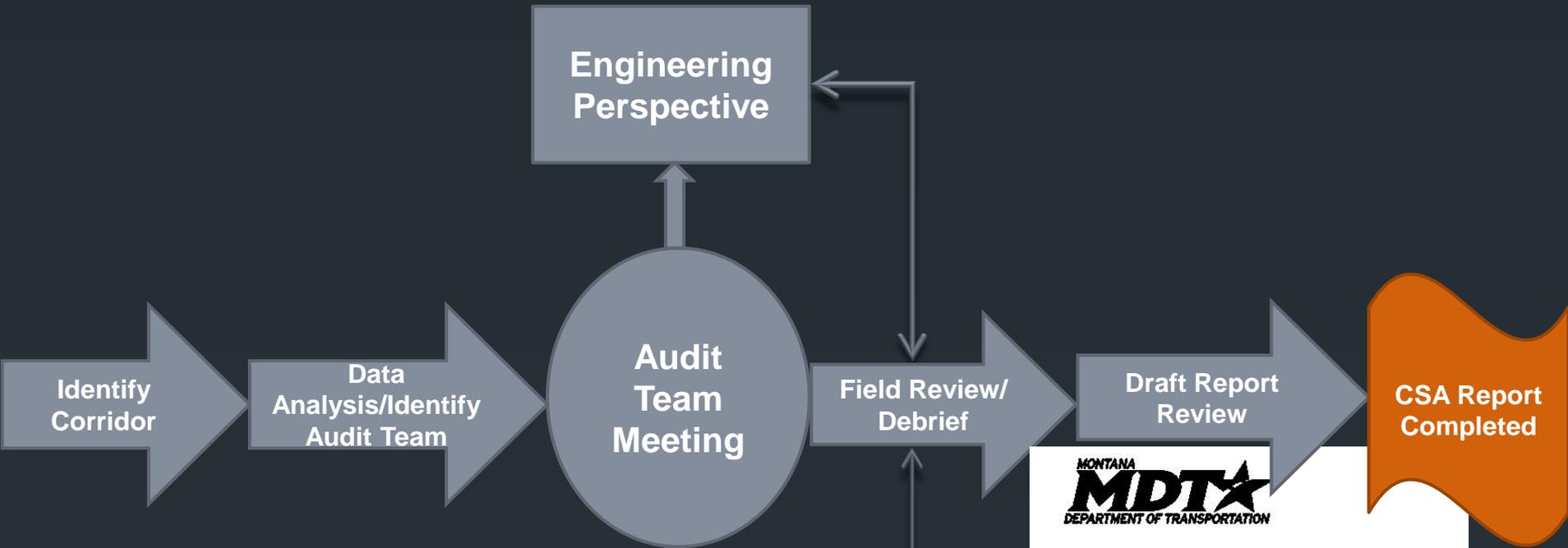
\* Corridors were identified based on Montana Highway Patrol 2004 - 2008 crash records



PREPARED BY THE  
STATE OF MONTANA  
DEPARTMENT OF TRANSPORTATION  
ROAD INVENTORY AND MAPPING SECTION  
Created May 2010 in ArcGIS 9.3.1 using ArcMap. ESRI, Inc.  
NAD 1983 StatePlane Montana FIPS 2900  
Lambert Conformal Conic

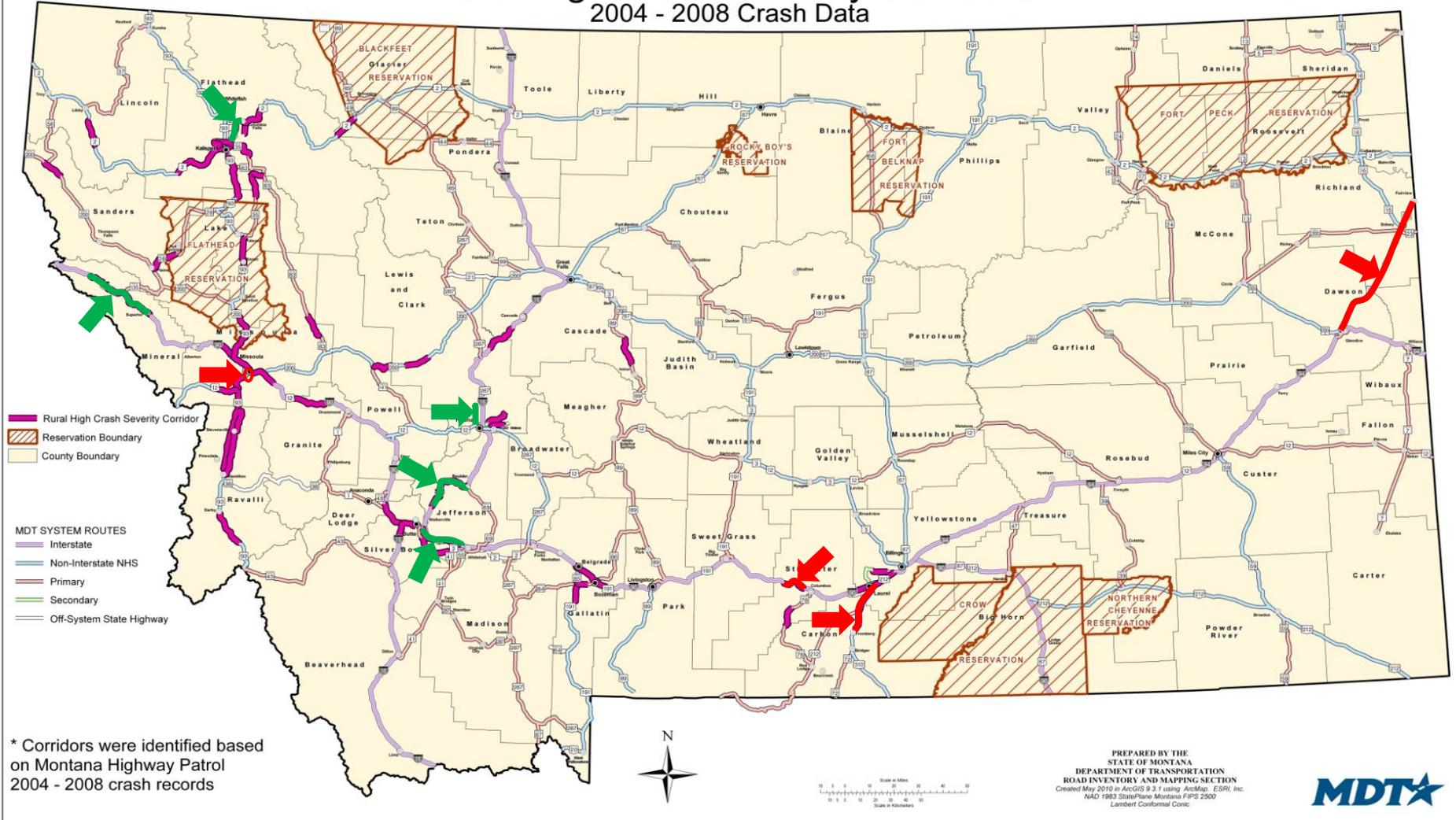


# Corridor Safety Audits



# Historical and Ongoing CSA's: 7

## Rural High Crash Severity Corridors 2004 - 2008 Crash Data



# Data Typically Evaluated:

## ■ Driver Details:

- Sex
- Age
- Contributing Circumstances

## ■ Roadway/Environmental Details:

- Light Condition
- Road Condition
- Crash Rates

## ■ Crash Details:

- Severity
- Crash Characteristics
- Collision Type
- Belt Usage
- Location (+/-)
- Time, day, month

## ■ Vehicle Details

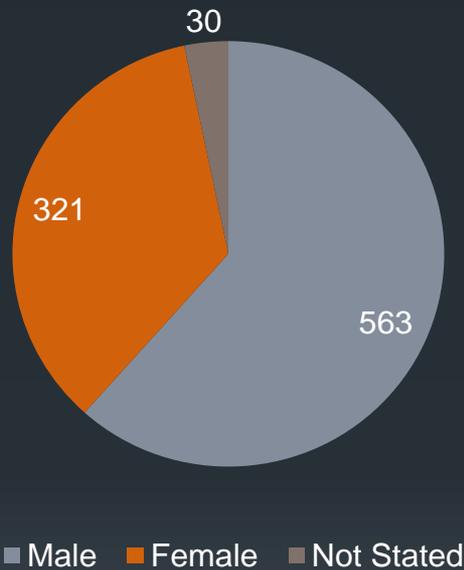
- Type
- Number

# Example – MT16/MT 200



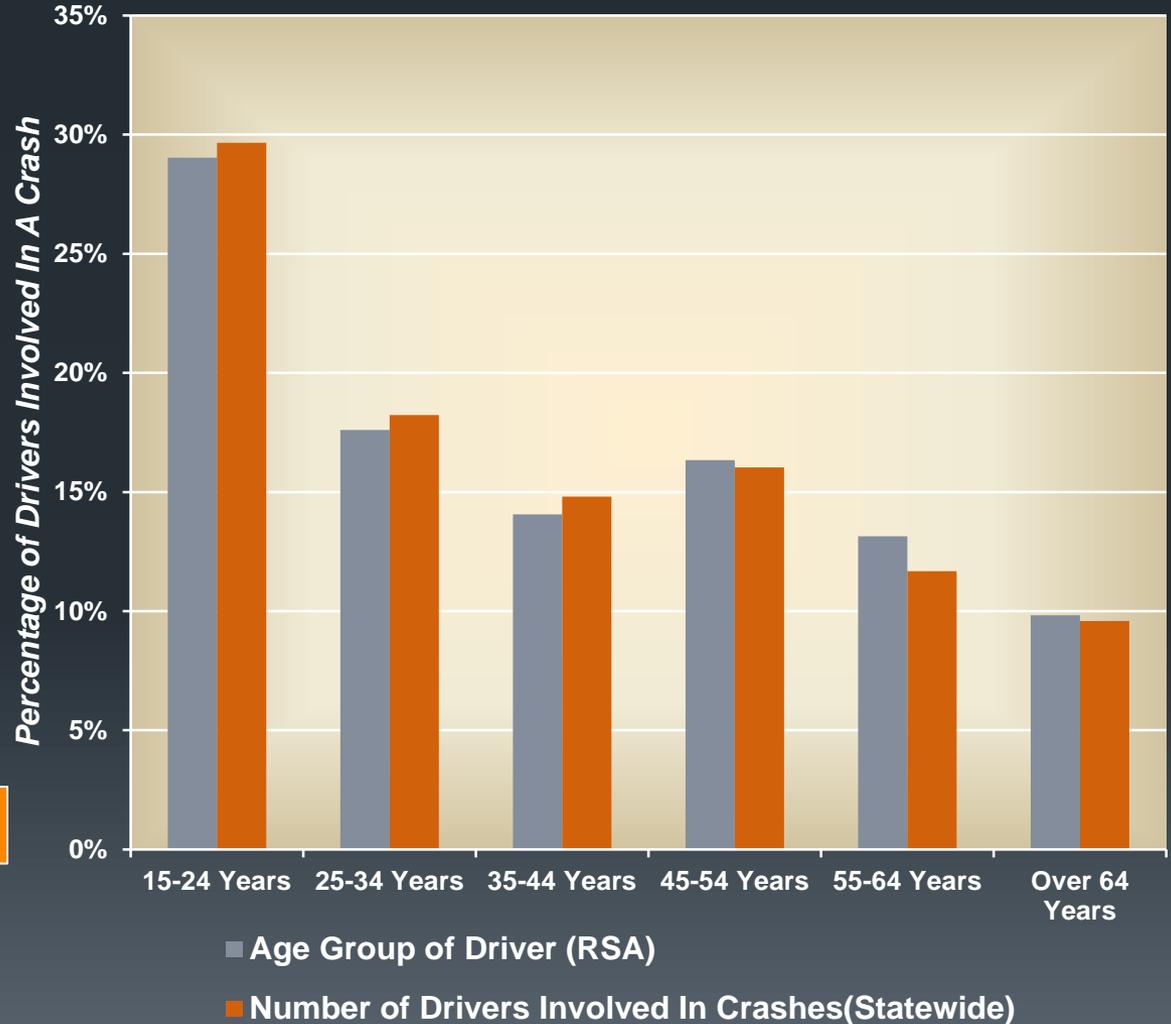
# Example – MT16/MT 200

### Drivers By Sex

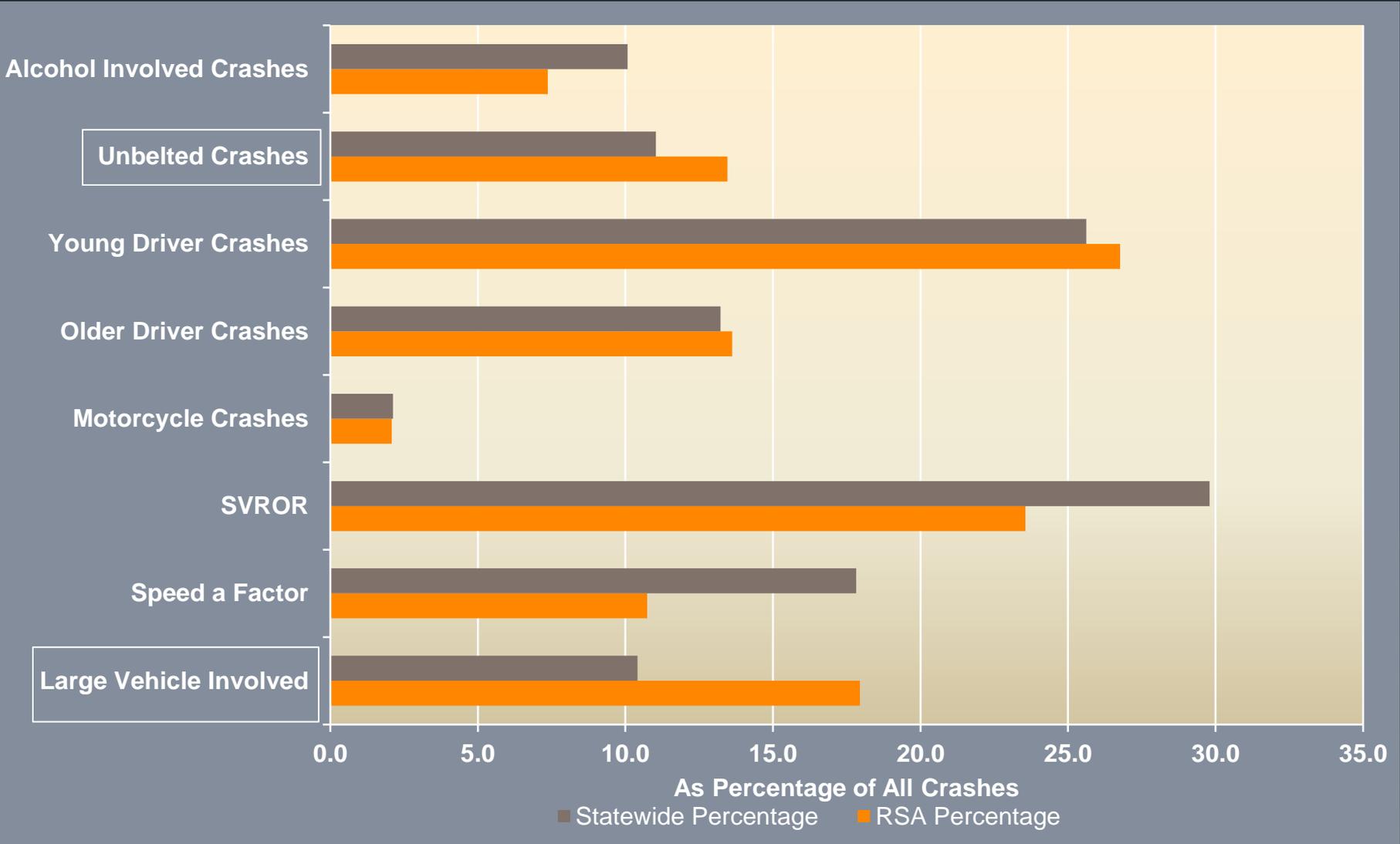


- Similar to statewide data.

### Drivers by Age vs. Statewide Averages



# Example – MT16/MT 200



# Example MT 16/MT 200 – Primary First Harmful/Most Harmful Event



# Field Review & Debrief

- Following office review conduct a field review to identify issues or concerns.
  - Reviews are performed in day and nighttime conditions.



- Debrief to gather observations from the field and final thoughts.

# MT 16/MT 200 Possible Solutions – Behavioral Based:

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- Provide tools to local officials to address driver behavior issues:
  - MDT Plan 2 Live Website.
  - Support Buckle Up Coalition Coordinator.
  - Respect the Cage during upcoming community event or North Dakota event.
- Increase enforcement within the corridor.

# MT 16/MT 200 Possible Solutions - Engineering

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- Continuous centerline rumble strips, similar to ND.
- Widen roadway and provide passing lanes within the limits of the current reconstruction project.



# MT 16/MT 200 Possible Solutions - Engineering

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- Evaluate addition of left turn phase on Sidney signals.
- Dynamic speed message signs at the north/south end of Fairview.



# Questions & Discussion – Road Safety Audits

## COMMON TRANSPORTATION SAFETY ISSUES

### LOCAL SAFETY INITIATIVES

- Designated pedestrian/bicycle routes
- Speed zone requests
- Local programs (MADD, etc.)

### PLANNING INITIATIVES

- Local planning/development
- Area roadway projects
- Standards
- Planning approvals & process
- Funding

### ROAD DESIGN & OPERATION

- Traffic weaving and passing maneuvers
- Adjacent land use character
- Lane configuration
- Access density/access control
- Shoulder/clear zone
- Guardrail
- Horizontal alignment
- Sight distance
- Lighting/night time visibility
- Pavement condition
- Bridges
- Vertical alignment
- Traffic control

### EMERGENCY RESPONSE

- Response time
- Proximity of EMS & hospitals
- Roadway cross-section available for emergency vehicles
- Dispatching & communication

### SAFETY ISSUES

- High speed
- Traffic mix (i.e. trucks, tourists, commuters)
- Speed differential
- Driver training
- Blowing snow
- Wildlife
- Visibility

### ENFORCEMENT

- Speeding
- Drunk driving
- Seat belt
- Illegal operations
- Frequency/visibility of enforcement

### MAINTENANCE ISSUES

- Frequency of maintenance
- Drainage and icing
- Snow storage

# Highway Safety Improvement Program (HSIP):

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- Core funding program under current highway bill (SAFETEA-LU).
- Montana receives \$10.5 M (+/-) annually to address engineering related safety needs across the state.
- HSIP funding is eligible on all public roads.

# MDT Project Identification for Safety Projects:

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- Determine criteria for year.
- Query crash database using established criteria.
- Complete office review of sites. Eliminate locations based on various items.



- Field review of selected locations.

# MDT Project Identification for Safety Projects:

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- Complete cost estimates and benefit/cost calculations for identified engineering improvement.
- Rank proposed locations based on benefit/cost.
- Move forward with projects with highest benefit/cost within funding constraints.

# 2011 HSIP:

- 70 (+/-) proposed sites, B/C's ranging from 700 to 1.3.
- Average Construction Cost of \$149K per site.
- 48 sites had an anticipated construction cost of less than \$50K.

# MDT Project Identification for Safety Projects:

- Other government agencies can submit up to 5 locations annually for consideration.
- Use the HSIP Application on MDT's website:

[http://www.mdt.mt.gov/publications/docs/forms/hsip\\_application.pdf](http://www.mdt.mt.gov/publications/docs/forms/hsip_application.pdf)

**Comprehensive Highway Safety Plan  
Highway Safety Improvement Program**

**What is the Highway Safety Improvement Program?**  
The Highway Safety Improvement Program (HSIP) is an element of the Montana Department of Transportation's (MDT) Comprehensive Highway Safety Plan. The HSIP funds infrastructure-related highway safety improvements. Some examples of the types of projects addressed with these funds are signing, striping, delineation, guardrail installation, slope flattening, intersection improvements, and roadway realignment.

**Who manages the program?**  
MDT's Safety Engineering Section reviews investigated accidents of record and sites submitted by local agencies in order to develop a priority list of locations that could participate in this program.

**Where does the money come from?**  
Ninety percent of the money for safety improvements at these locations comes from the federal government. Ten percent comes from the state or local governments.

**What type of project is eligible?**  
Any highway safety improvement project on any public road or publicly owned bicycle or pedestrian pathway or trail is eligible for HSIP funding. The proposed improvement must not be a maintenance function.

**What is the goal of the Highway Safety Improvement Program?**  
The purpose of the Highway Safety Improvement Program is to achieve a significant reduction in traffic fatalities and serious injuries on public roads. Montana's overall goal for the Comprehensive Highway Safety Plan is that all highway users arrive safely at their destination.

**How are high-hazard locations identified?**  
High-hazard locations are identified by accident trends based on the number of crashes, accident rates, severity of crashes, or a combination of these factors.

**How many locations can local road agencies submit from each city or county?**  
Applicants may submit up to five locations annually. These sites will be included in the overall statewide ranking and priority listing.

**What information should a local road agency submit with the application?**  
Local road agencies will need to include a safety priority list; provide an accident analysis and traffic information (if available); and identify proposed improvements, including any site constraints (right-of-way acquisition, utility relocations, etc.). (See the application on the back of this page.)

**What is the review and approval process?**  
After MDT receives the applications from local road agencies, the Safety Engineering Section develops an annual list of priorities according to a benefit/cost ratio analysis. MDT then develops a program for improvements subject to availability of funds and a benefit/cost ratio greater than 1.0. The Transportation Commission approves the list of safety improvement projects.

**Where should local road agencies send the application?**  
Safety Engineering Section  
Montana Department of Transportation  
P.O. Box 201001  
Helena, MT 59620-1001  
(406)444-6256

**What is the deadline for submitting applications?**  
End of the calendar year for projects to be reviewed during the spring of the following year.

**Comprehensive Highway Safety Plan  
Highway Safety Improvement Program  
Application**

Each local road agency should submit one application per intersection or high-hazard location to be considered for funding along with a copy of the safety priority list for their jurisdiction.

**Send to:** Safety Engineering Section  
Montana Department of Transportation  
P.O. Box 201001  
Helena, MT 59620-1001

- City, county, or road agency \_\_\_\_\_
- Contact person (name, address, and phone number):  
\_\_\_\_\_  
\_\_\_\_\_
- Location description for intersection or hazard area \_\_\_\_\_  
\_\_\_\_\_
- Collision diagram of investigated accidents  
a. Type (pedestrian, angle, rear-end, other, etc.) \_\_\_\_\_  
b. Severity (fatal, injury, or property damage) \_\_\_\_\_
- Time period for the data:  
from \_\_\_\_\_ to \_\_\_\_\_  
(date) (date)
- Average daily traffic volume: \_\_\_\_\_
- Accident trend and countermeasures  
a. Identified accident trends \_\_\_\_\_  
b. Corrective measures proposed to address the accident trends \_\_\_\_\_
- Proposed improvements  
a. Improvement to be considered and a sketch of the improvement \_\_\_\_\_  
b. Cost estimate for the improvement \_\_\_\_\_  
c. Site constraints (right-of-way required, utility relocations, irrigation impacts, etc.) \_\_\_\_\_

\*\*\* Please attach a diagram and analysis to the application.\*\*\*

# Questions & Contact Info:

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