



# Appendices

Sign-in Sheets

Presentations



# South Dakota Tribal Transportation Safety Summit

2019

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Jordan Cardenas	Sen. Thune			
Kyle Chase	Sen. Rounds	<a href="mailto:kyle.chase@round.senate.gov">kyle.chase@round.senate.gov</a>		
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# 2019 Tribal Transportation Safety Summit

*ER Program Overview*

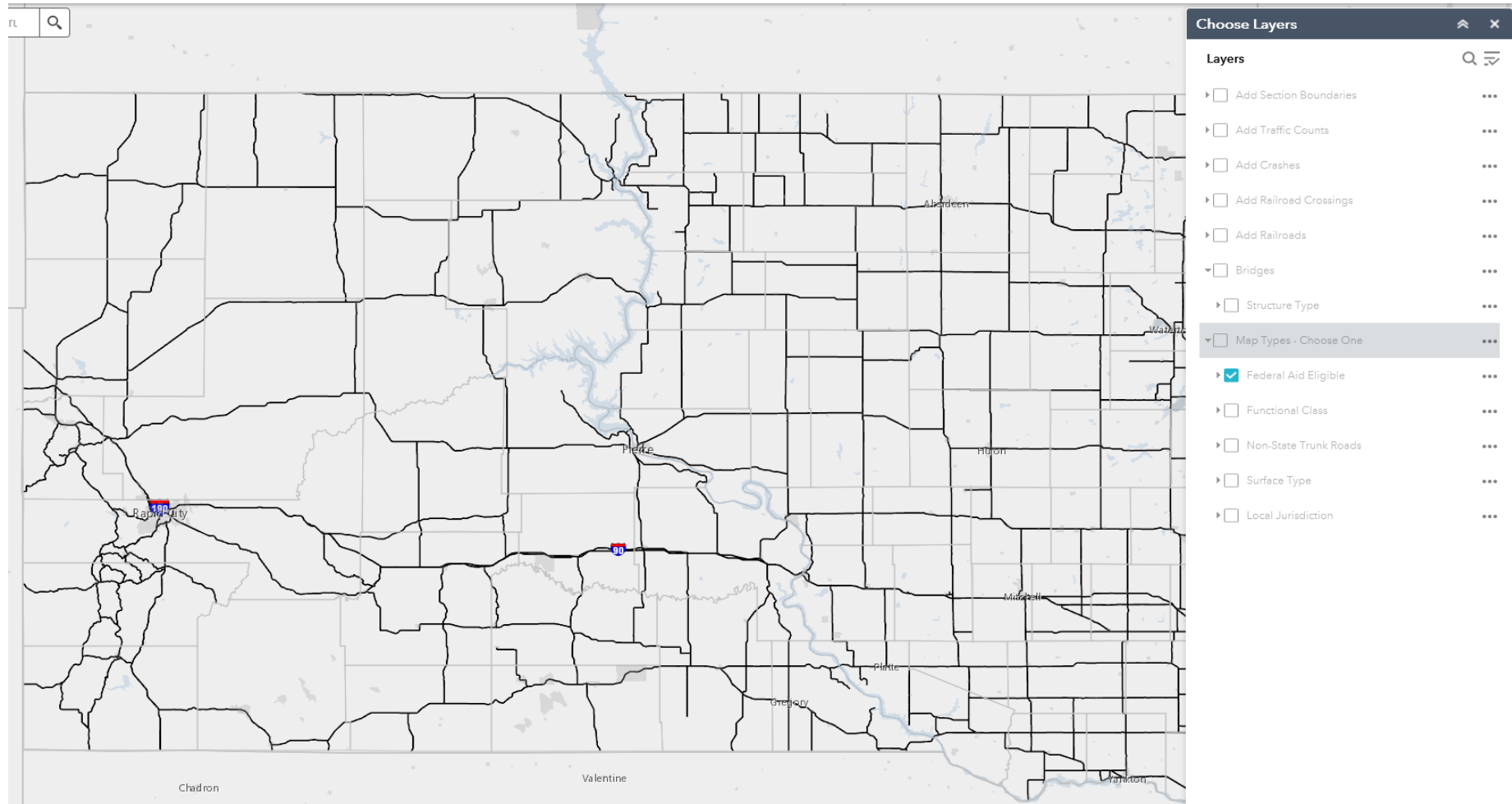
# ***ER Route Eligibility Definition:***

- *Roads and Bridges on Federal-aid System (FAS) (any road classified as a major collector or higher)*
- *SDDOT Website (Interactive Road System Maps) – Any road shown in GREEN is a FAS route.*

<http://sdbit.maps.arcgis.com/apps/webappviewer/index.html?id=93bd565a70a94f138f90ceed29ce1b12>

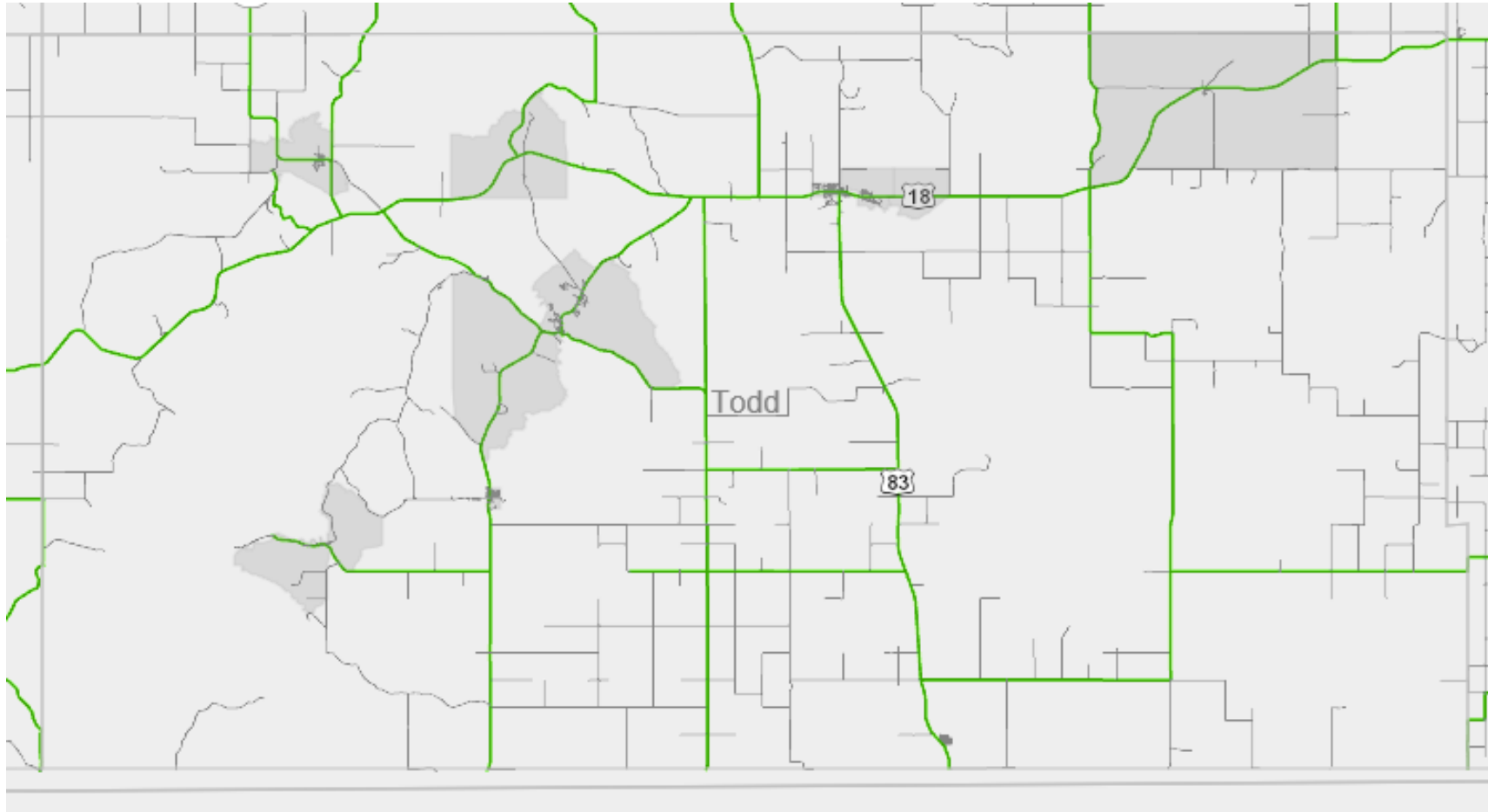
# *Interactive Road System Map*

## *(Selecting Federal-aid Eligible Routes)*



# *Example Interactive Road System Map*

## *Rosebud Reservation*



# *After a Disaster Event Occurs*

- *SDDOT contacts Area Offices, Counties, Cities, and Towns to gather damage estimates for Federal-aid routes.*
- *Disaster must total at least \$700,000 (Federal share).*
- *\$5,000 per site.*
- *Damage needs to be within the Right-of-Way*
- *Need sites identified on county maps with photos of damage, and estimate of repairs.*
- *May complete permanent repairs as part of the emergency repairs if it is the most economical and feasible option to complete the repair.*

# ***2019 ER Disaster Events***

## ***(Beginning Dates)***

**Event A – March 16th**

**Event B – May 21st**

**Event C – June 30th**

**Event D – September 10th**

# ***FHWA/SDDOT ER Contacts:***

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*605-776-1006*

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*Shane Carnahan – SDDOT – ER Coordinator*

*605-773-5109*

*[Shane.Carnahan@state.sd.us](mailto:Shane.Carnahan@state.sd.us)*





# ERFO: OVERVIEW AND FAQs

Lorell Duteil

ERFO Coordinator

Central Federal Lands Highway Division (FHWA)

SD TTP Conference

Oct 22, 2019

# WHAT IS ERFO?

## ERFO: Emergency Relief for Federally Owned Roads

- U.S.C. Title 23 program administered by FLH
- Applies to Federal & Tribal transportation facilities
- Pays to repair seriously damaged transportation facilities



## ERFO PROGRAM INTENT

*To pay the unusually heavy expenses to repair serious damage to eligible facilities caused by natural disaster or catastrophic failure*

- Not heavy maintenance
- Not routine emergency repair activities
- Not repair of facilities affected by long term, pre-existing conditions, or predictable developing situations
- Not a preventative program
- Not an improvement program

## ERFO DISASTER TYPES

- ERFO requires a disaster to have occurred before funding can be made available
- Two Types of ERFO disasters:

Natural



Catastrophic



## ERFO ELIGIBLE DISASTERS

### Natural Disasters must:

- Be **Unusual** natural **occurrence** which causes **serious damage**
  - Floods, hurricanes, tornados, earthquakes, severe storms, landslides
- And Occurs over a **wide area**
  - Several counties, federal land units, or major drainages
- And Over **\$700,000** of damage





## ERFO ELIGIBLE DISASTERS

### Catastrophic Disasters must:

- Be **Sudden failure** of a **major element** or segment of an eligible facility from an **external cause**
- And Failure is not primarily attributable to progressive deterioration or lack of maintenance
- And Over **\$700,000** of damage



# ERFO DISASTER DECLARATION

- All Tribes apply through BIA to Federal Lands Division
- Federal Lands Highway Division Director declares the disaster separately from other programs
- Does not require a Presidential or Governor's disaster declaration





## ERFO ELIGIBLE FACILITIES

- Tribal Transportation Facilities on NTTFI or,
  - Federal Lands Transportation Facilities on the NFLTFI or,
  - or Other Federally Owned Roads
- 
- ERFO Facility types include:  
Roads, Trails, Parking areas, & Transit

# ERFO ELIGIBLE FACILITIES

Facilities must be:

- Open to Public
- On official Inventory
- Actively maintained
- Roads accommodate standard passenger vehicles



## ERFO DAMAGE ELIGIBILITY

- Disaster related damage only
- Only 'Serious Damage' is eligible
- Repairs must exceed \$5,000 per site
- Not maintenance or routine repair activities
- ERFO covers Emergency & Permanent repairs at 100%



# ERFO DAMAGE DOCUMENTATION

- Damage Survey Report (DSR) completed for each site
- DSR includes site data, location, damage pictures, sketches, cost estimate, and quantity calculations
- Includes Emergency and Permanent repairs
- ERFO uses MSAR for DSR and disaster event tracking



## ERFO KEY POLICIES

- ERFO is a least cost, repair in-kind program
- ERFO funds can only be used on approved ERFO sites
- ERFO funding is based on documented actual costs (excess funds must be returned)
- ERFO is a reimbursement program, however when funds are available it may provide upfront funds



## ERFO KEY POLICIES

- Permanent repairs must have approval prior to starting
- ERFO repairs must be prioritized over non- emergency programs
- ERFO repairs must be completed within 2 fiscal years following the disaster fiscal year
- Time extensions for ERFO are rare and must be requested 60 days prior to expiration date
- ERFO reporting must be completed or funds may be withheld or withdrawn



# ERFO KEY POLICIES

- ERFO projects must follow all applicable laws and regulations (MUTCD, FP, CFR, NEPA, Davis-Bacon, etc)
- ERFO repairs may be delivered by a variety of agencies including the Tribe, BIA, FLH, or others depending on the circumstances
- ERFO does not cover utilities, bathrooms, recreational facilities, boat ramps, or decorative items
- ERFO is all digital! All disasters use the FHWA MSAR app & web portal for all ERFO approvals and tracking



The screenshot displays the MSAR (Mobile Safety Reporting) app interface. At the top, the status bar shows 'Verizon' and '9:07 AM'. The app header features the 'MSAR' title and a hamburger menu icon. Below the header is the U.S. Department of Transportation Federal Highway Administration logo. The main section is titled 'Default Information' and contains several dropdown menus for report details: 'Event' (2017 CA Jan FWS), 'Applicant Agency' (US Fish and Wildlife), 'State' (6 - California), 'County' (67 - Sacramento), and 'Report Type' (DSR). A red 'CREATE REPORT' button is positioned below these fields. At the bottom, a 'Saved Reports' section indicates 'There is 1 report on this device.' and includes links for 'VIEW ALL' and 'UPLOAD ALL'.

Default Information	
Event:	2017 CA Jan FWS
Applicant Agency:	US Fish and Wildlife
State:	6 - California
County:	67 - Sacramento
Report Type:	DSR

[CREATE REPORT](#)

**Saved Reports**  
There is 1 report on this device.  
[VIEW ALL](#) [UPLOAD ALL](#)



# NEED ERFO NOW?

- Open ERFO CFL events for DSR writing
  - SD2019-I-BIA Midwest Flooding 3/12/19 - 6/24/19
  - NE2019-I-BIA Midwest Flooding 3/12/19 - 6/24/19
  - KS2019-I-BIA Midwest Flooding 3/12/19 - 6/24/19
  - CA2019-I-BIA Feb 14 Storm & Flooding 2/14/19 - 2/17/19







BEEN THERE, FIXED THAT. ERFO CAN HELP FIX YOURS TOO!

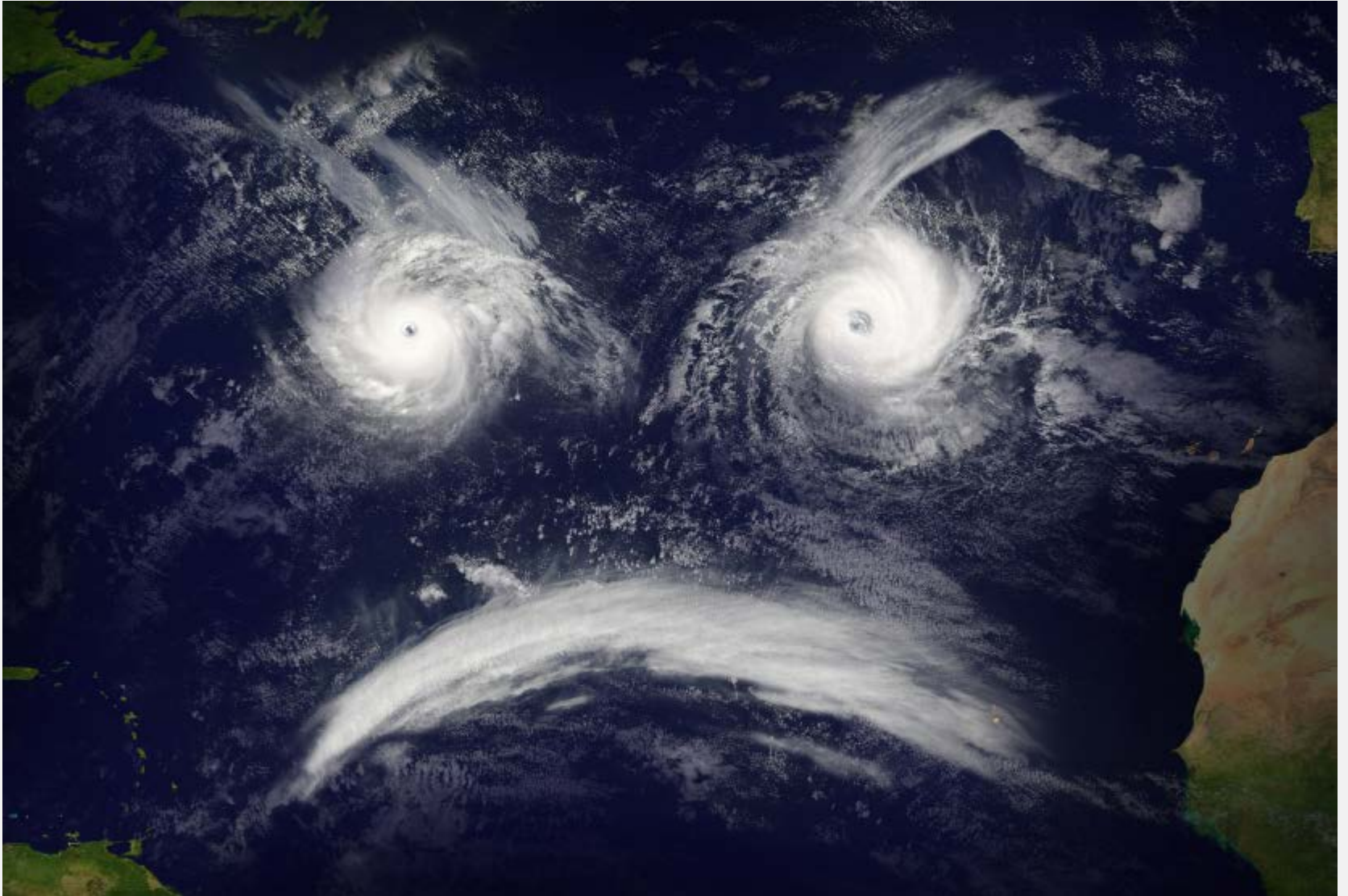


# WHERE CAN I LEARN MORE?

- ERFO Coordinator
  - EFLHD – Eric Wright (571) 434-1547
  - CFLHD – Lorell Duteil (720) 963-3425**
  - WFLHD – Steve Hinz (360) 619-7532
- ERFO Disaster Assistance Manual
  - <http://flh.fhwa.dot.gov/programs/erfo/>
  - Program Guidance
  - Templates, Forms, Checklists
- Free indepth ERFO Training available
- Free MSAR training webinars offered



QUESTIONS?





# SISSETON WAHPETON OYATE DEPARTMENT OF TRANSPORTATION

## Management Staff

Cliff Eberhardt – SWO DOT Director

Toni Heminger – SWO DOT Office Manager

Richard White – SWO Tribal Roads Manager

Josh Kohl – SWO DOT Construction Program Foreman



# SWO DOT 2019 SAFETY PROJECTS

- SWO Safety Plan Update.
- Long Range Transportation Plan update project.
- Roadway Safety Improvements Signing and Rumble Strips project.
- Enemy Swim Pathway project.



# SISSETON WAHPETON OYATE TRANSPORTATION SAFETY PLAN UPDATE PROJECT 2019

## Safety Team

Dr. Sherry Johnson – SWO Education Department Director

Gary Gaikowski – SWO Tribal Police Chief

Jim Pearson – SWO Emergency Management Services Manager

Cliff Eberhardt – SWO DOT Director

Darin Falcon – KLJ Consulting, Client Manager



# OUR VISION

“WORKING TOGETHER TO KEEP OUR  
TRAVELING PUBLIC SAFE”

1. This project is in the planning stages.
2. Completion of this project will be December 2019.
3. SWO DOT working with KLJ consulting on the final Safety plan document.
4. The plan is to include all safety planning projects programmed for the next 4 years.



# SWO LONG RANGE TRANSPORTATION PLAN UPDATE PROJECT

1. KLJ Consulting assisting the SWO DOT.
2. Development stage of the project.
3. Inventory updates including tribal cluster site roads in our Federal Inventory.
4. Updated traffic counts.
5. The plan to include all transportation entities and modes within the Reservation boundaries, County, State and Local Township roads.



# Roadway Safety Improvements Signing and Rumble Strips project

- 24 miles with 3 BIA routes included for edge line rumble strips BIA routes 3,5 & 8.
- 15 locations for the double sets of flashing stop signs and stop rumbles to include 5 sets installed at Roberts county intersections.
- These locations were determined using crash data.



# Roadway Safety Improvements Signing and Rumble Strips project





# Roadway Safety Improvements Signing and Rumble Strips project





# ENEMY SWIM PATHWAY PROJECT

- BIA Regional Office Mike Hauge, Design.
- KLJ Consulting and Engineering, Construction monitor.
- Red Lake Builders, Construction contractor.
- 1.4 miles of 8' wide asphalt pathway.
- Cross walk RRFB installed at the intersection.



# ENEMY SWIM PATHWAY PROJECT













# SD DOT STATE HWY 10 CONSTRUCTION PROJECT AND ROUNDABOUTS IN SISSETON SD. (FOR DISCUSSION)





















# CONTACT INFORMATION

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Sisseton-Wahpeton Oyate

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Cell (605) 268-1775

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# Tribal Transportation Safety Plan Implementation

South Dakota Tribal Safety Summit

October 2019

Craig Genzlinger

# TTP Safety Funding



- 2% of TTP Funds Set Aside
  - Approximately \$9 million per year
- Originally eligible for:
  - Planning/Data, Education, Enforcement, Engineering and EMS.
  - Was revised by Congress to only include Planning/Data and Engineering.
- Initial step is to complete a Tribal Safety Plan

# FLANDREAU SANTEE SIOUX TRIBE

## 2015 TRIBAL TRANSPORTATION SAFETY PLAN



Developed through the  
Flandreau Santee Sioux  
Transportation Department

Prepared by KLJ

July 2015





# CHEYENNE RIVER SIOUX TRIBE

## 2015 TRIBAL TRANSPORTATION SAFETY PLAN



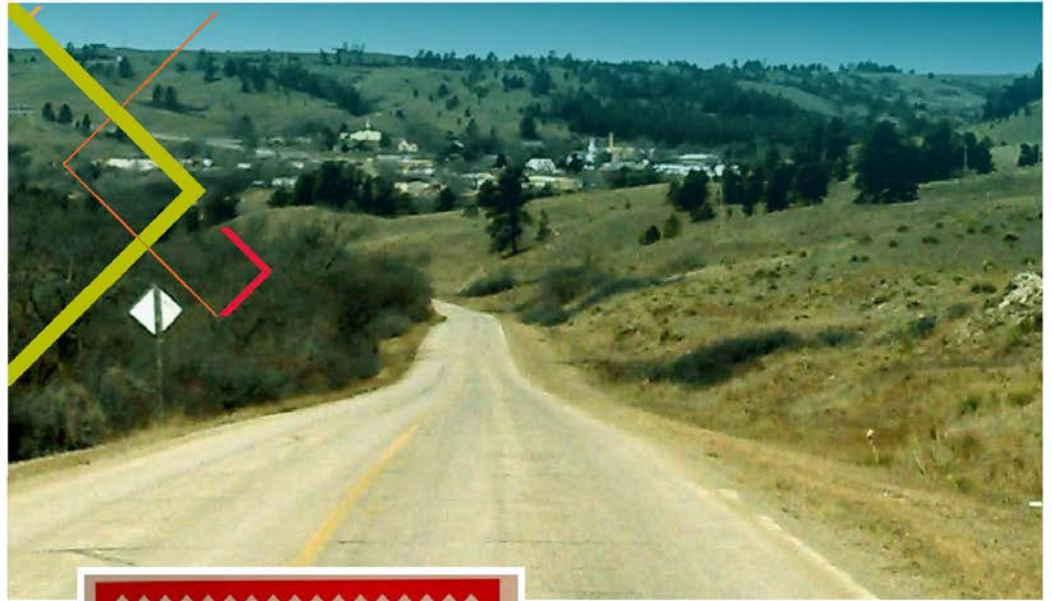
Developed through the  
Cheyenne River Sioux  
Tribal Transportation  
Department

Prepared by KLJ

July 2015



# ROSEBUD SIOUX TRIBE TRIBAL TRANSPORTATION SAFETY PLAN



Developed through the  
Rosebud Sioux Tribe  
Federal Highway Program

Prepared by KLJ

September 2014





# STANDING ROCK SIOUX TRIBE

## 2015 TRIBAL TRANSPORTATION SAFETY PLAN



Developed through the  
Standing Rock Tribal  
Transportation Program

Prepared by KLJ

March 2015





# Sisseton-Wahpeton Oyate Transportation Safety Plan 2014

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Sisseton-Wahpeton Oyate Transportation Safety  
Committee

May 2014



# YANKTON SIOUX TRIBE

## 2016 TRIBAL TRANSPORTATION SAFETY PLAN



Developed through the  
Yankton Sioux Tribal  
Transportation Department

Prepared by KLJ





# OGLALA SIOUX TRIBE

## 2016 TRIBAL TRANSPORTATION SAFETY PLAN



Developed through  
the Oglala Sioux Tribe  
Department of  
Transportation

Prepared by KLJ

October 2016







## Crow Creek Sioux Tribe Transportation Safety Management Plan

December 2017



ENGINEERING, REIMAGINED





November 2017



# Lower Brule Sioux Tribe Transportation Safety Management Plan



ENGINEERING, REIMAGINED



# TTP Safety Funds



- All SD Tribes have completed a Safety Plan
- Everyone has received TTP Safety Funds
- So, what have we done with them

# Flandreau Santee Sioux TTPSF



- 2014
  - Tribal Safety Plan \$12,500 Completed
- 2016
  - Three Mile Pathway \$380,000
- 2017-2018



# Flandreau Santee Sioux





# Flandreau Santee Sioux



# Flandreau Santee Sioux





# Cheyenne River Sioux TTPSF



- 2013
  - Tribal Safety Plan \$12,500 – Completed
- 2015
  - Education Materials \$39,200
  - Pathway Lighting \$268,800
- 2015

# Cheyenne River Sioux





# Rosebud Sioux TTPSF



- 2013
  - Tribal Safety Plan \$9,600 Completed
- 2015
  - Road Safety Audit \$40,000
- 2016

# Standing Rock Sioux TTPSF



- 2013
  - Safety Plan Update \$7500 Completed
- 2014
  - Educational Materials \$34,500 Completed
- 2015
  - Cannonball Pathway \$343,200
- 2016
  - Speed Stalker Study \$2535
- 2017-2018
  - Cannonball Pathway Ph II \$664,472



Join SRST Traffic Safety for a

# BIKE RODEO



Do I have the right seat?  
Is it expired or recalled?  
Is it installed correctly?

**We care about baby's safety  
on the road just like you do.**



**Free Car Seat Check-Up**  
Monday, June 20  
12 noon to 3 p.m.  
WIC Parking Lot, Ft. Yates

Walk-Ins Welcome. To ensure you are seen that day, please call the WIC office at 701-854-7263 to schedule an appointment.





# Standing Rock Sioux





# Sisseton – Wahpeton Oyate TTPSF



- 2013
  - Tribal Safety Plan \$12,500 Completed
- 2014
  - Safety Education Materials \$59,681
  - Law Enforcement Eq \$430,949
- 2017-2018
  - Tribal Safety Plan Update \$7500
  - Signing, R Strips & Striping \$257,333



# Sisseton – Wahpeton Oyate





# Sisseton – Wahpeton Oyate





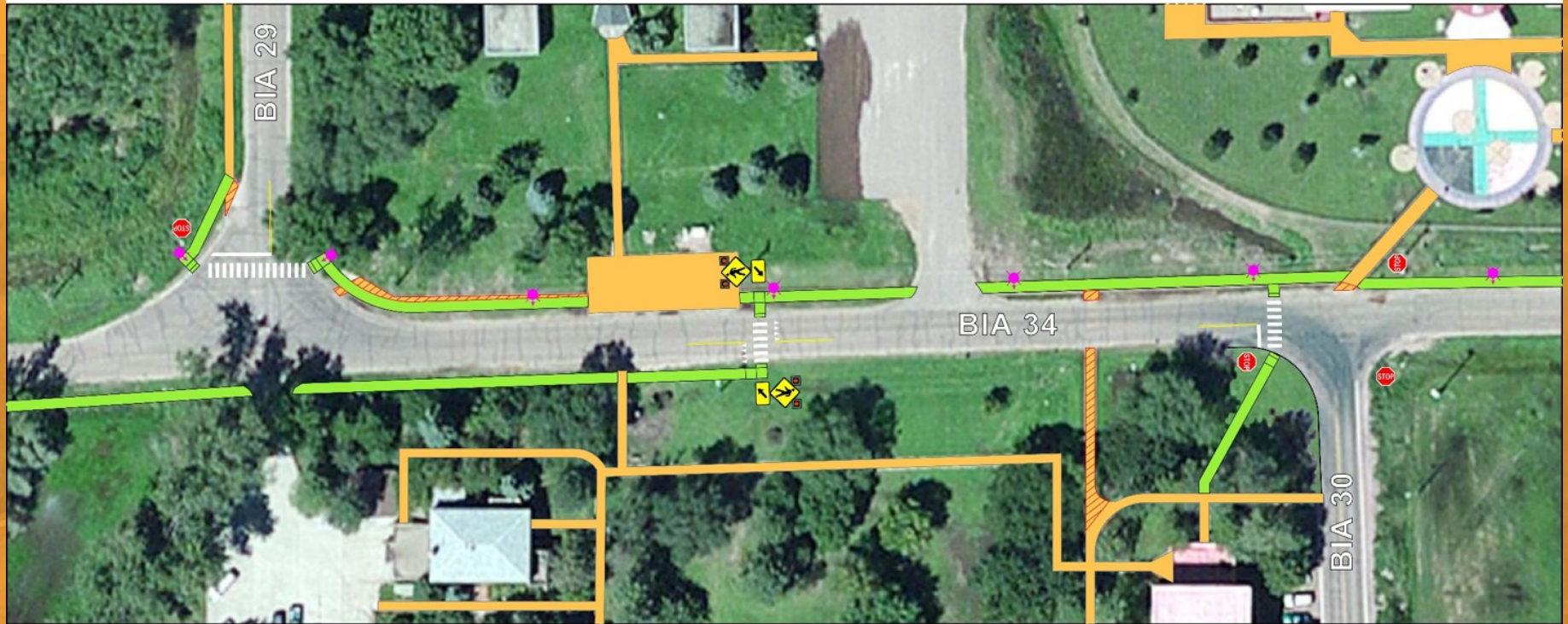
# Yankton Sioux TTPSF



- 2013
  - Tribal Safety Plan \$12,500 Completed
- 2016
  - Marty Pathway \$515,000
  - Crash Data Improvements \$105,000
- 2017-2018
  - Road Safety Audit \$35,955
  - BIA 29 Widening \$767,818

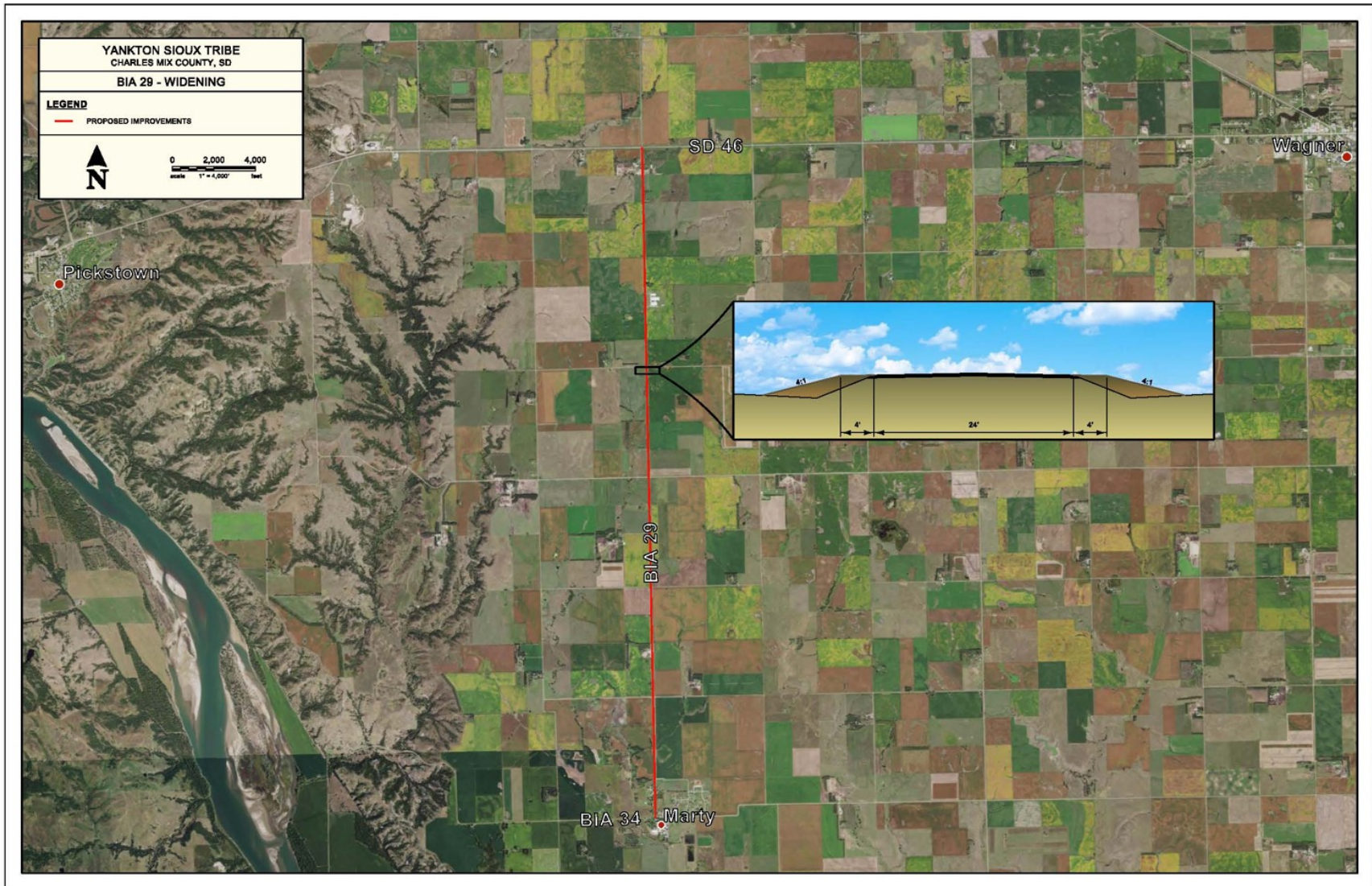


# Yankton Sioux





# Yankton Sioux



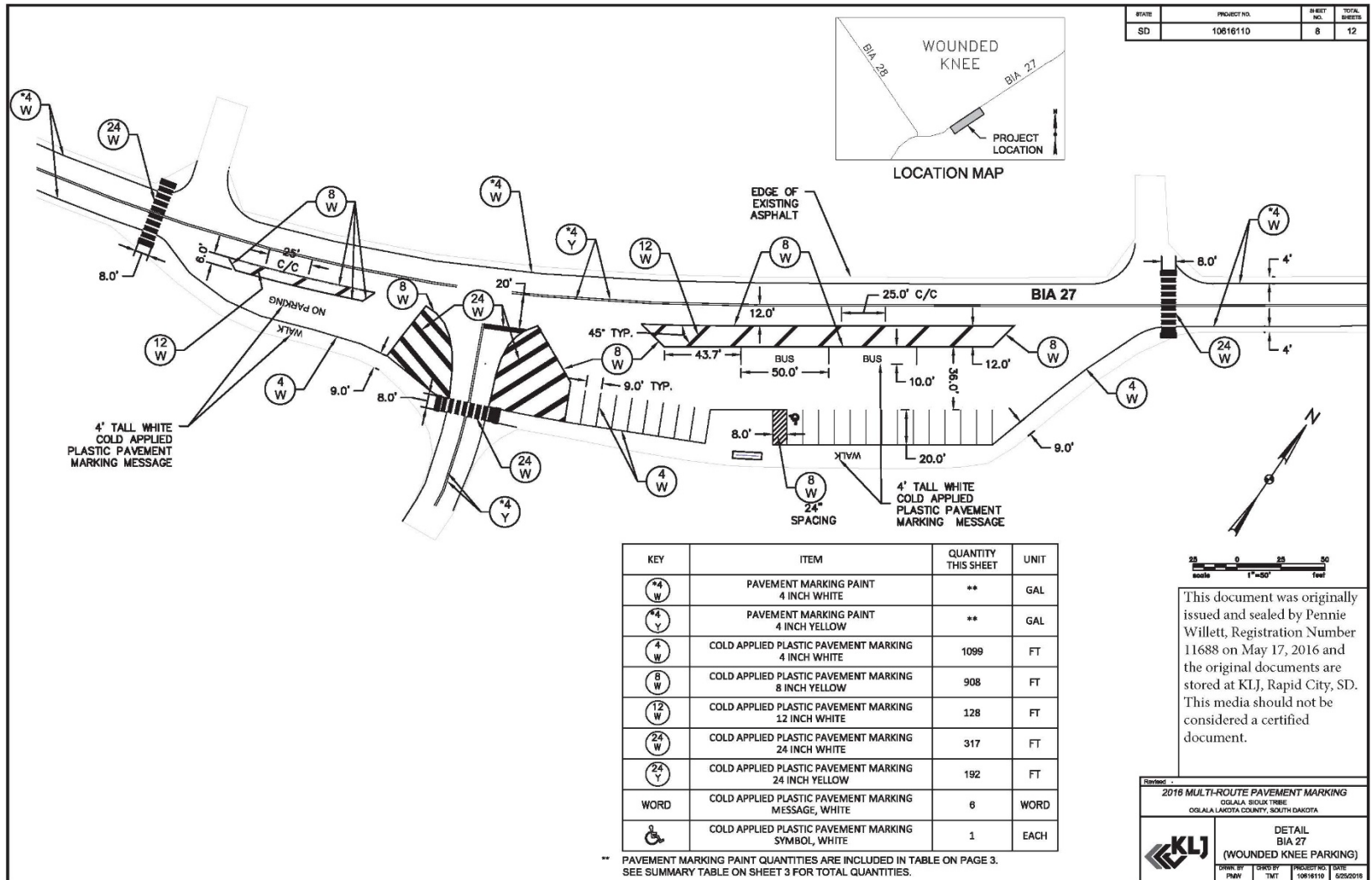


# Oglala Sioux Funds



- 2013
  - Tribal Safety Plan \$12,500 Completed
  - BIA 27 Improvements \$109,500

# Oglala Sioux





# Oglala Sioux



Wounded Knee during the project.



Wounded Knee completed project.

2014 MULTI-ROUTE PAVEMENT MARKING  
AND BIA 27 SAFETY UPGRADES COMBINED  
PROJECT NUMBERS 10613116 and 10613122 Combined

NATIONAL PERSPECTIVE  
REGIONAL EXPERTISE  
TRUSTED ADVISOR

# Crow Creek Sioux TTPSF



- 2016
  - Tribal Safety Plan \$12,500 Completed
- 2017-2018
  - Road Safety Audit \$29,478
  - Rumble Strips and Striping \$155,460



# Lower Brule Sioux TTPSF



- 2016
  - Tribal Safety Plan \$12,500 Completed
- 2017-2018
  - Road Safety Audit \$40,143
  - BIA 10 Culvert Replacement \$682,011

# Issues/Concerns?

- Having trouble getting complete data
- Little Pedestrian Data
- Larger Projects having a tough time getting funded
  - Cost Sharing
  - Better data that relates to project
- Pedestrian Pathways
  - Again lack of data
- Others?



# Moving Forward



- How to obtain better Tribal/BIA police data
- IHS Data
- 2018 Applications
- How to Improve Applications
- Other

# Questions and Discussion

Craig Genzlinger

KLJ – Helena

(406) 447-3357

[Craig.Genzlinger@kljeng.com](mailto:Craig.Genzlinger@kljeng.com)





# Yankton Sioux Tribal Transportation































# FHWA Tribal Transportation Safety Update



Adam Larsen  
Safety Engineer & Program Manager  
[Adam.Larsen@dot.gov](mailto:Adam.Larsen@dot.gov)  
360-619-7751



# Overview



TTP Safety Fund Update



Proven Safety Countermeasures



Safety Plan Update Tips



Tribal Crash Data Toolkit



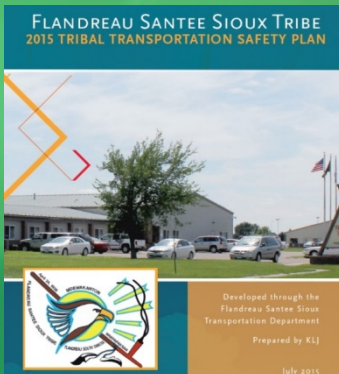
Systemic Safety



NHTSA GO Teams

# Tribal Transportation Program Safety Fund (TTPSF)

- FY19 Awards expect announcement by December 2019
- FY20 NOFO published February 2020, 60 days to apply
- FY20 NOFO similar to FY19, three categories:



Safety  
Plans

Data Assessment,  
Improvement, and Analysis



Infrastructure  
Improvement



# Tribal Transportation Program Safety Fund (TTPSF)

- **FY20 TTPSF**
- **Simplified Application Form**
- **Reduced Selection Criteria**
- **Adds clarification that routes must be official and existing in the National Tribal Transportation Facility Inventory**

# TTPSF Future

- **Senate Bill 2302 Title IV Section 4008 would double TTPSF to 4%**
- **Bill also would require changes to crash data collection in Tribal areas.**





Consider the topics in the National Tribal Transportation Strategic Safety Plan.



Identify improvements to safety data collection and sharing.

Page 1 of 2 Pages

DEPARTMENT OF THE INTERIOR  
INVESTIGATOR'S TRAFFIC CRASH REPORT

Case No.:

Investigated at the scene: ☐ Yes ☐ No  
Hit and run? ☐ Yes ☐ No ☐ Unknown  
Non-motor-vehicle property damage: ☐ Yes ☐ No Amount:

Number of Vehicles	Organization	Park Alpha
Crash Date	Day of Week	Military Time
State	County	GPS Latitude
Crash occurred on	Related Intersection	GPS Longitude
Source of Information	Officer Name	Officer Signature
Official Badge	Report Date	Approving Official Signature
Official Badge	Approving Official Name	Signature Date

Base Information

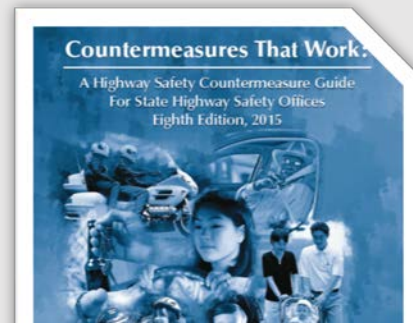
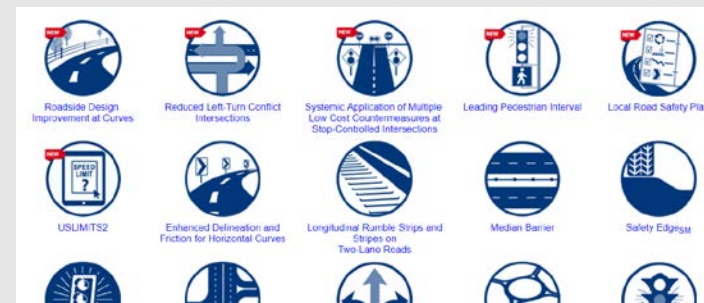
First Harmful Event	Location of First Harmful Event
Weather	Roadway condition
Lighting	School Bus Related
Road Circumstances	Work Zone Related
Environmental Circumstances	Work Zone Workers Present
Work Zone Location	Type of Intersection
Law Enf. Present at	

# Recommendations for Safety Plan Updates

Use data to identify risks for Systemic Safety Study and locations for Road Safety Audits



Consider applicability of the FHWA Proven Safety Countermeasures & NHTSA Countermeasures That Work



# TRIBAL TRANSPORTATION STRATEGIC SAFETY PLAN

## Tribal Transportation Strategic Safety Plan



presented by the

Tribal Safety Management System Steering Committee



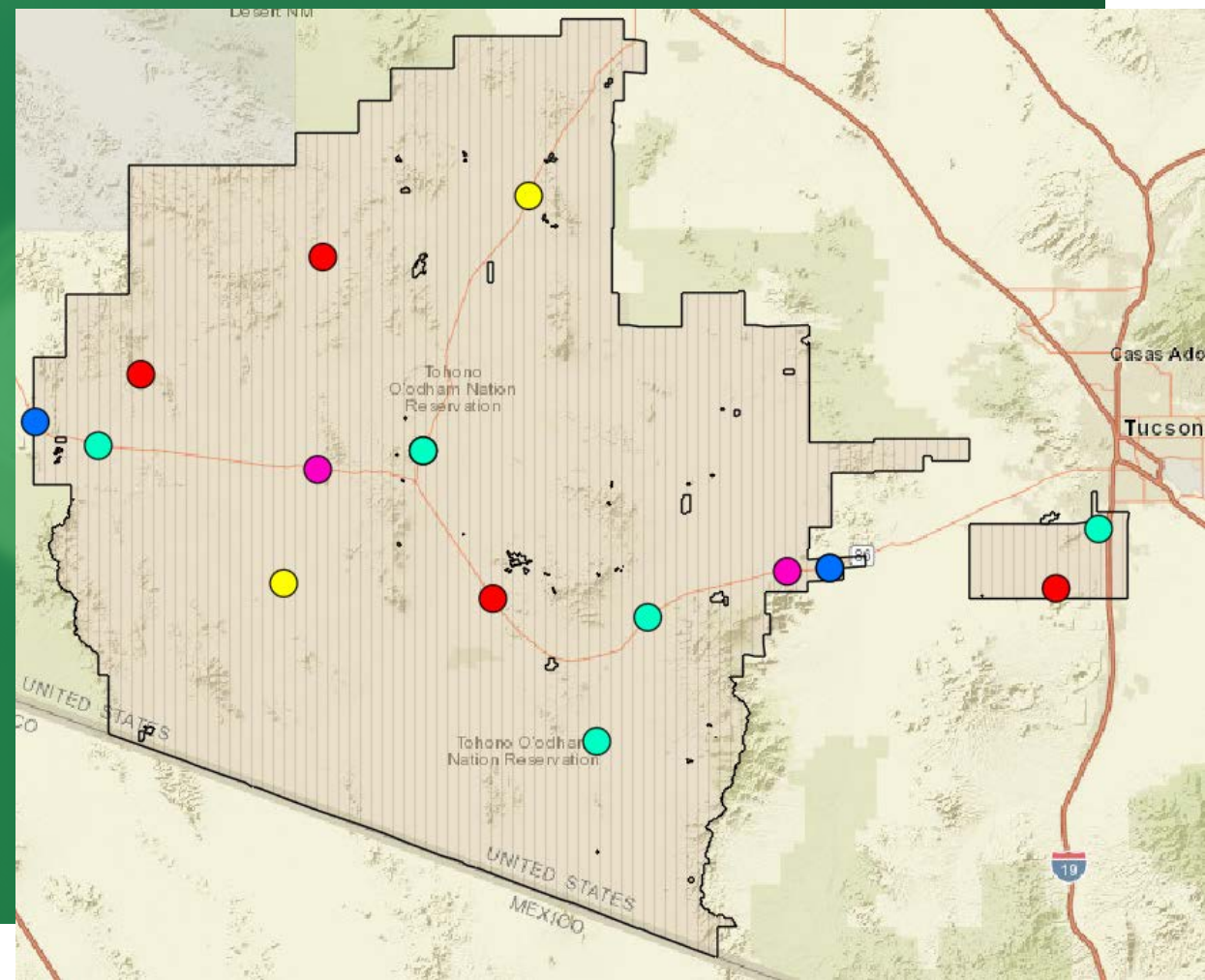
- Decision Making Process
- Safety Data
- Occupant Protection/Child Seats
- Roadway Departure Crashes
- Alcohol/Drug Impaired Driving
- Pedestrian Safety
- Public Safety Services



# Systemic Safety Analysis

- Risk approach rather than location approach
- Proactive safety improvements
- Low cost improvements at all higher-risk locations.

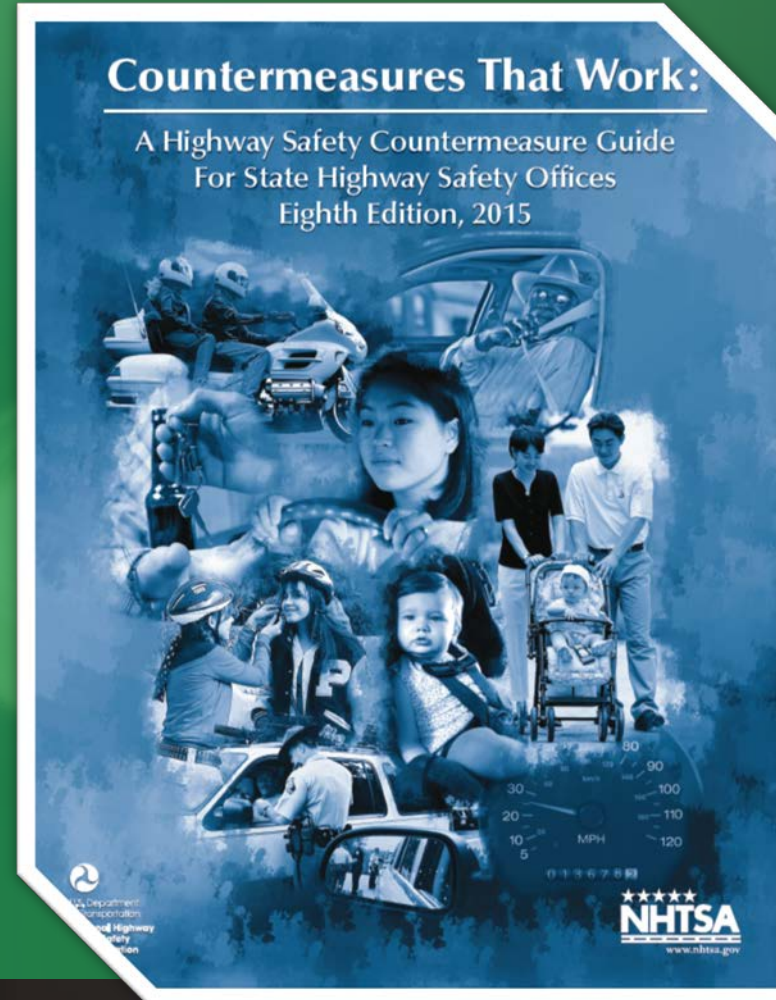
[tribalsafety.org/data-analysis](http://tribalsafety.org/data-analysis)



# NHTSA

## Countermeasures That Work

- Education and Enforcement
- Impaired Driving
- Seatbelts
- Speed Limits
- Distracted Driving
- Motorcycles
- Young Drivers
- License Renewal
- Bicycle Helmets





# FHWA

## Proven Safety Countermeasures



Roadside Design Improvement at Curves



Reduced Left-Turn Conflict Intersections



Systemic Application of Multiple Low Cost Countermeasures at Stop-Controlled Intersections



Leading Pedestrian Interval



Local Road Safety Plan



USLIMITS2



Enhanced Delineation and Friction for Horizontal Curves



Longitudinal Rumble Strips and Stripes on Two-Lane Roads



Median Barrier



Safety Edge<sub>SM</sub>



Backplates with Retroreflective Borders



Corridor Access Management



Dedicated Left- and Right-Turn Lanes at Intersections



Roundabouts



Yellow Change Intervals



Medians and Pedestrian Crossing Islands in Urban and Suburban Areas



Pedestrian Hybrid Beacon



Road Diet



Walkways



Road Safety Audits

# USLIMITS2 – Speed Limits Tool

- Why do we set speed limits?
  - Inform drivers of the maximum reasonable and safe operating speed under favorable conditions
- USLIMITS 2 is an online tool to assist with setting appropriate speed limits
- <https://safety.fhwa.dot.gov/uslimits/>





# Road Safety Audits

A formal safety performance examination of an existing or future road or intersection by an independent, multi-disciplinary RSA team.



# Systemic Approach



Curve design

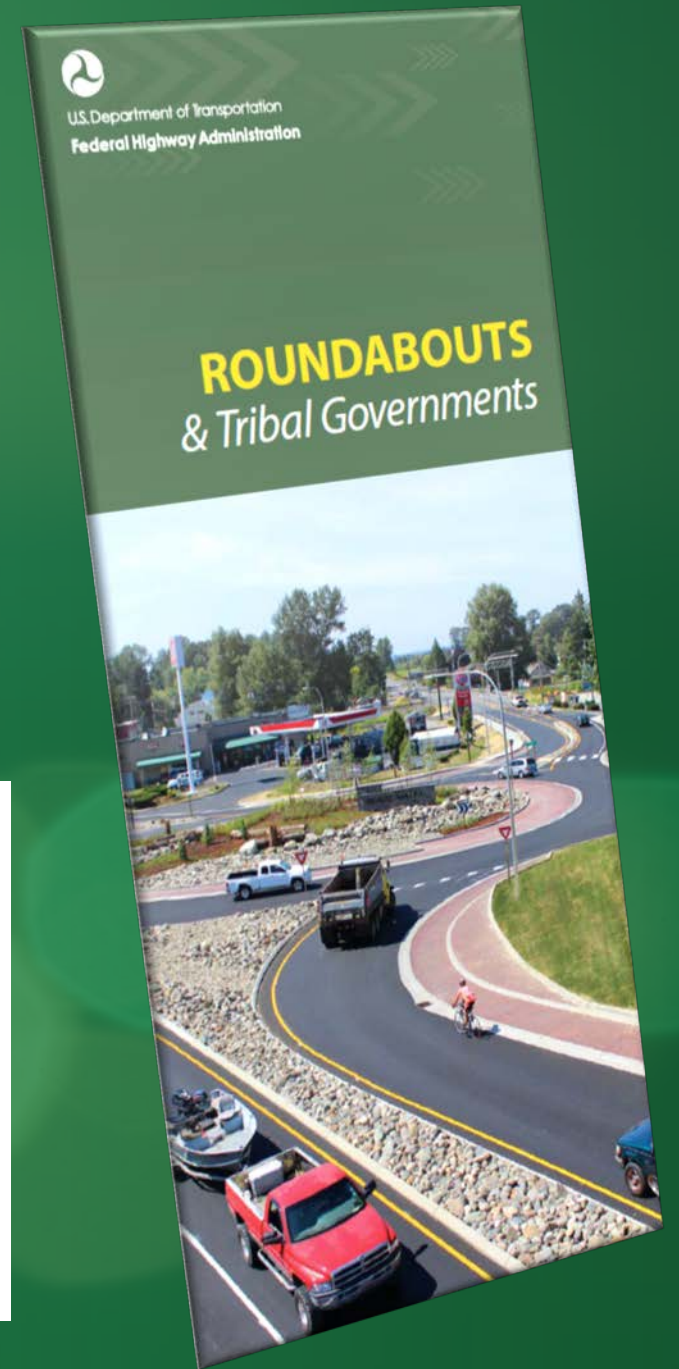
Low-volume stop controlled intersections





# Roundabouts

82% reduction in  
serious crashes



# Mini-Roundabout

- Not a traffic circle
- Includes design features of a modern roundabout turns prevented
- Traffic calming and pedestrian benefits
- Can often be designed to fit within existing intersection
- ~30% crash reduction





# Crash Reporting Toolkit



*Coming Fall 2020*

# Crash Reporting Toolkit



## Purpose

Intended to help Tribes save lives and reduce injuries resulting from motor vehicle crashes, the Tribal Crash Reporting Toolkit provides Tribes resources to better capture and use their crash data.



# Crash Reporting Toolkit



## Contents



Crash Form & Instructions



Database



Documentation: Value of Crash Data, Misunderstandings



Data Analysis Tool



Quality Control Guide

Crash Reporting Toolkit



Schedule

Spring 2020 –  
Tribes Pilot Tools

Fall 2020 –  
Final Toolkit Published

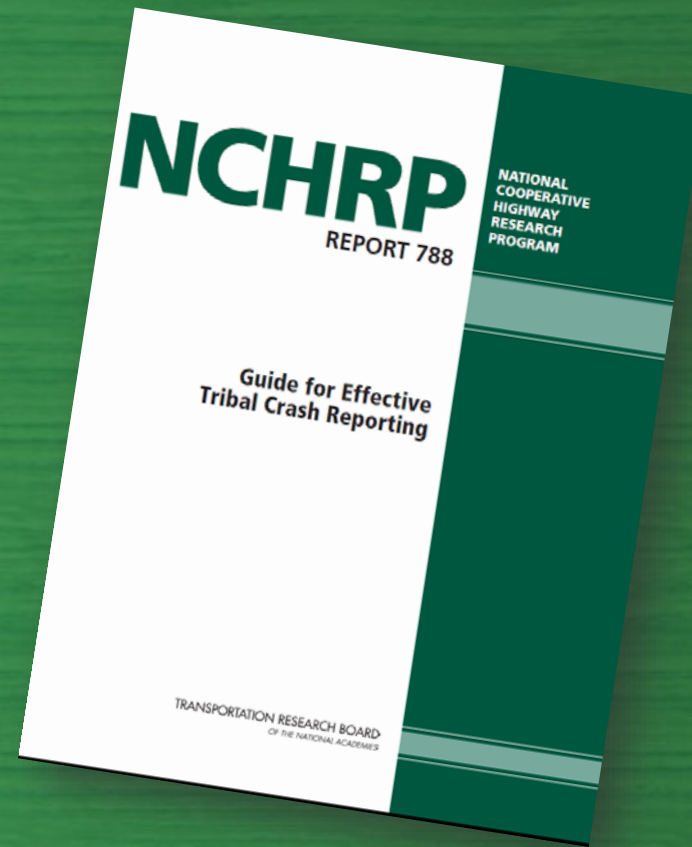


Crash Reporting Toolkit



& NCHRP 788

The new toolkit will complement  
the existing  
Guide to Effective Tribal Crash  
Reporting (NCHRP-788)



# GO Teams



*National Highway Traffic Safety  
Administration*



# What is a GO Team?

- ★ Safety Data Improvement Technical Assistance
- ★ Subject Matter Experts
- ★ No Cost to Tribes
- ★ Previously available only to States; recently available to Tribes

# What can a GO Team accomplish?

- ★ Improving your crash data collection
- ★ Crash data analysis and problem identification
- ★ Development of data sharing agreements
- ★ Strategic planning and working with State Traffic Records Coordinating Committees.



Think a GO Team  
could help you?

## Contact

**Tom Bragan**

**National Highway Traffic  
Safety Administration**

**202-366-6978**

**Tom.Bragan@dot.gov**

# Questions?



Adam Larsen

Safety Engineer & Program Manager

[Adam.Larsen@dot.gov](mailto:Adam.Larsen@dot.gov)

360-619-7751



# Monitoring Scour Critical Bridges During Floods

South Dakota Tribal Transportation Safety Summit

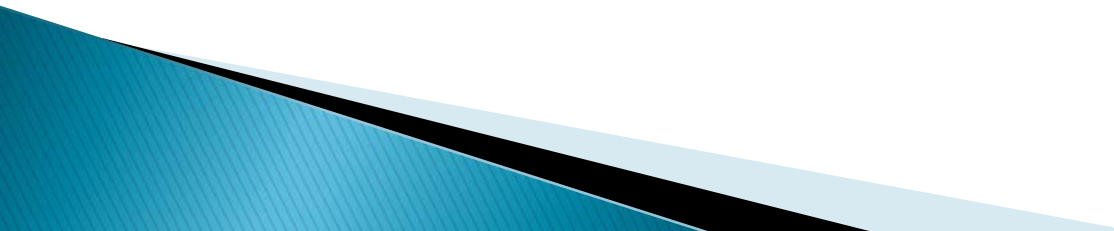
Watertown, South Dakota

Brenda Red Wing

Regional Transportation Engineer – BIA Great Plains Regional Office

October 22, 2019



- Safety First
  - What are the Parts of a Bridge?
  - What is Scour?
  - What is a Scour Critical Bridge?
  - What are the Scour Critical Categories?
  - Why is Monitoring Necessary?
  - What is “Monitoring” a Bridge?
- 



# SAFETY FIRST

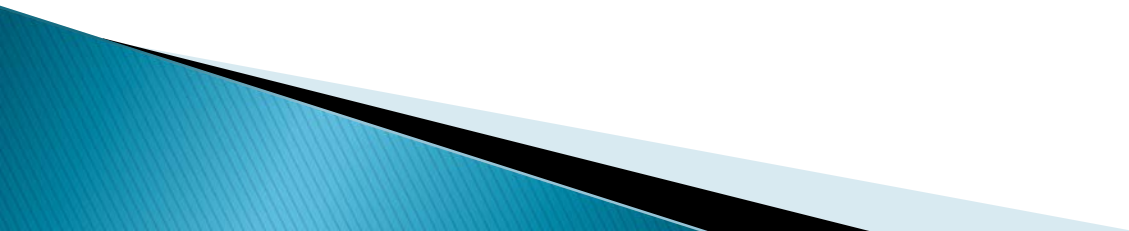


# **SAFETY FIRST**

**DO NOT ENDANGER YOURSELF OR OTHERS  
WHILE MONITORING BRIDGES**

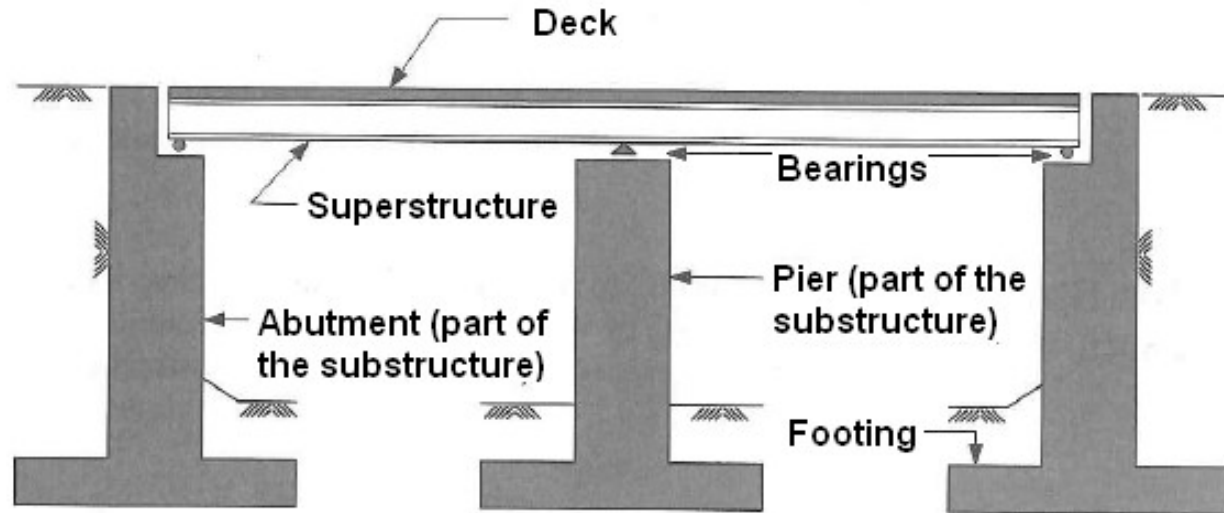
**DO NOT ENTER FLOOD WATERS**

**FLOOD WATERS INCLUDE BOTH STANDING  
AND FLOWING WATER**





# What are the parts of a bridge?

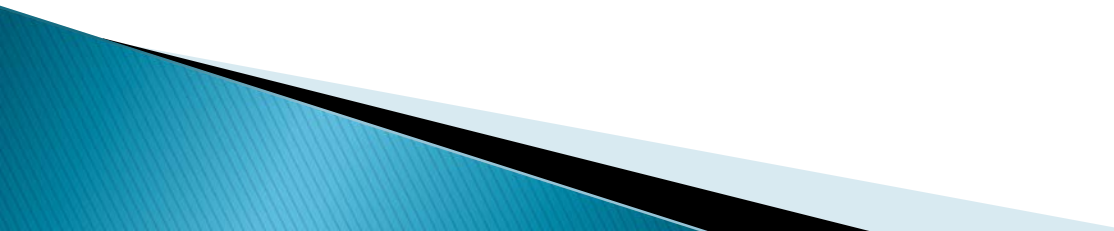


**Deck** = the part of a bridge that provides a surface for cars and pedestrians. **Superstructure** = the part of a bridge that supports traffic and transfers load to the bridge substructure below. Superstructure includes the beams or girders, railings, sidewalks, and bearings.

# What are the parts of a bridge?

**Substructure** = the part of a bridge that supports the superstructure and transfers load to the bridge foundation. Substructure includes the abutments, piers, wingwalls, and footings.

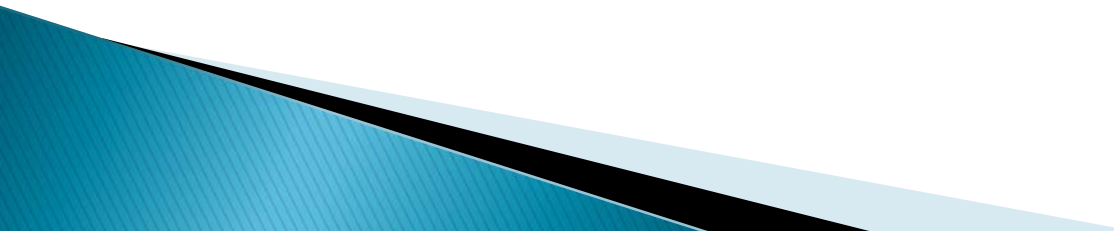
Picture Source: FHWA NHI 03-001 Bridge Inspector's Reference Manual





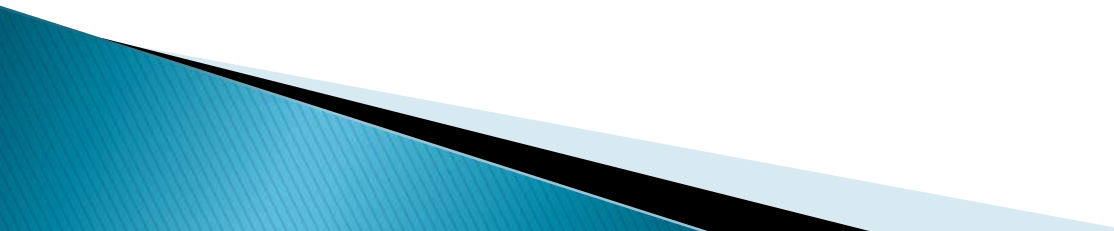
# What is scour?

---

- Scour is streambed erosion caused by flowing water.
  - Scour caused by floodwaters can remove large amounts of foundation material from under the footings of a bridge.
  - Scour can make the bridge unstable and dangerous for people to cross.
- 

# What is a scour critical bridge?

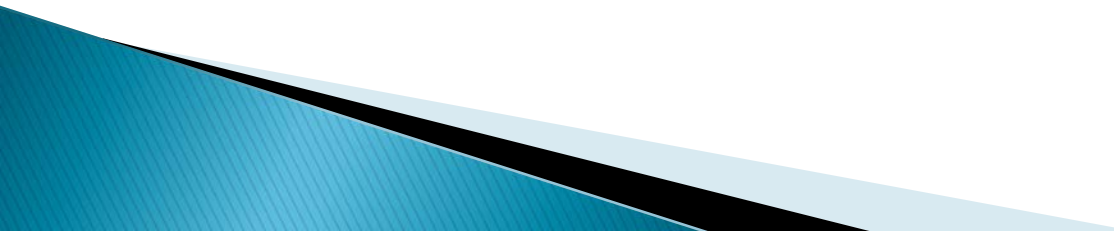
---

- A scour critical bridge is at risk of becoming unstable at its footings if scour becomes serious during a flood.
  - A scour critical bridge requires a written scour plan of action which includes monitoring when triggered by flooding events.
- 



# What is a scour critical bridge?

---

- Many bridges are not scour critical and therefore are not categorized.
  - **Bridges which are not categorized do NOT need to be monitored during floods.**
- 

# What is a scour critical bridge?

- However, nearly all bridges which cross waterways have some vulnerability to scour damage or washout caused by flood waters.



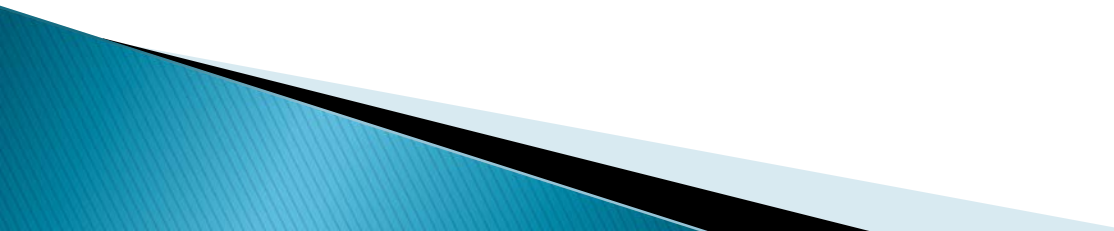
# What are the Scour Critical Categories?

---

- **Category A** = Serious scour and undermining has occurred; any additional scour could cause the bridge to become unstable
- Footing is at high risk of becoming unstable due to potential for scour
- Presents significant safety hazard under high water conditions

# What are the Scour Critical Categories?


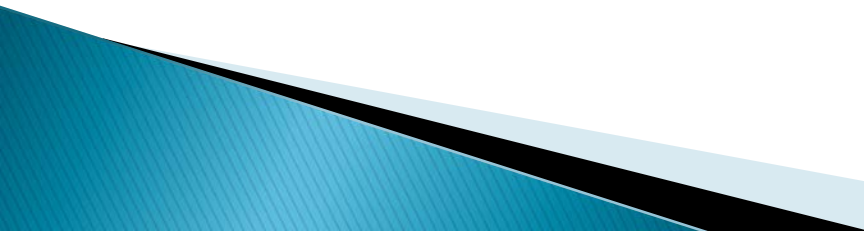
---

- **Category B** = Advanced scour has occurred; moderate amounts of new scour could cause the bridge to become unstable
  - Footing at moderate risk of becoming unstable due to potential for scour
  - Presents moderate safety hazard under high water conditions
- 



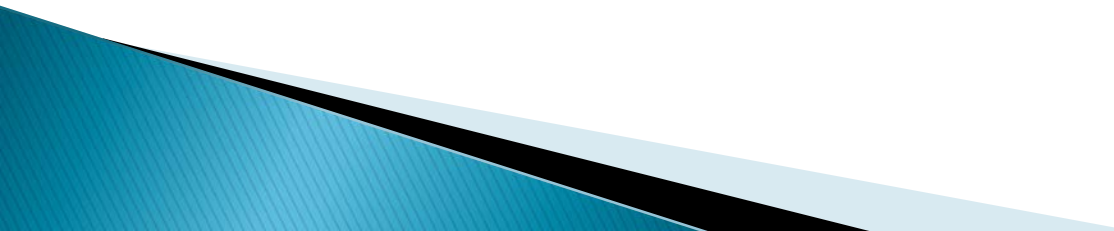
# What are the Scour Critical Categories?

- **Category C** = Minor scour has occurred; significant amounts of new scour could cause the bridge to become unstable
- Footing at lower risk of becoming unstable due to potential for scour
- Presents lower safety hazard under high water conditions

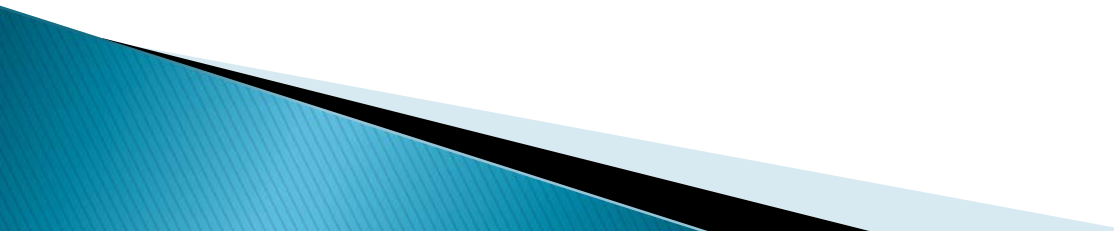
- 
- For public safety
  - Required by federal statute
    - Code of Federal Regulations; Chapter 23 Highways
    - Section 650.313(3)(3); 2005 National Bridge Inspection Standards (NBIS)
    - “Bridges that are scour critical. Prepare a plan of action to monitor known and potential deficiencies and to address critical findings. **Monitor bridges that are scour critical in accordance with the plan.**”
- 



# What is “Monitoring” a Bridge?

- The NBIS applies to bridges greater than 20 feet in span length
- 
- During flood events, visit and observe scour critical bridges to ensure that they remain structurally safe.
  - This process is called a monitoring visit and it helps ensure the safety of the traveling public.
  - A bridge monitoring log is used to record each monitoring visit.
- 

# What is “Monitoring” a Bridge?

- In addition to recording monitoring activities, the log helps the bridge owner decide whether the bridge should remain open or should be closed.
  - At each monitoring visit, observe specific aspects of the condition of the bridge and its surroundings and record findings on a scour critical bridge monitoring log.
- 



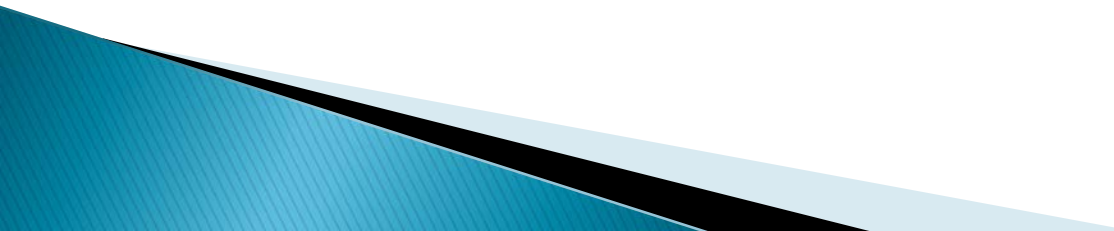
# What is “Monitoring” a Bridge?

- Bridge closure depends on the conditions observed at the bridge, approach roadway and waterway channel.

## Flood Conditions to Observe Record and Respond

- Bridge
  - Pressure flow
  - Water overtopping the bridge
  - Alignment, settlement or tilt damage
- Approach Roadway
  - Settlement damage
  - Embankment erosion damage

# What is “Monitoring” a Bridge?

- Waterway Channel
    - Significant Debris Build-up
- 
- Use the monitoring log to record visible distress by circling either Yes (Y) or No (N) to identify whether conditions for closure exist at the bridge.
  - Bridge closure should be strongly considered whenever a Y is circled on the monitoring log.
- 



# Scour Critical Bridge Monitoring Log

## **SAFETY FIRST - DO NOT ENDANGER YOURSELF OR OTHERS WHILE MONITORING BRIDGES**

File Scour Critical Bridge monitoring logs with other bridge inspection records at the municipality

Monitoring logs are subject to review by the Federal Highway Administration (FHWA)

Struct ID: 02711333172722

02/113 - PENN HILLS

Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

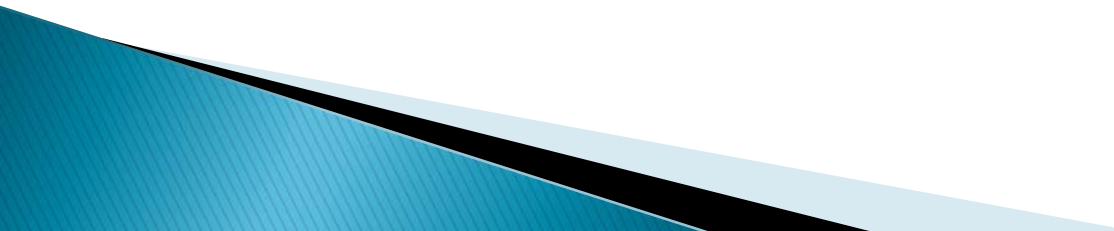
BRKEY: 2179

PLUM CREEK UPPER BRANCH

UNIVERSAL RD

			Bridge		Roadway		Channel
Monitoring Personnel	Time	AM or PM	Pressure Flow	Alignment / Settlement / Tilt	Settlement	Embankment Erosion	Debris Buildup
		A / P	Y / N	Y / N	Y / N	Y / N	Y / N
Remarks:							
		A / P	Y / N	Y / N	Y / N	Y / N	Y / N
Remarks:							
		A / P	Y / N	Y / N	Y / N	Y / N	Y / N
Remarks:							

# Scour Bridge Monitoring

- ▶ You do NOT need to be an engineer or bridge inspector in order to monitor scour critical bridges
  - ▶ Road maintenance crews may be used to monitor scour critical bridges on BIA and Tribal roads
  - ▶ Familiarization with these scour monitoring procedures should be completed prior to flood events
- 



# Scour Bridge Monitoring

BIA employees, Tribal employees and local volunteers can monitor scour critical bridges including:

- ▶ Road crews
  - ▶ Emergency management personnel
  - ▶ Fire police
- 

# Scour Bridge Monitoring

- ▶ **Complete the monitoring log at each visit during flood events. The log serves as a record and must be kept on file.**



# Monitoring Priority and Frequency

---

## Category A

- Monitor once flooding begins
- Required monitoring frequency is at least once every 4 hours.
  - If a Category A bridge experiences pressure flow or debris build-up but must remain open, then the bridge must be monitored continuously until flood waters recede and then inspected by qualified personnel.

# Monitoring Priority and Frequency

---

## Category B

- Monitor as resources allow once flooding begins.
- If necessary, provide higher priority for monitoring activities on Category A bridges.
- Required monitoring frequency is at least once every 12 hours.
  - If a Category B bridge experiences pressure flow or debris build-up but must remain open, then the bridge must be monitored continuously until flood waters recede and then inspected by qualified personnel.



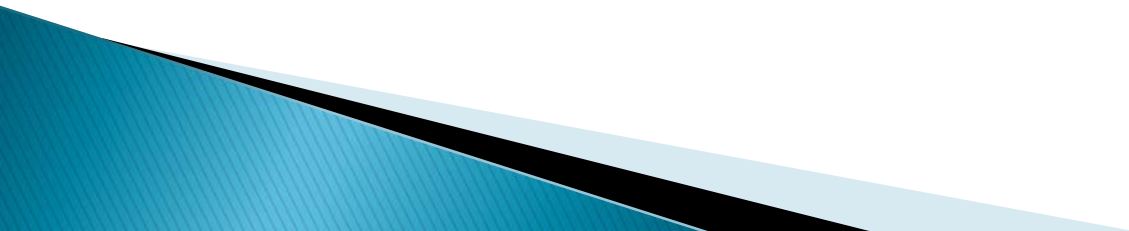
# Monitoring Priority and Frequency

---

## Category C

- Monitor as resources allow once flooding begins.
- If necessary, provide higher priority for monitoring activities on Category A & B bridges.
- Required monitoring frequency is at least once every 24 hours.
  - If a Category C bridge experiences pressure flow or debris build-up but must remain open, then the bridge must be monitored continuously until flood waters recede and then inspected by qualified personnel.

# Bridge Pictures







# Partnering For Success

## Questions??

# Great Plains Region Tribal Transportation Program Update

South Dakota Tribal Transportation Safety Summit  
Watertown, South Dakota

Brenda Red Wing  
Regional Transportation Engineer – BIA Great Plains Regional Office  
October 22, 2019



# Topics

- ▶ Regional Staff
  - ▶ FAST Act
  - ▶ ERFO
  - ▶ Program Management Oversight
- 



# Regional Staff

- Administration
  - Administrative Officer – Vickie Parisien
- Planning and Project Development
  - Mike Hauge
  - Civil Engineer (Vacant)
  - Civil Technician (Vacant)
- Construction
  - Bill Whiteside
  - Shane Nedved
  - Civil Technician (Vacant)
- Road Maintenance
  - Civil Engineer (Vacant)
- Survey
  - Jeff Garreau



# FAST Act TTP Funding

- ▶ Fixing America's Surface Transportation Act
- ▶ 5 year Highway Bill (FY16 – FY20)
- ▶ Tribal Transportation Program (TTP) Funding
  - FY16 – \$465 Million
  - FY17 – \$475 Million
  - FY18 – \$485 Million
  - **FY19 – \$495 Million**
  - FY20 – \$505 Million
  - **TOTAL – \$2.425 Billion over 5 years**



# FAST Act

## ▶ TTP

- No change in existing funding formula
- No change in Safety or Planning set-asides
- TTP Bridge set aside increases from 2% to 3%.
- PM&O set aside decreases from 6% to 5%.

## ▶ Annual Reporting Requirement

- 100% of Great Plains Tribes reporting
  - Reports are due December 31st
  - Common errors
-





# Region ERFO Coordinator

- ▶ All ERFO Damage Survey Reports must be submitted to designated tribal contact:
  - Bill Whiteside (Lead) – Cheyenne River Sioux, Oglala, Flandreau, Crow Creek & Lower Brule
  - Mike Hauge – Three Affiliated Tribes, Turtle Mountain, Spirit Lake, Standing Rock, Sisseton–Wahpeton Oyate and Yankton
  - Shane Nedved – Rosebud, Winnebago, Omaha, Santee & Ponca



# Program Management Oversight

- ▶ TTP Program Delivery
  - Seven Direct Service Tribes
  - Six BIA G2G Agreement Tribes
  - Three FHWA Agreement Tribes
- ▶ Road Maintenance
  - Eleven PL93–638 Contracts
  - Five Agency funded RM programs





# Program Management Oversight

- ▶ Regional Office Program Reviews
  - Areas to be reviewed:
    - Program Management
    - Financial Management
    - Planning
      - LRTPs
    - Construction and Construction Monitoring
      - Close out Reports



# Partnering For Success

## Questions??





This is a photograph of **pressure flow**. The water is flowing against the bridge superstructure. Water levels may continue to rise and flow over the bridge; this is called “overtopping”.



This top photograph shows **settlement** distress in the roadway due to **tilt** damage of the abutment.

This bottom photograph shows the **tilt** damage of the abutment on the left-hand side causing the **settlement** distress of the roadway in the top photograph.







This top photograph shows **settlement** damage in the abutment due to scour taking away the earth underneath the abutment.

This bottom photograph shows the same **settlement** damage, and its effect of distress on the roadway above the bridge.







This is a photograph of extreme **settlement** damage in the abutment on the left-hand side of the photo.





This is a photograph of **settlement** damage in the stone masonry pier and some collapsing in the arch.





This is a photograph of **settlement** damage in the approach fill behind the abutments, viewed from the roadway above the bridge.





This is a photograph of extreme **settlement** damage in the roadway, causing a hole in the roadway behind the bridge abutments.





This is a photograph of **embankment erosion** damage. The shoulder of the roadway has fallen away and part of the masonry bridge has collapsed into the stream channel.





This is a photograph of **embankment erosion** damage under and next to the roadway. The earth that was holding up the shoulder of the roadway has fallen away.





This is a photograph of severe **debris buildup**, in this case a pile of tree branches, caught against the bridge that is blocking more than 25% of the span opening.



# After a Flood

- Completed monitoring logs for each bridge that was monitored are to be placed in the bridge file maintained by the owner.
- These records may be subject to audit at a later date as required by FHWA.
- Bridges that are closed must receive a post-flood damage inspection performed by a qualified bridge safety inspector and a professional

# After a Flood

engineer approves that the bridge is safe for traffic.

- **All Category A bridges that have been closed from pressure flow, overtopping, debris build-up or from damage must be inspected PRIOR to re-opening.**
- **All flood-damaged bridges (including settlement, tilt, misalignment, erosion or**



# After a Flood

bridge washout) **MUST REMAIN** closed until inspected.

- Depending on the severity of the storm, some or all Category A, B, or C bridges may require a post-flood damage inspection after water recedes to normal levels even if the bridge was not closed; this may include bridges that were not closed during monitoring.

# After a Flood

- This determination will be made by BIADOT. BIADOT bridge personnel will notify local bridge inspection engineers.





# **SAFETY FIRST**

**DO NOT ENDANGER YOURSELF OR OTHERS  
WHILE MONITORING BRIDGES**

**DO NOT ENTER FLOOD WATERS**

**FLOOD WATERS INCLUDE BOTHSTANDING  
AND FLOWING WATER**

# 2019 Indian Highway Safety Program



Lawrence Robertson, Program Director

Albuquerque NM 87104

505-563-3814, [Lawrence.Robertson@bia.gov](mailto:Lawrence.Robertson@bia.gov)





## *Mission Statement:*

*“To reduce the number and severity of traffic crashes in Indian Country by supporting Education, Enforcement and Engineering as well as Safe Tribal Community Programs”*

# *Indian Highway Safety Program*

- The Indian Highway Safety Program is responsible for providing services to Native American/Alaskan Tribes in the United States.
- We are located in Albuquerque NM and included in the National Highway Traffic Safety Administration's Region 6.
- Our office staff consists of: Director, Program Coordinator, Financial Analyst, and two Law Enforcement Assistants.

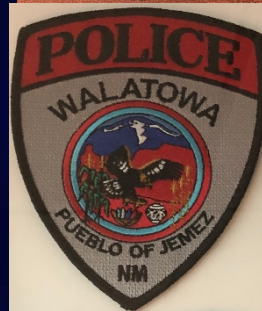
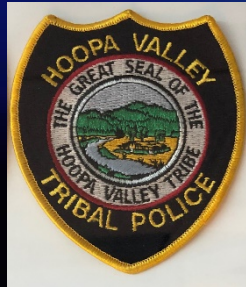


# IHSP Tribal program performance

- 2012-2018 averaged 30 granted tribal programs.
  - 454 fatalities
  - 26,953 motor vehicle crashes
  - 31,864 DUI arrests
  - 24,434 Seat Belt citations issued
  - 227,018 Speeding citations issued
  - 238,938 other traffic citations issued

# FY2020 Funded Programs

- Alaska
- Arizona
- California
- Colorado
- Florida
- Idaho
- Michigan
- Minnesota
- Montana



- Nevada
- New Mexico
- New York
- North Dakota
- Oklahoma
- South Dakota
- Wisconsin
- Washington





# Funded activities

## Community Education Programs

Educating at the local level to make a difference for Indian Country

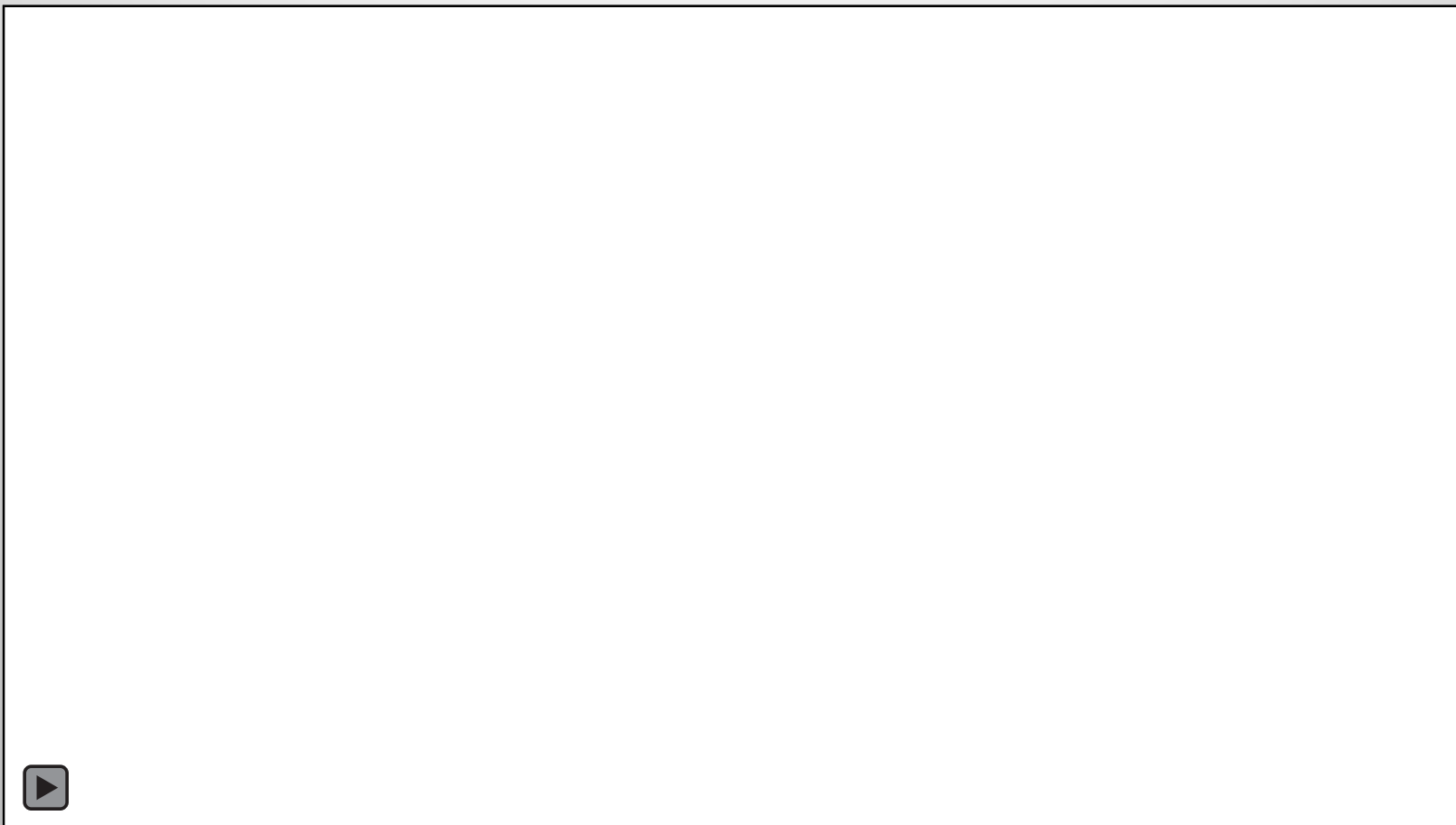


# Tribal Media project





# Tribal Media project





# IHSP Indian Country

The infamous tape windshield



Tribal Troopers working  
Winter checkpoints



Afternoon DUI



Teepee capital of the world-Crow Fair





# Media and Community Outreach



A person wearing a blue shirt is working on a yellow traffic cone. The background is dark and blurry, with some green and yellow light streaks.

# 2020 Highway Safety Plan (HSP) funding

- **Police Traffic Service (PTS) grants, includes full time and overtime tribal projects: \$8,671,363.59; 35 PTS programs.**
- **Occupant Safety grants, includes car seat program and seat belt survey: \$146,476.00; 16 CPS programs.**
- **BATmobile, funding for operation and maintenance: \$100,000.00**



# Where are the funds going?

## Program funding:

- Overall Fulltime grant funds: \$7,816,164.00 (includes fringe and IDC).
    - Average funding per agency: \$300,621.00.
  - 108,160 Straight time hours (equal to 52 full time officers): \$2,624,280.00
    - Salary ranges from \$34,000.00 to \$60,000.00 with average pay at \$50,466.92.
  - 13 full time data clerks: \$522,583.00
    - Salary ranges from \$33,280.00 to \$48,195.00; average pay at \$40,198.00.
  - 9 Overtime programs: \$706,412.00 (includes all costs); average per agency: \$78,490.00.
- 
- South Dakota programs for FY2020 PTS: \$1,309,773.00
  - South Dakota programs for FY2020 CPS: \$6,895.00

# Where are the funds going?

## Operating costs:

- **Equipment: \$528,846.00**
  - for cars, computers, educational material, radar/lidar, in-car camera systems, PBT's, Intoxilizers, digital cameras, speed monitoring trailers, lightbars, vehicle decals, Draegar drug testing machines, printers, fatal vision goggles, SIDNE machines.
- **Vehicle lease costs: \$402,480.00**
- **Overtime mileage costs: \$173,533.00**
- **Supplies: \$49,986.00 includes office supplies, PBT tubes, citations, e-ticket citation paper.**
- **Media costs: \$59,061.00, this includes promotions through billboards, radio, newspaper, video media and program brochures.**

**Lifesavers grant program: grants to tribes to attend this conference, this year we exceeded expectations and 58 tribal participants travelled to the conference.**





## ***“Performance based Reimbursable Program”***

- Each tribe must perform the work and submit the Request for Reimbursement (RFR)
- We monitor each program at 100%
- This is so tribes will not have to payback for non-compliant performance.

# Vision for the future

- **Continue to provide PTS funding**
  - More training to officers for drug impaired driving (ARIDE and DRE)
  - More administrative data clerks to the tribal programs
  - More media projects nationwide to benefit tribal programs
- **Continue to provide CPS funding**
- **Continue to provide funding for tribes to attend Lifesavers Conference-March 2020 Tampa FL**
- **Continued partnership with Federal Highways and NHTSA Traffic Records for improved crash reporting nationally.**
- **Efforts to enhance the staffing at IHSP to provide more services.**



# Questions?







# Thank you



**Lawrence Robertson, Program Director**  
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## ***FEMA PUBLIC ASSISTANCE GRANT PROGRAM***

Tyler Steen  
Recovery and Mitigation Manager  
South Dakota Office of Emergency Management

Mark Petitt  
Tribal Recovery Specialist  
FEMA



# EVENT OCCURS





- EVENT OCCURS

DETERMINE THE EXTENT OF DAMAGES





21







Site 4









- EVENT OCCURS

DETERMINE THE EXTENT OF DAMAGES

DETERMINE THE INCIDENT PERIOD

STATE & NWS CAN ASSIST WITH THIS



- 2019

- MARCH 13<sup>TH</sup> – APRIL 26<sup>TH</sup> DR-4440

- MAY 26<sup>TH</sup> – JUNE 7<sup>TH</sup> DR-4463

- JUNE 30<sup>TH</sup> – JULY 21<sup>ST</sup> DR-4467



- EVENT OCCURS

DETERMINE THE EXTENT OF DAMAGES

DETERMINE THE INCIDENT PERIOD

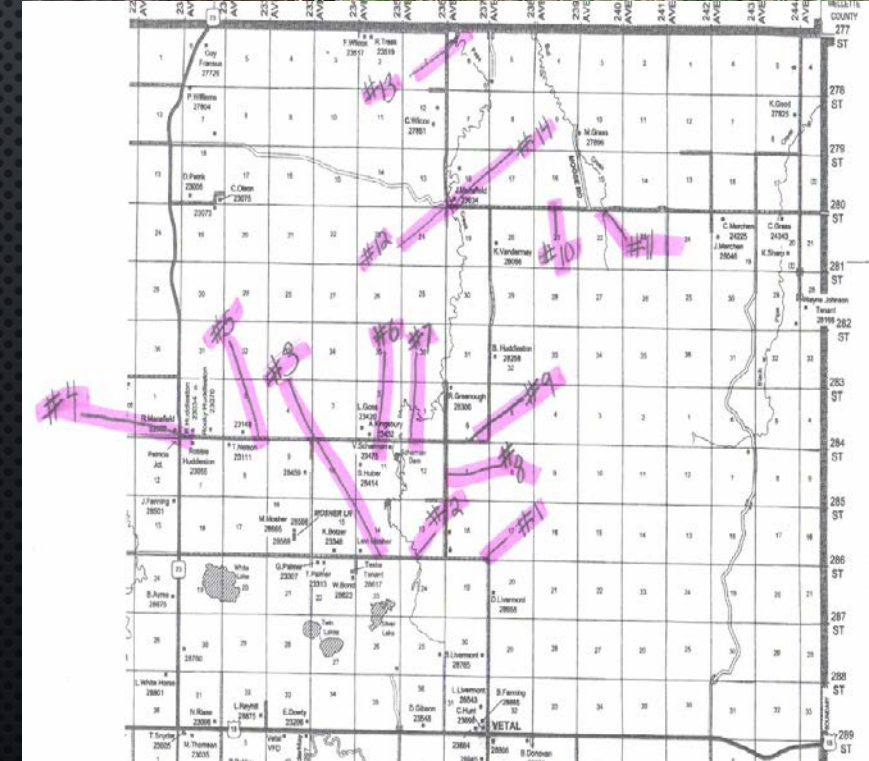
STATE & NWS CAN ASSIST WITH THIS

DETERMINE WHO HAS RESPONSIBILITY

TRIBE, BIA, STATE, COUNTY, TOWNSHIP



- CAPTURING DAMAGES
- PHOTOS
- MAPS/LOCATIONS





- CAPTURING DAMAGES

PHOTOS

MAPS/LOCATIONS

ESTIMATES

DOCUMENTATION



## Damage Assessment Site Worksheet - Roads and Culverts

Applicant Name		Name of Local Contact		Contact Phone #		Contact Email				County		Date		All sites must be identified on an attached map. Pictures of each site are required. Label each picture with the site number.	
\$ -		GRAVEL OR BASE	GRAVEL OR BASE	GRAVEL	BASE	CULVERT	CULVERT		CY	CY	CULVERT				
Map Site#	Description of Material	Length in Feet	Width in Feet	Depth in Inches	Depth in Inches	Length in Feet	Width in Inches		Gravel	Base	Cost per foot (applicant enters)	Latitude	Longitude	Work Complete %	Total Cost
												N	W		
1	Gravel							=	0.00						\$0.00
1	Base							=		0.00					\$0.00
1	Culvert							=							\$0.00
2	Gravel							=	0.00						\$0.00
2	Base							=		0.00					\$0.00
2	Culvert							=							\$0.00
3	Gravel							=	0.00						\$0.00
3	Base							=		0.00					\$0.00
3	Culvert							=							\$0.00
4	Gravel							=	0.00						\$0.00
4	Base							=		0.00					\$0.00
4	Culvert							=							\$0.00
5	Gravel							=	0.00						\$0.00
5	Base							=		0.00					\$0.00
5	Culvert							=							\$0.00
6	Gravel							=	0.00						\$0.00
6	Base							=		0.00					\$0.00
6	Culvert							=							\$0.00
7	Gravel							=	0.00						\$0.00
7	Base							=		0.00					\$0.00
7	Culvert							=							\$0.00
									CY (Gravel)	CY (Base)	Culverts	Tons (Gravel)	Tons (Base)		
Total cubic yards/Tons (Tons=CY*1.325)									0.00	0.00		0.00	0.00		
Applicant in place cost for work activity: Applicant enters cost per CY									\$ -	\$ -					Total Damage
Total in place cost for sheet									\$ -	\$ -	\$ -				\$ -

# PRELIMINARY DAMAGE ASSESSMENTS

INFORMATION MUST BE COMPLETED IN ORDER TO REQUEST A PRESIDENTIAL DISASTER DECLARATION

WORK WITH THE TRIBAL EMERGENCY MANAGER

MUST BE COMPLETED NO LATER THAN 30 DAYS FOLLOWING THE INCIDENT PERIOD TO REQUEST A DECLARATION



# TRIBES HAVE THREE OPTIONS FOR DECLARATIONS

- PARTICIPATE WITH THE STATE AS A SUB-RECIPIENT IN PDA AND DECLARATION
  - CAN ALSO REQUEST RECIPIENT STATUS UNDER A STATE DECLARATION
- PARTICIPATE IN THE PDA, THEN REQUEST A SEPARATE DECLARATION
- REQUEST A SEPARATE PDA AND DECLARATION
  - NEED A MINIMUM \$250,000 IN DAMAGES TO REQUEST PDA
  - DOES NOT GUARANTEE A DECLARATION WILL BE APPROVED



# AFTER THE PRELIMINARY DAMAGE ASSESSMENT

- MAY TAKE A MONTH OR MORE BEFORE THE DECLARATION IS DECLARED BY THE PRESIDENT
- IF DECLARED FEMA WILL WORK WITH THE TRIBE TO IDENTIFY ELIGIBLE COSTS
  - FEMA DELIVERY MODEL
    - APPLICANT BRIEFINGS, EXPLORATORY CALL, RECOVERY SCOPING MEETING, DAMAGE INVENTORY, SITE INSPECTIONS PROJECT FORMULATION
    - OPPORTUNITIES FOR MITIGATION



# FUNDING

- RECIPIENT — RECEIVE FUNDING FROM FEMA
  - FEMA — 75%
  - TRIBE — 25%
- SUBRECIPIENT — RECEIVE FUNDING FROM STATE
  - FEMA — 75%
  - STATE — 10%\* AMOUNT IS DETERMINED BY GOV FOR EVERY DISASTER
  - TRIBE — 15%







2019

**SOUTH DAKOTA**

# Strategic Highway Safety Plan

Andy Vandel  
Highway Safety Engineer  
SDDOT

2019

SOUTH DAKOTA

# Strategic Highway Safety Plan



PREPARED BY:  
The South Dakota Department  
of Transportation (SDDOT)

## What is the SHSP?

**REQUIRED** by the Federal  
Transportation Law

Updated every **FIVE** years

**DATA** driven approach

Statewide & coordinated plan  
involving **MULTI-DISCIPLINARY**  
safety partners

Focused on the reduction of fatalities  
and incapacitating injuries on **ALL**  
public roads

**STRATEGIES** to keep moving  
toward zero



**VISION**



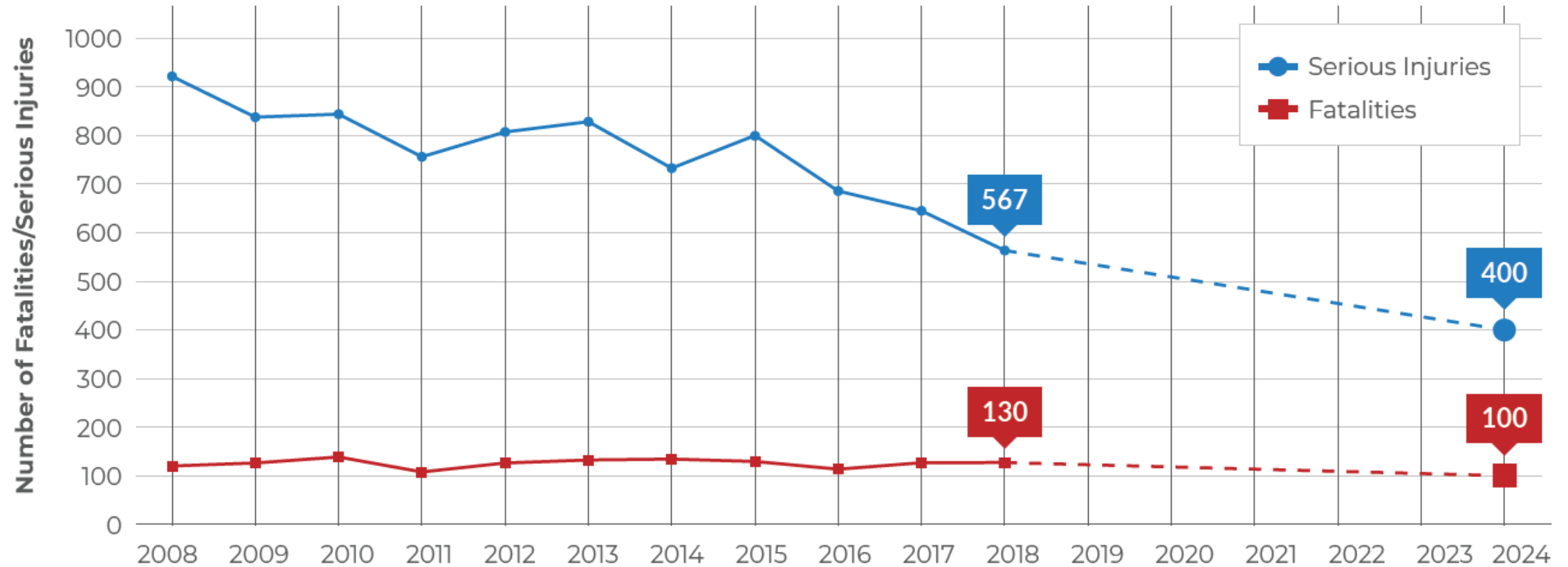
Eliminate *ALL* deaths and life-changing injuries on South Dakota roads so everyone arrives home safely.



Why highway safety is important



Exhibit 1. Fatality and Serious Injury Trends (2008-2018) and Goals



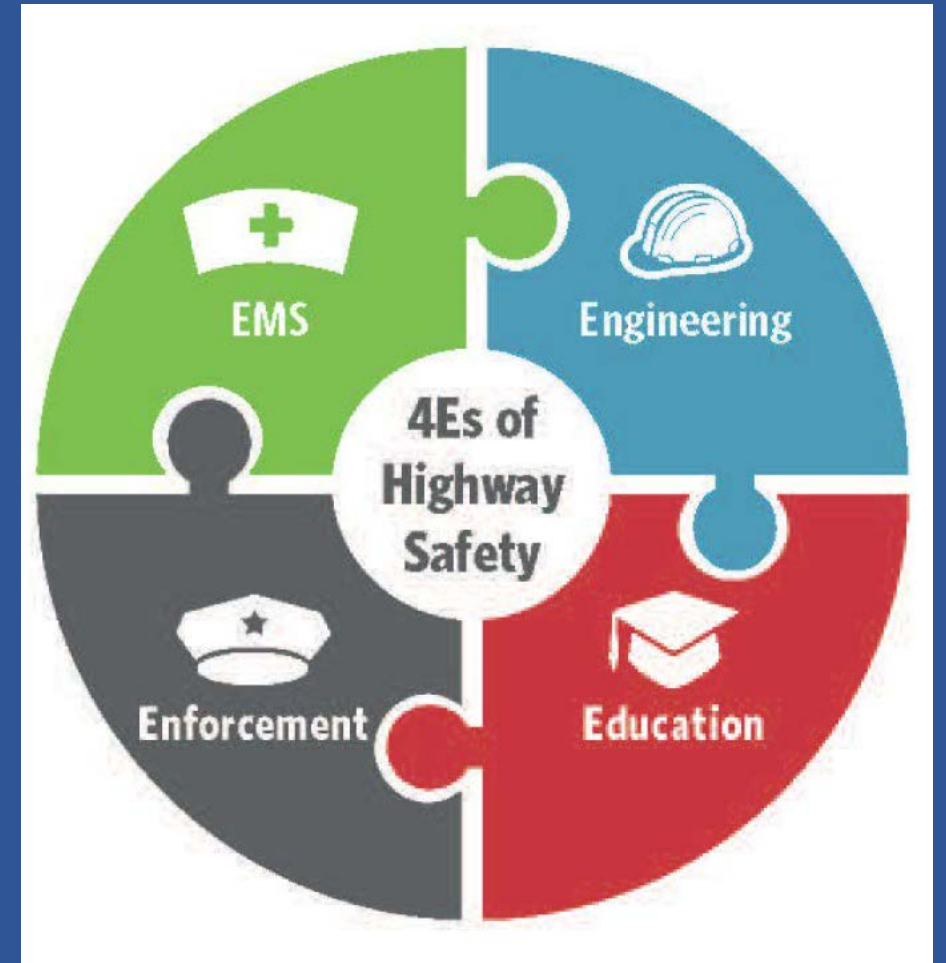
# Development Process

- Analyze Crash Data
- Review Existing Plans
- Stakeholder Input
- Public Input
- Study Advisory Team  
Coordination



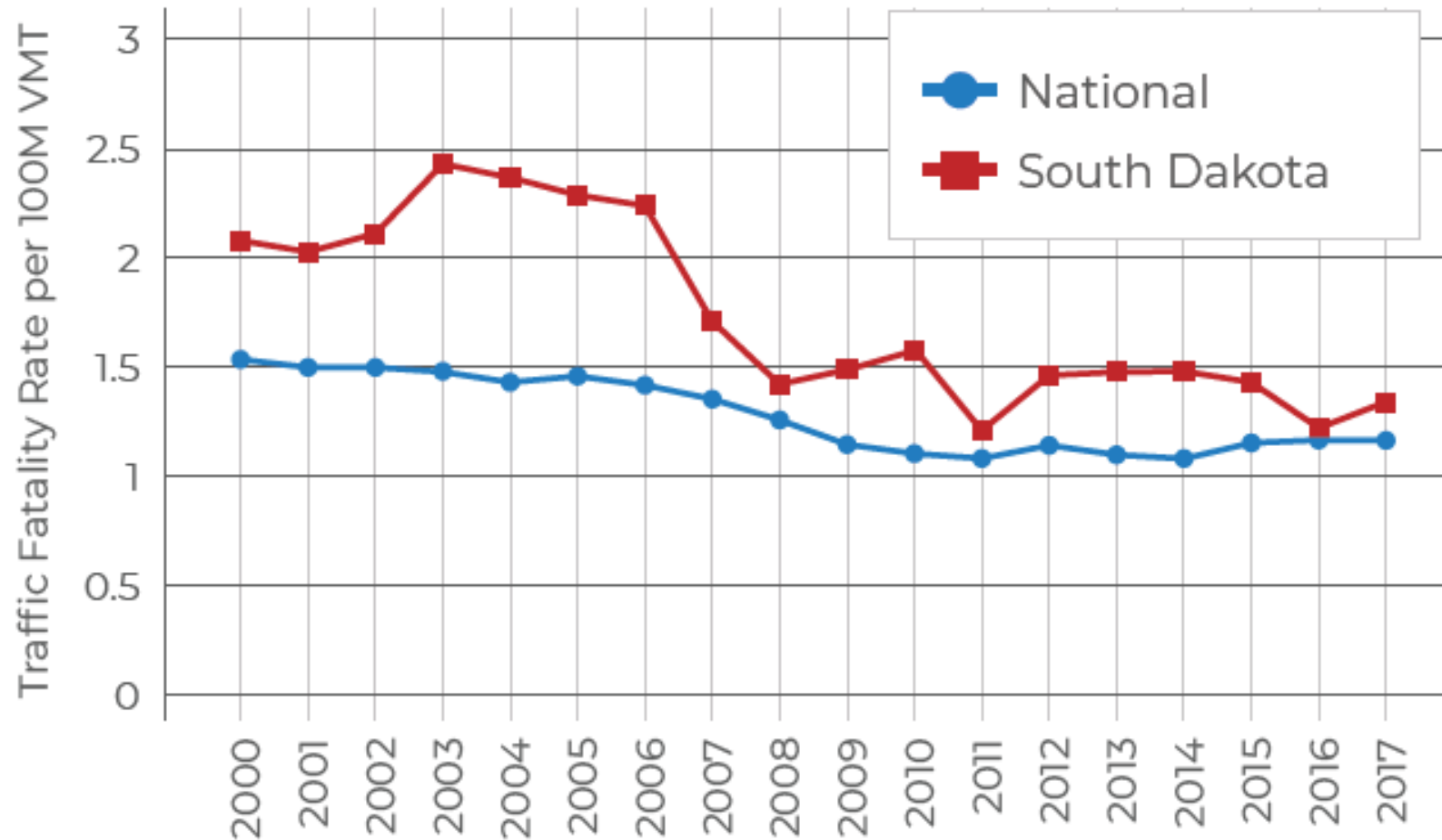
# Who was involved?

- Department of Transportation (SDDOT)
- Department of Public Safety (DPS)
- Department of Health (DOH)
- Metropolitan Planning Organizations (MPO)
- Law Enforcement
- Emergency Responders
- Advocacy Groups
- Other State and Local Agencies
- Federal Highway Administration (FHWA)
- National Highway Traffic Safety Administration (NHTSA)

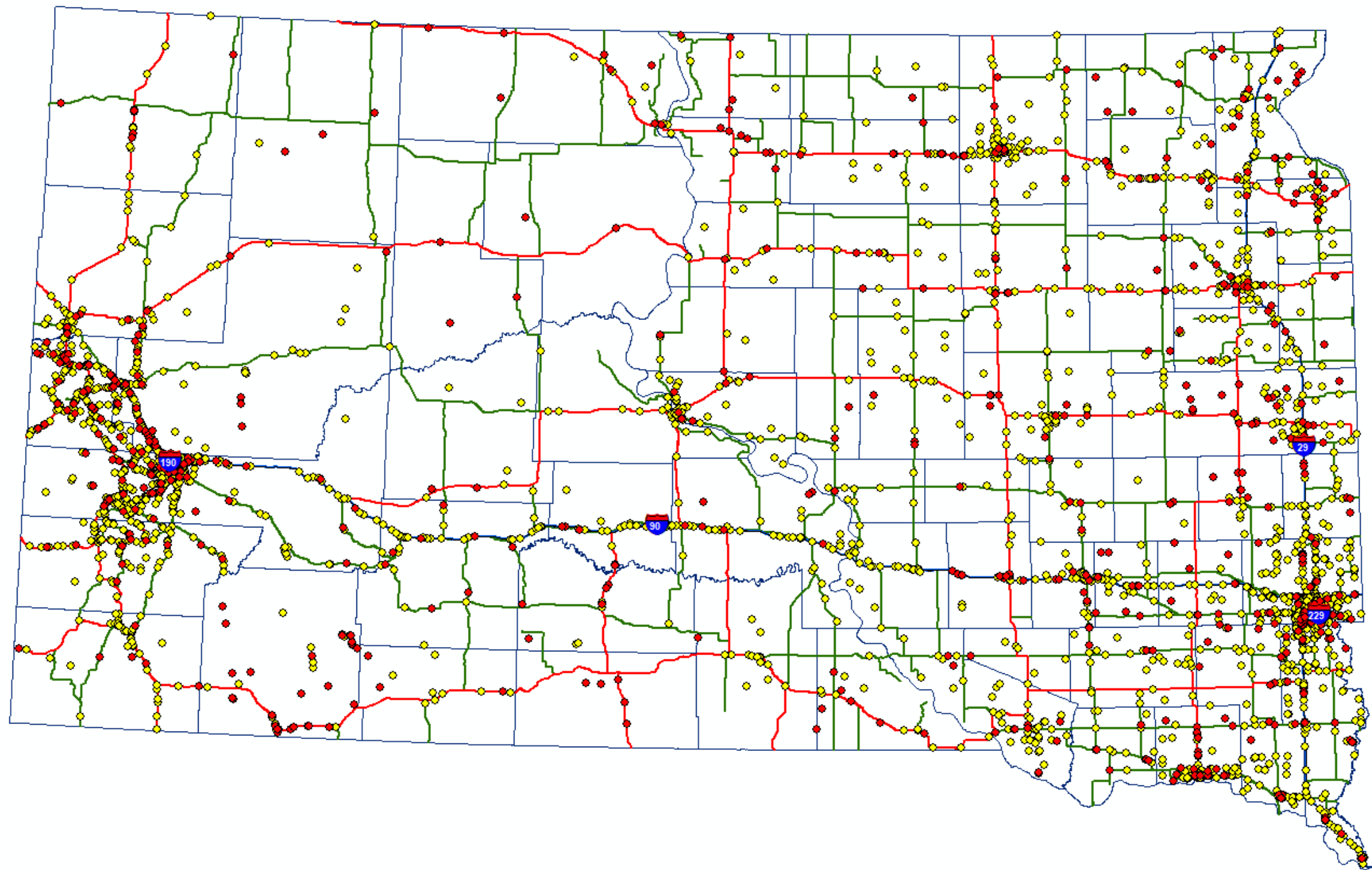


# Crash Data Analysis

**Exhibit 4. Fatality Rate per 100M VMT**







# Crash Data Analysis

## South Dakota Roads

**82,000**

Miles of road in SD

**9%**

Of those roads  
owned by SDDOT

**52%**

Of all severe crashes happen  
on state-owned roads

**48%**

Of all severe crashes happen  
on non-state owned roads

## State Roads

The number of severe  
crashes per mile is 10  
times higher on state  
roads than non-state  
roads.

**10×**

## Non-State Roads

The severe crash rate is  
2 times higher on non-  
state roads than state  
roads.

**2×**



# Total Severe Crashes 3,473

State System		Other/Unknown		Local System	
1,811	52%	21	1%	1,641	47%

City	
744	45%

County	
896	55%

Other/Blank	
1	0%

Intersection-Related	
412	55%

Segment	
332	45%

Intersection-Related	
154	17%

Segment	
742	83%

Signalized	
179	43%

Unsignalized	
179	43%

Other/Unknown	
54	13%

Signalized/ Unsignalized	
97	63%

Other/Unknown	
57	37%

Animal	
20	3%

Non-Animal	
722	97%

On Curve	
54	16%

Off Curve	
278	84%

On Curve	
238	33%

Off Curve	
483	67%

Crash Type <sup>(1)</sup>		
Angle	105	59%
Older Driver	51	28%
Young Driver	45	25%
Unbelted Occupants	34	19%
Speeding/ Aggressive	27	15%
Alcohol/Drug-Related	24	13%
Rear End	22	12%
Pedestrian	20	11%
Bicycle	12	7%
Single Vehicle Roadway Departure	5	3%
Head-On	4	2%
Side Swipe Same	3	2%
Heavy Vehicle	2	1%
Side Swipe Opp	0	0%

Crash Type <sup>(1)</sup>		
Angle	109	61%
Older Driver	49	27%
Young Driver	43	24%
Alcohol/Drug-Related	25	14%
Unbelted Occupants	23	13%
Speeding/ Aggressive	21	12%
Pedestrian	17	9%
Rear End	13	7%
Single Vehicle Roadway Departure	11	6%
Bicycle	6	3%
Head-On	4	2%
Heavy Vehicle	3	2%
Side Swipe Opp	0	0%
Side Swipe Same	0	0%

Crash Type <sup>(1)</sup>		
Single Vehicle Roadway Departure	31	57%
Alcohol/Drug-Related	25	46%
Speeding/ Aggressive	22	41%
Unbelted Occupants	16	30%
Young Driver	12	22%
Older Driver	4	7%
Rear End	3	6%
Side Swipe Opp	3	6%
Angle	2	4%
Head-On	2	4%
Heavy Vehicle	1	2%
Pedestrian	1	2%
Side Swipe Same	0	0%
Bicycle	0	0%

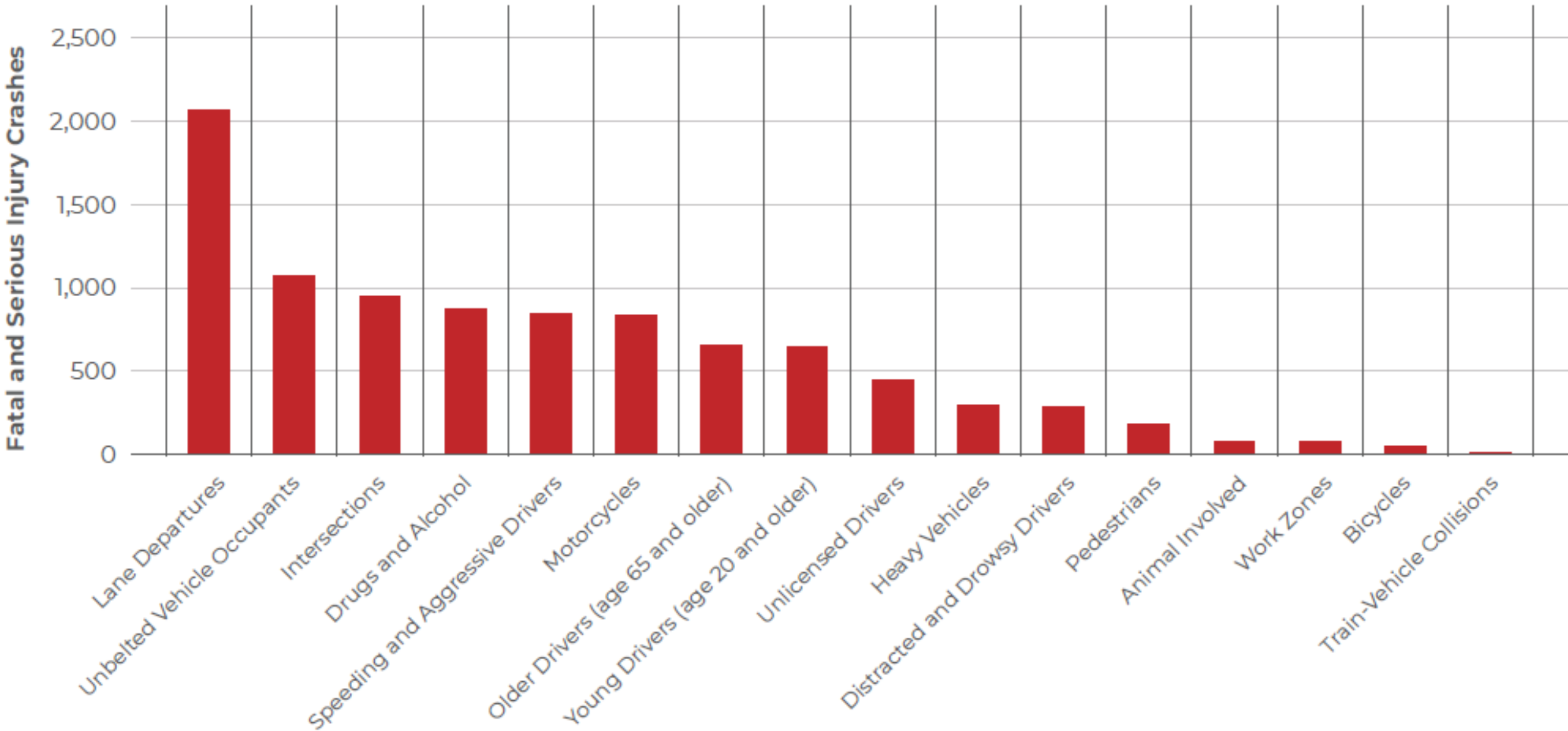
Crash Type <sup>(1)</sup>		
Alcohol/Drug-Related	76	27%
Young Driver	63	23%
Unbelted Occupants	61	22%
Single Vehicle Roadway Departure	57	21%
Speeding/ Aggressive	47	17%
Pedestrian	47	17%
Rear End	45	16%
Older Driver	44	16%
Angle	43	15%
Bicycle	13	5%
Head-On	8	3%
Heavy Vehicle	7	3%
Side Swipe Same	3	1%
Side Swipe Opp	0	0%

Crash Type <sup>(1)</sup>		
Angle	59	61%
Unbelted Occupants	40	41%
Young Driver	25	26%
Alcohol/Drug-Related	25	26%
Single Vehicle Roadway Departure	17	18%
Speeding/ Aggressive	16	16%
Older Driver	15	15%
Rear End	8	8%
Heavy Vehicle	8	8%
Side Swipe Same	2	2%
Head-On	1	1%
Side Swipe Opp	1	1%
Pedestrian	1	1%
Bicycle	0	0%

Crash Type <sup>(1)</sup>		
Single Vehicle Roadway Departure	203	85%
Speeding/ Aggressive	105	44%
Alcohol/Drug-Related	91	38%
Unbelted Occupants	85	36%
Young Driver	45	19%
Older Driver	29	12%
Angle	8	3%
Head-On	5	2%
Side Swipe Opp	4	2%
Heavy Vehicle	3	1%
Rear End	0	0%
Side Swipe Same	1	0%
Pedestrian	1	0%
Bicycle	1	0%

Crash Type <sup>(1)</sup>		
Single Vehicle Roadway Departure	369	76%
Unbelted Occupants	249	52%
Alcohol/Drug-Related	190	39%
Speeding/ Aggressive	141	29%
Young Driver	112	23%
Older Driver	42	9%
Pedestrian	24	5%
Head-On	18	4%
Rear End	17	4%
Heavy Vehicle	21	4%
Angle	12	2%
Bicycle	3	1%
Side Swipe Opp	2	0%
Side Swipe Same	1	0%

Exhibit 12. South Dakota Fatal and Serious Injury Crashes (2013–2017)\*





# 2019 SHSP Emphasis Areas

- Drugs and Alcohol
- Intersections
- Lane Departures
- Motorcycles
- Older Drivers
- Speeding and Aggressive Drivers
- Unbelted Vehicle Occupants
- Young Drivers

Safety Emphasis Area	SHSP Update Analysis (2013-2017)		2014 SD SHSP (2007-2011)		Change in Frequency		Change in Proportion	
	Percent	Number	Percent	Number				
Statewide Totals (Fatal and Serious Injury Crashes)	3,479		3,858		-379	✓		
Drivers								
Unbelted Vehicle Occupants	31%	1,073	37%	1,440	-367	✓	-6%	✓
Speeding and Aggressive Drivers	24%	847	28%	1,080	-233	✓	-4%	✓
Drugs and Alcohol	25%	875	24%	926	-51	✓	1%	⬆
Young Drivers (age 20 and younger)	19%	646	23%	899	-253	✓	-4%	✓
Unlicensed Drivers	13%	447	12%	470	-23	✓	1%	⬆
Older Drivers (age 65 and older)	19%	655	15%	592	63	⬆	4%	⬆
Distracted and Drowsy Drivers	8%	287	13%	508	-221	✓	-5%	✓
Other Users								
Pedestrians	5%	178	5%	188	-10	✓	0%	
Bicycles	1%	46	1%	57	-11	✓	0%	
Vehicles								
Motorcycles	24%	834	21%	825	9	⬆	3%	⬆
Heavy Vehicles	9%	297	8%	312	-15	✓	1%	⬆
Highways								
Lane Departures	59%	2,056	57%	2,211	-155	✓	2%	⬆
Intersections	27%	948	27%	1,041	-93	✓	0%	
Train-Vehicle Collisions	0%	6	0%	18	-12	✓	0%	
Work Zones	2%	75	2%	93	-18	✓	0%	
Animal Involved	2%	77	NA	NA	NA		NA	



Figure 14. Emphasis Area Relationship Matrix

	Drugs and Alcohol	Intersections	Lane Departures	Motorcycles	Older Drivers	Speeding and Aggressive Drivers	Unbelted Vehicle Occupants	Young Drivers
Drugs and Alcohol	-	18%	75%	15%	8%	27%	50%	13%
Intersections	17%	-	12%	21%	26%	15%	26%	25%
Lane Departures	32%	5%	-	22%	14%	30%	39%	16%
Motorcycles	16%	24%	54%	-	18%	20%	0%	8%
Older Drivers	11%	38%	44%	23%	-	16%	23%	8%
Speeding and Aggressive Drivers	28%	17%	73%	20%	13%	-	38%	25%
Unbelted Vehicle Occupants	41%	23%	75%	0%	14%	30%	-	21%
Young Drivers	17%	36%	52%	10%	8%	33%	35%	-
Statewide for All Severe Crashes	25%	27%	59%	24%	19%	24%	31%	19%



# Drugs and Alcohol

- 25% of all Severe Crashes
- Majority are single vehicle Run Off Road
- 71% are on Rural Roads, 26% on Horizontal Curves
- 55% are After Dark
- 83% are on Dry Roads

Who is involved?

72%  
Male



52%

<36 Years



50%



Unbelted Occupant





# Drugs and Alcohol

- Publicized sobriety checkpoints
- High-visibility saturation patrols
- Effective, high-visibility communication and outreach campaigns
- Alternative transportation programs



# Young Drivers

- 19% of all Severe Crashes
- Majority are single vehicle Run Off Road
- 59% are on Rural Roads, 36% at Intersections
- 68% are During Daylight
- 75% are on Dry Roads

**Who is involved?**

**53%**

Male



**35%**



Unbelted Occupant





# Young Drivers

- Targeted education to schools on driver safety
- Involvement of parents in teaching and managing young drivers



# Older Drivers

- 19% of all Severe Crashes
- Majority are Angle Intersection Crashes
- 63% are on Rural Roads
- 81% are During Daylight
- 81% are on Dry Roads

**Who is involved?**

**62%**

Male

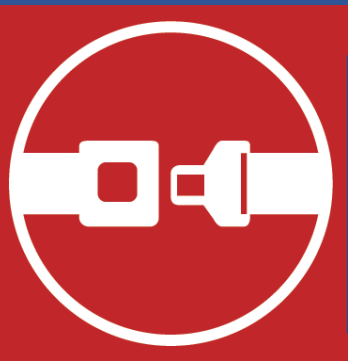






# Older Drivers

- Driver license screening and referral process, DL25 form
- Courses involving adjusting driving to accommodate age-related changes
- Increase driver visibility through oversized signing
- Improve transit opportunities through door-to-door services



# Unbelted Vehicle Occupants

- 31% of all Severe Crashes
- 76% are on Rural Roads
- Majority are single vehicle Run Off Road
- 21% Occurred on Horizontal Curves
- 57% are During Daylight
- 78% are on Dry Roads

Who is involved?

65%

Male



38%

<26 Years

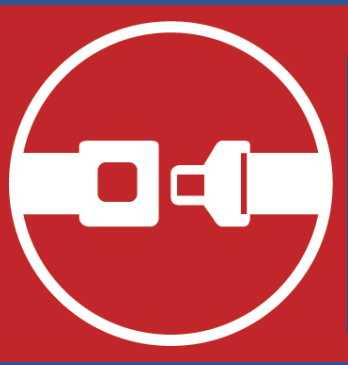


41%

Under influence







# Unbelted Vehicle Occupants

- Effective, high-visibility communication and outreach campaigns
- Aggressive enforcement efforts for non-use of seatbelt and child safety seats



# Speeding and Aggressive Drivers

- 24% of all Severe Crashes
- 74% are on Rural Roads
- 29% Occurred on Horizontal Curves
- 85% are During Daylight
- 63% are on Dry Roads
- 27% on Winter Road Conditions

## Who is involved?

63%  
Male



23%

<21 Years



38%



Unbelted Occupant





# Speeding and Aggressive Drivers

- Set well-established speed limits
- High-visibility enforcement of speeding and aggressive driving
- Effective, high-visibility communication and outreach campaigns
- Expand the use of advisory speed signs
- Radar Speed Feedback Signs to reduce drivers speed



# Intersections

- 27% of all Severe Crashes
- Majority are Angle Crashes
- 59% are on Urban Roads
- 77% are During Daylight
- 84% are on Dry Roads

## Who is involved?

59%  
Male



26%  
<26 Years



14%  
+65 Years



Above Average





# Intersections

- Improve signing, markings or lighting to increase conspicuity
- Clear sight triangles
- Consider pedestrian facilities, LPI, RRFB
- Radar Speed Feedback Signs to reduce drivers speed
- Optimize signal coordination to reduce delay
- Provide left and right turn lanes
- Improve access management to reduce conflict points



# Lane Departures

- 59% of all Severe Crashes
- 83% are on Rural Roads
- 31% Occurred on Horizontal Curves
- 64% are During Daylight
- 75% are on Dry Roads

## Who is involved?

64%   
Male

36%   
<26 Years

32%   
Under influence

39%   
Unbelted Occupant





# Lane Departures

- Install centerline, shoulder, or edgeline rumble strips
- Widen and/or pave shoulders
- Enhanced pavement markings and make wet reflective
- High Fiction Surface Treatment
- Enhanced curve delineation
- Remove or relocate fixed objects



# Motorcycles

- 24% of all Severe Crashes
- 69% are on Rural Roads
- 34% Occurred on Horizontal Curves
- 85% are During Daylight
- 94% are on Dry Roads

Who is involved?

69%  
Male



52%  
46 to 55 Years







# Motorcycles

- Aggressive impaired driving enforcement
- High-visibility enforcement of speeding and aggressive driving
- Rider education and training courses
- Sweeping of roadways prior to motorcycle events
- Shoulder widening
- Promote [SouthDakotaRides.com](https://SouthDakotaRides.com)



## Drugs and Alcohol

Fatal and Serious Injury Crashes (2013-2017)

**DEFINITION:** Crashes involving roadway users who are under the influence of alcohol, illicit drugs, and/or prescription drugs. Under the influence is defined as a BAC of 0.08 or higher. Under the influence of drugs is determined by law enforcement.

**Note:** "Severe crashes" noted in this fact sheet include Fatal (K) and Serious Injury (A-Injury) crashes.

### Roadway Jurisdiction - Severe Drugs and Alcohol Crashes



**72%**

on Rural Roads

**44%**

on State Roads

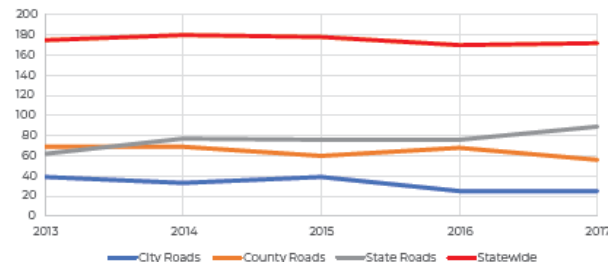
**37%**

on County Roads

	Rural		Urban		Statewide	
State Roads	310	36%	70	8%	380	44%
County Roads	295	34%	27	3%	322	37%
City Roads	15	2%	146	17%	161	19%
<b>All Jurisdictions</b>	<b>620</b>	<b>72%</b>	<b>243</b>	<b>28%</b>	<b>863</b>	<b>100%</b>

### Roadway Jurisdiction -

Severe Drugs and Alcohol Crashes Annually



## Statewide Crash Statistics



**875**

Total severe drugs and alcohol crashes (2013-2017)

**175**

Severe drugs and alcohol crashes per year (average)

**25%**

of all severe crashes in South Dakota involved drugs and alcohol



## Drugs and Alcohol

Fatal and Serious Injury Crashes (2013-2017)



### Method of Collision - Severe Drugs and Alcohol Crashes



	Fatal	Serious Injury	Percentage of Severe Drugs and Alcohol Crashes	Percentage of All Severe Crashes
Angle	23	81	12%	24%
Head-on ( front to front )	27	18	5%	4%
Rear-end ( front to rear )	6	34	5%	9%
Sideswipe, opposite direction	2	13	2%	2%
Sideswipe, same direction	1	7	1%	1%
No collision between 2 MV in transport	157	440	68%	60%
Animal - Wild or Domestic	1	3	0%	2%
Ditch or Embankment	18	51	8%	5%
Fixed Object	35	174	24%	15%
Other (Jackknife, Fire/Explosion, etc.)	2	8	1%	2%
Overturn/Rollover	101	204	35%	30%
Bicycle	0	3	0%	1%
Pedestrian	22	41	7%	5%



### Roadway Alignment - Severe Drugs and Alcohol Crashes

	RURAL			URBAN			Percentage of Severe Drugs and Alcohol Crashes	Percentage of All Severe Crashes
	City Roads	County Roads	State Roads	City Roads	County Roads	State Roads		
Curve	2	88	86	26	10	13	26%	21%
Straight	12	206	224	119	17	57	74%	79%



### Roadway Type - Severe Drugs and Alcohol Crashes

	RURAL						URBAN				
Functional Class	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Roads	Interstate	Principal Arterial	Minor Arterial	Major Collector	Local Roads
Severe Crashes	44	162	82	191	28	117	33	48	80	33	57
% Crashes	5.0%	18.5%	9.4%	21.8%	3.2%	13.4%	3.8%	5.5%	9.1%	3.8%	6.5%
% Total Roadway	1.6%	3.2%	3.6%	15.0%	7.5%	64.8%	0.3%	0.2%	0.6%	0.4%	2.8%





## Drugs and Alcohol

Fatal and Serious Injury Crashes (2013-2017)



### Light Condition - Severe Drugs and Alcohol Crashes



	Fatal	Serious Injury	Percentage of Severe Drugs and Alcohol Crashes	Percentage of All Severe Crashes
Dark - any roadway lighting	133	343	55%	28%
Dark - lit roadway	15	101	13%	7%
Dark - roadway not lit	117	240	41%	21%
Dark - unknown roadway lighting	1	2	0%	0%
Daylight	89	266	41%	68%
Dawn	7	13	2%	2%
Dusk	6	14	2%	2%



### Road Surface Condition - Severe Drugs and Alcohol Crashes



	Fatal	Serious Injury	Percentage of Severe Drugs and Alcohol Crashes	Percentage of All Severe Crashes
Dry	209	513	83%	79%
Wet, Water (standing, moving )	16	60	9%	8%
Frost / Ice / Snow / Slush	8	39	5%	11%
Oil / Sand, mud, dirt, gravel	5	24	3%	2%



### Time of Day and Month - Severe Drugs and Alcohol Crashes

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Crashes
Midnight - 3:00 AM	7	15	17	7	13	9	12	18	17	20	17	8	160	18.3%
3:00 AM - 6:00 AM	3	6	9	6	12	7	9	9	5	5	5	2	78	8.9%
6:00 AM - 9:00 AM	5	4	7	5	7	4	4	4	8	4	8	6	66	7.5%
9:00 AM - Noon	3	2	1	2	7	7	9	4	4	5	4	5	55	6.3%
Noon - 3:00 PM	4	3	5	3	8	20	15	15	8	8	5	4	84	9.6%
3:00 PM - 6:00 PM	4	5	6	10	10	20	15	20	13	7	8	6	124	14.2%
6:00 PM - 9:00 PM	7	8	7	8	17	20	20	24	18	17	12	9	167	19.1%
9:00 PM - Midnight	6	6	10	19	10	9	16	12	18	16	10	9	141	16.1%
Total	39	49	62	60	84	82	98	111	91	81	70	48	875	
% of Crashes	4.5%	5.6%	7.1%	6.9%	9.6%	9.4%	11.2%	12.7%	10.4%	9.3%	8.0%	5.5%		



## Drugs and Alcohol

Fatal and Serious Injury Crashes (2013-2017)



### Age and Gender - Severe Drugs and Alcohol Crashes

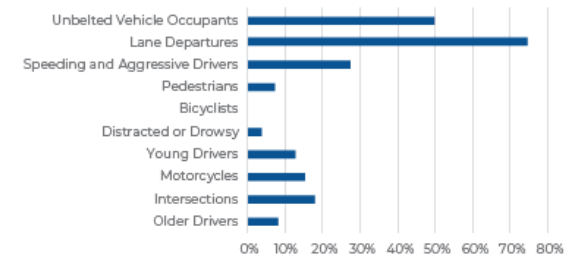
Age	Male		Female		Statewide Crashes	
<16	32	4%	14	2%	46	6%
17 to 20	41	5%	23	3%	64	8%
21 to 25	108	13%	46	5%	154	18%
26 to 35	140	16%	43	5%	183	21%
36 to 45	115	13%	25	3%	140	16%
46 to 55	106	12%	35	4%	141	16%
56 to 65	65	7%	22	3%	87	10%
>65	22	3%	15	2%	37	5%
Total	629	73%	223	27%	853	100%



### Emphasis Area - Severe Drugs and Alcohol Crashes

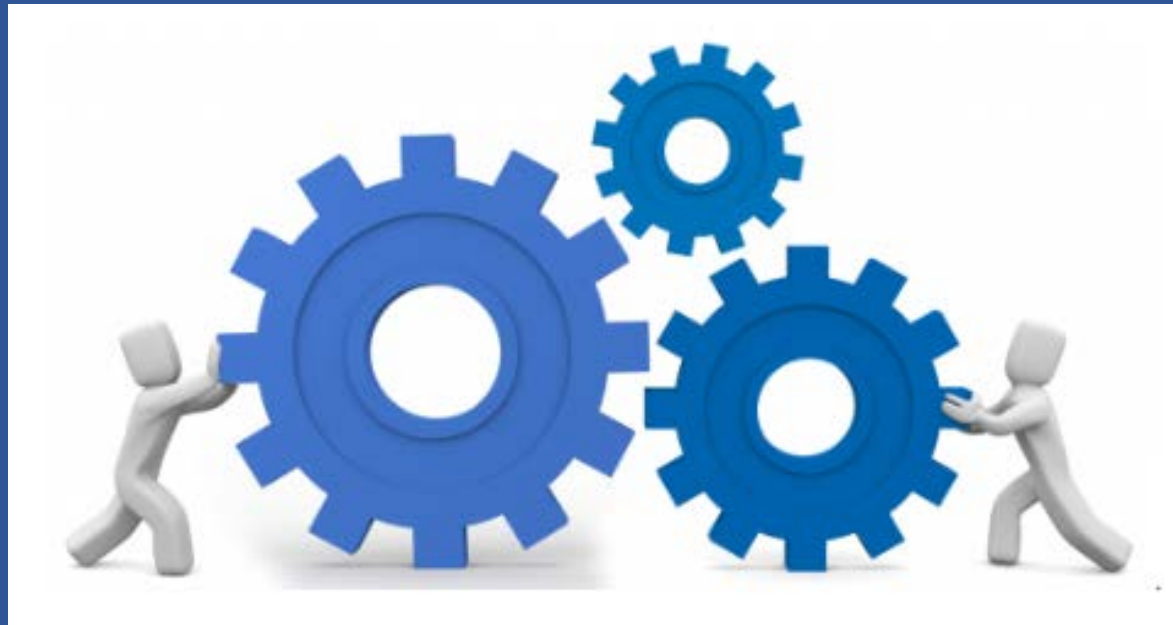
	Severe Drugs and Alcohol Crashes		Percentage of Severe Drugs and Alcohol Crashes	Percentage of All Severe Crashes	Percentage Point Difference
	Fatal	Serious Injury			
Unbelted Vehicle Occupants	160	276	50%	31%	19% ↑
Lane Departures	188	465	75%	59%	16% ↑
Speeding and Aggressive Drivers	64	176	27%	24%	3% -
Pedestrians	22	42	7%	5%	2% -
Bicyclists	0	0	0%	1%	-1% -
Distracted or Drowsy	9	24	4%	8%	-4% -
Young Drivers	26	86	13%	19%	-6% ↓
Motorcycles	30	104	15%	24%	-9% ↓
Intersections	33	124	18%	27%	-9% ↓
Older Drivers	25	46	8%	19%	-11% ↓

### Emphasis Area - Percentage of Severe Drugs and Alcohol Crashes



# IMPLEMENTATION!!

- Implementation is everyone's responsibility
- All 4 Es of Safety
- Needed to reach the goal of 100 or fewer fatalities by 2024





# Implementation Plans

1. Install centerline, shoulder or edge line rumble strips on rural roads, including county roads	
Responsible Lead Agency	South Dakota Department of Transportation
Potential Partners	Counties and Tribal Nations
Targeted Facilities	Rural State/County Roads
Objective	Reduce the frequency and severity of head-on and run-off-road crashes and alert distracted drivers to be aware of the roadway lanes
Goals for Deployment	Reduce Lane Departure fatal crashes to 64 or fewer and serious injury crashes to 178 or fewer by 2024
Four E's of Safety	Engineering

# How do I find it?

## Google “SDDOT”

**DOT SOUTH DAKOTA**  
DEPARTMENT OF TRANSPORTATION

Transportation Doing Business Projects & Studies Programs & Services Travelers

**BETTER LIVES  
THROUGH BETTER  
TRANSPORTATION**

CAREERS FORMS & PUBLICATIONS BID LETTING CONTRACTORS MAPS & GIS PUBLIC MEETINGS ROAD AND TRAVEL INFO

💡 HOW DO I?

**PRESS RELEASES**

**Railroad Crossing Work To Begin in Wall**  
The South Dakota Department of Transportation says railroad crossing work will begin in Wall on the Interstate 90 Loop/Hwy 240 near the Wall School on Friday, Oct. 18.

**FEATURED RESOURCES**

[2019 Strategic Highway Safety Plan \(SHSP\)](#)

[2020-2023 Statewide Transportation Improvement Program \(STIP\)](#)  
\*\*NEW\*\*

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South Dakota Department of Transportation

SDDOT Retweeted  
**Seaman-RCRegEng**  
@RapidCityRegEng  
A No Travel Advisory is in effect for the Northern Black Hills of South Dakota. This includes 190 from Tilford to Wyoming. Roads are snow packed and slippery. Snow and blowing snow is limiting visibility. Good night to have out of home.



Questions??

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