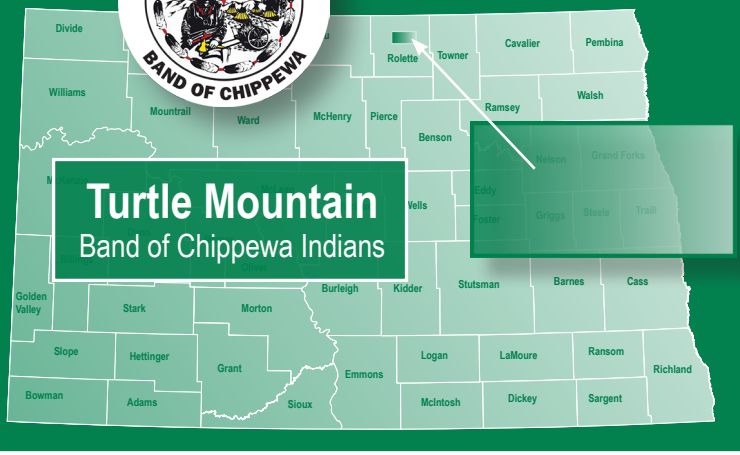
NDDOT
North Dakota
Department of Transportation

INFRASTRUCTURE & DRIVER BEHAVIOR

TURTLE MOUNTAIN BAND OF CHIPPEWA



Turtle Mountain
Band of Chippewa Indians

April 2015

North Dakota

Local Road Safety Program

CODE FOR THE ROAD
PARTNERING TO SAVE LIVES.

TR0119151018SEA

North Dakota
Local Road Safety Program

Prepared by

CH2M HILL

SRF Consulting Group, Inc.

On behalf of

North Dakota Department of Transportation

Grant Levi, P.E., Director

April 2015

TR0119151018SEA

Contents

Acronyms and Abbreviations

4Es	education, enforcement, engineering, and emergency medical services
100MVMT	100 million vehicle miles traveled
AASHTO	American Association of State Highway and Transportation Officials
ADT	average daily traffic
CMC	county major collector
CMF	crash modification factor
CRS	Crash Reporting System (North Dakota Department of Transportation)
DUI	driving under the influence
EMS	emergency medical services
ERA	edge risk assessment
FHWA	Federal Highway Administration
GDL	graduated driver's license
GHSA	Governors Highway Safety Association
HSIP	Highway Safety Improvement Program
LEAD	Listen, Educate, Ask, Discuss
LRSP	Local Road Safety Program
MUTCD	*Manual on Uniform Traffic Control Devices*
NCHRP	National Cooperative Highway Research Program
NDDOT	North Dakota Department of Transportation
NHTSA	National Highway Traffic Safety Administration
Plan	LRSP Safety Plan
PSA	public service announcement
SHSP	Strategic Highway Safety Plan
TSO	Traffic Safety Office

Executive Summary

This Local Road Safety Program (LRSP) Plan (Plan) was prepared for Turtle Mountain as part of North Dakota's statewide highway safety planning process. The contents are the result of a data-driven process, with a goal to reduce severe crashes (defined as those crashes resulting in at least one fatality or incapacitating injury) by documenting at-risk locations, identifying effective low-cost safety improvement strategies, and better positioning local agencies to compete for available safety funds. The LRSP includes a description of the connection to safety planning efforts at the national, state (through North Dakota's *Strategic Highway Safety Plan* and the Highway Safety Improvement Program), and regional levels.

This LRSP was commissioned by the North Dakota Department of Transportation (NDDOT) to provide a tool to assist counties, cities and Indian reservations in submitting proactive low-cost systemic safety projects for the NDDOT to fund as part of the Highway Safety Improvement Program (HSIP). The LRSP is not intended to be a complete safety plan for Turtle Mountain, because there may be other safety improvement strategies that are considered high-cost or low-cost that are also effective, but cannot be systemically applied across a local road system. While this LRSP addresses many of the safety concerns at high-risk locations within the Turtle Mountain Reservation, other equally important projects may be identified after this safety planning effort is complete.

Specifically, this LRSP includes the following:

- 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 local road systems 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 North Dakota where severe crashes have occurred.
- Development of approximately $1 million of suggested safety projects across the reservation (Table ES-1), including the filled out forms suitable for submittal to the NDDOT for their consideration for HSIP funding. 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.

TABLE ES-1
Turtle Mountain Total Safety Project Estimated Costs

Rural Projects	Roadway Segments	Intersections	Curves	Total
Turtle Mountain	$89,788	$622,680	$61,085	$773,553

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 highway agencies statewide in an effort to reduce the number of severe crashes on the local road systems. It is understood that the final decision to implement any of the suggested projects resides with tribe staff.

It should also be noted that the rankings of reservation roadway facilities are based on a comparison with documented risk factors. There is no expectation or requirement that Turtle Mountain 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 tribe staff based on consideration of economic, social, and political issues, as well as in coordination with other projects already in the Capital Improvement Program.

It should also be noted that some of the at-risk locations and suggested safety projects involve the intersection of a local roadway and a state route. It is acknowledged that the tribe does not have the authority to implement projects on the state's right-of-way. The tribe is encouraged to coordinate with the NDDOT to pursue a partnership that identifies a path toward implementation. This LRSP (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.

Regarding the expected life of this LRSP, 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 LRSP contains approximately $0.8 million of potential safety projects, which could provide Turtle Mountain with a sufficient backlog of projects for up to five years. As a result, the tribe is encouraged to periodically update this LRSP.

The tribe is also encouraged to apply for these projects through the NDDOT's HSIP process. The anticipated annual HSIP process is shown in Table ES-2.

TABLE ES-2
HSIP Solicitation Schedule

Month	Task Description
October/November	Solicitation for HSIP is sent out to all counties, districts, MPOs, cities, and tribes. The counties, districts, MPOs, cities, and tribes will have about **6 weeks to respond**.
January through April	NDDOT reviews the requests and conducts additional studies if required.
Following Fall	HSIP approval notices are sent after program concurrence from the FHWA. Funding for an approved project will be provided as funding is available.

1.0 Introduction

1.1 Background

To fulfill a commitment in the 2013 North Dakota Strategic Highway Safety Plan (SHSP), the North Dakota Department of Transportation (NDDOT) began the Local Road Safety Program (LRSP). The purpose of the LRSP is to better engage local roadway agencies in the statewide safety planning process. The NDDOT's commitment is based on two pieces of information:

- Based on 2007-to-2011 crash records, the SHSP identified that 56 percent of severe crashes (those crashes resulting in at least one fatality or incapacitating injury) in North Dakota occurred on roads operated by local agencies. (Note: More recent crash data from 2009 to 2013 indicates that 44 percent of severe crashes were on local agency roads.)
- The NDDOT had historically focused federal safety funds on interstates, U.S. highways, and state highways, even though slightly more than half of severe crashes occurred on those facilities.

The NDDOT set out to increase the level of participation of local agencies in safety planning and the amount of safety funds directed toward projects on local systems. To do this, the NDDOT partnered with local agencies (including all 53 counties, 12 major cities, 4 Indian reservations and 1 national park in the state) to prepare safety plans for every region of North Dakota.

> *The Strategic Highway Safety Plan (SHSP) development process was key in helping us identify the importance of local roads to achieve our long-term safety goals. This data-driven process helped us to transition to a systemic identification of crash types on all roads in addition to our traditional crash location (or hot spot) approach on the state system. As a result, the NDDOT has partnered with local stakeholders to prepare road safety plans that will identify potential safety projects consistent with the SHSP.*
>
> — Grant Levi, P.E., Director
> North Dakota Department of Transportation

Representatives from the NDDOT and Turtle Mountain participated in developing this LRSP Safety Plan (Plan) as part of a comprehensive effort to reduce the number of fatal and incapacitating injury crashes (referred collectively as severe crashes) that occur on North Dakota's local road system. The area covered by the Plan includes portions of NDDOT District 3 – Devils Lake (Figure 1-1).

The purpose of this Plan is to identify and implement specific safety strategies at specific locations and to link these projects directly with the contributing factors associated with the majority of severe crashes on the local roads. These safety projects are intended to be comprehensive by addressing both infrastructure- and driver-behavior-related crashes by including proactive projects developed through a system-wide risk assessment process. These projects are intended to compliment reactive projects developed through a site analysis approach focused on high-crash locations.

The traffic safety priorities identified in this Plan are the result of a data-driven analysis of nearly 90,980 crashes (including 2,340 severe crashes) on all roads in North Dakota. Of these crashes, 21 severe crashes occurred within the Turtle Mountain Reservation over the 5-year period from 2009 to 2013.

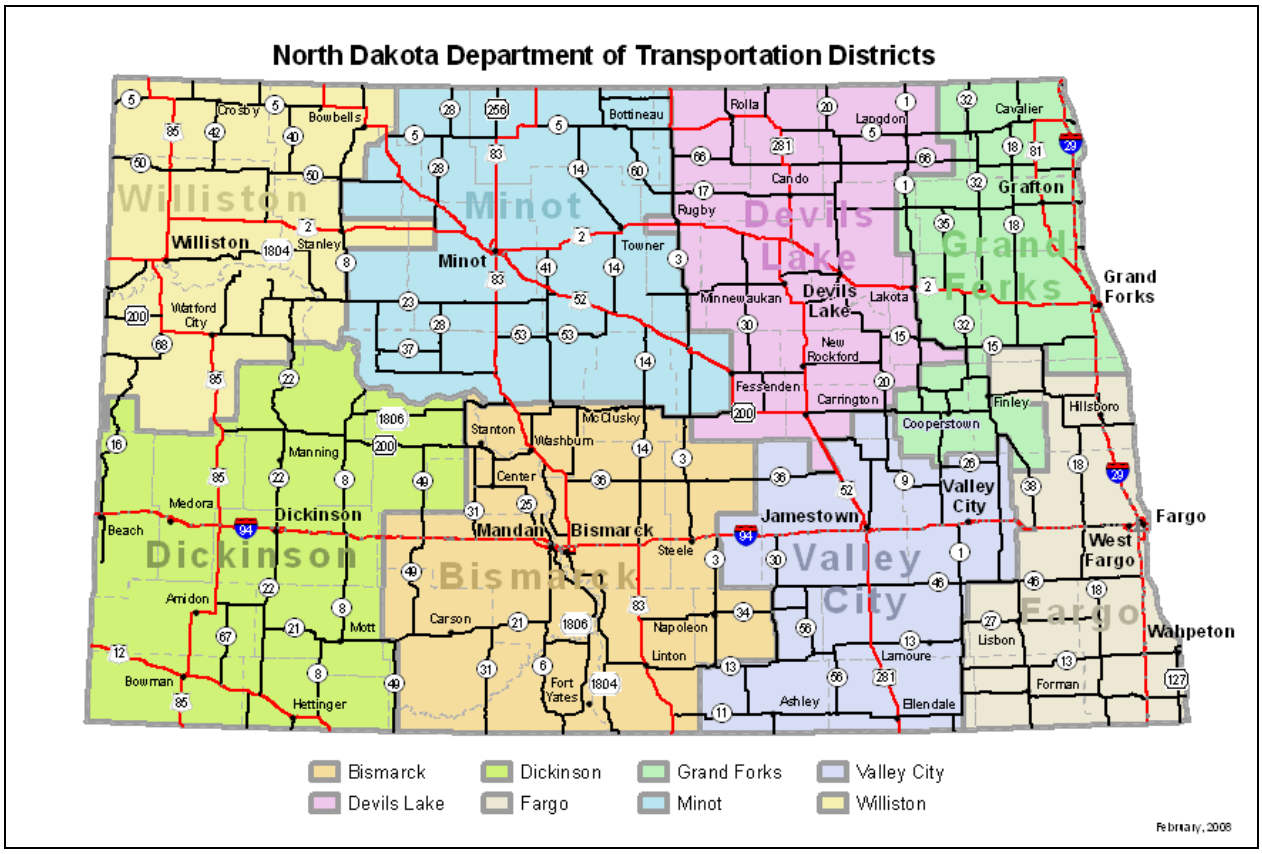


FIGURE 1-1
North Dakota Department of Transportation's Eight Districts

1.2 Traffic Safety – A National Perspective

According to the National Highway Traffic Safety Administration (NHTSA), 33,561 people were killed in traffic crashes in 2012—an average of 92 people killed every day—and an additional 2.4 million people were injured. The number of fatalities nationally decreased significantly and steadily in the 1970s and 1980s. Beginning in the early 1990s and continuing through the early 2000s, traffic fatalities began to increase. However, since 2005, traffic fatalities have decreased dramatically to the lowest number of fatalities in recent history—32,479 fatalities in 2011 and 33,561 in 2012

Like the national trend, the North Dakota traffic fatality rate also decreased in the 1970s and 1980s. Likewise, North Dakota's traffic fatalities slowly increased through the 1990s and early 2000s, and began to decrease again in 2005. However, unlike the national trend, North Dakota's traffic fatality rate has increased since 2008. The 2013 North Dakota Strategic Highway Safety Plan recognizes the following issues likely account for much of the increase:

- Shifts in the age of the driving population.
- Steady increase in the number of vehicle miles traveled in North Dakota, which is counter to the flat or decreasing national trend in travel.
- Other states have a longer history using a systemic investment approach to focus on locations with risk factors for severe crashes.
- The growing challenges of providing emergency medical response and quick access to advanced health care in rural areas.

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

In the late 1990s, the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA) supported a comprehensive and data-driven approach to reduce the number of traffic-related fatalities. Both AASHTO and the FHWA concluded that up to that point, states' efforts had not been effective in lowering the number of severe crashes because: (1) efforts were not focused on severe crashes nor the primary factors resulting in severe crashes; and (2) safety project selection was not part of a data-driven process that implemented effective strategies at locations most at risk for a severe crash.

AASHTO and the FHWA recommended a safety program development process that included 22 categories (or safety emphasis areas) in the areas of drivers, special users, vehicles, highways, emergency services, and management. The objective of this first step is to help agencies consider the 4Es of safety—education, enforcement, engineering, and emergency medical services (EMS)—when identifying safety priorities for their roads. In addition, selecting safety emphasis areas focuses agency efforts on safety strategies linked to the issue.

In 2007, AASHTO set a goal to reduce the number of traffic fatalities nationally by 1,000 each year for the next 20 years, which is an integral first step in a national *Toward Zero Deaths* safety vision. FHWA has determined that this goal will be reached only by partnering with individual states. This 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 injury crashes.

1.3 North Dakota's Statewide Safety Planning Efforts

Through 2004, North Dakota had a fatality rate (1.34 fatalities per 100 million vehicle miles traveled [100MVMT] in 2004) that was less than the national average (1.44 fatalities per 100MVMT). However, in recent years, the North Dakota fatality rate (1.47 fatalities per 100MVMT in 2013) has risen above the national average (1.11 fatalities per 100MVMT) and the overall number of traffic fatalities has generally crept upward (see Figure 1-2). Although the highest fatality rate occurred in 2009, the most traffic fatalities reported in the state since 1982 occurred in 2012 when there were 170 fatalities on North Dakota roads. In 2013, the number of North Dakota traffic fatalities decreased to 148, matching 2011; differences in the vehicle miles of travel result in different fatality rates for these two years.

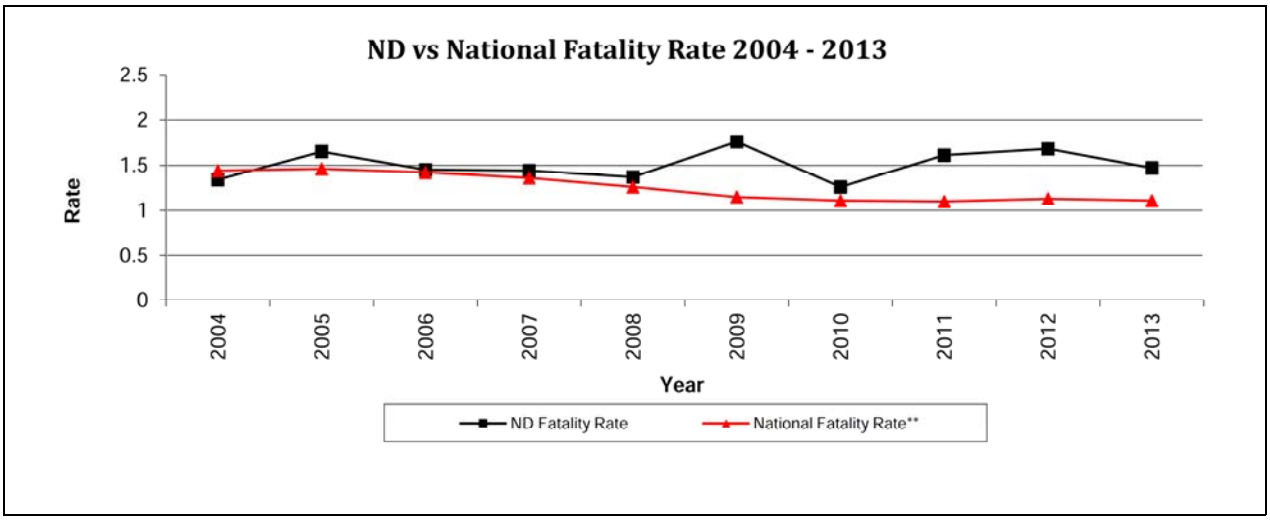


FIGURE 1-2
Fatality Rate – National and North Dakota (2004 to 2013)

In 2013, the NDDOT updated the state's SHSP. Based on severe crashes (Table 1-1), the 2013 SHSP identified the following safety emphasis areas, as well as priority safety strategies in each area:

- Young drivers (under age 21)
- Speeding or aggressive driving
- Alcohol-related
- Unbelted vehicle occupants
- Lane departure
- Intersections

North Dakota also adopted a long-term vision of zero fatalities on its roadways. Achieving this vision will require many years and dramatic shifts in the safety culture for North Dakota. An aggressive intermediate goal was set to reduce the 3-year traffic fatality average to 100 or fewer by 2020.

TABLE 1-1
North Dakota Fatal and Severe Injury Crashes by AASHTO Safety Emphasis Area

Safety Emphasis Area		Statewide Crashes (All Roads)	
		Percent	Number
Drivers	**Involving Driver under Age 21**	**21%**	**492**
	Involving drivers over the age of 64	12%	279
	Speeding or Aggressive Driving	**25%**	**576**
	Alcohol-Related	**28%**	**663**
	Distracted, asleep, or fatigued drivers	9%	208
	Unbelted Vehicle Occupants	**30%**	**699**
Special Users	Pedestrians crashes	5%	109
	Bicycle crashes	1%	34
Vehicles	Motorcycles crashes	11%	248
Highways	Train-vehicle collisions	1%	18
	Lane-Departure **Including both lane-departure (1,094 severe crashes) and head-on/ sideswipe-opposing crashes (204 severe crashes)**	**46%**	**1,067**
	Intersections	**23%**	**540**
	Work zone crashes	2%	42
Total Severe (Fatal and Incapacitating Injury) Crashes		**2,340**	

Notes:
Information is from the 2009-to-2013 North Dakota crash data records, which is an update to the information in the 2013 North Dakota SHSP that used 2007-to-2011 crash records.
Numbers in this table do not add up to the statewide 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.

1.4 Local Road Safety Program Overview

North Dakota's local road system encompasses more than 97,500 miles of roadway out of approximately 106,000 miles statewide. Although, historically, more than 50 percent of severe crashes in North Dakota occurred on local roads, the density of these crashes was very low (approximately 0.002 severe crash per mile per year). As a result, local agencies were unable to identify high-crash locations to nominate for funding through the Highway Safety Improvement Program (HSIP). Therefore, using stand-in data for the severe crashes, safety projects were identified using a systemic process to evaluate at-risk locations. The use of the systemic process was necessary due to the low crash density. Based on revised FHWA policy, the NDDOT expanded the HSIP to include projects identified through the systemic analysis of local roads.

The focus areas of the systemic risk assessment are rural, paved local highways[1], and urban arterials and collectors in North Dakota's larger cities (cities with a population greater

[1] Does not include all paved roads outside municipal limits, but focuses on routes that serve regional travel. For example, a loop road that is paved and yet only provides access to a residential neighborhood was considered to be a local road given the type of traffic served by the facility.

than 5,000). Paved, rural local highways were selected based on an analysis of statewide crash data that indicated that approximately 59 percent of severe local road crashes occurred on rural county roads. Of these crashes, approximately 40 percent occurred on paved roads, which account for less than 10 percent of county roads (approximately 6,200 miles). Further analysis indicated that on these rural highways, the most at-risk elements were roadway segments (76 percent of severe crashes), horizontal curves (31 percent of severe crashes), and intersections (20 percent of severe crashes).

Major cities were selected as a focus because approximately 90 percent of the severe local roadway crashes occurred within the city boundaries of the 12 cities in this category. Furthermore, 56 percent of the severe crashes occurred on urban arterials and collectors. In addition, because these 12 cities are responsible for operation and maintenance of U.S. highway and state highway routes within the municipal limits (not including fully access-managed facilities, such as freeways), the U.S. and state highways were included in the review.

Figure 1-3 shows the approach used to develop this Plan. The process began with the crash analysis and concluded with this Plan, the culmination of the NDDOT and concerned local agencies working together for nearly half a year.

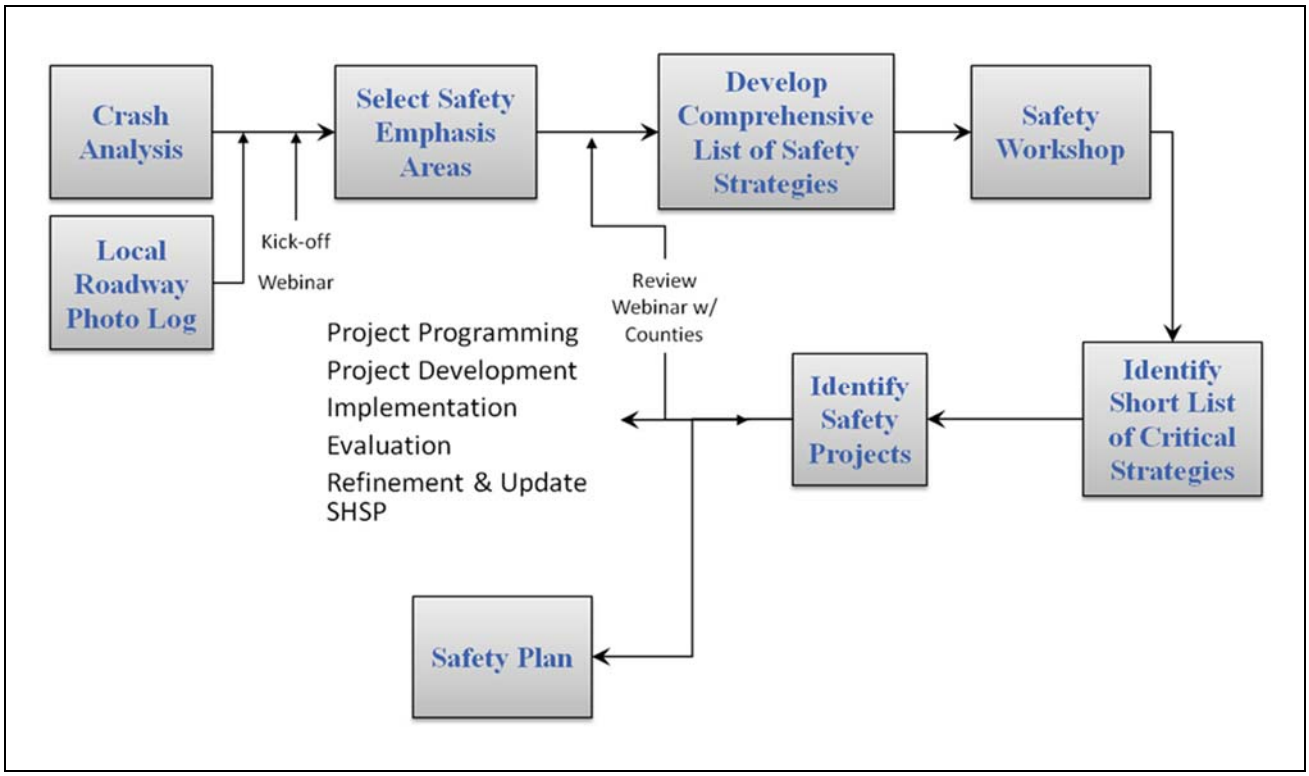


FIGURE 1-3
Local Road Safety Program Safety Plan Approach

2.0 Turtle Mountain Safety Emphasis Areas and Crash Overview

The first step in the process to prepare the Plan was to conduct a crash analysis overview statewide for North Dakota.

2.1 Turtle Mountain Crash Overview

2.1.1 North Dakota Crash Mapping

Crash data was taken from NDDOT Crash Reporting System (CRS) and placed into ArcGIS for data exportation based on specific locations relative to local roads. The most recent five-year period of crash data (from 2009 to 2013) was analyzed and used to determine risk factors specific to the local roads. Consistent with the NDDOT's SHSP, the analysis focused on severe (fatal and incapacitating injury) crashes.

2.1.2 Facilities Analyzed

The crash analysis was broken into three main facility types: roadway segments, curves, and intersections:

- Rural local paved and major gravel roadway segments were analyzed. Other local gravel roads were removed from the analysis because of the relatively low percentage of severe crashes and the lack of infrastructure-based strategies that can be applied to this roadway type.
- Local rural road intersections with state highways or other local roads were included in the analysis. Local non-CMC gravel roads intersecting with other local roads were removed from the analysis due to the very low number of crashes at these intersections.
- Horizontal curves on paved rural local roads were included in the analysis.
- All other local roadway segments and intersections, including gravel roads, were reviewed for locations with multiple severe crashes or "hot spots."

2.1.3 Crash Data Sets

Crash data for the five years from 2009 to 2013 was used for the crash analysis. In safety analysis, it is recommended that more than one year of data be studied 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 but not include too many years so that changed conditions are a concern (for example, reconstructed roads, addition of STOP signs, and changed speed limits). For Turtle Mountain, there were not enough crashes to be statistically reliable; therefore, the analysis also considered crashes from all Phases of the LRSP, statewide data, or national research.

The Turtle Mountain data set includes 58 crashes on local roads; of these, 13 were fatal or incapacitating injury crashes. Disaggregating statewide severe crashes by road type (paved, gravel, or local), area (urban versus rural), and crash type category (intersection versus roadway segment crashes) resulted in the distributions shown in Figure 2-1 and Figure 2-2. This review shows that, on the local system, severe lane departure crashes on paved roads and angle crashes at Thru-STOP intersections were overrepresented. Based on statewide traffic safety data, severe lane departure crashes along curves are also overrepresented.

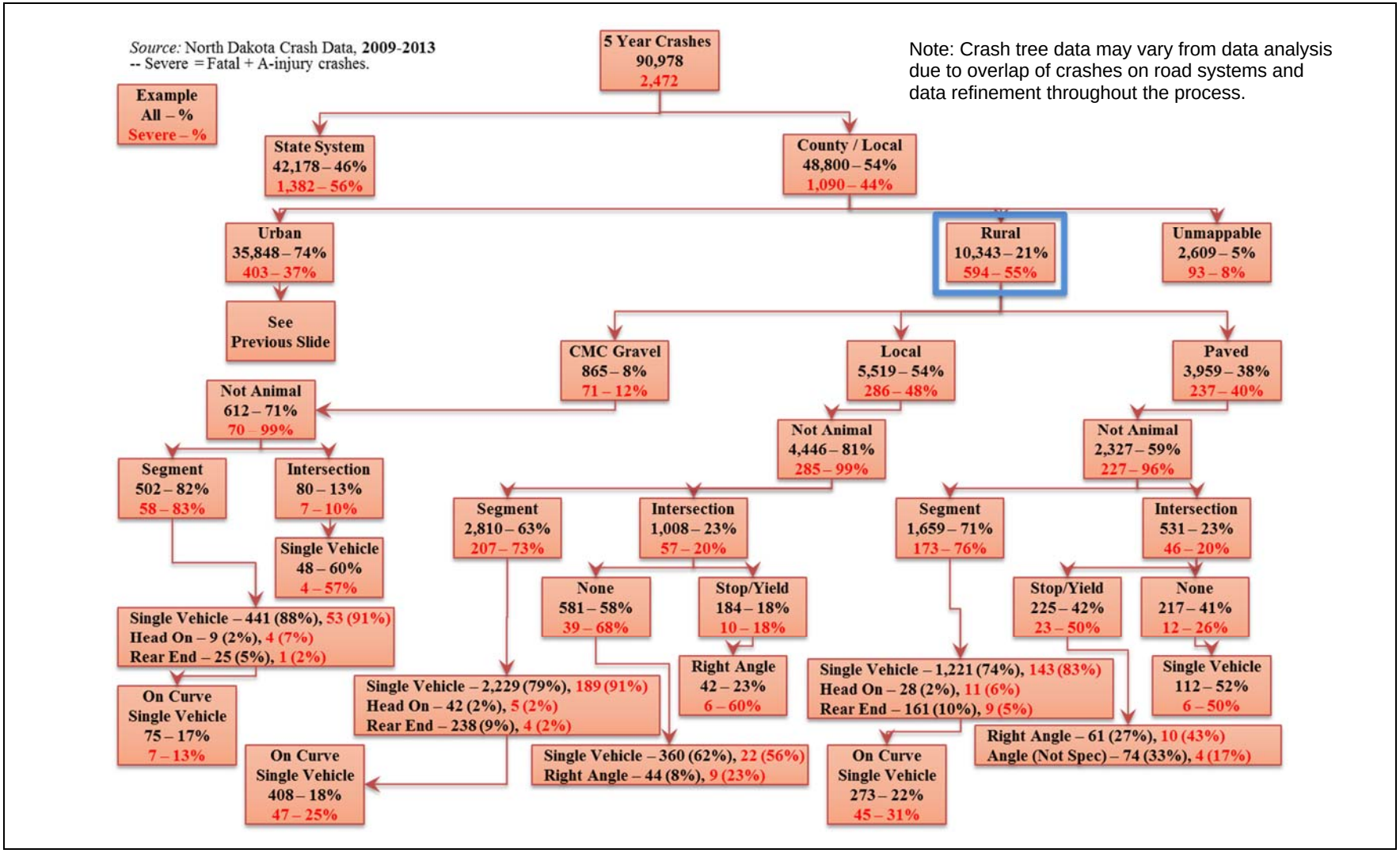


FIGURE 2-1
Crash Data Overview – Statewide Rural Local Road Systems (2009 to 2013)

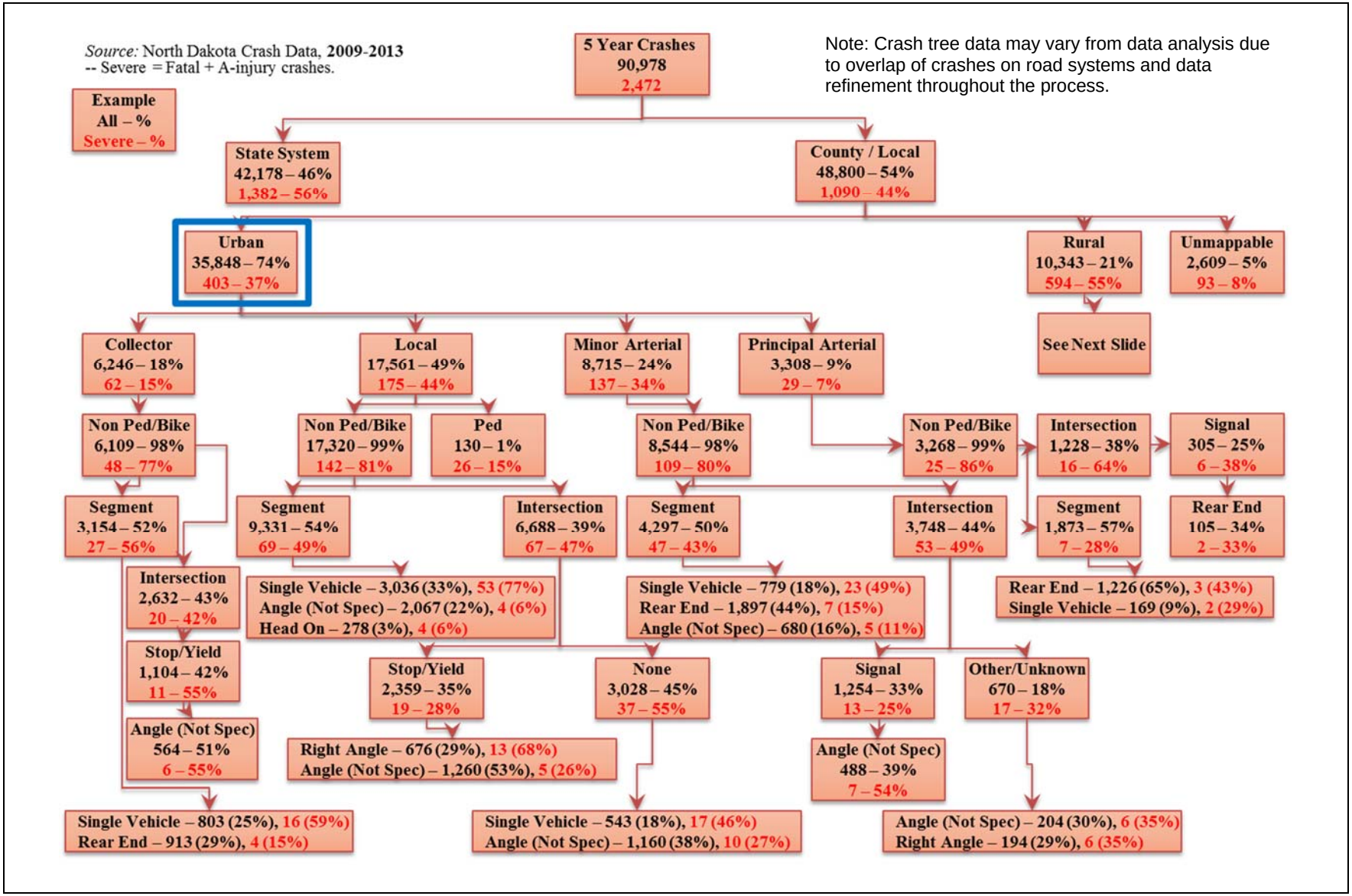


FIGURE 2-2
North Dakota Crash Data Overview – Statewide Urban Local Road Systems (2009 to 2013)

2.2 Turtle Mountain Safety Emphasis Areas

The total number of severe crashes (those crashes resulting in a fatality or incapacitating injury) in each region over the 5-year period from 2009 to 2013 was so few that the crash data was analyzed at statewide levels for various risk factors.

Section 1.2 described the development of AASHTO's emphasis areas, and how this process was applied to the State of North Dakota to identify statewide safety emphasis areas (Chapter 1). An identical process was followed for Turtle Mountain, resulting in the distribution of severe crashes among AASHTO's 22 emphasis areas (Table 2-1). The safety emphasis areas for the reservation are consistent with the state's emphasis areas. 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 safety emphasis areas were identified as priorities for safety investments:

- Driver Behavior – Young drivers, aggressive drivers, alcohol-related, and unbelted vehicle occupants
- Highways – Lane departure and intersection crashes

TABLE 2-1
Severe Crashes by Safety Emphasis Areas (2009 to 2013)

Safety Emphasis Areas	Statewide (% of Total)	2009 to 2013 Severe Crashes	
		Turtle Mountain	
		%	#
Total Severe Crashes	**2,340**		**13**
Involving Drivers Under Age 21	21%	23%	3
Involving Drivers Over Age 64	12%	15%	2
Excessive Speed or Aggressive Driving	25%	31%	4
Alcohol-Related	28%	54%	7
Distracted, Asleep, or Fatigued Drivers	9%	0%	0
Unbelted Vehicle Occupants	30%	31%	4
Pedestrian Crashes	65%	31%	4
Bicycle Crashes	1%	0%	0
Motorcycle Crashes	11%	0%	0
Train-Vehicle Collisions	1%	0%	0
Lane Departure (Run-Off-the-Road and Head-On) Crashes	46%	54%	7
Head-On	***8%***	***31%***	***4***
Run-off-the-Road Crashes	***38%***	***23%***	***3***
Intersection Crashes	23%	15%	2
Work Zone Crashes	2%	0%	0
Deer Collisions	1%	0%	0
Adverse (Winter) Weather Related	17%	8%	1

Strategies to reduce crashes depend on whether a safety emphasis area is infrastructure-based or driver behavior-based. Infrastructure-based emphasis areas refer to characteristics of the location (for example, a roadway segment, curve, or intersection) where crashes occurred. 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, roadway agencies generally have less ability to address driver-behavior-based emphasis areas. The most effective approach for road authorities to address driver behavior-based emphasis areas is to focus on public education and law enforcement through cooperation and collaboration with other tribe staff. Generally, more opportunities exist for agency road authorities to address infrastructure-based emphasis areas, 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 the safety workshop held for the reservation are provided in Section 3.2.

2.3 Crash Risk Factors

The objective of the analytical process is to identify candidates for safety investment based on two criteria: high-crash locations and at-risk locations. A more detailed crash analysis was performed for each priority crash type to identify (1) locations where these priority crash types occur at a rate of one or more severe crashes per year, and (2) basic roadway and traffic characteristics of locations with severe crashes. These characteristics are not considered to be the cause of crashes, but instead are used to determine the risk that a future severe crash may occur at a particular location. Information from historic crashes was used to evaluate the remainder of the reservation's local road system and prioritize locations for safety investment based on similar characteristics.

2.3.1 Rural Roadway Segments – Crashes on Paved Roads

Of the more than 97,500 miles of local road system in North Dakota, only 7 percent of the roads are paved. However, 40 percent of crashes occured on paved roads. Therefore, the focus of the LRSP is on rural paved roadway segments.

There are 71 miles of studied rural paved roads in the reservation. From 2009 to 2013, 13 severe crashes were reported on these reservation roads. The predominant crash type on these types of roads statewide was single vehicle lane departure (Figure 2-3). The following five risk factors were identified for rural lane departure crashes on paved roads statewide:

1. **Average Daily Traffic (ADT) –** Of the rural paved roads, 28 percent of the segment miles have an ADT greater than 450 vehicles per day. However, 60 percent of the severe lane departure crashes occurred at or above this ADT (Figure 2-4). Therefore, any segment with an ADT greater than 450 vehicles per day received a star.
2. **Access Density –** Nationally, research has shown that an access density of eight or more access points per mile (including field entrances, commercial entrances, roadway access, etc.) increase the likelihood of a severe crash occurring. North Dakota's review of severe crashes on their rural county roads (shown in Figure 2-5) demonstrates a similar relationship. Therefore, any roadway segment with an access density greater than or equal to eight access points per mile received a star.

3. **Lane Departure Crash Density –** The average lane departure crash density for Turtle Mountain was 0.064 crash per mile. Due to this limited number of crashes, any roadway segment where the lane departure crash density was greater than the average for the central region received a star.
4. **Critical Radius Curve Density –** Nationally, lane departure crashes frequently occur within curves. Curves with radii between 500 and 1,200 feet (that is, critical radius curves) have a higher severe crash rate than other curves and roadway segments with more curves in this range are considered to have greater risk. The risk factor is determined by the number of critical radius curves divided by the length of the segment. The average critical curve radius density for these types of curves along roadway segments was 0.218 curve per mile for the central region. Any segment with a critical radius curve density greater than or equal to the region average received a star.
5. **Edge Risk Assessment (ERA) –** 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 2-6. Roads with a rating of 2 or 3 received a star.

Detailed segment analyses and results for the reservation are provided in Chapter 4. A prioritization process for each roadway segment was put into place using the five risk factors by giving stars to each risk factor present. The highest priority roadway segments received the most stars. In cases where roadway segments received the same number of stars, the ERA, and ADT were used to break the tie.

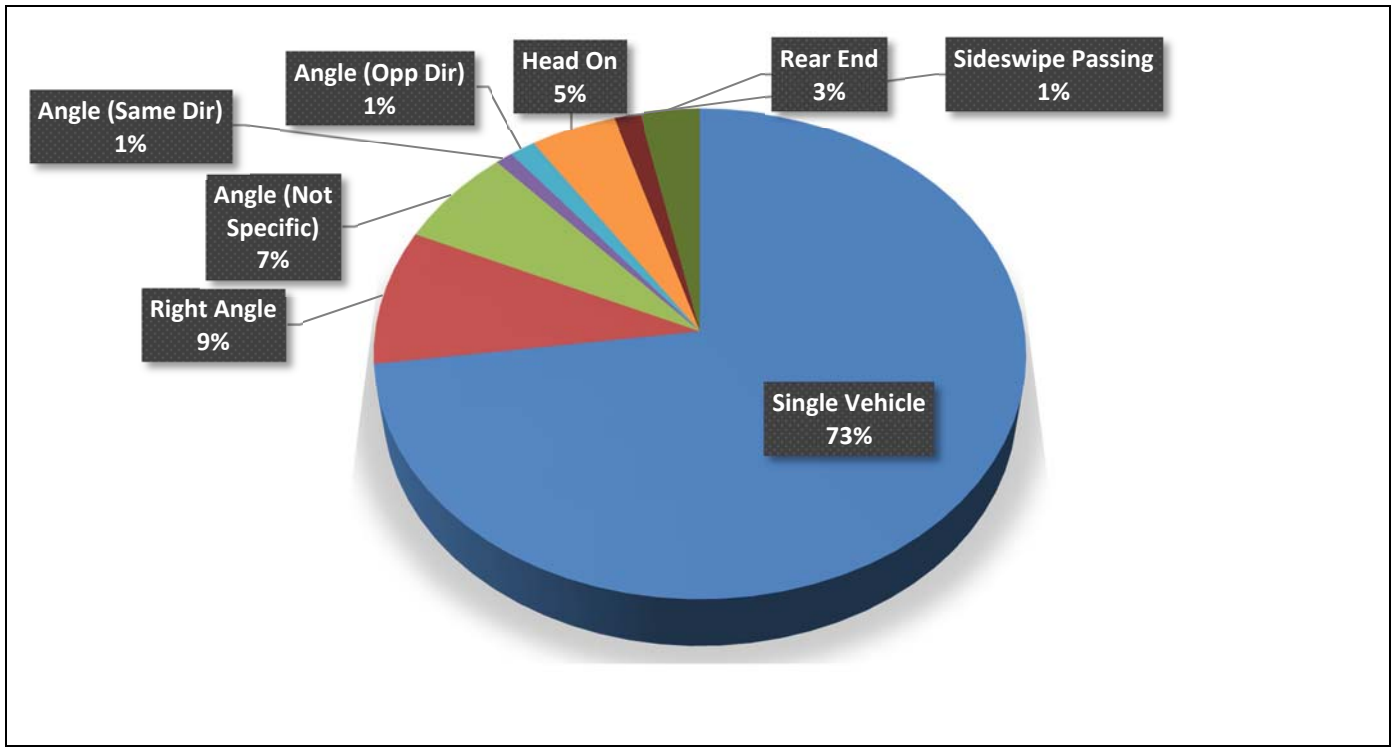


FIGURE 2-3
Severe Crash Types on Rural Paved Road Segments Statewide (2009 to 2013)

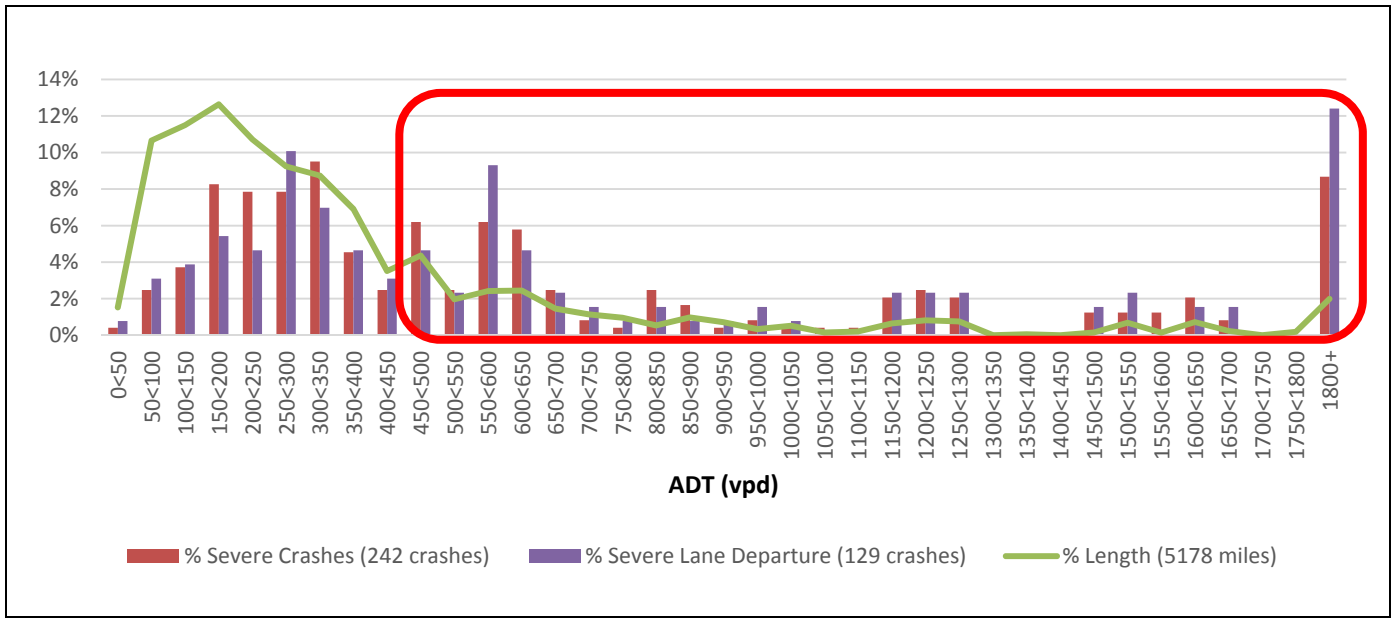


FIGURE 2-4
Rural Roadway Segment Average Daily Traffic (ADT) Statewide Local Crash Data
Source: 2008-2012 (Phase 1 and Phase 2), 2009-2013 (Phase 3 and Phase 4)

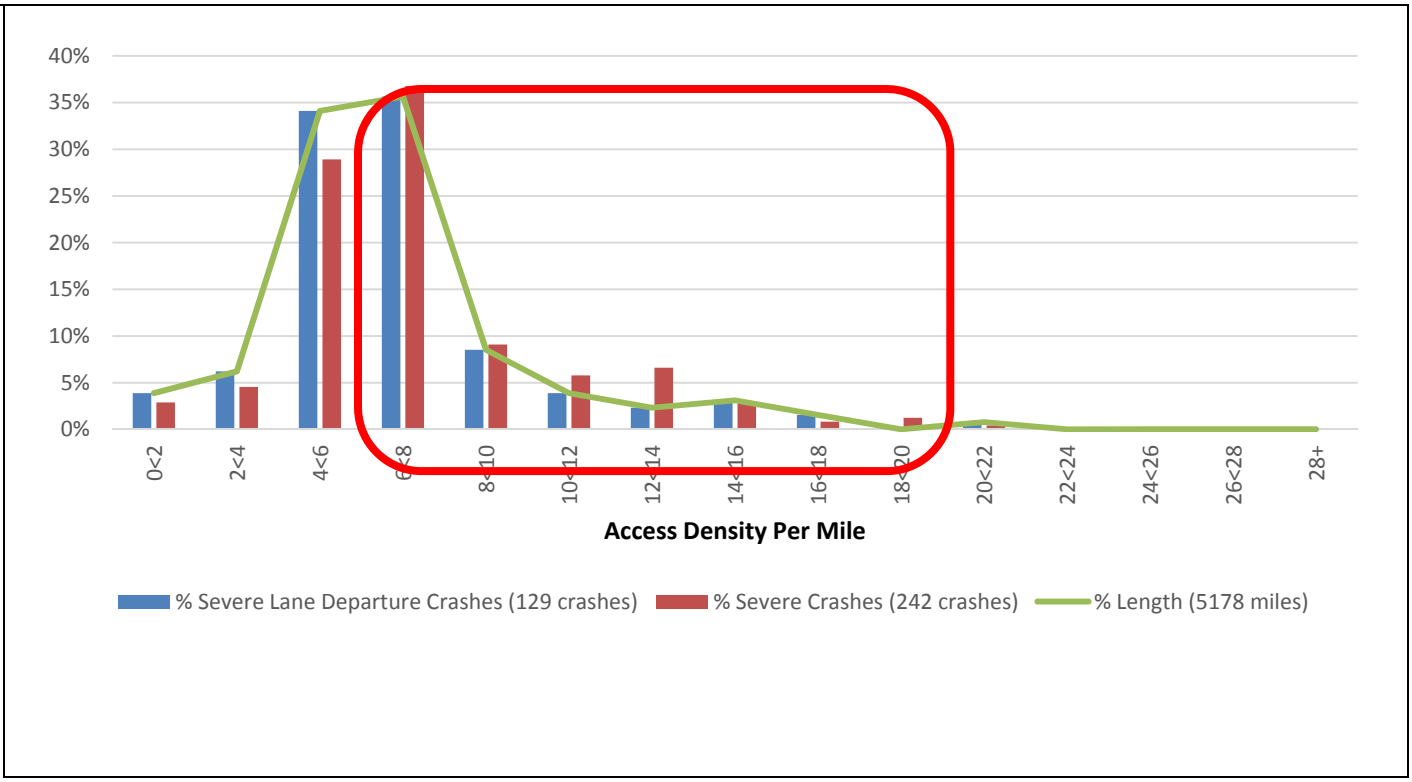


FIGURE 2-5
Severe Crashes by Access Density on Rural County Roads Statewide
Source: 2008-2012 (Phase 1 and Phase 2), 2009-2013 (Phase 3 and Phase 4)

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 2-6
Sample Edge Risk Assessment Ratings and Descriptions

2.3.2 Rural Curves – Crashes on Paved Roads in Curves

Detailed crash analysis included horizontal curves on rural paved local roads. Research indicates horizontal curves with certain characteristics contribute to the overall frequency of lane departure crashes. The 71 miles of rural paved roads in the reservation contain 19 curves totaling approximately 3 miles in length (4 percent of the road system mileage).

With only 2 severe crashes along curves reported from 2009 to 2013, too few crashes occurred on these curves in Turtle Mountain to serve as a reliable indicator of the relative degree of risk. However, data statewide shows the importance of safety improvements on curves to reduce severe crashes since many severe lane departure crashes occur in curves. As a result, the LRSP team used characteristics of curves in the reservation where crashes had occurred, as well as available information from similar analysis of national and statewide data. Results from *Cost-Benefit Analysis of In-Vehicle Technologies and Infrastructure Changes to Avoid Crashes Along Curves and Shoulders* (compiled by the University of Minnesota and CH2M HILL in June 2009) were also used in curve analysis and prioritization.

Based on a review of these sources, the following five risk factors were identified for crashes along curves:

1. **Curve Radius –** The reservation did not have enough severe curve crashes to provide insight into North Dakota's characteristics (Figure 2-7). National data shows that curves with mid-range radii had higher crash densities. An upper limit of 1,200 feet was used for at-risk curves, because 1,200 feet is a 60-mile-per-hour design speed based on AASHTO's *A Policy on Geometric Design of Highways and Streets* (commonly referred to as the "Green Book;" 6th edition, 2011). A lower limit of 500 feet was used to represent the severe lane departure crashes that were reported in the region from 2009 to 2013. Any curve with a radius between 500 and 1,200 feet received a star.
2. **Average Daily Traffic (ADT) –** Traffic volumes over 450 vehicles per day represent a higher risk for crashes (Figure 2-8). Sixty-seven percent of severe lane departure crashes occurred along curves with this ADT and above, while only thirty-two percent of curves are represented in this range. Therefore, curves with an ADT over 450 vehicles per day received a star.
3. **Intersection within the Curve –** In the reservation, the presence of an intersection within a curve increased the risk for a severe crash. Curves with at least one intersection within the curve received a star.
4. **Visual Trap –** A visual trap exists when the crest of a vertical curve is located before a horizontal curve or where a minor road, tree line, or line of utility poles continues on a tangent to the curve, thereby creating the illusion that the road continues straight ahead (Figure 2-9). The presence of a visual trap increased the risk of crashes in the reservation and, therefore, received a star.
5. **Severe Crashes –** If a severe crash occurred on a curve between 2009 and 2013, the curve received a star.

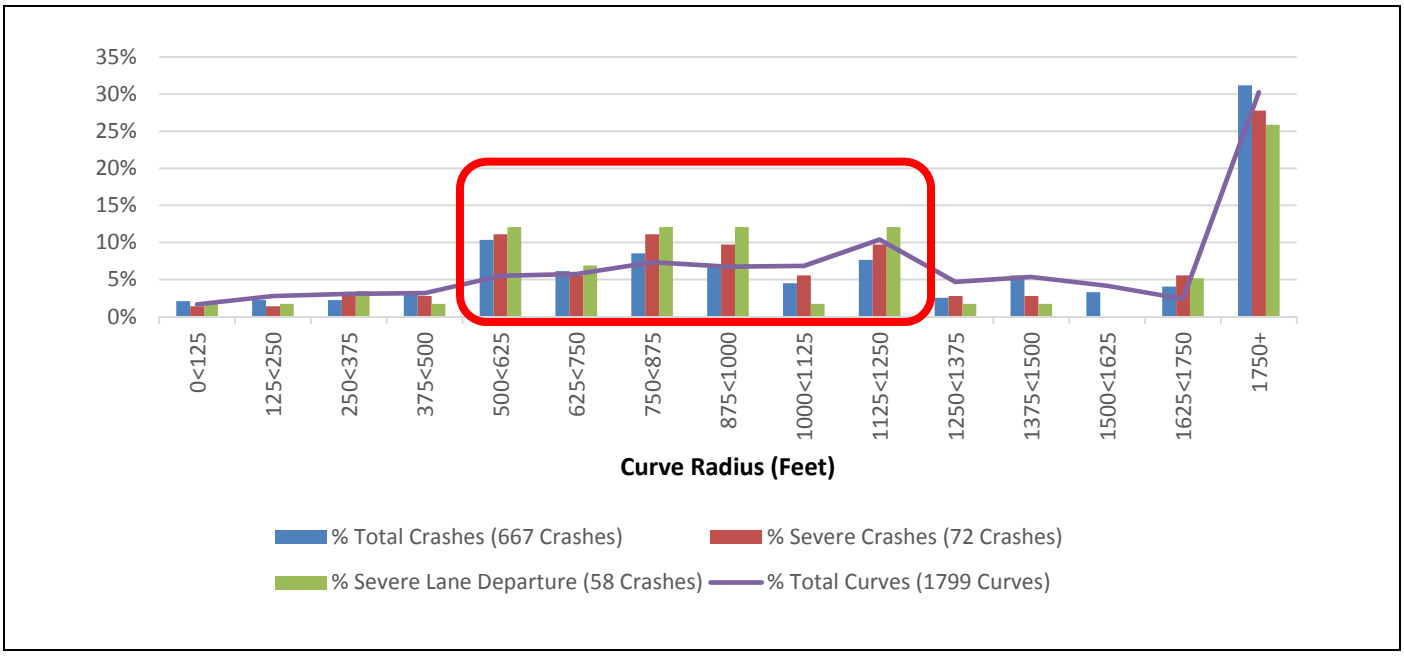


FIGURE 2-7
Rural Curve Crashes by Radii – 500 to 1,200 feet Statewide
Source: 2008-2012 (Phase 1 and Phase 2), 2009-2013 (Phase 3 and Phase 4)

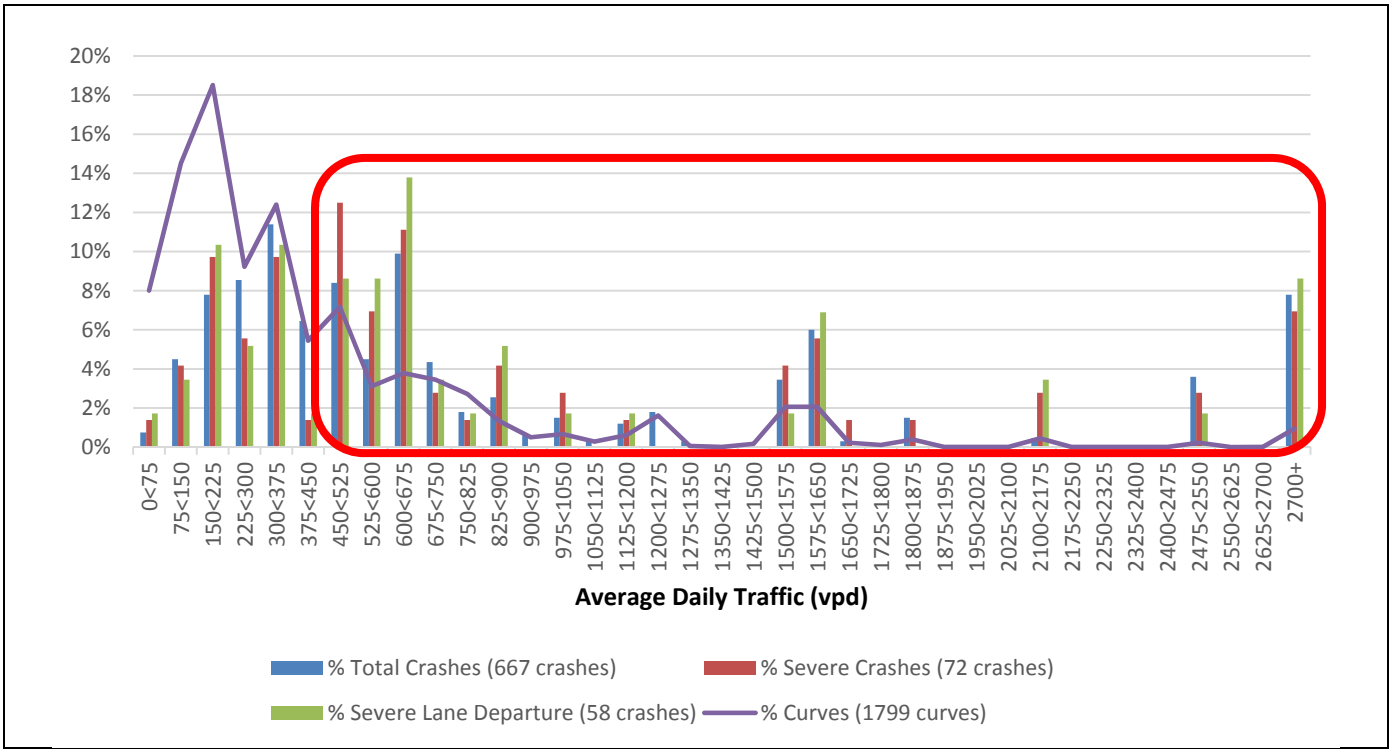


FIGURE 2-8
Rural Curve Crashes by Average Daily Traffic (ADT) – Greater than 450 Vehicles per Day Statewide
Source: 2008-2012 (Phase 1 and Phase 2), 2009-2013 (Phase 3 and Phase 4)

FIGURE 2-9
Example of a Visual Trap – Minor Road Intersects Roadway on a Curve

Based on 664 total crashes and 70 severe lane departure crashes along the curves on paved rural local roads statewide, those with intersections and visual traps have a higher crash density (are more at risk) than those without such features. These risk factors have also been observed nationally.

Detailed curve analyses and results for the reservation are provided in Chapter 4. The five risk factors were used to prioritize curves in the reservation, with the highest-priority curves receiving the most stars. Curves were reviewed for proximity to high-priority curves and existing conditions as well.

Curves in the reservation were screened for compliance with the *Manual on Uniform Traffic Control Devices* (MUTCD; 2009) requirement regarding traffic signs at horizontal curves. Under this requirement, a curve must have an advance horizontal alignment warning sign if the daily traffic is greater than 1,000 vehicles per day and if speed differential (the difference between the speed limit and the advisory speed) meets certain thresholds. A horizontal alignment sign and advisory speed plaque are recommended when the speed differential is 5 mph, and they are required if the speed differential is 10 mph or greater. 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 speeds (assuming a 55-mph speed limit, 6-percent superelevation, and friction factor that are consistent with the AASHTO Green Book) based on the curve radius are as follows:

- 900 to 1,100 feet – 50 mph
- 700 to 900 feet – 45 mph
- 500 to 700 feet – 40 mph
- 300 to 500 feet – 35 mph
- Under 300 feet – 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 reservation to determine the appropriate advisory speed. Additionally, it is recommended that the reservation complete its own ball-bank indicator assessment of all curves to determine whether the curves on their road system meet the MUTCD requirement and to verify suggested advisory speeds.

If a curve was not selected as a project candidate through the LRSP 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 reservation to determine the need for additional signs based on MUTCD guidance.

2.3.3 Rural Intersections – Crashes at Thru-STOP Intersections

At rural intersections, a severe crash is most common at Thru-STOP intersections,[1] where 87 percent of the of severe intersection crashes occurred from 2009 to 2013 (Figure 2-10). Severe right-angle and single vehicle crashes are the most common types of crashes at these intersections (Figure 2-11).

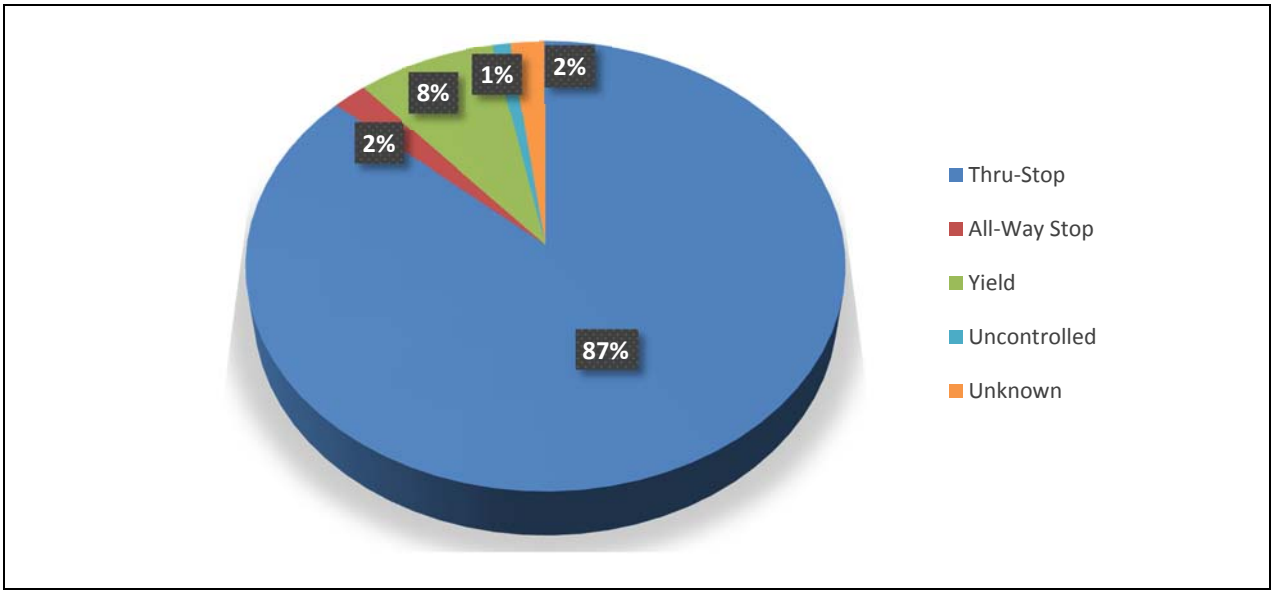


FIGURE 2-10
Statewide Rural Severe Crashes by Traffic Control Device (2009 to 2013)

[1] Those intersections where traffic on the more heavily used road may proceed through the intersection without stopping, while traffic on the less-used crossroad must stop at the STOP sign before proceding through the intersection.

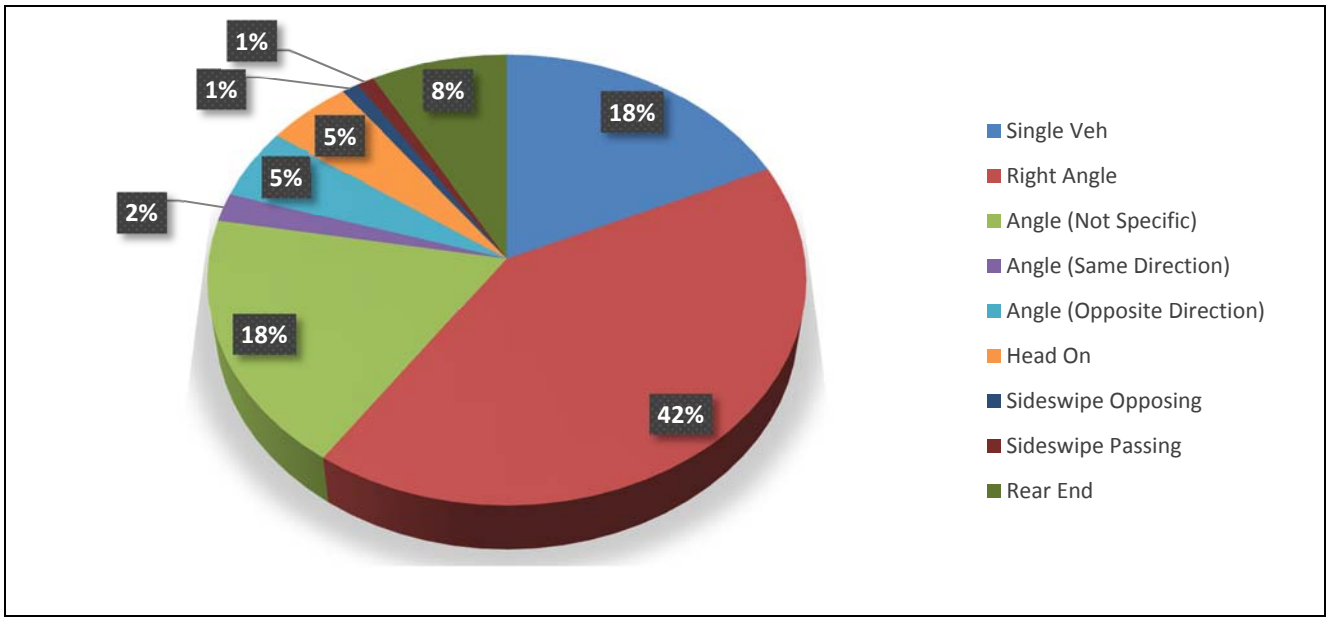


FIGURE 2-11
Statewide Rural Intersection Severe Crashes by Crash Type (2009 to 2013)

In the reservation, 56 rural intersections with 46 Thru-STOP locations were reviewed. The average severe crash density at rural Thru-STOP locations is 0.02 severe crash per intersection per year. This low density supports assessing an intersection risk based on the characteristics of the locations where severe crashes occurred. The following seven rural Thru-STOP risk factors were identified for severe right-angle crashes:

1. **ADT Cross Product –** 60 percent of the severe right angle crashes at rural Thru-STOP intersections occurred at intersections with an ADT Cross Product[2] of major and minor entering vehicles greater than 80,000 (Figure 2-12). An intersection was considered to have a higher risk of severe right angle crashes if the ADT Cross Product was greater than 80,000. These intersections received a star.
2. **Skew –** As the intersection skew (the angle at which one road intersects another) increases, the crash risk also increases (Figure 2-13). At a 20-degree skew, the crash risk compared to that of a 90-degree intersection is increased by approximately 10 percent. While the reservation's severe right-angle crash data set was too small to determine if skew plays a role in crashes, it has been proven nationally that the greater the skew, the greater the likelihood for a crash. Intersections with a skew greater received a star.
3. **Within or Near a Curve –** Research has shown that intersections located within or near a horizontal curve are subject to a higher level of risk. This risk factor was supported by the analysis (Figure 2-14). In this analysis, intersections located within or near a horizontal curve received a star.
4. **Development Present –** Research has shown that intersections with commercial or industrial development in one or more quadrants have a higher level of risk, possibly due to vehicles entering or exiting the development. Private residences or farms were not included

[2] The ADT Cross Product is the major-street entering volume multiplied by the minor-street entering volume.

as development. Intersections with development present had more severe crash rates (Figure 2-14) and therefore received a star.

5. **Railroad Crossing –** Intersections on or near a railroad crossing are subject to increased risk because drivers must navigate the railroad tracks while approaching the intersection. The rural analysis supported this risk factor (Figure 2-14). An intersection with a railroad crossing on one of the approaches received a star.
6. **Previous STOP More than 1 Mile Before the Intersection –** When traveling longer distances without encountering a STOP sign, drivers lose attention, and research has shown those intersections to be at higher risk (Figure 2-14). National data were used to confirm this risk factor. Intersections at which either of the stopped approaches do not enocounter a STOP sign within 1 mile received a star.
7. **Total Crashes –** If an intersection had any type of crash from 2009 to 2013, the intersection received a star.

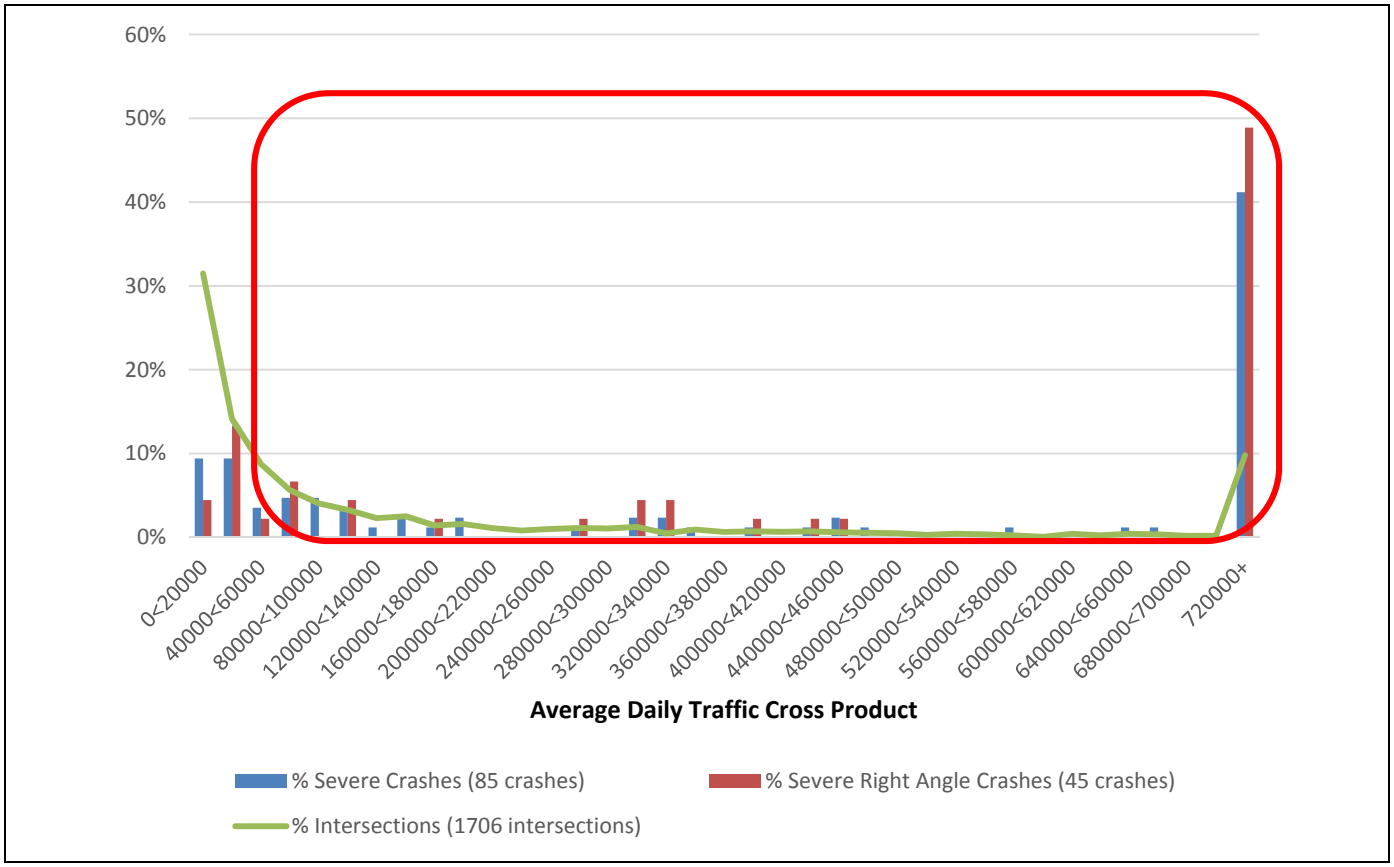
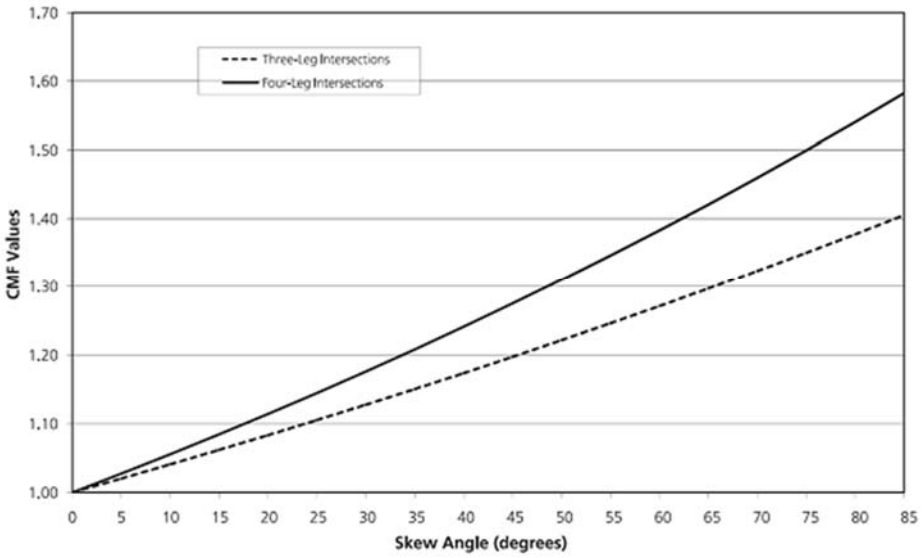


FIGURE 2-12
Statewide Rural ADT Cross Product
Source: 2008-2012 (Phase 1 and Phase 2), 2009-2013 (Phase 3 and Phase 4)



Source: *Highway Safety Manual*, Volume III (Figure 14-6)
CMF = Crash Modification Factor

FIGURE 2-13
Intersection Skew Risk

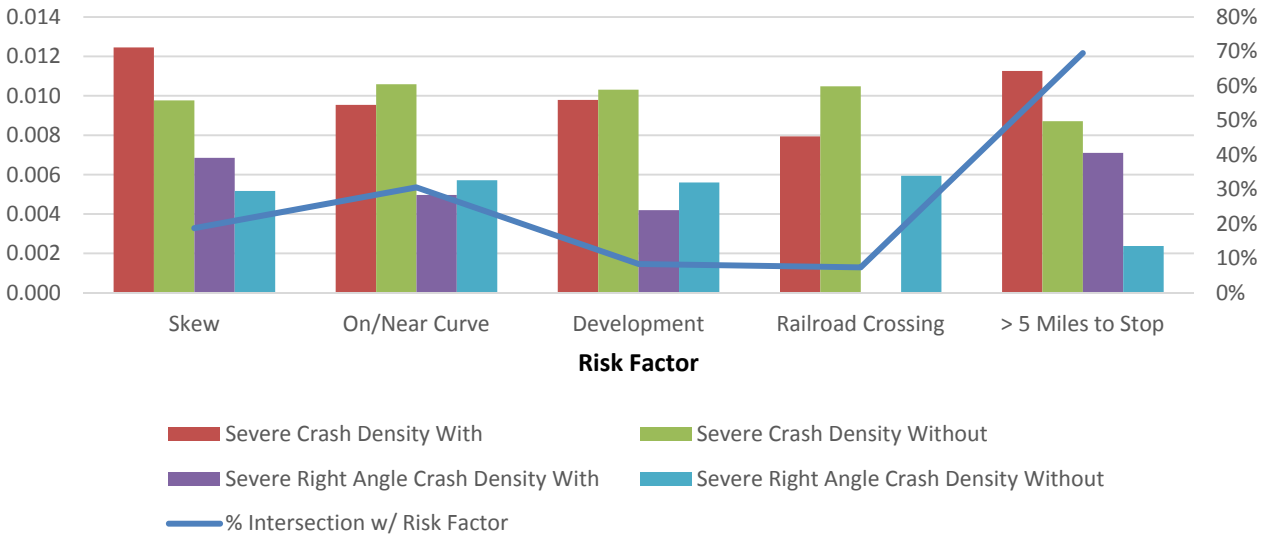


FIGURE 2-14
Statewide Rural Intersection Risk Factors
Source: 2008-2012 (Phase 1 and Phase 2), 2009-2013 (Phase 3 and Phase 4)

Turtle Mountain had 27 total rural intersection crashes on the studied network from 2009 to 2013, and only 5 of those crashes were severe. Due to the small number of severe crashes, some of the data and risk factors may be misleading based on the reservation data alone. Therefore, national data were used to confirm intersection risk factors.

Detailed intersection analyses and results are provided in Chapter 4. Due to the large number of intersections, each intersection was prioritized using the seven risk factors by giving stars to each risk factor present. The highest-priority intersections received the most stars. In cases where two or more intersections received the same number of stars, crash costs were used to break the tie and determine priority.

2.4 Turtle Mountain Risk Summary

Table 2-2 summarizes the risk factors, ranges, and sources used in Turtle Mountain's systemic analysis.

TABLE 2-2
Turtle Mountain Risk Summary

Risk Factors	Central Region		
	Minimum	Maximum	Source
Rural Roadway Segments			
ADT Range	450	Unlimited	Statewide
Access Density	8	Unlimited	Reservation-specific
Lane Departure Density	0.064	Unlimited	Statewide
Curve Critical Radius Density	0.218	Unlimited	Reservation-specific
ERA	2	3	Statewide
Rural Curves			
Radius	500	1,200	Statewide
ADT Range	450	Unlimited	Statewide
Intersection on Curve	Present		Statewide
Visual Trap	Present		Statewide
Severe Crashes	1	Unlimited	Statewide
Rural Intersections			
ADT Cross Product	80,000	Unlimited	Statewide
Skew	Present		Statewide
On/Near Curve	Present		Statewide
Development	Present		Statewide
Railroad Crossing	Present		Statewide
Previous STOP >1 Mile	Present		Statewide
Total Crashes	1	Unlimited	Statewide

3.0 Turtle Mountain Priority Safety Strategies

3.1 Background

A variety of strategies are available to address each safety emphasis area. The implementation of high-priority strategies will assist state and local agencies in reducing traffic-related fatalities and incapacitating injuries. The primary sources for these strategies are the *National Cooperative Highway Research Program* (NCHRP) *Report 500* series and the National Highway Traffic Safety Administration (NHTSA) *Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices*, (Seventh Edition, 2013). Each guide includes a description of the problem, strategies, and model implementation processes. In addition, to assist practitioners in assessing the safety strategies, the guides document the expected effectiveness of each strategy. *NCHRP Report 500* series assigns strategies to one of the following categories:

- **Proven:** These strategies have been used in multiple locations with multiple studies, and have been demonstrated to be effective.
- **Tried:** These strategies have been implemented in many locations; however, no rigorous evaluations have been completed to determine their 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 LRSP. For the LRSP process, NDDOT team members sought to identify viable safety strategies for the top safety emphasis areas. The LRSP team reviewed the full range of safety strategies, and did an initial screening based on cost and effectiveness. For example, the NCHRP report lists over 70 potential strategies to address intersection safety. The screening conducted by the LRSP team narrowed the list of strategies for all safety emphasis areas down to strategies considered to be the most applicable in North Dakota.

Behavioral strategies, described in Chapter 5, include information on the expected effectiveness of the strategy to influence driver behavior based on current best practice and evaluation research results when available.

3.3 Prioritizing Safety Strategies

The priority infrastructure safety strategies for the LRSP are:

- **Infrastructure strategies**
  - Lane Departure: Provide enhanced shoulders, lighting, delineation (for example, Chevrons), or pavement markings for sharp horizontal curves
  - Lane Departure: Install edge rumble strips (shoulder or edge line)
  - Lane Departure: Install enhanced pavement markings, 6-inch edge line, or embedded wet-reflective pavement markings on section with narrow or no paved shoulders

- Unsignalized Intersection: Install larger regulatory and warning signs at intersections, including the use of dynamic warning signs at appropriate intersections
- Unsignalized Intersection: Improve visibility of intersections by providing appropriate street lighting
- Signalized Intersections: Install countdown timers

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 low, medium and high categories.

The relative costs for the lane departure and intersection strategies are:

- 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

Infrastructure safety projects that are developed as part of this LRSP are considered eligible for funding through the state's Highway Safety Improvement Program (HSIP). The managers of this program have identified implementation cost and effectiveness as priorities in their evaluation process of selecting projects for funding. Low-cost projects allow the limited funding to support a wider deployment and the use of proven-effective strategies provides the highest level of confidence that a given project will result in an overall crash reduction.

The ability of the selected strategies to reduce crashes is based on information in the FHWA's CMF [Crash Modification Factors] Clearinghouse and other published research. Table 3-1 provides a summary of the crash reduction factors that were found in the CMF Clearinghouse for infrastructure safety strategies considered and/or suggested for the central region, along with an estimated unit cost for each strategy. Most factors reported are based on research that was assigned higher-quality ratings.

TABLE 3-1
Proposed Strategies, Crash Reduction Factors, and Typical Installation Costs

Strategy	Crash Reduction Factor [a]	Typical Installation Costs
Rural Segments		
4-inch latex edge line		$1,320 per mile
4-inch latex centerline		$660 per mile
6-inch latex edge line	10% to 45% all rural serious crashes	$1,980 per mile
Shoulder or edge line rumble strips	20% run off road crashes	$5,850 per mile
Ground in wet-reflective markings		$36,000 per mile
Centerline rumble strips	40% head-on/sideswipe-crashes	$3,600 per mile
6-inch centerline		$1,020 per mile
Rural Curves		
Chevrons	20% to 30%	$3,960 per curve
Arrow board only		$1,200 per curve
Advance warning sign and advisory speed plaque		$1,440 per curve
2-foot paved shoulder and shoulder rumble strips	20% to 30% run-off-the-road crashes	$54,000 per mile +$5,850 per mile
Rural Intersections		
Roundabout	20% to 50% all crashes/ 60% to 90% right-angle crashes	$4,200,000 per intersection
Directional median (RCI or J-Turn)	17% all crashes/ 100% angle crashes	$1,080,000 per intersection
Mainline dynamic warning sign	50% all crashes/ 75% serious right-angle crashes	$60,000 per intersection
Close median		$30,000 per intersection
Intersection lighting	25% to 40% nighttime crashes	$10,200 per streetlight
Upgrade signs and pavement markings	40% upgrade of all signs and pavement markings/ 15% for STOP AHEAD pavement marking	$2,640 per approach [b]
Clear sight triangle	37% serious injury crashes [c]	$2,940 per intersection [d]
Urban		
Conversions (three-lane/five-lane)	30% to 50%	$48,000 per mile [three-lane] $54,000 per mile [five-lane] +$36,000 per signalized intersection for updates (for example, loop and signal head placement)
Access management	5% to 31%	$360,000 per mile [e]
Signal – confirmation lights	25% to 84% reduction in violations	$1,200 per two approaches
Pedestrian/bicycle – advanced walk	Up to 60% pedestrian/ vehicle crashes	$600 per intersection
Pedestrian/bicycle – countdown timers	25% vehicle/pedestrian crashes	$12,000 per intersection
Pedestrian/bicycle – curb extensions	Increase in vehicles yielding to pedestrians	$36,000 per corner
Pedestrian/bicycle – median refuge island	46% in vehicle/pedestrian crashes	$24,000 per approach

TABLE 3-1
Proposed Strategies, Crash Reduction Factors, and Typical Installation Costs

Strategy	Crash Reduction Factor [a]	Typical Installation Costs

Notes:

[a] Crash reduction factors based on review of CMF Clearinghouse and other published research

[b] Includes $540 per STOP sign, $540 per junction sign assembly, $600 per STOP AHEAD sign, $600 per STOP AHEAD pavement marking message, and $360 per stop bar

[c] Reduction based on increasing sight distance triangle

[d] Inclusive of sign upgrades identified and materials and labor for clearing of sight triangle.

[e] For management of unsignalized intersection movements within a corridor that has a divided median. Typical project may include minor street diverters, signed turn restrictions, and median closings.

N/A = not applicable

3.4 Safety Strategies Workshop

A Safety Planning Workshop was held as part of the LRSP process. The January 7, 2014 meeting in Bismarck included representatives from four of the Indian reservations in North Dakota, the Tribal Technical Assistance Program (TTAP), North Dakota Indian Affairs Commission, and the North Dakota Department of Transportation (NDDOT). The primary focus of the safety workshop was to discuss roadway safety concerns and initiatives, and to discuss the LRSP priority strategies outlined in Table 3-1.

The basic workshop structure included introductions and an overview of the current NDDOT safety program. Mark Nelson (Deputy Director, Driver and Vehicle Services) and Scott Davis (Director, North Dakota Indian Affairs Commission) shared information on funding, enforcement, data, and safety initiatives pertaining to Indian reservations in North Dakota.

Following the overview, the workshop participants discussed concerns and initiatives specific to each reservation, including updates on each tribal safety plan, which is now required by the Bureau of Indian Affairs (BIA) in order to receive funding. The final local speaker was Dennis Trusty of Northern Plains TTAP, who shared roadway safety resources pertaining to driver behavior issues.

Workshop participants included road safety engineering, traffic, enforcement, education, and NDDOT staff in order to include a variety of backgrounds and experiences to enable valuable interaction and discussions during the workshops.

4.0 Turtle Mountain Infrastructure Safety Projects

4.1 Turtle Mountain Proactive Project Decision Process

The primary objectives of the LRSP effort are to identify low-cost, safety-related infrastructure projects focused on each agency's documented safety emphasis areas and target crash types. These emphasis areas account for the greatest number of severe crashes occurring on the local road system. Mitigating the factors that contribute to these crashes will assist each agency in reducing serious crashes on the local road system.

Projects were developed that include identifying a specific improvement at a specific location based on risk factors described in Chapter 2 and the high-priority safety strategies described in Chapter 3. Improvement strategies are consistent with the NDDOT's SHSP with a focus on proven effectiveness at reducing the target crash type and low cost of implementation. Proven-effective strategies give safety program managers the highest level of confidence that the deployment will result in a reduction of crashes. Low-cost strategies allow improvements to be widely deployed across a system to address the low density of crashes and are less expensive than complete reconstruction of high-risk locations. Project development and mitigation focused on the following improvements:

- **Rural**
  - Lane-departure crashes along roadway segments and in curves
  - Intersection-related crashes
- **Urban**
  - Rear-end and head-on crashes on roadway segments
  - Angle crashes and pedestrian and bicycle crashes at intersections

For consistency across the state, project decision trees were created so that locations with similar characteristics received the same suggested mitigation treatment. Projects were chosen based on the identification of at-risk locations and the availability of proven strategies for crash reduction. This resulted in a systemic focus on rural paved roadway segments, horizontal paved curves, and rural intersections. In cities with populations over 5,000, of which there were none on the reservation, the focus was on arterial and collector roadway segments and intersections along these segments. Projects were originally suggested based on the technical analysis and then revised in accordance with input from the local agencies and NDDOT.

High-priority rural roadway segment projects focused on addressing the most common type of serious segment-related crash—a single-vehicle, lane-departure crash—by implementing road edge improvements to alert drivers when they are drifting too far along the road edge (Figure 4-1).

High-priority rural curve projects focused on enhancing the curve delineation to improve the driver's ability to successfully navigate the curves (Figure 4-2). As shown in the figure, a curve is eligible for a safety improvement project in three ways.

High-priority rural intersection projects (Figure 4-3) focused on addressing the most common type of serious intersection crash—a right-angle collision—by making the intersection more visible to drivers and by reducing the number of intersection conflicts. Examples of suggested projects are shown in Figure 4-4.

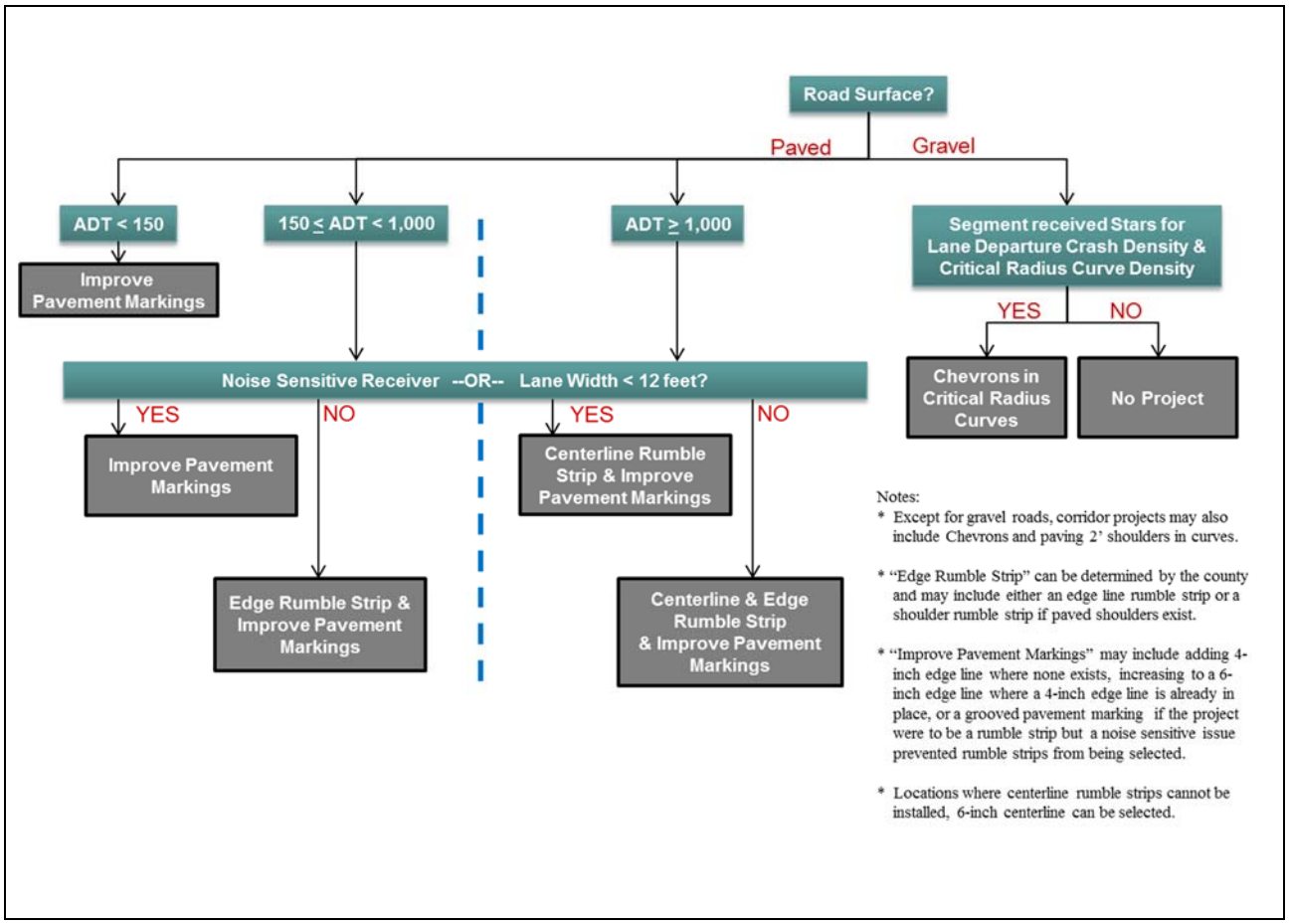


FIGURE 4-1
High-Priority Rural Roadway Segment Project Decision Tree

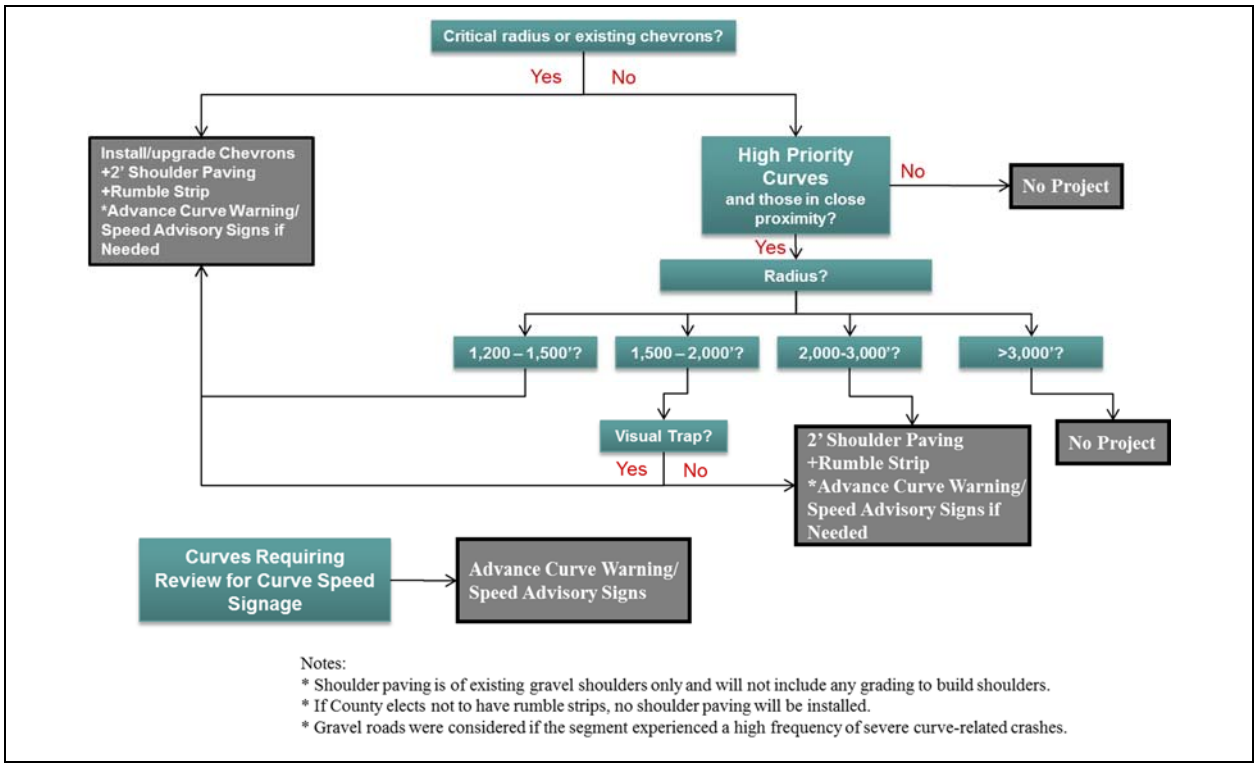


FIGURE 4-2
High-Priority Rural Curve Project Decision Tree

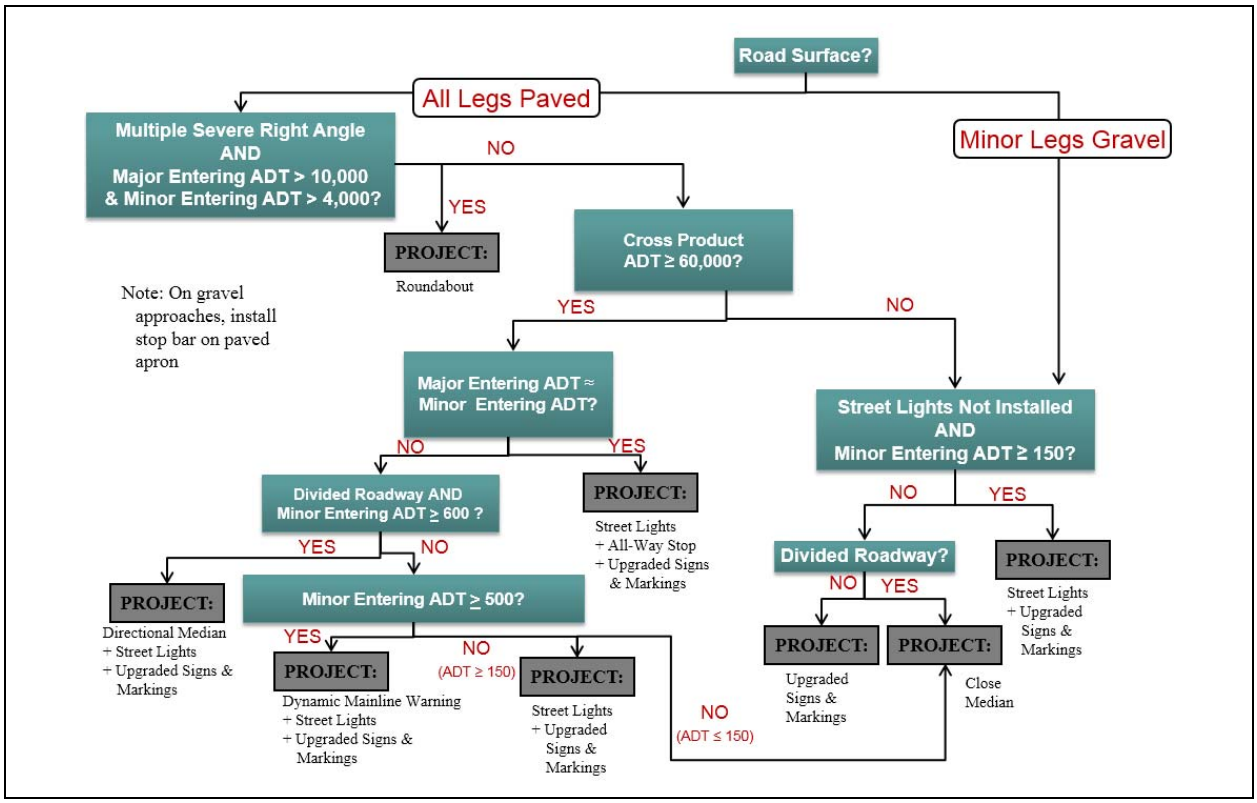
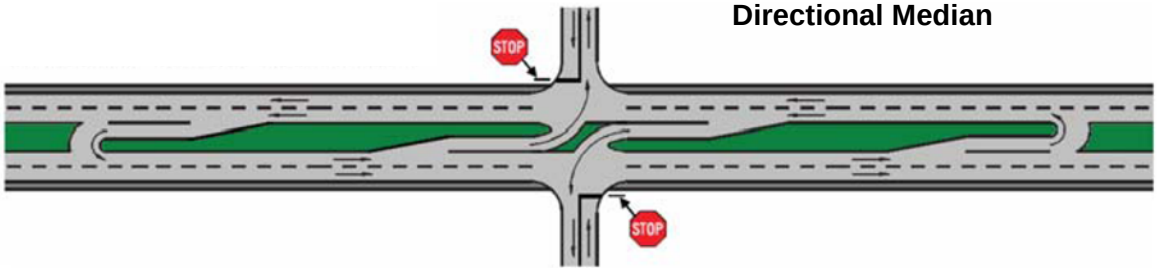
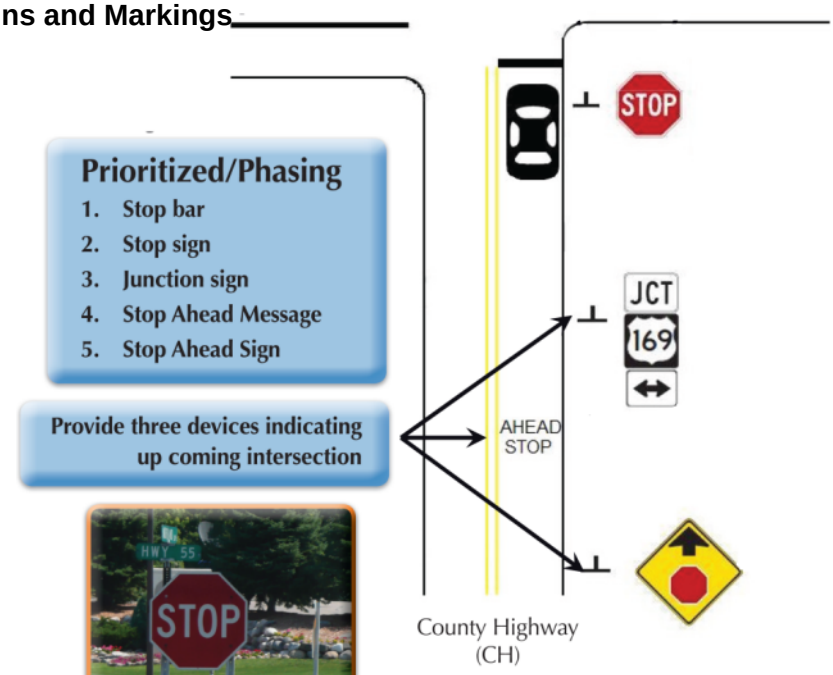


FIGURE 4-3
High-Priority Rural Intersection Project Decision Tree

Directional Median



Upgraded Signs and Markings



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

Source*: Minnesota DOT District 3-13 County RSA,* CH2M HILL, 2006

FIGURE 4-4
Intersection Safety Strategies Considered for Deployment

High-priority urban roadway segment projects focused on reducing rear-end and head-on crashes by creating buffer space in the middle of the roadway. This buffer space would be created by converting to a three-lane or five-lane roadway and by better managing access along divided arterials (Figure 4-5).

High-priority urban right-angle intersection projects focused on reducing right-angle crashes by reducing red-light running and managing access to reduce the number of conflict points along a corridor, particularly at signalized intersections (Figure 4-6).

High-priority urban pedestrian and bicycle intersection projects focused on reducing pedestrian and bicycle crashes by providing shorter crossing distances, curb extensions or median refuge islands, as well as advanced walk intervals and countdown timers at signalized intersections (Figure 4-7).

Project forms were completed for each high-priority intersection, curve, and roadway segment, including a description of the location, brief crash history, ranking factors, and the identified safety strategy. These forms were formatted so they could be submitted directly through the HSIP process, but may require supplemental information for the evaluation and scoring process.

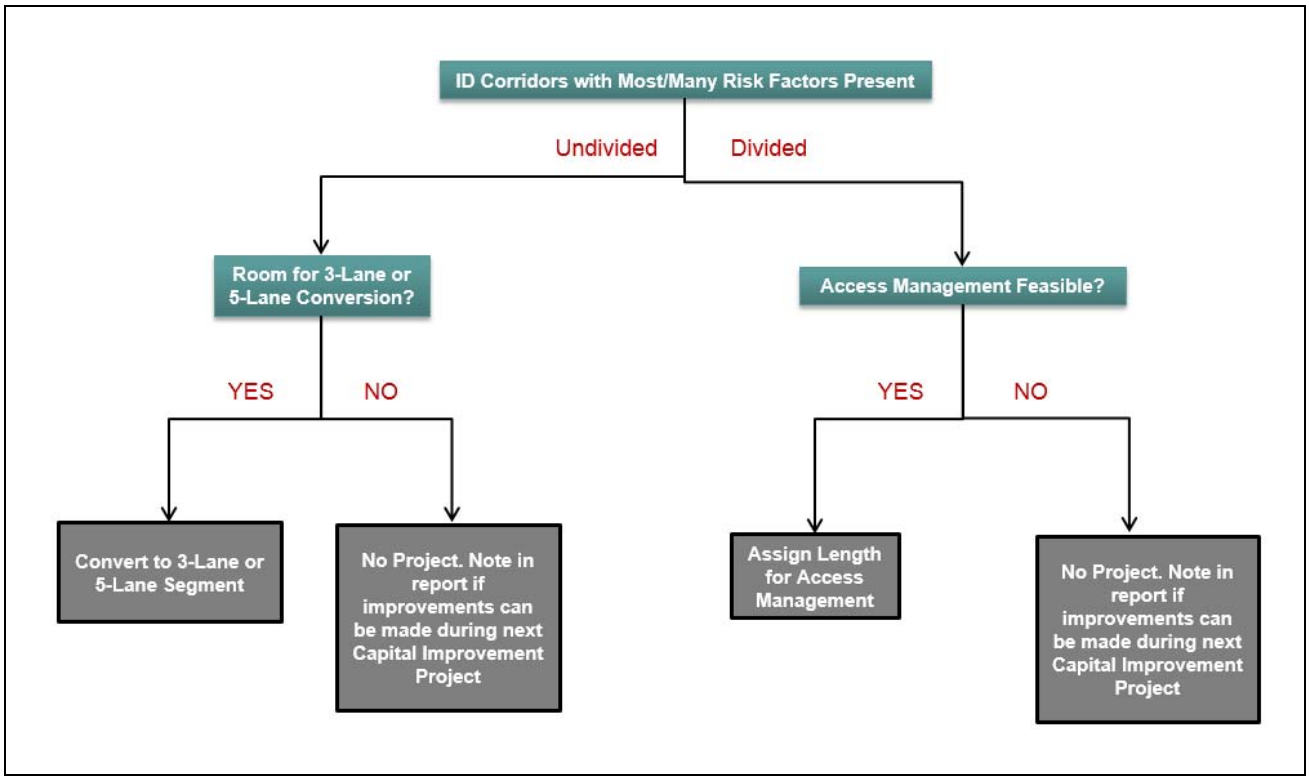


FIGURE 4-5
High-Priority Urban Roadway Segment (Turning) Project Decision Tree

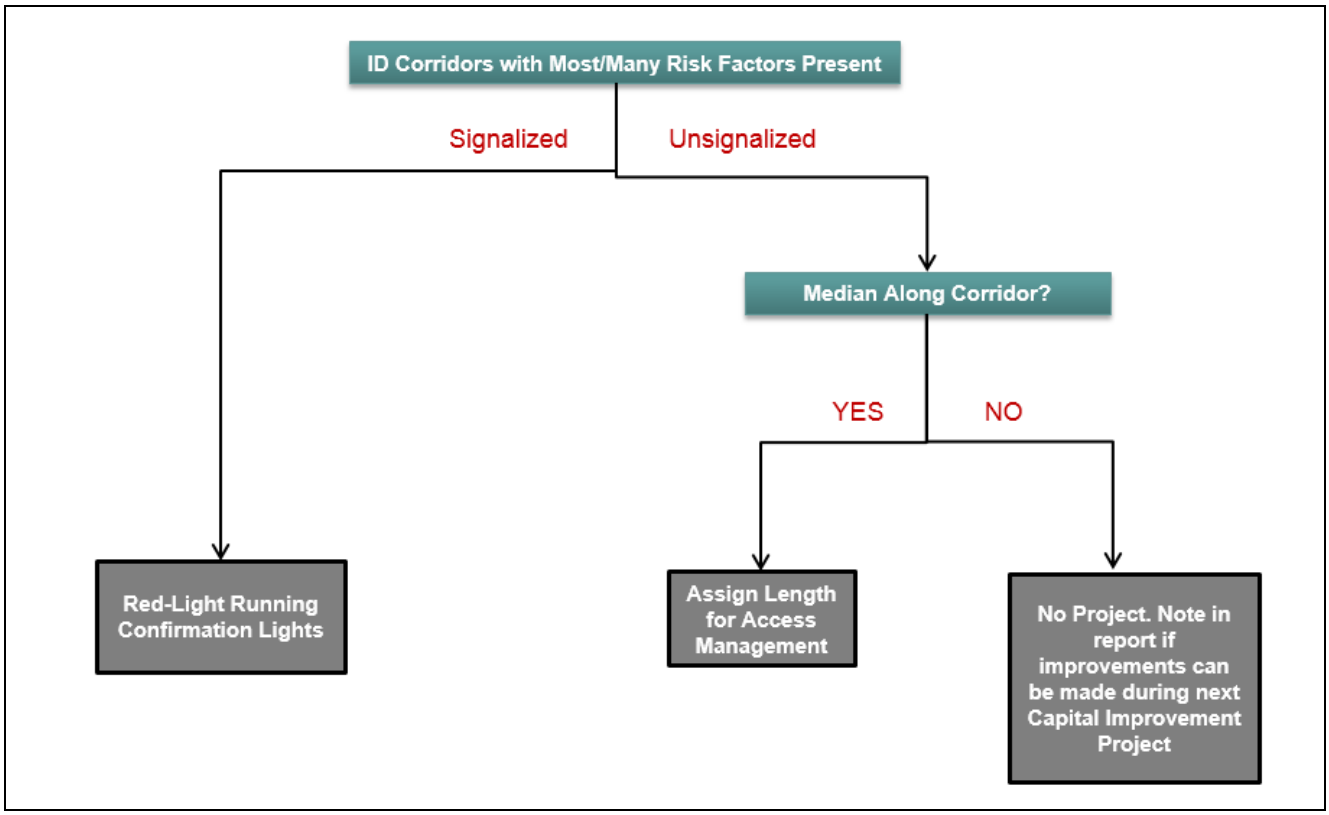


FIGURE 4-6
High-Priority Urban Right-Angle Intersection (Signalized) Project Decision Tree

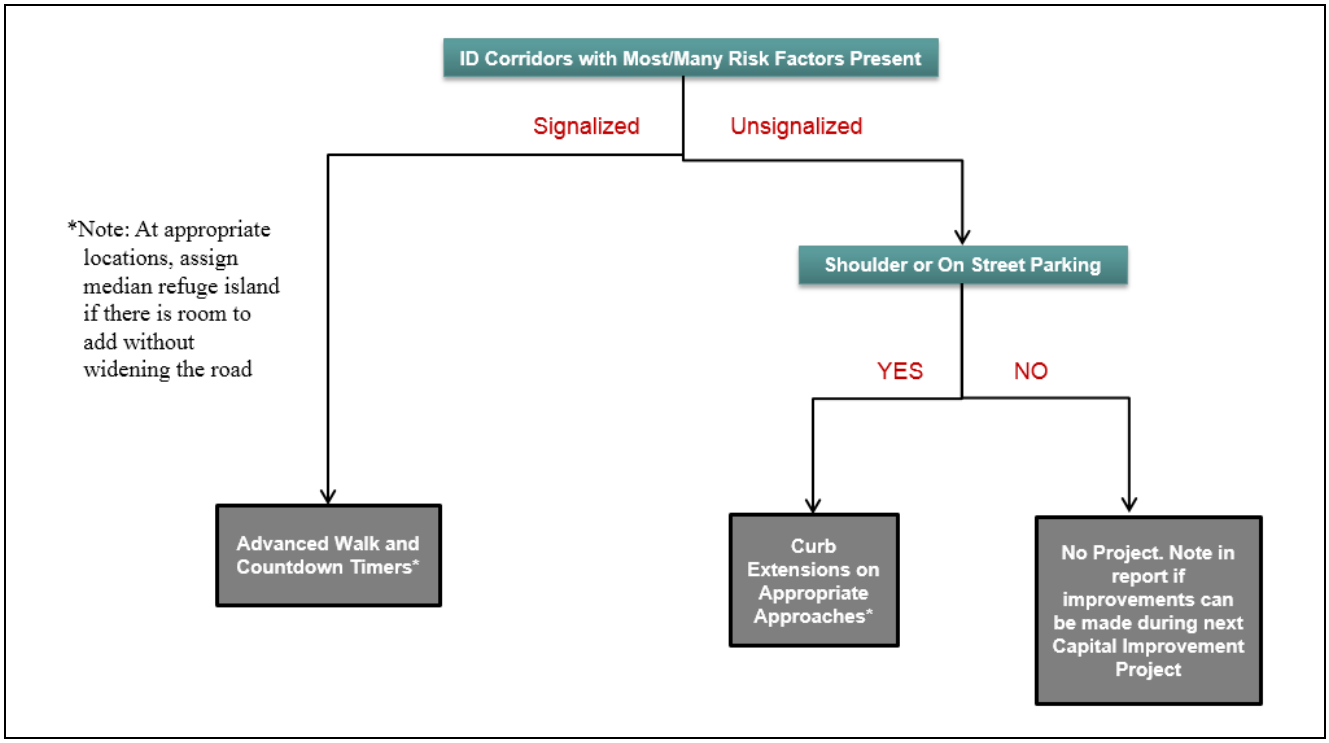


FIGURE 4-7
High-Priority Urban Pedestrian and Bicyclist Intersection Project Decision Tree

4.2 Turtle Mountain Project Summary

The suggested low-cost safety projects for Turtle Mountain are described below and in the Chapter 4 Appendix: Turtle Mountain. The costs assigned to each project are planning-level estimates and do not include right-of-way or some other supplemental costs. Because of funding limitations, all potential projects would not be completed in one year. The actual schedule for implementing individual projects will necessitate securing funding from the state's HSIP. The safety planning process followed is consistent with the North Dakota SHSP. In addition, several of the high-priority safety strategies are among those recommended for the state road system in the state's SHSP.

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

Many project details are still undetermined, including general project termini. Each agency 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 agency coordinate with various municipal departments, the public, and other transportation departments.

The total project cost suggested for Turtle Mountain is $773,553. The project cost breakout for intersection, roadway segment, and curve projects are listed in Table 4-1. High-priority locations that received a project are shown in Figure 4-8. These locations are described in further detail in the Chapter 4 Appendix: Turtle Mountain, along with priority rankings and suggested project sheets.

TABLE 4-1
Turtle Mountain Project Costs

Project Type	Cost
Intersections	$622,680
Roadway Segments	$89,788
Curves	$61,085
Total	$773,553

One roadway segment identified as a high-priority location did not receive projects. This segment was too short to receive a project and was removed from consideration (Table 4-2).

TABLE 4-2
Turtle Mountain Priority Segment Locations without Suggested Treatments

Segment ID	Local Name	Segment Start	Segment End	Location Notes
520.01	Unnamed road in/near town of Shell Valley	US 281/ND 5	Dead end	Short Segment – Removed From Consideration

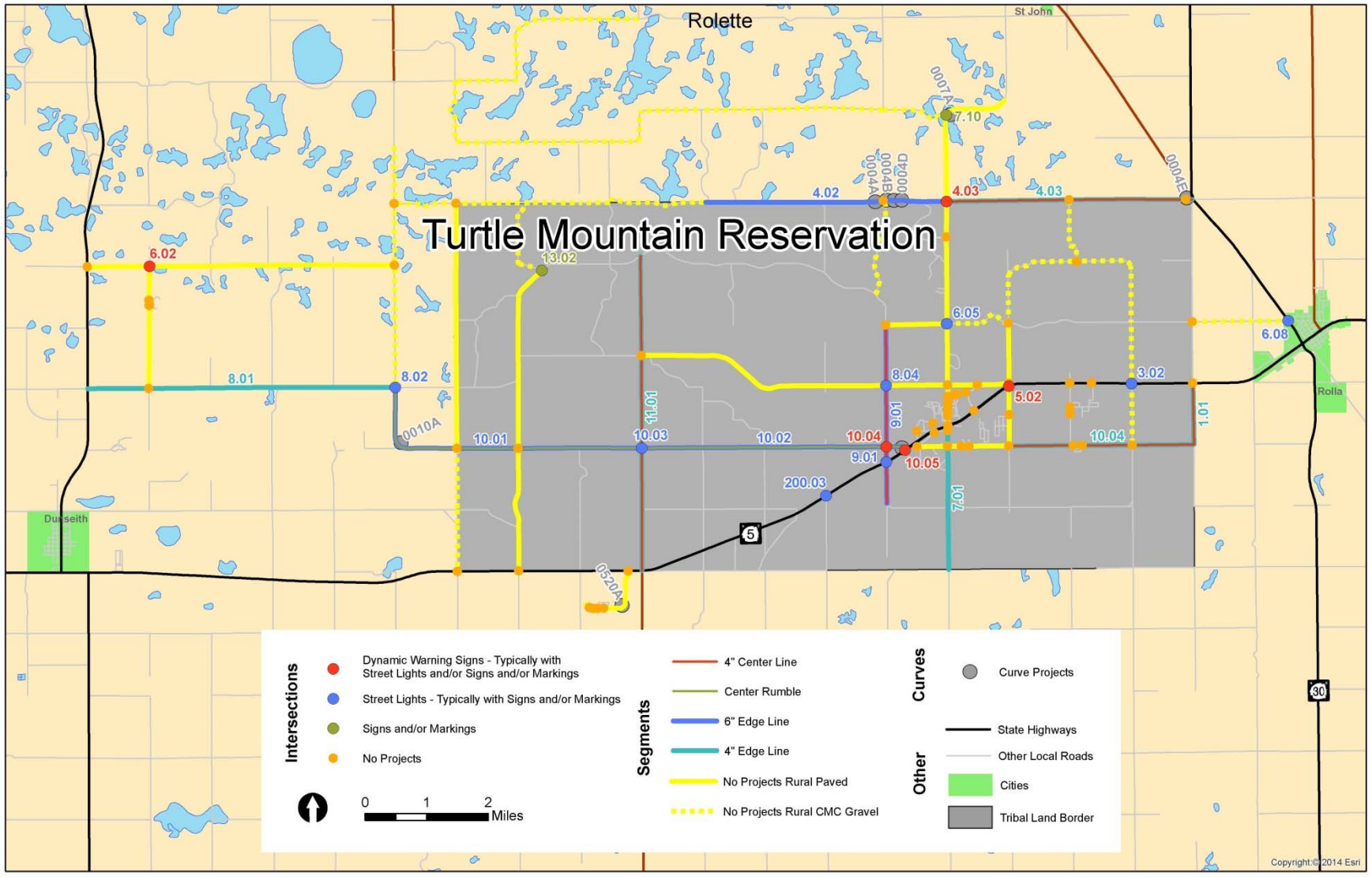


FIGURE 4-8
Turtle Mountain Project Locations Map

APPENDIX

Turtle Mountain Reservation

Turtle Mountain Reservation

Rolette
St John
Dunseith
Rolla
6.02
13.02
4.02
4.03
4.03
0004A
0004B
0004C
0004E
0007A
7.10
6.05
6.08
8.01
8.02
8.04
3.02
5.02
1.01
0010A
10.01
11.01
10.03
10.02
10.04
9.01
10.05
10.04
200.03
7.01
0520A
5
30

Intersections

- Dynamic Warning Signs - Typically with Street Lights and/or Signs and/or Markings
- Street Lights - Typically with Signs and/or Markings
- Signs and/or Markings
- No Projects

0 1 2 Miles

Segments

- 4" Center Line
- Center Rumble
- 6" Edge Line
- 4" Edge Line
- No Projects Rural Paved
- No Projects Rural CMC Gravel

Curves

- Curve Projects

Other

- State Highways
- Other Local Roads
- Cities
- Tribal Land Border

Turtle Mountain Reservation
Rural Segment Projects

Page	Corridor ID	Route #	Start	End	Length	Risk Ranking	4" Edge Line	6" Edge Lines	Edge Rumble Strip	Center Line Rumble	4" Center Line	6" Center Line	Project Cost ($)
1	10.02	BIA 10	BIA 11	US 281 / ND 5	4.3	★★★★	0.0	4.3	0.0	4.3	0.0	0.0	$ 23,994
2	8.01	BIA 8	US 281 / ND 5	BIA 15	5.0	★★★★	5.0	0.0	0.0	0.0	0.0	0.0	$ 6,600
3	7.01	BIA 7	96th St NE	US 281 / ND 5	2.3	★★★★	2.3	0.0	0.0	0.0	0.0	0.0	$ 3,036
4	10.04	BIA 10	BIA 5	BIA 3	3.0	★★★★	3.0	0.0	0.0	0.0	3.0	0.0	$ 3,960
5	11.01	BIA 11	US 281 / ND 5	BIA 6	5.1	★★★★	5.1	0.0	0.0	0.0	5.1	0.0	$ 6,732
6	10.01	BIA 10	BIA 8	BIA 11	4.9	★★★	2.9	2.0	0.0	4.9	0.0	0.0	$ 25,402
7	9.01	BIA 9	BIA 12	BIA 6	2.9	★★★	0.0	2.9	0.0	0.0	2.0	0.0	$ 5,742
8	4.02	BIA 4 2	1.6 miles East if BIA Rd 11	BIA 7	3.9	★★★	0.0	3.9	0.0	0.0	0.0	0.0	$ 7,722
9	4.03	BIA 4 3	BIA 7	Rolette 6 / ND 30	4.0	★★★	4.0	0.0	0.0	0.0	4.0	0.0	$ 5,280
10	1.01	BIA 1 1	BIA 10	US 281 / ND 5	1.0	★★★	1.0	0.0	0.0	0.0	1.0	0.0	$ 1,320
23 USC 409 NDDOT Reserves All Objections							**23.3**	**13.1**	**0.0**	**9.2**	**15.1**	**0.0**	**$ 89,788**

Turtle Mountain Reservation
Rural Segment Listing

23 USC 409
NDDOT Reserves All Objections

*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	1.01	BIA 1	BIA 10	US 281 / ND 5	1.0	0	450	0.00	27.0	0.00	2
8	4.02	BIA 4	1.6 miles East if BIA Rd 11	BIA 7	3.9	0	525	0.00	11.7	0.00	2
9	4.03	BIA 4	BIA 7	Rolette 6 / ND 30	4.0	1	460	0.05	13.3	0.00	2
	5.01	BIA 5	BIA 10	BIA 6	2.0	0	520	0.00	22.0	0.00	1
	6.01	BIA 6	US 281 / ND 5	BIA 15	5.0	0	310	0.00	14.6	0.00	2
	6.02	BIA 6	BIA 9	BIA 7	1.0	0	490	0.00	44.3	0.00	1
3	7.01	BIA 7	96th St NE	US 281 / ND 5	2.3	1	690	0.09	21.8	0.00	2
	7.02	BIA 7	US 281 / ND 5	BIA 8	0.7	1	1,975	0.30	37.4	0.00	1
	7.03	BIA 7	BIA 8	East end of Southern 105th St NE	5.4	2	1,210	0.07	12.7	0.18	1
2	8.01	BIA 8	US 281 / ND 5	BIA 15	5.0	2	812	0.08	13.8	0.00	2
	8.02	BIA 8	BIA 11	BIA 5	6.2	0	324	0.00	15.9	0.00	2
7	9.01	BIA 9	BIA 12	BIA 6	2.9	0	705	0.00	24.1	0.00	2
6	10.01	BIA 10	BIA 8	BIA 11	4.9	1	1,170	0.04	9.9	0.20	2
1	10.02	BIA 10	BIA 11	US 281 / ND 5	4.3	1	1,563	0.05	13.2	0.23	2
	10.03	BIA 10	US 281 / ND 5	BIA 5	1.5	2	1,633	0.26	37.1	0.00	1
4	10.04	BIA 10	BIA 5	BIA 3	3.0	1	600	0.07	15.6	0.00	2
5	11.01	BIA 11	US 281 / ND 5	BIA 6	5.1	7	572	0.27	11.3	0.00	2
	13.01	BIA 13	US 281 / ND 5	BIA 10	2.0	0	170	0.00	11.4	0.00	1
	13.02	BIA 13	BIA 10	BIA 6	3.0	1	222	0.07	11.5	0.00	1
	23.02	BIA 23	BIA 10	BIA 4	4.0	0	200	0.00	9.0	0.00	1
	25.01	BIA 25	BIA 8	BIA 6	2.0	2	525	0.20	19.1	0.00	1
	520.01	No Designation	Dead End near 38th Ave NE	US 281/ND 5	1.3	1	675	0.16	10.3	0.79	2
					70.5	23					

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	450
Max	1,000,000

	Access	Lane Departure	Critical Radius Curves
Total	1082	23	4
Total Mileage	70.5	70.5	70.5
Years		5	
Average Density (Total/Mile)	**15.3**	**0.07**	**0.06**

Turtle Mountain Reservation
Rural Segment Prioritization - Lane Departure Priority

23 USC 409
NDDOT Reserves All Objections

#	Corridor	Route	Start	End	Length	ADT	ADT Range	Lane Departure Density	Access Density	Curve Critical Radius Density	Edge Risk	Totals	Tiebreakers: Edge Risk	Tiebreakers: ADT
1	520.01	No Designation	Dead End near 38th Ave NE	US 281/ND 5	1.3	675	★	★	★	★	★	★★★★★	2	675
2	10.02	BIA 10	BIA 11	US 281 / ND 5	4.3	1,563	★		★	★	★	★★★★	2	1,563
3	8.01	BIA 8	US 281 / ND 5	BIA 15	5.0	812	★	★	★		★	★★★★	2	812
4	7.01	BIA 7	96th St NE	US 281 / ND 5	2.3	690	★	★	★		★	★★★★	2	690
5	10.04	BIA 10	BIA 5	BIA 3	3.0	600	★	★	★		★	★★★★	2	600
6	11.01	BIA 11	US 281 / ND 5	BIA 6	5.1	572	★	★	★		★	★★★★	2	572
7	10.01	BIA 10	BIA 8	BIA 11	4.9	1,170	★		★		★	★★★	2	1,170
8	9.01	BIA 9	BIA 12	BIA 6	2.9	705	★		★		★	★★★	2	705
9	4.02	BIA 4	1.6 miles East if BIA Rd 11	BIA 7	3.9	525	★		★		★	★★★	2	525
10	4.03	BIA 4	BIA 7	Rolette 6 / ND 30	4.0	460	★		★		★	★★★	2	460
11	1.01	BIA 1	BIA 10	US 281 / ND 5	1.0	450	★		★		★	★★★	2	450
12	7.02	BIA 7	US 281 / ND 5	BIA 8	0.7	1,975	★	★	★			★★★	1	1,975
13	10.03	BIA 10	US 281 / ND 5	BIA 5	1.5	1,633	★	★	★			★★★	1	1,633
14	7.03	BIA 7	BIA 8	East end of Southern 105th St NE	5.4	1,210	★	★	★			★★★	1	1,210
15	25.01	BIA 25	BIA 8	BIA 6	2.0	525	★	★	★			★★★	1	525
16	8.02	BIA 8	BIA 11	BIA 5	6.2	324			★		★	★★	2	324
17	6.01	BIA 6	US 281 / ND 5	BIA 15	5.0	310			★		★	★★	2	310
18	5.01	BIA 5	BIA 10	BIA 6	2.0	520	★		★			★★	1	520
19	6.02	BIA 6	BIA 9	BIA 7	1.0	490	★		★			★★	1	490
20	13.02	BIA 13	BIA 10	BIA 6	3.0	222		★	★			★★	1	222
21	23.02	BIA 23	BIA 10	BIA 4	4.0	200			★			★	1	200
22	13.01	BIA 13	US 281 / ND 5	BIA 10	2.0	170			★			★	1	170
					Total Stars --		17	10	22	2	13			
					% That Gets Star --		77%	45%	100%	9%	59%			

	#	%	Mileage %
★★★★★	1	5%	2%
★★★★	5	23%	28%
★★★	9	41%	37%
★★	5	23%	24%
★	2	9%	9%
	0	0%	0%
	22	100%	100%

Stars

ADT Range - If segment has an ADT in the range of most at risk ADT based on statewide totals. (450 < ADT < 1000000)
Lane Departure Density - If segment has higher lane departure density than the Central average (0.064).
Access Density If segment has access density than the statewide overrepresented threshold (8).
Curve Critical Radius Density - If segment has higher density of curves with critical radius than the Central average (0.218).
Edge Risk Assessment - Edge risk of 2 or 3, based on assessment of roadway edge and clear zone.

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 10 from BIA 11 to US 281 / ND 5

Agency Name: Turtle Mountain Reservation **ND DOT District:** 3
Contact Name: Ron Trottier **Telephone Number:** Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Start:	BIA 11	*Lane Width:*	11'
End:	US 281 / ND 5	*Speed Limit:*	High
Facility Type:	2-Lane	*Shoulder Width:*	0'
ADT:	1563	*Shoulder Type:*	None
Road Type	Rural Paved	*Length (miles):*	4.3
County Road	BIA 10	*Rumble Installed:*	No
Local Name:	BIA 10	*Oil Project:*	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

	Total	Road Dept	K+A
Crashes	6	1	3
Density (per mile per year)	0.28	0.05	0.14
Rate (per MVM)	0.49	0.08	0.24

	Value	Critical	Departure
ADT Range	1,563	450≤ADT≤1000000	★
RD Density	0.046	0.064	
Access Density	13.2	8.0	★
Curve Critical Radius Density	0.232	0.218	★
Edge Risk	2	2 or 3	★
			★★★★

Describe Proposed Safety Improvements

Description	Type	Cost per mi	Mileage	Cost	Notes -
4" Edge Lines	Proactive	$ 1,320	0.0	$ -	
6" Edge Lines	Proactive	$ 1,980	4.3	$ 8,514	
Edge Rumble Strip	Proactive	$ 5,850	0.0	$ -	
Ground In Wet-Reflective Markings	Proactive	$ 36,000	0.0	$ -	
Center Line Rumble Strip	Proactive	$ 3,600	4.3	$ 15,480	
4" Center Line	Proactive	$ 660	0.0	$ -	
6" Center Line	Proactive	$ 1,020	0.0	$ -	

Project Cost Estimate (attach detailed copy)

Federal Funds	$	21,595
Local Match (10% of Total project cost)	$	2,399
Total Project Cost	**$**	**23,994**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 8 from US 281 / ND 5 to BIA 15

Agency Name: Turtle Mountain Reservation **ND DOT District:** 3
Contact Name: Ron Trottier **Telephone Number:** Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Start:	US 281 / ND 5	*Lane Width:*	11'
End:	BIA 15	*Speed Limit:*	High
Facility Type:	2-Lane	*Shoulder Width:*	0'
ADT:	812	*Shoulder Type:*	None
Road Type	Rural Paved	*Length (miles):*	5.0
County Road	BIA 8	*Rumble Installed:*	No
Local Name:	BIA 8	*Oil Project:*	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

	Total	Road Dept	K+A
Crashes	3	2	1
Density (per mile per year)	0.12	0.08	0.04
Rate (per MVM)	0.40	0.27	0.13

	Value	Critical	Departure
ADT Range	812	450≤ADT≤1000000	★
RD Density	0.080	0.064	★
Access Density	13.8	8.0	★
Curve Critical Radius Density	0.000	0.218	
Edge Risk	2	2 or 3	★
			★★★★

Describe Proposed Safety Improvements

Description	Type	Cost per mi	Mileage	Cost	Notes -
4" Edge Lines	Proactive	$ 1,320	5.0	$ 6,600	
6" Edge Lines	Proactive	$ 1,980	0.0	$ -	
Edge Rumble Strip	Proactive	$ 5,850	0.0	$ -	
Ground In Wet-Reflective Markings	Proactive	$ 36,000	0.0	$ -	
Center Line Rumble Strip	Proactive	$ 3,600	0.0	$ -	
4" Center Line	Proactive	$ 660	0.0	$ -	
6" Center Line	Proactive	$ 1,020	0.0	$ -	

Project Cost Estimate (attach detailed copy)

Federal Funds	$	5,940
Local Match (10% of Total project cost)	$	660
Total Project Cost	**$**	**6,600**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 7 from 96th St NE to US 281 / ND 5

Agency Name: Turtle Mountain Reservation **ND DOT District:** 3
Contact Name: Ron Trottier **Telephone Number:** Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Start:	96th St NE	*Lane Width:*	11'
End:	US 281 / ND 5	*Speed Limit:*	High
Facility Type:	2-Lane	*Shoulder Width:*	0'
ADT:	690	*Shoulder Type:*	None
Road Type	Rural Paved	*Length (miles):*	2.3
County Road	BIA 7	*Rumble Installed:*	No
Local Name:	BIA 7	*Oil Project:*	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

	Total	Road Dept	K+A
Crashes	6	1	0
Density (per mile per year)	0.52	0.09	0.00
Rate (per MVM)	2.07	0.35	0.00

	Value	Critical	Departure
ADT Range	690	450≤ADT≤1000000	★
RD Density	0.085	0.064	★
Access Density	21.8	8.0	★
Curve Critical Radius Density	0.000	0.218	
Edge Risk	2	2 or 3	★
			★★★★

Describe Proposed Safety Improvements

Description	Type	Cost per mi	Mileage	Cost	Notes -
4" Edge Lines	Proactive	$ 1,320	2.3	$ 3,036	
6" Edge Lines	Proactive	$ 1,980	0.0	$ -	
Edge Rumble Strip	Proactive	$ 5,850	0.0	$ -	
Ground In Wet-Reflective Markings	Proactive	$ 36,000	0.0	$ -	
Center Line Rumble Strip	Proactive	$ 3,600	0.0	$ -	
4" Center Line	Proactive	$ 660	0.0	$ -	
6" Center Line	Proactive	$ 1,020	0.0	$ -	

Project Cost Estimate (attach detailed copy)

Federal Funds	$	2,732
Local Match (10% of Total project cost)	$	304
Total Project Cost	**$**	**3,036**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 10 from BIA 5 to BIA 3

Agency Name: Turtle Mountain Reservation **ND DOT District:** 3
Contact Name: Ron Trottier **Telephone Number:** Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Start:	BIA 5	*Lane Width:*	11'
End:	BIA 3	*Speed Limit:*	Low
Facility Type:	2-Lane	*Shoulder Width:*	0'
ADT:	600	*Shoulder Type:*	None
Road Type	Rural Paved	*Length (miles):*	3.0
County Road	BIA 10	*Rumble Installed:*	No
Local Name:	BIA 10	*Oil Project:*	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

	Total	Road Dept	K+A
Crashes	1	1	1
Density (per mile per year)	0.07	0.07	0.07
Rate (per MVM)	0.30	0.30	0.30

	Value	Critical	Departure
ADT Range	600	450≤ADT≤1000000	★
RD Density	0.067	0.064	★
Access Density	15.6	8.0	★
Curve Critical Radius Density	0.000	0.218	
Edge Risk	2	2 or 3	★
			★★★★

Describe Proposed Safety Improvements

Description	Type	Cost per mi	Mileage	Cost	Notes -
4" Edge Lines	Proactive	$ 1,320	3.0	$ 3,960	
6" Edge Lines	Proactive	$ 1,980	0.0	$ -	
Edge Rumble Strip	Proactive	$ 5,850	0.0	$ -	
Ground In Wet-Reflective Markings	Proactive	$ 36,000	0.0	$ -	
Center Line Rumble Strip	Proactive	$ 3,600	0.0	$ -	
4" Center Line	Proactive	$ 660	3.0	$ 1,980	
6" Center Line	Proactive	$ 1,020	0.0	$ -	

Project Cost Estimate (attach detailed copy)

Federal Funds	$	5,346
Local Match (10% of Total project cost)	$	594
Total Project Cost	**$**	**5,940**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 11 from US 281 / ND 5 to BIA 6

Agency Name: Turtle Mountain Reservation **ND DOT District: 3**
Contact Name: Ron Trottier **Telephone Number: Work: 701-477-0407 Ext. 223**
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Start:	US 281 / ND 5	*Lane Width:*	11'
End:	BIA 6	*Speed Limit:*	High
Facility Type:	2-Lane	*Shoulder Width:*	0'
ADT:	572	*Shoulder Type:*	None
Road Type	Rural Paved	*Length (miles):*	5.1
County Road	BIA 11	*Rumble Installed:*	No
Local Name:	BIA 11	*Oil Project:*	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

	Total	Road Dept	K+A
Crashes	8	7	0
Density (per mile per year)	0.31	0.27	0.00
Rate (per MVM)	1.50	1.32	0.00

	Value	Critical	Departure
ADT Range	572	450≤ADT≤1000000	★
RD Density	0.273	0.064	★
Access Density	11.3	8.0	★
Curve Critical Radius Density	0.000	0.218	
Edge Risk	2	2 or 3	★
			★★★★

Describe Proposed Safety Improvements

Description	Type	Cost per mi	Mileage	Cost	Notes -
4" Edge Lines	Proactive	$ 1,320	5.1	$ 6,732	
6" Edge Lines	Proactive	$ 1,980	0.0	$ -	
Edge Rumble Strip	Proactive	$ 5,850	0.0	$ -	
Ground In Wet-Reflective Markings	Proactive	$ 36,000	0.0	$ -	
Center Line Rumble Strip	Proactive	$ 3,600	0.0	$ -	
4" Center Line	Proactive	$ 660	5.1	$ 3,366	
6" Center Line	Proactive	$ 1,020	0.0	$ -	

Project Cost Estimate (attach detailed copy)

Federal Funds	$	9,088
Local Match (10% of Total project cost)	$	1,010
Total Project Cost	**$**	**10,098**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 10 from BIA 8 to BIA 11

Agency Name: Turtle Mountain Reservation **ND DOT District:** 3
Contact Name: Ron Trottier **Telephone Number:** Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Start:	BIA 8	*Lane Width:*	11'
End:	BIA 11	*Speed Limit:*	High
Facility Type:	2-Lane	*Shoulder Width:*	0'
ADT:	1170	*Shoulder Type:*	None
Road Type	Rural Paved	*Length (miles):*	4.9
County Road	BIA 10	*Rumble Installed:*	No
Local Name:	BIA 10	*Oil Project:*	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

	Total	Road Dept	K+A
Crashes	3	1	0
Density (per mile per year)	0.12	0.04	0.00
Rate (per MVM)	0.29	0.10	0.00

	Value	Critical	Departure
ADT Range	1,170	450≤ADT≤1000000	★
RD Density	0.041	0.064	
Access Density	9.9	8.0	★
Curve Critical Radius Density	0.203	0.218	
Edge Risk	2	2 or 3	★
			★★★

Describe Proposed Safety Improvements

Description	Type	Cost per mi	Mileage	Cost
4" Edge Lines	Proactive	$ 1,320	2.9	$ 3,881
6" Edge Lines	Proactive	$ 1,980	2.0	$ 3,881
Edge Rumble Strip	Proactive	$ 5,850	0.0	$ -
Ground In Wet-Reflective Markings	Proactive	$ 36,000	0.0	$ -
Center Line Rumble Strip	Proactive	$ 3,600	4.9	$ 17,640
4" Center Line	Proactive	$ 660	0.0	$ -
6" Center Line	Proactive	$ 1,020	0.0	$ -

Notes - 4" edge line west of BIA Rd 13, 6" edge line east of BIA Rd 13

Project Cost Estimate (attach detailed copy)

Federal Funds	$	22,861
Local Match (10% of Total project cost)	$	2,540
Total Project Cost	**$**	**25,402**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 9 from BIA 12 to BIA 6

Agency Name: Turtle Mountain Reservation **ND DOT District:** 3
Contact Name: Ron Trottier **Telephone Number:** Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Start:	BIA 12	*Lane Width:*	11'
End:	BIA 6	*Speed Limit:*	High
Facility Type:	2-Lane	*Shoulder Width:*	0'
ADT:	705	*Shoulder Type:*	None
Road Type	Rural Paved	*Length (miles):*	2.9
County Road	BIA 9	*Rumble Installed:*	No
Local Name:	BIA 9	*Oil Project:*	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

	Total	Road Dept	K+A
Crashes	2	0	0
Density (per mile per year)	0.14	0.00	0.00
Rate (per MVM)	0.54	0.00	0.00

	Value	Critical	Departure
ADT Range	705	450≤ADT≤1000000	★
RD Density	0.000	0.064	
Access Density	24.1	8.0	★
Curve Critical Radius Density	0.000	0.218	
Edge Risk	2	2 or 3	★
			★★★

Describe Proposed Safety Improvements

Description	Type	Cost per mi	Mileage	Cost
4" Edge Lines	Proactive	$ 1,320	0.0	$ -
6" Edge Lines	Proactive	$ 1,980	2.9	$ 5,742
Edge Rumble Strip	Proactive	$ 5,850	0.0	$ -
Ground In Wet-Reflective Markings	Proactive	$ 36,000	0.0	$ -
Center Line Rumble Strip	Proactive	$ 3,600	0.0	$ -
4" Center Line	Proactive	$ 660	2.0	$ 1,302
6" Center Line	Proactive	$ 1,020	0.0	$ -

Notes - Existing centerline already in place south of BIA Rd 10 - project assigned to the portion of the segment north of BIA Rd 10 only

Project Cost Estimate (attach detailed copy)

Federal Funds	$	6,339
Local Match (10% of Total project cost)	$	704
Total Project Cost	**$**	**7,044**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 4 from 1.6 miles East if BIA Rd 11 to BIA 7

Agency Name: Turtle Mountain Reservation **ND DOT District:** 3
Contact Name: Ron Trottier **Telephone Number:** Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Start:	1.6 miles East if BIA Rd 11	*Lane Width:*	11'
End:	BIA 7	*Speed Limit:*	High
Facility Type:	2-Lane	*Shoulder Width:*	0'
ADT:	525	*Shoulder Type:*	None
Road Type	Rural Paved	*Length (miles):*	3.9
County Road	BIA 4	*Rumble Installed:*	No
Local Name:	BIA 4	*Oil Project:*	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

	Total	Road Dept	K+A
Crashes	1	0	0
Density (per mile per year)	0.05	0.00	0.00
Rate (per MVM)	0.27	0.00	0.00

	Value	Critical	Departure
ADT Range	525	450≤ADT≤1000000	★
RD Density	0.000	0.064	
Access Density	11.7	8.0	★
Curve Critical Radius Density	0.000	0.218	
Edge Risk	2	2 or 3	★
			★★★

Describe Proposed Safety Improvements

Description	Type	Cost per mi	Mileage	Cost	Notes -
4" Edge Lines	Proactive	$ 1,320	0.0	$ -	
6" Edge Lines	Proactive	$ 1,980	3.9	$ 7,722	
Edge Rumble Strip	Proactive	$ 5,850	0.0	$ -	
Ground In Wet-Reflective Markings	Proactive	$ 36,000	0.0	$ -	
Center Line Rumble Strip	Proactive	$ 3,600	0.0	$ -	
4" Center Line	Proactive	$ 660	0.0	$ -	
6" Center Line	Proactive	$ 1,020	0.0	$ -	

Project Cost Estimate (attach detailed copy)

Federal Funds	$	6,950
Local Match (10% of Total project cost)	$	772
Total Project Cost	**$**	**7,722**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 4 from BIA 7 to Rolette 6 / ND 30

Agency Name: Turtle Mountain Reservation **ND DOT District:** 3
Contact Name: Ron Trottier **Telephone Number:** Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Start:	BIA 7	*Lane Width:*	11'
End:	Rolette 6 / ND 30	*Speed Limit:*	High
Facility Type:	2-Lane	*Shoulder Width:*	0'
ADT:	460	*Shoulder Type:*	None
Road Type	Rural Paved	*Length (miles):*	4.0
County Road	BIA 4	*Rumble Installed:*	No
Local Name:	BIA 4	*Oil Project:*	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

	Total	Road Dept	K+A
Crashes	2	1	1
Density (per mile per year)	0.10	0.05	0.05
Rate (per MVM)	0.60	0.30	0.30

	Value	Critical	Departure
ADT Range	460	450≤ADT≤1000000	★
RD Density	0.050	0.064	
Access Density	13.3	8.0	★
Curve Critical Radius Density	0.000	0.218	
Edge Risk	2	2 or 3	★
			★★★

Describe Proposed Safety Improvements

Description	Type	Cost per mi	Mileage	Cost	Notes -
4" Edge Lines	Proactive	$ 1,320	4.0	$ 5,280	
6" Edge Lines	Proactive	$ 1,980	0.0	$ -	
Edge Rumble Strip	Proactive	$ 5,850	0.0	$ -	
Ground In Wet-Reflective Markings	Proactive	$ 36,000	0.0	$ -	
Center Line Rumble Strip	Proactive	$ 3,600	0.0	$ -	
4" Center Line	Proactive	$ 660	4.0	$ 2,640	
6" Center Line	Proactive	$ 1,020	0.0	$ -	

Project Cost Estimate (attach detailed copy)

Federal Funds	$	7,128
Local Match (10% of Total project cost)	$	792
Total Project Cost	**$**	**7,920**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 1 from BIA 10 to US 281 / ND 5

Agency Name: Turtle Mountain Reservation **ND DOT District:** 3
Contact Name: Ron Trottier **Telephone Number:** Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Start:	BIA 10	*Lane Width:*	12'
End:	US 281 / ND 5	*Speed Limit:*	High
Facility Type:	2-Lane	*Shoulder Width:*	0'
ADT:	450	*Shoulder Type:*	None
Road Type	Rural Paved	*Length (miles):*	1.0
County Road	BIA 1	*Rumble Installed:*	No
Local Name:	BIA 1	*Oil Project:*	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

	Total	Road Dept	K+A
Crashes	0	0	0
Density (per mile per year)	0.00	0.00	0.00
Rate (per MVM)	0.00	0.00	0.00

	Value	Critical	Departure
ADT Range	450	450≤ADT≤1000000	★
RD Density	0.000	0.064	
Access Density	27.0	8.0	★
Curve Critical Radius Density	0.000	0.218	
Edge Risk	2	2 or 3	★
			★★★

Describe Proposed Safety Improvements

Description	Type	Cost per mi	Mileage	Cost
4" Edge Lines	Proactive	$ 1,320	1.0	$ 1,320
6" Edge Lines	Proactive	$ 1,980	0.0	$ -
Edge Rumble Strip	Proactive	$ 5,850	0.0	$ -
Ground In Wet-Reflective Markings	Proactive	$ 36,000	0.0	$ -
Center Line Rumble Strip	Proactive	$ 3,600	0.0	$ -
4" Center Line	Proactive	$ 660	1.0	$ 660
6" Center Line	Proactive	$ 1,020	0.0	$ -

Notes - Noise sensitive receiver - no edge rumbles

Project Cost Estimate (attach detailed copy)

Federal Funds	$	1,782
Local Match (10% of Total project cost)	$	198
Total Project Cost	**$**	**1,980**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

Turtle Mountain Reservation
Curve Projects

Page	Corridor ID	# of Curves	Route #	Start	End	Chevron	Arrow Board	Shoulder Pave	Edge Rumble Strips	Advanced Sign/ Speed Plaque	Project $
1	4.02	4	BIA 4	1.6 miles East if BIA Rd 11	BIA 7	$ 11,880	$ -	$ -	$ 1,626	$ -	$ 13,506
2	4.03	1	BIA 4	BIA 7	Rolette 6 / ND 30	$ 3,960	$ -	$ -	$ 282	$ 1,440	$ 5,682
3	7.03	1	BIA 7	BIA 8	East end of Southern 105th St NE	$ 3,960	$ -	$ -	$ 1,608	$ 1,440	$ 7,008
4	10.01	1	BIA 10	BIA 8	BIA 11	$ 3,960	$ -	$ 15,442	$ 1,673	$ 1,440	$ 22,515
5	10.02	1	BIA 10	BIA 11	US 281 / ND 5	$ 3,960	$ -	$ -	$ 600	$ 1,440	$ 6,000
6	520.01	3	No Designation	Dead End near 38th Ave NE	US 281/ND 5	$ 3,960	$ -	$ -	$ 974	$ 1,440	$ 6,374
23 USC 409 NDDOT Reserves All Objections						**$ 31,680**	**$ -**	**$ 15,442**	**$ 6,763**	**$ 7,200**	**$ 61,085**

Turtle Mountain Reservation Curves

Curve Count	ID	Corridor	Segment	Start	End	Inside Shoulder Type	Outside Shoulder Type	Isolated Curve	Curve Warning Sign	Warning Sign Type	Speed Advisory Sign	Advisory Speed	Arrow Board	Chevrons	Crashes Total	Crashes Total Severe	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Speed Limit	Risk Ranking	Chevrons (W1-8)	One Direction Large Arrow (W1-6)	Curve RS	Advance Horizontal Alignment Warning Sign
1	0004A	4.02	BIA 4	1.6 miles East if BIA Rd 11	BIA 7	None	None	No	Yes	Curve Warning	No		No	No	-	-	1301	525	No	No	High	★	x		Inside/Outside	-
2	0004B	4.02	BIA 4	1.6 miles East if BIA Rd 11	BIA 7	None	None	No	Yes	Winding Road	No		No	No	-	-	1323	525	Yes	No	High	★★	x		Inside/Outside	-
3	0004C	4.02	BIA 4	1.6 miles East if BIA Rd 11	BIA 7	None	None	No	Yes	Winding Road	No		No	No	-	-	1327	525	Yes	Yes	High	★★★	x		Inside/Outside	-
4	0004D	4.02	BIA 4	1.6 miles East if BIA Rd 11	BIA 7	None	None	No	Yes	Winding Road	No		No	No	-	-	1913	525	Yes	No	High	★★			Inside/Outside	-
5	0004E	4.03	BIA 4	BIA 7	Rolette 6 / ND 30	None	None	Yes	Yes	Curve Warning	No		No	Yes	-	-	310	460	Yes	No	High	★★	x		Inside/Outside	x
6	0007A	7.03	BIA 7	BIA 8	East end of Southern 105th St NE	Paved	Paved	Yes	Yes	Curve Warning	Yes	35	No	Yes	1	-	927	1210	Yes	No	High	★★★	x		Inside/Outside	x
7	0008A	8.02	BIA 8	BIA 11	BIA 5	None	None	No	Yes	Curve Warning	No		No	No	-	-	2906	324	Yes	Yes	High	★★			-	-
8	0008B	8.02	BIA 8	BIA 11	BIA 5	None	None	No	Yes	S-Curve	No		No	No	-	-	1446	324	No	No	High				-	-
9	0008C	8.02	BIA 8	BIA 11	BIA 5	None	None	No	Yes	S-Curve	No		No	No	-	-	3541	324	Yes	Yes	High	★★			-	-
10	0008D	8.02	BIA 8	BIA 11	BIA 5	None	None	Yes	No		No		No	No	-	-	2104	324	Yes	Yes	High	★★			-	-
11	0010A	10.01	BIA 10	BIA 8	BIA 11	Gravel	Gravel	Yes	Yes	Curve Warning	Yes	25	No	Yes	-	-	955	1170	Yes	No	High	★★★	x		Inside/Outside	x
12	0010B	10.02	BIA 10	BIA 11	US 281 / ND 5	Paved	Paved	Yes	Yes	Turn Warning			No	No	1	1	523	1563	Yes	Yes	High	★★★★★	x		Inside/Outside	x
13	0013A	13.01	BIA 13	US 281 / ND 5	BIA 10	Paved	Paved	No	Yes	Winding Road	No		No	No	-	-	1581	170	No	No	High				-	-
14	0013B	13.01	BIA 13	US 281 / ND 5	BIA 10	Paved	Paved	No	Yes	Winding Road	No		No	No	-	-	1373	170	Yes	No	High	★			-	-
15	0013C	13.01	BIA 13	US 281 / ND 5	BIA 10	Paved	Paved	No	Yes	Winding Road	No		No	No	-	-	1698	170	Yes	No	High	★			-	-
16	0013D	13.02	BIA 13	BIA 10	BIA 6	Paved	Paved	Yes	Yes	Curve Warning	No		No	No	-	-	1459	222	Yes	No	High	★			-	-
17	0520A	520.01	No Designation	Dead End near 38th Ave NE	US 281/ND 5	Paved	Paved	No	No		No		No	Yes	1	1	521	675	No	No	Low	★★★	x		Inside/Outside	x
18	0520B	520.01	No Designation	Dead End near 38th Ave NE	US 281/ND 5	None	None	No	Yes	S-Curve	Yes	25	No	No	-	-	241	675	No	No	Low	★			-	-
19	0520C	520.01	No Designation	Dead End near 38th Ave NE	US 281/ND 5	None	None	No	Yes	S-Curve	Yes	25	No	No	-	-	219	675	No	No	Low	★			-	-
															3	2							8	0		5

Stars	Total #	Total %	Chevroned % of stars
★★★★★	1	5%	0%
★★★★	0	0%	0%
★★★	4	21%	75%
★★	6	32%	17%
★	6	32%	0%
23 USC 409 IDDOT Reserves All Objection	2	11%	0%
	19	100%	21%

Critical Ranges	Min	Max
Radius	500	1,200
ADT	450	1,000,000

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming

SFN 59959 (06-2011)

Curves on BIA 4 from 1.6 miles East if BIA Rd 11 to BIA 7

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description (Corridor Containing Curves)

Start: 1.6 miles East if BIA Rd 11
End: BIA 7
Facility Type: 2-Lane
ADT: 525
Road Type Rural Paved
County Road BIA 4
Local Name: BIA 4

Lane Width: 11'
Speed Limit: High
Shoulder Width: 0'
Shoulder Type: None
Length (miles): 3.9
Rumble Installed: No
Edge Line Installed: Yes

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

Curve ID	Oil Proj	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity	Existing Arrow Board	Existing Chevrons	Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
0004A	No	0	0	1301	525	No	No	★	x	-	-	-	Chevron	-	Inside/Outside	-	-
0004B	No	0	0	1323	525	Yes	No	★★	x	-	-	-	Chevron	-	Inside/Outside	-	-
0004C	No	0	0	1327	525	Yes	Yes	★★★	-	-	-	-	Chevron	-	Inside/Outside	-	-
0004D	No	0	0	1913	525	Yes	No	★★	x	-	-	-	-	-	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

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	450 to 1000000
Intersection on Curve	Yes
Visual Trap	Yes

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

Describe Proposed Safety Improvements

Description	Type	Unit Cost		Quantity	Total cost	Notes -
Chevrons	Proactive	$ 3,960	per curve	3	$ 11,880	
Arrow Board Only	Proactive	$ 1,200	per curve	0	$ -	
Advance Warning Sign/Speed Advisory Plaque	Proactive	$ 1,440	per curve	0	$ -	
Shoulder Rumble Strip	Proactive	$ 5,850	per mile	.3 miles	$ 1,626	
Shoulder Paving	Proactive	$ 54,000	per mile	.0 miles	$ -	
					$ 13,506	

Project Cost Estimate (attach detailed copy)

Federal Funds	$ 12,155
Local Match (10% of Total project cost)	$ 1,351
Total Project Cost	**$ 13,506**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming

SFN 59959 (06-2011)

Curves on BIA 4 from BIA 7 to Rolette 6 / ND 30

Agency Name: Turtle Mountain Reservation
Contact Name: Ron Trottier
Email Address: ronwtrottierjr25@gmail.com

ND DOT District: 3
Telephone Number: Work: 701-477-0407 Ext. 223

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description (Corridor Containing Curves)

Start: BIA 7
End: Rolette 6 / ND 30
Facility Type: 2-Lane
ADT: 460
Road Type Rural Paved
County Road BIA 4
Local Name: BIA 4

Lane Width: 11'
Speed Limit: High
Shoulder Width: 0'
Shoulder Type: None
Length (miles): 4.0
Rumble Installed: No
Edge Line Installed: No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

Curve ID	Oil Proj	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity	Existing Arrow Board	Existing Chevrons	Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
0004E	No	0	0	310	460	Yes	No	★★	-	-	x	-	Chevron	-	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

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	450 to 1000000
Intersection on Curve	Yes
Visual Trap	Yes

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

Describe Proposed Safety Improvements

Description	Type	Unit Cost		Quantity	Total cost	Notes -
Chevrons	Proactive	$ 3,960	per curve	1	$ 3,960	
Arrow Board Only	Proactive	$ 1,200	per curve	0	$ -	
Advance Warning Sign/Speed Advisory Plaque	Proactive	$ 1,440	per curve	1	$ 1,440	
Shoulder Rumble Strip	Proactive	$ 5,850	per mile	.0 miles	$ 282	
Shoulder Paving	Proactive	$ 54,000	per mile	.0 miles	$ -	
					$ 5,682	

Project Cost Estimate (attach detailed copy)

Federal Funds	$ 5,113
Local Match (10% of Total project cost)	$ 568
Total Project Cost	**$ 5,682**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming

SFN 59959 (06-2011)

Curves on BIA 7 from BIA 8 to East end of Southern 105th St NE

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description (Corridor Containing Curves)

Start: BIA 8
End: East end of Southern 105th St NE
Facility Type: 2-Lane
ADT: 1210
Road Type Rural Paved
County Road BIA 7
Local Name: BIA 7

Lane Width: 12'
Speed Limit: High
Shoulder Width: 2'
Shoulder Type: Paved
Length (miles): 5.4
Rumble Installed: No
Edge Line Installed: No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

Curve ID	Oil Proj	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity	Existing Arrow Board	Existing Chevrons	Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
0007A	No	0	0	927	1210	Yes	No	★★★	0	-	x	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

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	450 to 1000000
Intersection on Curve	Yes
Visual Trap	Yes

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

Describe Proposed Safety Improvements

Description	Type	Unit Cost		Quantity	Total cost
Chevrons	Proactive	$ 3,960	per curve	1	$ 3,960
Arrow Board Only	Proactive	$ 1,200	per curve	0	$ -
Advance Warning Sign/Speed Advisory Plaque	Proactive	$ 1,440	per curve	1	$ 1,440
Shoulder Rumble Strip	Proactive	$ 5,850	per mile	.3 miles	$ 1,608
Shoulder Paving	Proactive	$ 54,000	per mile	.0 miles	$ -
					$ 7,008

Notes -

Project Cost Estimate (attach detailed copy)

Federal Funds	$ 6,308
Local Match (10% of Total project cost)	$ 701
Total Project Cost	**$ 7,008**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming

SFN 59959 (06-2011)

Curves on BIA 10 from BIA 8 to BIA 11

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description (Corridor Containing Curves)

Start: BIA 8
End: BIA 11
Facility Type: 2-Lane
ADT: 1170
Road Type Rural Paved
County Road BIA 10
Local Name: BIA 10

Lane Width: 11'
Speed Limit: High
Shoulder Width: 0'
Shoulder Type: None
Length (miles): 4.9
Rumble Installed: No
Edge Line Installed: No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

Curve ID	Oil Proj	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity	Existing Arrow Board	Existing Chevrons	Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
0010A	No	0	0	955	1170	Yes	No	★★★	0	-	x	x	Chevron	Inside/Outside	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

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	450 to 1000000
Intersection on Curve	Yes
Visual Trap	Yes

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

Describe Proposed Safety Improvements

Description	Type	Unit Cost		Quantity	Total cost	Notes -
Chevrons	Proactive	$ 3,960	per curve	1	$ 3,960	
Arrow Board Only	Proactive	$ 1,200	per curve	0	$ -	
Advance Warning Sign/Speed Advisory Plaque	Proactive	$ 1,440	per curve	1	$ 1,440	
Shoulder Rumble Strip	Proactive	$ 5,850	per mile	.3 miles	$ 1,673	
Shoulder Paving	Proactive	$ 54,000	per mile	.3 miles	$ 15,442	
					$ 22,515	

Project Cost Estimate (attach detailed copy)

Federal Funds	$ 20,264
Local Match (10% of Total project cost)	$ 2,252
Total Project Cost	**$ 22,515**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming

SFN 59959 (06-2011)

Curves on BIA 10 from BIA 11 to US 281 / ND 5

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description (Corridor Containing Curves)

Start: BIA 11
End: US 281 / ND 5
Facility Type: 2-Lane
ADT: 1563
Road Type Rural Paved
County Road BIA 10
Local Name: BIA 10

Lane Width: 11'
Speed Limit: High
Shoulder Width: 0'
Shoulder Type: None
Length (miles): 4.3
Rumble Installed: No
Edge Line Installed: Yes

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

Curve ID	Oil Proj	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity	Existing Arrow Board	Existing Chevrons	Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
0010B	No	0	1	523	1563	Yes	Yes	★★★★★	0	-	-	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

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	450 to 1000000
Intersection on Curve	Yes
Visual Trap	Yes

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

Describe Proposed Safety Improvements

Description	Type	Unit Cost		Quantity	Total cost
Chevrons	Proactive	$ 3,960	per curve	1	$ 3,960
Arrow Board Only	Proactive	$ 1,200	per curve	0	$ -
Advance Warning Sign/Speed Advisory Plaque	Proactive	$ 1,440	per curve	1	$ 1,440
Shoulder Rumble Strip	Proactive	$ 5,850	per mile	.1 miles	$ 600
Shoulder Paving	Proactive	$ 54,000	per mile	.0 miles	$ -
					$ 6,000

Notes -

Project Cost Estimate (attach detailed copy)

Federal Funds	$ 5,400
Local Match (10% of Total project cost)	$ 600
Total Project Cost	**$ 6,000**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming

SFN 59959 (06-2011)

Curves on Unnamed Road in Shell Valley from Dead End near 38th Ave NE to US 281/ND 5

Agency Name: Turtle Mountain Reservation | **ND DOT District: 3**

Contact Name: Ron Trottier | **Telephone Number: Work: 701-477-0407 Ext. 223**

Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description (Corridor Containing Curves)

Start: Dead End near 38th Ave NE
End: US 281/ND 5
Facility Type: 2-Lane
ADT: 675
Road Type Rural Paved
County Road No Designation
Local Name: Unnamed Road in Shell Valley

Lane Width: 12'
Speed Limit: Low
Shoulder Width: 0'
Shoulder Type: None
Length (miles): 1.3
Rumble Installed: No
Edge Line Installed: Yes

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☑ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☐ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009-2013 — 5 years

Curve ID	Oil Proj	K	A	Radius (ft)	ADT	Intersection on Curve	Visual Trap	Risk Ranking	Proximity	Existing Arrow Board	Existing Chevrons	Critical Radius	Sign Improvement Project	Shoulder Paving Project	Shoulder Rumble Strip Project	Advance Horizontal Alignment Warning Sign	Advisory Speed Plaque
0520A	No	1	0	521	675	No	No	★★★	-	-	x	x	Chevron	-	Inside/Outside	x	40
0520B	No	0	0	241	675	No	No	★	-	-	-	-	-	-	-	-	-
0520C	No	0	0	219	675	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

Ranking Criteria

	Criteria
Severe Crashes	> 0
Radius	500 to 1200
ADT	450 to 1000000
Intersection on Curve	Yes
Visual Trap	Yes

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

Describe Proposed Safety Improvements

Description	Type	Unit Cost		Quantity	Total cost
Chevrons	Proactive	$ 3,960	per curve	1	$ 3,960
Arrow Board Only	Proactive	$ 1,200	per curve	0	$ -
Advance Warning Sign/Speed Advisory Plaque	Proactive	$ 1,440	per curve	1	$ 1,440
Shoulder Rumble Strip	Proactive	$ 5,850	per mile	.2 miles	$ 974
Shoulder Paving	Proactive	$ 54,000	per mile	.0 miles	$ -
					$ 6,374

Notes -

Project Cost Estimate (attach detailed copy)

Federal Funds	$ 5,737
Local Match (10% of Total project cost)	$ 637
Total Project Cost	**$ 6,374**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

Turtle Mountain Reservation
Summary of Rural Intersection Projects

Page	Intersection ID	Description	Risk Ranking	Directional Median	Mainline Dynamic Warning Sign	Close Median	Install Street Lights	Signs & Markings	Project Cost ($)
1	5.02	US 281 / ND 5 & BIA 5	★★★★★	-	x	-	x	x	$ 85,680
2	10.05	US 281 / ND 5 & Aaniin Dr NE	★★★★	-	x	-	x	x	$ 84,480
3	10.04	BIA 10 & BIA 9	★★★	-	x	-	x	x	$ 85,680
4	4.03	BIA 4 (102nd St NE)	★★★	-	x	-	x	x	$ 85,680
5	9.01	US 281 / ND 5 & BIA 9	★★★	-	-	-	x	x	$ 25,680
6	8.02	Jack Rabbit Rd/BIA 8 & BIA 10	★★★	-	-	-	x	x	$ 24,720
7	6.08	BIA 6 / 5th Ave NE & ND 30	★★★	-	-	-	x	x	$ 25,080
8	7.1	BIA 2 & BIA 7	★★★	-	-	-	-	x	$ 1,680
9	6.02	BIA 6 & 31st Ave NE	★★	-	x	-	x	x	$ 72,840
10	10.03	BIA 10 & BIA 11	★★	-	-	-	x	x	$ 30,960
11	6.05	BIA 6 & BIA 7	★★	-	-	-	x	x	$ 25,680
12	8.04	BIA 8 & BIA 9 / 43rd Ave NE	★★	-	-	-	x	x	$ 25,680
13	3.02	US 281 / ND 5 & BIA 3	★★	-	-	-	x	x	$ 23,760
14	13.02	BIA 13 & BIA 6	★★	-	-	-	-	x	$ 2,040
15	200.03	ND 5 / US 281 & 42nd Ave NE	★★	-	-	-	x	x	$ 23,040
23 USC 409 NDDOT Reserves All Objections				**0**	**5**	**0**	**13**	**15**	**$ 622,680**

Turtle Mountain Reservation
Rural Intersection Listing

23 US 409
NDDOT Reserves All Objections

Int #	Sys	Intersection Description	Skew	On/Near Curve	Development	RR Xing	ADT	Previous STOP (>5mi)	Total Crashes	ADT Cross Product > 80000	Crash Cost
1.01	1	US 281 / ND 5 & BIA 1	No	No	No	No	4055	No	0	Yes	$ -
3.01	3	BIA 10 & BIA 3	No	No	No	No	578	No	0	No	$ -
3.02	3	US 281 / ND 5 & BIA 3	No	No	No	No	4100	Yes	0	Yes	$ -
3.04	3	BIA 4 & BIA 3	No	No	No	No	467	No	0	No	$ -
4.02	4	BIA 4 & BIA 23	No	No	No	No	230	No	0	No	$ -
4.03	4	BIA 4 (102nd St NE)	No	No	No	No	1408	Yes	2	Yes	$ 424,000
4.04	4	102nd St (BIA 4) & BIA 1	No	Yes	No	No	565	No	0	No	$ -
5.01	5	Residential Driveway & BIA 5	No	No	No	No	629	No	0	No	$ -
5.02	5	US 281 / ND 5 & BIA 5	Yes	Yes	No	No	3553	Yes	2	Yes	$ 272,000
6.01	6	BIA 6 & 30th Ave NE (US 281 / ND 3)	No	No	No	No	1630	No	0	Yes	$ -
6.02	6	BIA 6 & 31st Ave NE	No	No	No	No	600	No	1	Yes	$ 824,000
6.03	6	BIA 6 & BIA 15	No	No	No	No	533	No	0	No	$ -
6.04	6	BIA 6 & BIA 9 / 43rd Ave NE	No	No	No	No	808	No	0	Yes	$ -
6.05	6	BIA 6 & BIA 7	No	No	No	No	1948	No	1	Yes	$ 136,000
6.06	6	BIA 6 & BIA 5	No	Yes	No	No	545	No	0	No	$ -
6.08	6	BIA 6 / 5th Ave NE & ND 30	Yes	No	No	Yes	1623	No	0	Yes	$ -
7.09	7	Business Driveway & BIA 7	No	No	No	No	1613	No	0	Yes	$ -
7.10	7	BIA 2 & BIA 7	No	Yes	No	No	1035	Yes	0	Yes	$ -
8.01	8	Jack Rabbit & BIA 25	No	No	No	No	1737	No	0	Yes	$ -
8.02	8	Jack Rabbit Rd/BIA 8 & BIA 10	No	No	No	No	1528	Yes	1	Yes	$ 12,000
8.03	8	BIA 8 & BIA 11	No	No	No	No	595	No	0	No	$ -
8.04	8	BIA 8 & BIA 9 / 43rd Ave NE	No	No	No	No	1253	No	1	Yes	$ 136,000
8.05	8	BIA 8 & BIA 7	No	No	No	No	2045	No	0	Yes	$ -
8.06	8	BIA 8 & Naked City Rd	Yes	No	No	No	462	No	0	No	$ -
8.07	8	BIA 8 & BIA 5	No	No	No	No	675	No	0	Yes	$ -
9.01	9	US 281 / ND 5 & BIA 9	Yes	No	No	No	6305	No	2	Yes	$ 24,000
9.02	9	BIA 4 & BIA 9	No	Yes	No	No	473	No	0	No	$ -
10.01	10	BIA 10 & BIA 23	No	No	No	No	1580	No	0	Yes	$ -
10.03	10	BIA 10 & BIA 11	No	No	No	No	1653	No	2	Yes	$ 148,000
10.04	10	BIA 10 & BIA 9	No	No	No	No	2795	Yes	4	Yes	$ 696,000
10.05	10	US 281 / ND 5 & Aaniin Dr NE	No	Yes	No	No	7047	Yes	1	Yes	$ 412,000
10.08	10	BIA 10 & Rd A	No	No	No	No	2345	No	0	Yes	$ -
10.09	10	BIA 10 & Residential Rd	No	No	No	No	2305	No	0	Yes	$ -
10.11	10	BIA 10 & BIA 5	No	No	No	No	1350	No	0	Yes	$ -
10.12	10	BIA 10 & Residential Rd	No	No	No	No	790	No	0	No	$ -
10.13	10	BIA 10 & Residential Rd	No	No	No	No	570	No	0	No	$ -
13.01	13	96th St NE (US 281/ND 5) & BIA 13	No	No	No	No	2590	No	0	Yes	$ -
13.02	13	BIA 13 & BIA 6	Yes	Yes	No	No	230	No	0	No	$ -
23.01	23	96th St NE (US 281/ND 5) & BIA 23	No	No	No	No	2555	No	0	Yes	$ -
200.03	200	ND 5 / US 281 & 42nd Ave NE	Yes	No	No	No	6162	No	0	Yes	$ -
220.01	220	US 281 / ND 5 & Roadway 0.5 miles East of 44th Ave NE	No	No	No	No	4455	No	0	Yes	$ -
220.02	220	US 281 / ND 5 & 46th Ave NE	No	No	No	No	4207	No	0	Yes	$ -
220.03	220	US 281 / ND 5 & Residential Rd	No	No	No	No	4005	No	0	Yes	$ -

Turtle Mountain Reservation
Rural Intersection Listing

23 US 409
NDDOT Reserves All Objections

Int #	Sys	Intersection Description	Skew	On/Near Curve	Development	RR Xing	ADT	Previous STOP (>5mi)	Total Crashes	ADT Cross Product > 80000	Crash Cost
520.05	520	96th St NE (US 281/ND 5) & Unnamed Shell Valley Main Rd	No	No	No	No	2968	No	0	Yes	$ -
524.01	524	Residential Rd & 46th Ave NE	No	No	No	No	700	No	0	No	$ -
524.02	524	Residential Rd & 46th Ave NE	No	No	No	No	750	No	0	Yes	$ -

Turtle Mountain Reservation
Rural Intersection Prioritization

23 US 409
NDDOT Reserves All Objections

Rank	Int #	Intersection Description	Skew	On/Near Curve	Development	RR Xing	Previous STOP (>5mi)	Total Crashes	ADT Cross Product > 80000	Priority	Crash Cost
1	5.02	US 281 / ND 5 & BIA 5	★	★			★	★	★	★★★★★	$ 272,000
2	10.05	US 281 / ND 5 & Aaniin Dr NE		★			★	★	★	★★★★	$ 412,000
3	10.04	BIA 10 & BIA 9					★	★	★	★★★	$ 696,000
4	4.03	BIA 4 (102nd St NE)					★	★	★	★★★	$ 424,000
5	9.01	US 281 / ND 5 & BIA 9	★					★	★	★★★	$ 24,000
6	8.02	Jack Rabbit Rd/BIA 8 & BIA 10					★	★	★	★★★	$ 12,000
7	6.08	BIA 6 / 5th Ave NE & ND 30	★			★			★	★★★	$ -
8	7.10	BIA 2 & BIA 7		★			★		★	★★★	$ -
9	6.02	BIA 6 & 31st Ave NE						★	★	★★	$ 824,000
10	10.03	BIA 10 & BIA 11						★	★	★★	$ 148,000
11	6.05	BIA 6 & BIA 7						★	★	★★	$ 136,000
12	8.04	BIA 8 & BIA 9 / 43rd Ave NE						★	★	★★	$ 136,000
13	3.02	US 281 / ND 5 & BIA 3					★		★	★★	$ -
14	13.02	BIA 13 & BIA 6	★	★						★★	$ -
15	200.03	ND 5 / US 281 & 42nd Ave NE	★						★	★★	$ -
16	1.01	US 281 / ND 5 & BIA 1							★	★	$ -
17	4.04	102nd St (BIA 4) & BIA 1		★						★	$ -
18	6.01	BIA 6 & 30th Ave NE (US 281 / ND 3)							★	★	$ -
19	6.04	BIA 6 & BIA 9 / 43rd Ave NE							★	★	$ -
20	6.06	BIA 6 & BIA 5		★						★	$ -
21	7.09	Business Driveway & BIA 7							★	★	$ -
22	8.01	Jack Rabbit & BIA 25							★	★	$ -
23	8.05	BIA 8 & BIA 7							★	★	$ -
24	8.06	BIA 8 & Naked City Rd	★							★	$ -
25	8.07	BIA 8 & BIA 5							★	★	$ -
26	9.02	BIA 4 & BIA 9		★						★	$ -
27	10.01	BIA 10 & BIA 23							★	★	$ -
28	10.08	BIA 10 & Rd A							★	★	$ -
29	10.09	BIA 10 & Residential Rd							★	★	$ -
30	10.11	BIA 10 & BIA 5							★	★	$ -
31	13.01	96th St NE (US 281/ND 5) & BIA 13							★	★	$ -
32	23.01	96th St NE (US 281/ND 5) & BIA 23							★	★	$ -
33	220.01	US 281 / ND 5 & Roadway 0.5 miles East of 44th Ave NE							★	★	$ -
34	220.02	US 281 / ND 5 & 46th Ave NE							★	★	$ -
35	220.03	US 281 / ND 5 & Residential Rd							★	★	$ -
36	520.05	96th St NE (US 281/ND 5) & Unnamed Shell Valley Main Rd							★	★	$ -
37	524.02	Residential Rd & 46th Ave NE							★	★	$ -
38	3.01	BIA 10 & BIA 3									$ -
39	3.04	BIA 4 & BIA 3									$ -
40	4.02	BIA 4 & BIA 23									$ -
41	5.01	Residential Driveway & BIA 5									$ -
42	6.03	BIA 6 & BIA 15									$ -
43	8.03	BIA 8 & BIA 11									$ -

Turtle Mountain Reservation
Rural Intersection Prioritization

23 US 409
NDDOT Reserves All Objections

Rank	Int #	Intersection Description	Skew	On/Near Curve	Development	RR Xing	Previous STOP (>5mi)	Total Crashes	ADT Cross Product > 80000	Priority	Crash Cost
44	10.12	BIA 10 & Residential Rd									$ -
45	10.13	BIA 10 & Residential Rd									$ -
46	524.01	Residential Rd & 46th Ave NE									$ -
		Total Stars --	6	7	0	1	7	10	32		
		% That Gets Star --	13%	15%	0%	2%	15%	22%	70%		

Totals	#	%
★★★★★★★	0	0%
★★★★★★	0	0%
★★★★★	1	2%
★★★★	1	2%
★★★	6	13%
★★	7	15%
★	22	48%
-	9	20%
	46	100%

Stars	
Skew -	If intersection is skewed at an angle of 20 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.
ADT Cross Product -	If intersection has an ADT cross product > 80000

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

US 281 / ND 5 & BIA 5

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	X	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	3033
Entering ADT:	3553	Minor Entering ADT:	520
Jurisdiction:	State	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	2	1	0.00
Rate (per MVM)	0.3	0.2	0.0

	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 Cross Product	Yes	≥ 80000	★
Total Crashes	2	>0	★
			★★★★★

Describe Proposed Safety Improvements

Description	Unit Cost		Units	Cost	Notes -
Roundabout	$ 4,200,000	per intersection	0	$ -	
Directional Median	$ 1,080,000	per intersection	0	$ -	
Mainline Dynamic Warning Sign	$ 60,000	per intersection	1	$ 60,000	
Close Median	$ 30,000	per intersection	0	$ -	
Installing Street Lights	$ 10,200	per street light	2	$ 20,400	
Upgrade Stop Sign	$ 540	per sign	2	$ 1,080	
Upgrade Junction Sign	$ 540	per sign	2	$ 1,080	
Upgrade Stop Ahead Sign	$ 600	per sign	2	$ 1,200	
Upgrade Stop Ahead Marking	$ 600	per marking	2	$ 1,200	
Upgrade Stop Bar	$ 360	per marking	2	$ 720	
Review Signs and CST	$ 2,940	per intersection	0	$ -	
				$ 85,680	

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	77,112
Local Match (10% of Total project cost)	$	8,568
Total Project Cost	**$**	**85,680**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

23 USC 409
NDDOT Reserves All Objections

Intersection ID: 5.02
Date: 3/16/2015

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

US 281 / ND 5 & Aaniin Dr NE

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	X	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	5995
Entering ADT:	7047	Minor Entering ADT:	1052
Jurisdiction:	State	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	1	1	1.00
Rate (per MVM)	0.1	0.1	0.1

	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 Cross Product	Yes	≥ 80000	★
Total Crashes	1	>0	★
			★★★★

Describe Proposed Safety Improvements

Description		Unit Cost		Units		Cost	Notes -
Roundabout	$	4,200,000	per intersection	0	$	-	
Directional Median	$	1,080,000	per intersection	0	$	-	
Mainline Dynamic Warning Sign	$	60,000	per intersection	1	$	60,000	
Close Median	$	30,000	per intersection	0	$	-	
Installing Street Lights	$	10,200	per street light	2	$	20,400	
Upgrade Stop Sign	$	540	per sign	2	$	1,080	
Upgrade Junction Sign	$	540	per sign	2	$	1,080	
Upgrade Stop Ahead Sign	$	600	per sign	1	$	600	
Upgrade Stop Ahead Marking	$	600	per marking	1	$	600	
Upgrade Stop Bar	$	360	per marking	2	$	720	
Review Signs and CST	$	2,940	per intersection	0	$	-	
					$	84,480	

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	76,032
Local Match (10% of Total project cost)	$	8,448
Total Project Cost	**$**	**84,480**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 10 & BIA 9

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	X	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	2075
Entering ADT:	2795	Minor Entering ADT:	720
Jurisdiction:	Reservation	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	4	3	1.00
Rate (per MVM)	0.8	0.6	0.2

	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 Cross Product	Yes	≥ 80000	★
Total Crashes	4	>0	★
			★★★

Describe Proposed Safety Improvements

Description	Unit Cost		Units	Cost	Notes -
Roundabout	$ 4,200,000	per intersection	0	$ -	
Directional Median	$ 1,080,000	per intersection	0	$ -	
Mainline Dynamic Warning Sign	$ 60,000	per intersection	1	$ 60,000	
Close Median	$ 30,000	per intersection	0	$ -	
Installing Street Lights	$ 10,200	per street light	2	$ 20,400	
Upgrade Stop Sign	$ 540	per sign	2	$ 1,080	
Upgrade Junction Sign	$ 540	per sign	2	$ 1,080	
Upgrade Stop Ahead Sign	$ 600	per sign	2	$ 1,200	
Upgrade Stop Ahead Marking	$ 600	per marking	2	$ 1,200	
Upgrade Stop Bar	$ 360	per marking	2	$ 720	
Review Signs and CST	$ 2,940	per intersection	0	$ -	
				$ 85,680	

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	77,112
Local Match (10% of Total project cost)	$	8,568
Total Project Cost	**$**	**85,680**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

23 USC 409
NDDOT Reserves All Objections

Intersection ID: 10.04
Date: 3/16/2015

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 4 (102nd St NE)

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	X	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	975
Entering ADT:	1408	Minor Entering ADT:	433
Jurisdiction:	Reservation	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	2	2	1.00
Rate (per MVM)	0.8	0.8	0.4

	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 Cross Product	Yes	≥ 80000	★
Total Crashes	2	>0	★
			★★★

Describe Proposed Safety Improvements

Description		Unit Cost		Units		Cost	Notes -
Roundabout	$	4,200,000	per intersection	0	$	-	
Directional Median	$	1,080,000	per intersection	0	$	-	
Mainline Dynamic Warning Sign	$	60,000	per intersection	1	$	60,000	
Close Median	$	30,000	per intersection	0	$	-	
Installing Street Lights	$	10,200	per street light	2	$	20,400	
Upgrade Stop Sign	$	540	per sign	2	$	1,080	
Upgrade Junction Sign	$	540	per sign	2	$	1,080	
Upgrade Stop Ahead Sign	$	600	per sign	2	$	1,200	
Upgrade Stop Ahead Marking	$	600	per marking	2	$	1,200	
Upgrade Stop Bar	$	360	per marking	2	$	720	
Review Signs and CST	$	2,940	per intersection	0	$	-	
					$	85,680	

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	77,112
Local Match (10% of Total project cost)	$	8,568
Total Project Cost	**$**	**85,680**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

US 281 / ND 5 & BIA 9

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	X	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	5990
Entering ADT:	6305	Minor Entering ADT:	315
Jurisdiction:	State	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	2	1	0.00
Rate (per MVM)	0.2	0.1	0.0

	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 Cross Product	Yes	≥ 80000	★
Total Crashes	2	>0	★
			★★★

Describe Proposed Safety Improvements

Description	Unit Cost		Units	Cost	Notes -
Roundabout	$ 4,200,000	per intersection	0	$ -	
Directional Median	$ 1,080,000	per intersection	0	$ -	
Mainline Dynamic Warning Sign	$ 60,000	per intersection	0	$ -	
Close Median	$ 30,000	per intersection	0	$ -	
Installing Street Lights	$ 10,200	per street light	2	$ 20,400	
Upgrade Stop Sign	$ 540	per sign	2	$ 1,080	
Upgrade Junction Sign	$ 540	per sign	2	$ 1,080	
Upgrade Stop Ahead Sign	$ 600	per sign	2	$ 1,200	
Upgrade Stop Ahead Marking	$ 600	per marking	2	$ 1,200	
Upgrade Stop Bar	$ 360	per marking	2	$ 720	
Review Signs and CST	$ 2,940	per intersection	0	$ -	
				$ 25,680	

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	23,112
Local Match (10% of Total project cost)	$	2,568
Total Project Cost	**$**	**25,680**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

Jack Rabbit Rd/BIA 8 & BIA 10

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	X	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	1088
Entering ADT:	1528	Minor Entering ADT:	440
Jurisdiction:	Reservation	Oil Project:	No

SHSP Emphasis Area (check all that apply)

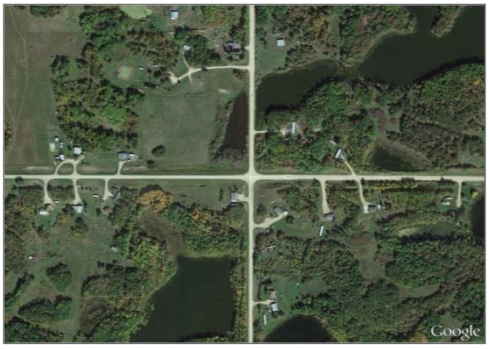
- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	1	1	0.00
Rate (per MVM)	0.4	0.4	0.0

	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 Cross Product	Yes	≥ 80000	★
Total Crashes	1	>0	★
			★★★



Describe Proposed Safety Improvements

Description	Unit Cost		Units	Cost
Roundabout	$ 4,200,000	per intersection	0	$ -
Directional Median	$ 1,080,000	per intersection	0	$ -
Mainline Dynamic Warning Sign	$ 60,000	per intersection	0	$ -
Close Median	$ 30,000	per intersection	0	$ -
Installing Street Lights	$ 10,200	per street light	2	$ 20,400
Upgrade Stop Sign	$ 540	per sign	2	$ 1,080
Upgrade Junction Sign	$ 540	per sign	2	$ 1,080
Upgrade Stop Ahead Sign	$ 600	per sign	2	$ 1,200
Upgrade Stop Ahead Marking	$ 600	per marking	1	$ 600
Upgrade Stop Bar	$ 360	per marking	1	$ 360
Review Signs and CST	$ 2,940	per intersection	0	$ -
				$ 24,720

Notes - Mainline dynamic warning sign project not assigned.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	22,248
Local Match (10% of Total project cost)	$	2,472
Total Project Cost	**$**	**24,720**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 6 / 5th Ave NE & ND 30

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	X	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Urban	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	1423
Entering ADT:	1623	Minor Entering ADT:	200
Jurisdiction:	State	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	0	0	0.00
Rate (per MVM)	0.0	0.0	0.0

	Value	Critical	Risk Ranking
Skew	Yes	Yes	★
On/Near Curve	No	Yes	
Development	No	Yes	
Near RR Crossing	Yes	Yes	★
Distance from previous STOP	No	Yes	
Volume Cross Product	Yes	≥ 80000	★
Total Crashes	0	>0	
			★★★

Describe Proposed Safety Improvements

Description	Unit Cost		Units	Cost	Notes - .
Roundabout	$ 4,200,000	per intersection	0	$ -	
Directional Median	$ 1,080,000	per intersection	0	$ -	
Mainline Dynamic Warning Sign	$ 60,000	per intersection	0	$ -	
Close Median	$ 30,000	per intersection	0	$ -	
Installing Street Lights	$ 10,200	per street light	2	$ 20,400	
Upgrade Stop Sign	$ 540	per sign	2	$ 1,080	
Upgrade Junction Sign	$ 540	per sign	2	$ 1,080	
Upgrade Stop Ahead Sign	$ 600	per sign	2	$ 1,200	
Upgrade Stop Ahead Marking	$ 600	per marking	1	$ 600	
Upgrade Stop Bar	$ 360	per marking	2	$ 720	
Review Signs and CST	$ 2,940	per intersection	0	$ -	
				$ 25,080	

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	22,572
Local Match (10% of Total project cost)	$	2,508
Total Project Cost	**$**	**25,080**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

23 USC 409
NDDOT Reserves All Objections

Intersection ID: 6.08
Date: 3/16/2015

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 2 & BIA 7

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	T	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	925
Entering ADT:	1035	Minor Entering ADT:	110
Jurisdiction:	Reservation	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	0	0	0.00
Rate (per MVM)	0.0	0.0	0.0

	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 Cross Product	Yes	≥ 80000	★
Total Crashes	0	>0	
			★★★

Describe Proposed Safety Improvements

Description	Unit Cost		Units	Cost	Notes -
Roundabout	$ 4,200,000	per intersection	0	$ -	
Directional Median	$ 1,080,000	per intersection	0	$ -	
Mainline Dynamic Warning Sign	$ 60,000	per intersection	0	$ -	
Close Median	$ 30,000	per intersection	0	$ -	
Installing Street Lights	$ 10,200	per street light	0	$ -	
Upgrade Stop Sign	$ 540	per sign	1	$ 540	
Upgrade Junction Sign	$ 540	per sign	1	$ 540	
Upgrade Stop Ahead Sign	$ 600	per sign	1	$ 600	
Upgrade Stop Ahead Marking	$ 600	per marking	0	$ -	
Upgrade Stop Bar	$ 360	per marking	0	$ -	
Review Signs and CST	$ 2,940	per intersection	0	$ -	
				$ 1,680	

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	1,512
Local Match (10% of Total project cost)	$	168
Total Project Cost	**$**	**1,680**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

23 USC 409
NDDOT Reserves All Objections

Intersection ID: 7.10
Date: 3/16/2015

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 6 & 31st Ave NE

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	X	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	335
Entering ADT:	600	Minor Entering ADT:	265
Jurisdiction:	Reservation	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	1	0	1.00
Rate (per MVM)	0.9	0.0	0.9

	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 Cross Product	Yes	≥ 80000	★
Total Crashes	1	>0	★
			★★

Describe Proposed Safety Improvements

Description	Unit Cost		Units	Cost
Roundabout	$ 4,200,000	per intersection	0	$ -
Directional Median	$ 1,080,000	per intersection	0	$ -
Mainline Dynamic Warning Sign	$ 60,000	per intersection	1	$ 60,000
Close Median	$ 30,000	per intersection	0	$ -
Installing Street Lights	$ 10,200	per street light	1	$ 10,200
Upgrade Stop Sign	$ 540	per sign	1	$ 540
Upgrade Junction Sign	$ 540	per sign	1	$ 540
Upgrade Stop Ahead Sign	$ 600	per sign	1	$ 600
Upgrade Stop Ahead Marking	$ 600	per marking	1	$ 600
Upgrade Stop Bar	$ 360	per marking	1	$ 360
Review Signs and CST	$ 2,940	per intersection	0	$ -
				$ 72,840

Notes - One of the minor approaches is residential.

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	65,556
Local Match (10% of Total project cost)	$	7,284
Total Project Cost	**$**	**72,840**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

23 USC 409
NDDOT Reserves All Objections

Intersection ID: 6.02
Date: 3/16/2015

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 10 & BIA 11

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	X	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	950
Entering ADT:	1653	Minor Entering ADT:	703
Jurisdiction:	Reservation	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	2	0	0.00
Rate (per MVM)	0.7	0.0	0.0

	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 Cross Product	Yes	≥ 80000	★
Total Crashes	2	>0	★
			★★

Describe Proposed Safety Improvements

Description	Unit Cost		Units	Cost	Notes -
Roundabout	$ 4,200,000	per intersection	0	$ -	
Directional Median	$ 1,080,000	per intersection	0	$ -	
Mainline Dynamic Warning Sign	$ 60,000	per intersection	0	$ -	
Close Median	$ 30,000	per intersection	0	$ -	
Installing Street Lights	$ 10,200	per street light	2	$ 20,400	
Upgrade Stop Sign	$ 540	per sign	4	$ 2,160	
Upgrade Junction Sign	$ 540	per sign	4	$ 2,160	
Upgrade Stop Ahead Sign	$ 600	per sign	4	$ 2,400	
Upgrade Stop Ahead Marking	$ 600	per marking	4	$ 2,400	
Upgrade Stop Bar	$ 360	per marking	4	$ 1,440	
Review Signs and CST	$ 2,940	per intersection	0	$ -	
				$ 30,960	

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	27,864
Local Match (10% of Total project cost)	$	3,096
Total Project Cost	**$**	**30,960**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

23 USC 409
NDDOT Reserves All Objections

Intersection ID: 10.03
Date: 3/16/2015

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 6 & BIA 7

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	X	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	1588
Entering ADT:	1948	Minor Entering ADT:	360
Jurisdiction:	Reservation	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	1	0	0.00
Rate (per MVM)	0.3	0.0	0.0

	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 Cross Product	Yes	≥ 80000	★
Total Crashes	1	>0	★
			★★

Describe Proposed Safety Improvements

Description	Unit Cost		Units	Cost	Notes -
Roundabout	$ 4,200,000	per intersection	0	$ -	
Directional Median	$ 1,080,000	per intersection	0	$ -	
Mainline Dynamic Warning Sign	$ 60,000	per intersection	0	$ -	
Close Median	$ 30,000	per intersection	0	$ -	
Installing Street Lights	$ 10,200	per street light	2	$ 20,400	
Upgrade Stop Sign	$ 540	per sign	2	$ 1,080	
Upgrade Junction Sign	$ 540	per sign	2	$ 1,080	
Upgrade Stop Ahead Sign	$ 600	per sign	2	$ 1,200	
Upgrade Stop Ahead Marking	$ 600	per marking	2	$ 1,200	
Upgrade Stop Bar	$ 360	per marking	2	$ 720	
Review Signs and CST	$ 2,940	per intersection	0	$ -	
				$ 25,680	

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	23,112
Local Match (10% of Total project cost)	$	2,568
Total Project Cost	**$**	**25,680**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

23 USC 409
NDDOT Reserves All Objections

Intersection ID: 6.05
Date: 3/16/2015

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 8 & BIA 9 / 43rd Ave NE

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	X	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	913
Entering ADT:	1253	Minor Entering ADT:	340
Jurisdiction:	Reservation	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	1	1	0.00
Rate (per MVM)	0.4	0.4	0.0

	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 Cross Product	Yes	≥ 80000	★
Total Crashes	1	>0	★
			★★

Describe Proposed Safety Improvements

Description	Unit Cost		Units	Cost	Notes -
Roundabout	$ 4,200,000	per intersection	0	$ -	
Directional Median	$ 1,080,000	per intersection	0	$ -	
Mainline Dynamic Warning Sign	$ 60,000	per intersection	0	$ -	
Close Median	$ 30,000	per intersection	0	$ -	
Installing Street Lights	$ 10,200	per street light	2	$ 20,400	
Upgrade Stop Sign	$ 540	per sign	2	$ 1,080	
Upgrade Junction Sign	$ 540	per sign	2	$ 1,080	
Upgrade Stop Ahead Sign	$ 600	per sign	2	$ 1,200	
Upgrade Stop Ahead Marking	$ 600	per marking	2	$ 1,200	
Upgrade Stop Bar	$ 360	per marking	2	$ 720	
Review Signs and CST	$ 2,940	per intersection	0	$ -	
				$ 25,680	

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	23,112
Local Match (10% of Total project cost)	$	2,568
Total Project Cost	**$**	**25,680**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

23 USC 409
NDDOT Reserves All Objections

Intersection ID: 8.04
Date: 3/16/2015

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

US 281 / ND 5 & BIA 3

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	X	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	3905
Entering ADT:	4100	Minor Entering ADT:	195
Jurisdiction:	State	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	0	0	0.00
Rate (per MVM)	0.0	0.0	0.0

	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 Cross Product	Yes	≥ 80000	★
Total Crashes	0	>0	
			★★

Describe Proposed Safety Improvements

Description	Unit Cost		Units	Cost	Notes -
Roundabout	$ 4,200,000	per intersection	0	$ -	
Directional Median	$ 1,080,000	per intersection	0	$ -	
Mainline Dynamic Warning Sign	$ 60,000	per intersection	0	$ -	
Close Median	$ 30,000	per intersection	0	$ -	
Installing Street Lights	$ 10,200	per street light	2	$ 20,400	
Upgrade Stop Sign	$ 540	per sign	2	$ 1,080	
Upgrade Junction Sign	$ 540	per sign	2	$ 1,080	
Upgrade Stop Ahead Sign	$ 600	per sign	2	$ 1,200	
Upgrade Stop Ahead Marking	$ 600	per marking	0	$ -	
Upgrade Stop Bar	$ 360	per marking	0	$ -	
Review Signs and CST	$ 2,940	per intersection	0	$ -	
				$ 23,760	

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	21,384
Local Match (10% of Total project cost)	$	2,376
Total Project Cost	**$**	**23,760**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

23 USC 409
NDDOT Reserves All Objections

Intersection ID: 3.02
Date: 3/16/2015

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

BIA 13 & BIA 6

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	T	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	180
Entering ADT:	230	Minor Entering ADT:	50
Jurisdiction:	Reservation	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	0	0	0.00
Rate (per MVM)	0.0	0.0	0.0

	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 Cross Product	No	≥ 80000	
Total Crashes	0	>0	
			★★

Describe Proposed Safety Improvements

Description	Unit Cost		Units	Cost	Notes -
Roundabout	$ 4,200,000	per intersection	0	$ -	
Directional Median	$ 1,080,000	per intersection	0	$ -	
Mainline Dynamic Warning Sign	$ 60,000	per intersection	0	$ -	
Close Median	$ 30,000	per intersection	0	$ -	
Installing Street Lights	$ 10,200	per street light	0	$ -	
Upgrade Stop Sign	$ 540	per sign	1	$ 540	
Upgrade Junction Sign	$ 540	per sign	1	$ 540	
Upgrade Stop Ahead Sign	$ 600	per sign	1	$ 600	
Upgrade Stop Ahead Marking	$ 600	per marking	0	$ -	
Upgrade Stop Bar	$ 360	per marking	1	$ 360	
Review Signs and CST	$ 2,940	per intersection	0	$ -	
				$ 2,040	

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	1,836
Local Match (10% of Total project cost)	$	204
Total Project Cost	**$**	**2,040**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

23 USC 409
NDDOT Reserves All Objections

Intersection ID: 13.02
Date: 3/16/2015

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROJECT APPLICATION

North Dakota Department of Transportation Programming
SFN 59959 (06-2011)

ND 5 / US 281 & 42nd Ave NE

Agency Name: Turtle Mountain Reservation
ND DOT District: 3
Contact Name: Ron Trottier
Telephone Number: Work: 701-477-0407 Ext. 223
Email Address: ronwtrottierjr25@gmail.com

Please attach a location map(s). You may use additional sheets to further describe your project.

Location Description

Configuration:	X	Traffic Control Device:	Thru-STOP
Configuration (2):	Undivided	Street Lights:	No
Urban/Rural:	Rural	Flashers:	No
Reservation:	Turtle Mountain	Major Entering ADT:	5990
Entering ADT:	6162	Minor Entering ADT:	172
Jurisdiction:	State	Oil Project:	No

SHSP Emphasis Area (check all that apply)

- ☐ Reduce Alcohol Impaired Driving
- ☐ Increase the Use of Safety Restraints for all Occupants
- ☐ Younger Driver/Older Driver Safety
- ☐ Curb Aggressive Driving
- ☐ Improvements to Address Lane Departure Crashes
- ☐ Enhancing Emergency Medical Capabilities to Increase Survivability
- ☑ Improve Intersection Safety

Describe Current Safety Issues & Systemic Ranking Review

North Dakota Crashes, 2009 - 2013 — 5 years

	Total	Angle	K+A
Crashes	0	0	0.00
Rate (per MVM)	0.0	0.0	0.0

	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 Cross Product	Yes	≥ 80000	★
Total Crashes	0	>0	
			★★

Describe Proposed Safety Improvements

Description	Unit Cost		Units	Cost
Roundabout	$ 4,200,000	per intersection	0	$ -
Directional Median	$ 1,080,000	per intersection	0	$ -
Mainline Dynamic Warning Sign	$ 60,000	per intersection	0	$ -
Close Median	$ 30,000	per intersection	0	$ -
Installing Street Lights	$ 10,200	per street light	2	$ 20,400
Upgrade Stop Sign	$ 540	per sign	1	$ 540
Upgrade Junction Sign	$ 540	per sign	1	$ 540
Upgrade Stop Ahead Sign	$ 600	per sign	1	$ 600
Upgrade Stop Ahead Marking	$ 600	per marking	1	$ 600
Upgrade Stop Bar	$ 360	per marking	1	$ 360
Review Signs and CST	$ 2,940	per intersection	0	$ -
				$ 23,040

Notes - North leg is driveway access - no signs and markings on that approach

Signs and Markings and Street Light project costs vary by the number of minor legs associated with the intersection.

Project Cost Estimate (attach detailed copy)

Federal Funds	$	20,736
Local Match (10% of Total project cost)	$	2,304
Total Project Cost	**$**	**23,040**

Proposed Year of Construction

NDDOT Central Office Only

Project Accepted?	☐ Yes ☐ No	Reference Number		ID Number	

Notes

5.0 Behavioral Safety Strategies

5.1 Purpose of Driver Behavior Safety Strategies

North Dakota's Local Road Safety Program (LRSP) recognizes that driver behavior is a significant factor contributing to a majority of the severe crashes on North Dakota's local and tribal roads. Traffic crashes may result from any combination of overlapping crash factors, such as the roadway, the vehicle, and driver behavior. Research supports and experts agree that in most cases driver behavior—risky decisions, driver error, lapses of attention, and driver limitations—is a chief factor contributing to traffic crashes (Lerner et al., 2010). Severe traffic crashes in North Dakota's Central Region can be largely prevented and reduced if motorists, with an emphasis on younger drivers, were persuaded to engage in key safe driving practices to buckle up, drive at safe speeds, pay attention, and plan ahead to avoid impaired driving. For maximum safety benefit, these measures should be undertaken in addition to adopting infrastructure safety strategies to help ensure the safest and most forgiving roadway possible.

5.2 Overview of Behavioral Crash Data for Turtle Mountain Band of Chippewa Indians

Unbelted Vehicle Occupants: Traffic safety research demonstrates that a motorist's seat belt is the most effective defense in the event of a crash. When lap and shoulder seat belts are used, the risk of fatal injury to front-seat passenger car occupants is reduced by 45 percent and the risk of moderate-to-critical injury is reduced by 50 percent (NHTSA, 2001). Safety benefits are even greater for light-truck occupants, with seat belts reducing fatalities by 60 percent and moderate-to-critical injury by 65 percent (NHTSA, 2009). Seat belts are extremely effective in preventing occupant ejection from the vehicle, the most injurious of crash outcomes (NHTSA, 2014). Reducing unbelted severe crashes is one of Turtle Mountain's greatest opportunities to strengthen safety on reservation roadways. The trend of severe unbelted crashes is increasing statewide. However, Turtle Mountain is below the 55 percent statewide-unbelted severe crashes with 31% percent of the reservation's severe crashes involving unbelted motorists.

Alcohol-Related Crashes: Nationally, although impaired driving fatalities have decreased since 2007, the percentage of alcohol-impaired fatalities in the U.S. has remained essentially unchanged (NHTSA, 2012). Similarly, over the last decade, each year nearly half of motor vehicle fatalities statewide in North Dakota continue to be alcohol-related. For Turtle Mountain, alcohol-related severe crashes are much higher at 54 percent than the statewide alcohol-related crashes at 34 percent.

Young Driver-Involved: Young drivers typically have the highest involvement in fatal crashes of any age group. Nationally, the fatal crash involvement of drivers age 16 to 20 is nearly twice that of drivers' age 21 and older (NHTSA, 2012a). Key underlying factors to their high crash risk are the developmental and behavioral issues of adolescence coupled with driving inexperience. Young drivers too often immaturely take risks while driving without thinking through the potential consequences of their life-threatening decisions (Keating, 2007). Such high-risk behaviors typically include lack of seat belt use, aggressive driving/speeding, and distractions

while driving. Although severe injury crashes involving young drivers have gradually declined statewide, young drivers under the age of 21 continue to be overrepresented in severe crashes. Turtle Mountain's severe crashes involving young drivers are similar to the statewide young driver crashes at 23 percent and 24 percent respectively.

Excessive Speed: Speeding is common and the percentage of speeding-related fatal crashes has changed littler over the years. Although drivers generally acknowledge that speeding is an unsafe behavior, speeding remains common because the perceived risk of injury is low relative to the perceived benefits of driving fast such as saving time and driving pleasure (Lerner et al., 2010). Excessive or inappropriate speeds result from two basic problems: drivers choosing to drive above the posted speed limit and drivers driving too fast and failing to adjust speed for accommodate existing road conditions. Consequently, the percentage of speeding-related fatal crashes has remained essentially unchanged over the years and remains a contributing factor in 31 percent of traffic fatalities in the U.S. (NHTSA, 2012b). Speeding and aggressive driving continue to account for 29 percent of all severe crashes in North Dakota. For Turtle Mountain, speed or aggressive driving accounts for 31 percent of its severe injury crashes.

5.3 Importance of Traffic Safety Culture Change

5.3.1 The Influence of Traffic Safety Culture

Turtle Mountain, together with its traffic safety partners, seeks to develop and implement traffic safety strategies within the broader societal context of motorists' behavior and the reservation's traffic safety culture. Traffic safety culture can be defined as the implicit shared values, beliefs, and perceptions that shape motorists' behavior.

5.3.2 Social Norms Inhibiting a Strong Traffic Safety Culture

At the core of the nation's and tribal reservations' traffic safety challenge is complacency toward risk-taking by drivers and a tolerance for traffic crashes and the resulting deaths and serious injuries. Contributing factors include a sense of individual driver invulnerability, perceived driving skills and vehicle control, and a sense of anonymity and entitlement on the road. The latest data from the *2012 Traffic Safety Culture Index Survey* reports that, as in previous years, the safety culture in the United States surrounding distracted driving can best be described as "do as I say, not as I do" — due to the high numbers of people who object to certain behaviors, yet will admit that they, themselves, engage in them (AAA, 2012). Real progress in traffic safety depends largely on addressing and changing this culture of indifference to effectively implement and see results from tribal safety strategies.

5.3.3 Social Levels Influencing Safety Culture

Efforts to change individual driver and motorist behaviors should be planned and executed from an ecological viewpoint—one that examines the driving public and their interaction with their social environments. Traffic safety culture and its influence operate at different levels within society. Therefore, a broader definition of traffic safety culture includes the values, beliefs, and perceptions of not only the individual driver, but of those shared by the various communities of which the driver is a part (Figure 5-1). The individual driver exists within a system that includes the following levels, each embodying factors that influence driving culture and crash risk (Ward et al., 2010; Dahlberg and Krug, 2002):

- Individual level – Factors such as driver age, driving experience, self-esteem, income, and substance abuse
- Relationship level – Factors such as relationships with peers, co-workers, supervisors, and family members
- Community level – Factors include the settings or environments in which relationships occur such as school, church, workplaces, and neighborhoods
- Societal level – Large-scale factors such as safety, health, economic, and educational policies, as well as tribal government commitments and priorities

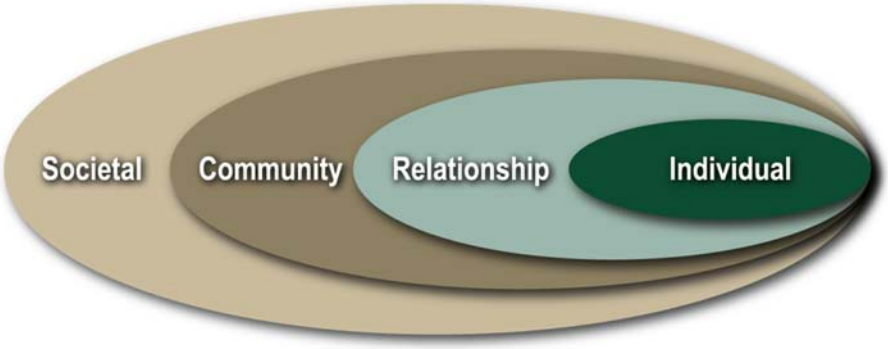


FIGURE 5-1
Social Ecological Perspective of Culture
Source: "Violence – A Global Public Health Problem" by L.L. Dahlberg and E.G. Krug, in *World Report on Violence and Health* (World Health Organization)

Social norms at each level and within each group point to what behaviors are perceived as important. Norms create conformity to expectations that allows people (that is, drivers) to successfully socialize to the subcultures in which they belong. These norms create a climate in which unsafe driving behavior is either encouraged or discouraged. Perceived social norms condoning high-risk driving behaviors provide the case for drivers to rationalize their own high-risk behaviors. To accomplish the culture change, traffic safety behavioral strategies seek to make safe-driving behaviors the accepted norm across all social ecological levels.

The implication of the social ecological model for LRSP and tribal road safety efforts is that implementation plans should attempt to:

- Increase perceived social pressure to comply with traffic safety laws and practices, thereby, producing safety behavioral norms (Ward et al., 2010)
- Shift the social acceptance of high-risk behaviors to one of perceived unacceptance by significant others and one's peers.

5.4 Behavioral Safety Strategies

5.4.1 Role of Policy, Education, and Enforcement

Techniques or strategies to change driver behavior essentially fall into one of three categories: 1) *policy change* or change to tribal traffic safety codes, regulations, sanctions and penalties; 2) *enforcement* of the laws; and 3) *education* or public information, media, and training. These three categories of behavioral safety strategies work together to have the greatest impact on changing risky driver behavior. The degree of effectiveness of any one strategy on behavioral change depends not only on how effectively the strategy is implemented, but also on how these three categories of policy, enforcement, and education are working together.

For example, if Turtle Mountain is seeking to increase motorists' seat belt use and decides to use a "buckle up" public information campaign (behavioral change strategy). The effectiveness of the campaign not only depends on the quality of the education or public information campaign (relevance to target group, duration, saturation of the messaging), but also the strength of the tribal law in place (primary vs. secondary seat belt law; all passengers vs. front seat only; higher penalty/fee vs. low penalty/fee) and, most important, the degree of seat belt use enforcement (enforcement coverage, intensity, visible by the public).

Consequently, the strength of driver safety policy, enforcement, and education surrounding a behavioral strategy selected greatly impact its effectiveness. Therefore, when selecting and implementing a behavioral strategy, tribal leaders must examine the related policy or tribal laws, enforcement available, and the supporting educational and public outreach available to support the strategy and explore ways to strengthen each, as appropriate, to gain the most safety benefit from a selected strategy.

Finally, it is critically important that traffic safety enforcement is viewed as a priority within the tribal community and its leadership, the tribal council. It is imperative that tribal leaders actively address political and community resistance and provide a pathway to deploy the leading safety strategy to save lives on Turtle Mountain's roadways—effective traffic enforcement coupled with public outreach. By advocating for enforcement, educating tribal council members, and equipping officers to effectively enforce traffic safety laws, Turtle Mountain will reap far greater life-saving outcomes from its local safety initiatives.

5.4.2 Effective Use of Public Information Strategies

Public information (education) strategies are often popular among communities seeking to change risky driving behaviors. Education or public information campaigns can range from brochures and mailings to peer-to-peer safety messaging. Brochures and mailings are a passive approach, while peer-to-peer messaging provides a more effective behavioral change approach. In general, a key challenge in influencing driver behavior is that most drivers know what they

are supposed to do to drive safely, yet due to successfully driving with risky patterns with no incidence of crash, drivers underestimate the risk of their choices. For this reason, research supports that education, coupled with enforcement, will have the strongest impact in changing driver behavior (NHTSA, 2013).

Following are key characteristics of impactful public information/education campaigns (Williams, 2007):

- Implemented in support of a high-visibility enforcement program
- Focused messaging for a target group
- Longer-term programs delivering messages of sufficient intensity over time
- Messages communicating new information not previously well known
- Messages that are part of a broader-based, longer-term community program with similar messaging coming from multiple sources
- Using behavior change models including interactive methods teaching skills to resist social pressure (such as role playing, group discussion)

5.4.3 Turtle Mountain's Priority Strategies

As previously described in Section 3.5, a Tribal Safety Workshop was held as part of the LRSP process on January 7, 2014 at the United Tribes Technical College (UTTC) in Bismarck. Turtle Mountain participated, together with representatives from the other three Indian reservations in North Dakota, to begin exploring specific infrastructure strategies outlined in Table 3-1 as well as discussing existing tribal behavioral safety initiatives.

Following the Tribal Safety Workshop, Turtle Mountain traffic safety staff was contacted to further discuss existing behavioral safety initiatives and identify priority new or expanded safety strategies to advance tribal efforts to influence and change risky driver behaviors.

Table 5-1 reflects Turtle Mountain's priority behavioral safety strategies to consider for tribal implementation and indicates strategy consistency with North Dakota's Strategic Highway Safety Plan.

TABLE 5-1
Turtle Mountain's Priority Behavioral Safety Strategies

LRSP Turtle Mountain Band of Chippewa Indians' Priority Driver Behavior Strategies and Their Relationship with the North Dakota SHSP	2013 ND SHSP
Impaired Driving	
• Promote BAC test "No Refusal" law to high-risk audiences	X
• Promote sobriety initiatives for DUI offenders (24/7 Program and DUI Courts)	X

• Expand high-visibility DUI enforcement saturations including sobriety checkpoints	X
• Educate and enforce zero tolerance laws for drivers under age 21	X
• Strengthen alcohol compliance of liquor-providing establishments	X
Speeding and Aggressive Driving	
• Identify high-risk speed locations/corridors and conduct targeted enhanced, high-visibility speed enforcement.	X
• Explore pilot implementation of tribal police automated speed enforcement in high-risk areas (e.g., work zones, school crossings) coupled with public education and outreach	
Young Drivers	
• Encourage tribal driver education providers to require parent education component	X
• Promote safe teen driving outreach	X
Unbelted Occupants	
• Conduct highly publicized enforcement campaigns to maximize Tribal restraint use.	X
Cross-Cutting Safety Strategy	
• Tribal Enforcement Use of Traffic and Criminal Software (TraCS)	X

The following subsections provide a more complete description of each priority strategy and suggested resources to help launch or expand tribal behavioral safety efforts. It is important to note that tribal traffic safety professionals seeking to leverage their safety initiatives described in the following subsections are encouraged to coordinate with and/or engage in the statewide SHSP implementation teams including: lane departure, unbelted vehicle occupants, alcohol-related, speed or aggressive drivers, young drivers, and intersections.

5.4.4 Impaired Driving

Turtle Mountain Priority Strategy – Promote the BAC test "No Refusal" law to high-risk audiences.

Description: Drinking drivers, particularly those who are at risk of receiving a repeat DUI offense, often refuse to provide a breath or blood sample for a BAC test. A driver's BAC is critical evidence in an alcohol-impaired driving charge. The absence of a BAC test can make it more difficult to convict the impaired driver. If the penalties for refusal are less severe than the penalties for failing the test, many drivers will refuse. Research supports that BAC test refusal rates are lower in States where the consequences of test refusal are greater than the consequences of test failure (NHTSA, 2005).

In an effort to stiffen penalties for drunken driving, North Dakota law criminalizes a drinking driver's refusal to submit to an on-site screening test or a chemical test. By refusing the test, a North Dakota drinking driver is automatically considered guilty of the offense, and must face criminal consequences and may loose driving privileges through administrative license revocation for up to four years.

Criminalizing BAC test refusal helps to ensure the necessary evidence of impairment while driving, thereby, decreasing the likelihood that impaired drivers can avoid penalties by refusing to be tested. It also ensures the driver will be identified as a repeat offender upon subsequent arrests.

Getting Started:

- Contact the Traffic Safety Office (TSO) to participate in the SHSP process as a stakeholder in the implementation of strategies identified for priority safety emphasis areas, such as impaired driving, in the SHSP.
- Enlist the support of tribal traffic safety stakeholders (e.g., enforcement, educators, corrections, treatment professionals) to conduct a proactive publicity and education campaign on BAC test "no refusal" law:
  - Educate tribal council members, tribal judges, prosecutors, defense attorneys, treatment officials and other concerned stakeholders of the benefits and the importance of the "no refusal" law in combating hard-core drunk drivers.
  - Strengthen "no refusal" deterrence effect by targeting outreach efforts to high-risk audiences and by putting potential repeat offenders on notice that BAC test refusal results in an automatic guilty charge with strong criminal penalties and administrative license revocation.

Implementation Resources:

- See Section 5.5, Traffic Safety Office Supporting Resources.
- For further information on the BAC test "no refusal" law, contact ND Traffic Safety Resource Prosecutors:
  - Aaron Birst at aaron.birst@ndaco.org, 701-328-7342
  - Kristi Pettit Venhuizen at 701-780-9276
- NHTSA's *Breath Test Refusals in DWI Enforcement: An Interim Report*: www.nhtsa.gov/staticfiles/nti/pdf/809876.pdf
- For information on No Refusal programs and other impaired driving resources, see the Foundation for Advancing Alcohol Responsibility at: http://responsibility.org/judicial-guide/no-refusal-programs
- For North Dakota road safety information including impaired driver facts sheets, issue briefs, and other education and outreach resources, visit the NDSU Rural Transportation Safety and Security Center (RTSSC) at: http://www.ugpti.org/rtssc/resources/

  The NDSU Upper Great Plains Transportation Institute at: http://www.ugpti.org/resources/
- Other impaired-driving safety resources:
  - National Highway Traffic Safety Administration: http://www.nhtsa.gov/Impaired
  - Governor's Highway Safety Administration: http://www.ghsa.org/html/issues/impaireddriving/index.html
  - Insurance Institute for Highway Safety: http://www.iihs.org/research/topics/alcohol_drugs.html

Turtle Mountain Priority Strategy – Promote Sobriety Initiatives for DUI Offenders – 24/7 and DUI Courts.

Description: To reduce impaired driving on tribal roadways, in addition to regular high-visibility DUI enforcement saturation patrols and DUI sobriety checkpoints, Turtle Mountain is encouraged to further incorporate 24/7 program components and explore DUI court programs to effectively monitor hardcore DUI offenders. Most hardcore repeat DUI offenders are alcohol dependent and often unable to control their drinking and driving behavior. For this reason, these programs are proven effective in combating impaired driving.

24/7 – North Dakota's 24/7 Sobriety Program provides an alternative to jail time for DUI offenders charged with or convicted of two or more or drunk driving offenses; first-time drunk driving offenders under the age of 18 are also required to participate in the 24/7 program. The program requires offenders to abstain from alcohol use and submit to sobriety testing twice per day through preliminary breath test (PBTs) or through continuous monitoring via a SCRAM; requiring sobriety 24 hours per day, 7 days per week. If the arrestee's test registers any alcohol use then he or she is immediately taken into custody. If the arrestee fails to show for testing, his or her jail bond is revoked. An offender may participate in the 24/7 Sobriety Program as a condition of bond or pre-trial release and to participate in the program as a condition of sentence or probation.

DUI Courts – North Dakota's four Drug/DUI Courts are hybrid courts; namely, they are drug courts that also work with DUI offenders. North Dakota Drug/DUI Courts are an effective tool to combat the hardcore impaired driver by using intensive supervision and treatment to change the offender's behavior. DUI Courts use all the criminal justice stakeholders (judge, prosecutor, defense attorney, law enforcement, probation, and treatment) using a cooperative approach to change the offender's behavior by meeting regularly as a team to discuss the status of each offender's case and to assure that alcohol treatment and all sentencing requirements are satisfied. With the input of all parties, tribal judges are more informed and can immediately revise restrictions when necessary.

Getting Started:

- Contact the Traffic Safety Office (TSO) to participate in the SHSP process as a stakeholder in the implementation of strategies identified for priority safety emphasis areas, such as impaired driving, in the SHSP.
- Enlist the support of tribal traffic safety stakeholders to conduct a proactive publicity and education campaign on 24/7 and DUI Courts to:
    - Educate tribal council members, tribal judges, prosecutors, defense attorneys, treatment officials and other concerned stakeholders of the importance of 24/7 and DUI court programs in combating hard core drunk drivers.
    - Educate the public on the nature of the impaired driving problem on the reservations and how these tools will provide necessary sanctions on the offenders as well as enhance the safety of all roadway users; and
    - Act as a general deterrent by putting potential offenders on notice that if they are arrested for impaired driving they may become subject to a highly supervised sanction with the costs and stigma associated with its use.

- Explore the tribal adoption of ignition interlock devices preventing DUI offenders from operating a vehicle if the offender has been drinking. Before starting the vehicle, the driver must breathe into the device and if the driver's breath alcohol reading is above a preset blood alcohol concentration (BAC) limit, the interlock device will not allow the vehicle to start. In North Dakota, the use of alcohol ignition interlocks is discretionary for all DUI offenders.

Implementation Resources:

- See Section 5.5, Traffic Safety Office Supporting Resources.
- For assistance with ND sobriety initiatives (24/7, DUI/Drug Courts) and for DUI data sources, contact ND Traffic Safety Resource Prosecutors:
  - Aaron Birst at aaron.birst@ndaco.org, 701-328-7342
  - Kristi Pettit Venhuizen at 701-780-9276
- For location information on ND DUI/Drug Courts, see: http://ndadcp.org/courts.html
- For information on the North Dakota's 24/7 Program: http://www.ag.nd.gov/TwentyFourSeven/
- The National Center for DWI Courts provides quick reference information for traffic safety stakeholders and policy makers on what they need to know about DUI courts: http://www.dwicourts.org/sites/default/files/ncdc/The%20Bottom%20Line.pdf http://www.dwicourts.org/node/98
- For a helpful overview of alcohol interlocks and their use as well as public outreach talking points, see *Ignition Interlocks - What You Need to Know: A Toolkit for Policymakers, Highway Safety Professionals, and Advocates* at: http://www.nhtsa.gov/staticfiles/nti/pdf/IgnitionInterlocks_811883.pdf
- For North Dakota road safety information including impaired driver facts sheets, issue briefs, and other education and outreach resources, visit the NDSU Rural Transportation Safety and Security Center (RTSSC) at: http://www.ugpti.org/rtssc/resources/

  The NDSU Upper Great Plains Transportation Institute at: http://www.ugpti.org/resources/
- Other impaired-driving safety resources:
  - National Highway Traffic Safety Administration: http://www.nhtsa.gov/Impaired
  - Governor's Highway Safety Administration: http://www.ghsa.org/html/issues/impaireddriving/index.html
  - Insurance Institute for Highway Safety: http://www.iihs.org/research/topics/alcohol_drugs.html

Turtle Mountain Priority Strategy – **Expand the use of high-visibility DUI enforcement saturation patrols including sobriety checkpoints.**

Description: High-visibility DUI enforcement is a high-priority, proven safety strategy to reduce alcohol-impaired severe crashes across the reservation. The most effective way to deter

impaired driving is through a highly visible enforcement effort to reinforce the tribal members' belief that impaired drivers are at high risk of being arrested, prosecuted, and adjudicated. High-visibility enforcement consists of multiple jurisdictions and/or multiple squads patrolling a segment of roadway at the same time, often using brightly colored vests and signs. Planned enforcement is publicized extensively through tribal community kickoff events involving the media, social media, and public education campaigns about the enforcement. In addition to deterring driving after drinking by increasing the perceived risk of arrest, high-visibility enforcement extends the safety impact of the enforcement campaign for a longer period following the campaign.

What are saturation patrols?
Saturation patrols, also known as "dedicated DUI patrols," are stepped-up enforcement involving a greater number of enforcement officers patrolling a specific area for a set time to identify and arrest impaired drivers. Multiple agencies often combine and concentrate their resources with a defined roadway segment to conduct saturation patrols.

What are sobriety checkpoints?
At sobriety checkpoints, tribal enforcement officials evaluate drivers for signs of alcohol or drug impairment at certain points on the roadway. Vehicles are stopped in a specific sequence, such as every other vehicle or every fourth, fifth, etc. The frequency of which vehicles are stopped depends on the traffic conditions and the number of enforcement personnel available to staff the checkpoint.

Getting Started:

- Contact the Traffic Safety Office (TSO) to participate in the SHSP process as a stakeholder in the implementation of strategies identified for priority safety emphasis areas, such as impaired driving, in the SHSP.
- Explore enforcement saturation and high-visibility enforcement cooperative agreements through piloting limited weekend agreements between tribal police and ND Highway Patrol, BIA, and/or local sheriff and police to strengthen enforcement presence and community impact.
- Tribal law enforcement, together with Tribal behavioral safety and traffic engineering staff, attend Tribal Council and community leadership meetings to speak on the importance of reducing impaired driving and the important role of both enforcement and engineering safety strategies working together to save lives on Tribal roads.
- Utilize Traffic Safety Office's DUI campaign materials to conduct community outreach on high-visibility enforcement campaigns.

Implementation Resources:

- For crash data to focus DUI enforcement efforts, contact the NDDOT Traffic Safety Office (TSO) at (701) 328-4692.
- To learn about traffic safety enforcement activities and enforcement grant opportunities, contact the TSO and the TSO Law Enforcement Liaison.
- See Section 5.5, Traffic Safety Office Supporting Resources.

- For statewide impaired-driving enforcement mobilizations, the TSO distributes media outreach materials to enforcement agencies, which may include press releases, talking points, camera-ready artwork and posters, impaired driving fact sheets, handouts for the public at checkpoints, a print public service announcement (PSA), and live-read radio PSAs. *(Note: TSO to assemble available information resources.)*
- For guidance on planning and publicizing saturation patrols and sobriety checkpoints:
  - *Saturation Patrols & Sobriety Checkpoints: A How-to Guide for Planning and Publicizing Impaired Driving Enforcement Efforts*, NHTSA, Report No. DOT HS 809 063, revised October 2002.
    http://www.nhtsa.gov/people/injury/alcohol/saturation_patrols/
  - *Low-Staffing Sobriety Checkpoints.* NHTSA, Report No. DOT HS 810 590, 2006.
    http://www.nhtsa.gov/people/injury/enforce/LowStaffing_Checkpoints/
- For information on the effective adjudication of DUI arrests and to inquire about DUI data sources, contact ND Traffic Safety Resource Prosecutors:
  - Aaron Birst at aaron.birst@ndaco.org, 701-328-7342
  - Kristi Pettit Venhuizen at 701/780-9276
- For North Dakota road safety information including impaired driver facts sheets, issue briefs, and other education and outreach resources, visit the NDSU Rural Transportation Safety and Security Center (RTSSC) at:
  http://www.ugpti.org/rtssc/resources/

  The NDSU Upper Great Plains Transportation Institute at:
  http://www.ugpti.org/resources/
- Other impaired-driving safety resources:
  - National Highway Traffic Safety Administration: http://www.nhtsa.gov/Impaired
  - Governor's Highway Safety Administration:
    http://www.ghsa.org/html/issues/impaireddriving/index.html
  - Insurance Institute for Highway Safety:
    http://www.iihs.org/research/topics/alcohol_drugs.html

Turtle Mountain Region Priority Strategy – Educate and Enforce Zero Tolerance Laws for Drivers under Age 21

Description: Turtle Mountain has a zero tolerance standard for anyone under the age of 21 operating a motor vehicle. Under North Dakota's "Use/Lose Laws," when minors measure a BAC of 0.02 or above, there is loss of driving privileges. The North Dakota Highway Patrol receives and distributes Enforcement of Underage Drinking Laws (EUDL) funds provided by the North Dakota Department of Human Services (federal Office of Juvenile Justice and Delinquency Prevention [OJJDP] funding). These funds are used by the Highway Patrol and dispersed to local law enforcement to facilitate underage drinking enforcement efforts across the state. The Highway Patrol participates with local law enforcement in multiagency efforts to stop underage drinking and driving using the following strategies to enforce Zero Tolerance Laws:

- Cops in Shops
- Shoulder Tap Operations
- Party Patrol Operations
- Compliance Checks
- Underage Alcohol–Related Fatality Investigations

In addition, Turtle Mountain enforcement participates in the national impaired driving prevention campaign, Driver Sober or Get Pulled Over, to ensure high visibility enforcement including North Dakota's zero-tolerance law for those under age 21.

In addition to enforcement, research demonstrates the primary role of parents in shaping their children's decision to not drink. To support parents' healthy influence, North Dakota's comprehensive Parents LEAD (Listen, Educate, Ask, Discuss) program is a primary resource for local traffic safety partners to engage parents to discuss the topic of underage drinking on an ongoing basis with their younger and adult children. Finally, OJJDP program outreach also provides information on social hosting, parental involvement, and consequences of underage drinking.

Getting Started

- Contact the Traffic Safety Office (TSO) to participate in the SHSP process as a stakeholder in the implementation of strategies identified for priority safety emphasis areas, such as impaired driving, in the SHSP.
- Inquire about and support Tribal enforcement efforts to actively enforce laws and programs that fight underage drinking. For example, when an underage drinker is involved in a traffic crash, find out how the youths obtained the alcohol, then hold whoever gave or sold it to them accountable.
- The TSO may offer grant funds for law enforcement to conduct alcohol compliance checks and server training programs; other communities conduct server training as required through city or county ordinances including Dickinson, Fargo, Grand Forks and Williston.
- The North Dakota Department of Human Services (DHS) administers funds from the Federal Office of Juvenile Justice and Delinquency Prevention (OJJDP) which allowed state and local law enforcement to deter underage drinking through various enforcement strategies (compliance checks, shoulder taps, saturation, and party patrols). OJJDP program

outreach also provided information on social hosting, parental involvement, and consequences of underage drinking.

Implementation Resources:

- To contact the North Dakota Safety Council for community resources, contact:
  - Terry Weaver, Traffic Safety Coordinator, TerryW@ndsc.org, 701-751-6106
- To contact local public health unit addressing alcohol use/impaired driving issues, see state listing located at: http://www.ndhealth.gov/localhd/lphu-directory.pdf

Enforcement Resources:

- For a list of approved DHS OJJDP grant enforcement strategies: http://www.nd.gov/dhs/services/mentalhealth/prevention/pdf/eudl-enforcement-strategies-v2.pdf
- For information on effective enforcement strategies, challenges, and suggested solutions, see NHTSA "Community How To Guide on Underage Drinking Enforcement" at: http://www.nhtsa.gov/people/injury/alcohol/community%20guides%20html/Book5_Enforcement.html
- For enforcement training and technical assistance in most promising practices for law enforcement operations to reduce underage drinking, see the Underage Drinking Enforcement Training Center at: http://www.udetc.org/LawEnforcement.htm

Education Outreach Resources

- For underage drinking laws and resources for parents on how to start and continue the conversation about alcohol use with their children, see the North Dakota's *Parents LEAD* (Listen, Educate, Ask, Discuss) program at: http://www.parentslead.org/
- For information on MADD's underage drinking programs and information resources such as Power of Parents, Power of You(th), PowerTalk 21, and Why 21? see MADD's underage drinking website at: http://www.madd.org/underage-drinking/

  Additional information provided by Students Against Destructive Decisions or SADD at: http://www.sadd.org/u21toolkit.htm
- For North Dakota road safety information including facts sheets, issue briefs, and other education and outreach resources, visit the NDSU Rural Transportation Safety and Security Center (RTSSC) at: http://www.ugpti.org/rtssc/resources/

  The NDSU Upper Great Plains Transportation Institute at: http://www.ugpti.org/resources/

Turtle Mountain Priority Strategy – Strengthen alcohol compliance of liquor-providing establishments.

Description: Liquor-providing establishments include bars, restaurants, and retail (convenience and liquor) stores. Strengthening the compliance of alcohol-related laws by these establishments includes advocating for responsible alcohol server and retailer training and compliance checks along with promoting judicial monitoring of "last place of drink" for bar-related DUI offenders and notifying establishments of their over-serving.

Responsible alcohol servers engage in alcohol sales policies and practices that prevent or discourage restaurant and bar patrons from drinking to excess, which can prevent patrons from driving while impaired. Likewise, responsible servers and retailers do not sell to underage people (NCHRP, 2005). Mandatory training programs can teach servers how to recognize the signs of intoxication and how to prevent intoxicated patrons from further drinking and from driving. With this knowledge, servers can refuse additional alcohol sales and assist with arranging alternative transportation. Training can also decrease the likelihood that alcohol will be sold to people under the legal drinking age. To achieve maximum effectiveness, employee training must be supported and promoted by management policies and programs such as limits on cheap drinks and other promotions, support for designated driver programs, strong commitment to server training, and strong support for servers who refuse alcohol to intoxicated patrons. Strong advocacy for training and associated policies will help to encourage management support for and compliance with responsible beverage service practices.

Tribal enforcement officers can conduct frequent compliance checks to reduce the likelihood that servers and retailers sell alcohol to underage people. To conduct a compliance check, officers watch as underage people attempt to purchase alcohol and cite the server or retailer for a violation if a sale is made (NHTSA, 2013). Because an effective compliance check program works primarily through deterrence, the goal is to increase the perception of being caught by sellers and purchasers (NHTSA, 2013). Strong and continued advocacy for compliance checks will help reduce the likelihood that underage people have access to alcohol and the potential to drive while impaired.

"Last place of drink" is a program in which tribal enforcement officers record the establishment (bar or restaurant) where a person involved in a DUI incident consumed their last alcoholic beverage prior to driving (Kringen, Mikkelson, Nesbitt). Review of this documentation can highlight alcohol-related trends including day of week, time, and particular establishments that have the highest frequencies of serving the last drink. With this information, officers can better focus their efforts in both educating and enforcing retailers about their violations and work with them to improve their serving practices. More responsible beverage service could reduce the potential for alcohol-related crashes on the reservation.

Getting Started:

- Contact the NDDOT Traffic Safety Office (TSO) to participate in the SHSP process as a stakeholder in the implementation of strategies identified for priority safety emphasis areas, such as speeding and aggressive driving, in the SHSP.
- Explore tribal ordinances requiring all liquor establishment owners, managers, and servers complete a standardized responsible beverage service training course as a condition for an

alcohol retailer obtaining and maintaining a license (or permit). Note: Several North Dakota cities mandate server training within city limits.

- Promote tribal enforcement and on-sale liquor establishments identified as having higher levels of customer drinking and driving incidents to develop and implement preventative action plans.
- Support tribal enforcement to strengthen compliance checks of alcohol retailers for sales to underage patrons.

Implementation Resources:

- For a standardized curriculum for server training programs used by Safe Communities and law enforcement, contact the NDDOT Traffic Safety Office (701) 328-4692.
- For a sample presentation for responsible beverage service prepared by the Minnesota Department of Public Safety, Office of Alcohol and Gambling Enforcement Division, see: https://dps.mn.gov/pages/Results.aspx?k=responsible%20beverage%20service%20training
- For information about on-line responsible beverage service training and certification, see: http://www.suresellnow.com/
- For descriptions of alcohol control policies to reduce youth access to alcohol from both social and commercial sources as well as links to resources including the *Alcohol Compliance Check Manual,* see: http://www.aep.umn.edu/index.php/aep-tools/underage-access
- For information on implementing a "last place of drink" program, contact Minnesota Department of Public Safety Alcohol and Gambling Enforcement Division: Brian Kringen, brian.kringen@state.mn.us

5.4.5 Speed and Aggressive Driving

Turtle Mountain Priority Strategy – **Identify high-risk speed locations/corridors and conduct targeted enhanced, high-visibility speed enforcement.**

Description: Identifying problem locations that have a high rate of speeding-related crashes are at the heart of an effective speed enforcement program. Enforcement and the associated public outreach efforts are most successful when deployed at specific locations or corridors and times when speeding is most likely to occur. Strengthened analysis of the following sources of data and information provides the focus needed for more effective, targeted enforcement and public outreach to reduce speed-related severe crashes:

1. Current and historical crash records and citation data
2. Engineering traffic and speed data
3. Law enforcement experience
3. Tribal council and member input

See Section 5.4.4 priority strategy, *Expand the use of high-visibility DUI enforcement saturation patrols including sobriety checkpoints,* for a full description of high-visibility/highly publicized enforcement campaigns.

North Dakota law enforcement agencies (state, county, city, and tribal) participate in the state's cooperative enforcement programs to reduce speeding-related fatalities and incapacitating injuries by stepped up enforcement of aggressive drivers of cars and trucks primarily in oil-production-impacted counties. For aggressive driving enforcement, officers focus on drivers who commit a combination of moving traffic violations such speeding, following too closely, and/or running red lights that endanger other persons or property.

Getting Started:

- Contact the Traffic Safety Office (TSO) to participate in the SHSP process as a stakeholder in the implementation of strategies identified for priority safety emphasis areas, such as speed and aggressive driving, in the SHSP.
- Contact Tribal transportation engineering staff for assistance with analyzing crashes and traffic data to identify locations with speed and aggressive driving-related crash involvement for high-visibility enforcement.

  Experience in other states suggests that rural road segments or corridors that have a higher density of road departure crashes have also been found to have a higher density for speed/aggressive driving and other behavioral-related crashes. Therefore, for suggested locations for enhanced enforcement, see tribal-specific priority locations for rural road segments at risk for lane departure in this report's Chapter 4 Appendix. (Note: HSIP flex funds may be used for overtime enforcement at at-risk locations for lane departure.)

  Note on at-risk lane departure infrastructure safety strategies: To reduce lane departure severe crashes on rural paved roads, the Turtle Mountain may be deploying infrastructure safety improvements (e.g., centerline rumble strips, edge line rumble strips, adding or widening edge lines, high visibility pavement markings) at select at-risk corridors. To maximize the expected safety benefit of the road improvements, integrating increased enforcement presence at targeted at-risk locations and timeframes will reduce risky driver behaviors through strengthening the public's perceived risk of being stopped.
- Tribal law enforcement, together with tribal behavioral safety and traffic engineering staff, attend Tribal Council and community leadership meetings to speak on the importance of enforcing the speed limits and reducing aggressive driving and the importance of enforcement and engineering safety strategies working together to save lives on Tribal roads.
- Collaborate with highway patrol, local law enforcement, community health officials, and local traffic safety stakeholders to use NDDOT Traffic Safety Office speed campaign materials to conduct community outreach on the speed enforcement campaign.

Implementation Resources:

- For crash data and analysis to focus speed enforcement efforts, which may include the development of electronic pin maps of speed-related crash locations, contact the NDDOT Traffic Safety Office (TSO) at (701) 328-4692.
- To learn about local traffic safety enforcement initiatives and enforcement grant opportunities, contact the TSO and the state's Law Enforcement Liaison at (701) 328-4692. Enforcement grant application information for overtime speed enforcement can be found at: https://www.dot.nd.gov/divisions/safety/trafficsafety.htm

- See Section 5.5, Traffic Safety Office Supporting Resources.
- For speed-related crash data by County, see: *2013 North Dakota Crash Summary* see: http://www.dot.nd.gov/divisions/safety/docs/crash-summary.pdf
- For a successful model of data-driven traffic enforcement, see Washington State's *Target Zero Team* project where planners use GIS mapping software to guide Target Zero patrols to where crashes were occurring and which roads led to high-collision areas at: http://www.wsp.wa.gov/targetzero/targetzero.htm#tzt
- For guidance on data-driven speed enforcement, see:

  NHTSA's Speed Enforcement Program Guidelines at: http://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa09028/resources/Speed%20Enforcement%20Program%20Guidelines.pdf#page=1

  National Cooperative Highway Research Program (NCHRP) Report 500, Vol. 23: Guidance for Implementation of the AASHTO Strategic Highway Safety Plan: A Guide for Reducing Speeding-Related Crashes at: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v23.pdf
- For guidance for law enforcement on planning and publicizing local speed saturation patrols and successful case examples, see NHTSA's *Guidelines for Developing a Municipal Speed Enforcement Program* at: http://www.nhtsa.dot.gov/people/injury/enforce/program.htm
- For a summary of successful aggressive driving enforcement programs deployed at the local and state-level across the country, see NHTSA's *Aggressive Driving Enforcement: Strategies for Implementing Best Practices* at: http://www.nhtsa.gov/people/injury/enforce/aggressdrivers/aggenforce/
- Other speed-related safety resources:

  Governor's Highway Safety Administration: http://www.ghsa.org/html/issues/speeding.html

  Insurance Institute for Highway Safety: http://www.iihs.org/iihs/topics/t/speed/topicoverview
- For North Dakota road safety information including speed facts sheets, issue briefs, and other education and outreach resources, visit the NDSU Rural Transportation Safety and Security Center (RTSSC) at: http://www.ugpti.org/rtssc/resources/

  The NDSU Upper Great Plains Transportation Institute at: http://www.ugpti.org/resources/

Turtle Mountain Priority Strategy – **Explore pilot implementation of Tribal police automated speed enforcement in high-risk areas coupled with public education and outreach.**

Description: To encourage compliance with posted speed limits and improve the efficiency and effectiveness of enforcing them, automated speed enforcement can be deployed simultaneously at multiple locations across the reservation. The devices are ideally located on high-speed roads

where speeding is a known issue and on roads where traditional traffic stops are difficult or dangerous. Automated speed enforcement is a tool that helps to maximize limited available tribal traffic safety enforcement resources on the reservation. Because the devices can operate 24 hours a day/7 days a week, they enable BIA and/or tribal police to have a greater impact on improving traffic safety without increasing personnel or operating costs.

These devices, known as speed cameras or photo radar, record a vehicle's speed using radar or some other type of speed measuring instrumentation. When the vehicle speed exceeds a threshold limit set by tribal staff and/or law enforcement (such as 10 miles per hour 10 [mph] over the posted speed limit), the camera takes a photograph of the vehicle license plate (NHTSA, 2013). The photograph and recorded data about speed, time, and date are electronically sent to tribal law enforcement personnel. Speeding citations can then be automatically issued to the vehicle owner (it is difficult to identify the driver from the photograph and, therefore, less effective to issue citations to the driver).

Studies conducted in the United States indicate that speed cameras are proven effective in reducing vehicle travel speeds (TRB, 2009). The cameras' presence strengthens the public's perception that if driving above a speed limit threshold, a speed citation will be issued. Studies suggest that a successful introduction of automated speed enforcement promotes public support (TRB, 2009). Therefore, it is suggested that tribal engineering and enforcement staff, explore pilot implementation of speed camera located where the public perceives speeding to be of greater concern, such as school crossings, work zones, and neighborhoods. Strong public education and outreach on the public safety benefits is critical for successful tribal community adoption of automated speed enforcement cameras.

Getting Started:

- Contact the Traffic Safety Office (TSO) to participate in the SHSP process as a stakeholder in the implementation of strategies identified for priority safety emphasis areas, such as speeding and aggressive driving, in the SHSP.
- Tribal law enforcement and traffic safety engineering staff collaborate with NDDOT Traffic Operations Section to explore suggested pilot speed camera project locations from a traffic crash history perspective. Contact NDDOT Traffic Operations Section, Shawn Kuntz, (701) 328-2673.
- Tribal law enforcement, together with tribal behavioral safety and traffic engineering staff, attend Tribal Council and community leadership meetings to educate about the community safety benefits and to develop support for automated speed enforcement and the pilot application of the technology in high-risk tribal areas.
- Tribal law enforcement and traffic safety engineering staff to meet with tribal court personnel to promote understanding of automated speed technology, the pilot demonstration locations, and to promote the willingness to prosecute violators and the court's upholding of charges and conviction of violators.

Implementation Resources:

- For supporting crash data and analysis to focus automated enforcement efforts, contact the NDDOT Traffic Safety Office (TSO) at (701) 328-4692.

- Work with NDDOT staff regarding specific design features of the system. Contact NDDOT Traffic Operations Section, Shawn Kuntz, (701) 328-2673.
- See Section 5.5, Traffic Safety Office Supporting Resources.
- Transportation Research Board: *Special Report 254 Managing Speed*. http://onlinepubs.trb.org/onlinepubs/sr/sr254.pdf.
- Intelligent Transportation Systems Institute: *Final Report Identifying Issues Related to Automated Speed Enforcement*. http://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa1304/1_48.htm.
- National Highway Traffic Safety Administration: *Speed Enforcement Program Guidelines*.
- Other speed-related safety resources:

  Governor's Highway Safety Administration:
  http://www.ghsa.org/html/issues/speeding.html

  Insurance Institute for Highway Safety:
  http://www.iihs.org/iihs/topics/t/speed/topicoverview
- For North Dakota road safety information including speed facts sheets, issue briefs, and other education and outreach resources, visit the NDSU Rural Transportation Safety and Security Center (RTSSC) at:
  http://www.ugpti.org/rtssc/resources/

  The NDSU Upper Great Plains Transportation Institute at:
  http://www.ugpti.org/resources/

5.4.6 Young Drivers

Turtle Mountain Priority Strategy – **Encourage tribal driver education providers (local schools and private providers) to require a parent education component**

Description: Effective parental monitoring of teen driving can go a long way in helping to keep novice drivers safe on the roadway. Programs offering teen driver safety materials together with facilitated guidance help parents make the important connection between teen driving restrictions and teen driving risks. Without a required parent component for teen driver education, parents lack awareness of graduated driver license (GDL) safety provisions, don't fully recognize teen driving risks, are often anxious to be relieved from shuttling their teens, may be reluctant to invest the necessary time to instruct and supervise their teen's driving, and often believe their teen is the exception and is a good and safe driver. Incorporating a parent education component into driver education programs is demonstrating promising results in overcoming these parent challenges and more effectively engaging parents.

Key components of a good parent education program include:

- Discusses risks for novice teen drivers
- Explains how and why GDL works to address the driving risks for young drivers
- Reviews the critical role parents play in teaching, supporting, and managing their novice drivers

- Explains the importance of and provides an opportunity to try out a parent/teen driving agreement
- Delivery by trained, educated facilitators
- Emphasizes parents and teens working together for safety

Getting Started:

- Contact the Traffic Safety Office (TSO) to participate in the SHSP process as a stakeholder in the implementation of strategies identified for priority safety emphasis areas, such as young drivers, in the SHSP.
- With local law enforcement and driver educators, Tribal Council and community leadership meetings to promote the tribal initiative to incorporate parent education into driver education programs to more fully engage parents and reduce severe young driver crashes.
- Post information on teen driving laws on tribal school websites or request school resource officer to send information to parents highlighting driving risks for teens and existing North Dakota teen driver laws.
- Consider linking parent-teen participation in a teen-driving program to school parking privileges.

Implementation Resources:

- See Section 5.5, Traffic Safety Office Supporting Resources.
- For educational materials for parents of teen drivers including guidelines to ensure teen drivers are educated on safe driving practices as well as *The North Dakota Parent Guide to Teen Driving* and the *Parent Teen Driver Agreement*, see the Teen Drivers & Parents section of the NDDOT website: http://www.dot.nd.gov/divisions/safety/teens-parents.htm
- For a free mobile app for parents and teens to automatically track and log their supervised driving and includes tracking night driving, type of roads traveled and weather conditions, see: http://www.roadreadyapp.com/
- For an example parent-teen class outline and discussion guide, download the Minnesota Department of Public Safety, Office of Traffic Safety's *Teen Drivers: The Parent's Role* at: https://dps.mn.gov/divisions/ots/teen-driving/Documents/Parent-class-leaders-guide-july-2013.doc
- The Minnesota Office of Traffic Safety developed, *Point of Impact: Teen Driver Safety Parent Awareness Program,* as a community-based class for parents and their soon-to-be teen drivers. The Point of Impact Leader's Guide is a resource for implementing the class. The Point of Impact video is an important component of the program. A PowerPoint presentation and other information are available by contacting Gordy Pehrson at gordy.pehrson@state.mn.us.
- For information on the nationally recognized University of Michigan's *Checkpoints* program offering facilitated parent education: http://youngdriverparenting.org/ and http://www.saferdrivingforteens.org/

- For a comprehensive guide to strengthen parental roles in teen safe driving, see the Governors Highway Safety Association's (GHSA's) *Promoting Parent Involvement in Teen Driving: An In-Depth Look at the Importance and the Initiatives.* http://www.ghsa.org/html/publications/pdf/sfteens13.pdf
- For additional information on mandated and voluntary parent/teen education programs in Connecticut, Massachusetts, Georgia, and select Virginia counties, see GHSA's *Curbing Teen Driver Crashes: An In-Depth Look at State Initiatives.* http://www.ghsa.org/html/publications/pdf/sfteens12.pdf
- For age-specific information and resources for parents on how to start and continue the conversation about alcohol use with their children, see the North Dakota's *Parents LEAD* program (Listen, Educate, Ask, Discuss). http://www.parentslead.org/
- For PowerPoint presentations, parent/teen activities and other tools to be adopted for driver education providers, see *Teendriversource*: *Research Put into Action.* www.teendriversource.org
- For information on *Teen Driving Parents/Alive at 25* that includes a 1-hour parent, 4-hour teen driving program including a comprehensive publication, *Teen Driver; A Family Guide to Teen Safe Driving.* http://www.nsc.org/products_training/Products/MotorVehicleSafety/Pages/TeenDriving.aspx
- For information in Utah's award winning "Don't Drive Stupid" Parent Night Program. http://publicsafety.utah.gov/highwaysafety/documents/smart.pdf http://www.ghsa.org/html/meetings/awards/2013/13utah.html
- For information on *Parents are the Key* and free downloadable resources that can be customized. www.cdcgov/ParentsAreTheKey/
- Other young driver-related safety resources:

  Governor's Highway Safety Administration: http://www.ghsa.org/html/issues/speeding.html

  Insurance Institute for Highway Safety: http://www.iihs.org/iihs/topics/t/speed/topicoverview
- For North Dakota road safety information including speed facts sheets, issue briefs, and other education and outreach resources, visit the NDSU Rural Transportation Safety and Security Center (RTSSC) at: http://www.ugpti.org/rtssc/resources/

  The NDSU Upper Great Plains Transportation Institute at: http://www.ugpti.org/resources/

Turtle Mountain Priority Strategy – Promote safe teen driving outreach.

Description: In addition to following traditional rules for operating and navigating vehicles on roadways, safe teen driving includes complying with driver behavior norms such as being

substance-free, limiting distractions within the vehicle, driving safe speeds, and using seat belts. Outreach to teen drivers and passengers is necessary to educate them about transportation safety issues and their potential consequences, and to encourage compliance with safe driving practices. Several materials, messages, and campaigns have been developed at a national level for use in teen outreach. However, to be effective, these materials need to be modified so the outreach effort is relevant to the Turtle Mountain culture.

Considerations for Tribal traffic safety outreach activities include: (1) culturally appropriate media activities, including news releases, news conferences, live radio and television remotes, television and radio interviews, etc., (2) culturally appropriate internet marketing activities, including blogging, postings to social networking websites like Facebook, email blasts, etc., and (3) other culturally appropriate public awareness activities, such as partnerships with local entities pertinent to the target populations including businesses, sports venues, health and social services programs, community and faith-based organizations, and other locally identified venues that would appropriately advance the campaign messages.

Outreach can be conducted by stakeholders associated with these activities, law enforcement, school administrators, and parents/family members. Successful teen driving outreach necessarily includes outreach to parents and adult family members so they understand the critical role they can play in their teen's safe driving practices. When parents/family members set, monitor and enforce safe driving practices, teens are less likely to crash or violate the law. Teens are more likely to drive safely if they have involved parents/family members that set high expectations and continue to educate and encourage their safe driving practices.

"Code for the Road" is a traffic safety campaign developed by the state of North Dakota. The campaign encourages drivers to police themselves about following the rules of the road and engaging in safe driver behaviors. To provide additional emphasis to teen drivers, high school activity ads, posters, web banners, and fact sheets were created to convey the message. Also, national materials (such as billboards, posters, and brochures) can be tailored to the Turtle Mountain culture by using local leaders or community members and local artistry to deliver the safety messages. Community members have the knowledge to develop materials that will connect with their teens.

Getting Started:

- Contact the Traffic Safety Office (TSO) to participate in the SHSP process as a stakeholder in the implementation of strategies identified for priority safety emphasis areas, such as speeding and aggressive driving, in the SHSP.
- Establish a committee of tribal teen safety stakeholders for the purpose of modifying national and state teen driver outreach materials to be culturally relevant.

Implementation Resources:

- Contact other tribes that have implemented transportation safety programs for young drivers, such as the Turtle Mountain Sioux Tribe and the Rosebud Sioux Tribe.

- For North Dakota's traffic safety education campaign, *Code for the Road,* providing extensive resources for safety stakeholders to help cultivate a stronger traffic safety culture, see: http://www.ndcodefortheroad.org/about/
- For a proven, peer-to-peer outreach program, *Teens in the Driver Seat,* addresses risky driving behaviors of teens and relies on teens developing and delivering traffic safety messaging to their peers, see: http://www.t-driver.com/
- For information about parental involvement in preventing teen substance abuse and impaired driving in North Dakota, see http://www.parentslead.org/
- To access the Governors Highway Safety Association Teen Driver Publications, see: http://www.ghsa.org/html/publications/teens/index.html
- For information about teen driving and resources from the National Highway Traffic Safety Administration, see http://www.nhtsa.gov/Teen-Drivers

5.4.7 Unbelted Occupants

Turtle Mountain Priority Strategy – **Conduct highly publicized enforcement campaigns to maximize Tribal restraint use.**

Description: *See Section 5.4.5 for a description of high-visibility/highly publicized enforcement campaigns.*

North Dakota law enforcement agencies (state, county, city, and tribal) participate in the state's *Click It or Ticket* mobilization program to boost seat belt use and reduce highway fatalities through stepped up enforcement of unrestrained occupants. The mobilization is supported by national and local paid advertising and earned media campaigns aimed at raising awareness before the enforcement saturation. North Dakota conducts four annual *Click It or Ticket* campaigns—including participation in the national campaign in May around the Memorial Day holiday. North Dakota has increased its focus on nighttime seat belt use because fewer motorists buckle up at night resulting in a greater number of nighttime severe-injury crashes.

Getting Started:

- Contact the Traffic Safety Office (TSO) to participate in the SHSP process as a stakeholder in the implementation of strategies identified for priority safety emphasis areas, such as unbelted crashes, in the SHSP.
- Contact Tribal transportation engineering staff for assistance with analyzing crashes and traffic data to identify locations with unbelted occupant-speed related crash involvement for high-visibility enforcement.
- Tribal law enforcement, together with tribal behavioral safety and traffic engineering staff, attend Tribal Council and community leadership meetings to educate about the community safety benefits and to strengthen support for tribal seat belt enforcement and the issuing of citations for lack of belt use.
- Collaborate with tribal enforcement, community health officials, and local traffic safety stakeholders to use TSO seat belt use campaign materials to conduct community outreach on the enforcement campaign.

Implementation Resources:

- For crash data and analysis to focus seat belt enforcement efforts, contact the NDDOT Traffic Safety Office (TSO) at (701) 328-4692.
- To learn about local traffic safety enforcement initiatives, secondary enforcement strategies, and enforcement grant opportunities, contact the TSO and the state's Law Enforcement Liaison at (701) 328-4692. Enforcement grant application information for overtime belt enforcement can be found at:
  https://www.dot.nd.gov/divisions/safety/trafficsafety.htm
- See Section 5.5, Traffic Safety Office Supporting Resources.
- For statewide belt use mobilizations, the TSO distributes media outreach materials to local enforcement agencies which may include: press releases, talking points, camera-ready artwork and posters, belt-use fact sheets, a print public service announcement (PSA), and live-read radio PSAs. *(Note: TSO to assemble available information resources.)*
- For information on strategies and recommendations for effective enforcement of secondary belt use:

  How States Achieve High Seat Belt Use Rates
  http://www-nrd.nhtsa.dot.gov/Pubs/810962.pdf

  Innovative Seat Belt Demonstration Programs in Kentucky, Mississippi, North Dakota, and Wyoming, NHTSA, Report No. DOT HS 811 080, April 2009.
  http://www.nhtsa.gov/Driving+Safety/Occupant+Protection

  Avoiding "Tween" Tragedies: Demonstration Project to Increase Seat Belt Use Among 8- to 15-year-old Motor Vehicle Occupants, NHTSA, Report No. DOT HS 811 096, June 2012.
  http://www.nhtsa.gov/Driving+Safety/Occupant+Protection
- For guidance on planning and publicizing belt-use saturation patrols:

  NHTSA 2014 national seat belt enforcement *Products for Enforcement Action Kit (PEAK)* to help enforcement rally officers and alert the public to prepare for maximum high-visibility seat belt enforcement during the day and also at night.
  http://www.trafficsafetymarketing.gov/CIOT-PEAK

  Nighttime Enforcement of Seat Belt Laws: An Evaluation of Three Community Programs, NHTSA, Report No. DOT HS 811 189, August 2009.

  For the above and other belt enforcement and information outreach resources:
  http://www.nhtsa.gov/Driving+Safety/Occupant+Protection

- For North Dakota road safety information including facts sheets, issue briefs, and other education and outreach resources, visit the North Dakota State University (NDSU) Rural Transportation Safety and Security Center (RTSSC) at:
  http://www.ugpti.org/rtssc/resources/

  The NDSU Upper Great Plains Transportation Institute at:
  http://www.ugpti.org/resources/

- Other seat-belt safety resources:

  Center for Disease Control and Prevention seat belt briefing:
  http://www.cdc.gov/motorvehiclesafety/seatbeltbrief/

  Governor's Highway Safety Administration:
  http://www.ghsa.org/html/issues/occprotection/index.html

  The NDSU Upper Great Plains Transportation Institute at:
  http://www.ugpti.org/resources/

5.4.8 Cross-Cutting Safety Strategy

Turtle Mountain Priority Strategy – Tribal Enforcement Use of Traffic and Criminal Software (TraCS)

Description: The analysis of timely, complete, and accurate tribal crash data provides the ability of tribal traffic safety enforcement, engineering, road maintenance, and driver behavior professionals to more accurately and clearly identify severe crash patterns and safety issues. Equipped with crash data-driven problem identification, tribal traffic safety team members can more effectively: 1) identify safety strategies having the greatest potential to reduce severe crashes, 2) focus limited resources on priority safety investments, and 3) better determine effective strategy implementation plans to achieve the expected safety impact—reduced fatalities and severe injuries on reservation roadways.

A reliable and complete tribal crash database begins with data collected from crash reports at the time of the incident when a crash involves fatalities, injuries, or at least $1,000 in property damage. More often, this crash information is collect by tribal enforcement officers, but depending on tribal procedures, may also be collected by emergency response personnel such as fire or ambulance staff.

A single and standardized, easy-to-use, in-the-field electronic reporting system is the best means for crash data collection and provides a mechanism for important crash data sharing, based on established Memorandum of Understandings, for more complete analysis of critical crash patterns and trends within Turtle Mountain, across the state of North Dakota, and other tribal communities in North Dakota and in the nation.

The NDDOT, together with the National Highway Transportation Safety Administration (NHTSA) and the Federal Highway Administration (FHWA), supports through grant funds, the installation of Traffic and Criminal Software or TraCS through and provides technical assistance and training to local agency and tribal law enforcement to effectively deploy TraCS for in-the-field incident reporting.

Getting Started:

- Contact the NDDOT Traffic Safety Office for further information on TraCS and the available tribal support for TraCS installation, training and on-going technical assistance.
- Explore creating a Memorandum Of Agreement (MOA) on crash reporting among Turtle Mountain and the State of North Dakota DOT and the Highway Patrol to exchange crash data between the tribe and the state to improve highway safety.
- Strengthen training for law enforcement officers on tribal lands on crash reporting including its role in traffic crash problem identification and the determination and implementation of safety strategies.

Implementation Resources:

- See Section 5.5, Traffic Safety Office Supporting Resources.
- For an overview of crash reporting and data sharing challenges and recommendations, see *Improving Crash Reporting Study of Crash Reporting Practice on Nine Indian Reservations* at: http://www.ttap.mtu.edu/library/ImprovingCrashReportingStudyofCrashReportingPractice-NineIndianRes.pdf
- For information offering guidance for state agencies and tribal leaders on effective crash Reporting, see NCHRP Report 788: *Guide for Effective Tribal Crash Reporting*, at: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_788.pdf

5.5 Traffic Safety Office Supporting Resources

Unless otherwise indicated, for technical assistance and supporting resources contact the NDDOT Traffic Safety Office (TSO) at (701) 328-4692.

5.5.1 TSO Grant Program Application Process

The TSO solicits grant applications from eligible state, local, and tribal agencies and for-profit and non-profit organizations that address North Dakota's problem solution plans or PSPs. PSPs reflect the state's greatest opportunities for behavioral safety improvement. Grant applications are due June 30th of each year and are evaluated based on: (1) response to identified problems, (2) proposed evidenced-based strategy, (3) clear objectives, (4) comprehensive evaluation plans, and (5) cost-effective budgets. Selected projects are included in TSO's Highway Safety Plan and once approved by NHTSA, grant contracts are generally effective October 1 through September 30th.

5.5.2 Technical Assistance

County Outreach Program

The TSO, in cooperation with the North Dakota Association of Counties, offers a county-based Traffic Safety Outreach program to provide advocacy and community mobilization, media support, public outreach, and training to address seat belt use, impaired driving, speeding, and distracted driving at the county level. County participants include county employees, county officials, law enforcement, transportation engineering, public health, schools, businesses, nonprofit agencies, media, and other entities.

5.5.3 Traffic Records/Crash Data

Traffic and Criminal Software or TraCS

The quality of traffic safety problem identification and decision-making regarding effective safety strategies and their implementation is based on the quality and timeliness of crash data.

To assist law enforcement in providing timely, complete, and accurate crash reports, the NDDOT Traffic Safety Office (TSO) supports the installation of Traffic and Criminal Software or TraCS and provides technical assistance and training to local agency and tribal law enforcement to effectively deploy TraCS for in-the-field incident reporting.

Local and tribal enforcement agencies are strongly encouraged to utilize the convenience of TraCS for the electronic submission of crash reports to the NDDOT. Key benefits to participating agencies and tribes are the reduced officer time and effort required for duplicate entry into local and state crash databases, reduced need for data entry resources and administrative support, as well as improving the overall quality and timeliness of the crash report.

Annual Crash Summary

The NDDOT annually publishes the Crash Summary to identify and describe the annual crash data and historical crash trends in North Dakota including the description of factors contributing to the occurrence of traffic crashes and the resulting injuries and fatalities. The Crash Summary is a valuable reference resource for local agencies and their safety partners for problem identification, safety strategy planning, targeted strategy implementation, program evaluation, and media inquiries, and is located at:
http://www.dot.nd.gov/divisions/safety/docs/crash-summary.pdf

References

AAA Foundation for Traffic Safety (AAA), 2012. 2012 *Traffic Safety Culture Index*. Washington DC. January.

Dahlberg, Linda L., and Etienne G. Krug, 2002. "Chapter 1. Violence-a Global Public Health Problem." *World Report on Violence and Health*. Edited by Etienne G. Krug, Linda L. Dahlberg, James A. Mercy, Anthony B. Zwi, and Rafael Lozano. World Health Organization: Geneva, Switzerland.

Goodwin, A., Foss, R., Hedlund, J. Hosn, J., Pfefer, R., Neuman, T., Slack, K. and Hardy, K., 2005. *Guidance for Implementation of the AASHTO Strategic Highway Safety Plan Volume 16: A Guide for Reducing Alcohol-Related Collisions.* National Cooperative Highway Research Program (NCHRP) 500 Report. Transportation Research Board. Washington DC.

Keating, Daniel P., 2007. "Understanding Adolescent Development: Implications for Driving Safety." *Journal of Safety Research*. Vol. 38, Issue 2. Pages 147-157.

Kringen, B., Long, J., Mikkelson, S., and Nesbitt, S. *Identifying and Addressing Overservice of Alcohol: POLD and RAVE.* Presentation.

Lerner, Neil, Jeremiah Singer, and James Jenness, 2010. "Safer Drivers." White Papers for: *Toward Zero Deaths: A National Strategy on Highway Safety*. White Paper No. 3. July 12.

National Highway Traffic Safety Administration (NHTSA), 2014. *Traffic Safety Facts, 2012: Occupant Protection.* Report No. DOT HS 811 892. Washington DC.

National Highway Traffic Safety Administration (NHTSA), 2013. *Countermeasures that Work: A Highway Safety Countermeasure Guide for Sate Highway Safety Offices*. 7th Edition. Report No. DOT HS 811 727. Washington DC. April.

National Highway Traffic Safety Administration (NHTSA), 2012. *Traffic Safety Facts 2010: A Compilation of Motor Vehicle Crash Data from the Fatality Analysis Reporting System and the General Estimates System.* Report No. DOT HS 811 659. Washington DC.

National Highway Traffic Safety Administration (NHTSA), 2012a. *Traffic Safety Facts, 2010 Data: Young Drivers*. Report No. DOT HS 811 622. National Center for Statistics and Analysis. Washington DC. May.

National Highway Traffic Safety Administration (NHTSA), 2012b. *Traffic Safety Facts, 2010 Data: Speeding*. Report No. DOT HS 811 636. National Center for Statistics and Analysis. Washington DC. August.

National Highway Traffic Safety Administration (NHTSA), 2009. *Traffic Safety Facts, 2008 Data: Occupant Protection*. Report No. DOT HS 811 160. National Center for Statistics and Analysis. Washington DC.

National Highway Traffic Safety Administration (NHTSA), 2007. *Screening and Brief Intervention Tool Kit for College and University Campuses*, Report No. DOT HS 810 751. Washington DC. February.

National Highway Traffic Safety Administration (NHTSA), 2005. *Breath Test Refusals in DWI Enforcement: An Interim Report*. Report No. DOT HS 809 876. Washington, DC.

National Highway Traffic Safety Administration (NHTSA), 2001. *Effectiveness of Occupant Protection Systems and Their Use*. Fifth/Sixth Report to Congress. Report No. DOT HS 809 442. Washington DC. November.

Neuman, T., Slack, K., Hardy, K. Bond, V., Potts, I., and Lerner, N., 2009. *Guidance for Implementation of the AASHTO Strategic Highway Safety Plan Volume 23: A Guide for Reducing Speeding-Related Crashes.* National Cooperative Highway Research Program (NCHRP) 500 Report. Transportation Research Board. Washington DC.

Shults, RA, Beck, LF, 2012. *Self-reported seatbelt use, United States, 2002-2010: Does prevalence vary by state and type of seatbelt law?* Journal of Safety Research; 43 (5-6): 417–42

Ward, Nicholas J., Jeff Linkenback, Sarah N. Keller, and Jay Otto, 2010. "White Paper on Traffic Safety Culture." White Paper No. 2. *White Papers for: Toward Zero Deaths: A National Strategy on Highway Safety*. Western Transportation Institute, College of Engineering, Montana State University. July 7.

Williams, Allan F., 2007. *Public Information and Education in the Promotion of Highway Safety*. Research Results Digest 322. National Cooperative Highway Research Program (NCHRP). Washington DC. August.

LOCAL ROAD SAFETY PROGRAM

NDDOT
North Dakota
Department of Transportation