STANDING ROCK SIOUX TRIBE

LONG RANGE TRANSPORTATION PLAN

DECEMBER 2018

KLJ

RESOLUTION NO. 541-18

[2018 LONG RANGE TRANSPORTATION PLAN]

WHEREAS, the Standing Rock Sioux Tribe is an unincorporated Tribe of Indians, having accepted the Indian Reorganization Act of June 18, 1934, with the exception of Article16; and the recognized governing body of the Tribe is known as the Standing Rock Sioux Tribal Council; and

WHEREAS, the Tribal Council is empowered by appropriate motion, resolution or ordinance, under Article IV, Section 1(a) and 1(b), to negotiate with Federal, State, local governments and others on behalf of the Tribe, to advise and consult with the representatives of the Department of Interior on all activities of the Department which may affect the Tribe and is further empowered to advise the Secretary of Interior on all appropriations estimates of Federal projects for the benefit of the Tribe or the Reservation; and

WHEREAS, in June 2006, the Standing Rock Sioux Tribe assumed the duties of the Secretary of the Interior for the Standing Rock Sioux Reservation under an IRR Program Agreement with the Federal Highway Administration (FHWA); and

WHEREAS, in May 2017, the FHWA formally announced that it would no longer enter into a Program Agreement with the Standing Rock Sioux Tribe, and that all funding for the Standing Rock Sioux Tribe to plan, design, engineer, pre-construct and construct eligible roads and bridges, would be directed to the Secretary of Interior for administration, through the Bureau of Indian Affairs (BIA); and

WHEREAS, the Standing Rock Sioux Tribe can allow the BIA to administer the funds through direct service, or the Tribe can assume the duties of the BIA under an Indian Self-determination Act, Public Law 93-638 contract; and

WHEREAS, under 25 CFR Part 107.402 (b) (5) the Tribe must develop long range transportation plans (LRTP); and

WHEREAS, under 25 CFR Part 170.409 (a) the purpose of the long-range transportation planning is to clearly demonstrate a Tribe's transportation needs and to develop strategies to meet these needs. These strategies should address future land use, economic development, traffic demand, public safety, and health and social needs. The planning process should result in a LRTP, and, (b) the time horizon for the LRTP should be 20 years; and

WHEREAS, the Tribe's Transportation Planning and Development, has with the services of KLJ Engineering, engaged in a year-long planning process soliciting public involvement through notices and meetings, and have developed a LRTP; and

NOW THEREFORE BE IT RESOLVED, the Standing Rock Sioux Tribe does hereby adopt the December 2018 Long Range Transportation Plan (LRTP), which is a 20 year strategy and capital improvements program to guide the effective use of Tribal Transportation Program (TTP) funds; and

BE IT FURTHER RESOLVED, that the Chairman and Secretary of the Tribal Council are hereby authorized and instructed to sign this resolution and all necessary documents for and on behalf of the Standing Rock Sioux Tribe in order to facilitate the goals and purposes of this Resolution.

CERTIFICATION

We, the undersigned, Chairman and Secretary of the Standing Rock Sioux Tribe, hereby certify that the Tribal Council is composed of [17] members, of whom **16** constituting a quorum, were present at a meeting duly and regularly called, noticed, convened and held on the **5TH** day of **December, 2018**, and that the foregoing resolution was duly adopted by the affirmative vote of **13** members, with **0** opposing, and with **3** not voting. **THE CHAIRMAN'S VOTE IS NOT REQUIRED EXCEPT IN CASE OF A TIE.**

DATED THIS 5TH DAY OF DECEMBER, 2018.

ATTEST:

Susan Agard, Secretary
Standing Rock Sioux Tribe

Mike Faith, Chairman
Standing Rock Sioux Tribe

[OFFICIAL TRIBAL SEAL]

Meeting Date:
12-5-18 #17

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DEFINITION OF ACRONYMS

AADT – Average Annual Daily Traffic
ADA – Americans with Disabilities Act
AIP – Airport Improvement Program
BIA – Bureau of Indian Affairs
BUILD - Better Utilizing Investments to Leverage Development
CFR - Code of Federal Regulations
FAA – Federal Aviation Administration
FAST Act – Fixing America's Surface Transportation Act
FEMA – Federal Emergency Management Agency
FHWA – Federal Highway Administration
GIS – Geographic Information System
IHS – Indian Health Services
IRR – Indian Reservation Roads
LED – Light-Emitting Diode
LRSP – Local Road Safety Program
LRTP – Long Range Transportation Plan
MAP-21 – Moving Ahead for Progress in the 21st Century Act
MUTCD – Manual on Uniform Traffic Control Devices
NDDOT – North Dakota Department of Transportation
NPIAS – National Plan of Integrated Airport Systems
PASER – Pavement Surface Evaluation and Rating
PM – Particulate Matter
PMP – Pavement Management Program
RIFDS – Road Inventory Field Data System
RSA – Road Safety Audit
SDDOT – South Dakota Department of Transportation
SD LTAP – South Dakota Local Transportation Assistance Program
SDDPS – South Dakota Department of Public Safety
SRHA – Standing Rock Housing Authority
SRPTP - Standing Rock Public Transit Program
SRST – Standing Rock Sioux Tribe
TA – Transportation Alternatives
TraCS – Traffic and Criminal Software
TTIP – Tribal Transportation Improvement Program
TTP – Tribal Transportation Program
TTSP - Tribal Transportation Safety Plan
USDOT – United States Department of Transportation

CHAPTER 1 - INTRODUCTION

The Standing Rock Indian Reservation is the sixth largest Native American Indian Reservation in the United States. It is located in Sioux County, North Dakota, and in Corson, Dewey, and Ziebach Counties of South Dakota. It is home to the Hunkpapa Lakota, Sihasapa Lakota and Yanktonai Dakota Tribes. According to the latest BIA labor force data, the Reservation population is approximately 9,000.

The Standing Rock Sioux Tribe (SRST) needs a transportation system that safely and efficiently moves people and goods and provides quality access to Tribal housing, services, and employment. The Long Range Transportation Plan (LRTP) is a master transportation plan, covering all modes of travel and presenting needs and alternatives from maintenance to new facility construction.

The LRTP provides guidance for new policies and project decisions related to funding. Thus, it provides a foundation for development of the Tribal Transportation Improvement Program (TTIP). The TTIP is a fiscally constrained 5-year plan that outlines use of federal transportation dollars on Tribal transportation projects. While the LRTP is more comprehensive in nature, it provides a system-level analysis rather than a project detailed analysis. Therefore, where additional analysis or studies are needed, the LRTP provides direction as to the types of analysis or studies that should be undertaken in the future.

This LRTP fulfills the requirements outlined in the November 7, 2016 Federal Register, 25 CFR Part 70, Tribal Transportation Program (TTP); Final Rule. In compliance with those directives, this LRTP is a 20+ year strategy and capital improvements program developed to guide the effective investment of TTP funds, and to provide a strong basis to be used for grant funding applications submitted for multimodal transportation facilities. The short-range element applies to the years 2019 through 2023. The long-range element applies to the years 2024 through 2045. The Federal Register suggests that this plan be updated every 5 years.

PLAN PURPOSE

Per the CFR, the purpose of a Tribal LRTP is to clearly demonstrate a Tribe's transportation needs and to fulfill Tribal goals by developing strategies to meet those goals. These strategies should address future land use, economic development, traffic demand, public safety, and health and social needs.

SRST officials need a strategic approach to respond to existing and anticipated future transportation issues. Therefore, the Tribe has undertaken this effort to develop a master plan for transportation infrastructure. The purposes of this plan are:

- To collect and examine information on current and future transportation improvement needs.

- To consider the needs of all modes of travel (vehicular, pedestrian, bicycle, and transit) and develop strategies and recommend projects to accommodate them. This Plan examines the existing system of roads, sidewalks, bridges, and transit facilities and considers opportunities for future improvements.
- To review the current transportation system maintenance strategy and consider opportunities for improvement.
- To provide a basis for future transportation improvement programming that is sustainable. The ability of the Tribe to sustain the transportation system is strongly tied to project costs and available funding. This Plan needed to consider existing and potential funding sources, the costs of maintenance, rehabilitation and new construction, and provide guidance on effective use of limited funding.

RECENT AND CONCURRENT STUDIES

There are recent studies conducted by the Tribe which are described in the bulleted list below:

- 2015: The Standing Rock Sioux Tribe Tribal Transportation Safety Plan (TTSP) was updated. The Plan identified transportation safety risks and recommended improvements.
- 2015: The SRST Local Road Safety Program (LRSP) Plan was written. The LRSP was commissioned by the North Dakota Department of Transportation (NDDOT) as part of its statewide highway safety improvement planning process. The goals of the LRSP were to identify locations at risk for severe crashes and to provide a tool to assist the Tribe in applying for low-cost safety project funds in Sioux County, ND.
- 2016: The Standing Rock Sioux Tribe/Sioux County, North Dakota Multi-Hazard Mitigation Plan was drafted in 2016. This was an update to the 2011 Plan conducted to review the natural and man-made hazards and risks on the Reservation and provide mitigating actions.
- 2017: The SRST Pavement Management Plan was written. There were two Plans generated, one for rural roads and one for urban roads. As part of these plans, a Pavement Surface Evaluation and Rating (PASER) study was conducted. The PASER evaluation assists in documenting existing pavement conditions and in prioritizing pavement improvements.
- 2017: The Standing Rock Public Transit Coordinated Human Services Transportation Plan analyzed the current conditions and needs of the transit system on the Reservation and provided recommendations for the transit program.

Information and data from these studies were reviewed during the LRTP process and are incorporated into this Plan.

CHAPTER 2 - STUDY AREA

The Standing Rock Indian Reservation extends across the North Dakota/South Dakota border and spans about 1,300 square miles. It includes the entireties of Sioux County in North Dakota and Corson County in South Dakota, along with northern fragments of Dewey and Ziebach Counties in South Dakota. It is bounded by the Missouri River on the east and Cannonball River to the north.

Fort Yates, Cannon Ball, and McLaughlin are the largest communities on the Reservation. Fort Yates serves as not only the Tribal headquarters of the SRST, but also the county seat of Sioux County. Other communities on the Reservation include Porcupine, Kenel, Wakpala, Little Eagle, Bullhead, Solen, Selfridge, Thunder Hawk, Keldron, Morristown, Watauga, McIntosh, Black Horse, Miscol, Trail City, Snake Creek, Mahto, Walker, and Maple Leaf. There are schools located in nearly every community on the Reservation. Public schools are located in McIntosh, McLaughlin, and Wakpala in South Dakota, and in North Dakota at Fort Yates, Selfridge, and Solen. There is a private parochial school in Fort Yates, which is also home to Sitting Bull College.

While the transportation needs of the entire Reservation were considered during the LRTP process, there were communities that were studied in more detail: Fort Yates, Cannon Ball, and Porcupine in North Dakota and McLaughlin, Kenel, Wakpala, Little Eagle, and Bullhead in South Dakota. Aerial images of the study areas for each of these communities are shown in Figures 2-3 through 2-10.

The SRST's governing body consists of a Tribal Chairman, Vice Chairman, Secretary, and 14 representatives. Representatives serve four-year terms with elections staggered to prevent complete replacement during a single election. Six members are elected from the public at-large, and one member is elected from each of the eight Tribal districts: Fort Yates, Porcupine, Kenel, Wakpala, Running Antelope, Bear Soldier, Rock Creek, and Cannonball. Geographical voting district boundaries are shown in Figure 2-2.

Cattle ranching is the main economic occupation for the SRST. Funds for the Tribe are also contributed to by two Tribal casinos: Prairie Knights Casino near Cannon Ball, North Dakota, and the Grand River Casino in Wakpala, South Dakota. There are also several businesses operating throughout the Reservation which are owned by both enrolled Tribal members and non-Native Americans; economic development through the establishment of new businesses is an important endeavor of the Tribe.

The SRST Transportation Department is administered by the Transportation Planner and is responsible for maintaining over 220 miles of BIA and Tribal roadways. Nearly half, 109 miles, are paved with the remainder consisting of gravel and earthen, or primitive, roadways. There are also nearly 1500 miles of other federal, state, county, and other roadways within the Standing Rock Indian Reservation. These roads consist of around 450 miles of paved roads,

approximately 150 miles of earthen roads, and over 1100 miles of gravel roads within the Reservation.

The study area is shown in Figure 2-1. It includes the region within the Standing Rock Indian Reservation boundaries, which contains an existing population of around 9,000 people. The population is expected to remain stable or experience minimal growth. Most traffic growth is expected to occur because of more traffic traveling through the Reservation on the state highway system, or localized traffic increases associated with new developments.

The study area includes the following federal and state highways. The current state-specified functional classifications are noted for each highway.

- US Highway 12 – Principal Arterial
- ND Highway 6 – Principal Arterial/Major Collector
- ND Highway 1806 – Minor Arterial
- ND Highway 24 – Principal Arterial/Minor Arterial
- ND Highway 31 – Minor Arterial
- ND Highway 49 – Minor Arterial
- SD Highway 65 – Minor Arterial
- SD Highway 63 – Minor Arterial
- SD Highway 20 – Minor Arterial
- SD Highway 1806 – Major Collector

Figure 2-1 – Standing Rock Indian Reservation Study Area

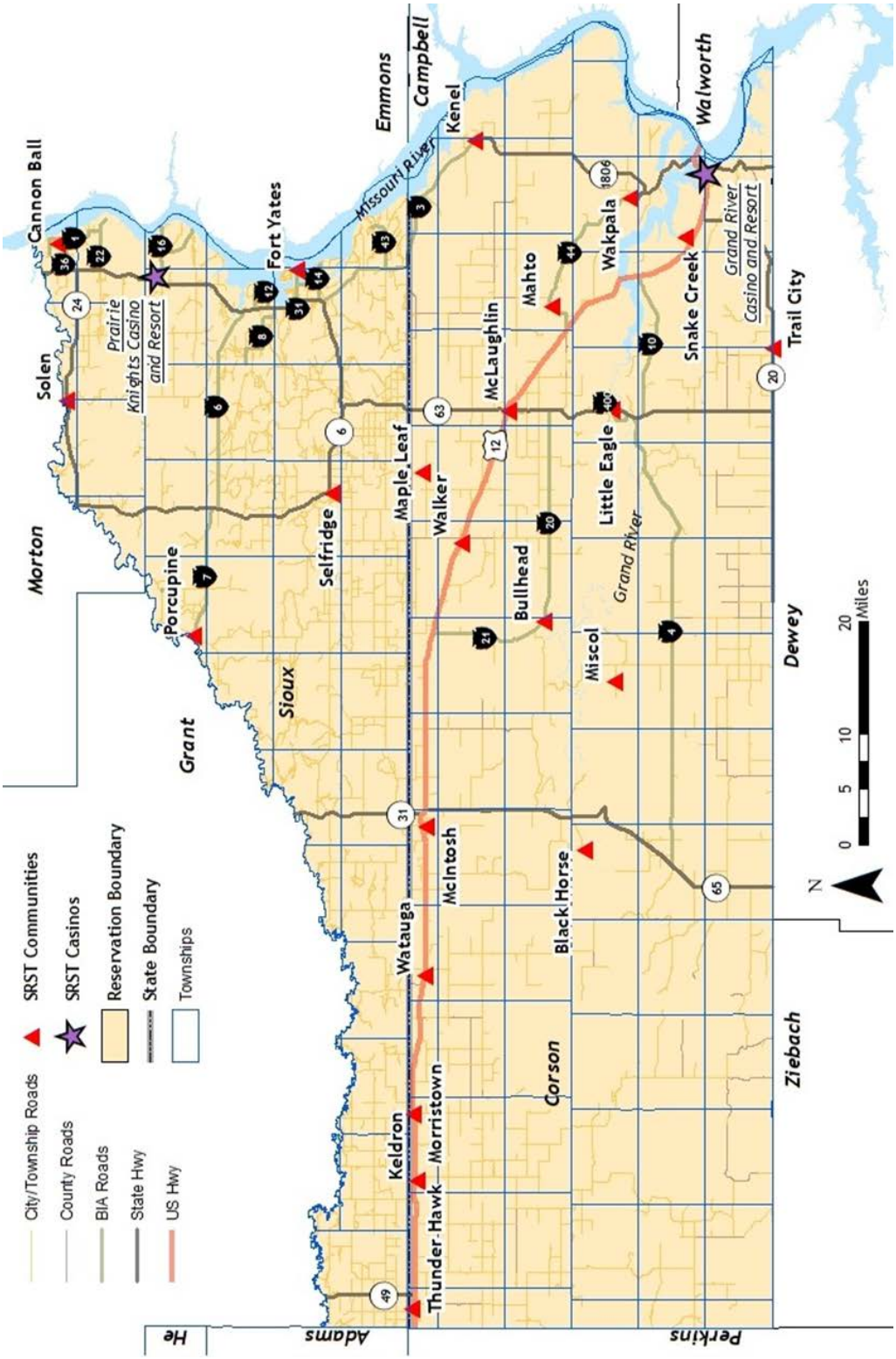


Figure 2-2 – Tribal Voting Districts

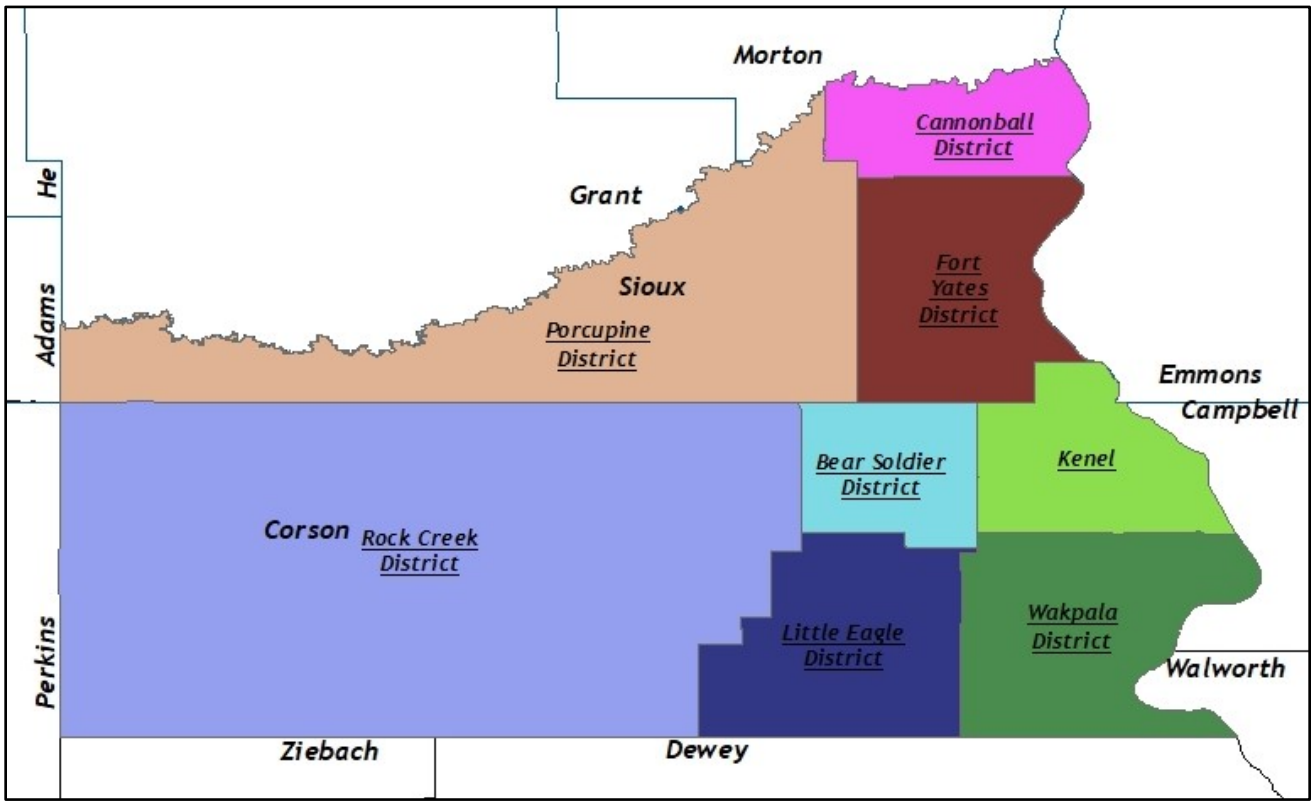


Figure 2-3 – Bullhead Study Area

Figure 2-4 - Cannon Ball Study Area

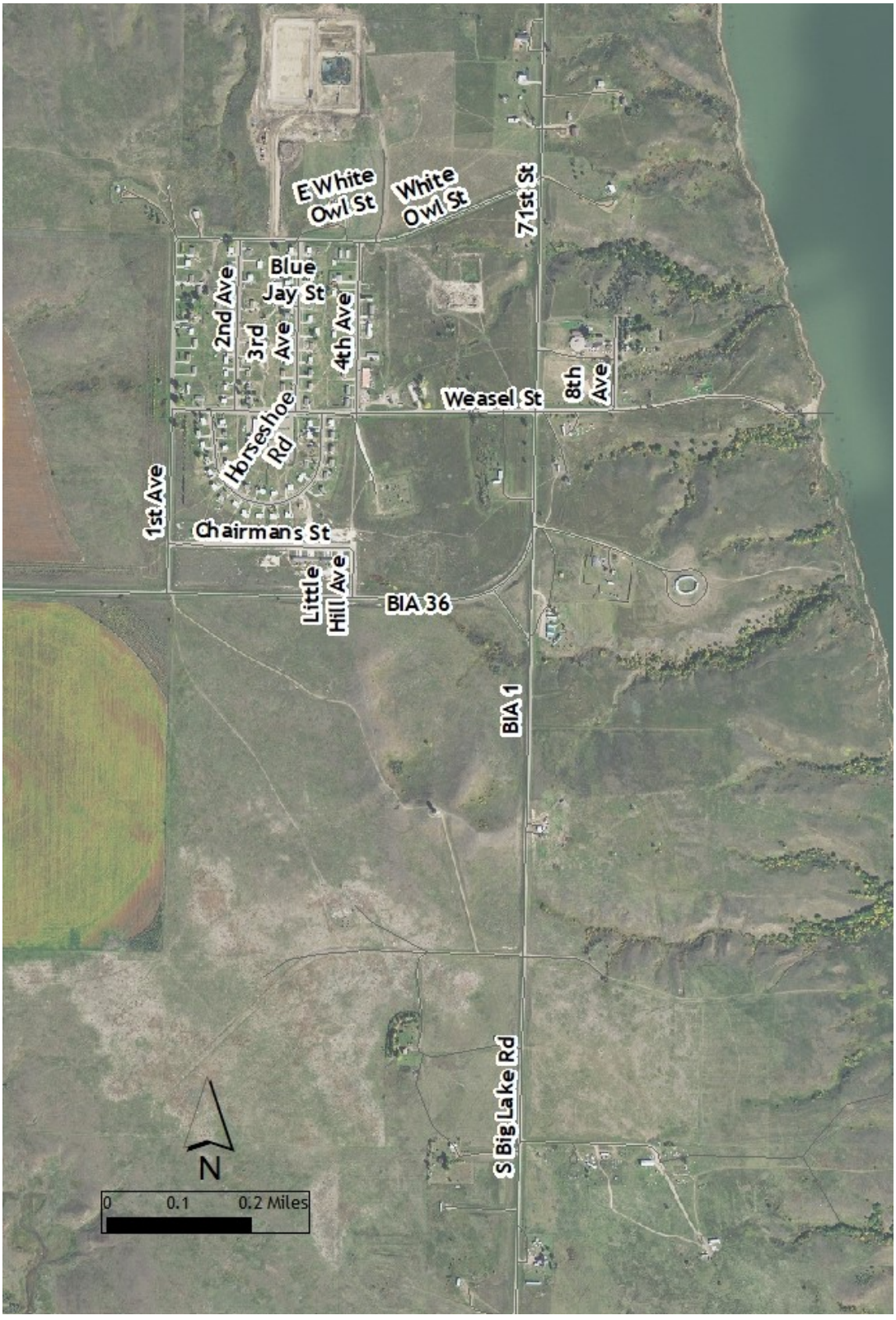


Figure 2-5 - Fort Yates Study Area

Figure 2-6 – Kenel Study Area

Figure 2-7 - Little Eagle Study Area

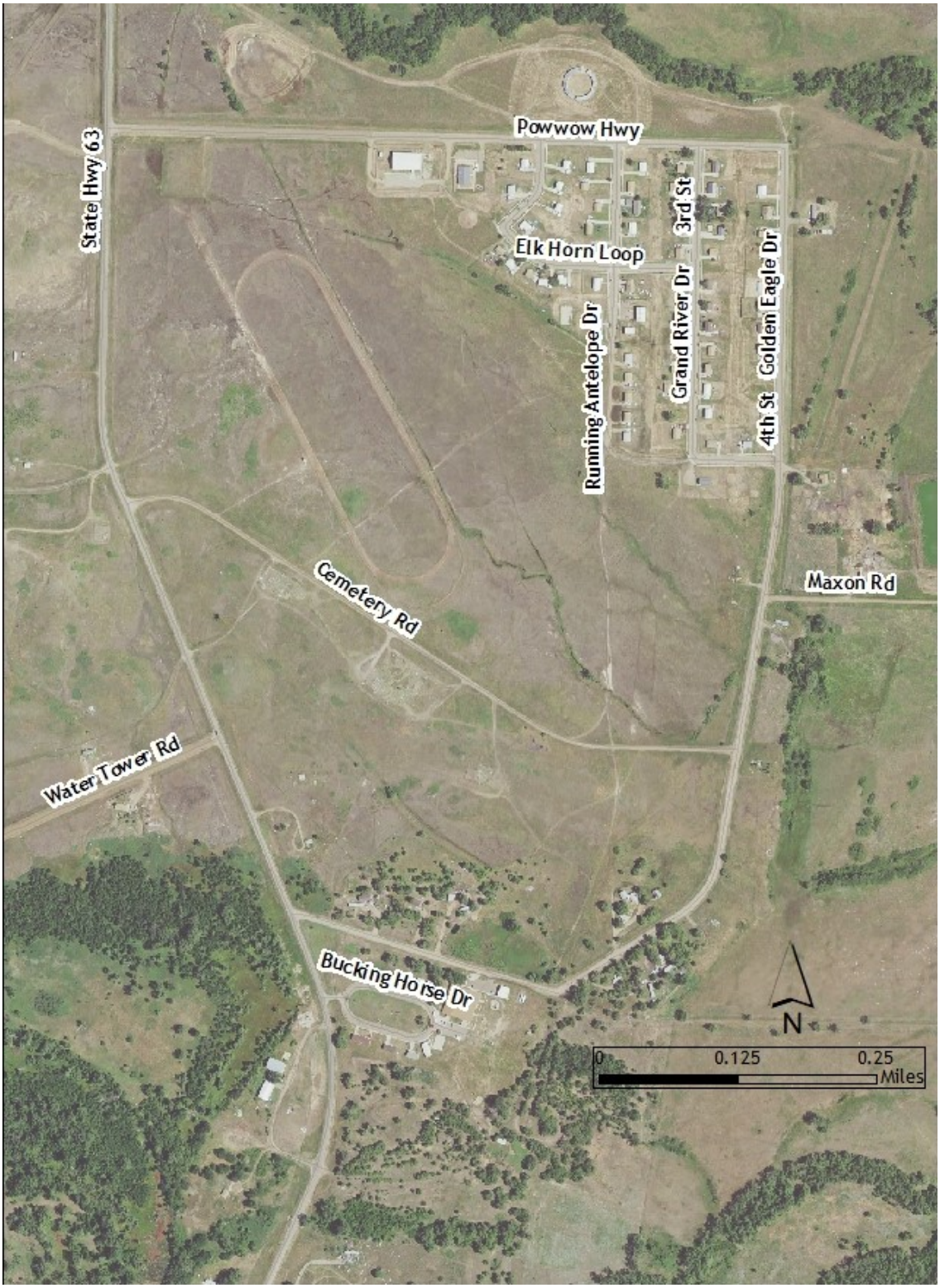


Figure 2-8 - McLaughlin Study Area

Figure 2-9 - Porcupine Study Area

Figure 2-10 - Wakpala Study Area

SCENIC BYWAYS

According to the US DOT, Federal Highway Administration, the Standing Rock National Native American Scenic Byway was established on September 22, 2005. The National Scenic Byway System is comprised of a total of 126 distinct and diverse roads designated as scenic byways and All-American roads.

The Standing Rock National Native American Scenic Byway, an 86-mile paved route, follows a stretch of highway through North Dakota and South Dakota along the Missouri River. The Byway's website (www.standingrockbyway.org) provides information about the management and organization of the corridor, which is administered by Sitting Bull College. The Byway Advisory Committee is currently seeking funding to complete the following projects:

- Fort Yates Stockade

  Located in Fort Yates and named for Captain George Yates who died at the Battle of the Little Big Horn, the Fort became the largest Missouri River post. Fundraising efforts have begun to restore, preserve, and promote the Stockade.

- Pageant of the Plains

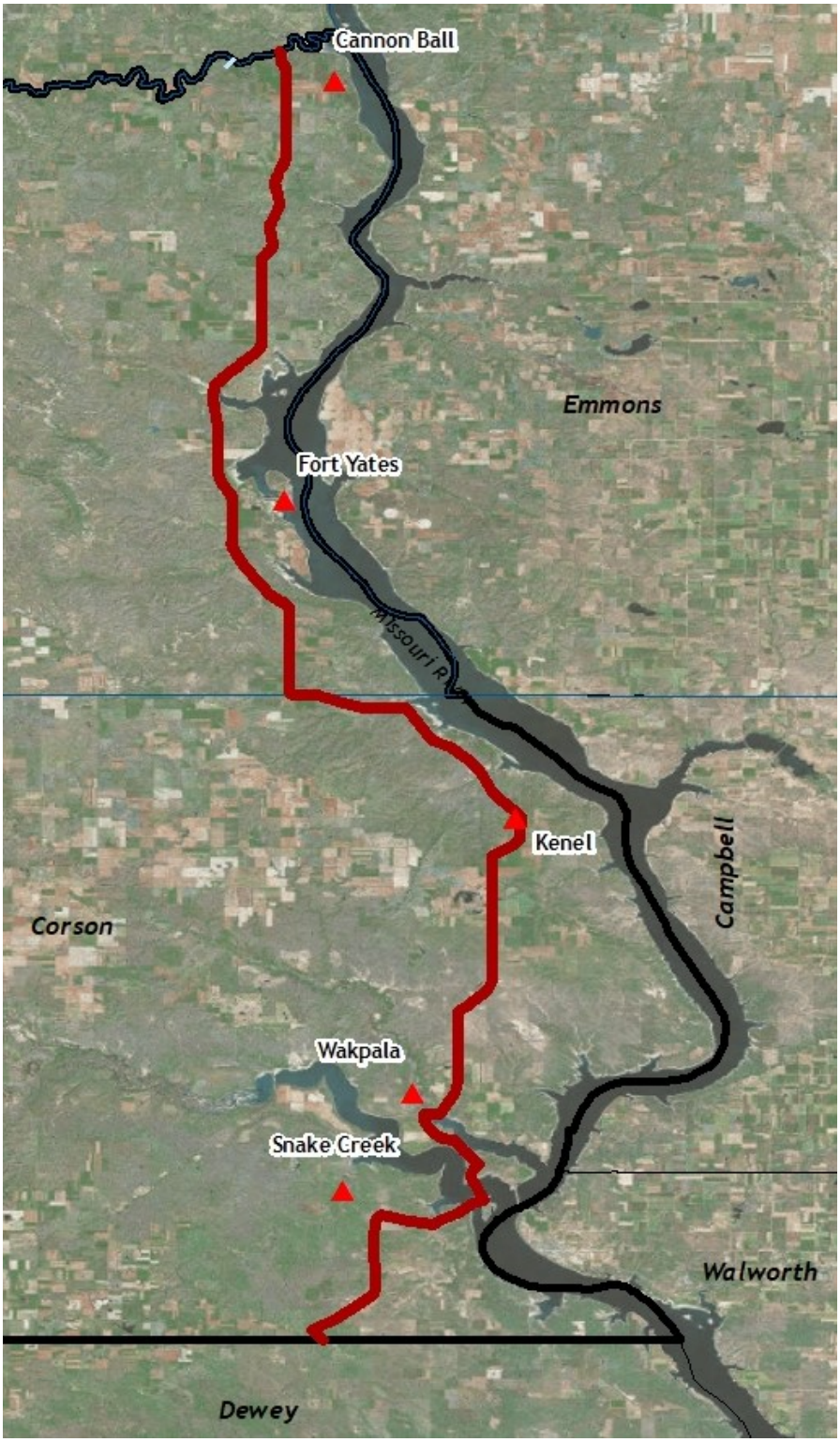
  A 1,200 seat outdoor amphitheater is planned to host the outdoor drama production. The set will be designed to be used also as a cultural center and marketplace. The construction of the tipi village is being sponsored by the North Dakota Department of Commerce. Additional funding is needed for the construction of the amphitheater, writing of the script, composition of the music and choreography of the dances planned for the pageant. Costumes, props and administrative costs are also necessary to complete the project.

- Visitor Center

  The planning and construction of a Visitor Center/Rest Area has been prioritized by the Byway Advisory Committee. A location for the Visitor Center has been secured adjacent to the Byway by the Standing Rock Sioux Tribe. The Visitor Center will provide year round visitor information, a rest area, and a picnic area.

The Scenic Byway is shown in Figure 2-11.

Figure 2-11 - Standing Rock National Native American Scenic Byway



CHAPTER 3 - INVENTORY AND DATA ANALYSIS

In order to determine the extent of transportation deficiencies and improvement opportunities, a transportation system evaluation was performed within the study area. Available aerial photography and data inventories were analyzed and mapped using Geographic Information System (GIS) technology to complete the evaluation. Perhaps one of the greatest benefits of the plan development process was the preparation of mapped resources which can aid Tribal planners, technicians, and officials to better understand the strengths and weaknesses of their transportation system.

Observations were made to assess the existing transportation network and traffic conditions were examined to identify potential issues and opportunities. This step determined the transportation network needs and potential improvement strategies for implementation.

ROAD INVENTORY AND OWNERSHIP

This section of the report discusses the existing road inventory and provides recommendations for roadway, bridge, and shared use path additions to the Road Inventory Field Data System (RIFDS) inventory, which is administered by the BIA. Strip maps and the full roadway inventory are available for review upon request.

ROADWAY OWNERSHIP

Roads on the Standing Rock Indian Reservation fall under the ownership of the SRST, SDDOT, NDDOT, Corson and Sioux Counties, townships, and municipalities.

INVENTORY AND FUNCTIONAL CLASSIFICATION

Data for this section was obtained from RIFDS. Functional classification establishes a hierarchy for roads. It provides a systematic approach to designing and prioritizing roads that have different purposes. Arterials, for example, are designed to serve higher volumes of traffic at high speeds and over greater distances, while collectors are designed to facilitate some land access at the expense of higher speeds or high traffic volume.

From a residential standpoint, most people prefer to live along quiet local roads with frequent land access points (driveways). At the same time, residents typically desire a relatively direct driving path at higher speeds to reach their destination.

The highest volume roads and roads most capable of handling truck traffic are identified as arterials. Volume alone does not determine arterials. It is desirable that residents can travel north/south and east/west across the Reservation on arterials or major collectors and that

communities are connected to other towns within the Reservation and beyond with arterial roads.

Although the PASER study, which will be discussed in greater detail in Chapter 5, shows that, overall, paved roads on the Reservation receive an acceptable score, the SRST has struggled to maintain all paved roads in top condition. Therefore, future priority for maintenance on any road should generally be given to arterials, followed by collectors, then local roads, parking, and other paved facilities.

The state highways and some key BIA routes will continue to serve regional trips entering and exiting the Reservation. Other highways are planned to serve shorter distance trips based on classification. Classifications from the Indian Reservation Roads Inventory found in RIFDS are shown in Figure 3-1.

FIGURE 3-1 -Functional Classifications and Surface Types

Road Miles by Class and Surface Type										Future Surface Type				
Functional Classification	Proposed 0	Earth (1)	Gravel (3)	< 2 inch (4)	> 2 inch (5)	Concrete (6)	Trail (9)	None (null)	Total	Earth (E)	Gravel (G)	Paved (P)	None (null)	Total
1 - Major Arterial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 - Rural Minor Arterial	0.0	0.0	48.0	4.9	298.5	33.8	0.0	0.0	385.2	0.0	0.0	0.0	0.0	385.2
3 - City Local	0.0	1.3	15.5	2.2	15.8	0.0	0.0	0.0	34.8	4.4	0.0	0.0	0.0	39.2
4 - Rural Major Collector	0.0	1.1	207.8	10.7	53.0	0.0	0.0	0.0	272.6	0.0	21.0	0.0	0.0	293.6
5 - Rural Local	0.0	155.7	835.9	4.3	12.4	0.4	0.0	0.0	1008.7	0.0	1.6	0.0	0.0	1,010.3
6 - City Minor Arterial	0.0	0.0	1.0	0.2	8.6	0.1	0.0	0.0	9.9	0.0	0.0	0.0	0.0	9.9
7 - City Collector	0.0	0.0	0.7	0.3	4.3	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.0	5.3
8 - Trails	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	4.0
9 - Other	0.0	0.0	0.2	0.0	1.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	1.2
10 - Airstrips	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	0.0	0.0	0.0	0.0	1.6
Total	0.0	158.1	1,109.1	22.6	397.6	34.3	0.0	1.6	**1723.3**	4.4	22.6	0.0	0.0	**1,750.3**

Based on RIFDS, roadway ownership by functional classification is shown in Figure 3-2.

FIGURE 3-2 – Roadway Ownership and Functional Classification

Road Miles by Ownership and Functional Class												
Ownership	Major Arterial (1)	Rural Minor Arterial (2)	City Local (3)	Rural Major Collector (4)	Rural Local (5)	City Minor Arterial (6)	City Collector (7)	Trail (8)	Other Trans Facility (9)	Airstrip (10)	None (null)	Total
1 - BIA	0.0	66.8	11.1	85.8	42.4	5.1	3.6	4.0	0.7	0.0	0.0	219.5
2 - Tribe	0.0	0.0	6.7	0.0	19.6	0.0	0.1	0.0	0.5	0.9	0.0	27.8
3 - State	0.0	318.4	0.0	3.7	1.7	0.0	0.0	0.0	0.0	0.0	0.0	323.8
4 - Urban	0.0	0.0	17.3	0.0	0.0	4.8	1.6	0.0	0.0	0.7	0.0	24.4
5 - County And Township	0.0	0.0	4.1	204.1	945.8	0.0	0.0	0.0	0.0	0.0	0.0	1154.0
6 - Other BIA Offices	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 - Other Federal	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.8
8 - Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	385.2	39.2	293.6	1,010.3	9.9	5.3	4.0	1.2	1.6	0.0	**1750.3**

Roadway ownership and surface types are shown in Figure 3-3.

FIGURE 3-3 – Roadway Ownership and Surface Types

Road Miles by Ownership and Surface Type								Future Surface Type				
Owner	Earth (1)	Gravel (3)	< 2 inch (4)	> 2 inch (5)	Concrete (6)	Trail (9)	None (null)	Earth (E)	Gravel (G)	Paved (P)	None (null)	Total
1 - BIA	1.0	94.6	8.8	94.0	0.1	0.0	0.0	0.0	21.0	0.0	0.0	219.5
2 - Tribe	1.3	13.2	3.0	3.1	0.3	0.0	0.9	4.4	1.6	0.0	0.0	27.8
3 - State	0.0	0.0	0.0	290.0	33.8	0.0	0.0	0.0	0.0	0.0	0.0	323.8
4 - Urban	0.6	11.8	2.1	9.2	0.0	0.0	0.7	0.0	0.0	0.0	0.0	24.4
5 - County And Township	154.7	989.2	8.7	1.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1,154.0
6 - Other BIA Offices	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 - Other Federal	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
8 - Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	158.1	1,109.1	22.6	397.6	34.3	0.0	1.6	4.4	22.6	0.0	0.0	**1,750.3**

ROAD INVENTORY ADDITIONS

When existing transportation facilities are changed, or new ones are added, it is important to update RIFDS to reflect those changes. A review of SRST's 2018 Indian Reservation Roads (IRR) Inventory Change Sheet shows that the most recent update to the inventory took place in 2015. An update needs to occur in order to determine which roads need to be added to the inventory. At the time of this report, GIS mapping of current inventory routes is being conducted to identify any routes that may need to be added. Until mapping and an update is completed, verification of a route on the RIFDS inventory needs to take place prior to any project proposal. No TTP funds can be spent on a road unless it is included within the RIFDS inventory.

SHARED USE PATH – EXISTING INVENTORY AND ADDITIONS

Shared use paths are an important pedestrian and bicycle transportation facility and serve a variety of functions. There is a significant population of Tribal members that lives near shared use paths, which can provide shortcuts, recreation, and additional safety versus sidewalks or walking on the shoulder of a roadway. In the RIFDS inventory, shared use paths are categorized as trails, Class 8, and there are two on the Reservation with Tribal ownership. BIA 30 Section 10 is a 3.2 mile path that begins at Standing Rock High School in Fort Yates, heads south and then east into the community of Fort Yates. BIA 30 Section 20 is a 0.8 mile path that connects the communities of Bear Soldier and McLaughlin.

There was a shared use path identified during the LRTP process which needs to be added to the RIFDS inventory in order to qualify for funding for future improvement projects:

- Shared use path adjacent to ND 24 starting from the intersection with BIA 31 and going south approximately 1.7 miles

There are also shared use path projects in the TTIP and proposed in this LRTP which are not currently in the inventory and will need to be added in order to qualify for future TTP funding. These projects are discussed in Chapter 5:

- Cannon Ball Shared Use Path
- Bullhead Shared Use Path
- Porcupine Shared Use Path
- Kenel Shared Use Path

PARKING LOT ADDITIONS

The following parking lots have been confirmed in the RIFDS inventory by GIS mapping:

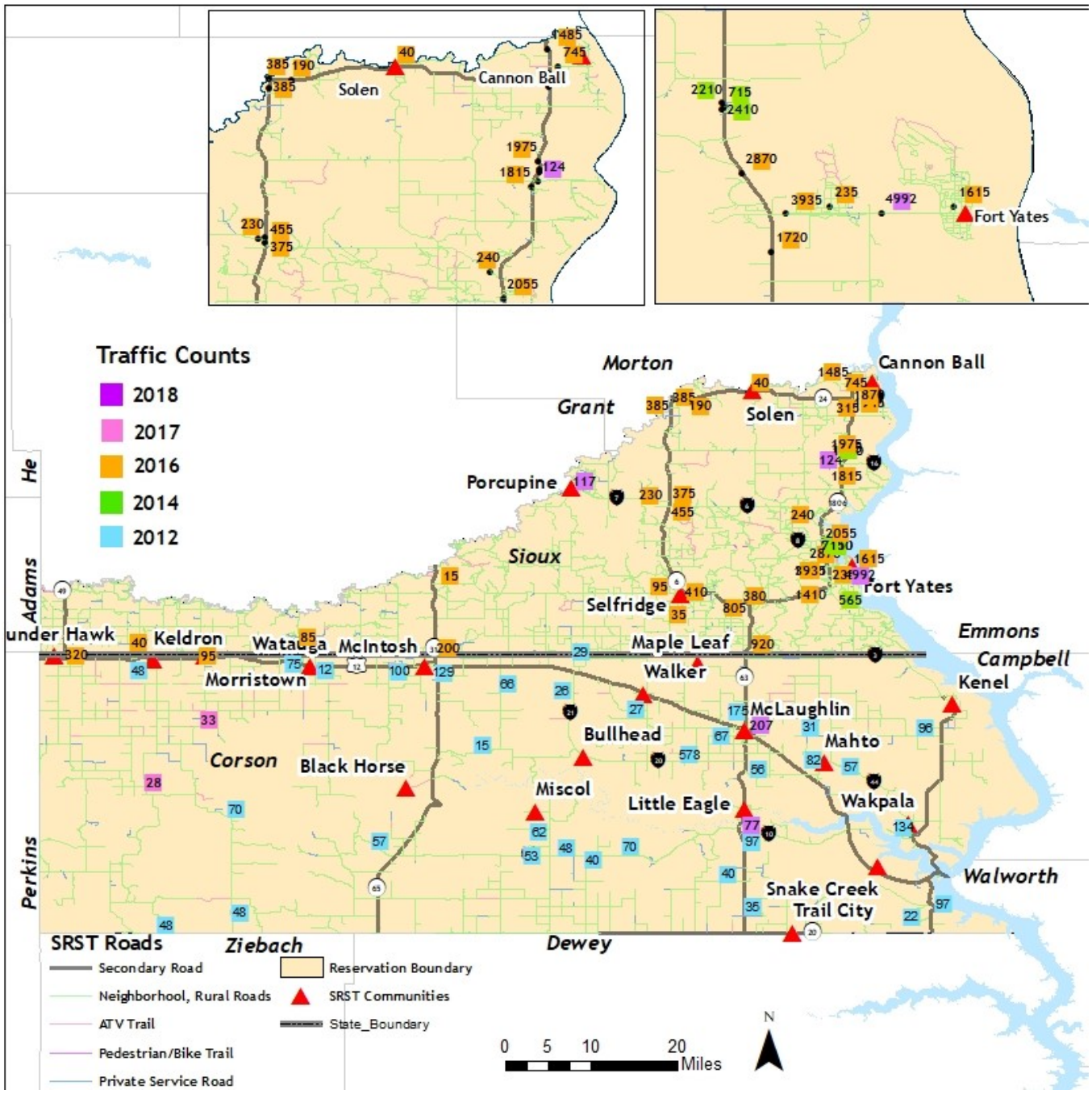
- Cannon Ball Civic Center Parking – Route 3000 Section 100
- Fort Yates BIA Parking – Route 3100 Sections 50, 60, 70
- Bullhead Civic Center Parking – Route 3500 Section 30
- Porcupine District Center Parking – Route 3600 Section 50

As the GIS mapping is not complete, there may be additional parking facilities in the inventory. If there is a potential desire to use TTP funding in the future for parking lot upgrades, these parking facilities would need to be confirmed or added to the RIFDS inventory first.

EXISTING AND PROJECTED TRAFFIC

Existing Average Daily Traffic (ADT) count data was obtained for ND and SD from the DOT websites. Traffic count data was supplemented by counts conducted in 2018 as part of this LRTP process Available ADT data by year is shown in Figure 3-23.

FIGURE 3-4 – Existing Average Daily Traffic



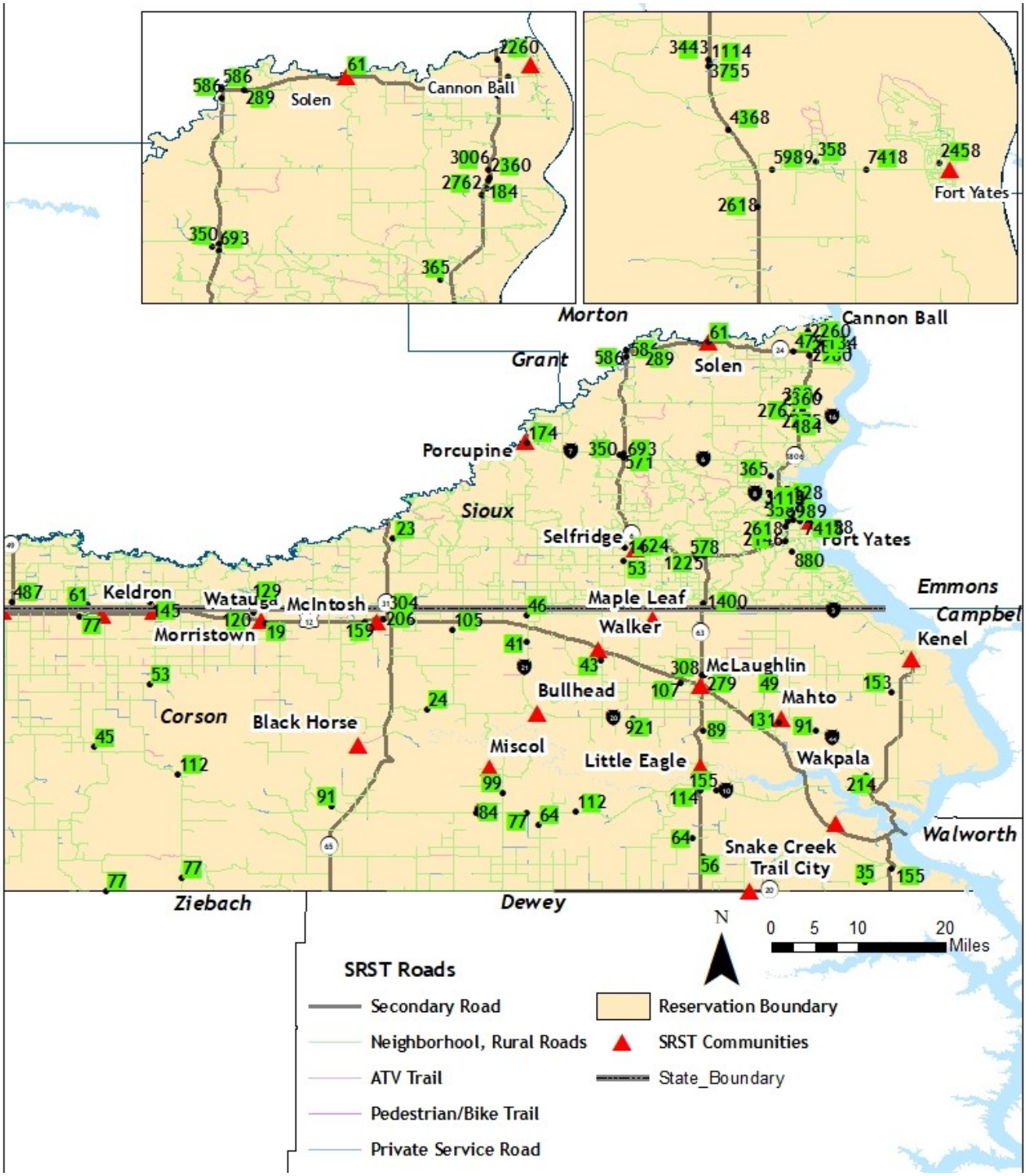
The busiest roads (over 1000 vehicles per day) and their heaviest measured ADT's are listed in Figure 3-5. All but two of the 15 highest traffic counts occurred on ND 1806.

FIGURE 3-5 – Highest SRST Traffic Locations

Route	Location	Vehicles/Day
ND 1806	0.25 mi S of BIA 31	1410
ND 1806	between casino entrances	1460
ND 1806	S of Cannon Ball bridge link	1485
ND 1806	1 mi N of BIA 16	1515
Proposal Avenue	N of Yates Street, Fort Yates	1615
ND 1806	0.5 mi S of BIA 31	1720
ND 1806	0.4 mi S of BIA 16	1815
ND 1806	0.5 mi N of ND 24 N leg intersection	1870
ND 1806	0.5 mi S of ND 24 N leg intersection	1945
ND 1806	1.5 m N of BIA 16, N casino entrance	1975
ND 1806	0.6 mi N of S leg BIA 12	2055
ND 1806	N of Family Dollar	2210
ND 1806	S of Family Dollar	2410
ND 1806	0.65 N of BIA 31	2870
BIA 31	Fort Yates Causeway	4992

A review of recent population growth suggests that traffic volumes on non-state corridors within the Reservation will stay relatively constant over time. The only expected appreciable increases in traffic will occur due to growth of through traffic on the state highway system or isolated growth associated with new developments. Figure 3-6 shows traffic volumes projected to the year 2045. Calculations were performed on known traffic counts with multipliers used by the SDDOT.

Figure 3-6 – Projected 2045 Traffic Counts



Projected traffic volumes suggest that the current two-lane facilities will provide adequate capacity over the next 20 years and beyond. Traffic conditions at some intersections may lead to the need for some additional turn lanes and modifications in traffic control. These needs should be evaluated on a case by case basis.

Most trips are generated by towns and subdivisions within the Reservation, although there are a significant number of pass through trips located primarily on the state and federal highway systems. Some of the highest trip generators within the Reservation include gas stations, stores and eating establishments, the two Tribal casinos, and schools.

ROAD CAPACITY AND TRAFFIC OPERATIONS

Roadway capacity and traffic operations work conjointly in providing mobility to the traveling public. The capacity of a roadway is governed by the number of through and turn lanes available and the types of traffic control being used. Traffic operations are also governed by traffic control, but other factors such as roadway geometrics, the level of access provided, and the presence of on-street parking can have a dramatic impact on traffic operations. Based on a review of existing daily traffic volumes on the major corridors, and considering projected growth, no traffic capacity issues exist or are expected to occur within the foreseeable future.

Given the extensive road system that exists, it is reasonable to assume that some localized roadway capacity and traffic operational issues exist. These should be addressed over time as each corridor and intersection is evaluated as part of future transportation project improvements.

SAFETY

This section analyzes crash and safety data extracted from the 2015 Tribal Transportation Plan for the years 2005 through 2013 and crash counts obtained from the NDDOT and the SDDOT for the years 2013-2017.

EXISTING CONDITIONS

The majority of crash and safety data and analysis was extracted from the 2015 Tribal Transportation Safety Plan (TTSP). From 2005 to 2013 there were 396 total crashes on the Standing Rock Sioux Reservation based upon an analysis done by the Wyoming Technology Transfer Center (WYT2/ LTAP). The traffic crashes in Corson County, SD and Sioux County, ND resulted in more than 40 fatalities and 170 injuries.

While there are many causes for these crashes, more than 40 percent are due to collisions with wildlife and other animals. Figure 3-7 illustrates the top crash causations.

In an effort to reduce fatalities and injuries and improve the overall safety of the transportation system on the Standing Rock Sioux Reservation, the SRST developed a Transportation Safety Management Plan in 2009. The plan identified a number of strategies to reduce injuries and deaths including establishing a Safety Committee, developing education and training programs, reviewing unsafe roadways and addressing driver behavior issues. The 2015 TTSP was an update of that Plan. Progress has been shown as overall crashes, injuries and fatalities reported to the state have declined from 2009, (see Figure 3-8) but there is uncertainty on the actual extent of the problem as Bureau of Indian Affairs (BIA) crash data is not included.

Figure 3-7 – Crash Causations 2005-2013

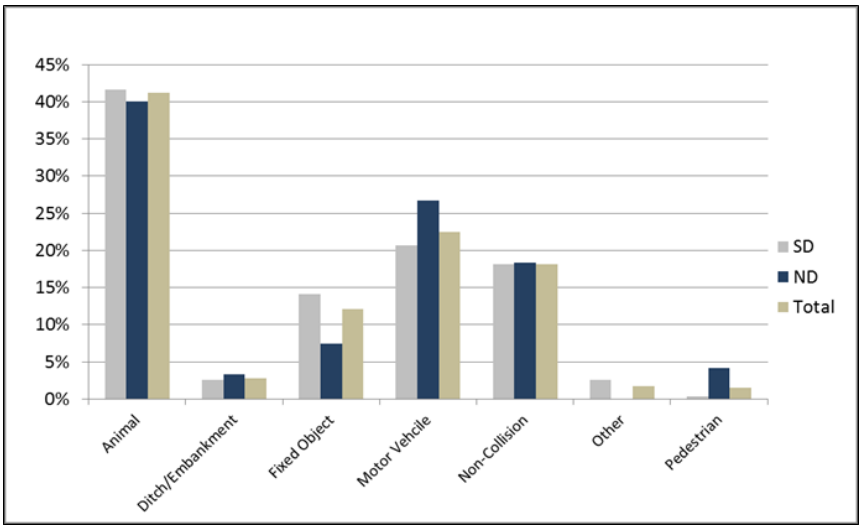
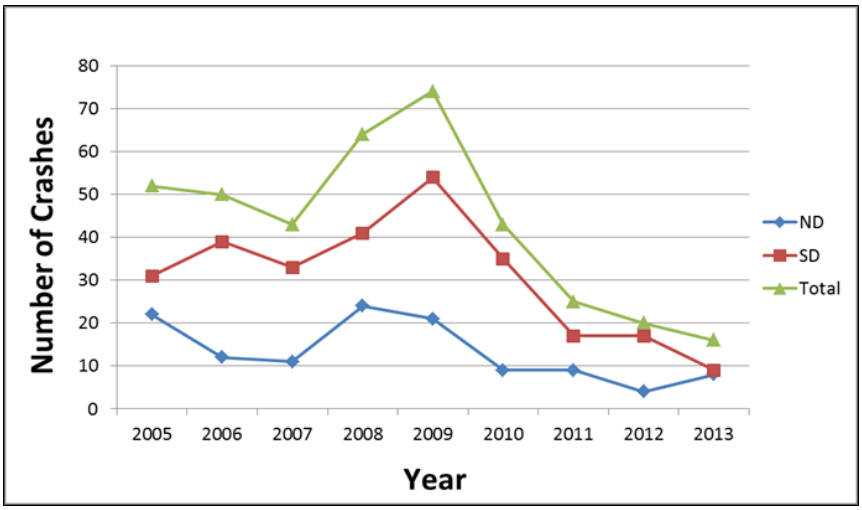


Figure 3-8 – Total Reservation Crashes 2005-2013



The 2015 (TTSP) gathered crash data from the states of North Dakota and South Dakota but did not have access to data from BIA law enforcement. The TTSP provided strategies and recommendations to improve education, enforcement, engineering, and emergency services conducive to meeting safety needs within the Reservation.

The TTSP identified transportation safety issues that are causing crashes, increasing crash severity, or restricting complete data analysis. These safety issues included:

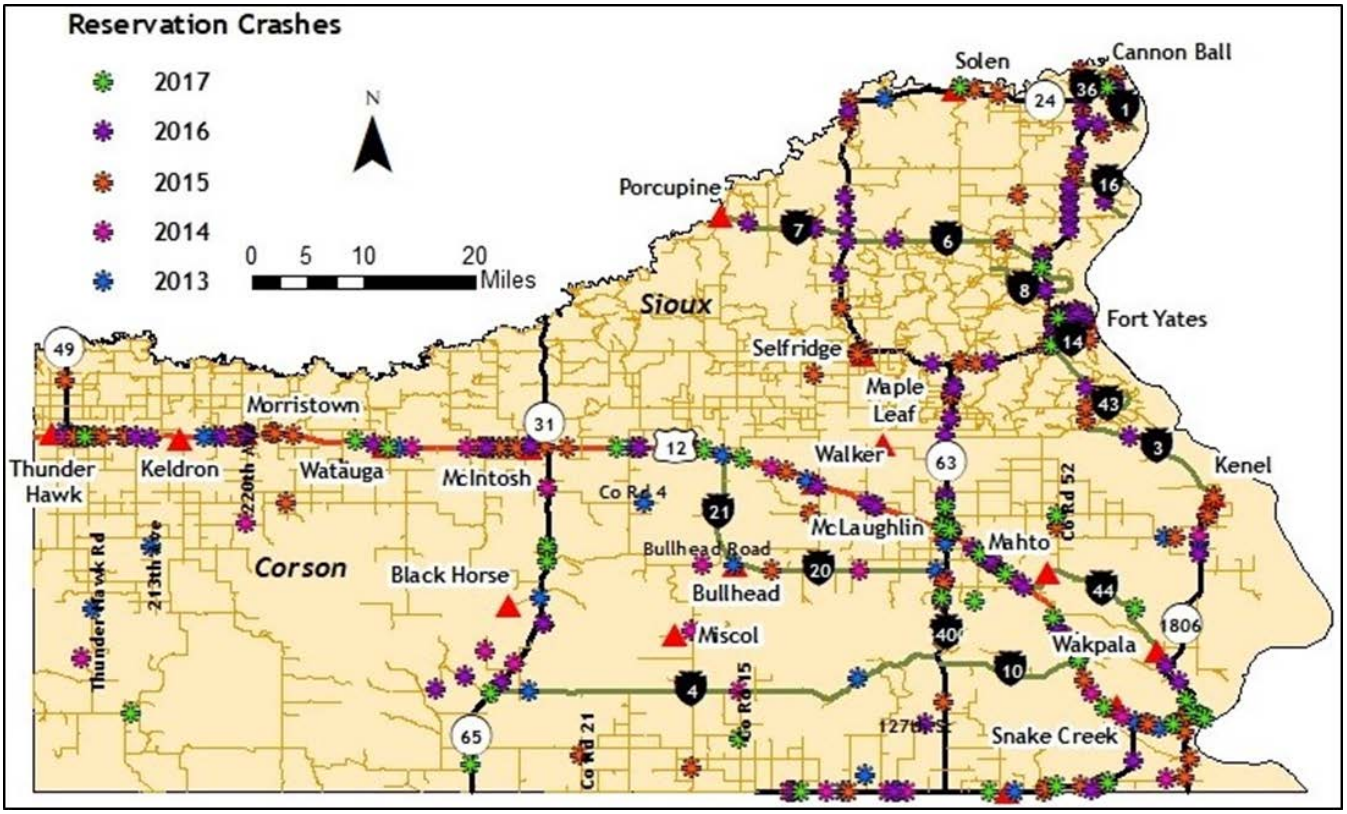
- Animal crashes
- Nighttime crashes
- Lack of seatbelt use
- Alcohol involvement
- Overturning/rollover crashes
- Fixed objects
- Departure from roadway
- Lack of data sharing

The TTSP identified other transportation safety issues based upon personal experience in dealing with transportation safety concerns in the local communities. These issues included:

- Communication/coordination - law enforcement
- Enforcement of traffic safety laws
- Road maintenance
- Texting and driving
- Large trucks and commercial vehicles
- Narrow road widths
- Low fines and sentencing in Tribal court
- Access to ND 24 for Emergency Medical Services (EMS)
- Lack of shared use paths
- Lack of crosswalks
- Speeding
- Lack of car seat technicians
- Weight limits on bridges
- Access into Fort Yates
- Car seat use
- Need for better delineation and markings

Capturing and analyzing crash data is an important component of a Tribal Safety Plan. It is used in the identification of safety issues on the road system and aids in the development of improvements. Most federal and state safety funding grants request crash data to support grant applications. Figure 3-9 plots crashes that occurred in the years 2013-2017. Crash data was obtained from the NDDOT and the South Dakota Department of Public Safety (SDDPS). Most crashes occurred along US 12, SD 63, ND 24 and ND 1806. Again, due to incomplete records sharing, this figure may not provide a complete depiction of crashes that have occurred on the Reservation.

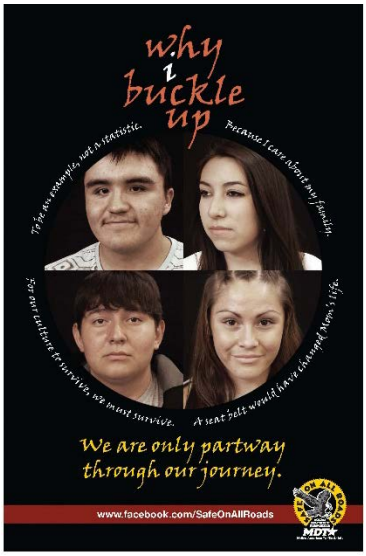
FIGURE 3-9 – Standing Rock Indian Reservation Crashes



RECOMMENDATIONS AND STRATEGIES

The 2015 TTSP offered numerous recommendations and strategies for improving transportation safety on the Reservation. These were prioritized around the 4Es of safety: education, enforcement, engineering and emergency response, and are outlined in the below bulleted list:

- Education
    - Develop a Reservation-Wide Transportation Safety Education Program: Funding was applied for and received for the purchase of materials to develop billboards, safety posters and brochures, and a Transportation Safety Booth to be used at various cultural events to promote transportation safety.



- Enforcement
    - Develop a Stronger Partnership with BIA/Tribal Law Enforcement: The Tribe has implemented a Primary Seat Belt Law on the Reservation.
    - Implement Electronic Crash Record System and Data Sharing: Funding has been received and software and hardware purchased. Implementation is under process.
    - Provide a Tribal Highway Safety Officer: The Tribe has funded and filled a position to serve as Transportation Safety Coordinator
    - Initiate Discussions on Use of Cross Jurisdictional Agreements: Corson County has worked with the Tribe to ticket non-Tribal members for traffic violations when pulled over by Tribal police.
- Engineering
    - Implement the North Dakota Department of Transportation (NDDOT) Highway Safety Improvement Program (HSIP)
    - Perform Road Safety Audits (RSAs): Funding has been received; this is an ongoing project.
    - Develop Shared Use Separated Paths: Funding was received for construction of shared use paths in Bullhead, SD and Porcupine, ND.
    - Develop Turning Lanes for Family Dollar Store
    - Develop Pedestrian and School Zone Markings and Lighting
    - Install Transverse Rumble Strips at Rural Intersections:
    - Participate in the Tribal Technical Assistance Program (TTAP)/WY LTAP Low-Cost Safety Improvement Project: This project has been completed.
- Emergency Management Systems
    - Improve 911 Addressing System
- Other
    - Establish a Standing Rock Safety Committee

The Tribe has five safety related projects in the current TTIP as shown in Figure 3-10. All except the reservation wide signing project came from the 2015 TTSP.

Figure 3-10 – TTIP Safety Projects

SRST SAFETY TTIP Projects				
		FY 2019	FY 2021	FY 2022
Project #	Project Description			
1	Reservation Wide Signing			$ 337,450.00
2	Turn Lanes - Dollar Store on ND 24	$ 20,000.00		
3	BIA 31 Widening		$ 405,000.00	
9	Bullhead Shared Use Path	$ 179,330.00		
14	Bear Soldier Shared Use Path Lighting	$ 20,000.00		

In addition to the recommendations from the TTSP, this plan includes suggestions from the 2015 LRSP, which identified at-risk locations and a list of low-cost safety strategies, prioritized by a comparison of documented risk factors. Since this report was commissioned by the NDDOT, it is limited to Sioux County, ND. Safety projects were suggested in the areas of roadway segments, intersections, and curves. These projects, as well as other safety-oriented projects, are designated long-range and should be completed as soon as funding becomes available. Figure 3-11 lists the long-range safety projects.

Figure 3-11 – SRST Long-Range Safety Projects

Project #	Project Location	Project Description	Project Type	Cost
4	Reservation Wide	Speed issues near schools, need better lighting	Lighting/Safety	$ 600,000.00
10	ND: Sioux County	Edge lines and rumble strips where prescribed in ND LSRP[1]	Safety	$ 191,000.00
11	ND: Sioux County	LRSP curve project[2]	Safety	$ 250,000.00
18	Cannon Ball Y-Intersection Improvement	BIA 16 Cannon Ball	Safety	$ 792,000.00
21	ND: Sioux Village W of Fort Yates	Street lights	Lighting/Safety	$ 800,000.00
25	ND: Sioux County	intersections[3]	Safety	$ 250,000.00
28	ND: Hwy 24	Safety improvement; guardrail, signs, chevron	Safety	$ 425,000.00
31	ND: ND 24, Solen Road	Dead Man's Curve	Safety	$ 1,800,000.00
32	ND: BIA 8, Stone Man Road	EMS	Safety	$ 236,500.00
37	SD: BIA 20, Bullhead	Safety improvement; add rumble strips	Safety	$ 100,000.00
39	SD: BIA 3 and 100th St Intersection	Add signs and chevrons and/or realign at 100th St	Safety	$ 25,000.00
41	SD: BIA 44	Add advisory speed plate, warning signs to curve	Safety	$ 25,000.00
44	SD: Hwy 12 at Grand River Casino	Add advisory speed plate, warning signs, flashers	Safety	$ 25,000.00
47	SD: BIA RT 30, Bear Soldier	Lighting bike trail from Bear Soldier to Mclaughlin	Lighting/safety	$ 152,000.00

1: a) ND 1806 from SD line to intersection w/ND 24; b) 71st St SW from intersection w/ND 1806 to intersection w/74th St SW; c) 84th St SW from intersection w/36th Ave SW to intersection w/ND 6; d) 85th St SW from intersection w/ND 6 to intersection w/ND 1806

2: 16 curves, chevrons, rumble strips and advance warning signs/speed advisory: a) ND 1806 from SD line to intersection w/ND 24 - 3 curves; b) 85th St SW from intersection w/ND 6 to intersection w/ND 1806 - 5 curves; c) 84th St SW from intersection w/36th Ave SW to intersection w/ND 6 - 4 curves; d) 71st St SW from intersection w/ ND 1806 to intersection w/74th St SW - 4 curves

3: BIA Route 3 (ND 1806) & ND 24; Northern School Entrance(Ft Yates) & ND 24/ND 1806; W Causeway Rd/Southern School Entrance(Ft Yates) & ND 24/ND 1806; BIA Route 6 & ND 24/ND 1806; Unnamed Road & S Big Lake Rd (Western); Unnamed Road & S Big Lake Rd (Eastern); 92nd St & ND 24/ND 1806; 92nd St/Yates St & Standing Rock Ave/S River Rd; BIA Route 6 & ND 6; BIA Route 7 & ND 6; Unnamed Road & ND 1806; Tatanka Iyotaka Dr & ND 24/ND 1806; 92nd St & Wolf Ave; S Big Lake Rd & Unnamed Road (Northern); 71st St/S Big Lake Rd & White Owl St; BIA Route 7 & Wiyohepeyata St W (Western); BIA Route 7 & Wiyohepeyata St W (Eastern); 92nd St & Coyote Ave; 92nd St & Bald Eagle Ave; Unnamed Road & 1st Ave; 92nd St & Buffalo Ave; 92nd St & Red Tail Hawk Ave; S Big Lake Rd & Weasel St

CHAPTER 4 - PUBLIC INVOLVEMENT

This section discusses the meetings and public input held and received during the LRTP process.

Kickoff Meeting

A kickoff meeting was held July 18, 2017 in Fort Yates, ND. The agenda covered the following main topics:

- Welcome and Introductions
- Review LRTP Process and Outline
- Existing Conditions
- Discuss Transportation Deficiencies
- Discuss Transportation Facility Needs
- Questions/Discussion of Process/other Items
- Wrap up and/or Site Visit to any Locations

Public Input Meeting

A public meeting was held April 26, 2018 at The Prairie Knights Casino and Lodge located on ND 24. An invitation to the meeting was mailed to Tribal Council members and posted in each community center to notify the public. The agenda for the meeting is outlined below:

9:00 am **Introductions and Purpose**

9:30 am **Overview of Tribal Transportation Programs**
- Legislation
- Regulations
- Funding

10:30 am **Break**

10:45 am **Long Range Transportation Plan Development**
- Current LRTP and Need for Update
- Existing Infrastructure
- Transportation System Goals
- Transportation System Needs

12:00 **Lunch Buffet Provided**

1:00 pm **Long Range Transportation Plan**
- Transit Needs
- Roadway Needs
  - Paved
  - Gravel
- Pedestrian Needs
- Oahe Crossing
- Short Term Projects

- Long Term Projects

2:30 pm **Break**

2:45 pm **Develop Transportation Improvement Program**

- Current Project Priorities
- New or Revised Project Priorities
- Funding Levels and Projections

4:30 pm **Adjourn**

PUBLIC INPUT RECEIVED – ISSUES AND NEEDS

During the April 26, 2018 public meeting, the following needs were identified by attendees:

- ND 24 should be widened at the Prairie Knights Casino and installation of exit signage
- Turn lanes at Dollar Store
- Curve at Cannon Ball and triangular intersection need to be fixed
- Entire Rock Creek housing subdivision unpaved
- Wakpala housing located on a hill; can't navigate road uphill during/after rain events because road is unpaved
- 1806 from Mobridge to Fort Yates needs to be widened and made 65 mph
- There is heavy truck traffic on some roads
- EMS personnel expressed safety concerns on the following routes:
    - Kenel to McLaughlin cut across (BIA 44)
    - Little Eagle cut across (BIA 10)
    - Stoneman road becomes easily wash boarded
    - "Dead Man's Curve" on ND Hwy 24
- All gravel roads need regravelling
- There is no binder in gravel and roads become quickly wash boarded
- It is sometimes necessary to haul gravel 90 miles on way
- The highway in Cannon Ball disappears during snow events and needs a snow fence
- The 3rd Street Manhole in Cannon Ball is frequently breaking and needs to be repaired/replaced
- There are areas in some housing developments that don't have streets or curb and gutter.
- Speed bumps by schools have been frequently requested
- The Ambulance base has been moved and is need of lighting and notification signs
- The slope at the end of BIA 16 (Marina Road) is steep, gravel, and used by many people

There were no specific comments or concerns received from the public.

After the final report was approved by the Council it was posted on the Tribe's website for 30 days to provide the public an opportunity to review and comment on the LRTP. No specific comment or concerns were received from the public.

CHAPTER 5 - EXISTING CONDITIONS & RECOMMENDATIONS

Chapter 3 of the report provided an inventory and analysis of data necessary to assess existing conditions for the transportation system. This chapter discusses the existing conditions of the transportation facilities found on the Reservation. This includes roadside elements, paved and non-paved roadways, freight and trucking, bridge, pedestrian and bicycle facilities, airport, transit, and utilities.

After a full assessment of present conditions, previously analyzed data, and public input, recommendations were formulated and are incorporated into this section.

ROADSIDE ELEMENTS

This section of the report provides a review of roadside elements which include traffic control, access conditions, on-street parking, and street lighting.

EXISTING CONDITIONS

Traffic Control

Road traffic control devices are signs, markers, or signaling devices utilized to control the flow of traffic, including pedestrians, bicyclists, and motor vehicles. Common traffic control devices and their applications are discussed in the following paragraphs.

The following list outlines common traffic control methods from the FHWA's Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 Edition.

- Traffic Signals - The MUTCD traffic signal standards include warrants for varying data thresholds ranging from pedestrian and vehicular volumes to crash frequency. Based on a review of the highest traffic volumes within the Reservation, no unsignalized intersections meet traffic signal warrants.

- All-Way Stop Control - The MUTCD includes All-Way Stop Control (AWSC) warrants based upon traffic volumes, motorist delay and crash frequency. The AWSC signs increase delay on major approaches by forcing vehicles to stop on the primary streets regardless of whether a vehicle is present on the minor approaches. Studies have found AWSC sites with great disparities between major and minor approach volumes typically experience high levels of traffic control noncompliance.

- Pedestrian Hybrid Beacons - A pedestrian hybrid beacon (PHB) is a special type of beacon used to warn and control traffic at an unsignalized location to assist pedestrians in crossing a street or highway at a marked crosswalk. This type of beacon is activated by

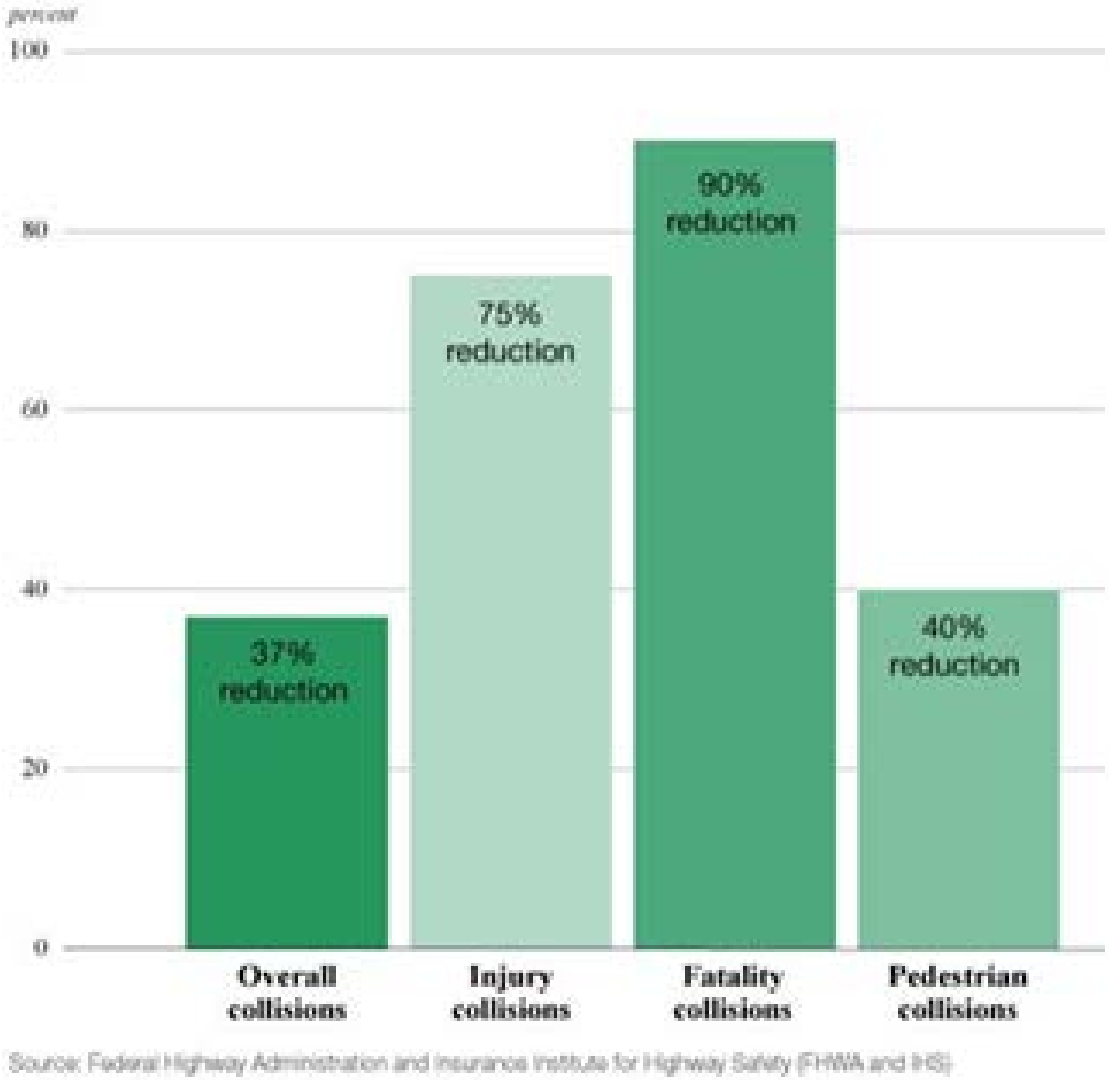
pedestrians when needed. MUTCD standards for this type of traffic control require consideration of vehicular traffic volumes, pedestrian crossing volumes and crosswalk lengths.

- Pedestrian Flashing Beacons - Flashing beacons may be used at pedestrian crosswalks to enhance pedestrian visibility and induce vehicle stoppages.

- Two-Way Stop Control - The MUTCD guidance for Two-Way Stop Control (TWSC) installation is based upon either traffic volume thresholds, sight distance limitations or crash frequency thresholds.

- Roundabouts - There are currently no roundabouts in the study area. Roundabouts are a traffic control measure that offers potential traffic operational benefits when implemented at the proper location. Roundabouts also offer the following safety benefits:
  - Roundabouts have fewer vehicular conflict points in comparison to conventional intersections. The potential for high-severity conflicts, such as right angle and left-turn head-on crashes, is greatly reduced with roundabout use.
  - Low speeds generally associated with roundabouts allow drivers more time to react to potential conflicts, also helping to improve the safety performance of roundabouts. Low vehicle speeds help reduce crash severity, making fatalities and serious injuries for vehicles and pedestrians uncommon at roundabouts.
  - Pedestrians need only cross one direction of traffic at a time at each approach as they traverse roundabouts (i.e., crossing in two stages) as compared with the existing intersections, reducing exposure and delay by reducing vehicular gap requirements.
  - Roundabouts can reduce the number of crashes at an intersection in comparison to traffic signal use. The expected reductions are shown in Figure 5-1.

Figure 5-1- Collisions Reduction with Roundabouts

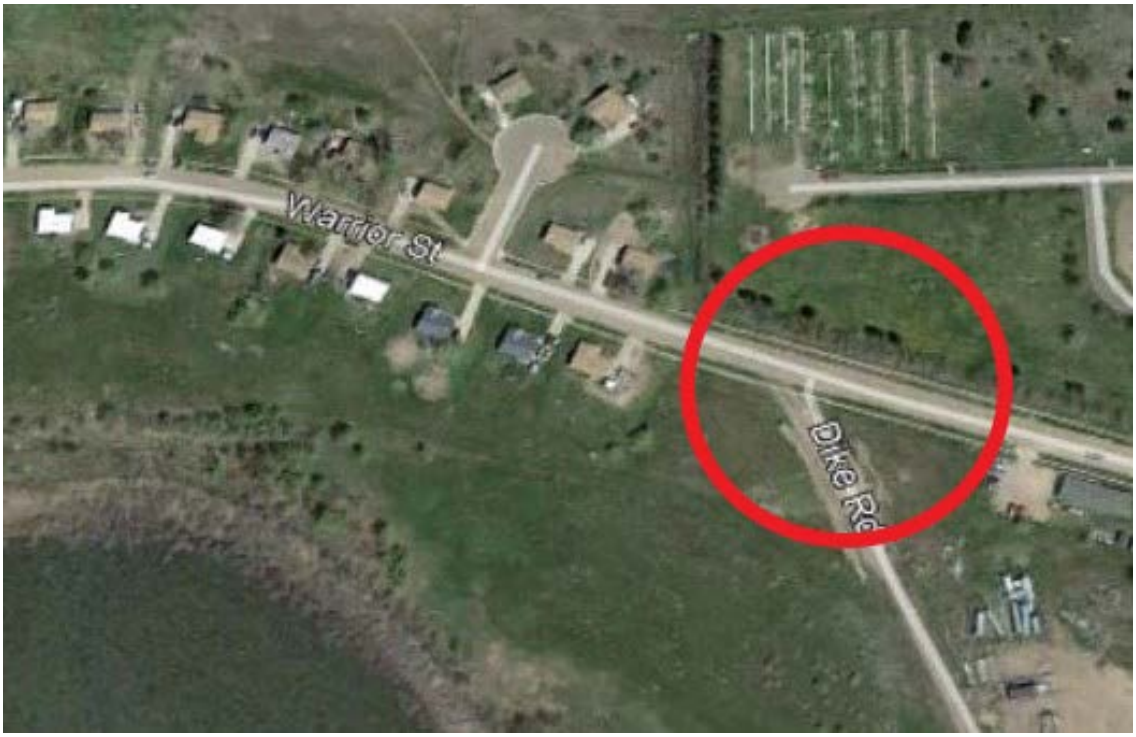


Source: Federal Highway Administration and Insurance Institute for Highway Safety (FHWA and IHS)

Access Conditions

High levels of access exist along various highway and street segments within the Standing Rock Sioux Indian Reservation. Studies have shown that this increases the potential for crashes. An example of a poor access condition is a skewed intersection, such as the one shown in Figure 5-2 in Fort Yates. Better access for hunting, fishing, tourism, and development would be beneficial in many locations throughout the Reservation.

Figure 5-2 – Skewed Intersection: Fort Yates



On-Street Parking

Parking is an essential complement to transportation systems and land development. Although many businesses and residents have off-street parking, some of them rely on abutting on-street parking.

A high volume of on-street parking maneuvers can impede traffic progression as parking vehicles block through traffic. These parking maneuvers also impact safety, particularly where diagonally parked cars back out into the through traffic stream. On-street parking also reduces the space available for sidewalks, landscaping, and other amenities. This photo showing on-street parking is from the intersection of Yates Street and Agency Avenue in Fort Yates.

Street Lighting

A formal review of existing lighting was not undertaken as part of the LRTP. However, there is a need for improved lighting in towns and subdivisions, at busy intersections, and along existing and future sidewalks and shared use paths in areas throughout the Reservation.

RECOMMENDATIONS

Traffic Control

A formal engineering study of traffic conditions and pedestrian and location characteristics was not conducted as part of the LRTP. The following recommendations are based on traffic and crash data obtained from the NDDOT and SDDOT websites, observations made during the LRTP process, and information from SRST's TTSP and LRSP, both written in 2015.

- Pedestrian Flashing Beacons – This type of beacon is popularly requested due to the belief that it will motivate vehicle drivers to slow down. Due to construction, maintenance, and operating costs, installation of this control should only be completed after a traffic study has been conducted.

- There are currently no roundabouts in the study area. Because of the reduced collisions and safety benefits offered by roundabouts, and the high pedestrian traffic generated on the Reservation, it is recommended that the Tribe considers this measure for future construction at any location having a high level of traffic and identified safety concerns. There has been a cluster of crashes at the intersection of BIA 36 and ND 1806 in Cannon Ball, for example, and this location may be a good candidate for a roundabout.

Access Conditions

Access Conditions - Efforts should be taken to reduce access in locations where it is excessive when possible. The planning phase of a new road project is the best time to consider how access can efficiently and safely be provided. New development plans should also be carefully reviewed to determine whether planned access will interfere with safety or mobility along an adjacent highway.

Where undesirable access conditions exist, access management strategies should be implemented. Access management is a set of techniques used to control access on streets and highways. It is typically focused on functionally classified collector and arterial roads. Access management techniques generally reduce the number of accesses or increase the spacing between accesses onto major thoroughfares. They can also include aligning offset intersections.

On-street Parking

Provision of on-street parking within the Reservation should be evaluated on a case by case basis. On-street parking is expensive to build and maintain. It increases the width of a street, potentially reducing the safety for pedestrian crossings, and reduces space that could be used for sidewalks, landscaping, and other amenities. Wherever on-street parking is underutilized, consideration should be given to phasing it out over time.

Street Lighting

It is recommended that the SRST conduct a study to identify the types and locations for street lighting needed throughout the Reservation, and that lighting improvements be prioritized and completed as funding becomes available.

PAVED ROADS

This section of the report examines the existing conditions of paved roads prevalent within the Reservation.

EXISTING CONDITIONS

The Standing Rock Sioux Tribe is responsible for maintaining 220 miles of roadway, of which 109 miles are paved roads. These consist almost entirely of 2-lane asphalt roads. Funding levels have not allowed for extensive regular overlays, reconstruction, seal coats, and other maintenance.

The ND and SD DOT's are responsible for the maintenance of State and United States highways within the Reservation. Routine maintenance of the highway system includes:

- Snow removal
- Annual crack sealing and patching
- Culvert repair
- Shoulder grading
- Weed spraying
- Guard rail repair
- Mowing

In 2018, the SDDOT entered into an agreement to design, contract and construct new and upgraded signing and delineation along all paved roads within the Reservation. Gravel road signing will be addressed in a follow-up project.

Having a proactive maintenance strategy in place will maximize design life and help prevent the necessity of higher-cost reconstruction versus more moderately priced repairs. Images of paved roadway conditions found on the Standing Rock Indian Reservation are shown in Figure 5-3

Figure 5-3 - Paved Roadway Conditions

PAVEMENT SURFACE EVALUATION AND RATING (PASER)

Roadway surface types and conditions are a significant concern on the Reservation. The paved highways within the Reservation cover the entire range of good to poor condition. The condition of paved streets, both in towns and in subdivisions, also vary from good to poor condition. Most of the TTIP funds the SRST spends go to maintaining, rehabilitating, or reconstructing the paved BIA roads. PASER ratings were performed in 2017 to assist the SRST in identifying paved roadway conditions and prioritizing improvements based on a range of factors including roughness (ride), surface distress (condition), surface skid characteristics, and structural characteristics (potholes, cracking, etc.). Based on the PASER rating, different maintenance tasks are needed to maintain or raise the rating for each roadway. By continuing to ensure that a good roadway remains a good roadway, the life of a roadway can be extended for a far lower upfront cost than by waiting until a more intensive maintenance method is required.

To determine the PASER rating of each segment of roadway, each mile of paved BIA road was driven, visually inspected, and given a rating of between 1 and 10 based on engineering principals. Factors such as the amount of cracking, potholes, rutting, shoulder condition, ability

to drive at full speed, and the presence of gravel were all considered in rating the road segments.

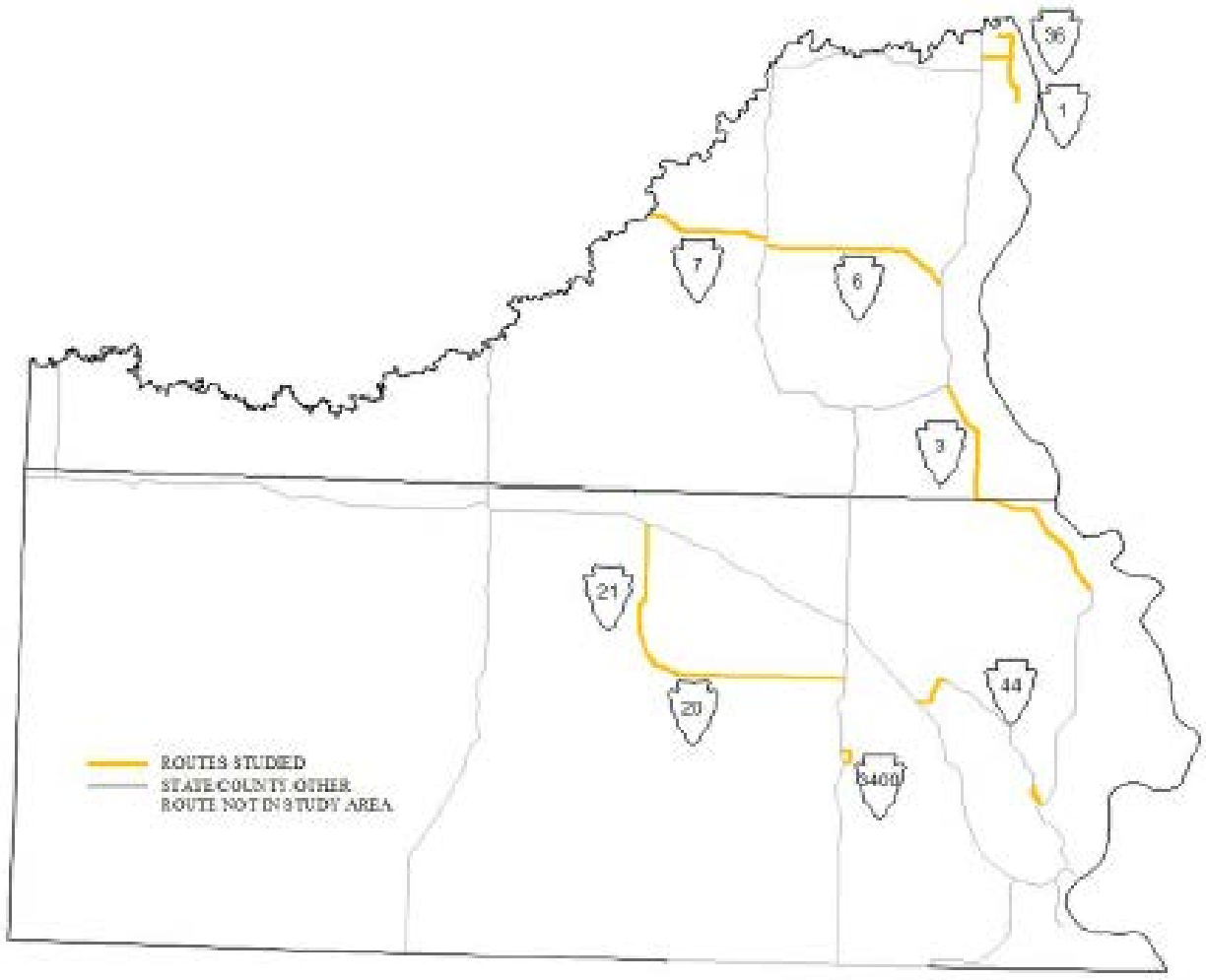
The properties of each road were measured using the first one hundred feet of each mile. Instances of shorter segments were also noted if conditions differed suddenly. For example, while driving down BIA Route 3400 the pavement condition was much worse at mile marker 1.2 near Little Eagle than it was at the northwest end. Consistency was important in the rating. Each of the rating values was defined and kept consistent throughout the PASER rating process. For example, severe cracking on a roadway rated it as a five and each instance of severe cracking was rated as a five consistently.

Two separate reports were generated from the PASER study, one for rural roads and one for urban roads.

Rural Roads

The study was focused on assessing the current condition of the main highways around the Reservation and developing a maintenance strategy to improve and repair the roadways. Tribal officials identified nine main and minor routes, consisting of approximately 83 miles of 2-lane paved highway to be evaluated. Each mile of the 83 miles in the study area was driven and rated in April 2017. Not all paved roads were to be evaluated; urban streets were studied and reported separately. Figure 5-4 displays in orange the Standing Rock Tribally and BIA-owned roadways evaluated.

Figure 5-4 – Paved Rural Roads Evaluated



PASER Rating of 1:

There were no roadways in the study area with a PASER rating 1. If there were, however, it would essentially be a gravel road, and the Tribe would have to determine if a full reconstruction is needed or if it is to remain gravel.

PASER Rating of 2:

This rating indicates heavy gravel patches on failed asphalt with limited pavement intact. No striping exists and shoulders are deteriorated. This road cannot be traveled safely at the posted speed limit. Drivers need to slow down. Example: none in the study area.

PASER Rating of 3:

Roads with a PASER rating of 3 are in poor condition and demonstrate severe cracking and rutting with moderate visible potholes. There is heavy patching including newer patches placed over older patching. There is limited striping and shoulders are deteriorated. Areas are marked with flags. This road cannot be traveled safely at the posted speed limit. Drivers need to slow down. Example: BIA Route 44, two miles south of Mahto, SD.

PASER Rating of 4

This is also a poor rating. Roads characteristics include heavy cracking and rutting with moderately visible potholes. There is heavy patching including newer patches placed over older patching. There is limited striping and shoulders are deteriorated. Cracks are not sealed. The entire road is undrivable at the posted speed limit. Drivers need to slow down in areas. Example: BIA Route 3400, south of Little Eagle, SD.

PASER Rating of 5:

This rating indicates roads in fair condition, with moderate to heavy cracking and moderate rutting. There is moderate patching with some new on old patches and limited striping. Cracks are mostly not sealed. It is safe to travel this road at the posted speed limit. Example: BIA Route 1, south of Cannon Ball, ND.

PASER Rating of 6:

Roads with a PASER Rating of 6 will show light signs of aging and are in fair condition. Moderate to heavy cracking or some raveling and rutting exists. There may be moderate polishing with occasional patches visible. Cracks are mostly sealed. Example: BIA Route 7 near Porcupine, ND.

PASER Rating of 7:

This rating suggests roads in good condition with some cracking but no raveling and little rutting. No patches are visible. Cracks are sealed. This roadway is not in need of immediate repair. Example: BIA Route 20, near Bullhead, SD

PASER Rating of 8:

No immediate maintenance is required on roadways with a PASER rating of 8. There is no cracking, raveling or rutting present, and no patches or sealed cracks are visible. Example: BIA Route 3, near Kenel, SD.

PASER Rating of 9:

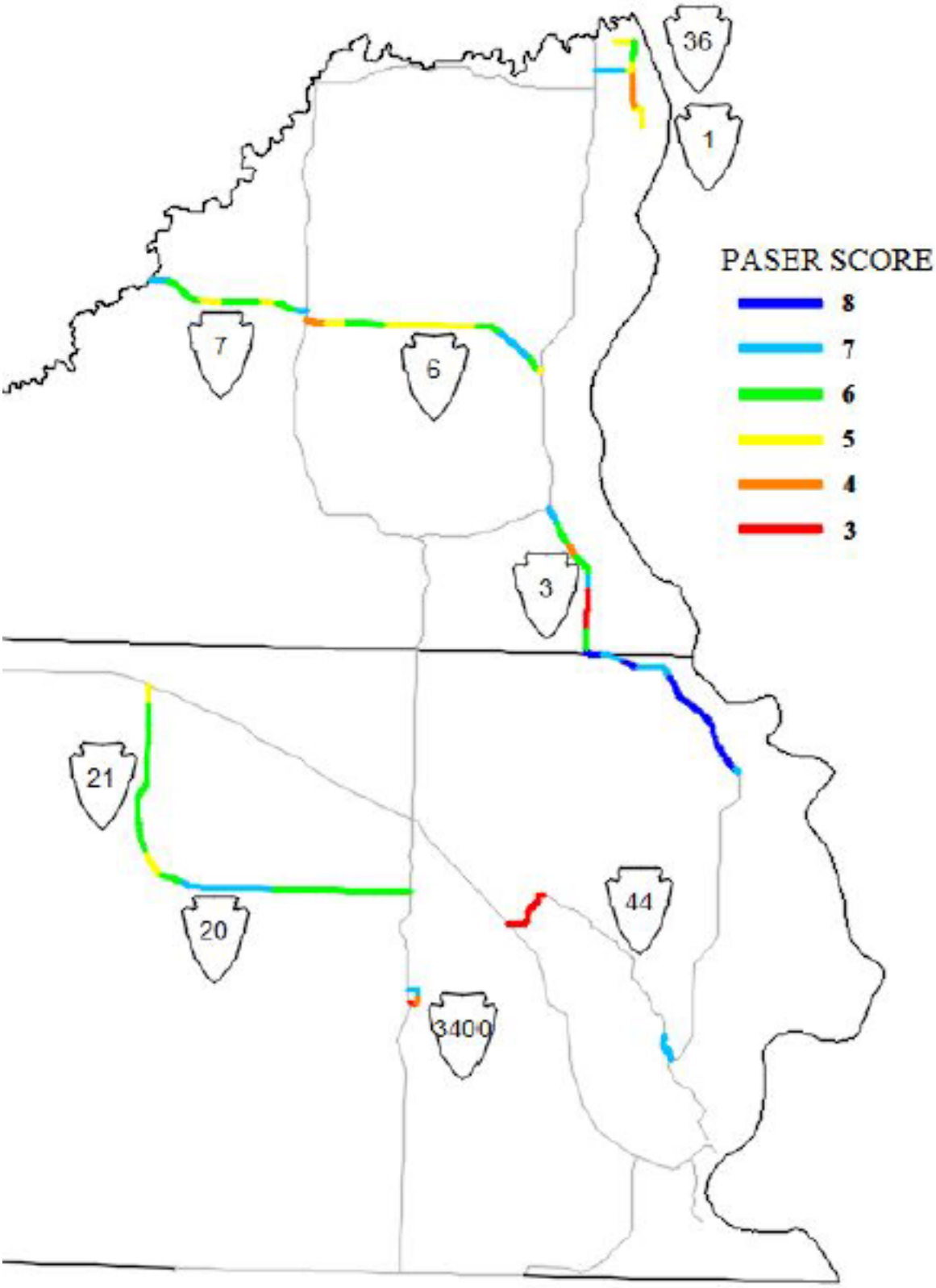
These roads will be in excellent condition. This will be a relatively new road with new striping, or a roadway that was reconstructed or overlaid recently. Example: None in the study area.

PASER Rating of 10:

This roadway was recently completed and considered in perfect condition with appropriate striping and shoulders. Example: None in the study area.

Every one-mile segment of highway was given a PASER score and the results were mapped. Figure 5-5 is a map that displays the PASER ratings in a color-coded system. Blue indicates the highest values or best conditions with red and black being the lowest values or worst conditions found in the study area.

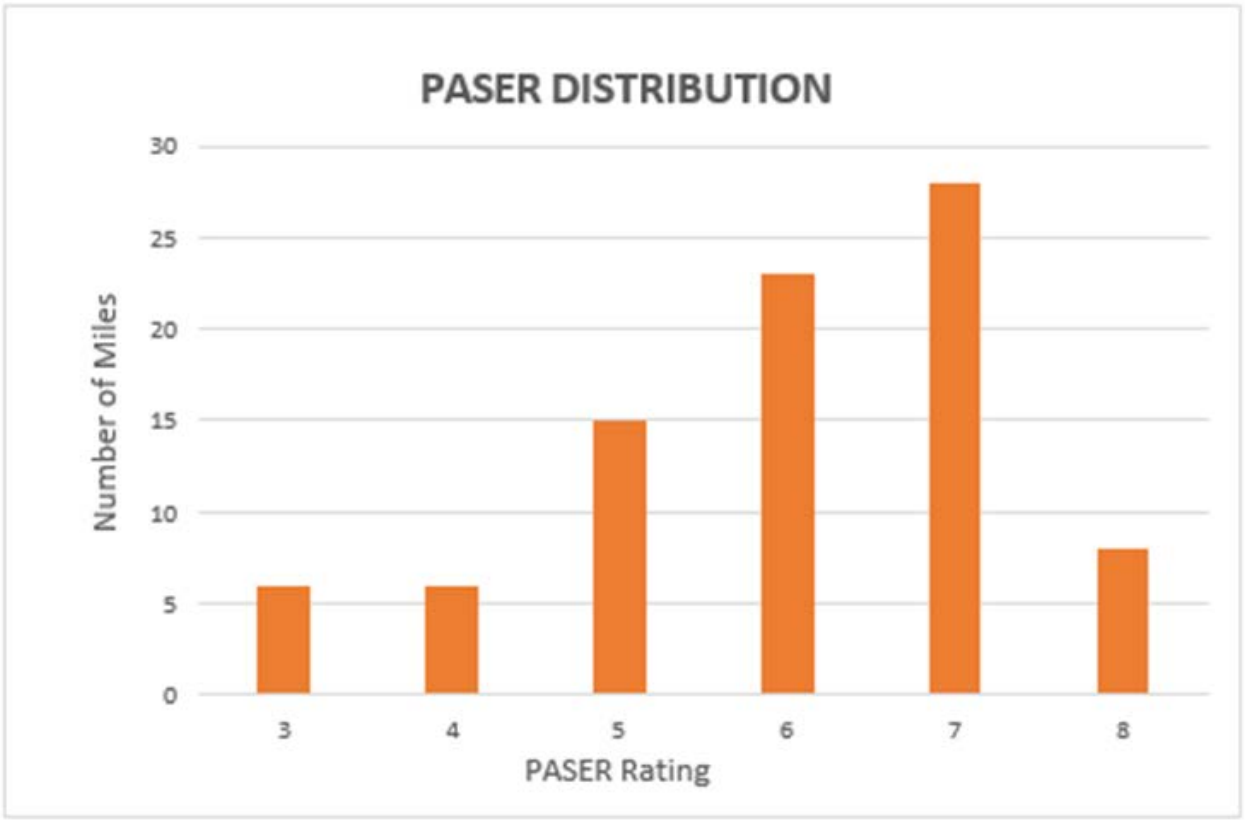
Figure 5-5 – Rural PASER Scores



Approximately 83 miles of Tribal/BIA roadway were assigned PASER ratings throughout the course of the study. The average (mean) rating for the studied roadways was 5.99. That number may not signify much, but it does indicate that the Standing Rock highways scored tend to be in fair to good condition.

If a rating of five is to be considered the minimum acceptable pavement condition (roads that can be traveled at posted speed limit) then 86% of scored roads meet that standard today. This is visualized in Figure 5-5 as it indicates there are more miles of orange, green, and blue than there are of red and black. There were 4 miles of roads rated an eight or nine. These miles in great or excellent condition were short intermittent segments along the southern half of BIA 3 near Kenel, SD. The ratings per mile are broken down in Figure 5-6.

Figure 5-6 – Rural PASER Score Distribution

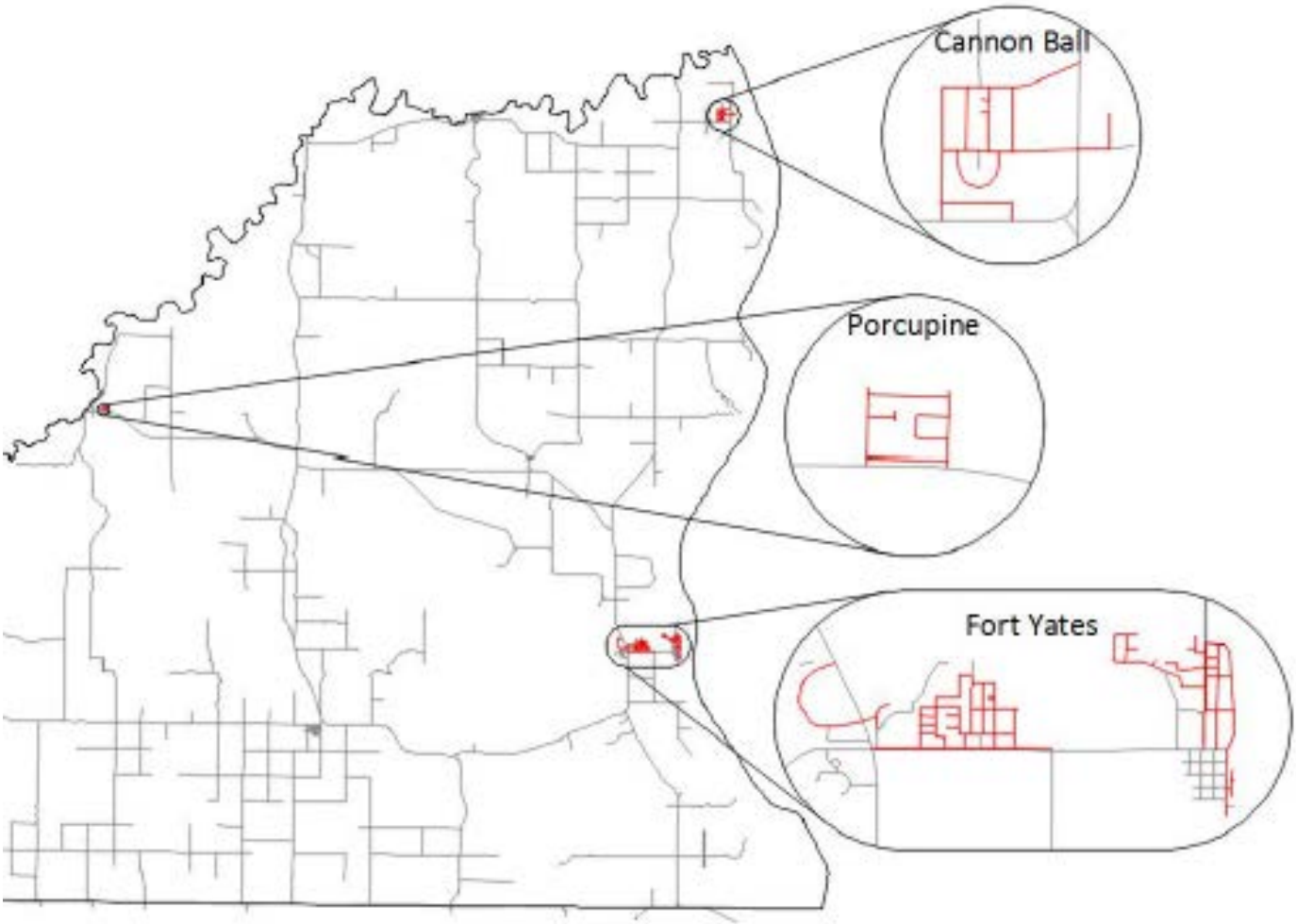


Urban Roads

Of the 220 miles of roadway for which the Standing Rock Sioux Tribe is responsible, 22 miles are included in the PASER study of urban roads on the Reservation. Like the rural road study, these consist almost entirely of 2-lane asphalt roads. The rating methodology for this study was the same as for the rural roads with the exception that rather than the process used on rural highways where a 100-foot sample segment was rated per every mile of roadway, the urban streets were rated along the entire length of the roadway.

Tribal officials identified housing streets, streets near schools, shared use paths, and several other heavily travelled areas, consisting of approximately 22 miles of pavement of varying widths to be evaluated. Not all paved roads were to be evaluated; very few city-owned streets were studied, and all routes included in the Rural Pavement Management Program (PMP) were excluded. Figures 5-7 and 5-8 highlight the roadways that were evaluated on the Standing Rock Reservation in the study.

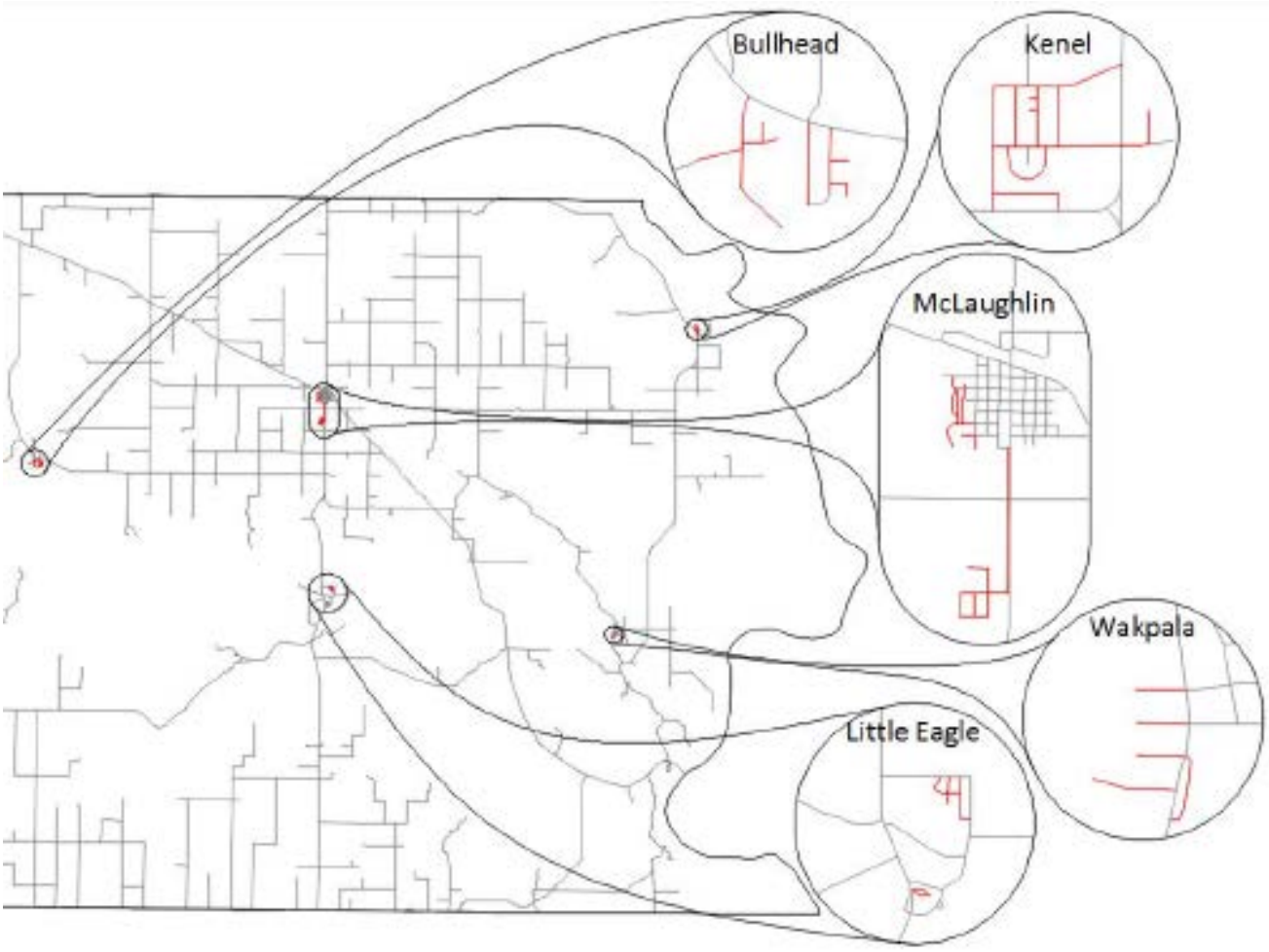
Figure 5-7 – Paved Urban Roads Evaluated – Sioux County



Paved Sioux County Urban Roads Mileage Summary

- The community of Cannon Ball had 3.14 miles of streets included in the study. Local roadways that were omitted from this study were included in the Rural PMP Report.
- The community of Porcupine had 0.92 miles of streets included in the study.
- The town of Fort Yates and surrounding areas had 9.54 miles of streets and 3.26 miles of pedestrian pathway included in the study. The Causeway and many city streets were excluded from the study.

Figure 5-8 – Paved Urban Roads Evaluated – Corson County



Paved Corson County Urban Roads Mileage Summary

- The community of Bullhead had 1.64 miles of paved streets in the study area.
- The community of Kenel had 1.00 miles of paved streets in the study area.
- The town of McLaughlin had 2.37 miles of paved streets and 0.75 miles of pedestrian pathway in the study area. Most city streets in McLaughlin were excluded from the study.
- The community of Wakpala had 0.56 miles of paved streets in the study area.
- The community of Little Eagle had 1.05 miles of paved streets in the study area.

Local roadways that were excluded from the urban study have been included in the rural study. The PASER ratings were explained in the Rural PMP. For the Urban PMP, there were no roadways with the following PASER ratings:

- Rating 1
- Rating 2
- Rating 9
- Rating 10

PASER rating 3 example: One mile S of McLaughlin at All Nations – SD Hwy 63 intersection

PASER rating 4 example: 1st Avenue in Cannonball

PASER rating 5 example: Cedar Avenue one mile S of McLaughlin, SD

PASER rating 6 example: Wolf Street in Fort Yates, ND

PASER rating 7 example: Rain in the Face Avenue in Bullhead, SD.

PASER rating 8 example: Wiyohiyampta Street in Porcupine, ND

Every segment of roadway and shared use path was given a PASER score and the results were mapped. Figures 5-9 and 5-10 are maps that display the PASER ratings using the same color-coded system described in the rural section of the PMP.

Figure 5-9 – Urban PASER Scores – Sioux County

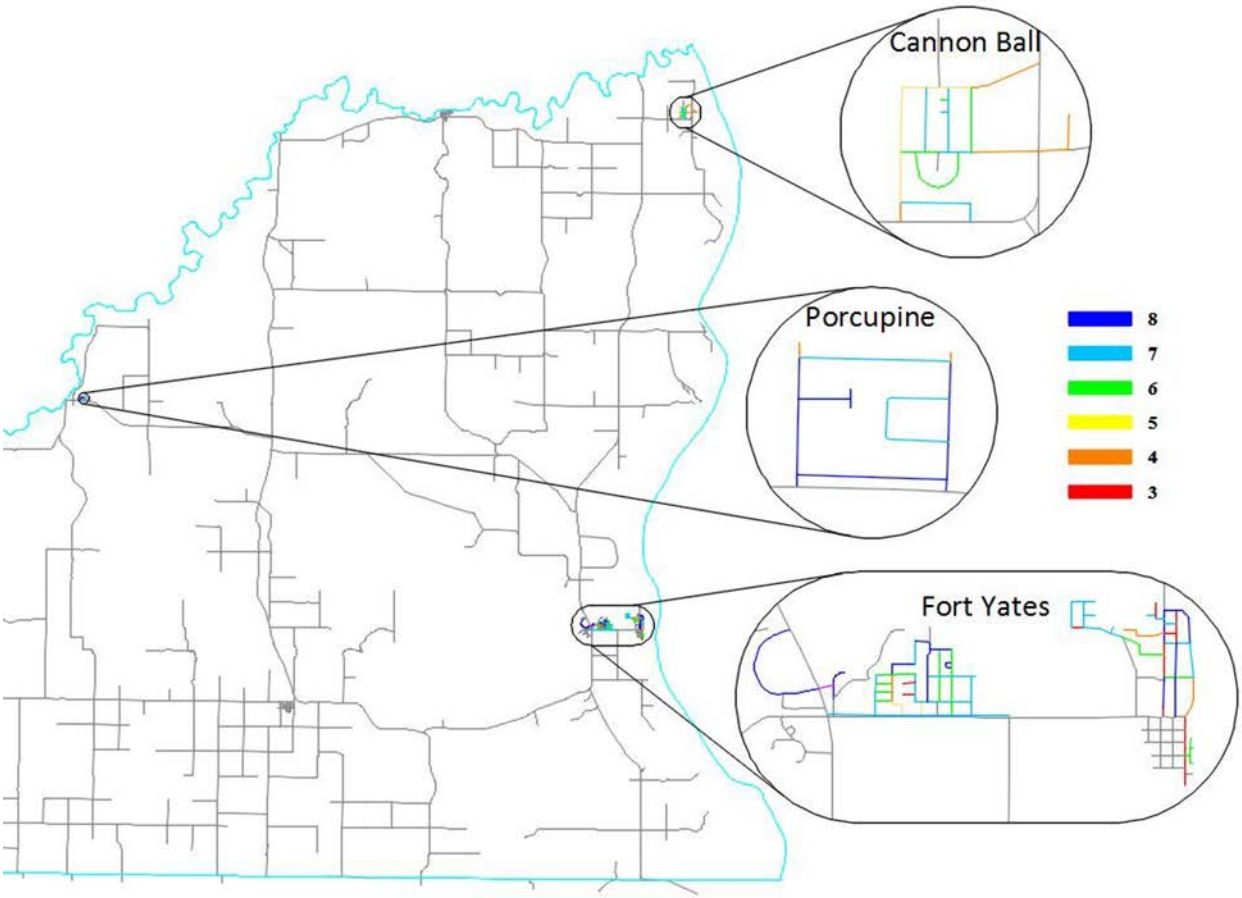
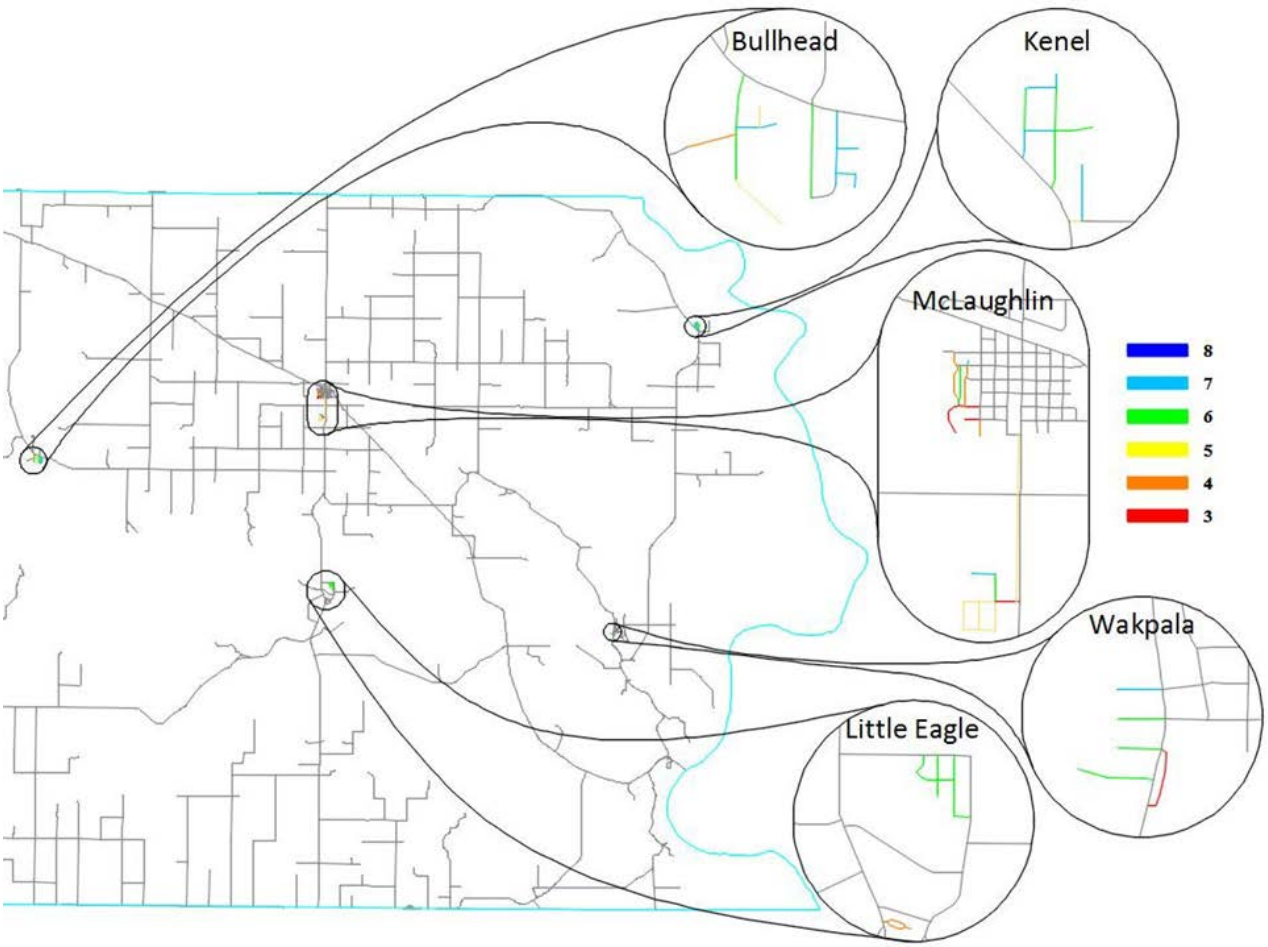
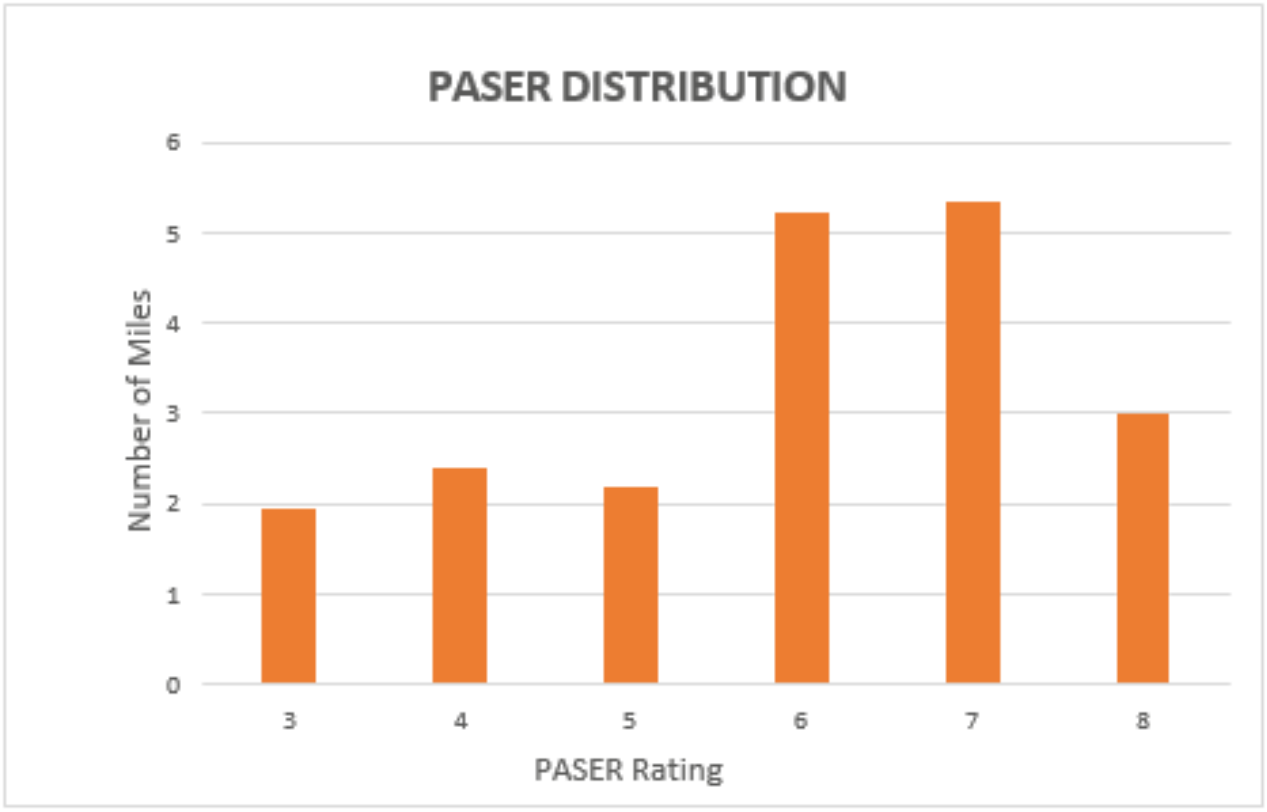


Figure 5-10 – Urban PASER Scores – Corson County



The number of road miles per PASER rating are broken down and illustrated in Figure 5-11.

Figure 5-11 – Urban PASER Distribution



RECOMMENDATIONS

Costs for maintenance and new construction may vary within SRST borders. Approximate contracted out costs for major maintenance tasks on the Reservation are listed in Figure 5-12. It is very important for future planning to keep track of all maintenance costs (crack sealing, seal coats, etc.), no matter how minor the task. Tracking costs allows for an accurate pavement management plan throughout the Reservation and will enable more accurate programming, scheduling, and budgeting.

Figure 5-12 – Average Costs of Improvements

Improvement Type	Cost per Mile*
Reconstruction	$ 1,700.000.00
Structural Overlay	$ 500,000.00
Non-structural Overlay	$ 275,000.00
Chip Seal	$ 35,000.00

*Costs include TERO fees, engineering design and construction observation. Crack seals should be performed before chip seals and non-structural overlays.

The expected design life of transportation facilities is estimated as follows:

- Bridges and concrete culverts: 50-100 years
- Asphalt pavements and bike paths: 20 years
- Gravel roadways: 3 to 7 years (prior to re-graveling)
- Signs: 10 years
- Pavement markings: 1 to 3 years for paint

This section focuses on the strategies and projects needed to maintain and improve upon the existing paved roads for which the SRST is responsible. The primary source for information in this chapter came from the FHWA's Pavement Preservation Compendium, Strategic Planning for Pavement Preventive Maintenance, documenting the Michigan Department of Transportation's "Mix of Fixes" Program. The following three strategies and projects are recommended:

- Continue Pavement Management Program (PMP)
- Establish a Schedule for Pavement Preservation and Maintenance
- Undertake Short and Long Range Paving Projects

Continue Pavement Management Program

Pavement management is the methodical planning and repair of paved roadways in order to optimize pavement conditions over the entire transportation system. A good pavement management plan includes a periodic evaluation of highway pavements. On a paved highway system, conditions are typically rated on metrics like distress, ride quality, friction, and rutting.

As mentioned earlier in this Plan, this evaluation was accomplished with a PASER rating system. This detailed data was used to determine an ideal strategy to keep the pavement on the Reservation in good condition. It is also recommended that SRST reevaluate the paved roads sometime in the year 2022 or 2023 so that the data is available for an updated LRTP in 2024 as recommended by 25 CFR Part 70.

In conducting the evaluation, it is not as easy as simply looking at the lower scoring roads and saying that they are in the worst conditions; therefore, have the most need. Other factors such as traffic volume, truck traffic, roadway safety, maintenance history, level of service needed, connections, and other elements should be considered. KLJ considered road conditions and daily traffic to establish a level of relative need to prioritize projects for recommendation.

Establish a Schedule for Pavement Preservation and Maintenance

Pavement preservation is performed to keep the transportation system facilities in good condition. Common asphalt pavement preservation efforts include crack sealing, chip seal coats, and non-structural overlays.

The pavement preservation program is designed to provide the public with safe, smooth, and well-maintained roads by applying cost-effective treatments to correct minor pavement deficiencies before the problems become major. This is a departure from the more traditional practice of reactive maintenance and expensive reconstruction. Prioritizing pavement preservation over reconstruction saves money in the long-term.

Asphalt pavements with a moderate stress load will have generally have a 20-year life cycle. Using this life cycle duration, asphalt overlays would ideally be completed every 15 years to minimize pavement deterioration that would require costly reconstruction to rehabilitate. However, on SRST local roads where truck travel is uncommon, useful pavement life may extend beyond 20 years if maintained with timely crack filling and seal coats.

There are 109 miles of asphalt BIA and Tribal roads on the Reservation. Using a 20-year life cycle, a suggested schedule has been created as shown in Figure 5-13. The values for the years 2019-2023 came from the current TTIP. The remaining miles of roadway were then divided over the remaining 15 years, resulting in a rotating schedule that covers all asphalt paved roads for a 20 year life cycle.

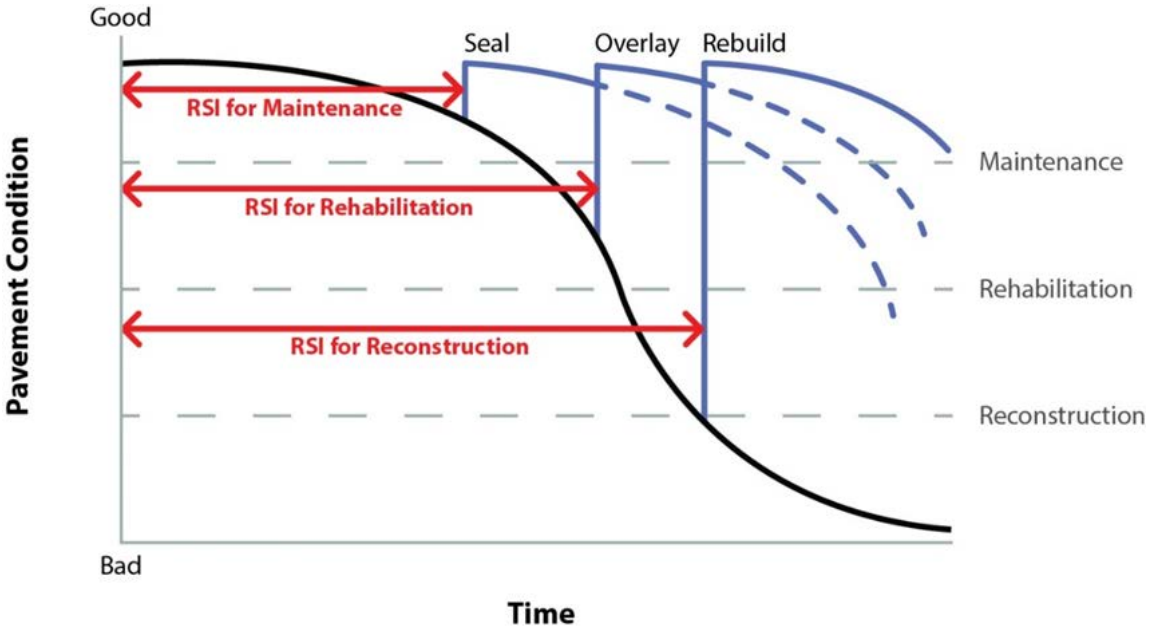
FIGURE 5-13 - 20 Year Pavement Preservation Plan – update

Standing Rock DOT 20 Year Pavement Preservation Plan			
Year	**Miles Crack Sealing**	**Miles Seal Coat**	**Miles Nonstructural Overlay**
2019-2023	26.0	27.9	25.7
2024-2028	83.0	81.1	27.8
2029-2033	54.5	54.5 (~yr 2031)	27.8
2034-3038	54.5	54.5 (~yr 2036)	27.7

This schedule allows for all 109 miles of asphalt to be crack sealed every 10 years, seal coats applied approximately every seven years, and a nonstructural overlay every 20 years. By following a schedule of improvements, SRST will prolong roadway life and reduce premature failure. This will be economically beneficial to the Tribe, who may then decide to allocate more of their transportation budget to maintaining and improving the gravel road system. Any paved roads that may be constructed or added to RIFDS inventory during this 20-year cycle will need to be added to the rotation as applicable.

Preventive maintenance can extend pavement life by using short-term treatments. Benefits can be maximized by applying treatments to roads while they are still mostly in good condition. Figure 5-14 represents longer asphalt life over time when preventative measures are utilized appropriately.

FIGURE 5-14 – Life-extending Benefit of Preventative Maintenance



Undertake Short Range Paving Projects

There are paving projects in the current TTIP shown in Figure 5-15, scheduled to be completed or started by 2023.

Figure 5-15 – TTIP Paving Projects

SRST - TTIP Paving Projects - Fiscal Years 2019-2023						
		FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Project #	Project Description					
3	BIA 31 Widening			$ 405,000.00		
6	Bullhead East & Surfacing	$ 250,000.00		$ 250,000.00		
11	BIA 6 Resurfacing to ND 6 East			$ 1,500,000.00	$ 1,500,000.00	
12	BIA 3 Resurfacing to State Line South					$ 2,000,000.00
13	BIA 3400 - Little Eagle South Loop	$ 900,000.00				

Several projects were identified during the process development of SRST's current PMP. They have been incorporated into both the short range (TTIP) and long range project lists. Figures 5-16 and 5-17 are tables listing the rural and urban PMP paving projects respectively. The "Status" column shows if the project is completed, and if not, where the project is located within this Plan.

Figure 5-16 – PMP Rural Priority Paving Projects

Number	Status	Route	Length (Miles)	Average PASER Rating	Treatment Type	Estimated Cost (2016 Dollars)
1	Project Completed	3	2.0	3.0	Structural overlay	$ 675,000.00
2	Project Completed	3	5.5	5.5	Chip Seal	$ 65,000.00
3	Project Completed	6	8.0	6.0	Chip Seal	$ 286,000.00
4	Project Completed	1	2.0	5.33	Chip Seal	$ 65,000.00
5	TTIP #13 - 2019	3400	1.0	3.0	Structural Overlay	$ 395,000.00
6	Project Completed	21	1.0	5	Non-Structural Overlay	$ 195,000.00
7	Project Completed	21	10.1	5.9	Chip Seal	$ 295,750.00
8	Project Completed	36	2.1	5.33	Non-Structural Overlay	$ 409,500.00
9	Project Completed	1	2.9	5.5	Non-Structural Overlay	$ 565,500.00
10	LR #2	6	8.0	5.1	Non-Structural Overlay	$ 1,560,000.00
11	LR #3	6	5.3	6.2	Chip Seal	$ 172,250.00

Figure 5-17 – PMP Urban Priority Paving Projects

Number	Status	Community	Total Length (miles)	Average Paser Rating	Treatment Type	Estimated Cost (2017 Dollars)
1	LR #15	Fort Yates	0.76	3.8	Reconstruction	$ 606,515.00
2	LR #2	Fort Yates	0.94	4.2	Repave Utility Trenches	$ 187,386.00
3	LR #2	McLaughlin	0.84	5.0	Non-Structural Overlay	$ 168,333.00
4	LR #36	McLaughlin	0.88	4.5	Reconstruction	$ 701,515.00
5	LR #27	Cannon Ball	0.69	5.0	Non-Structural Overlay	$ 137,121.00
6	LR #2	Cannon Ball	0.79	4.0	Structural Overlay	$ 316,742.00
7	LR #36	Wakpala	0.13	3.0	Reconstruction	$ 105,303.00
8	LR #2	Little Eagle	0.25	4.0	Non-Structural Overlay	$ 49,811.00
9	LR #2	Bullhead	0.28	5.0	Non-Structural Overlay	$ 56,061.00

Undertake Long Range Paving Projects

Long range projects are those which the Tribe has identified as transportation improvement needs and that they desire to have completed, but do not yet have available or anticipated funding required to achieve. Figure 5-18 is a list of paving projects to be completed as funding becomes available.

Figure 5-18- Paving Projects Beyond the TTIP

Project Number	Project Title	Project Location	Project Description	Cost
2	NTTFI ROUTES: PAVEMENT PRESERVATION OVERLAYS	Reservation Wide	Structural/nonstructural asphalt overlays	$ 40,500,000.00
3	NTTFI ROUTES: PAVEMENT PRESERVATION CHIP SEAL	Reservation Wide	Chip seals	$ 2,632,500.00
5	NEW DISTRICT HOUSING	Reservation Wide	New construction: streets, curb&gutter, sidewalks, drainage	$ 17,500,000.00
6	1806 FORT YATES TO MOBRIDGE	ND/SD BIA 3	Reconstruction	$ 49,320,000.00
7	BIA 16 MARINA ROAD	BIA 16	Reconstruction	$ 4,212,000.00
12	FORT YATES POST OFFICE ROAD	BIA 3104 Fort Yates	Asphalt rehabiliatation	$ 450,000.00
14	BIA 1	Cannon Ball	Asphalt rehabiliatation on 3.35 mi paved portion	$ 4,020,000.00
16	BIA 36 – CANNON BALL ACCESS ROAD	Cannon Ball	Reconstruction	$ 5,400,000.00
20	3rd Ave - Cannon Ball	Cannon Ball	Manhole repair	$ 50,000.00
26	ND 24 / 1806 FORT YATES TO MANDAN	ND	NDDOT, road widening, curve flattening	$ 71,640,000.00
27	EXISTING ND COMMUNITY STREET IMPROVEMENTS	ND: Cannon Ball, Porcupine, Fort Yates	asphalt overlays, chip seals, reconstruction	$ 7,313,920.45
34	BIA 6 & BIA 7	ND	Full depth reconstruction on BIA 6, moderate overlay on BIA 7	$ 19,764,000.00
35	YOUTH RANCH ROAD	ND between Cannon Ball and Fort Yates	Resurfacing with reconstruction on vertical curve	$ 636,000.00
36	EXISTING SOUTH DAKOTA COMMUNITY STREETS IMPROVEMENT	SD: Bullhead, Kenel, Little Eagle, McLaughlin, Wakpala	Asphalt overlays, chip seals, reconstruction	$ 3,404,166.67
45	McLAUGHLIN CUTACROSS	Corson County Rt 3110	Asphalt overlay	$ 5,350,000.00
51	GAME & FISH PROGRAM ROAD	Fort Yates	Regrade base, asphalt pavement	$ 250,000.00
54	EXISTING SD COMMUNITY STREETS UPGRADE	SD: Bullhead, Little Eagle, Wakpala	Extend sidewalks, C&G, paved surfaces in new housing	$ 735,000.00
55	BIA PARKING	ND: Fort Yates	Pave parking lot, sidewalks, C&G, striping	$ 209,527.00

NON-PAVED ROADS

This section of the report examines the existing conditions of non-paved roads prevalent within the Reservation.

EXISTING CONDITIONS

There is limited documentation available regarding the condition of non-paved roadway surfaces within the Reservation. Non-paved roadway conditions have a high degree of variability throughout the Reservation.

There are approximately 110 miles of gravel roads on the Reservation that fall under the jurisdiction of the Tribe or BIA. County, township, and city-owned roads account for approximately 1000 more miles of gravel roads throughout the reservation, and maintenance for these roads is the responsibility of the applicable jurisdiction. Issues with non-paved roadways include narrowness, limited or no surface aggregate, poor cross section, lack of proper ditches and drainage, rutting, and dust. There are also areas within the Reservation with wash boarding and excessive rutting caused by school buses and trucks. Pictures of non-paved roadway surface conditions prevalent on the Standing Rock Indian Reservation roads are shown in Figure 5-19.

SRST has a maintenance budget of $250,000.00 each for North Dakota and South Dakota from which non-paved roadway maintenance activities are paid. Current maintenance practices include blading, adding gravel, mowing, and snow removal.

FIGURE 5-19 – Non-Paved Roadway Types and Conditions

RECOMMENDATIONS

Recommendations for non-paved roadways include provision of suitable roadway materials and surface treatments, as well as the implementation of improvements through gravel rehabilitation and maintenance programs.

There are many resources available that provide guidance on good maintenance practices for gravel roads. This report referred to the FHWA Gravel Roads Construction & Maintenance Guide published August 2015, and the SD LTAP Gravel Roads Maintenance and Design Manual published November 2000.

Surface and Base Materials

Most people understand the importance of using a skilled grader operator to perform gravel maintenance and rehabilitation, and the operator often receives the blame when problems arise. However, the source of problems with gravel road maintenance and rehabilitation is often the material that is used. Therefore, it is extremely important to use good quality aggregate that is appropriate for each project.

The SRST owns and operates Standing Rock Sand and Gravel and has access to good gravel sources. The Tribe purchases aggregate from itself when needed for road maintenance or rehabilitation and has identified the need for all gravel roads on the Reservation to be re-graveled. There is a Tribally-owned crusher and the Tribe intends to produce the gravel needed by the roads in each community. Performing this type of operation would be beneficial as it

would provide material for local gravel roads while utilizing the quality aggregate sources found throughout the Reservation.

Surface Treatments

Surface treatments can be applied to reduce dust and to stabilize loose surface gravel. Magnesium chloride is a chemical effective in dust control, with a cost of about $8,000 per mile for the first treatment and $5,000 per mile for additional treatments. These treatments need to be applied once or twice a year, depending on conditions, to be effective. However, dust control is typically only applied where road dust issues result in air quality issues adjacent to residences.

Gravel Rehabilitation

Some existing gravel roads need significant effort to improve them to function as a quality gravel road. When the gravel surfacing needs to be removed and the subgrade needs to be improved, and changes to the ditch cross section are needed, a gravel rehabilitation project should be planned.

This type of work falls well beyond the typical gravel maintenance project and is therefore more expensive. However, without proper drainage and a good cross section, addition of gravel will do little to fix the problem. Gravel rehabilitation may also be used as an interim step towards future paving.

Before/after gravel rehabilitation. Image source: Ken Skorseth, Program Manager, SDLTAP; used with permission

Maintenance

Effective roadway maintenance techniques are outlined in the USDOT Gravel Roads Maintenance and Design Manual. Non-paved roadways will perform better if they are maintained with a 4 percent crown. Improper grading can remove valuable surface materials and grading must account for intersecting roads and driveways, as well as other site conditions.

Training may be recommended for road grader operators to improve their ability to maintain various non-paved road surfaces and to respond to varying conditions.

The ability for roadway shoulders and ditches to keep the surface and subgrade free from water and ice is also important. Mowing operations should be included in the annual maintenance budget. Ditch in slopes should be mowed. This will also improve visibility, resulting in improved safety. Whenever possible, ditches should be provided to allow good drainage to occur and to provide additional snow storage.

Ditch improvements should be considered along roadways where drainage issues exist. The FHWA Gravel Roads Construction & Maintenance Guide published August 2015, reports that a survey of operators in the State of Iowa indicated mowing the shoulders on gravel roads ranked as one of four primary functions needed to maintain a good gravel road. Keeping proper shape, drainage, and straight cutting edges were the others.

Conversion of primitive roads to gravel roads is desirable wherever practical and as funding allows. Top priority should be given to roads with higher usage. Funding can also be set aside annually to upgrade equipment to bolster the gravel maintenance program.

Gravel Project Priorities

There are no short-range gravel projects in the 5-year TTIP. Long range gravel projects are listed in Figure 5-20. Project #14 is a combination paving/gravel resurfacing project to be performed in phases. Some of these projects were identified as needs quite some time ago and should be constructed as funding becomes available.

Figure 5-20 – Long Range Gravel Surfacing Maintenance Project Priorities

Project #	Project Location	Project Description	Project Type	Cost
8	ND: BIA 22 Eagle Rd	2.5 mi gravel roadway needs surfacing	surfacing	$ 500,000.00
9	ND: BIA 12 Lonesome Arrow Loop	3.8 mi gravel roadway needs surfacing	Gravel surfacing	$ 191,000.00
14	ND: BIA 1 Cannon Ball	2.7 mi gravel portion of roadway needs resurfacing	Gravel resurfacing	$ 4,020,000.00
32	ND: BIA 8 – Stone Man Road	4.7 mi gravel roadway needs surfacing	Gravel surfacing and stabilization	$ 236,500.00
35	ND: Youth Ranch Road	Design and construction; gravel, widening, fix steep grade at end of road	Gravel reconstruction/ surfacing	$ 636,000.00
40	SD: BIA 4	Pulverize 4 mi of existing asphalt; resurface entirety through multi-phase project	Gravel surfacing	$ 1,495,000.00
52	SD: BIA 10 - Little Eagle Cutacross Road	9.7 mi gravel roadway needs surfacing	Gravel surfacing and stabilization	$ 640,000.00
53	SD: BIA 44	12.8 mi gravel roadway needs rehab as future needs dictate	Gravel rehabilitation	$ 640,000.00

FREIGHT AND TRUCKING

EXISTING CONDITIONS

Freight is defined as goods transported by truck, train, ship, or aircraft. The efficient movement of goods is a central element for growth in jobs and a strong economy, both of which are important to the Tribe. Since there are no railway facilities on the Reservation, and the Standing Rock Airport is not typically used for hauling freight, trucking is the only means of freight movement within the Reservation.

Truck traffic data is available on the US and State Highway systems. Data from the NDDOT provided specific count location values. The highest counts where along ND 1806 in the Fort Yates area. The SDDOT provides annual average daily truck traffic data, with counts averaged along an entire roadway. The highest average was along US 12, with average daily volumes in the range of 100-249 trucks. The state highways (63, 65, and 1806) all had volumes of under 100 trucks per day. Truck

volume data on the rest of the Reservation road system was unavailable.

Concerns have been raised regarding trucks exceeding the load limits. While this occurs Reservation-wide, the Tribe has identified three roads in particular where trucking has caused damage:

- BIA 3 (1806), Kenel to Fort Yates; the Mobridge livestock market and ranching traffic have contributed to roadway damage that extends to Bismarck.
- BIA 6 and 7; the Tribe estimates that 25 trucks a day traveled these routes to avoid the state weigh station during the summer of 2017.
- BIA 10 south of Little Eagle.

The hauling of hazardous materials is also a potential issue associated with hauling of freight. According to the 2016 SRST Multi-Hazard Mitigation Plan, the closest hazardous materials response unit is in Bismarck, ND.

RECOMMENDATIONS

Heavy loads carried by trucks cause much greater damage to roads than passenger vehicles, and the heavier the load, the more the damage increases exponentially. Heavy loads exacerbate rutting and accelerate fatigue cracking, which can lead to potholes, and cause corrugation (wash boarding) on gravel roads.

This impact can be minimized if load limits are established and enforced. Portable scales can be used to monitor travel by trucks exceeding the load limits, and to assist in levying fines. It would be beneficial for the SRST to consider development of ordinances, policies and procedures aimed to reduce the activity of excessively loaded trucks on Reservation roads, and inclusion in the Tribal code would be necessary for enforcement.

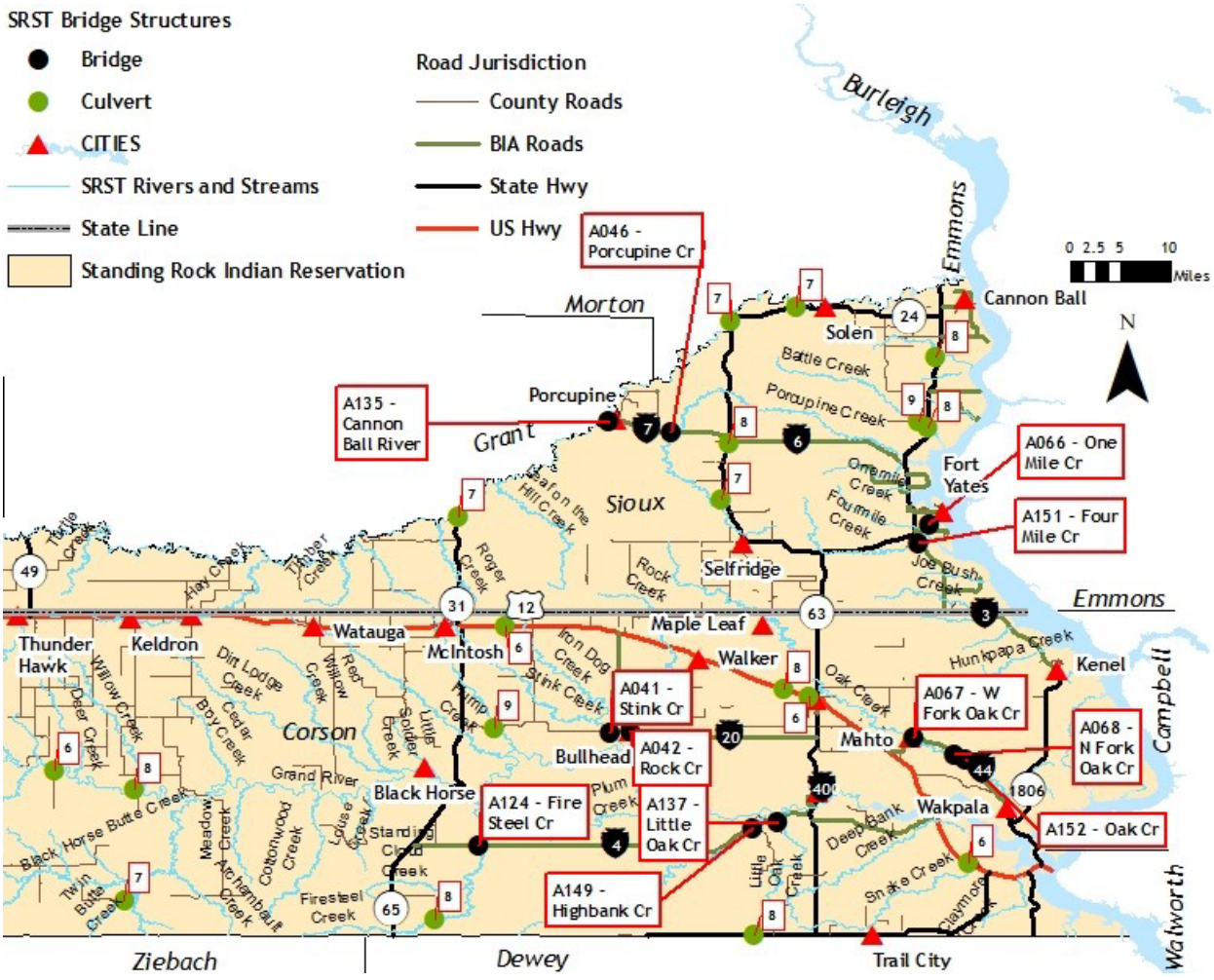
The hauling of hazardous materials is a potential issue associated with the hauling of freight. Emergency planning should address the potential for hazardous spills and their impacts on access and safety. Planning should also propose possible responses to potential spills.

Future policies could include requiring hauling permits and levying fines for all overweight vehicles that use BIA and Tribal roads. Ideally, contractors and major businesses would be held responsible for damage to any haul roads on the Reservation.

EXISTING CONDITIONS

According to the National Bridge Inventory, there are 41 bridges located on the Reservation. Twelve of these are BIA or Tribally owned, with the remaining bridges falling under the jurisdiction of County and Township or State. Figure 5-21 shows the locations of bridges and culverts under the jurisdiction of the Tribe.

Figure 5-21 – SRST Bridge Structures



Bridge inspections were conducted by the Midwest regional office of the BIA on BIA- and Tribally-owned bridges in 2017. Deficiencies were noted and listed in Figure 5-22 along with the suggested maintenance/repairs for each bridge.

Figure 5-22 – SRST Bridge Deficiencies

Structure Number	Deficiency/Maintenance
A041*	SE clearance marker is missing; west sign is in poor condition.
A042*	Minor damage and graffiti to all signs; signs are installed too low and are leaning; replace all; east embankment has 60cm wide x 60cm deep v-shaped erosion gully due to roadway runoff coming from NE wingwall that is not impacting structure; bottom of both abutments exposed: 13cm maximum on W and 5cm maximum on E abutment; pile exposed; probe can penetrate beneath entire depth of abutments.
A046	SW approach guard rail missing post #2 & has traffic damage (2.4m tear, broken post, end treat damage); SE approach guard rail has traffic damage (117cm tear & end treat damage); NE guard rail has missing and loose nuts and bolts; most posts and spacers loose with severe weathering and decay; all signs are installed low and need straightening; NW sign is damaged.
A066*	1st-3rd bridge rail posts from NW corner and 1st and 2nd rail posts from SW corner have detached due to impacts; 25% of rail paint is peeled off; bridge rail does not match the face of the curb; replace entire rail system; all 4 signs placed too low; NE sign slightly bent with bullet holes; NW and NE signs out of plumb; SW sign bent; signs need to be corrected; north abutment has 3 vert cracks up to 0.8mm w, diagonal cracks at each end of the abutment up to 1.6mm. wide at the NE corner creating an impending spall 50cm x 60cm; the crack extends to bolt at bearing; at NW corner spall 32cm h x 30cm w x 8cm d with crack up to bolt at bearing; 2nd deck drain from NE corner has delamination and honeycomb with exposed rebar on underside; SW
A067	All signs are either bent or have bullet holes and should be replaced; longitudinal and transverse joints between t-beams leaking; clean and seal joints; butt joints over piers need cleaning and filling.
A068*	removed.
A124*	All signs are too low and leaning; west slope protection toe is undermined up to 4m l x up to 20cm d; no action required; could not confirm undermining at time of 2010 inspection due to the high water levels; pillow crete sloughing away from west pier on east side and likely eroding underneath, 8 cm from pier and 38 cm deep; monitor.
A135*	Signs have bullet holes; graffiti on SE sign; 40cm l x 5cm w longitudinal tear in w-rail of SW corner approach guardrail between posts 9-10 from rail end; longitudinal tear in w-rail at NE corner of approach guardrail at posts 6-7 from bridge; longitudinal damage in w-rail from plow along SE guardrail at posts 5-9 from bridge; NE wood post at terminal is broke off; elevation difference and settlement of bituminous patch at west approach at bridge end.
A137*	All signs installed too low and need to be raised; some bullet holes.
A149*	replacing.
A151*	All signs in good condition but should align with face of rail; typical erosion at all four wingwalls; erosion in NW and SW ditches about 75 ft from bridge both sides.
A152*	Two new signs needed.
	* Routine maintenance recommended: clean and sweep deck surface, clean and open deck drains, cut vegetation along approach rails and abutment slopes, clear channel debris, cut and remove trees and brush beneath structure.

The results of inspection reports dated November 2017 are summarized in Figure 5-23. Ratings shown in the figure ranging from 7 to 9 indicate good conditions, ratings ranging from 4 to 6 indicate moderate deterioration, and below a rating of 4 indicates poor to failing conditions.

FIGURE 5-23 - 2017 SRST Bridge Conditions

Structure Number	Feature Intersected	BIA Route	Location	Surface Type	Surface Condition	Length (feet)	Superstructure Rating	Substructure Rating	Channel Protection	Inspection Date
A041	Stink Creek	2	3.2 KM W of Bullhead	Gravel	Rough	74	7	7	5	7/24/2017
A042	Rock Creek	21	In Bullhead	AC Pavement	Smooth	105	7	7	5	7/24/2017
A046	Porcupine Creek	6	6.8 KM W of CR 6	AC Pavement	Minor	94	5	7	6	7/24/2017
A066	One Mile Creek	29	4 KM S of Ft. Yates	Gravel	Rough	53	5	5	6	7/24/2017
A067	W Fork of Oak Creek	44	1 KM NE of Mahto	AC Pavement	Minor	93	6	6	4	7/25/2017
A068	N Fork of Oak Creek	44	5.6 KM SE of Mahto	AC Pavement	Rough	63	6	6	6	7/24/2017
A124	Fire Steel Creek	4	8 KM E of State HWY 65	Gravel	Minor	119	7	8	6	7/24/2017
A135	Cannonball River	6	14.4 KM W of CR 6	AC Pavement	Smooth	300	7	8	6	7/24/2017
A137	Little Oak Creek	4	5.8 KM SW of Little Eagle	Gravel	Minor	97	7	7	7	7/24/2017
A149	High Bank Creek	4	8.9 KM S of Little Eagle	Gravel	Smooth	96	7	7	7	7/24/2017
A151	Four Mile Creek	3	0.6 KM S of ND 24 and BIA 3	AC Pavement	Minor	115	8	8	6	7/24/2017
A152	Oak Creek	44	7.2 KM SE of Mahto	Gravel	Smooth	100	8	8	8	7/24/2017

Culvert Conditions

Culvert conditions are important because these facilities not only provide drainage that prevents soil erosion and flooding of roads, but they also have the capacity to save communities large amounts of money that would otherwise be spent to repair damages to roadways and other transportation infrastructure.

Although some culverts are in good condition, there are culverts throughout the Reservation that have become aged with broken inlet flares and outlet scours, such as the culvert near Kenel shown here. There are several other culverts with noted deficiencies.

When culverts are placed in the same jurisdiction as bridge structures, there is a possibility that key issues related to culvert conditions are overlooked by inspectors more familiar with bridge inspection. One possible outcome of this is evident in the latest culvert inspections conducted in 2015-2016, where culverts are given a general deficiency rating with no recommendations for maintenance or repair. Refer to Figure 5-20 for culvert locations and assigned condition codes. The bulleted list below describes the condition code assigned to each culvert. Code descriptions were obtained from the *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nations Bridges*, US DOT, FHA.

- 9 – No deficiencies noted.
- 8 – No noticeable or noteworthy deficiencies which affect the condition of the culvert. Insignificant scrape marks caused by drift.
- 7 – Shrinkage cracks, light scaling, and insignificant spalling which does not expose reinforcing steel. Insignificant damage caused by drift with no misalignment and not requiring corrective action. Some minor scouring has occurred near curtain walls, wingwalls, or pipes. Metal culverts have a smooth symmetrical curvature with superficial corrosion and no pitting.
- 6 – Deterioration or initial disintegration, minor chloride contaminations, cracking with some leaching, or spalls on concrete or masonry walls and slabs. Local minor scouring at curtain walls, wingwalls, or pipes. Metal culverts have a smooth curvature, non-symmetrical shape, significant corrosion or moderate pitting.

RECOMMENDATIONS

It is recommended that the Tribe perform maintenance and repairs on existing bridges as specified in Figure 5-21. The Tribe has expressed a desire to perform its own bridge inspections. The benefits of this include potential economic savings and the ability to perform inspections on culverts with the same standards used to inspect bridges. Whether performed by the Tribe or contracted out, it is suggested that the next scheduled bridge inspections include the focus

on culverts required to record any deficiencies and make appropriate maintenance or repair recommendations.

Short and Long-Range Projects

The Tribe has one bridge/culvert project in the current TTIP as shown in Figure 5-24.

Figure 5-24 – TTIP Bridge/Culvert Projects

SRST Bridge/Culvert TTIP Projects		
		FY 2019
Project #	Project Description	
10	Kennel Culverts	$953,000.00

There are also numerous bridge and culvert projects which the Tribe has identified as needed transportation improvements but fall outside the TTIP. These projects are shown in Figure 5-25. Like all other long-range plans, these should be completed as funding becomes available and prioritized by need.

Figure 5-25 – SRST Long-Range Bridge/Culvert Projects

Project #	Project Location	Project Description	Project Type	Cost
17	ND: BIA 6, Porcupine	Repair top of box culvert at Halfway Creek	Culvert	$ 200,000.00
30	BIA 3 , 1 mi N of ND state line	Culvert replacement	Culvert	$ 1,500,000.00
33	ND: N of Fort Yates	New Missouri River Bridge EIS/update and PS&E	Bridge	$ 8,000,000.00
43	SD: SW of Bullhead	Joe Leaf Crossing on the Grand River: design and construction, T21N R24E S32, S33	Bridge	$ 500,000.00
48	SD: Wakpala	Wakpala NE creek low water crossing and road: construction	Bridge	$ 1,000,000.00
49	SD: Wakpala	Wakpala NE creek low water crossing and road: design	Bridge	$ 500,000.00

Project #33: New Missouri River Bridge

Formally titled "*New Missouri River Bridge Crossing Over Lake Oahe Planning Project*", this project will finalize planning and environmental assessment efforts for a new Missouri River bridge that will address connectivity, economic vitality, and community access issues. Congress originally authorized the project in the Pick-Sloan Act when Lake Oahe was created in 1958.

Although the project was advanced between 1973 and 1994, planning was not finalized. Focused planning efforts will provide the Tribe with preferred bridge locations, completed environmental impact statement, vetted cultural concerns and resolutions/solutions to those, and preliminary engineering documents to move the project forward through design and construction.

Completion of planning and eventual construction of the New Missouri River Bridge Crossing Over Lake Oahe will:

- Address deficiencies in the Tribal and regional transportation system by providing a new bridge over Lake Oahe, alleviating a 100+ mile stretch of road on both the east and west sides in which vehicles cannot currently cross the Missouri River
- Enhance the livability of the Standing Rock Reservation through a direct vehicular and multi-modal connection, increasing access to employment opportunities, medical care, emergency services, and other essential human services in the surrounding communities
- Improve the safety on both Highways 1804 (east side of the river) and 1806 (west side of the river) by providing an alternate crossing route and lessening traffic volume on both roads
- Promote regional economic development supporting the agricultural industry
- Create jobs in the region for the duration of both the planning and construction activities (up to 10 years)
- Connect Tribal members to culturally important sites

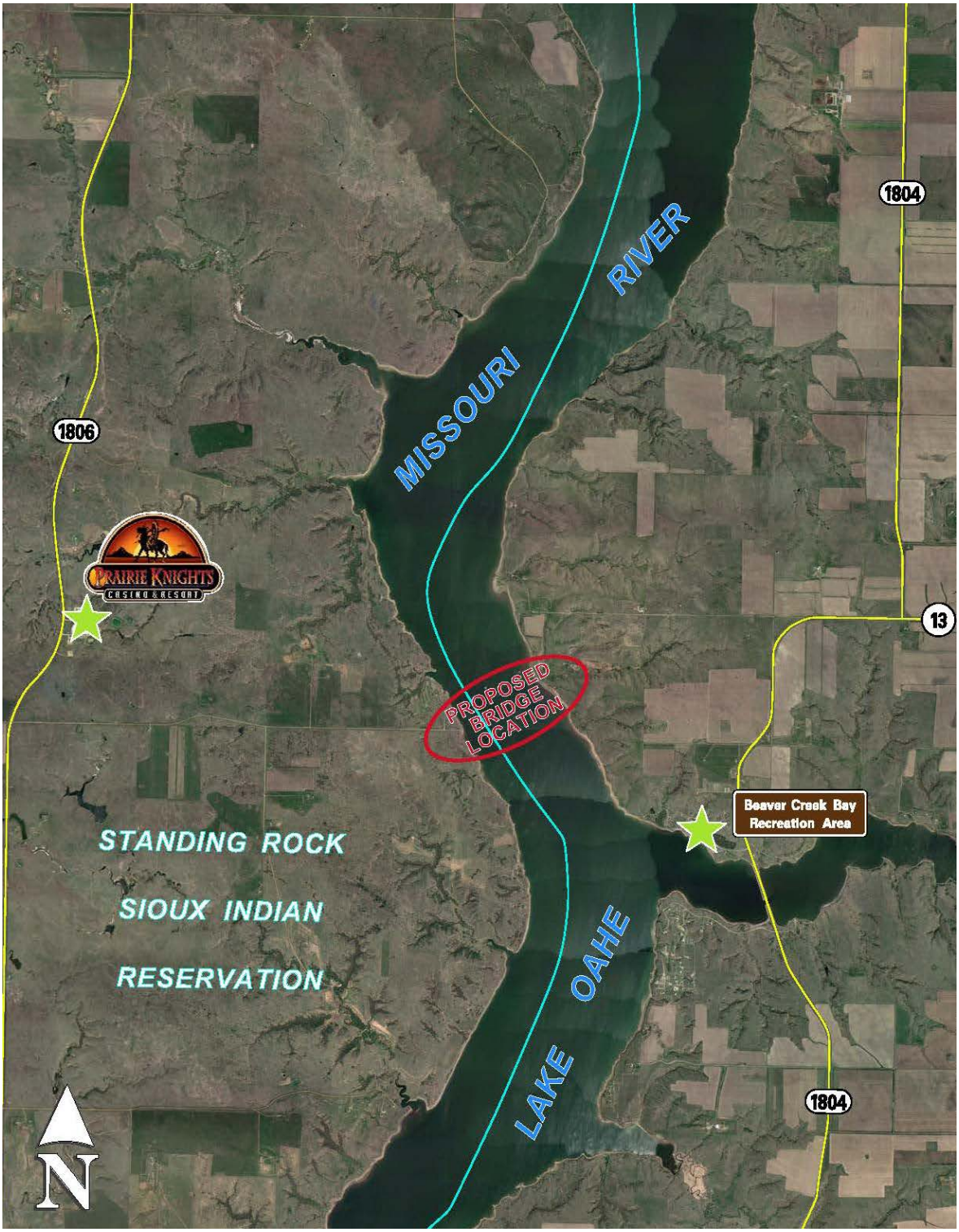
Although the need for the new Missouri River bridge has been documented for over 50 years, the project was stalled in the 1990s because of local concerns that cultural artifacts would be disturbed at the proposed bridge locations. In 2014, the project was recategorized as a priority, and in 2018 a resolution was passed to apply for BUILD planning funds.

The grant amount requested is $6.7M, or 100% of the total anticipated project planning costs, and will be allocated by project task and phase as seen in Figure 5-26. An image of the proposed bridge location is shown in Figure 5-27.

Figure 5-26 – New Missouri River Bridge Costs by Phase

Oahe EIS Costs by Phase*		
Year	**Phase**	**Cost**
2019	Scoping	$78,900
2019-2025	Public Involvement	$172,475
2019-2020	Concept Development	$2,023,462
2020-2021	Survey and Field Work	$3,246,787
2020-2022	Alternatives Analysis	$512,941
2022-2024	Draft EIS	$344,850
2024-2025	Final EIS	$157,170
	Total	**$6,536,585**
* Costs include 10% inflation for engineering in future years, excluding TERO fees		

Figure 5-27 – Proposed Location of New Missouri River Bridge



PEDESTRIANS AND BICYCLES

EXISTING CONDITIONS AND RECOMMENDATIONS

For many Tribal members of the SRST, walking and bicycling are important modes of transportation. While recreation for some, for others it is the only option for travel to work, school, medical appointments, and other essential trip purposes.

Improving the ability to walk or bike involves not only providing the infrastructure but also linking design, streetscapes and land use to support walking and bicycling. Safety is also integral when developing an inviting and functional pedestrian and bicycle system. Pedestrian traffic represents a disproportionate percentage of road-related fatalities according to national studies, and therefore due diligence needs to be applied to safety concerns surrounding walking and bicycling.

Most pedestrian and bicycling activity within the Reservation occurs on or adjacent to the roadway facility. Some sidewalks are available in Bullhead, Cannon Ball, Fort Yates, Kenel, Little Eagle, McLaughlin, Porcupine, and Wakpala. (See Figures 5-26 through 5-35.) Wider, shared use paths exist between McLaughlin and Bear Soldier and along BIA 31 in Fort Yates. There are areas throughout the Reservation where worn, dirt paths exist that were created by repetitive pedestrian and bicycle use, but which haven't been improved.

Sidewalk conditions on the Reservation vary. Though many of them are in good condition, some sidewalks have settled, causing trip hazards, or carry other issues associated with disrepair or a lack of maintenance. Some pedestrian facilities are not compliant with the Americans with Disabilities Act (ADA). This typically occurs because of inadequate ramp design or a lack of ramps at intersections.

There are many locations within the Reservation that are not served by sidewalks or paved shared use paths. Additionally, there are many missing links in the system. Construction of wider shoulders in street design is a method of providing pedestrian and bicycle facilities beyond provision of sidewalks and paved shared use paths. This method is most useful along state highways where heavier use is expected but where separated facilities are not likely to be installed.

Each town across the Reservation would benefit from installation of sidewalks and/or shared use paths and bike racks. Figures 5-26 through 5-35 are aerial maps of Bullhead, Cannon Ball,

Fort Yates, Kenel, Little Eagle, McLaughlin, Porcupine, and Wakpala showing existing sidewalks and shared use paths along with recommended placement of additional sidewalks, shared use paths, bike racks, and lighting.

In addition to construction of new sidewalks and shared use paths, it is recommended that the Tribe conduct a sidewalk conditions and needs survey throughout the Reservation. A comprehensive survey would provide current conditions of existing sidewalks, which the Tribe can then utilize to establish a schedule for maintenance, repairs and replacement, and new construction. It is recommended that existing sidewalks in all communities be brought into ADA compliance.

Bullhead Sidewalks

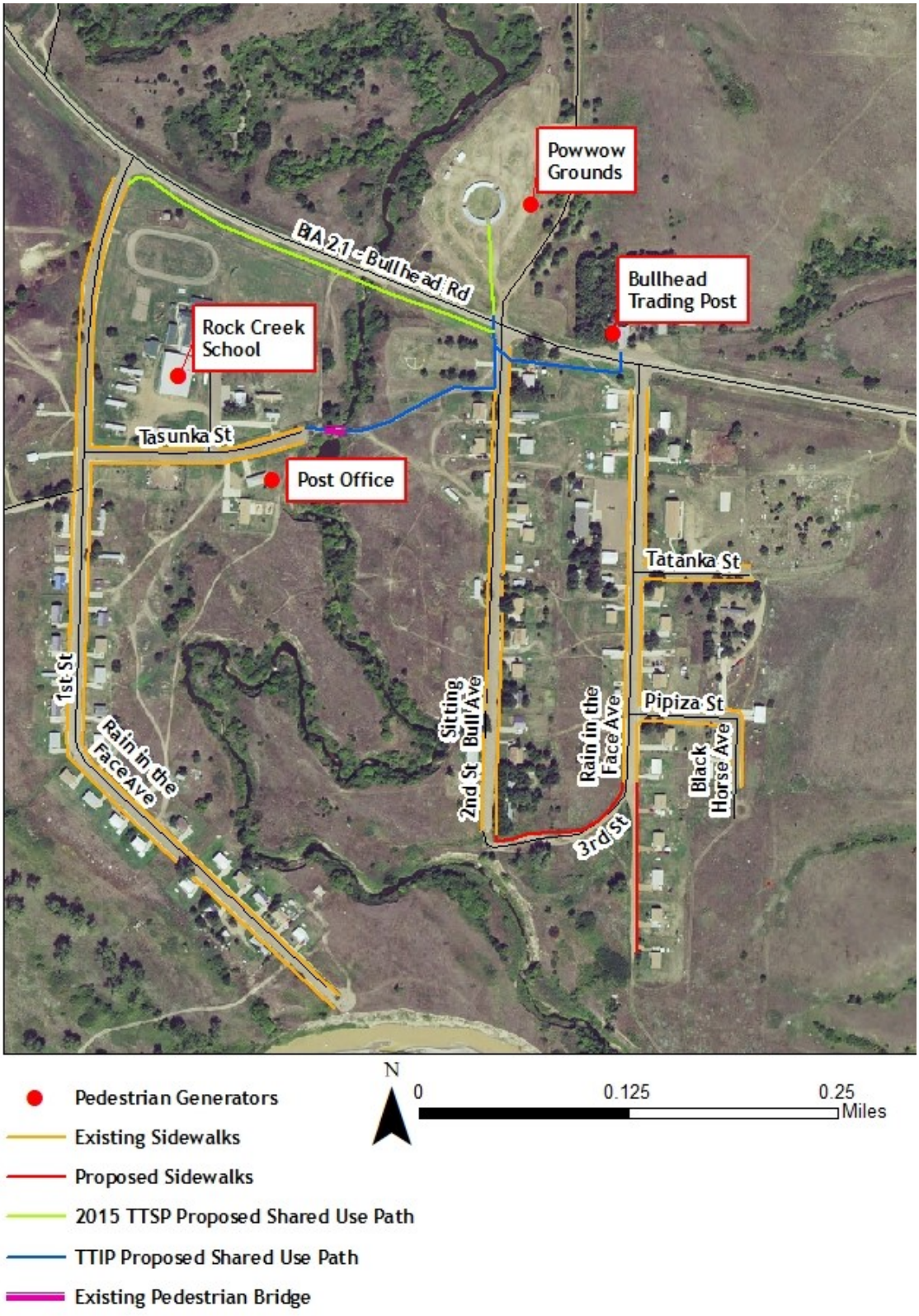
There are sidewalks along most of the three main streets in town: 1st Street, Sitting Bull Avenue (2nd Street) and Rain in the Face Avenue (3rd Street). These sidewalks lead to BIA 20 (Bullhead Road), which runs NE-SW just north of town. However, there is no sidewalk or shared use path along BIA 20, which must be crossed to reach the powwow grounds and the Bullhead Trading Post, two important pedestrian generators in this small community. There are also missing sidewalk links on the road that connects the southern end of 2nd Street to 3rd Street, and the housing on the south end of 3rd Street.

Bullhead was identified in the 2015 TTSP as needing a shared use path. At that time, it was suggested to construct a shared use path along BIA 20 starting at 1st Avenue and extending east through the community, with a north leg leading to the powwow grounds and two crosswalks and lighting at the approaches to the powwow grounds and the Bullhead Trading Post. This section of shared use path would be approximately 0.35 miles with an estimated cost of $160,000.00.

More recently, a second shared use path has been proposed and included in the current TTIP which would be constructed south of BIA 20 between the Bullhead Trading Post and the powwow grounds with crossings at each. It would then run south and southwest to connect with the east end of Tasunka Street. There is already a worn path here and an existing pedestrian bridge. The project encompasses an asphalt paved shared use path and improvements to the pedestrian bridge.

It is recommended that SRST construct the shared use path project listed in the TTIP and complete the original 2015 project as funding becomes available. It is also recommended to add sidewalks as recommended in Figure 5-28.

Figure 5-28 – Existing and Proposed Sidewalks – Bullhead



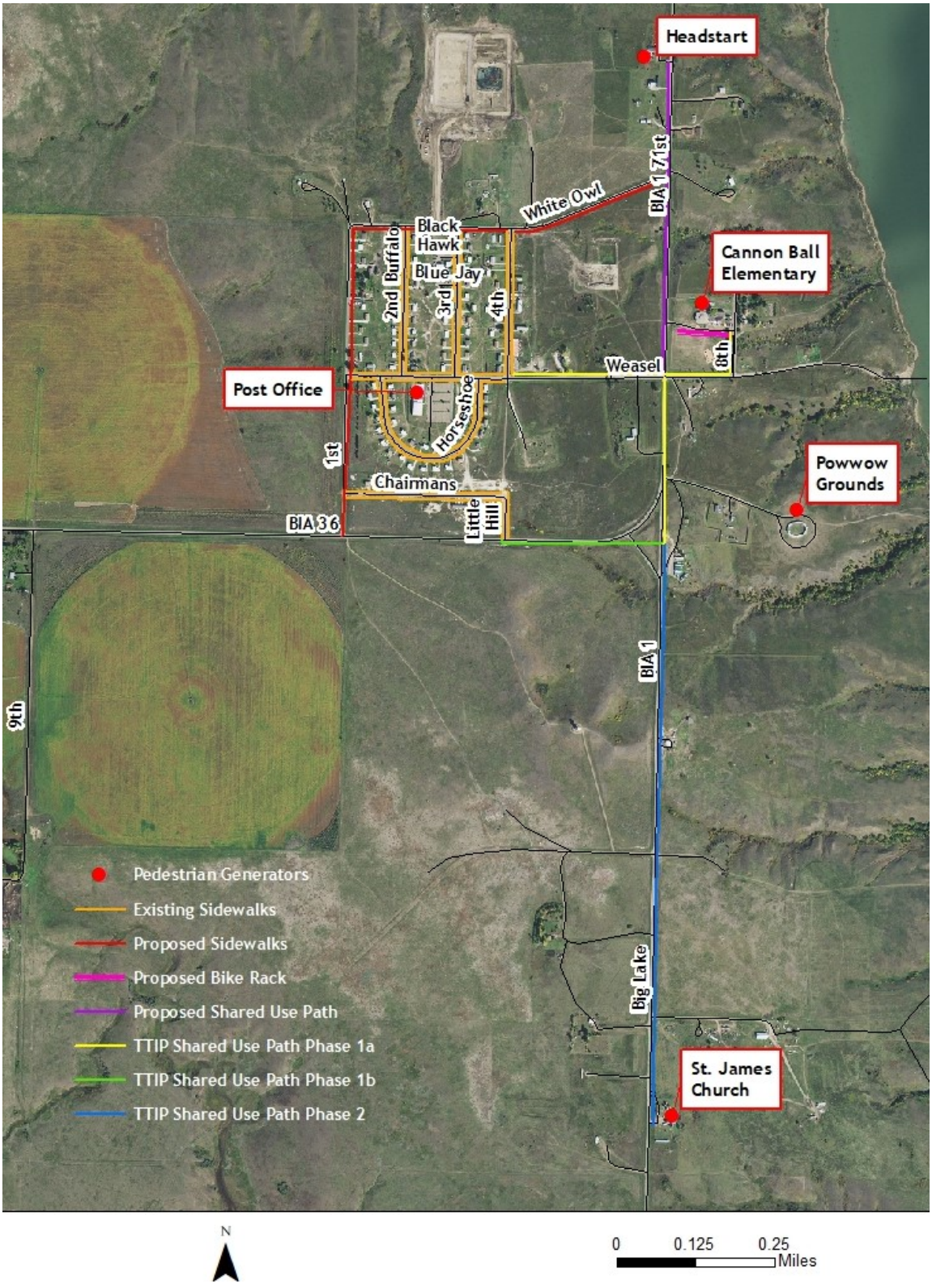
Cannon Ball Sidewalks

In Cannon Ball the housing district lies to the west of BIA 1 (71st Street), while the elementary school, powwow grounds and St. James Church are located east of BIA 1. There is an almost complete sidewalk system within the housing district, but nothing that connects to BIA 1 or eastwardly to the location of the elementary school. There is also no connection to the Head Start building located north of town or St. James Church, located almost a mile south of town.

The SRST has a project in the current TTIP to construct a shared use path which is to be completed in three phases: 1a, 1b, and 2. Phase 1a will be adjacent to Weasel Street and be placed from the intersection with 4th Avenue to the school east of BIA 1. Phase 1b will be adjacent to BIA 36 to the intersection with BIA 1. Phase 2 will connect Phase 1a to St. James Church south of town.

It is also recommended to construct sidewalks and shared use paths and install a bike rack at the school as shown in Figure 5-29. This would fill in gaps within the housing area, provide a connection from the northeast part of town to BIA 1 along White Owl Street, and provide a pedestrian/bicycle facility along BIA 1 north to the Head Start building.

FIGURE 5-29 – Existing and Proposed Sidewalks – Cannon Ball



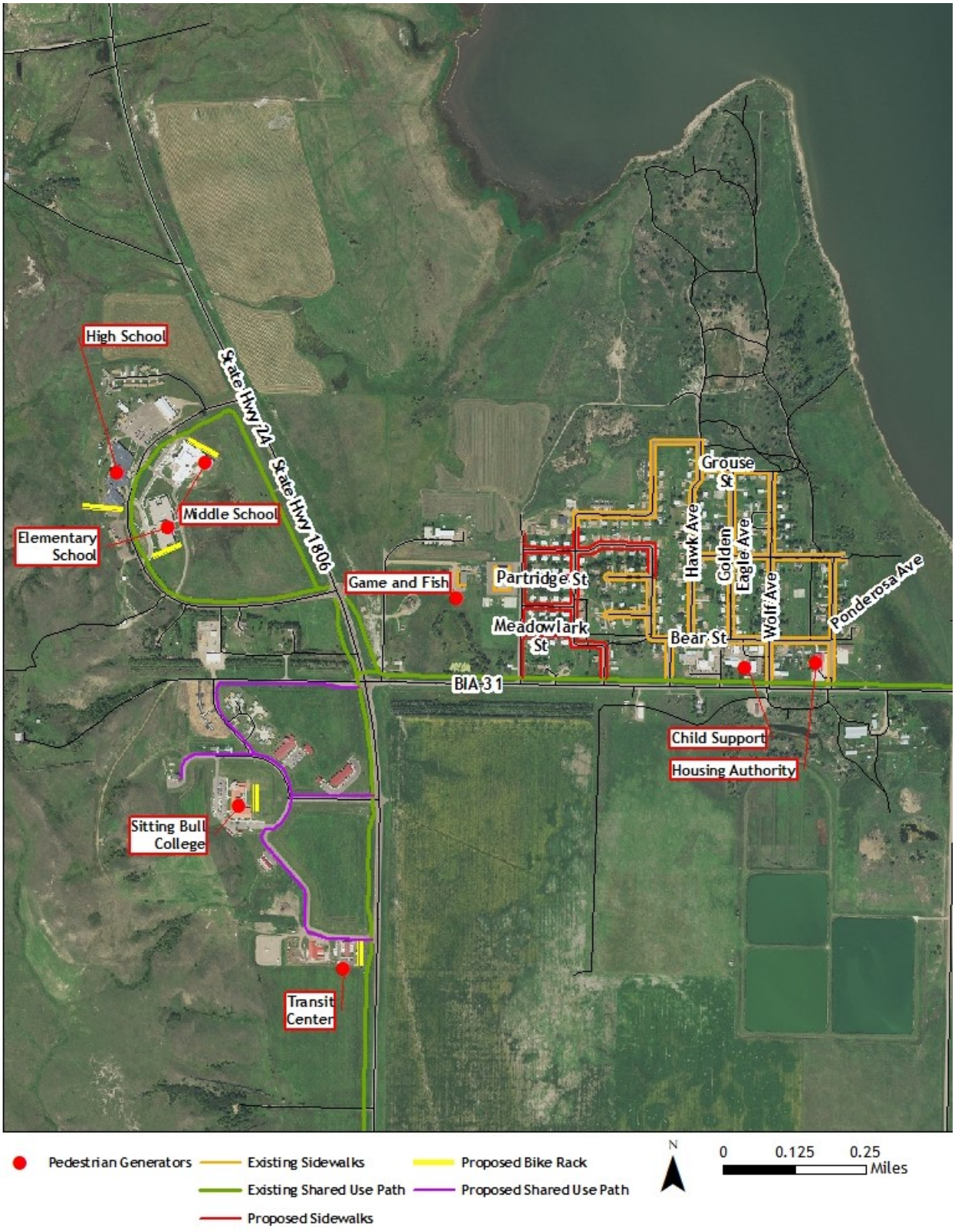
The housing and business areas on the east side of town have an interconnected sidewalk system with a shared use path that connects to the west side of Fort Yates. The shared use path continues to the west edge of Fort Yates and north on State Hwy 1806 to connect to the school district. It also connects to Sitting Bull College south of town. The sidewalks on the west side are not complete, with many missing sections.

As mentioned, there is an almost complete sidewalk network east of the causeway in Fort Yates. There is a missing link on South River Road; adding a sidewalk here is recommended to complete the network. West of the causeway, there are several missing sidewalks in the housing district. It is also recommended to add shared use paths from the intersection of ND 24 and BIA 31 west to the north entrance of the Sitting Bull College campus and throughout the campus area, as well as bike racks at the schools, college campus, and public transit center to provide safer and more convenient pedestrian and bicycle travel for students, faculty, staff, and visitors.

It is recommended to consider a shared use path that would extend from the northern end of Proposal Avenue in the east side of Fort Yates to the Fort Yates recreation area. Potentially, this could increase tourism and help promote a healthy lifestyle for Tribal members. There were two maps generated to display the sidewalks in the east and west parts of Fort Yates as shown in Figures 5-30 and 5-31.

Figure 5-30 – Existing and Proposed Sidewalks - Fort Yates East

Figure 5-31 – Existing and Proposed Sidewalks - Fort Yates West

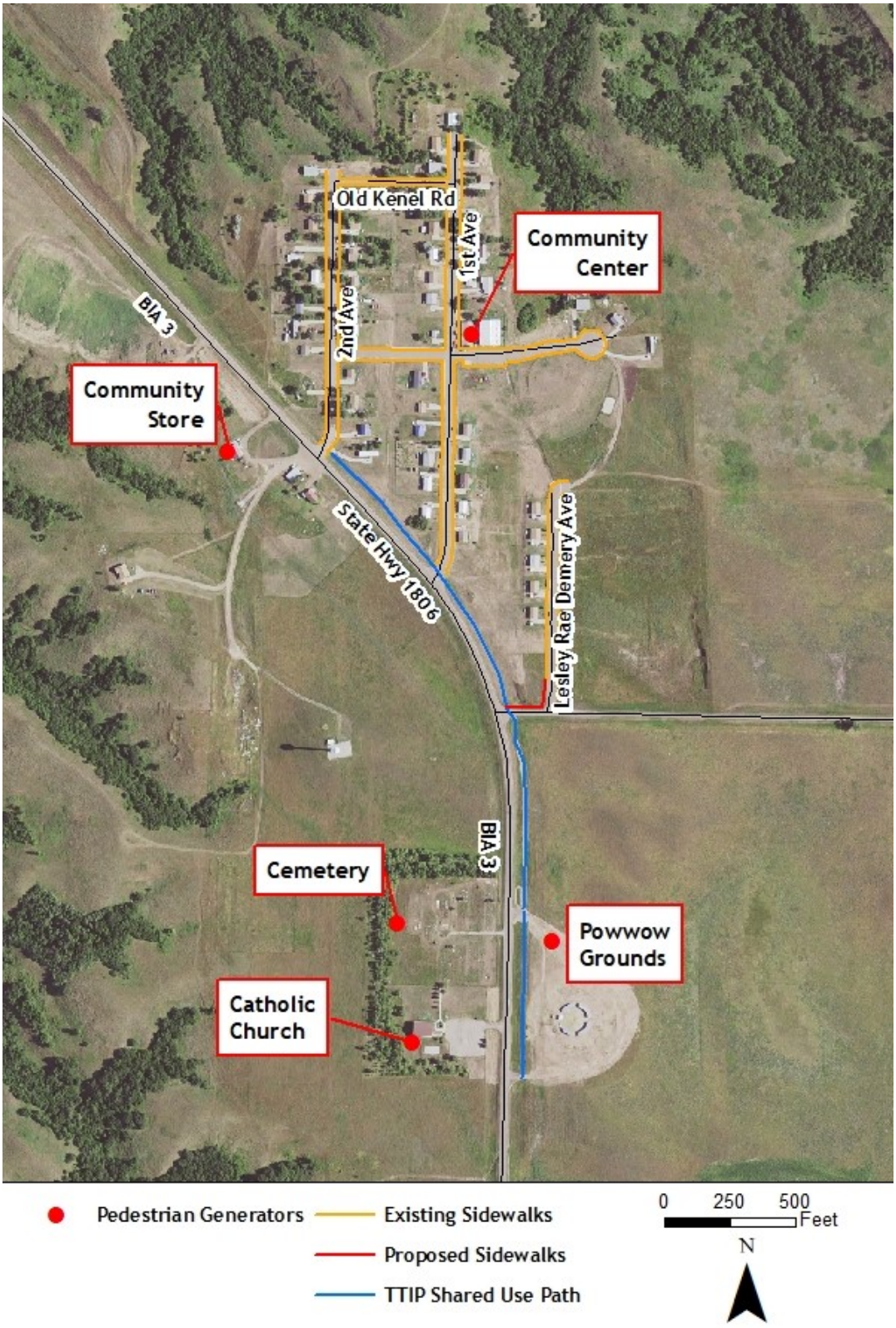


Kenel Sidewalks

Kenel is a community situated on the north side of BIA 3 (SD 1806). There is a complete, interconnected sidewalk system throughout the housing development and an unpaved shared use path that extends from the southern-most housing area to the northern approach of the powwow grounds. There are pedestrian generators located on the opposite side of BIA 3, and there are no pedestrian/bicycle facilities to accommodate safe crossing to those destinations.

There is a good sidewalk system existing throughout the community of Kenel. A shared use path will be constructed under the current TTIP which will extend from the south approach of the powwow grounds north to 2nd Avenue. Further recommendations are new sidewalks on the south end of Lesley Rae Demery Avenue to connect with the new shared use path. See Figure 5-32.

Figure 5-32 – Existing and Proposed Sidewalks - Kenel

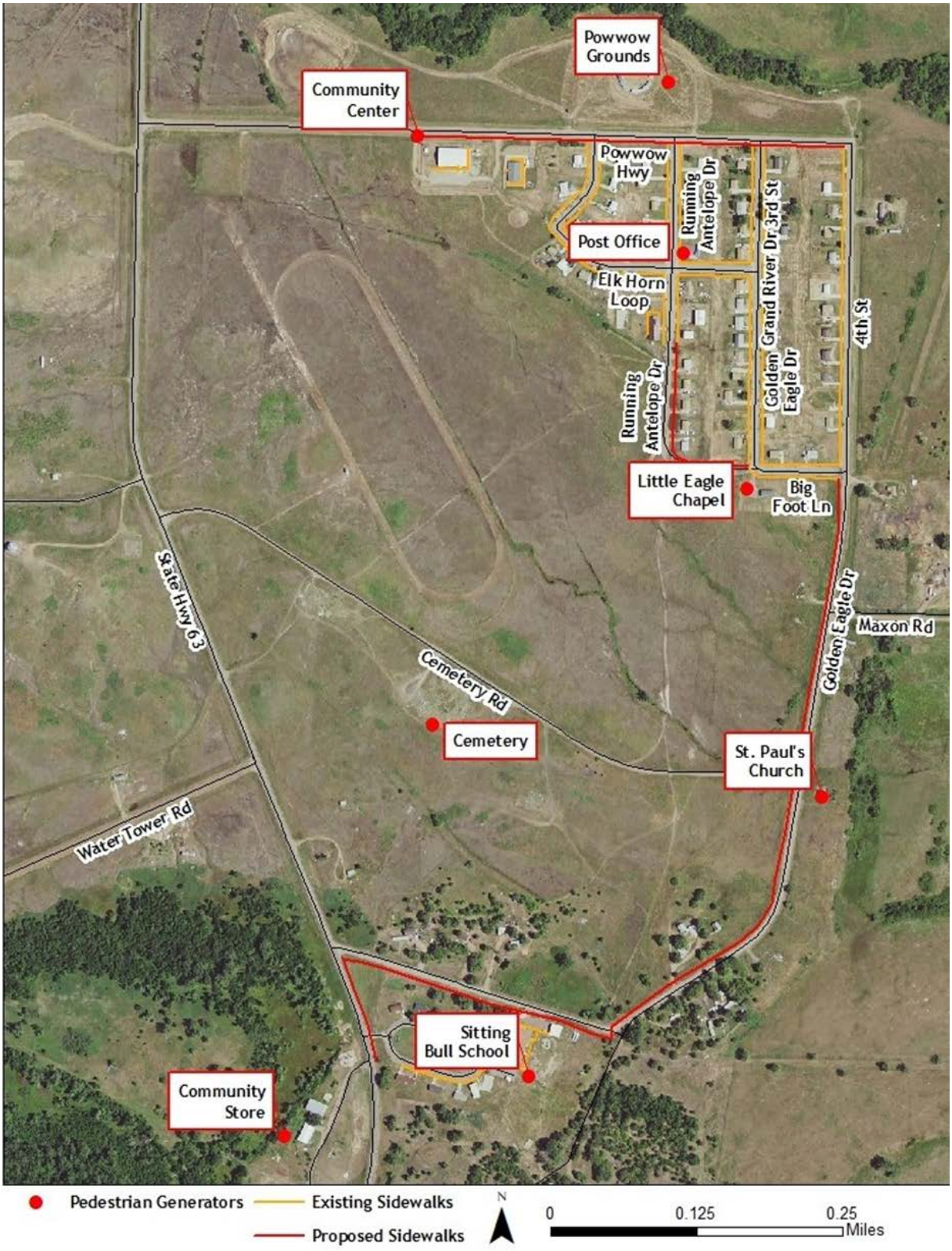


Little Eagle Sidewalks

The community of Little Eagle is located east of SD 63. There are existing sidewalks throughout town. Missing sections prevent a completely connected sidewalk system. There is also the absence of pedestrian/bicycle facilities on the northern edge of town situated along Powwow Hwy, and the east edge along Golden Eagle Drive (4th St), which leads to the Little Eagle School approximately a half mile south of town.

Sidewalk construction is recommended on Powwow Highway starting at the community center east to Golden Eagle Drive (4th Street), then south and west in front of the school to SD 63. From there, a connection is recommended south to the approach of the community store located southwest of the school. There are also missing sidewalk sections in the housing area, and construction is recommended from the south end of the sidewalk on Running Antelope Drive to the end of the street and then east to connect with the existing system. See Figure 33.

Figure 5-33 – Existing and Proposed Sidewalks - Little Eagle



McLaughlin Sidewalks

McLaughlin is located along US Hwy 12 and bisected by State Hwy 63 (Main St). Sidewalks are missing on approximately half of the city streets including those that lead to the high school at the south of town, and there are no pedestrian/bicycle facilities along US Hwy 12, which cuts through the northern part of town. A sidewalk is recommended here to start at Third Avenue West and run adjacent to the highway to Third Avenue East (see Figure 5-34). Approximately half of the residential blocks are also missing sidewalks, and it is recommended to prioritize construction to fill in the gaps following a sidewalks condition survey.

There is also a project in the current TTIP for the design and installation of pedestrian grade lighting along the shared use path (BIA 30 Section 20) that connects McLaughlin and Bear Soldier. This project should include roughly 140 feet of sidewalk to connect the shared use path to the existing sidewalks in Bear Soldier. Figure 5-35 shows an aerial view of this project and the McLaughlin Municipal Airport, located southeast of McLaughlin.

Figure 5-34 – Existing and Proposed Sidewalks - McLaughlin

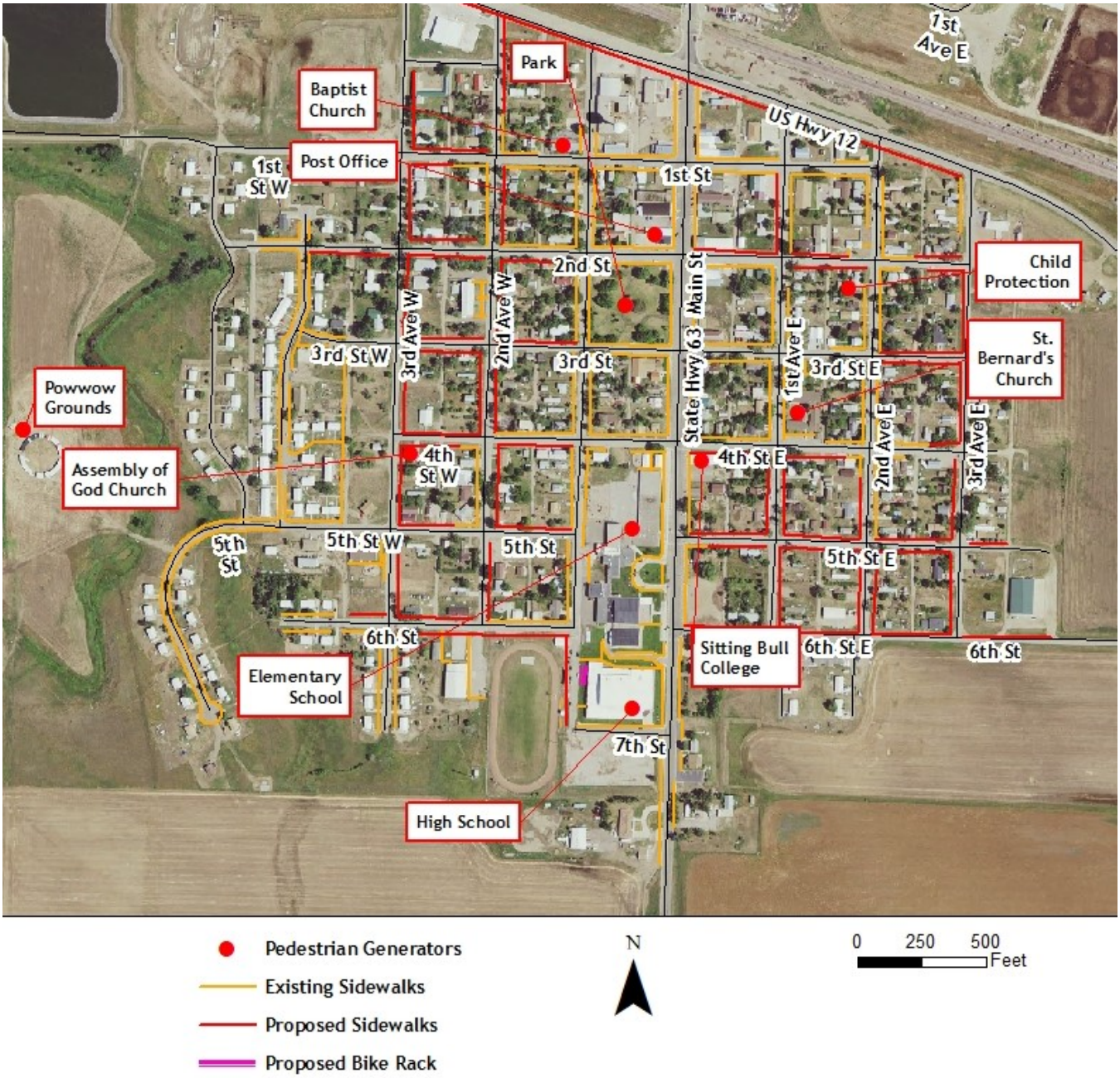
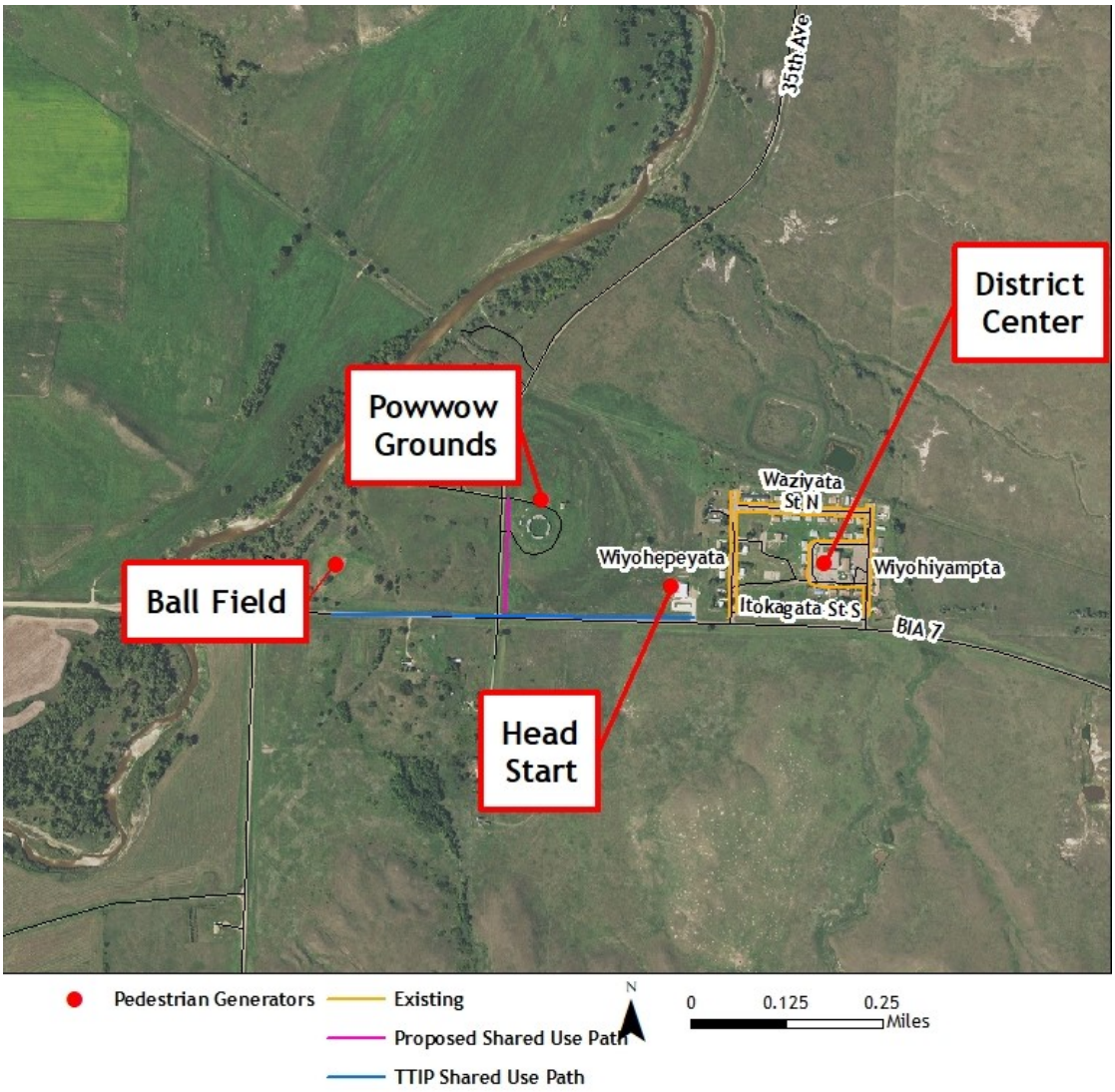


Figure 5-35 – McLaughlin Area

Porcupine is located directly north of BIA 7 and is home of the Porcupine District headquarters. The town itself has a fully connected sidewalk network. However, there are no pedestrian facilities along BIA 7 or north on 35th Avenue leading to the powwow grounds. There is a ball field west of town which is frequently visited by Tribal members and used for a variety of community functions. However, there are no pedestrian or bicycle facilities leading to the ball field, and local residents have identified a need for a shared use path for safer travel.

There is a TTIP project that would provide a shared use path from the west edge of town to the ball field. It is also recommended to construct a shared use path from BIA 7 north to the powwow grounds on 35th Avenue as shown in Figure 5-36.

Figure 5-36 – Existing and Proposed Sidewalks - Porcupine

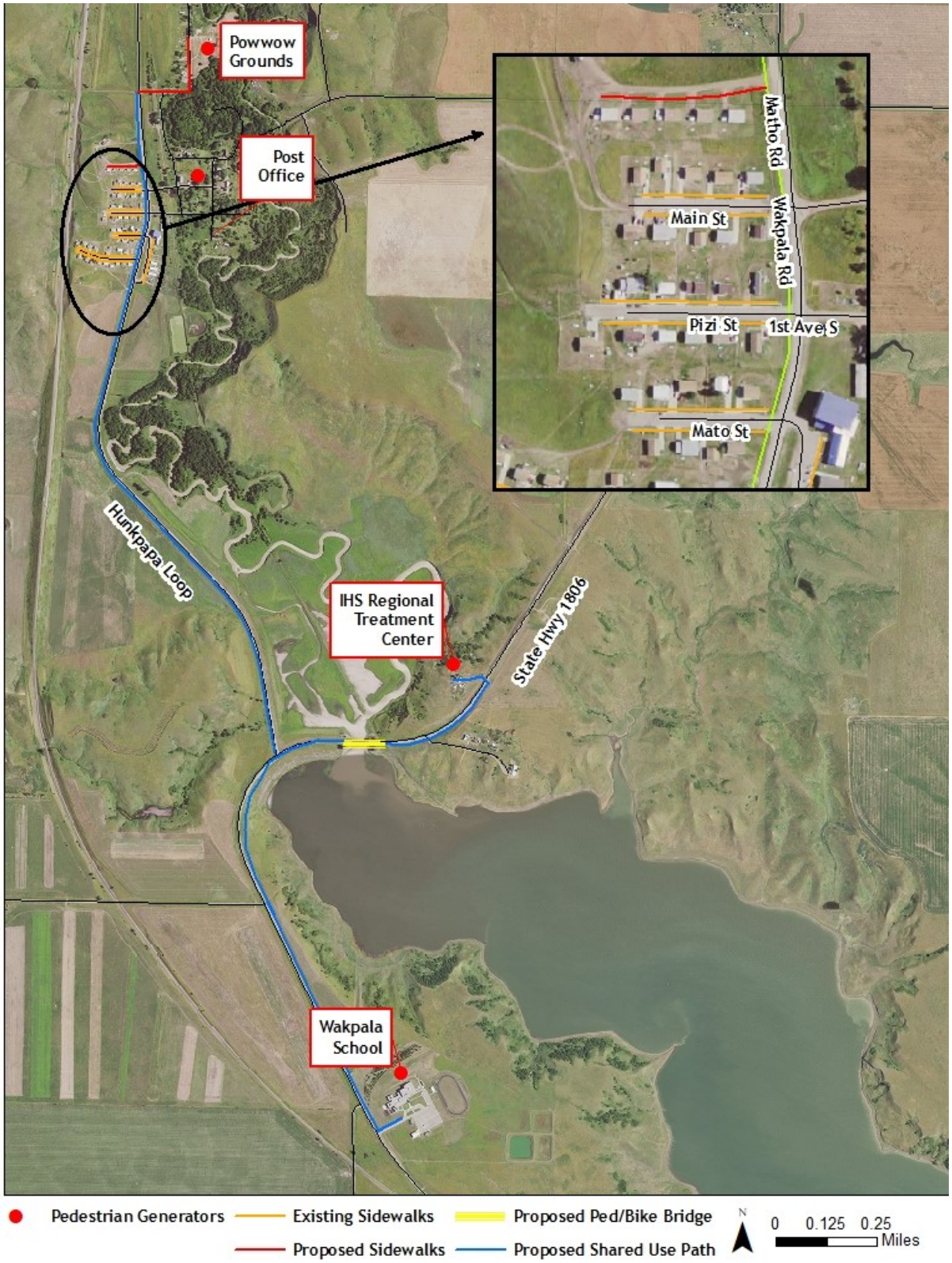


Wakpala Sidewalks

Located west of SD 1806 on Matho Road, Wakpala is a community with five residential streets; four of the five have sidewalks on both side of the streets but the northern-most street is unpaved with no sidewalks. There are no sidewalks leading to the powwow grounds. Wakpala School is located off SD 1806 approximately 2.5 miles south-east of town and there are no pedestrian or bicycle facilities leading to it or to the Indian Health Services (IHS) Regional Treatment Center also located on SD 1806 approximately 1.6 miles northeast of the school.

Sidewalks are recommended from the north end of town leading to the powwow grounds. Residents would also benefit from having a sidewalk added to the north street in the housing area east of Matho Road (Hunkpapa Loop). Like other small communities throughout Standing Rock Indian Reservation, the school is located some distance from the town and there are no connecting pedestrian facilities. It is recommended to construct a shared use path from the north end of Wakpala running south adjacent to Matho Road until it joins SD 1806, and then adjacent to the highway south to the school. Also recommended is a shared use path that extends from the IHS treatment center on SD 1806 to the intersection with Matho Road to include construction of a pedestrian bridge.

Figure 5-37 – Existing and Proposed Sidewalks - Wakpala



Supplementary Recommendations

Going forward, designing roadways to accommodate all users would improve walking and biking conditions on the Reservation. This practice is commonly referred to as "complete streets" and offers the following benefits:

- Safety: A FHWA safety review found that streets designed with sidewalks, raised medians, traffic-calming measures, and treatments for travelers with disabilities improves pedestrian safety.
- Health: Multiple studies have found a direct correlation between the availability of walking and biking options and obesity rates. In fact, the Centers for Disease Control and Prevention recently named adoption of complete streets policies as a recommended strategy to prevent obesity.
- Reduced User Costs: Complete streets offer inexpensive transportation alternatives to roadway users. A recent study found that most families spend far more on transportation than on food.
- Foster Strong Communities: A recent study found that people who live in walkable communities are more likely to be socially engaged and trusting than residents living in less walkable communities.

Bicycle facilities include paved and dirt shared use paths, path lighting, and bike racks. Bike racks at populous destinations add a level of security and establishes the locations where people may park their bikes. Locations where bike racks would be beneficial are schools, Tribal offices, convenience stores, transit stops, and transit shelters.

Short and Long-Range Pedestrian/Bicycle Projects

There are four pedestrian/bicycle projects on the current TTIP, shown in Figure 5-38 along with estimated cost. These projects are discussed above in Recommendations.

Figure 5-38 – Short-Range Pedestrian/Bicycle Facility Projects

SRST Pedestrian/Bicycle Facility TTIP Projects			
		FY 2019	FY 2020
Project #	Project Description		
7	Cannon Ball Shared Use Path Phase 1	$350,000.00	
8	Cannon Ball Shared Use Path Phase 2		$600,000.00
9	Bullhead Shared Use Path	$179,330.00	
14	Bear Soldier Shared Use Path Lighting	$20,000.00	

There were also pedestrian/bicycle needs which were identified during the LRTP process and designated as long-range projects. These should be completed as funding becomes available. Figure 5-39 lists the project locations, descriptions, types, and cost.

Figure 5-39 – Long-Range Pedestrian/Bicycle Facility Projects

Project #	Project Location	Project Description	Project Type	Cost
19	ND: BIA 36, Cannon Ball	Tree rows to provide living snow fence for existing shared use path	Tree rows	$ 75,000.00
23	ND: BIA 31 Fort Yates	Safety improvement to provide better lighting for foot traffic on access road	Lighting & Safety	$ 364,000.00
24	ND: BIA 6 Porcupine	Shared use path to ballfield	Shared Use Path	$ 338,000.00
38	SD: BIA 20	Shared use path and pedestrian bridge improvements	Shared use path and pedestrian bridge improvements	$ 260,000.00
47	SD: BIA 30 Section 20 Bear Soldier	Lighting along shared use path from Bear Soldier to McLaughlin	Lighting & Safety	$ 152,000.00
50	SD: Kenel	Design and construct shared use path adjacent to SD 1806 from powwow grounds N to 2nd Ave	Shared Use Path	$ 260,000.00
52	Bullhead Sidewalks	0.2 mi - see Figure 5-26	Sidewalk	$ 40,000.00
53	Cannon Ball Sidewalks	0.7 mi - see Figure 5-27	Sidewalk	$ 140,000.00
54	Cannon Ball Shared Use Path/Bike Rack	0.5 mi - see Figure 5-27	Shared Use Path	$ 150,500.00
55	Fort Yates Sidewalks	2.2 mi - see Figured 5-28 and 5-29	Sidewalk	$ 660,000.00
56	Fort Yates Shared Use Path/Bike Racks	1.6 mi - see Figure 5-28	Shared Use Path	$ 482,500.00
57	Kenel Sidewalks	0.1 mi - see Figure 5-30	Sidewalk	$ 20,000.00
58	Kenel Shared Use Path	0.5 mi - See Figure 5-30	Shared Use Path	$1,500,000.00
59	Little Eagle Sidewalks	1.3 mi - see Figure 5-31	Sidewalk	$ 260,000.00
60	McLaughlin Sidewalks/Bike Rack	3.9 mi - see Figure 5-32	Sidewalk	$ 780,500.00
61	Porcupine Sidewalks	0.1 mi - see Figure 5-34	Sidewalk	$ 20,000.00
62	Porcupine Shared Use Path	0.5 mi - See Figure 5-34	Shared Use Path	$ 150,000.00
63	Wakpala Sidewalks	0.4 mi - see Figure 5-35	Sidewalk	$ 80,000.00
64	Wakpala Shared Use Path	3.4 mi - see Figure 5-35	Shared Use Path	$1,020,000.00

AIRPORTS

This section of the report provides for the consideration of the two airports located on the Reservation: Standing Rock Airport and McLaughlin Municipal Airport.

EXISTING CONDITIONS

Standing Rock Airport

Standing Rock Airport, located about 1 mile south of Fort Yates, is owned and managed by the Tribe. The 3700 x 60 foot asphalt runway is in good condition. According to FAA operational statistics, there were 200 aircraft operations in the twelve-month period ending July 2018. Of these, 50% were transient general aviation and 50% air taxi operations. The airport operates 24 hours a day, 12 months a year with the SRST maintenance department providing snow removal during the months of October through April. The airport is shown in the Fort Yates study area map, Figure 2-5.

The Tribe has indicated that there is continued development at the airport and expressed a need for increased landing options. They would also like to construct hangars at the airport and improve amenities such as adding a pilots' lounge.

McLaughlin Municipal Airport

McLaughlin Municipal Airport is located approximately 2 miles southeast of McLaughlin, South Dakota, and is a public airport owned by the City of McLaughlin. Its single runway is asphalt paved, measures 3800 x 60 feet, and is in excellent condition. Aircraft operations, which include night flights, average 53 per month, of which 94% are general aviation and the remaining 4% transient general aviation. There are nine single engine planes and a helicopter based on the airfield.

RECOMMENDATIONS

Standing Rock Airport

- Upgrade from a visual to a GPS approach type system. This will increase landing options of incoming aircraft.
- Construct a terminal building. This would enable the provision of a pilot's lounge and restrooms.
- Construct additional hangar space for based and transient aircraft

The above recommendations would assist the Tribe in meeting their goals for airport development. They were also identified as objectives in the 2014 North Dakota Statewide Aviation System Plan. Other recommendations for the Standing Rock Airport from the Plan are:

- Purchase snow removal equipment. Snow removal is currently provided by the SRST maintenance department using their roadway equipment. Purchasing bigger plows and blowers will allow snow removal at the airport to be more efficient and allow for roadway equipment to be available for road maintenance.
- Increase airport security by controlling airfield access.

The Tribe is eligible for funding of airport projects through the Airport Improvement Program (AIP) administered by the Federal Aviation Administration (FAA). Eligibility for the program is due to the Airport's inclusion in the National Plan of Integrated Airport Systems. These grants cover 75-95 percent of eligible projects, and the Tribe has been receiving $150,000 a year. The Tribe is encouraged to continue applying for AIP funding.

TRANSIT SYSTEM

EXISTING CONDITIONS

The Standing Rock Public Transit Program (SRPTP) was established in 1989 to serve Tribal communities. Sitting Bull College was designated to serve as the grantee for the Federal Transit Administration funds and has administered the program since then. The college and the Standing Rock Sioux Tribe provide local matching funds for the transit program.

According to the Standing Rock Public Transit Plan 2018-2023, the SRPTP operates 14 vehicles ranging in capacity from five to 26 passengers, with 13 of these offering handicap accessibilities. SRPTP logged 200,704 miles in 2016 which included 14,609 one-way rides. The majority of its rides are commuter related. All rides are requested through Standing Rock Public Transit's main office in Fort Yates, ND. Standing Rock Public Transit currently coordinates its services with Bis-Man Transit, River Cities Public Transit in Pierre, SD, Cheyenne River Sioux Tribe Transit, and the region's intercity bus companies. The SRPTP transit schedule is shown in Figure 5-40 and routes are displayed in Figure 5-41.

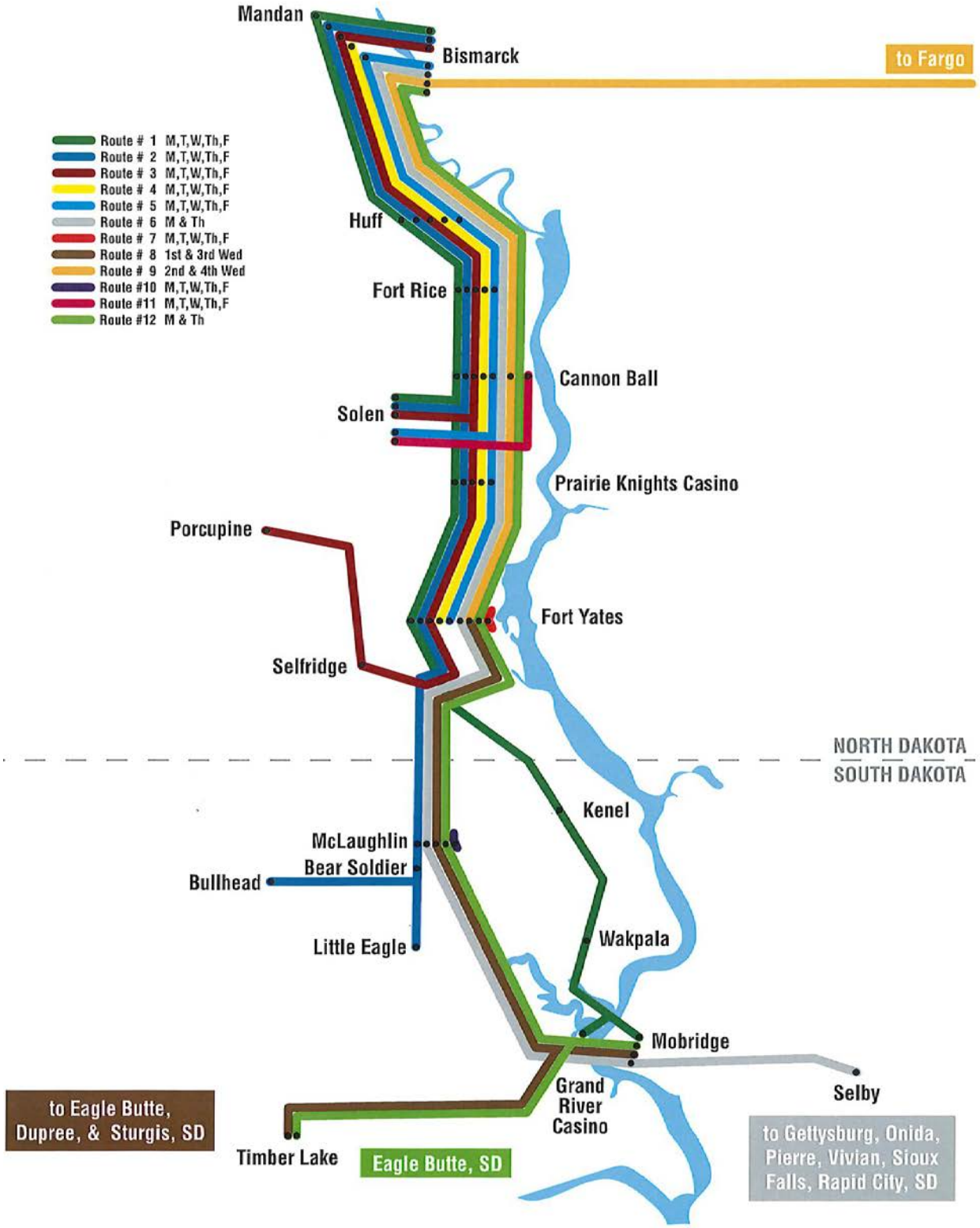
Other transportation services that are specific to the Standing Rock Reservation include transportation services that are offered by the Fort Yates Indian Health Hospital (IHS). Although offered on a very limited basis, IHS does operate a van to pick up dialysis patients who need care and provide ambulatory transportation to Bismarck,

North Dakota to patients in need of acute care. This does pose a problem though, as patients who are released from the hospital are responsible for their own transportation back to the Reservation.

FIGURE 5-40 - SRTPT Transit Service Schedule

Mobridge GR Casino Wakpala Kenel Fort Yates	Bullhead Little Eagle Bear Soldier McLaughlin Fort Yates	Porcupine Selfridge Fort Yates	Mandan Cannonball PK Casino Fort Yates	Fort Yates PK Casino Cannonball Solen Fort Rice Huff Mandan Bismarck	Bismarck Fort Yates McLaughlin Mobridge Pierre Sioux Falls Rapid City	Fort Yates Town	Fort Meade VA Hospital	Fargo VA Hospital	Wakpala Mobridge Trail City McLaughlin	Solen Cannonball (with connections to Fort Yates PKC Bismarck)	Eagle Butte Timber Lake Mobridge McLaughlin Fort Yates Bismarck
Route #1 M,T,W,Th,F	**Route #2** M,T,W,Th,F	**Route #3** M,T,W,Th,F	**Route #4** M,T,W,Th,F	**Route #5** M,T,W,Th,F	**Route #6** M & Th	**Route #7** M,T,W,Th,F	**Route #8** 1st & 3rd Wed	**Route #9** 2nd & 4th Wed	**Route #10** M,T,W,Th	**Route #11** M,T,W,Th,F	**Route #12** M & Th
GR Casino *Hotel Lobby* Dept. 6:00 am **Mobridge** *Gas & Goodies* Dept. 6:20 am **Wakpala** *C. Center* Dept. 6:40 am **Kenel** *C. Center* Dept. 7:05 am **Fort Yates** Arrive 7:50 am **Bismarck** ***(See Route #5)*** **Fort Yates** Dept. 4:30 pm **Kenel** *C. Center* Dept. 5:00 pm **Wakpala** *C. Center* Dept. 5:20 pm **GR Casino** *Hotel Lobby* Dept. 5:30 pm **Mobridge** *Gas & Goodies* Arrive 5:35 pm	**Bullhead** *C. Center* Dept. 6:30 am **Little Eagle** *C. Center* Dept. 7:00 am **Bear Soldier** Dept. 7:10 am **McLaughlin** *SBC Campus* *Cenex* Dept. 7:15 am **Fort Yates** *Transit Ctr* Arrive 7:50 am **Bismarck** ***(See Route #5)*** **Fort Yates** *Transit Center* Dept. 4:30 pm **McLaughlin** *Cenex* *SBC Campus* Dept. 5:05 pm **Bear Soldier** Dept. 5:15 pm **Little Eagle** *C. Center* Dept. 5:30 pm **Bullhead** Arrive 5:55 pm	**Porcupine** *C. Center* Dept. 7 am **Selfridge** *Cenex* Dept. 7:30 am **Fort Yates** Arrive 7:50 am **Bismarck** ***(See Route #5)*** **Fort Yates** *Transit Center* Dept. 4:30 pm **Selfridge** *Cenex* Dept. 4:50 pm **Porcupine** *C. Center* Arrive 5:20 pm	**Mandan** *Dans* *Spirit of Life* Dept. 6:23 am **Huff** Dept. 6:43 am **Fort Rice** Dept. 6:58 am **Cannon Ball** *Shuttle* Dept. 7:00 am **PK Casino** *Guest Service* Dept. 7:20 am **Fort Yates** Arrive 7:50am **Fort Yates** Dept. 4:30 pm **PK Casino** *Guest Service* Dept. 4:50 pm **Cannon Ball** *Shuttle* Dept. 5:15 pm **Fort Rice** Dept. 5:30 pm **Huff** Dept. 5:45 pm **Mandan** *Spirit of Life* *Dans* Arrive 6:00 pm	**Fort Yates** *Transit Center* Dept. 8:30 am **PK Casino** *Guest Service* Dept. 8:45 am **Solen** *Shuttle* Dept. 8:20 am **Cannon Ball** *Shuttle* Dept. 8:45 am **Fort Rice** Dept. 9:15 am **Huff** Dept. 9:30 am **Mandan** Dept. 9:50 am **Bismarck** Arrive 10:30 am **Bismarck** Dept. 2:30 pm **Mandan** Dept. 2:30 pm **Huff** Dept. 2:45 pm **Fort Rice** Dept. 3:10 pm **Cannon Ball** *Shuttle* Dept. 3:10 pm **Solen** *Shuttle* Arrive 3:30 pm **PK Casino** *Guest Service* Dept. 3:20 pm **Fort Yates** Arrive 3:45 pm	**Rapid City,** **Sioux Falls,** **Vivian** TBA **Pierre** Dept. 10:00 am **Onida** 10:30 am **Gettysburg** Dept. 11:00 am **Selby** Dept. 11:40 am **Mobridge** Dept. 12:10 pm **McLaughlin** Dept. 12:35 am **Fort Yates** Dept. 1:00 am **Bismarck** Arrive. 2:30 pm **Bismarck** Dept. 9:30 am **Fort Yates** Dept. 10:55 am **McLaughlin** Dept. 11:20 am **Mobridge** Dept. 12:10 pm **Selby** Dept. 12:50 pm **Gettysburg** Dept. 1:30 pm **Onida** Dept. 2:10 pm **Pierre** Arrive. 2:40 pm **Rapid City,** **Sioux Falls,** **Vivian** TBA	**Fort Yates** **Town** 7:55 am to 4:30 pm	**Fort Yates** *Transit Center* Dept. 6:00 am **McLaughlin** *Cenex* Dept. 6:30 am **Mobridge** *Gas & Good.* Dept. 7:00 am **Timber Lake** Dept. 6:30am **Eagle Butte** Dept. 7:10 am **Dupree** Dept. 7:45 am **Sturgis** Arrive 10:45 am **Sturgis** Dept. 5pm **Dupree** Dept. 8:00 pm **Eagle Butte** Dept. 8:35 pm **Timberlake** Dept. 9:10 pm **Mobridge** Dept. 10:40 pm **McLaughlin** Dept. 11:15 pm **Fort Yates** Arrive 11:45 pm	**Fort Yates** *Transit Center* Dept. 6:00 am **Cannon Ball** *C. Center* Dept. 6:30 am **Bismarck** *Transit Center* Dept. 7:30 am **Fargo** Arrive 11:00 am **Fargo** Dept. 5pm **Bismarck** *Transit Center* Dept. 8:00 pm **Cannon Ball** *C. Center* Dept. 9:00 pm **Fort Yates** *Transit Ctr.* Arrive 10:00 pm	**Wakpala** Dept. 6:30 am **Mobridge** *Gas & Goodies* Dept. 6:50 am **GR Casino** Dept. 7:00 am **Trail City** Dept. 7:20 am **McLaughlin** Arrive 8:00 am **Town Route** **8:15 – 3:00 pm** **McLaughlin** Dept. 4:30 pm **Trail City** Dept. 4:50 pm **GR Casino** Dept. 5:10 pm **Mobridge** Dept. 5:20 pm **Wakpala** Arrive 5:40 pm	**Solen** **Cannonball** 6:40 am To 4:30 pm	**SOUTH** **to NORTH** **Eagle Butte** Dept. 7:00 am **Timber Lake** Dept. 8:00 am **Mobridge** *GRC Hotel Lobby* Dept. 12:30 pm **McLaughlin** *Cenex* Dept. 1:05 pm **Fort Yates** *Transit Center* Dept. 1:35 pm **Bismarck** Arrive 2:50 pm *Transit Center* **NORTH** **to SOUTH** **Bismarck** *Transit Center* Dept. 9:30 am **Fort Yates** *Transit Center* Dept. 10:45 am **McLaughlin** *Cenex* Dept. 11:15 am **Mobridge** *GRC Hotel Lobby* Dept. 4:00 pm **Timber Lake** Dept. 5:00 pm **Eagle Butte** Arrive 5:50 pm

FIGURE 5-41 - SRTPT Transit Service Routes



Federal transit law requires that projects selected for funding under the Enhanced Mobility for Individuals and Individuals with Disabilities (Section 5310) Program be "included in a locally developed, coordinated public transit-human services transportation plan." This was accomplished when the Standing Rock Public Transit Coordinated Human Services Transportation Plan was approved in December 2017. Figure 5-42 lists the resulting goals, objective, and outcomes, which are identical to those listed in the 2018-2023 Transit Plan.

Figure 5-42 – Goals and Objectives, SRPTP 2018-2023

Goals	Objectives	Outcomes
Improve communications internally and externally	• Revise job descriptions • Create new job description to include marketing and management duties	Enhances organizational performance
Develop and empower Public Transit most valuable asset, its employees.	• Attract and recruit quality employees • Empower and retain efficient, effective, and productive employees • Implement employer provided employee incentive program	Public Transit is satisfied with the quality of its workforce Public Transit employees are satisfied with their jobs and feel their work contributes to an improved quality of life
Establish a culture of customer service and deliver services that are responsive to community needs.	• Develop marketing plan • Hire additional drivers • Provide driver training and certifications • Procure new vehicles	More people have access to and regularly use public transportation products and services
Establish Safety, Security and Emergency Program	• Develop comprehensive safety plan, policies and procedures • Identify employee orientation and safety training needs • Conduct ongoing employee orientation and safety training • Evaluate effectiveness of employee training	Ensure the Public Transit's employees ability to effectively respond to potential and actual disasters
Improve financial and reporting processes	• Secure funding for electronic fare system	Streamline the use of technology for passengers

	• Purchase fare boxes for vehicles • Secure funding for electronic fare system • Develop practical database for financial and passenger reporting purposes	
Increase ridership	• Improve satisfaction with Public Transit products and services and the way they are delivered • Improve public awareness of Public Transit products and services	People are more satisfied with Public Transit products and services
Develop and implement "Travel Training" program	• Hire passenger assistants • Recruit volunteers for transit buddy system	Create a safe transportation services
Promote "Wisdom of Riding the Bus"	• Develop passenger testimonials and advertisements for radio and newspaper	People understand how to use Public Transit products and services and use them more often
Secure new mobile ad contracts	• Secure 2 new mobile ad contracts	Increased funding for Public Transit

The Plan recommendations from the SRTPT are all incorporated into this LRTP, and are described in the following bulleted list:

- The overall findings point to several recommendations for consideration. Based on the information gathered, the clear majority of the respondents who use or would use the transit system were from Sioux or Corson County. This indicates that more dollars and resources may need to be focused on those two counties.
- A clear majority of the respondents had their own transportation as a primary form of transportation. Only 5% of the respondents utilize the transit system currently as their primary form of transportation. This indicates that continued efforts in marketing and education need to be at the forefront of the Transit Board's efforts to increase ridership and utilization of services.
- 68% of the respondents reporting having children. Having access to child seats and drop off and pickups near day care facilities may be a consideration for increasing ridership and accessibility for riders.
- Respondents indicated that they would be more likely to use the transportation system in the morning hours than afternoon or evening hours. Also, a vast majority of the respondents indicated that they would utilize the system Monday-Friday. 75% of the respondents indicated that the current hours of operation meet their needs. For the ones that said the schedule didn't meet their needs there seemed to be a pattern of an issue

with the last bus leaving Fort Yates and lack of access to evening runs. Recommendations for the Board would be a closer look at increasing service for evening users and weekend accessibility.

- Respondents indicated that education, employment, and medical issues were the three main reasons people utilized the transit system. Recommendations would be to continue work with the various education entities, employers and medical facilities to provide routes and times that assist in riders utilizing the SRST Transit System.

In addition to the above recommendations, it is suggested that the SRPTC consider expanding its Uber-style service wherein passengers needing transportation could call Transit and then be picked up at various locations along an already established route.

UTILITIES

EXISTING CONDITIONS

Utility conditions have an important part to play in the maintenance of roads and in the cost of construction or reconstruction. When undertaking roadway improvements, it is essential that the age, condition, and capacity of utilities under the road be considered and addressed.

A map showing existing locations for power substations, wells, electric transmitters, and rural water pipelines is available in the 2016 SRST MHMP Update.

RECOMMENDATIONS

Existing lighting conditions and recommendations are discussed in Chapter 5 of this Report. It is also suggested that the SRST regularly review utility mapping for accuracy and provide updates as improvements are made. This information is imperative when planning transportation improvements in communities where utilities are more likely to be impacted. This will also allow for planning utility repairs and upgrades to be performed concurrently with road projects.

CHAPTER 6 - POLICY RECOMMENDATIONS

The purpose of this chapter is to identify recommended policies to support an efficient and safe future transportation system.

HOUSING, SOCIAL AND ECONOMIC DEVELOPMENT PRIORITIES

Standing Rock Housing Authority (SRHA) currently manages requests for new housing and development on the Standing Rock Indian Reservation. Future decisions regarding Tribal growth and locations for new housing will impact the Tribe's ability to maintain their existing transportation system. The SRHA has preliminary plans for new additions in the following communities:

- Bear Soldier
- Bullhead
- Cannon Ball
- Fort Yates
- Kenel
- Little Eagle
- Selfridge
- Sioux Village
- Solen
- Wakpala

If housing is expanded into new areas or new subdivisions are built, it will require extension of both utilities and roadway facilities. The plans that were reviewed during the LRTP process show that the new additions on the Reservation include expansions of current housing developments, like the images shown in Figures 6-1 and 6-3, depicting new additions in Sioux Village and Bullhead, respectively.

This makes sense, as the cost of utilities and roads is generally less if current facilities can be expanded. Other amenities are also more feasible in expanded subdivisions and towns. Examples include schools, recreational facilities, retail establishments, and transit stops.

Figure 6-1 – Proposed Additions – Sioux Village

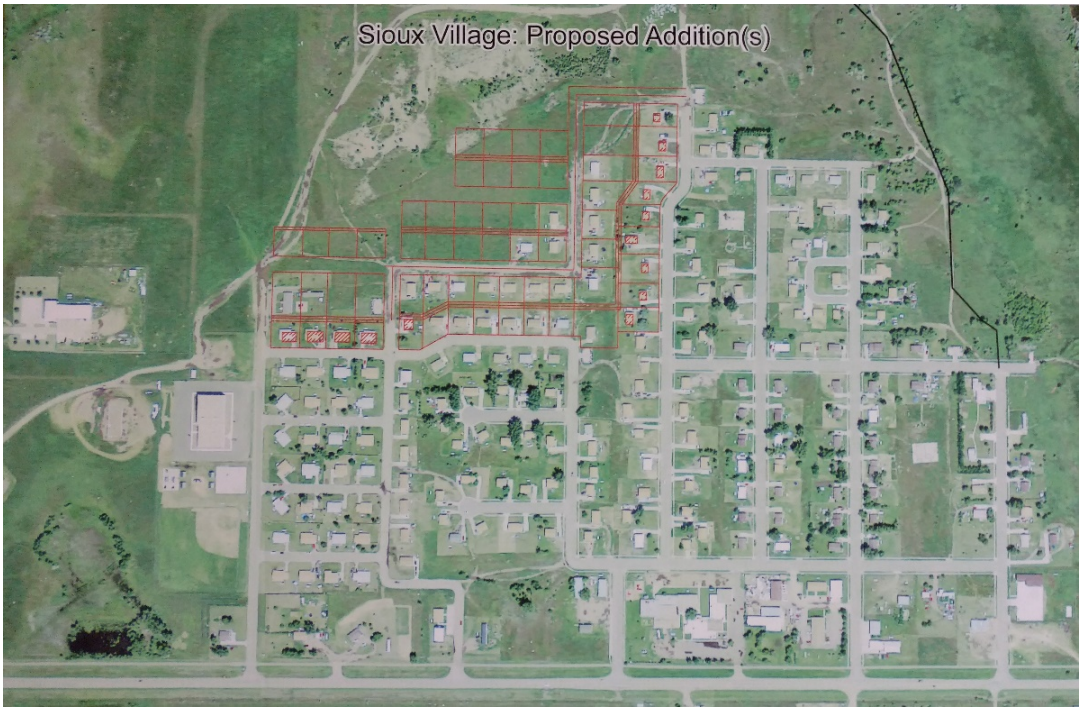


Figure 6-2 – Proposed Additions – Cannon Ball

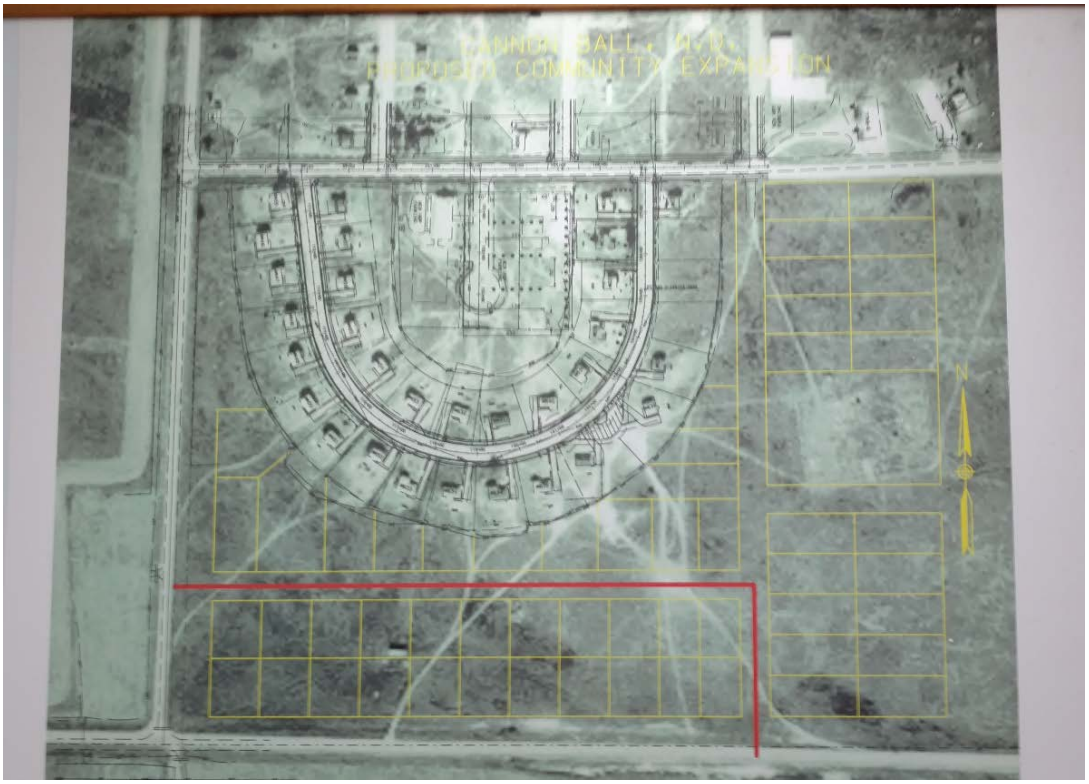


Figure 6-3 – Proposed Additions – Bullhead

However, if future housing development occurs adjacent to current roads and utilities, more funding resources will be available to maintain and upgrade the existing transportation system. The new housing proposed for Cannon Ball, shown in Figure 6-2, is planned in this manner.

Examples of promising housing lot availability lies in and around many of the SRST towns and subdivisions. There are many vacant lots adjacent to quality roadways and near amenities such as medical services, schools, Tribal offices, and nearby transit services.

It is therefore recommended that current Tribal practices for location of new housing, housing rehabilitation, and other economic development be reviewed. Optimal locations for future housing and economic development should be identified, mapped, and promoted in locations adjacent to well-maintained transportation corridors. Having optimal development locations mapped could improve and streamline the selection of better future development sites linked to available existing infrastructure.

The SRST has a project listed in this Plan specifically for the new construction of roads in future housing additions:

Project #	Project Title	Project Location	Project Description	Estimated Cost
5	NEW DISTRICT HOUSING	Reservation Wide	New construction: streets, curb and gutter, sidewalks, drainage	$17,500,000.00

The following projects are listed in the SRHA's Year 2015-2035 Master Economic Development and Housing Development Plan:

- Elderly apartment complex in Bear Soldier, SD
- Elderly apartment complex in Fort Yates, ND
- Three story public apartments in Fort Yates, ND

SYSTEM MANAGEMENT PRIORITIES

Given that funding is limited, some project needs should be delayed until higher priority needs are addressed. This section of the report suggests priorities for system management.

The goal of this effort is to get all roads on a low-cost rotational schedule of crack sealing and seal coat maintenance. For this to happen, roads that are already in good condition will need to be properly maintained and roads requiring structural overlays or full reconstruction will need to be completed as funding allows so they can be placed within this rotational schedule.

This transportation plan recommends that a strategic approach to Tribal priorities be established based on the following hierarchy of roadway needs:

Priority #1 – Conduct normal maintenance and needed upgrades and/or repairs on existing bridges, culverts, and guardrails, and crack sealing and seal coats on paved BIA and Tribal facilities

Priority #2 – Address safety issues on arterial routes, followed by safety issues on other routes

Priority #3 – Complete overlays or reconstruction on paved BIA highways

Priority #4 - Correct gravel road surface and cross section/drainage deficiencies on primary routes

Priority #5 – Complete overlays and reconstruction on paved city and subdivision streets

Priority #6 - Correct road surface and cross section/drainage deficiencies on secondary and primitive roads

It is recommended that maintenance and needed upgrades of existing bridges, culverts, and guardrails, and crack sealing and seal coats on paved BIA and Tribal facilities be given top priority over the rest of the transportation system. This will enable the Tribe to keep as much of their existing system in good condition as possible, without it getting in poor condition resulting in expensive reconstruction.

Paved roadways that are in fair to good condition should be set up on a rotational program of crack sealing, seal coats and/or non-structural overlays. According to FHWA TechBrief, Sealing and Filling Cracks in Asphalt Pavements, long-term crack sealing should be undertaken every 5-8 years on paved roads. Seal coats should be done every 7-10 years and non-structural overlays should be completed when needed, roughly every 15-20 or more years.

While not receiving as high a priority as paved routes, maintenance of the gravel road system is important to the mobility, economic viability, safety, and quality of life of many of the SRST's residents. Maintenance of primary gravel roads has been ongoing and most of the rest of the earth, dirt, primitive, and gravel roads system only receives attention in cases of emergency. A study is recommended to identify secondary routes that should receive maintenance and to improve proactiveness, resulting in fewer emergency events.

Given that the SRST is years away from providing desired conditions of the current roadway system, it is inadvisable for them to use their funds for construction of new routes or for paving existing gravel roads. Use of funds for these projects would result in a further decline in surface conditions elsewhere within the Reservation. Ideally, any new routes or pavements completed as part of economic development or new housing should leave maintenance responsibility with the development or agency undertaking the project.

ROADWAY CROSS-SECTION STANDARDS

Roadway, path and sidewalk projects have used typical cross-sections, though no clear standards have been adopted. Cross-section standards should be adopted for future projects and should serve as guidance for future housing and development projects. It is recommended that these standards be used on all future projects. The proposed cross-sections are shown in Figures 6-1 through 6-7.

FIGURE 6-1 – Standard High-Speed BIA Paved Road Typical Section

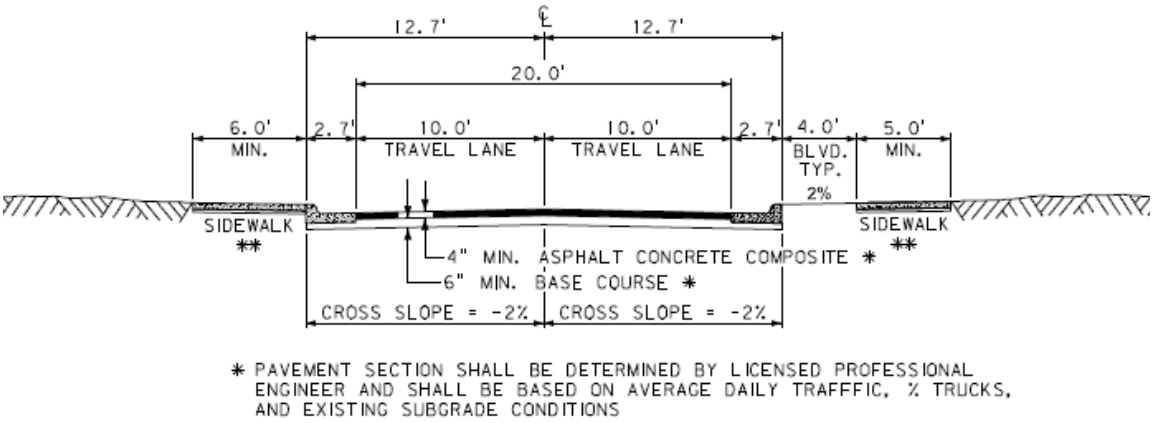


FIGURE 6-2 – Standard High-Speed Gravel Road Typical Section

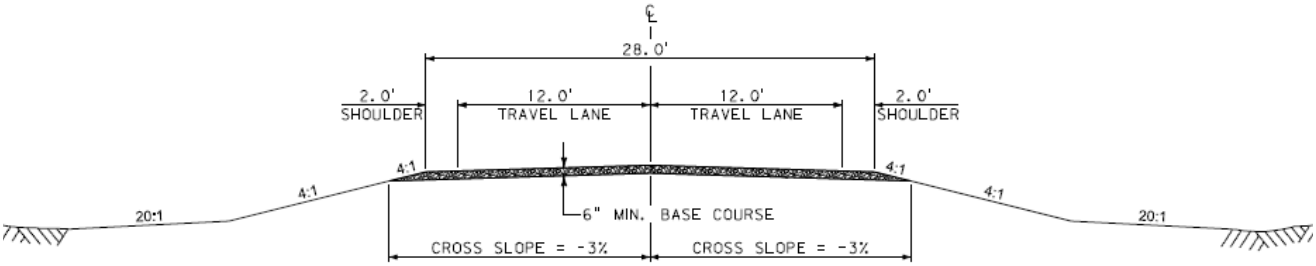


FIGURE 6-3 – Standard Low Speed Gravel Road Typical Section

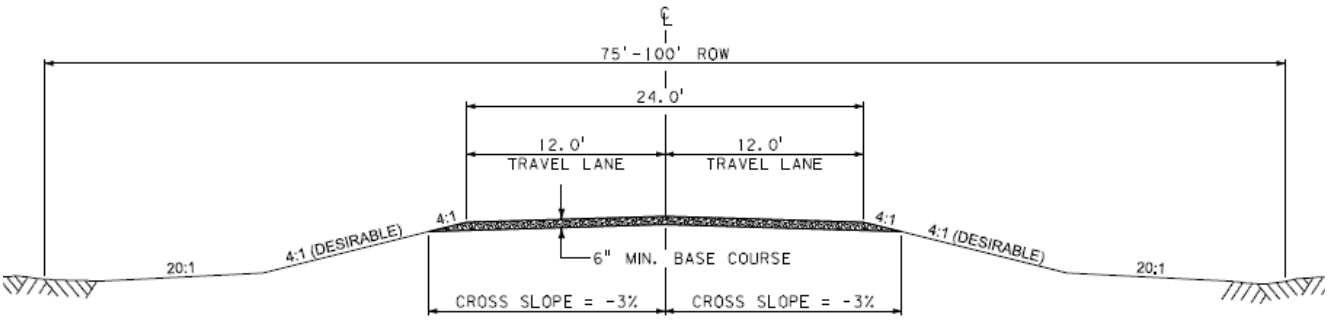
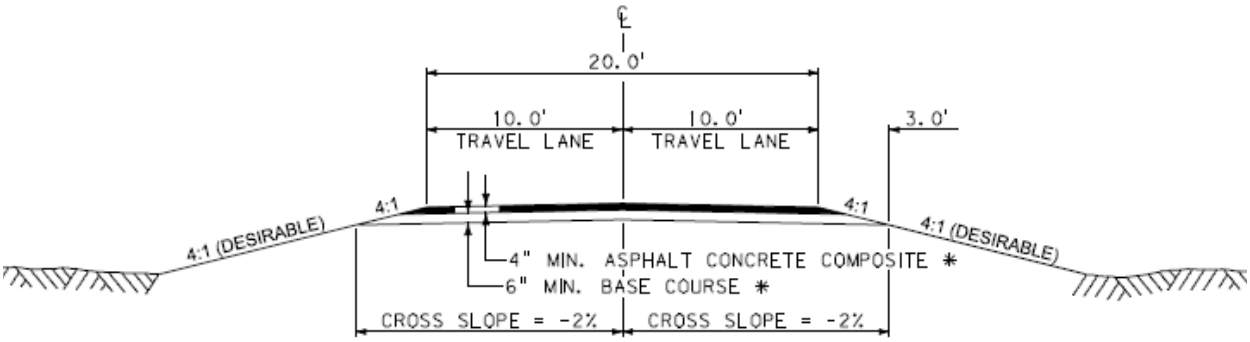
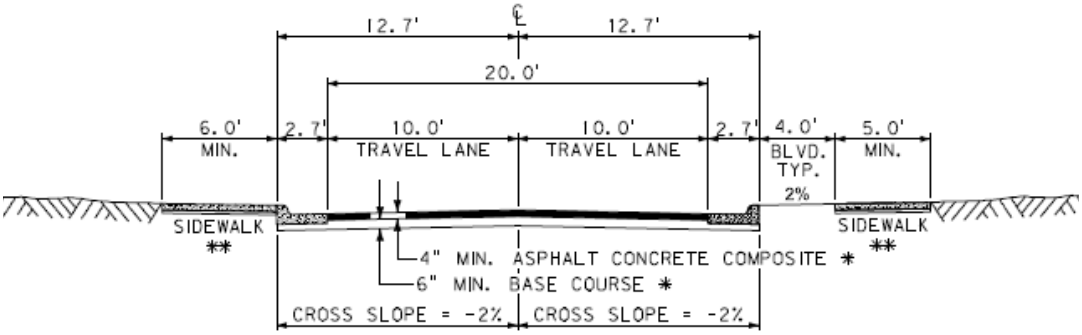


FIGURE 6-4 – Standard Tribal Housing & Residential Street Typical Section - Rural



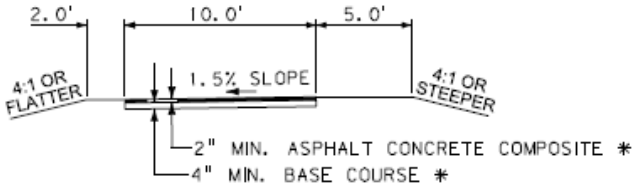
* PAVEMENT SECTION SHALL BE DETERMINED BY LICENSED PROFESSIONAL ENGINEER AND SHALL BE BASED ON AVERAGE DAILY TRAFFFIC, % TRUCKS, AND EXISTING SUBGRADE CONDITIONS

FIGURE 6-5 – Standard Tribal Housing & Residential Street Typical Section - Urban



* PAVEMENT SECTION SHALL BE DETERMINED BY LICENSED PROFESSIONAL ENGINEER AND SHALL BE BASED ON AVERAGE DAILY TRAFFFIC, % TRUCKS, AND EXISTING SUBGRADE CONDITIONS

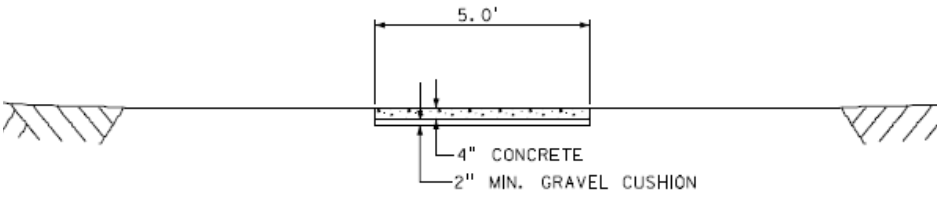
FIGURE 6-6 – Standard Separated Shared Use Path Typical Section



NOTE:
2" MIN. ASPHALT CONCRETE COMPOSTIE OVER 4" MIN. BASE COURSE
OR
4" MIN. CONCRETE OVER 2" MIN. GRAVEL CUSHION

* PAVEMENT SECTION SHALL BE DETERMINED BY LICENSED PROFESSIONAL ENGINEER AND SHALL BE BASED ON AVERAGE DAILY TRAFFFIC, % TRUCKS, AND EXISTING SUBGRADE CONDITIONS

FIGURE 6-7 – Standard Sidewalk Typical Section



DEVELOPMENT REVIEW

Future development proposals have the potential for impacts on the SRST transportation system. It is recommended that future development proposals be submitted to SRST Transportation for review and comment before approval. This will increase Tribal leaders' information and their ability to make the best decisions pertaining to the development and potential impacts to the transportation system.

ENVIRONMENTAL CONSIDERATIONS

The primary environmental impacts associated with the existing transportation system include dust-related impacts on air quality, erosion, and wild animal hits by automobiles. These also are considerations associated with future transportation improvement projects, as well as impacts to undeveloped land and wetlands.

The SRST is encouraged to consider and mitigate these impacts as is customary in future projects, and to apply for and take full advantage of grants and additional funding that can be applied to address these issues. Current practices to mow ditches is a useful method to improve visibility resulting in fewer wild animals hit, which are the top cause for accidents on the Reservation. Where appropriate, fencing should also be considered to further reduce interaction with wild animals and livestock.

CULTURAL CONSIDERATIONS

The Standing Rock Indian Reservation retains bountiful history and heritage within its borders. There are many cultural resources that require access at various times throughout the year, including many pow wow and sundance grounds, cemeteries, and unique historical sites. During the LRTP process it was noted that in many Standing Rock communities there are no pedestrian facilities leading to pow wow or sundance grounds. This concern has been voiced by many SRST members. In the future, if any access roads to cultural sites become degraded or unsafe, priority should be given to those sites that need road improvements, sidewalks, or shoulder widening.

ENERGY CONSERVATION CONSIDERATIONS

The SRST has been using Light-Emitting Diode (LED) lighting for locations accessible to electric utilities. The reason for LED preference over solar lighting has been that the maintenance cost for solar batteries is high and the performance of solar batteries is impacted by the colder weather. It is recommended that this energy conserving practice be continued until the cost and performance of solar batteries outweighs that for LED lighting.

Energy conservation can also be realized through improvements to roads that can serve as effective short cuts to other, longer routes.

Energy is conserved when people choose non-motorized transportation as their mode of travel. This plan provides alternatives to improve facilities for walking, biking, and transit. It is anticipated that as these facilities are improved, alternative mode choice will increase over time.

CHAPTER 7 - PROJECT FUNDING

State highways on the Reservation are currently funded and maintained by the SDDOT and NDDOT. There are multiple funding sources available for roads, bridges, sidewalks, trails, and transit which are not on the state highway system. It is possible that more of these funding sources can be tapped if a greater emphasis is placed on applying for these funds. These funding sources are discussed in the following sections.

TRIBAL TRANSPORTATION PROGRAM FUNDS

The Tribal Transportation Program (TTP) is the primary source of Tribal transportation funding. It is estimated that these funds will total about $2.4 million annually, or roughly 80-85% of total Tribal transportation funding over the next few years. The purpose of the TTP is to provide access to basic community services to enhance the quality of life in Indian country. The TTP replaces the former Indian Reservation Roads (IRR) program. Prior to distribution to Tribes, the following amounts may be deducted from the overall federal program:

- Up to 6% for program administration, including funding for Tribal Technical Assistance Centers (TTAPs). These funds may be used by the Secretary or the Secretary of the Interior for program management and oversight and project-related administrative expenses.
- Up to 2% per year for transportation planning, to be allocated among Indian Tribal governments that apply for transportation planning.
- Up to 2% per year for a nationwide priority program for improving eligible deficient bridges.
- Up to 2% per year for safety projects, to be allocated to applicant Tribal governments for eligible projects.

Unless additional funding resources can be tapped, funding for transportation improvements is limited to those resources identified in the Standing Rock Transportation Improvement Program (TIP).

TRIBAL TRANSPORTATION PROGRAM SAFETY FUNDS

Tribal Transportation Program Safety Funds (TTPSF) have established funding goals in four categories: Safety Planning (40%); Engineering Improvements (30%); Enforcement/EMS (20%); and Education (10%). Funds are available to federally recognized Indian Tribes through a competitive, discretionary program. Awarded annually, projects are chosen whose outcomes will address the prevention and reduction of death or serious injuries in transportation related

crashes. Safety funds support safety projects, studies, roadside safety audits, and other title 23-eligible safety activities.

In 2014 the SRST was awarded $7,500 to conduct a safety plan. It is anticipated that the Tribe will receive another grant of $7,500 in 2020 which will provide funding for an update to the safety plan. It is recommended that the SRST continue to apply for TTPSF funding to address transportation safety issues on the Reservation. The success of these applications can be increased if location-specific crash data is collected with a higher level of detail. With implementation of an electronic crash records system, this information will provide the supporting evidence needed to justify project funds.

SRST has also successfully applied for the following TTPSF grants:

Project	Amount	Year Awarded
Cannon Ball Shared Use Path Project	$343,200.00	2015
Stalker Traffic Data Collector	$2,535.00	2017
Cannon Ball Shared Use Path Project Phase 2	664,472.00	2018

TRIBAL BRIDGE PROGRAM FUNDS

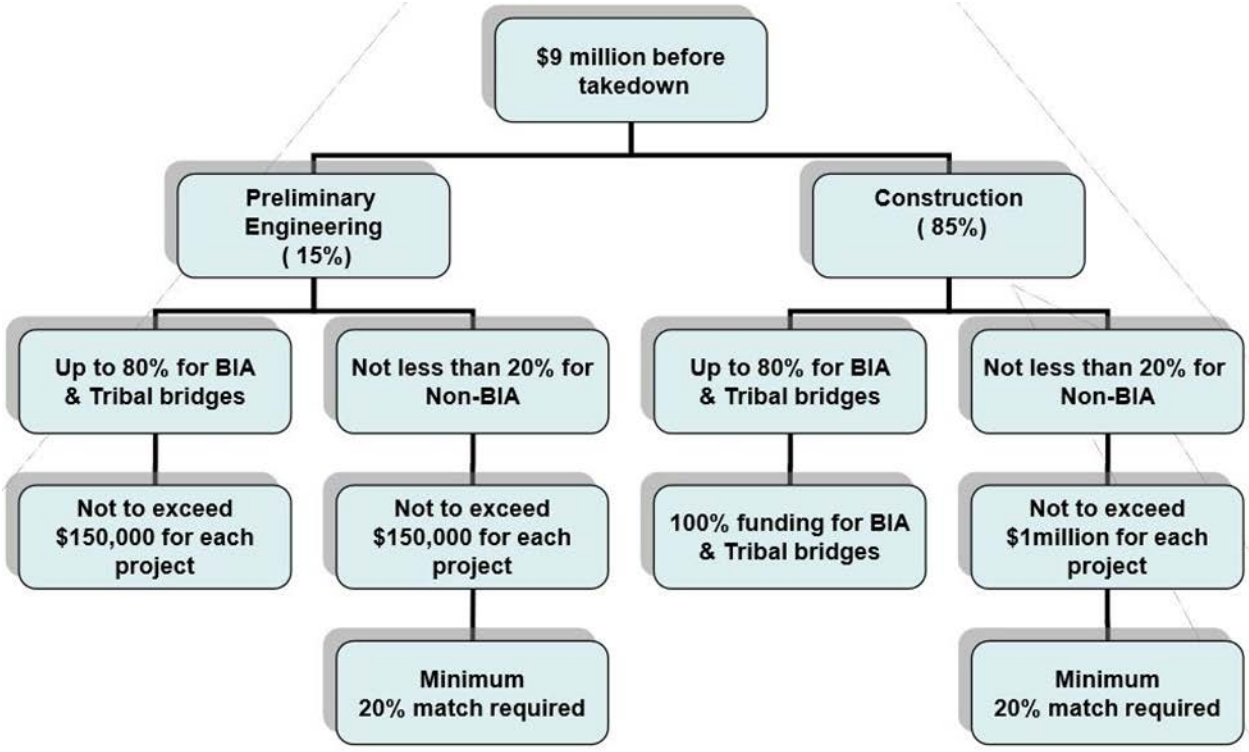
Applications for bridge project funding can be submitted under the Tribal Transportation Bridge Program (TTBP). All projects are ranked and prioritized based on the following criteria:

- Bridge sufficiency rating (SR);
- Bridge status with structurally deficient (SD) having precedence over functionally obsolete (FO);
- Bridges on school bus routes;
- Detour length;
- Average daily traffic
- Truck average daily traffic.

TTBP funds may be used for planning, design, engineering, preconstruction, construction, and inspection of a project to replace, rehabilitate, seismically retrofit, paint, or for anti-icing and deicing, or to implement any countermeasures (including multiple-pipe culverts) for eligible Tribal transportation facility bridges.

MAP-21 requires the inspection of all public bridges including Tribal bridges be performed at least every 2 years, and the reporting of data into the FHWA National Bridge Inventory. To be eligible for funding, a bridge must have an opening of at least 20 feet, be classified as a Tribal transportation facility, and be structurally deficient or functionally obsolete. On a national level, annual Tribal bridge program funding that the SRST can compete for is shown in Figure 7-1.

FIGURE 7-1 – Annual Tribal Bridge Program Funding



TRIBAL TRANSIT PROGRAM FUNDS

Per the SDDOT website, the Federal Transit Administration (FTA) Section 5311 Program authorizes capital, administrative, operating assistance and training grants to state agencies, local governments, Indian Tribes, and nonprofit organizations providing rural public transportation services. All projects must benefit residents in non-urbanized areas (under 50,000 population) of South Dakota. Section 5311 provides up to 80% federal share of the costs for administrative expenses, up to 80% for capital costs and up to 50% of the net operating deficit for rural transit operations.

Coordinated community transit systems serving both the rural public and human service agencies are preferred applicants for Section 5311 grants.

The Rural Technical Assistance Program (RTAP) available under Section 5311 provides grants for training at 100% federal share. Eligible subgrantees for RTAP training grants include administrative and operating personnel providing rural transit services to areas in South Dakota.

The Tribe received a TTP grant in 2015 for $34,500 to purchase materials for transportation safety education.

TRANSPORTATION ALTERNATIVE & RECREATIONAL TRAILS FUNDING

Transportation Alternatives is authorized by the Fixing America's Surface Transportation Act (FAST Act) which provides funding for a variety of alternative transportation projects, including many that were previously eligible under separately funded programs. The Transportation Alternatives (TA) Program replaces funding from *previous programs authorized under MAP-21,* including Transportation Enhancements, Recreational Trails, Safe Routes to School, and other discretionary programs. The Federal share for these projects is 86.58%, with the non-Federal share covered by the responsible jurisdiction. The award maximum is $400,000.

Eligible categories include:

- On-road and off-road trail facilities for pedestrians and bicyclists, including ADA improvements;
- Historic Preservation and rehabilitation of transportation facilities;
- Archeological activities relating to impacts for a transportation project;
- Any environmental mitigation activity, including prevention and abatement to address highway related stormwater runoff and to reduce vehicle/animal collisions including habitat connectivity;
- Turnouts, overlooks, and viewing areas;
- Conversion/use of abandoned railroad corridors for trails for non-motorized users;
- Inventory, control, and removal of outdoor advertising;
- Vegetation management in transportation right of way for safety, erosion control, and controlling invasive species;
- Construction, maintenance, and restoration of trails and development and rehabilitation of trailside and trailhead facilities;
- Development and dissemination of publications and operation of trail safety and trail environmental protection programs;
- Educations funds for publications, monitoring, and patrol programs and for trail-related training;
- Planning, design, and construction of projects that will substantially improve the ability of students to walk and bicycle to school; and
- Non-infrastructure-related activities to encourage walking and bicycling to school, including public awareness campaigns, outreach to press and community leaders, traffic education and enforcement school vicinities, student sessions on bicycle and pedestrian safety, health, and environment, and funding for training.

The Tribe received a TA grant in 2017 for $200,000.00 for Phase 1 of the Cannon Ball shared use path project.

BUILD GRANTS

The Department of Transportation provides funding through the Better Utilizing Investments to Leverage Development (BUILD) program. The funds are awarded on a competitive basis for capital investments in transportation projects that will have a significant local or regional impact.

The April 2018 release of the new BUILD program made available $1.5 billion in discretionary funding to support roads, bridges, transit, rail, ports or intermodal transportation. Not less than 30 percent (or $450 million) of the funds provided shall be used for projects located in rural areas. Additionally, the FY2018 Appropriations Act allows for up to $15 million to be awarded as grants for the planning, preparation or design of eligible projects, known as BUILD Transportation Planning Grants.

Projects for BUILD will be evaluated based on merit criteria that include safety, economic competitiveness, quality of life, environmental protection, state of good repair, innovation, partnership, and additional non-Federal revenue for future transportation infrastructure investments.

Competition for BUILD grants is anticipated to be very high, and the right project, a strong strategy and supporting local funding is needed for grant applications to have a reasonable chance at being approved. While a successful grant application can prove challenging, the rewards of a successful grant application is generally a project of significant value.

There is BUILD funding application pending approval in the amount of $6.7 million for a new Missouri River bridge crossing.

FEDERAL TRANSPORTATION AUTHORITY (FTA) TRIBAL TRANSIT GRANTS

The FAST Act authorizes the Public Transportation on Indian Reservations Program (Tribal Transit Program (TTP) for Fiscal Years 2016-2020. This program consists of a $30 million formula program and a $5 million competitive grant program subject to the availability of appropriations.

A 10-percent local match is required under the competitive program, however, there is no local match required under the formula program. This program is available to federally recognized Tribes that are eligible recipients under the Tribal Transit Program. Funding may be used for capital, operating, planning, and administrative expenses for public transit projects that meet the growing needs of rural Tribal communities.

SD TRANSPORTATION ECONOMIC DEVELOPMENT PROGRAMS

The South Dakota Department of Transportation administers a grant program to foster economic development and enhance community access in South Dakota. The program has three categorical purposes, each category providing for 60 percent of construction costs of the project, not including engineering or utility work. The grant size under each program is limited to $400,000.

Industrial Park grants will be made to any local unit of government for the development of new or expanded access for new industry located within industrial parks. Applications are due April 15, July 15, or October 15.

Agri-Business grants will be made to any local unit of government for the development of new or expanded agri-business industries. Applications are due April 15, July 15, or October 15.

Community Access Grants are state funds for towns less than 5,000 in population and are for the construction or reconstruction of major streets in each town such as Main Street, the road to the elevator, schools, hospitals, etc. Applications are due July 15.

FEDERAL AVIATION ADMINISTRATION AIRPORT IMPROVEMENT PROGRAM

The Airport Improvement Program (AIP) provides grants to public agencies — and, in some cases, to private owners and entities — for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems (NPIAS).

For large and medium primary hub airports, the grant covers 75 percent of eligible costs (or 80 percent for noise program implementation). For small primary, reliever, and general aviation airports, the grant covers a range of 90-95 percent of eligible costs, based on statutory requirements.

AIP grants for planning, development, or noise compatibility projects are at or associated with individual public-use airports (including heliports and seaplane bases). A public-use airport is an airport open to the public that also meets the following criteria:

- Publicly owned, or
- Privately owned but designated by FAA as a reliever, or
- Privately owned but having scheduled service and at least 2,500 annual enplanements.

Further, to be eligible for a grant, an airport must be included in the NPIAS. The NPIAS, which is prepared and published every 2 years, identifies public-use airports that are important to public transportation and contribute to the needs of civil aviation, national defense, and the Postal service.

The description of eligible grant activities is described in the authorizing legislation and relates to capital items serving to develop and improve the airport in areas of safety, capacity, and noise compatibility. In addition to these basic principles, an awardee must be legally, financially, and otherwise able to carry out the assurances and obligations contained in the project application and grant agreement.

Eligible projects include those improvements related to enhancing airport safety, capacity, security, and environmental concerns. In general, sponsors can get AIP funds for most airfield capital improvements or rehabilitation projects and in some specific situations, for terminals, hangars, and nonaviation development. Certain professional services that are necessary for eligible projects (such as planning, surveying, and design) can also be eligible. The FAA must be able to determine that the projects are justified based on civil aeronautical demand. The projects must also meet Federal environmental and procurement requirements.

The following requirements must also be met for FAA to consider a project for AIP funding:

- The project sponsorship requirements have been met.
- The project is reasonably consistent with the plans of planning agencies for the development of the area in which the airport is located.
- Sufficient funds are available for the portion of the project not paid for by the Federal Government.
- The project will be completed without undue delay.
- The airport location is included in the current version of the NPIAS.
- The project involves more than $25,000 in AIP funds.
- The project is depicted on a current airport layout plan approved by FAA.

Figure 7-2 lists examples of typical eligible and ineligible AIP Projects.

Figure 7-2 - Examples of Eligible and Ineligible AIP Projects

Examples of Eligible Versus Ineligible AIP Projects	
Eligible Projects	Ineligible Projects
Runway construction/rehabilitation	Maintenance equipment and vehicles
Taxiway construction/rehabilitation	Office and office equipment
Apron construction/rehabilitation	Fuel farms*
Airfield lighting	Landscaping
Airfield signage	Artworks
Airfield drainage	Aircraft hangars*
Land acquisition	Industrial park development
Weather observation stations (AWOS)	Marketing plans
NAVAIDs such as REILs and PAPIs	Training
Planning studies	Improvements for commercial enterprises
Environmental studies	Maintenance or repairs of buildings
Safety area improvements	
Airport layout plans (ALPs)	
Access roads only located on airport property	
Removing, lowering, moving, marking, and lighting hazards	
Glycol Recovery Trucks/Glycol Vacuum Trucks	

*May be conditionally eligible at non-primary airports.

For complete information about the AIP, view the website at www.faa.gov/airports/aip. Both Standing Rock Airport and the McLaughlin Municipal Airport receive $150,000.00 annually. This Plan recommends that the SRST continue to apply for AIP grants. Successful projects completed at the Standing Rock Airport through AIP funds are:

- 2007 – Runway Rehabilitation (14/32) - $123.315
- 2008 – Apron Rehab - $113,216
- 2009 – Install Perimeter Fencing, Runway Lighting Rehab (14/32), Remove Obstructions - $705,955
- 2009 - Runway Rehab (14/32) - $1,108,000
- 2010 – Improve Access Road - $332,500
- 2011 – Remove Obstructions, Update Airport Master Plan Study - $119,999

LOCAL FEES AND TAXES

The SRST has very limited resources for raising local funds. Some items that may be considered include assessing a wheel tax on vendors, fines for overweight vehicles, and fees associated with haul road agreements. The success of any of these options is contingent on Tribal lawyers drafting the regulations and laws required and Tribal courts providing needed enforcement.

RECOMMENDED FUNDING STRATEGY

Until an inventory of pavement conditions and a pavement management plan is prepared, it is difficult to know the extent of transportation improvement needs, both now and heading into the future. It is reasonable to anticipate that the needs will be greater than funding that is available. The federal register requires analysis of funding alternatives.

Keeping this in mind, it is more important than ever that the SRST wisely spend the limited funds that are received and make necessary efforts to leverage additional funds from competitive funding programs.

Figure 7-3 provides a general guide for project types and funding mechanisms. It should be consulted yearly to determine potential projects that fit within competitive programs. When projects are identified, the Tribe should determine the appropriate timing to initiate funding applications.

FIGURE 7-3 – Funding Mechanisms by Project Type

Funding Program	Acronym	Funding Mechanism	Typical Project Type
Tribal Transportation Program Funds	TTP	Allocation	Roads
Tribal Safety Funds	TTPSF	Application	Studies, guard rail, hazard reduction
Tribal Bridge Program Funds	TTBP	Application	Bridges
Transportation Alternative Funding	TA	Application	Sidewalks and shared use paths
Better Utilizing Investments to Leverage Development Funds	BUILD	Application	Variety tied to economic development
Congestion Mitigation and Air Quality Funds	CMAQ	Application	Maintenance equipment
Transit	FTA	Application	Transit buses, transit shelters

Strategic decisions on where to use available funds must recognize that use of funds to address one need often impacts the ability to resolve another need. Figure 7-4 shows annual averages of available and used funding from the 2019-2023 TTIP.

Figure 7-4 also shows the balance of funding applied to new construction and reconstruction, major rehabilitation, pavement preservation and maintenance. This table is intended to serve as a guide, so that when, for example, decisions are made to spend more on one type of project, additional decisions are needed to spend less on another type of project. Alternative funding covering bike paths, bridges and transit are not shown as these will generally be dependent upon success in submitting applications and competition against other submittals.

FIGURE 7-4 – Annual Tribal Program Funding

Available Funds (With Estimated Grants)	Annual Average
Est. TTP Formula Funds	$2,455,350.00
Est. Carry Over	$1,536,507.00
Other Est. Annual Funds	$212,913.00
Total	**$4,204,770.00**

Funding Use	Annual Average
Planning and Design	$ 73,880.00
Transit	$ 5,000.00
Projects and Maintenance	$ 2,252,956.00
Total	**$2,331,836.00**

Other Est. Annual Funds	
TTP Safety Funds	$134,394.00
TTP Bridge Funds	$0.00
TA Funds	$40,000.00
BUILD Grants	$0.00
Other (SD TAP)	$38,519.00
Total	**$212,913.00**
Available Funds	$4,204,770.00
Funding Use	-$2,331,836.00
Total Remaining Funds	**$1,872,934.00**

New Construction and Reconstruction	Cost/Mile	Priority Miles	Miles/Year	Annual Cost
Street Construction/Reconstruction	$1,700,000.00	3.5	0.3	$510,000.00
Lighting (TA Match)	$300,000.00	3	0.50	$150,000.00
Sidewalks (TA Match)	$200,000.00	3	0.20	$40,000.00
Shared Use Paths (TA Match)	$300,000.00	7	0.50	$150,000.00
			Subtotal	$850,000.00
Major Rehabilitation				$0.00
Major Surface Rehabilitation	$750,000.00	0	0	$0.00
Gravel Rehabilitation	$150,000.00	4	0.5	$75,000.00
			Subtotal	$75,000.00
Pavement Preservation				
Chip Seal	$35,000.00	100	10	$350,000.00
Crack filling and sealing	$2,000.00	100	10	$20,000.00
4-Inch Structural Overlay	$500,000.00	0	0.5	$250,000.00
1-1/2 Inch Non-Structural Overlay	$275,000.00	20	0.5	$137,500.00
			Subtotal	$757,500.00
Maintenance				
Patching (In Square Yards)	$20.00	100	100	$2,000.00
Gravel Blading & Maintenance	$5,000.00	20	4	$20,000.00
Conversion of Primitive to Gravel	$82,000.00	4	0.5	$41,000.00
Multi-Route Pavement Striping	$2,000.00	10	10	$20,000.00
Bridge and Culvert Maintenance	$26,000.00	1 LS	1	$26,000.00
Equipment Acquisition and Repairs	$150,000.00	1 LS	0.5	$75,000.00
Dust Control	$8,000.00	0	0	$0.00
			Subtotal	**$184,000.00**
			Project Improvements	**$1,866,500.00**

CHAPTER 8 - PROJECT PRIORITIZATION PLAN

Projects were prioritized in line with available funding, anticipated success in applying for competitive funding, proposed policies and identified project needs.

State highway improvements will be implemented based upon state and federal funding availability and based upon their own prioritization methodology. Project prioritization may vary based upon other infrastructure needs. For example, if a major water main is to be installed under a roadway, it is more cost effective to improve this roadway in combination with the underground utility improvements rather than restoring the road and improving it in subsequent years. At the time this report was completed, a utility implementation strategy was unavailable.

SHORT AND LONG RANGE PROJECT RECOMMENDATIONS

Short range projects are those anticipated to be completed by the end of the year 2023. To maintain the Tribe's economic sustainability, funding must be carefully distributed to the most critical locations. Proposed short range projects are listed in Figure 8-1.

FIGURE 8-1 – Short Range Projects and Funding

SRST - TTIP Projects - Fiscal Years 2019-2023						
		FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Project #	Project Description					
1	Reservation Wide Signing				$ 337,450.00	
2	Turn Lanes - Dollar Store on ND 24	$ 20,000.00				
3	BIA 31 Widening			$ 405,000.00		
4	Community Streets Improvement (ND)	$ 125,000.00		$ 125,000.00		
5	Community Streets Improvement (SD)	$ 125,000.00		$ 125,000.00		
6	Bullhead East & Surfacing	$ 250,000.00		$ 250,000.00		
7	Cannon Ball Shared Use Path Phase 1	$ 350,000.00				
8	Cannon Ball Shared Use Path Phase 2		$ 600,000.00			
9	Bullhead Shared Use Path	$ 179,330.00				
10	Kennel Culverts	$ 953,000.00				
11	BIA 6 Resurfacing to ND 6 East			$ 1,500,000.00	$ 1,500,000.00	
12	BIA 3 Resurfacing to State Line South					$ 2,000,000.00
13	BIA 3400 - Little Eagle South Loop	$ 900,000.00				
14	Bear Soldier Shared Use Path Lighting	$ 20,000.00				
15	New Missouri River Bridge*	$ 8,000,000.00				

*The New Missouri River Bridge Project is also listed in the long range plans as Project Number 35. It may be started in the short term pending approval of a $6.7M BUILD Grant.

There is a surplus of $850,000 in the 2019-2023 TTP. This Plan recommends that those funds be used on projects from the PMP which have not yet been completed. These projects are listed in Figure 8-2.

Figure 8-2 – Incomplete PMP Projects

Project #	Community/ Route	Total Length (miles)	Average Paser Rating	Treatment Type	Estimated Cost (2017 Dollars)
LR #15	Fort Yates	0.8	3.8	Reconstruction	$ 606,515.00
LR #2	Fort Yates	0.9	4.2	Repave Utility Trenches	$ 187,386.00
LR #2	McLaughlin	0.8	5	Non-Structural Overlay	$ 168,333.00
LR #36	McLaughlin	0.9	4.5	Reconstruction	$ 701,515.00
LR #27	Cannon Ball	0.7	5	Non-Structural Overlay	$ 137,121.00
LR #2	Cannon Ball	0.8	4	Structural Overlay	$ 316,742.00
LR #36	Wakpala	0.1	3	Reconstruction	$ 105,303.00
LR #2	Little Eagle	0.2	4	Non-Structural Overlay	$ 49,811.00
LR #2	Bullhead	0.3	5	Non-Structural Overlay	$ 56,061.00
LR #2	BIA 6	8.0	5.1	Non-Structural Overlay	$ 1,560,000.00
LR #3	BIA 6	5.3	6.2	Chip Seal	$ 172,250.00

Prioritizing by PASER rating, the Tribe should shift the reconstruction projects in Fort Yates and Wakpala into the short range. These projects total $711,818, which leaves $138,182 that could be used to either complete non-structural overlays in Bullhead and on BIA 6, or the non-structural overlay in Cannon Ball. It is recommended that the Tribe decide on chosen priorities and amend the current TTIP.

Long range projects are those anticipated to be completed after the year 2023. While many of these projects are desired sooner, funding limitations indicate that it may not be possible to complete them during the short-range element of the plan. Some of these projects may become short range projects if the Tribe is able to pull from alternative funding sources described earlier. Long range projects are shown in Figure 8-3.

FIGURE 8-3 – Long Range Projects and Costs

Project #	PROJECT TITLE	Project Location	Project Description	Estimated Cost
1	ROAD MAINTENANCE	Reservation Wide	Snow removal, mowing, clearing ROW, blading gravel, etc.	$ 250,000.00
2	NTTFI ROUTES: PAVEMENT PRESERVATION	Reservation Wide	Structural/nonstructural asphalt overlays	$ 40,500,000.00
3	NTTFI ROUTES: PAVEMENT PRESERVATION CHIP	Reservation Wide	Chip seals	$ 2,632,500.00
4	SCHOOL SAFETY PROJECTS	Reservation Wide	Pavement markers, lighting, ped activated flashers, shared use	$ 600,000.00
5	NEW DISTRICT HOUSING	Reservation Wide	New construction: streets, curb&gutter, sidewalks, drainage	$ 17,500,000.00
6	1806 FORT YATES TO MOBRIDGE	ND/SD BIA 3	Reconstruction	$ 49,320,000.00
7	BIA 16 MARINA ROAD	BIA 16	Reconstruction	$ 4,212,000.00
8	BIA 22 EAGLE ROAD	S of Cannon Ball	Gravel surfacing	$ 500,000.00
9	BIA 12 LOANS HIM ARROW LOOP	2 mi N of Fort Yates	Gravel surfacing	$ 191,000.00
10	ND LONG RANGE SAFETY IMPROVEMENT PROJECT	Reservation Wide	Edge lines, rumble strips	$ 250,000.00
11	ND LONG RANGE SAFETY CURVE IMPROVEMENT	Reservation Wide	Chevron, stop bars, advance warning and other signage, lighting	$ 250,000.00
12	FORT YATES POST OFFICE ROAD	BIA 3104 Fort Yates	Asphalt rehabilitation	$ 450,000.00
13	CANNON BALL COMMUNITY PATHWAY	Cannon Ball	Shared Use Path	$ 975,000.00
14	BIA 1	Cannon Ball	Asphalt rehabilitation, gravel resurfacing	$ 4,020,000.00
15	FORT YATES ACCES ROAD	BIA 31 Fort Yates	Reconstruction	$ 450,000.00
16	BIA 36 - CANNON BALL ACCESS ROAD	Cannon Ball	Reconstruction	$ 5,400,000.00
17	BIA 7 CULVERT REPAIR	5 mi E of Porcupine, Halfway	Culvert repair	$ 200,000.00
18	CANNONBALL Y-INTERSECTION IMPROVEMENT	BIA 16 Cannon Ball	Intersection modification	$ 792,000.00
19	BIA 36 LIVING SNOW FENCE	Cannon Ball	Tree rows	$ 75,000.00
20	CANNON BALL - 3RD AVENUE	Cannon Ball	Manhole repair	$ 50,000.00
21	SIOUX VILLAGE LIGHTING	W of Fort Yates	Lighting installation, lighting upgrades	$ 800,000.00
22	NEW FORT YATES ACCESS ROAD	Fort Yates	New Construction: Bridge or causeway	$ 2,625,000.00
23	FORT YATES ACCES ROAD LIGHTING	BIA 31	Lighting upgrades	$ 364,000.00
24	PORCUPINE WALKWAY	BIA 7 Porcupine	Shared use path	$ 338,000.00
25	ND LRSP INTERSECTION IMPROVEMENTS	Sioux County, ND	Rumble strips, destination lights, additional signage	$ 250,000.00
26	ND 24 / 1806 FORT YATES TO MANDAN	ND	NDDOT, road widening, curve flattening	$ 71,640,000.00
27	EXISTING ND COMMUNITY STREET IMPROVEMENTS	ND: Cannon Ball, Porcupine, Ft	asphalt overlays, chip seals, reconstruction	$ 7,313,920.45
28	ND 24 SAFETY IMPROVEMENTS	ND	signage, guardrail, curve delineation, chevrons	$ 425,000.00
29	BIA 3, KENEL TO ND 24	ND/SD	Asphalt overlay	$ 6,180,000.00
30	KENEL CULVERT REPLACEMENT	BIA 3 , 1 mi N of ND state line	Culvert replacement	$ 1,500,000.00
31	ND 24	"Dead Man's Curve" near Solen	Delineation and advance warning; full reconstruct of curve	$ 1,800,000.00
32	BIA 8 - STONE MAN ROAD	ND	Gravel surfacing	$ 236,500.00
33	NEW MISSOURI RIVER CROSSING	N of Fort Yates	Bridge construction	$ 8,000,000.00
34	BIA 6 & BIA 7	ND	Full depth reconstruction on BIA 6, moderate overlay on BIA 7	$ 19,764,000.00
35	YOUTH RANCH ROAD	ND: Cannon Ball to Fort Yates	Resurfacing with reconstruction on vertical curve	$ 636,000.00
36	EXISTING SD COMMUNITY STREET IMPROVEMENTS	SD: Bullhead, Kenel, Little Eagle, McLaughlin, Wakpala	Asphalt overlays, chip seals, reconstruction	$ 3,404,166.67
37	BIA 20 SAFETY IMPROVEMENTS	SD	Center and edge rumble strips	$ 150,000.00
38	BULLHEAD PATHWAY	BIA 20	Shared use path and pedestrian bridge improvements	$ 260,000.00
39	BIA 3 SAFETY PROJECT	90-degree curve at ND/SD state line	Advisory speed placards to advance warning signs; chevrons and delineation; flashers to advance warning signs	$ 25,000.00
40	BIA 4 RESURFACING	SD	Pulverize asphalt, gravel resurfacing	$ 1,495,000.00
41	BIA 44 SAFETY UPGRADES	SD	Place speed advisory placards on curve warning signs	$ 25,000.00
42	BIA 44 - OAK CREEK CHANNEL REPAIR	SD S of Wakpala	Design/construct erosion control methods	$ 150,000.00
43	JOE LEAF CROSSING	SD SW of Bullhead	Construct replacement low-water crossing	$ 500,000.00
44	US 12 AT GRAND RIVER CASINO	SD W of Mobridge	Warning Signs, flashers, advisory speed placards	$ 25,000.00
45	McLAUGHLIN CUTACROSS	Corson County Rt 3110	Asphalt overlay	$ 5,350,000.00
46	LITTLE EAGLE CUTACROSS	BIA 3400	Reconstruction	$ 936,000.00
47	BEAR SOLDIER PATHWAY LIGHTING	SD	New lighting installation	$ 152,000.00
48	WAKPALA NORTHEAST LOW WATER CROSSING	SD	Construction of new low-water crossing	$ 1,000,000.00
49	WAKPALA NORTHEAST LOW WATER CROSSING	SD	Design of new low-water crossing	$ 500,000.00
50	KENEL PATHWAY	SD	Shared use path	$ 260,000.00
51	GAME & FISH PROGRAM ROAD	Fort Yates	Regrade base, asphalt pavement	$ 250,000.00
52	Bullhead Sidewalks	0.2 mi - see Figure 5-26	Sidewalk	$ 40,000.00
53	Cannon Ball Sidewalks	0.7 mi - see Figure 5-27	Sidewalk	$ 140,000.00
54	Cannon Ball Shared Use Path/Bike Rack	0.5 mi - see Figure 5-27	Shared Use Path	$ 150,500.00
55	Fort Yates Sidewalks	2.2 mi - see Figured 5-28 and 5-	Sidewalk	$ 660,000.00
56	Fort Yates Shared Use Path/Bike Racks	1.6 mi - see Figure 5-28	Shared Use Path	$ 482,500.00
57	Kenel Sidewalks	0.1 mi - see Figure 5-30	Sidewalk	$ 20,000.00
58	Kenel Shared Use Path	0.5 mi - See Figure 5-30	Shared Use Path	$ 1,500,000.00
59	Little Eagle Sidewalks	1.3 mi - see Figure 5-31	Sidewalk	$ 260,000.00
60	McLaughlin Sidewalks/Bike Rack	3.9 mi - see Figure 5-32	Sidewalk	$ 780,500.00
61	Porcupine Sidewalks	0.1 mi - see Figure 5-34	Sidewalk	$ 20,000.00
62	Porcupine Shared Use Path	0.5 mi - See Figure 5-34	Shared Use Path	$ 150,000.00
63	Wakpala Sidewalks	0.4 mi - see Figure 5-35	Sidewalk	$ 80,000.00
64	Wakpala Shared Use Path	3.4 mi - see Figure 5-35	Shared Use Path	$ 1,020,000.00
			TOTAL	$ 270,275,587.12

Figures 8-4 through 8-8 are tables of the long range projects divided into categories based on project type. Note that a single project may appear in more than one category.

Figure 8-4 – Long Range Paving Projects

Project Number	Project Title	Project Location	Project Description	Cost
2	NTTFI ROUTES: PAVEMENT PRESERVATION OVERLAYS	Reservation Wide	Structural/nonstructural asphalt overlays	$ 40,500,000.00
3	NTTFI ROUTES: PAVEMENT PRESERVATION CHIP SEAL	Reservation Wide	Chip seals	$ 2,632,500.00
5	NEW DISTRICT HOUSING	Reservation Wide	New construction: streets, curb&gutter, sidewalks, drainage	$ 17,500,000.00
6	1806 FORT YATES TO MOBRIDGE	ND/SD BIA 3	Reconstruction	$ 49,320,000.00
7	BIA 16 MARINA ROAD	BIA 16	Reconstruction	$ 4,212,000.00
12	FORT YATES POST OFFICE ROAD	BIA 3104 Fort Yates	Asphalt rehabiliatation	$ 450,000.00
14	BIA 1	Cannon Ball	Asphalt rehabiliatation, gravel resurfacing	$ 4,020,000.00
16	BIA 36 – CANNON BALL ACCESS ROAD	Cannon Ball	Reconstruction	$ 5,400,000.00
20	3rd Ave - Cannon Ball	Cannon Ball	Manhole repair	$ 50,000.00
26	ND 24 / 1806 FORT YATES TO MANDAN	ND	NDDOT, road widening, curve flattening	$ 71,640,000.00
27	EXISTING ND COMMUNITY STREET IMPROVEMENTS	ND: Cannon Ball, Porcupine, Fort Yates	asphalt overlays, chip seals, reconstruction	$ 7,313,920.45
34	BIA 6 & BIA 7	ND	Full depth reconstruction on BIA 6, moderate overlay on BIA 7	$ 19,764,000.00
35	YOUTH RANCH ROAD	ND between Cannon Ball and Fort Yates	Resurfacing with reconstruction on vertical curve	$ 636,000.00
36	EXISTING SOUTH DAKOTA COMMUNITY STREETS IMPROVEMENT	SD: Bullhead, Kenel, Little Eagle, McLaughlin, Wakpala	Asphalt overlays, chip seals, reconstruction	$ 3,404,166.67
45	McLAUGHLIN CUTACROSS	Corson County Rt 3110	Asphalt overlay	$ 5,350,000.00
51	GAME & FISH PROGRAM ROAD	Fort Yates	Regrade base, asphalt pavement	$ 250,000.00

Figure 8-5 – Long Range Bridge Projects

Project #	Project Location	Project Description	Project Type	Cost
17	ND: BIA 6, Porcupine	Repair top of box culvert at Halfway Creek	Culvert	$ 200,000.00
30	BIA 3 , 1 mi N of ND state line	Culvert replacement	Culvert	$ 1,500,000.00
33	ND: N of Fort Yates	New Missouri River Bridge EIS/update and PS&E	Bridge	$ 8,000,000.00
43	SD: SW of Bullhead	Joe Leaf Crossing on the Grand River: design and construction, T21N R24E S32, S33	Bridge	$ 500,000.00
48	SD: Wakpala	Wakpala NE creek low water crossing and road: construction	Bridge	$ 1,000,000.00
49	SD: Wakpala	Wakpala NE creek low water crossing and road: design	Bridge	$ 500,000.00

Figure 8-6 – Long Range Gravel Projects

Project #	Project Location	Project Description	Project Type	Cost
8	ND: BIA 22 Eagle Rd	2.5 mi gravel roadway needs surfacing	Gravel surfacing	$ 500,000.00
9	ND: BIA 12 Lonesome Arrow Loop	3.8 mi gravel roadway needs surfacing	Gravel surfacing	$ 191,000.00
35	ND: Youth Ranch Road	Design and construction; gravel, widening, fix steep grade at end of road	Gravel reconstruction/ surfacing	$ 636,000.00
40	SD: BIA 4	Pulverize 4 mi of existing asphalt; resurface entirety through multi-phase project	Gravel surfacing	$ 1,495,000.00

Figure 8-7 – Long Range Pedestrian/Bicycle Projects

Project #	Project Location	Project Description	Project Type	Cost
19	ND: BIA 36, Cannon Ball	Tree rows to provide living snow fence for existing shared use path	Tree rows	$ 75,000.00
23	ND: BIA 31 Fort Yates	Safety improvement to provide better lighting for foot traffic on access road	Lighting & Safety	$ 364,000.00
24	ND: BIA 6 Porcupine	Shared use path to ballfield	Shared Use Path	$ 338,000.00
38	SD: BIA 20	Shared use path and pedestrian bridge improvements	Shared use path and pedestrian bridge improvements	$ 260,000.00
47	SD: BIA 30 Section 20 Bear Soldier	Lighting along shared use path from Bear Soldier to McLaughlin	Lighting & Safety	$ 152,000.00
50	SD: Kenel	Design and construct shared use path adjacent to SD 1806 from powwow grounds N to 2nd Ave	Shared Use Path	$ 260,000.00
52	Bullhead Sidewalks	0.2 mi - see Figure 5-26	Sidewalk	$ 40,000.00
53	Cannon Ball Sidewalks	0.7 mi - see Figure 5-27	Sidewalk	$ 140,000.00
54	Cannon Ball Shared Use Path/Bike Rack	0.5 mi - see Figure 5-27	Shared Use Path	$ 150,500.00
55	Fort Yates Sidewalks	2.2 mi - see Figured 5-28 and 5-29	Sidewalk	$ 660,000.00
56	Fort Yates Shared Use Path/Bike Racks	1.6 mi - see Figure 5-28	Shared Use Path	$ 482,500.00
57	Kenel Sidewalks	0.1 mi - see Figure 5-30	Sidewalk	$ 20,000.00
58	Kenel Shared Use Path	0.5 mi - See Figure 5-30	Shared Use Path	$ 1,500,000.00
59	Little Eagle Sidewalks	1.3 mi - see Figure 5-31	Sidewalk	$ 260,000.00
60	McLaughlin Sidewalks/Bike Rack	3.9 mi - see Figure 5-32	Sidewalk	$ 780,500.00
61	Porcupine Sidewalks	0.1 mi - see Figure 5-34	Sidewalk	$ 20,000.00
62	Porcupine Shared Use Path	0.5 mi - See Figure 5-34	Shared Use Path	$ 150,000.00
63	Wakpala Sidewalks	0.4 mi - see Figure 5-35	Sidewalk	$ 80,000.00
64	Wakpala Shared Use Path	3.4 mi - see Figure 5-35	Shared Use Path	$ 1,020,000.00

Figure 8-8 – Long Range Safety Projects

Project #	Project Location	Project Description	Project Type	Cost
4	Reservation Wide	Speed issues near schools, need better lighting	Lighting/Safety	$ 600,000.00
10	ND: Sioux County	Edge lines and rumble strips where prescribed in ND LSRP[1]	Safety	$ 191,000.00
11	ND: Sioux County	LRSP curve project[2]	Safety	$ 250,000.00
18	Cannon Ball Y-Intersection Improvement	BIA 16 Cannon Ball	Safety	$ 792,000.00
21	ND: Sioux Village W of Fort Yates	Street lights	Lighting/Safety	$ 800,000.00
25	ND: Sioux County	intersections[3]	Safety	$ 250,000.00
28	ND: Hwy 24	Safety improvement; guardrail, signs, chevron	Safety	$ 425,000.00
31	ND: ND 24, Solen Road	Dead Man's Curve	Safety	$ 1,800,000.00
32	ND: BIA 8, Stone Man Road	EMS	Safety	$ 236,500.00
37	SD: BIA 20, Bullhead	Safety improvement; add rumble strips	Safety	$ 100,000.00
39	SD: BIA 3 and 100th St Intersection	Add signs and chevrons and/or realign at 100th St	Safety	$ 25,000.00
41	SD: BIA 44	Add advisory speed plate, warning signs to curve	Safety	$ 25,000.00
44	SD: Hwy 12 at Grand River Casino	Add advisory speed plate, warning signs, flashers	Safety	$ 25,000.00
47	SD: BIA RT 30, Bear Soldier	Lighting bike trail from Bear Soldier to Mclaughlin	Lighting/safety	$ 152,000.00

RECOMMENDED STUDIES

Some transportation issues were identified that were beyond the scope of this transportation plan. Additional analysis is needed to explore potential improvements. A list of recommended transportation studies follows:

- Review and update the 2016 Standing Rock/Sioux County Multi-Hazard Mitigation Plan as needed and create a plan for the South Dakota portion of the Reservation.
- Sidewalk Conditions and Needs Survey – There were several areas observed in SRST communities where sidewalks are old and deteriorating or missing altogether. Sidewalk replacement and repair can be costly. SRST has limited resources and cannot reasonably repair or replace sidewalks in the same year that the needs are identified. A comprehensive survey would provide current conditions of existing sidewalks, which the Tribe can then utilize to establish a schedule for maintenance, repairs and replacement, and new construction.
- Signing Inventory and Consistency Study – Existing traffic control signs within the Reservation should be inventoried. This will allow further analysis to determine whether they have been appropriately and consistently applied. This measure would provide verification that appropriate traffic control signing (stop and yield signs) are in place, increasing safety for the traveling public. The SDDOT is planning a paved roads sign inventory beginning late 2018. SRST is encouraged to participate in this study and any similar studies that the NDDOT may facilitate. That would leave gravel roads to be inventoried, and this is something that may be done by each state's DOT by county in the future.
- Non-paved roadway conditions survey – a set of standards and procedures needs to be established for categorizing non-paved roadway conditions, as well as for establishing future priorities for varying levels of effort to be applied to improve these roads.
- Complete a study of street lighting conditions and needs within SRST towns and subdivisions.
- Complete Reservation wide road safety audits (RSAs).
- Mapping upgrades and designation of new routes within RIFDS should be undertaken.

- Complete a culvert inventory. Analyzed data can then be used to update the Tribe's Federal Emergency Management Agency (FEMA) database, and input into GIS to provide spatial relationships.
- Reservation wide crash data analysis to be used for data collection, sharing, and analysis. This would include entering BIA crash records into TraCS system.
- Conduct Reservation wide seat belt study.