

PROJECT SPONSOR
Oglala Sioux Tribe
Department of Transportation
(OSTDOT)

OGLALA SIOUX TRIBE · TRANSPORTATION DEPARTMENT ·

2023

B.I.A. 33

BIA ROUTE 33

Tribal Resiliency and Evacuation Route Improvement Project

NORTH SECTION: ROCKYFORD TO BIA ROUTE 14 &
SOUTH SECTION: MANDERSON TO US HWY 18

TOTAL PROJECT COST
$60 Million

TOTAL PROTECT REQUEST
$60 Million

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Supporting Documentation Link: https://inputcentral.com/oglalasiouxprotect

Why?

The current BIA Route 33 roadway on the **North Section** does not meet FHWA standards, has asphalt deterioration, and drainage issues that during flood events have caused culvert failures and road closures.

The **South Section** is not paved, does not meet FHWA standards, is not usable for emergency service vehicles to travel, and it is not usable to the traveling public during inclement weather.

Introduction

The Oglala Sioux Tribe (OST) is requesting $60,000,000 for the BIA 33 Tribal Resiliency and Evacuation Route Improvement Project (the Project). Due to the complexity and major undertaking of the Project, OST plans to complete the Project in phases and is requesting Multiyear Distribution of Funds to complete the Project in its entirety. Funding will be utilized to complete the planning and construction activities to reconstruct 16.4 miles of the transportation corridor from the community of Rockyford, SD to BIA 14 (North Section 12.7 miles) and from Manderson, SD to US 18 (South Section 13.7 miles) on the Pine Ridge Indian Reservation. The BIA 33 corridor connects BIA 27 near the Badlands National Park to US 18 servicing the Tribal communities of Rockyford, Manderson, and Red Cloud and Tribal Districts of Porcupine, Wounded Knee, White Clay, and Wakpamni. The current roadway on the North Section does not meet Federal Highway Administration (FHWA) standards, has asphalt deterioration, and drainage issues that during flood events have caused culvert failures and road closures. The South Section is not paved, does not meet FHWA standards, is not usable for emergency service vehicles to travel, and it is not usable to the traveling public during inclement weather. The Project will address these critical transportation infrastructure issues, increase roadway resiliency, ensure public and emergency access to critical destinations, and strengthen and protect evacuation routes that are essential for providing and supporting evacuations caused from emergency events by:





- Regrading to widen ditches and incorporate green scaping to promote flood and snow storage
- Increasing the size and number of culverts to withstand the 100-year flood events that are currently happening every 3–4 years in the area
- Armoring culvert ends with gabions and rip-rap to prevent scour leading to road failure
- Raising road sections that experience overtopping to a higher profile
- Widening the road to incorporate shoulders for emergency and evacuation
- Constructing the road surface with geotextiles layered in the base course for a more resilient pavement structure

The existing road and culverts are vulnerable to severe winter and summer storms, flooding, and other extreme weather events. During the declared disaster of 2019, the North and South Sections were heavily damaged. The North Section had extreme asphalt breakups, more than any asphalt road on the Reservation. With the South Section's lack of built-up roadway and ditches for drainage, dirt surface, and inadequate culvert drainage, it experienced severe scouring.

Recently, July 30, 2023, a severe storm passed through the Pine Ridge Indian Reservation, which brought heavy rains that triggered another culvert on the North Section to fail and road to collapse causing the road to be closed until an emergency repair can be completed.

Project Description

Current Transportation Challenges and Project History

The Project is a large engineering design and construction project for which the Oglala Sioux Tribe does not have the funding resources to complete. As identified in the OST Long Range Transportation Plan (LRTP), reconstruction projects of this scale need to be supplemented with significant grant funding to come to fruition.

- Lack of culverts and drainage
- Lack of ditches for flood and snow storage
- Asphalt deterioration
- Road scouring
- Culvert failures
- Narrow road

The **12.7-mile North Section** was constructed in 1959 and does not meet current width and federal safety standards. The existing asphalt pavement is extremely deteriorated and is 40 years beyond its useful life. The North Section is in Badlands geology, having very erosive and corrosive soils. Existing culverts are metal, do not have end sections, and are not armored with gabions or rip rap to prevent erosion and protect the road embankment. Also, existing soils in this region have low electrical resistivity causing corrosion to the outside of metal pipes, resulting in premature aging of the pipes. The existing road is narrow without shoulders and steep side slopes, encouraging run-off road crashes and especially dangerous for emergency vehicles traveling faster than the speed limit. During inclement weather winter months, the road ditches do not accommodate snow storage resulting in excessive snow drifting across the roadway surface.

The **13.7-mile South Section** from the intersection of BIA 28 in Manderson, SD to US 18 consists of a 3-mile gravel built-up engineered segment and a 10.7-mile dirt, non-engineered segment. The route can be found on maps dating as early as 1904 and is used by many residents. The non-engineered dirt road segment follows the existing grade making it the channel for stormwater run-off rather than being built-up and having culverts and ditches for drainage. When the road has been graveled, it washes away. During snowstorms, the road is blocked, and road maintenance crews cannot remove the snow because there are no ditches for storage. During inclement weather, residents along this section of road are stranded and emergency services, food, and water deliveries cannot access these residents. This section of the road needs a “grade and drain” project to prevent the road from being damaged due to inclement weather. To create a more efficient direct route between Manderson, SD and Red Cloud, the entire south section needs to be reconstructed and paved. This will also provide an evacuation route and an alternate route to BIA 27 should BIA 27 become blocked.



The land topography and regional weather patterns often make existing roads dangerous, but the issues with this route are compounded by the road’s aged surface and culverts, poor geometry and cross-section making it extremely hazardous for users. Despite the danger of utilizing the route, some users are forced to travel the route because alternative routes are not available or are too time consuming.

Following the declared disaster of 2019, BIA roads and culverts were evaluated for damage. The Oglala Sioux Tribe Department of Transportation (OSTDOT) found approximately 300 sites

throughout the Pine Ridge Indian Reservation needing repairs. The OSTDOT submitted 129 sites to the FHWA for consideration of Emergency Relief for Federally Owned Roads (ERFO) funding. Only 36 sites were approved for ERFO funding and of those sites only in-kind funding of $4.9 Million was allowed. To repair the road and culvert sites to become more resilient to future storms, the OSTDOT invested another $13.4 Million in Tribal Transportation Program funds to improve the roads and culverts affected by this storm. This funding was previously set aside for other infrastructure improvement projects, including BIA 33.

NORTH SECTION: In 2021, engineering design for the replacement of an existing damaged culvert began. Several requests for construction funding for the culvert have been submitted to the BIA and FHWA, however, to date no planning or preconstruction funds have been awarded. In 2023, an emergency/temporary repair was made to the culvert site to reset the existing culvert and recompact and stabilize the road. Unfortunately, on the evening of July 30, 2023, a large storm caused severe widespread flooding. The temporary culvert repair was damaged, the road collapsed, and is now currently closed awaiting another temporary repair until funding can be secured to replace the existing structure with a wider precast box culvert, adequately sized for 25-year and 100-year storm events. Following the 2019 declared disaster, $547,000 was expended on emergency asphalt breakup repairs.

SOUTH SECTION: Despite the lack of funding, in 2008, the OSTDOT began investigating funding options for reconstruction including innovative financing, but it was not feasible for the Tribe to pursue. In 2011, an engineering consultant performed topographic survey and conceptual alignment and profile. Due to lack of funding, no additional planning and preconstruction activities have occurred. Following the 2019 declared disaster, the Tribe regraded and reshaped the road but were not approved by ERFO or FEMA for betterments of the road to make it more resilient to future storms. For previously incurred costs for BIA 33 improvements or repairs, please see **Appendix A.**

There are a few other related infrastructure investments being pursued currently or are planned for the near future that would tie into this project. Bridge funding is being sought for a structure 5.5 miles south of Rockyford, SD on a tributary approximately 1-mile upstream of Wounded Knee Creek. In Manderson, SD, a Community Access Grant is being pursued to reconstruct approximately 0.5-mile of BIA 33 with curb and gutter, new asphalt pavement surfacing, storm sewer, improved commercial driveway access, and sidewalk connecting to recently constructed Manderson Pathway. Within the community of Manderson, a new community center and expansion of Wounded Knee School are under design, and funding for community streets is being pursued.

Due to the Project including eligible activities under both the Resilience Improvement and the Community Resilience and Evacuation Routes categories, OST would like to be considered for planning and construction funding under both categories with this grant application.

On July 30, 2023 a culvert on BIA 33, between Rockyford and Manderson, failed due to severe and heavy rains which caused the road to collapse and be closed until further notice.



OST does not have a Resilience Improvement Plan (RIP) and BIA 33 is not listed in any current RIP. The Tribe is submitting a secondary application to the PROTECT program for grant funding to develop a reservation-wide vulnerability assessment of all their transportation assets. Under the Bipartisan Infrastructure Law, each State DOT was apportioned a lump sum of PROTECT formula funding that could be used for creation of a statewide RIP. Currently, South Dakota Department of Transportation (SDDOT) does not have a statewide RIP. They have made completing this plan a priority within the next two years. It is unclear if SDDOT will include any Tribal roadways while developing this plan.

Design Status

OSTDOT started a conceptual design of the South Section in 2011 but was halted due to lack of funding. Due to a previous culvert failure, an undersized, damaged culvert within the North section is at 90 percent design. A bridge funding application has been submitted to FHWA for a proposed double barrel 12-feet-wide x 11-feet-high precast concrete box culvert with armored ends to replace the damaged culvert. This preliminary work is out of the Tribe's annual allocation of road funding due to the importance of BIA 33 being a usable roadway to those within the local communities.

Contributions To Economic Growth

Infrastructure is the foundation for economic growth and prosperity, and on the Reservation, the need for infrastructure investment is evident. The lack of economic competitiveness across the Reservation is tied to lack of infrastructure including roads and bridges, telecommunications, water, and housing. The Pine Ridge Indian Reservation experiences economic barriers due to their extremely rural nature and lack of economic diversity, which are obstacles to the untapped workforce of the Oglala Sioux Tribe. The project presents many ways to enhance the economic competitiveness of the area.

In a region primarily reliant on agriculture, infrastructure improvements contributing to the movement of goods and services will have a far reaching, long-term benefit that positively impacts many users. Providing additional access to BIA 33 and US 18 will enhance the long-term efficiency of the movement of people, goods, and services as the project roadways are designed to manage daily consumer and heavy truck traffic efficiently and safely.



The North Section is currently closed to heavy truck traffic because of all the asphalt break-ups that have occurred. There is a Tribal-owned gravel pit located along this section which cannot be used until truck traffic is allowed again.

This project will enhance the area's economic competitiveness through the reduction of household and tribal government expenditures on fuel and vehicle maintenance and provide more reliable access for school buses and transit services. Making travel more affordable for all users will also connect residents to more employment resources and opportunities offered in the communities of Pine Ridge Village, Kyle, Red Cloud, and Oglala. Reconstructing and paving the South Section will reduce the mileage and travel time between Manderson and Pine Ridge Village, Manderson and Red Cloud, Manderson and Oglala, and Manderson and SD 79 (Heartland Express) via US 18.

The project will reduce consumer spending on vehicle repairs allowing consumers to reallocate these dollars for other essential needs. A rough, pothole-filled road causes damage to vehicles, many owned by Tribal residents who are financially challenged and not able to afford repairs. Overall reduction of household spending will allow consumers to better manage the cost of living in the project area and surrounding proximity. Roads in good condition meeting current highway safety standards also reduce vehicular crashes.

With a high unemployment rate and location in a rural area of persistent poverty, job creation in the grading and paving construction phases of the project will have significant short-term and probable long-term economic impact. In accordance with OST Tribal Employment Rights Office (TERO), a contractor is required to give preference to qualified Tribal members in hiring, promotions, and on-the-job training for all work performed on the project. Many of these hires have stayed employed with the construction companies long-term. The recent 2019 Storm Repairs project employed approximately 90% local Native Americans. The key to future long-term economic competitiveness on the Reservation is to strengthen the existing economic base and diversify the economy by supporting it with adequate transportation infrastructure. The project will create a place where diverse industries can survive and prosper, and residents can earn a living wage.

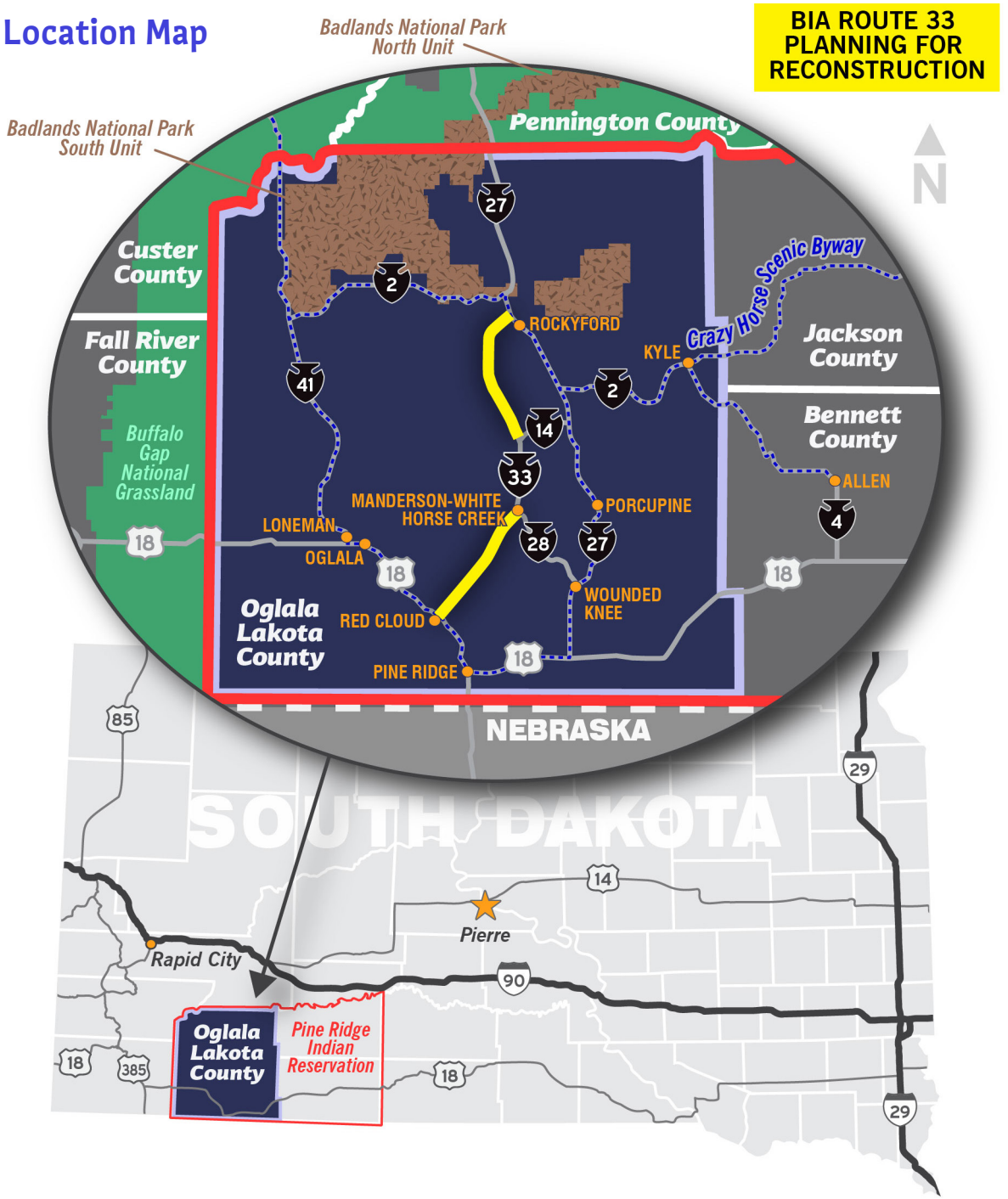
Project Location

The Project is located on the Pine Ridge Indian Reservation in rural southwestern SD in Oglala Lakota County. The Reservation encompasses over 2 million acres (3,469 square miles) in Oglala Lakota County, the southern half of Jackson County, and Bennett County in southwest South Dakota. The northern and western boundary is along the Oglala Lakota County border. The northern border is also defined by the White River in Jackson County. The southern boundary is the South Dakota/Nebraska state border. While most of the eastern border is not defined by natural land features, it follows the Jackson/Mellette and Bennett/Todd County lines.

BIA 33 is located in Oglala Lakota County. It is a collector route connecting the communities of Rockyford and Manderson. The North Section starts at its northernmost junction with BIA 27 in Rockyford, SD and runs 12.7 miles south ending at the junction of BIA 14. The Middle Section begins at BIA 33's junction with BIA 14 and ends 6.7 miles south in the community of Manderson. The Middle Section has recently been resurfaced and is not included in this grant application. The South Section begins at the intersection of BIA 28 in the community of Manderson and ends 13.7 miles southwest at the junction of US 18 in the Red Cloud community.

There are no floodplains identified in the project area. FEMA has never mapped floodplains within the Reservation, except for the City of Martin. If awarded grant funding, through the planning and preconstruction process, the Project will

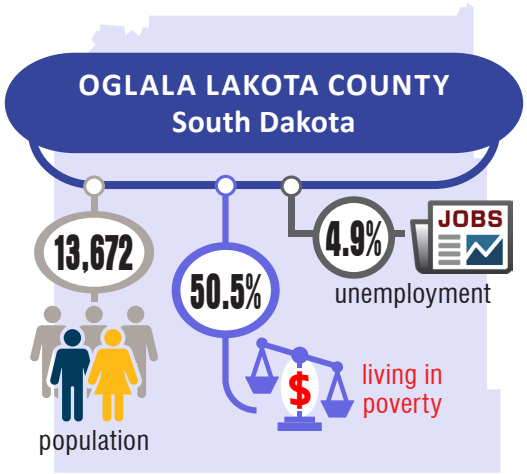
Location Map





implement any identified components from the OST and Oglala Lakota County Hazard Mitigation Plan to mitigate risk to the transportation assets.

The Reservation is home to many individuals and families in financially sensitive situations. Access to reliable and safe transportation is critical to living sustainably in this impoverished rural area. Pine Ridge Indian Reservation[1] is one of poorest communities in the nation with 48.2 percent of people living in poverty and a 12.3 percent unemployment rate compared to the national average of 3.6 percent. Oglala Lakota County, where the project is centrally located, is a regional hub providing access to goods and services, health care, education centers, employment, childcare, recreation, and other essential tribal services.



Oglala Lakota County[2] has a population of 13,672 with 50.5 percent of that population living in poverty. Oglala Lakota County, census tract 9408, tribal tract T005, is identified as an Area of Persistent Poverty, a Historically Disadvantaged, Transportation Disadvantaged, Economic Disadvantaged, Health Disadvantaged and Equity Disadvantaged Community due to being located the Pine Ridge Indian Reservation. The area is also a designated Promise Zone, Empowerment Zone, Sustainable Communities Planning Zone, and an Opportunity Zone. Manderson[3] has a population of 539. They currently have a poverty rate of 84.2 percent, more than 1.5 times the rate in Oglala Lakota County.

1 https://data.census.gov/profile/Pine_Ridge_Reservation,_SD--NE?g=2500000US2810

2 https://data.census.gov/profile/Oglala_Lakota_County,_South_Dakota?g=050XX00US46102#income-and-poverty

3 https://censusreporter.org/profiles/16000US4640550-manderson-white-horse-creek-sd/

Project Parties

Oglala Sioux Tribe Department of Transportation (OSTDOT) is the Lead Applicant for this Project. In 2007, the Oglala Sioux Tribe entered into an agreement with FHWA to become one of five initial Tribes to be a "direct-funded" transportation program at which point the OSTDOT was created to manage the planning and construction of BIA and Tribal transportation facilities within the Reservation. Unfortunately, the OSTDOT inherited an under-funded, failing system. The OSTDOT has made great improvements to the transportation infrastructure but there is still much improvement needed. OSTDOT is committed to maintaining their infrastructure investments as they are critical to the Reservation's economic competitiveness and quality of life. Successful administration of nearly 1,700 miles of BIA and Tribal roads, over 25 maintained bridges, and dozens of other major and ancillary asset types relies on sound investment strategies and management practices. They have successfully managed, stretched the funding received, and improved the surface transportation within the Reservation since 2007.

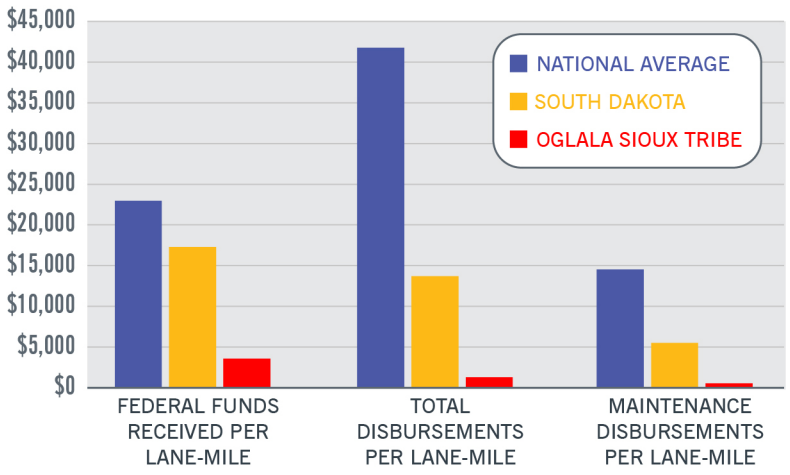
OSTDOT has a long history of planning, designing, and delivering successful capital projects. This includes using Tribal Transportation Program funds to advance initiatives. In the past five years OSTDOT has expended an average of $7 million annually on transportation planning, construction, and maintenance. They have experience with grant reporting and annual reporting to the Federal Highway Administration's Tribal Transportation Program Port Reporting. They have consistently proven to be a good steward of Federal funding and is well-versed in the reporting requirements associated with federal grants. OSTDOT has successfully administered TIGER, TTPSF, ERFO, Tribal Bridge Improvement Program, and other federal and state grant awards.

No other entities will be involved in delivery of the Project, but OST has had numerous discussions with, and full project support from, the OST Department of Public Safety and the OST Emergency Management. Please see letters of support at https://inputcentral.com/oglalasiouxprotect.

OST is requesting $60,000,000 in PROTECT grant funding for the Project. The Tribe is requesting 100% federal funding as they do not have the necessary funds for any non-federal cost share.

Grant Funds Sources & Uses

The Tribe receives inadequate funding to keep up with the transportation needs across the Reservation. As referenced in the OST LRTP (pg 107) roughly 93 percent of the TTP funds received used for maintenance of the current BIA asphalt road system, yet many of those roads still require costly reconstruction. The Oglala Sioux Tribe is responsible for nearly 1,700 miles of BIA and Tribal roads within the Reservation and receives approximately $3,500 per roadway mile ($1,750 per lane-mile) in annual allocated TTP federal disbursements for administration, planning, construction, and maintenance activities.[1] By comparison, $23,000 per lane-mile of federal funds are disbursed to State Departments of Transportation.[2] Given the Tribe's extremely limited financial resources, Reservation roads are in poor condition, especially as compared to state-owned roads. In the past 5 years, the Tribe has been forced to spend $6.3 Million of TTP funds on repair of roads and culverts following disasters which has further depleted funding.



The current programmed plan for BIA 33 improvements relies on grant funding with a share of formula TTP funds.

FY2024 – FY2025	$1,200,000	TTP/ COMMUNITY ACCESS GRANT	Middle Section Manderson, SD	Manderson Main Street BIA 33 Reconstruction
FY2024 – FY2025	$750,000	TTP BRIDGE FUNDS	North Section, 5.5 miles south of Rockyford, SD	BIA 33 Culvert Replacement, Construction
FY2024 – FY2025	$750,000	TTP BRIDGE FUNDS	North Section, 4.9 miles south of Rockyford, SD	BIA 33 Culvert Replacement, Construction

We recognize the entirety of the project is a major undertaking, so the Project is broken into phases starting with planning and preconstruction of the North and South section. Properly planned and designed projects reduce potential change orders and cost overruns, limit liability, and can make or break the success of the project.

OST is requesting Multiyear Distribution of Funds to complete the Project in its entirety. In the event the PROTECT program is unable to fund the entire proposed project, OST would be grateful for an allocation of $3,600,000 to cover the Planning and Preconstruction phases of the North and South Sections to get the Project shovel-ready (1a,1b), with a second priority to include full Construction of the North Section, for a total of $31,800,000 in grant funding (1a, 1b, 2a, 2b).

Phase	Component(s)	Description	Amount
1a	North Section	PS&E – Planning and Preconstruction	$1,800,000
1b	South Section	PS&E – Planning and Preconstruction	$1,800,000
2a	North Section	Grade and Drain Construction	$20,700,000
2b	North Section	Paving Construction	$7,500,000
3a	South Section	Grade and Drain Construction	$20,200,000
3b	South Section	Paving Construction	$8,000,000
		Total Project Cost:	**$60,000,000**

1 https://highways.dot.gov/federal-lands/programs-tribal/finance/tribal-shares-fy20

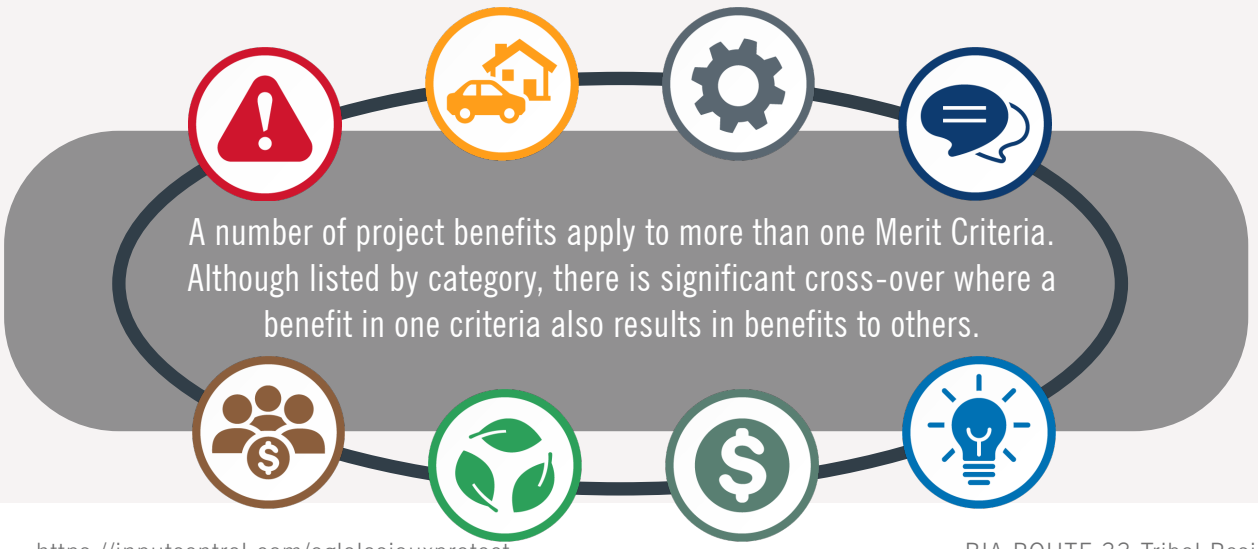
2 https://reason.org/wp-content/uploads/27th-annual-highway-report.pdf and https://www.fhwa.dot.gov/fastact/fy2021comp.pdf

Anticipated benefits of phasing the Project include:

- ☑ Provides for smaller scope of work to ensure phases are completed on time and within budget
- ☑ Full design completed for entire project will minimize change orders
- ☑ Full design determines technically and financially feasible phases which balance grading
- ☑ Quality and efficiencies in future phases as processes are repeated and refined
- ☑ Provides shovel ready project phases that the Tribe can then apply for other grant opportunities in the future with FEMA, TTPSF, RAISE, RURAL, and Tribal Bridge Program
- ☑ Provides extended long-term employment opportunities for Tribal members

Merit Criteria

The Project addresses critical infrastructure issues, increases roadway resiliency, ensures public and emergency access to critical destinations, and strengthen and protect evacuation routes that are essential for providing and supporting evacuations caused by emergency events. The following pages detail the specific Project benefits by Merit Criteria.



Vulnerability

According to a paper published by the US Environmental Protection Agency (EPA) in August of 2016,[1] South Dakota's climate is changing. In the past century, most of the state has warmed by one to two degrees, rainstorms are becoming more intense, and annual rainfall is increasing. In the coming decades, summers are likely to become increasingly hot, which may amplify some risks. Warmer air tends to have more water vapor, so more water can be potentially released in a storm. During the last 50 years, the amount of rain falling during the wettest four days of the year has increased about 15 percent in the Great Plains. Over the next several decades, heavy downpours will account for an increasing fraction of all precipitation. Larger river flows and more intense rainstorms would each increase the risk of flooding.

Major current and future vulnerability elements include:

- Flooding
- Severe Storms
- Snow and Ice accumulation
- Erosion
- Wildfires (evacuation routes)

1 https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-sd.pdf

Exposure

Within the last ten years, there have been three Major Disaster Declarations issued within the region of central Oglala Lakota County, with other severe weather events impacting the Project area.

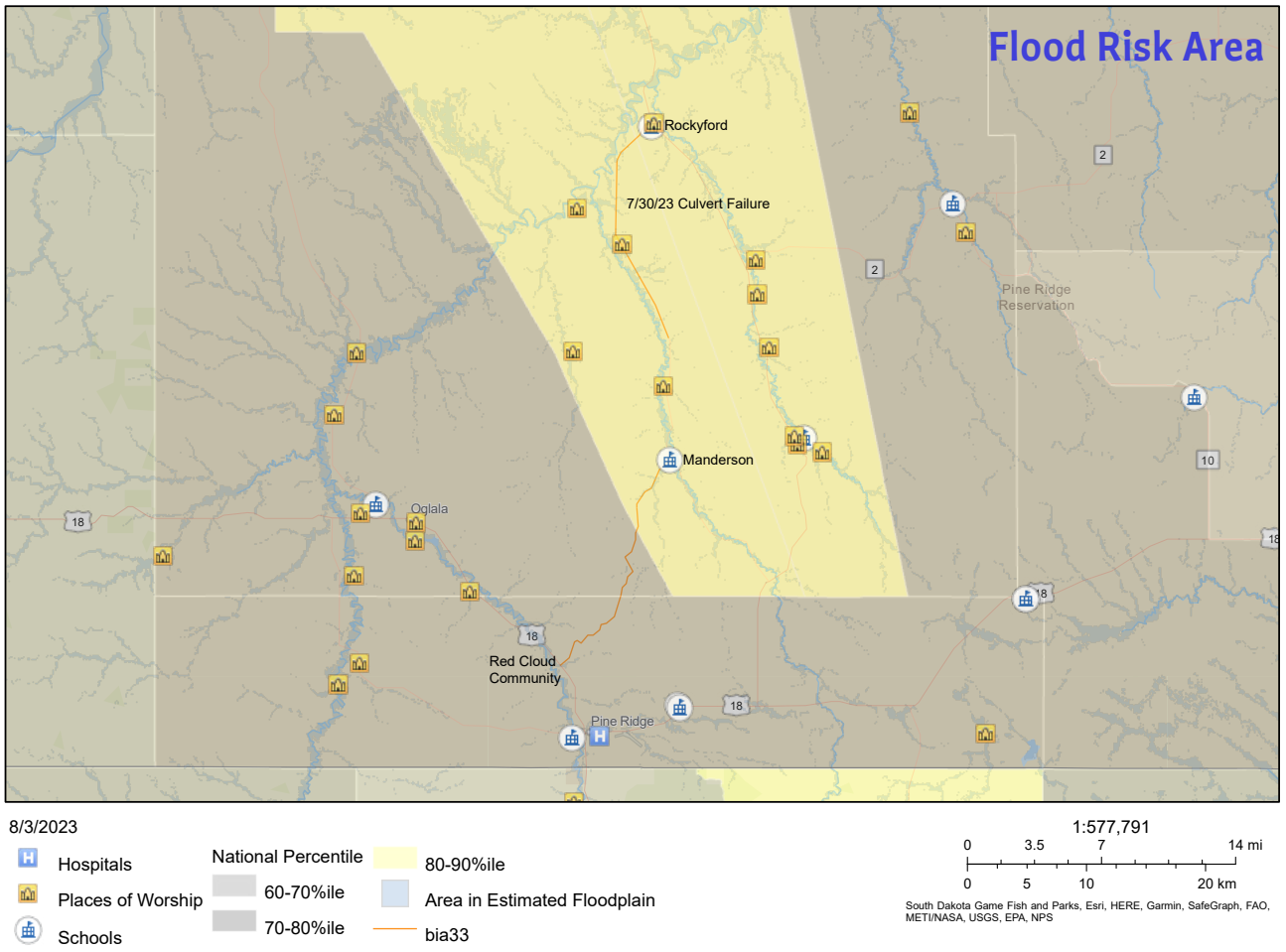
On August 7, 2015, the President declared a Major Disaster Declaration on the Pine Ridge Indian Reservation due to serve storms, straight-line winds, and flooding during the period May 8–26, 2015. ERFO funding of $2,052,465.29 was received for five sites, with four involving culvert damage.

On June 20, 2019, the President declared a Major Disaster Declaration on the Pine Ridge Indian Reservation due to a severe winter storm, snowstorm, and flooding during the period of March 13–26, 2019. Public Assistance and Hazard Mitigation was provided. Damage included roads and watermains. $18.3 Million in ERFO and TTP funding for road and culvert repairs will be completed Fall 2023.

On February 20, 2023, the President declared a Major Disaster Declaration on the Pine Ridge Indian Reservation due to severe winter storms and snowstorms during the period of December 12–25, 2023.

On July 30, 2023, heavy rains impacted several culverts and overtopped roads, damaging some of the most recent repairs of the 2019 storm damage. These sites are currently being evaluated to determine the cost of damage.

Even though there are no official floodplains identified in the project area. The EPA EJScreen and Mapping Tool[2] does identify the area around BIA 33 near Rockyford and Manderson, in the 80-90th percentile of a flood risk.



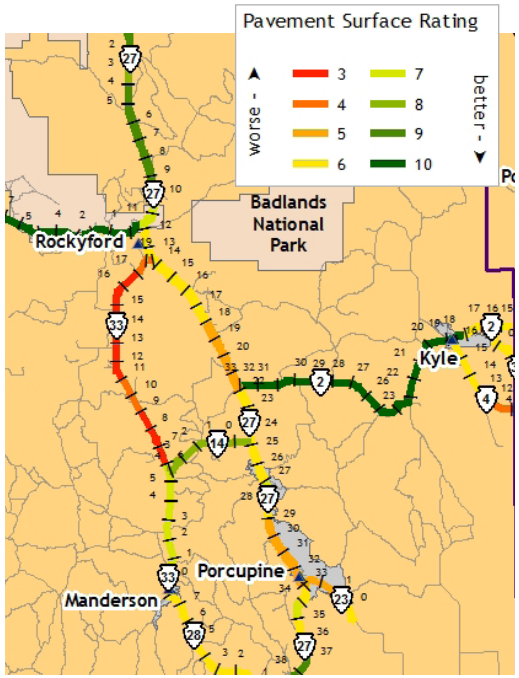
According to the EPA's CREAT Climate Change Scenarios Projection Map, Oglala Lakota County[3] is anticipated to see an annual increase in average precipitation. Current predictions for the project area region indicate a change in annual precipitation between 3 percent to 6 percent by 2035 and between 5.9 percent and 11.8 percent by 2060. Additionally, there is an indication that the intensity of the 100-year storm event will impact rainfall and potential flooding scenarios moving forward, with a predicted change of up to 12.2 percent in 2035 and up to 23.8 percent intensity change by 2060.

Storm disasters are more frequent and prevalent within the Reservation and cause increased damage to the already vulnerable surface

2 https://ejscreen.epa.gov/mapper/

3 CREAT Climate Change Scenarios Projection Map (arcgis.com)

transportation system. According to the National Centers for Environmental Information-National Oceanic and Atmospheric Administration (NOAA) Storm Events Database, Oglala Lakota County experienced 21 severe weather events between 7/1/2003 and 6/30/2013.[4] This number nearly doubled from 7/1/2013 to 7/30/2023[5] to 41 severe weather events.



The most recent event reported 3/30/23 was a quick moving, but potent, storm system that brought up to 15 inches of snow across the area. Wind gusts were over 50 mph and produced considerable blowing and drifting snow. During storms like this, the South Section is completely unusable for local traffic for extended periods of time even after the storm quits. The lack of ditches for snow storage, and the already poor condition of the roadway, makes snowplows unable to clear the road and snow removal nearly impossible.

The Tribe barely receives enough road maintenance funding to control snow and ice, let alone upgrade or make repairs to roads. With the excessive cost of recent storm repairs, the Tribe has depleted its construction funding and has had to delay improvement projects until grant funding can be applied for and received.

Sensitivity

The North Section was last reconstructed in 1959. It has reached the end of its useful life and needs to be reconstructed. The asphalt surface is significantly deteriorated, and the volume of potholes and cracks are numerous and often tough for the OSTDOT to maintain. It has at least eight large drainages crossing from east to west, draining to either Wounded Knee Creek or the White River. The existing culverts are undersized, aged, corroded metal, and are without end sections and armored ends. They are already highly vulnerable plus the soils around the culverts consist of badlands geology which has high storm water runoff and extremely erodible material making this section of BIA 33 particularly sensitive to flooding and scouring.

In 2009, the OSTDOT developed a Pavement Management Plan (PMP) and in 2018, a Pavement Surface Evaluation and Rating (PASER) Study was completed and included in the LRTP. Both studies focused on the current condition of asphalt paved roads within the Reservation. It was recognized in the PMP, that BIA 33 was in poor condition and should be reconstructed but funding is a major issue. During the PASER Study, BIA 33's North Section received a rating of 3, which represents reconstruction or structural overlays are needed. (2018 LRTP pages 38-44) These studies were completed prior to significant damage in 2019 and it is expected the ratings have decreased. Please see PMP and PASER Study at https://inputcentral.com/oglalasiouxprotect.





BIA 33 North Section Existing Conditions. See https://inputcentral.com/bia-33 for drone video and photos.

4 NOAA Date 7/1/2003 thru 6/30/2013

5 NOAA Data 7/1/203 thru 7/30/2023

The 13.7-mile South Section from the intersection of BIA 28 in Manderson, SD to US 18, consists of a 3-mile gravel built-up engineered segment and a 10.7-mile dirt, non-engineered segment. The non-engineered dirt road segment follows the existing grade making it the channel for stormwater runoff rather than being built-up and having culverts and ditches for drainage. This section of the road needs a "grade and drain" project to prevent the road from being damaged due to inclement weather. When the road has been graveled, it washes away.





BIA 33 South Section Existing Conditions. See https://inputcentral.com/bia-33 for drone video and photos.

During winter months, the road ditches do not accommodate snow storage resulting in excessive snow drifting across the roadway surface. The land topography and regional weather patterns often make existing roads dangerous, but the issues with this route are compounded by the road's poor geometry and cross-section making it at times extremely hazardous for users. Despite the danger of utilizing the route, some users are forced to travel the route because alternative routes are not available or are too time consuming.

The Project seeks to avoid potential impacts from flooding, heavy rainfalls, snow and ice accumulations by reprofiling/regrading ditches to provide drainage to the existing outlets, removing and replacing existing culverts with larger culverts that will facilitate larger water flows, regrading portions of BIA 33 to provide a higher profile through the area that has been prone to flooding, reconstructing and improving the North Section, and upgrading and paving the South Section to meet FHWA design standards.

Adaptive Capacity

Upon completion, the Project will extend the useful life of the roadway, reduce risk from heavy rainfall, severe storms, flooding, and provide a safe and reliable evacuation route by reconstructing and improving the resilience of the roadway and allowing for continued access and operation during severe weather events and other natural disasters.

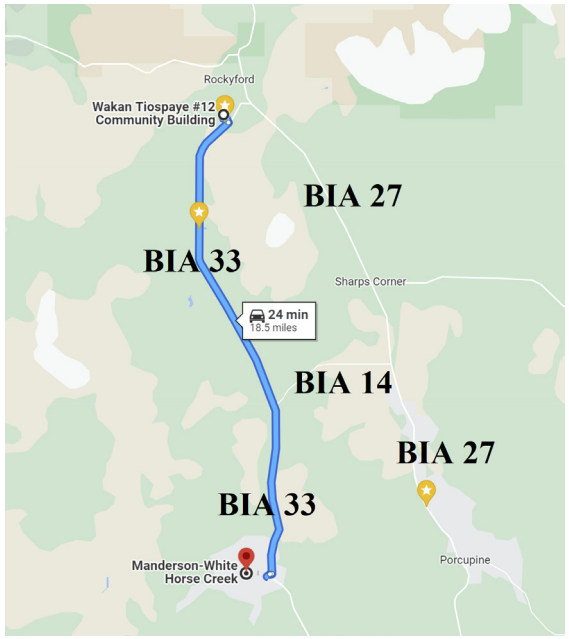
Planning and preconstruction activities for the reconstruction of BIA 33 North and South Sections will include planning activities to achieve 12-foot lanes, 4-foot shoulders, recoverable side slopes, and roadside ditches large enough to carry stormwater and hold snow. Major safety design improvements will include enlarging existing sharp horizontal curves; flattening and filling hills and valleys to achieve a safe roadway vertical alignment and reducing the overall length of no-passing zones; grading and realignment at intersections to achieve sufficient sight distance; widening the roadway asphalt surface to include shoulders for emergency parking; providing a 30-foot wide clear zone with recoverable side slopes; and installing large concrete culverts with armored ends.

The roadway pavement structure will be innovatively analyzed using geotextile separation fabric under the base course and triaxial geogrid between layers of base course. The existing asphalt will be milled, recycled, and up to 20 percent reused in the new asphalt concrete. The geotechnical engineer will investigate if the existing base course has been contaminated by underlying silt and if it has the needed gradation to be salvaged and recycled for the new road base. Any remaining asphalt and base course will be mixed and applied as surfacing to intersecting approaches or used for temporary surfacing to maintain traffic during construction. The existing subgrade will be scarified and recompacted to 95 percent maximum dry density.

There are several large watersheds crossing BIA 33. Through the planning and preconstruction process, hydrology and hydraulics will be studied to determine if box culverts wider than 20-feet are needed. Culverts will be designed to 100-year storms and have wider bases which will decrease velocity and reduce scour. Additionally, the culvert ends will be sloped or flared and armored with gabions, riprap, grouted riprap, or turf reinforcement mat. Roads will be raised so they are less susceptible to flooding overtopping the road, widened to ensure they can be used as evacuation and emergency routes, and paved to protect the top of road from erosion. Additionally, all disturbed graded areas will be reclaimed with seed inoculated with Mycorrhizal fungi spores, fertilized, and mulched. Mycorrhizae fungi produce a network of filaments that connect to grass plant roots and draw nutrients from the soil. The fungus-plant alliance stimulates plant growth and accelerates root development, making the disturbed area resistant to erosion.

Currently, the North Section is closed due to a culvert failure. Local traffic is utilizing a detour route adding 6 miles one way to get from Manderson to Rockyford. This increases response times for emergency services, and adds travel time for school bus routes, and local traffic. Reconstruction of the North Section would allow for continued operation during severe weather events and reduce travel time of having to use a detour route.

Due to the South Section being unusable at intermittent times, emergency and community services, as well as school buses and much of local traffic do not utilize the roadway. With reconstruction, this will reduce travel time from Manderson to Pine Ridge Hospital by 5.5 miles one way.



North Section: Normal Route between Rockyford and Manderson – 18.5 miles



Current Detour due to Damaged Culvert and Road Closure – Rockyford to Manderson



Manderson to Pine Ridge Hospital: Current Route is Blue – 25 miles. Proposed Route After Construction is Gray – 19 miles

Criticality to Community

According to 2021 Census data,[1] 50.5 percent of Oglala Lakota County residents live in poverty, with the community's median household income approximately 50 percent lower than that of South Dakota. The residents of Manderson,[2] who are directly affected by the Project, have a poverty rate of 84.2 percent, more than 1.5 times the rate in Oglala Lakota County. Currently, residents who rely on BIA 33 for travel must navigate deteriorated and at times unusable roadway to access goods and services, health care, education, employment, childcare, recreation, and other essential Tribal services. The Project is critical to the community and will enrich the quality of life for the local residents by increasing efficiency and resiliency of the roadway, provide consistent access to Tribal Transit and school bus services, and connectivity to living-wage employment while decreasing the number of traffic incidents, delay time for emergency services, and burdensome deterioration of vehicles. The project creates transportation connectivity among cities and counties across the Reservation.

Critical Facilities and Destinations

Pine Ridge Village is the regional hub for providing access to goods and services, health care, education, employment, childcare, recreation, and other essential Tribal services for the 19,000 residents of the Pine Ridge Indian Reservation.

The South Section connects the residents of Manderson to US 18, Red Cloud Community and Pine Ridge Village. Due to the narrow roadway top, lack of gravel, drainage issues and areas of persistent scouring, many avoid the route, traveling further on alternate routes. Tribal agency personnel, including OST Department of Emergency Management (OSTDEM), Road Maintenance Department (RMD), and OST Department of Public Safety (OSTDPS) have also reported avoiding this segment of BIA 33 as often as possible. Each of these departments report a history of incidences on the route.

Due to the existing condition of the South Section, community health services such as food deliveries and in-home care for dialysis and heart patients, cannot be done for residents living along the route. Additionally, the transit program does not utilize the gravel road. Census data shows that over 12 percent of residents of Oglala Lakota County do not own a vehicle and 13.1 percent of residents identify as having a disability. With completion of the project, the Tribe can provide needed community services to residents that live along the South Section and look to expand transit services to residents along the project area, being most impactful for those without access to vehicles. Connecting individuals to Tribal and essential services provides community residents to all ladders of opportunity including educational institutions, essential services, healthcare facilities, job training centers and community social services.

The Project is included in the OST's LRTP. As part of the recent Plan update, the public provided comments and feedback on critical issues to address. There is a desire for new paved roads within the Reservation. Examples raised by the public include paving Mouse Creek Road from Wounded Knee to Batesland, paving BIA 33 from Red Cloud to Manderson, and paving the southern two miles of BIA 25. While these and other paving projects are desired, spending TTP dollars to pave them will detract from available funding needed to correct pavement deficiencies elsewhere. PROTECT grant funding to fulfill this need will be well received within the region but outreach will be essential as the project fully develops.

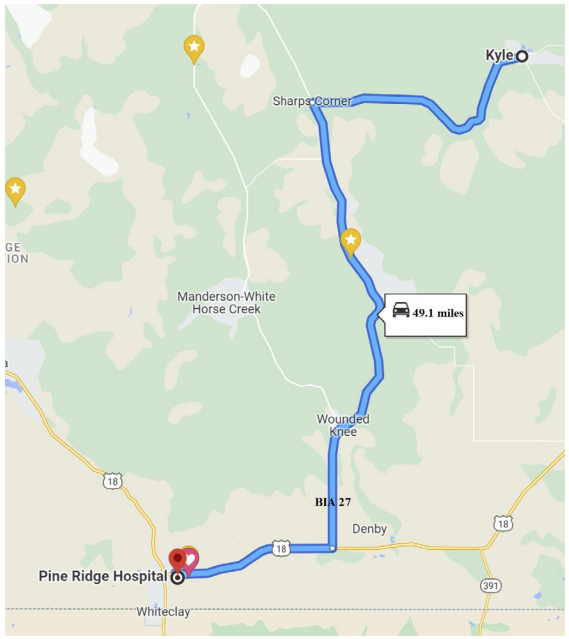
The North Section also serves as a school bus route, and more miles must be traveled until the roadway is temporarily fixed in hopes of a permanent fix. If a wildfire erupts and an evacuation is needed, currently not having BIA 33 open to the North, and access on the South at times unusable, this is an extreme hazard to the residents and emergency services. Operation of this roadway is critical to the local community.

Completion of the project will provide critical transportation benefits to the community including improved system operations, decrease travel time while providing reliable transportation access, strengthen the regional economy while providing access to increased employment options, and increase local community connectivity.

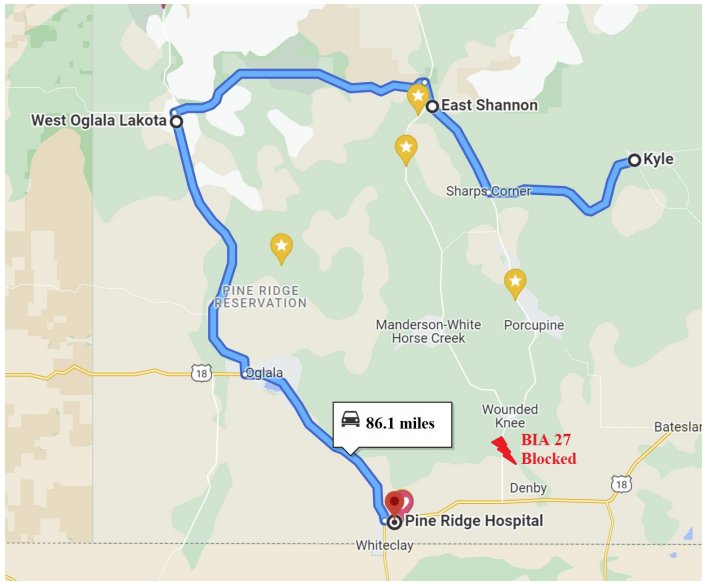
1 https://data.census.gov/all?q=Oglala+Lakota+County,+South+Dakota

2 https://censusreporter.org/profiles/16000US4640550-manderson-white-horse-creek-sd/

On July 30, 2023, a culvert on BIA 33 was damaged and the road collapsed. BIA 33 is currently closed to traffic at this location. If emergency services from Pine Ridge Hospital need to answer a call north of this closure, the 43-mile one way drive is now 63 miles. In addition, constructing the South Section to a safe, efficient route will reduce emergency response times between Pine Ridge Hospital and central Oglala Lakota County. For instance, the current emergency route between the hospital and Kyle, SD is 49 miles via BIA 27. Should BIA 27 become blocked south of Wounded Knee, the alternate paved route to Kyle, SD is 86 miles. After BIA 33 South Section is reconstructed and paved, response time across 48 miles will be slightly shorter than it is currently. Emergency calls are usually long distance on the Reservation and every minute counts to save lives. Extra mileage due to damaged or blocked roads is detrimental to the Tribe, and alternate, safe emergency and evacuation routes are desperately needed.



Current Emergency Route via BIA 27 between Kyle, SD and Pine Ridge Hospital–49 miles



If BIA 27 is Blocked, Current Alternate Emergency Route–86 miles



If BIA 27 is Blocked, Proposed Alternate Emergency Route–48 miles

Design Elements

Service Life of the Facility

Through the preliminary engineering phase of the project, design elements will be identified and evaluated to provide the best solutions in reducing the current and future vulnerabilities and risks from the weather events that have severely affected and deteriorated the roadway.

It is anticipated that the proposed road grading and concrete culverts will have a design life exceeding 100 years. Road grading with wider ditches, higher profile, and wider road base will mitigate issues with flooding, snow and ice accumulation, and erosion, providing resiliency and minimal need for future reconstruction. With the use of geotextile separator fabric and triaxial geogrid along with standard rock base course and asphalt pavement, the design life of the asphalt pavement structure will extend beyond 30 years and is anticipated to reach 50 years with normal crack and chip sealing maintenance.[1]

Design Elements

The Project will provide solutions to the impacts from flooding, severe storms, snow and ice accumulations, vulnerable erosion areas, and need for evacuation routes.

FLOODING. The project design will study the hydrology of watersheds entering and crossing the road project area. There are several large watersheds crossing BIA 33. Through the planning and preconstruction process, hydrology and hydraulics will be studied to determine if box culverts wider than 20-feet are needed. Culverts will be designed to 50 and 100-year storm events.

SEVERE STORMS. The project will address flooding and severe storms by reprofiling the road to raise it, regrading and widening ditches to provide excess flood storage, and installing culverts designed to convey the 100-year storm without overtopping the roadway. Pavement structure will include geotextiles to extend the life of pavement and protect against badlands geology fat clays which cause heaving and movement. Geotextile separation fabric will be used to separate subgrade soils from clean base course and tri-axial geogrid will be used in between lifts of base course to lock base course layers and create a solid, stiff layer to lay asphalt concrete pavement.

SNOW AND ICE ACCUMULATION. The widened ditches along with flatter backslopes will allow for snow to collect in ditches and reduce drifts across the road. Ice accumulation will be reduced when there is less snow drifting and will melt away faster on a wider asphalt pavement section. The geotextile reinforced pavement structure will better resist harsh South Dakota freeze and thaw movement.

EROSION. Asphalt pavement will protect the road surface from scouring and erosion. After final grading operations, topsoil will be placed a minimum of 4-inches thick followed by drill seeding, fertilizing, and mulching. Grass seed inoculated with Mycorrhizal fungi spores will be used to accelerate root development, covering the disturbed area quickly and preventing erosion. Erosion control wattles and rock check dams will be added to ditches to control stormwater flows. By installing larger, wider concrete culverts, flow velocities will be reduced resulting in less shear force and scour potential. Additionally, the culvert ends will be sloped or flared and armored with gabions, riprap, grouted riprap, turf reinforcement mat, or wetlands seeded into ditches and channels upstream.

WILDFIRES (EVACUATION ROUTE) . By reconstructing BIA 33 to current highway safety standards and widening to incorporate shoulders, the route would become an important emergency and evacuation route.

There are several large watersheds crossing BIA 33. Through the planning and preconstruction process, hydrology and hydraulics will be studied to determine if box culverts wider than 20-feet are needed. Culverts will be designed to 100-year storms and have wider bases which will decrease velocity and reduce scour. Additionally, the culvert ends will be sloped or flared and armored with gabions, riprap, grouted riprap, or turf reinforcement mat. Roads will be raised so they are less susceptible to flooding overtopping the road, widening to ensure they can be used as evacuation and emergency routes, and paved to protect the top of road from erosion. Additionally, all disturbed graded areas will be reclaimed with seed inoculated with Mycorrhizal fungi spores, fertilized, and mulched. Mycorrhizae fungi produce a network of filaments that connect to grass plant roots and draw nutrients from the soil. The fungus-plant alliance stimulates plant growth and

1 https://www.sciencedirect.com/science/article/abs/pii/S2214391220303597

accelerates root development, making the disturbed area resistant to erosion.

Pavement structure will include geotextiles to extend the life of pavement and protect against badlands geology fat clays which cause heaving and movement. Geotextile separation fabric will be used to separate subgrade soils and clean base course and tri-axial geogrid will be used in between lift of base course to lock base course layers and create a solid, stiff layer to lay asphalt concrete pavement.

Nature-Based Solutions

Existing wetlands and Other Waters of the US will be surveyed during the planning and preconstruction work. Wetlands will be avoided to the greatest extent possible, but if unable to avoid, will be mitigated. These wetlands will be used in the hydrology study as possible flood storage areas. Additional wetlands will be created in ditches upstream of large culverts to assist with erosion and scour control.

Large box culverts will be counter-sunk a minimum of 1-foot to allow silting within the box culvert rather than scour outside. The counter-sunk culvert will allow aquatic passage in perennial streams. Grass seed inoculated with Mycorrhizal fungi spores will be used to accelerate grass coverage, covering the disturbed area quickly and preventing erosion. The fungi produce a network of filaments that connect to grass plant roots and draw nutrients from the soil. The fungus-plant alliance stimulates plant growth and accelerates root development, making the disturbed area resistant to erosion.

> “Should BIA 33 remain as is, the existing narrow road, lack of shoulders, and steep side slopes, increases run off road crashes.”

Safety Elements

According to the 2021 OST Tribal Transportation Safety Plan, culvert replacements are an identified engineering strategy for implementation of safety efforts on the Pine Ridge Indian Reservation, pg 21-23. Culvert failures can cause a significant safety risk and contribute to roadway departure crashes. FHWA suggests proven corrective measures that can be taken to mitigate the effects of identified drainage problems that affect roadway safety.[2] These safety countermeasures will be designed and implemented throughout the Project. The existing road is narrow without shoulders and steep side slopes, encouraging run off road crashes. Major safety design improvements will include enlarging existing sharp horizontal curves; flattening and filling hills and valleys to achieve a safe roadway vertical alignment and reducing the overall length of no-passing zones; grading and realignment at intersections to achieve sufficient sight distance; widening the roadway asphalt surface to include shoulders for emergency service parking; providing a 30-foot wide clear zone with recoverable side slopes; and installing large culverts longer than their replacements to move the dangerous end section away from the roadway and outside of the clear zone.

During the planning process other safety countermeasures will also be assessed including: school and transit bus and mailbox turnout locations to move stopped traffic outside the normal driving lane, rumble strips to warn a vehicle leaving the driving lane, pavement safety edge to allow a vehicle to easily recover to the roadway top, ditch and back slope grading to achieve adequate snow storage which will prevent and reduce snow drifting on the roadway surface, and permanent signage and striping.

Maintenance Plan

State of good repair is a critical piece of the OSTDOT’s Tribal Transportation Improvement Program (TTIP) and maintenance asphalt pavement crack and chip seals are scheduled. Once constructed the Project will be maintained as a critical piece of Tribal transportation infrastructure. Road asphalt paving will be crack and chip sealed every seven years. Concrete box culverts wider than 20-feet will be listed in the National Bridge Inventory and are required to be inspected every two years. Smaller culverts will be inspected by OSTDOT and BIA Road Maintenance annually. All analysis at the OSTDOT include plans for ongoing operation and maintenance as part of the overall state of good repair for transportation infrastructure on the Pine Ridge Indian Reservation.

2 https://highways.dot.gov/safety/local-rural/maintenance-drainage-features-safety/iv-correcting-unsafe-drainage-features

Public Engagement, Partnerships and Collaboration

Traditionally, underserved populations are not involved or engaged in most transportation decisions. OST tribal member input and support of this project will ensure long-term project success. Since the project is in the planning phase, a formal public engagement plan has not been developed. As the project moves along, OST will utilize tactics and community involvement techniques as outlined in the USDOT'S Promising Practices for Meaningful Public Involvement in Transportation Decision Making Guide. Public outreach efforts will focus on reaching the people to ensure equitable representation from the disadvantaged and underrepresentation populations in the community.

Through a meaningful public engagement process, OSTDOT will implement effective methods to share information, explore needs and concerns, establish and strengthen relationships, maintain dialogue with the tribal communities, and to assess and mitigate impacts throughout all stages of the transportation decision-making process.

The OSTDOT works in partnership with local, state, and federal agencies as part of project development. Partnerships include OST Department of Public Safety, OST Emergency Management, BIA Road Maintenance, OST Motor Fuels, Oglala Lakota County, Jackson County, Bennett County, Indian Health Services (IHS), South Dakota Department of Transportation (SDDOT), OST Rural Water, and BIA Pine Ridge Agency. These partnerships serve as an integral part of the project as they see the improvements to safety, mobility, quality of life, accessibility, and connectivity vital to central Oglala Lakota County and the entire Tribe. The public, including the residents of Manderson, Rockyford, and Red Cloud as well as the Tribal Districts where the project is located are included as partners in this project. These enhancements directly affect the residents of this region and will greatly improve the quality of life and accessibility to essential services.

Identifying key stakeholders and developing partnerships with relevant local, state, and federal agencies involved in the Project will be essential to gain the best insight throughout the planning, design, and construction process. Outreach will begin upon award to develop a collaboration plan with Emergency Service Personnel, Oglala Lakota County, BIA, FEMA, THPO, and other community stakeholders as necessary.

Meaningful Engagement

There are multiple strategies which can be utilized in our public engagement process. Purposed public engagement may include:

Targeted Outreach to the OST Tribal Council



In an effort to keep maintain open communication, project information will be shared at Tribal Council meetings to gather feedback, answer questions, and ensure project goals are adhering to OST's overall identified strategy.

Meetings and Pop-Up Events



We want to meet the community where they are at, which means we will set up at events or locations that people already frequent, such as school sporting events, or coffee shops. Contact cards will be provided and newsletters or other communications will be available.

Stakeholder Interviews and Meetings



Stakeholder meetings will be continuous throughout the Project to offer insights into the needs and concerns to be addressed and the anticipated impacts throughout the construction process.

Virtual Collaboration



An interactive project website will be available that will have all project materials and encourage ongoing public engagement through interactive maps, comment boards, surveys and language translations.

Equity and Justice40

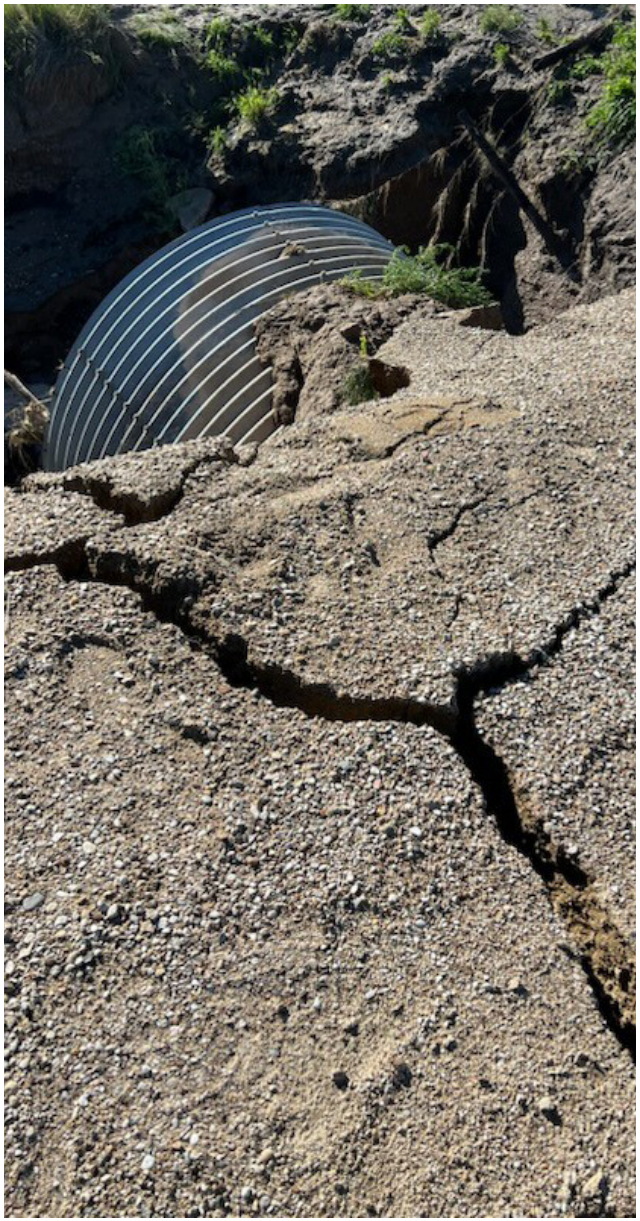
As per the PROTECT NOFO, applications from Indian Tribes are not required to provide information on equity and Justice40. FHWA will consider project applications from Indian Tribes to inherently benefit a Justice40 community and will rate them high for this criterion.

The Project is located on the Pine Ridge Indian Reservation, Census Tract 9408, Tribal Tract T005, and is identified as an Area of Persistent Poverty, a Historically Disadvantaged, Transportation Disadvantaged, Economic Disadvantaged, Health Disadvantaged and Equity Disadvantaged Community.

Reservation roads have historically been underfunded and as a result are considered some of the worst roads in the Nation. Comparing federal funds historical disbursements to states versus tribes, Oglala Sioux Tribe receives 20 percent of federal funding per lane-mile that SD receives. Road conditions directly impact the ability for Tribal members to access goods and services, medical care, education, and employment.

Through the planning and preconstruction process, robust public and stakeholder engagement will take place.





Climate Change and Sustainability

OST's aging infrastructure, combined with the effects of global climate change, including volatile weather patterns and an increasing number of severe weather events, highlight the need to provide and maintain resilient and reliable transportation infrastructure that not only limits the environmental consequences, but reduces harm and vulnerability to local communities. Currently OST is having 100-year storm events approximately every 3 to 4 years. The Project will provide a safe, efficient, resilient roadway with culverts designed to withstand larger storm events, such as 50-year for smaller watersheds and 100-year for larger watersheds. Communities which will benefit from the Project include Rockyford, Manderson, Red Cloud, and many others in central Oglala Lakota County.

The Project will reduce mileage and travel time resulting in reduced greenhouse gas emissions by reconstructing the South Section of BIA 33 to a safe, more efficient route for many residents living in Manderson and commuting to Pine Ridge Village, Red Cloud, Oglala and SD 79 via US 18. It will also provide for more efficient use of Oglala Sioux's Transit. Currently, buses travel from Pine Ridge Village to Manderson and back 3 times each day. After BIA 33's South Section is reconstructed, the route would be reduced by 12,000 miles every year.

Currently, the North Section is closed due to a culvert failure. Local traffic is utilizing a detour route adding 6 miles one way to get from Manderson to Rockyford. Repeated closures to this section of roadway increases response times for emergency services, and adds travel time for transit, school bus routes and local traffic, and further isolates the already disadvantaged communities in the area. Reconstruction of the North Section would allow for continued operation during severe weather events and reduce travel time of having to use a detour route.

Most of the new road horizontal alignment will be centered along the existing road. The roadway pavement structure will be innovatively analyzed using geotextile separation fabric under the base course and triaxial geogrid between layers of base course. The existing asphalt will be milled, recycled, and up to 20 percent reused in the new asphalt concrete. Base course will be reused as surfacing to intersecting approaches or used for temporary surfacing to maintain traffic during construction. The proposed road and culvert improvements will be more resilient, sustainable, and have a longer life span.

The project will avoid adverse environmental impacts by first surveying and delineating existing environmental resources, such as wetlands, Threatened and Endangered Species, and culturally significant sites. These sites will be avoided to the greatest extent possible. If unavoidable, the resources will be mitigated in compliance with local and federal requirements. Construction best practices will include applying water to graded areas and base course for dust control, perimeter installation of erosion controls to limit sediment from leaving the Project area, and seeding, fertilizing, and mulching within two weeks of completed final grading and topsoil placement. Additionally, to avoid impacts to the Northern Long-Eared Bat, tree removal will take place after September 30 and before April 1.

After BIA 33's South Section is reconstructed, bus travel will be reduced by 12,000 miles every year.

Schedule and Budget

Schedule

The Project activities include planning, preconstruction, and all phases of construction of both sections of BIA 33. It is projected that planning and preconstruction for the North Section (including NEPA activities) can start upon obligation of award, anticipated by end of 2024, and be completed in 2026, allowing the Tribe to let the North Section project for bidding in winter 2026/2027, move forward with construction activities in the spring of 2027, and have the North Section completed by the end of 2028. The planning and preconstruction for the South Section can be completed in 2028, then be let for bidding in winter of 2028/2029 and begin construction activities in the spring/summer of 2029 and completion on the end of 2030.

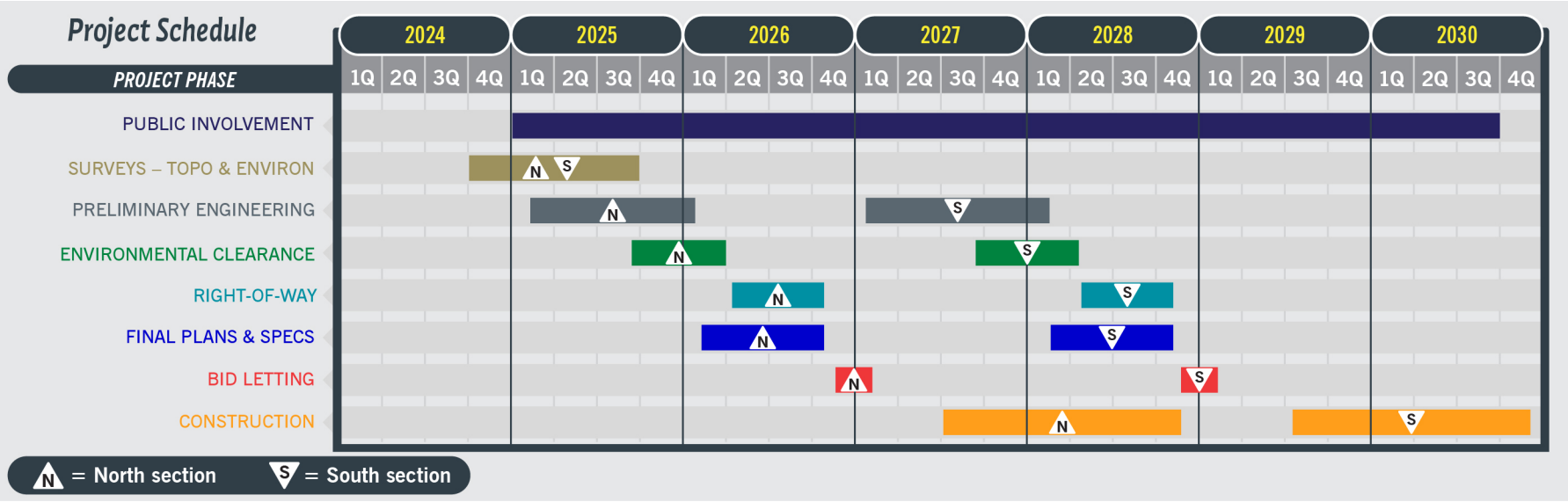
Budget

OST is requesting $60,000,000 in PROTECT grant funding. This is a Tribal grant application making it eligible for 100 percent federal funding. If actual construction costs exceed the PROTECT grant funding, the OST will dedicate TTP formula funding to cover the cost overruns. Funding of the Project will be an investment in a rural area of persistent poverty, and a historically disadvantaged community that will have beneficial local and regional impacts.

FUNDING SOURCE	AMOUNT	PERCENT (%)
PROTECT	$ 60,000,000	100%
Total	**$ 60,000,000**	**100%**

PROJECT BUDGET	
Planning and Preconstruction Total	$3,600,000
Construction North Section Total	$28,200,000
Construction South Section Total	$28,200,000
Total Project Cost	**$60,000,000**

Planning and Preconstruction cost include survey, preliminary engineering, including hydrology and hydraulic studies, environmental clearance, right-of-way, final plans and specifications, and public involvement. Construction costs include supplies and materials, construction labor, mobilization, related construction costs and public involvement. For a complete detailed outline of Project costs, please see the Project Cost Estimate at https://inputcentral.com/oglalasiouxprotect.



We recognize the entirety of the project is a major undertaking, so the Project is broken into phases starting with planning and preconstruction of the North and South Sections as identified in the Grant Funds, Sources and Uses of all Project Funding Section. OST is requesting Multiyear Distribution of Funds to complete the Project in its entirety. In the event the PROTECT program is unable to fund the entire proposed project, OST would be grateful for an allocation of $3,600,000 to cover the Planning and Preconstruction phases of the North and South Sections to get the Project shovel-ready, with a second priority to include full Construction of the North Section, for a total of $31,800,000 in grant funding.

If awarded PROTECT funds, it is expected the Project would be able and ready to be obligated directly after award and Planning and Preconstruction can begin. Budget estimates were completed by a professional engineering firm based on extensive experience with similar projects in scope, location, and anticipated schedule for both planning and construction. The budget is current and has been calculated based on known variables for supplies, time, and labor and includes a 10 percent contingency.

Based on experience with similar projects, OSTDOT feels confident that the schedule and budget are feasible, reasonable, and commensurate with the work as outlined in the Project application.





Innovation

Innovative Partnerships, Technologies, Techniques

The Project will seek to implement innovative technologies and equitable planning methods to provide cost savings and environmental sustainability. Innovative technologies utilized during the planning and design phase will include the use of Global Positioning System (GPS) equipment for survey, environmental investigation, and photos, Drone video and photos, Geographic Information System (GIS) mapping of environmentally sensitive locations, latest version of software which analyze hydrology and hydraulics, and the newest versions of highway design software which can develop corridor grading surfaces for use by construction equipment.

Nature Based Solutions

The Project hydrology and hydraulic study will make use of existing topography that can provide flood and snow storage. Larger and wider culverts will be used where the Badlands geology is present to lower velocities and reduce scour. Culvert ends will be armored with natural materials including gabions, riprap, and turf reinforcement mats. The disturbed areas from reconstruction will be reclaimed with grass mixes which are already prevalent and thrive in the region. Seeds inoculated with fungi will grow at a higher rate and vegetation is the best prevention to scour and erosion. Disturbed graded areas will have erosion control wattles made from compost or natural materials which can be left in place and naturally discompose while slowing water runoff and resisting erosion.

Cost Sharing Best-Practices and Technical Expertise Partnerships

The Oglala Sioux Tribe receives annual TTP funding directly from the FHWA for planning, construction, and maintenance activities. Given that the Project is in an area of persistent poverty, is public transportation infrastructure, and is located on federal Tribal lands, private investment is not practical nor applicable.

The Project ends at the intersection of US 18 which the South Dakota Department of Transportation (SDDOT) has authority. The existing BIA 33 and US 18 intersection is dangerous and BIA 33 cuts through an existing cemetery making this intersection difficult to improve in its current location. The OSTDOT and SDDOT have collaborated on past projects and will work together to plan for relocating BIA 33 to intersect with US 18 at safe location with appropriate sight distance.

This Project is strongly supported throughout the Oglala Sioux Tribe, local businesses and community members, emergency services and road maintenance departments. Technical expertise and past experiences from emergency service and road maintenance department personnel will be sought to ensure the project meets emergency response needs, evacuation planning, and road maintenance plans as it will be essential to Project success.

Innovative Techniques and Best Practices

The pavement structure will consist of geotextile woven separator fabric between the subgrade and base course and tri-axial geogrid between layers of base course. In 2018, this method was tested by the OSTDOT on a 5-mile section of BIA 41 which had extreme heaving due to fat clay in the Badlands geology. In fact, the road only had one lift of asphalt concrete prior to the storms of 2019 and performed so well that no repairs were needed. After 5 years, the road asphalt pavement does not show signs of cracking and little signs of movement and is being considered for use on a county road with similar heaving issues and geology characteristics.



BIA 41 pavement with geotextile woven separator fabric between the subgrade and base course and tri-axial geogrid between layers of base course

Additionally, the existing asphalt will be milled, recycled, and reused in the new asphalt concrete pavement. The remaining existing base course will be salvaged and reused for gravel surfacing of driveways that connect to the reconstructed road or travel gravel to maintain traffic during construction. The existing metal culverts will be salvaged, if possible, for the OSTDOT to use on lower volume Tribal roads or housing cluster roads.

Economic Analysis (BCA)

The Project's probable benefits include construction cost savings, travel time savings, crash reduction savings, economic growth, emergency response savings, emissions savings, and health benefits. When fully implemented, the Project will:

- Increase road resiliency with better flood and scour control
- Improve the state of good repair though the increased road design life span with concrete culverts and stronger pavement structure
- Reduce temporary repair costs to OSTDOT
- Improve safety by providing a shorter, safer routes for emergency services and shoulders for emergency service parking
- Reduce vehicle hours traveled
- Improve efficiency for commercial users
- Decrease potential for crashes from road condition and added safety improvements
- Reduce fuel emissions
- Reduce damage to personal and commercial vehicles
- Reduce impacts to local residents, who are currently stranded when it rains or snows
- Added economic development from activities generated by the use of the gravel pit

As per the PROTECT NOFO, at their discretion, Indian Tribe applicants may elect to provide raw data with their application to support the need for a project, without additional analysis. FHWA will use this data to develop estimates (given the data provided) of benefits and costs. BCA data can be found in **Appendix B** or at https://inputcentral.com/oglalasiouxprotect.

PROBLEM TO BE SOLVED: The current roadway on the North Section does not meet FHWA standards, has asphalt deterioration, and drainage issues that during flood events have caused culvert failures and road closures. The South Section is not paved, does not meet FHWA standards, is not usable for emergency service vehicles access, and it is not usable to the traveling public during inclement weather. The Project will address these critical transportation infrastructure issues, increase roadway resiliency, ensure public and emergency access to critical destinations, and strengthen and protect evacuation routes that are essential for providing and supporting evacuations caused from emergency events.

TOTAL PROJECT COSTS: $60,000,000. Due to the complexity and major undertaking of the Project, OST plans to complete the Project in phases and is requesting Multiyear Distribution of Funds to complete the Project in its entirety.

STATE OF GOOD REPAIR AND ECONOMIC COMPETITIVENESS: The age of the North Section is estimated to be 64 years and the age of the South Section more than 100 years. In the last ten years, the Tribe has spent over $1 Million to repair BIA 33's road surface and culverts following damaging storms. The road has far exceeded its design life and should have been reconstructed years ago and would have if funding had been available. It is anticipated the reconstructed road will have a design life of 100 years for the culverts and grading, and 50 years for the reinforced asphalt pavement with minimal maintenance costs. Within the North Section is a Tribal owned gravel pit but cannot be used because BIA 33 cannot withstand heavy weight truck traffic.

ENVIRONMENTAL SUSTAINABILITY AND QUALITATIVE BENEFITS: The South Section of BIA 33 is a gravel/dirt road which can be found on maps dating back to 1904. Due to the current condition of the roadway, many residents along this route are shut-in (or out) during inclement weather. Emergency services cannot reach these homes. Food delivery, healthcare support, school buses and Tribal assistance cannot reach people living along the South Section. The Project will reduce miles traveled and travel time resulting in reduced greenhouse gas emissions by reconstructing the South Section of BIA 33 to a safe, more efficient route for many residents living in Manderson and commuting to Pine Ridge Village, Red Cloud, Oglala and SD 79 via US 18. It will also provide for more efficient route for school buses and Oglala Sioux's Transit services. Currently, transit services travel from Pine Ridge Village to Manderson and back 3 times each day. After BIA 33's South Section is reconstructed, just the transit service route alone would be reduced by 12,000 miles every year.

Currently, the North Section is closed due to a culvert failure. Local traffic, including food and dialysis deliveries from the Rockyford Community Center, use this route when it is open and are now forced to utilize a detour route adding 6 miles one way travel from Manderson to Rockyford. Repeated closures to this section of roadway increases response times for emergency services, and adds distance and travel time for transit, school buses and local traffic. This further isolates the already disadvantaged communities in the area. Reconstruction of the North Section would allow for continued operation during severe weather events and reduce travel distance and time versus having to use a detour route.

FHWA Priority Considerations

Equity and Justice40

As per the PROTECT NOFO, applications from Indian Tribes are not required to provide information on equity and Justice40. FHWA will consider project applications from Indian Tribes to inherently benefit a Justice40 community and will rate them high for this criterion.

Reservation roads have historically been underfunded and as a result are considered some of the worst roads in the Nation. Comparing federal funds historical disbursements to states versus tribes, Oglala Sioux Tribe receives one tenth of federal funding for the same lane-mile that SDDOT receives. Road conditions directly impact the ability for Tribal members to access goods and services, medical care, education, and employment.

Workforce Development, Job Quality, and Wealth Creation

The Project will have significant short-term and probable long-term economic impact, by providing construction training and employment through the OST TERO, a contractor is required to give preference to qualified Tribal members in hiring, promotions, and on-the-job training for all work performed on the project. The tribally administered construction project can be used to provide education, training, and employment opportunities in the construction market. The wages for this project will meet the current Davis-Bacon or TERO minimum wages, whichever is higher. The Project will provide future long-term economic competitiveness on the Reservation and strengthen the existing economic base and diversify the economy by supporting it with adequate transportation infrastructure. The Project will create a place where diverse industries can survive and prosper, and residents can earn a living wage.



Need For Funding

Tribes have historically received far less federal funding per lane mile compared to states and national averages yet are expected to maintain and reconstruct the transportation system within the Reservations to the same standard. Given the Tribe's extremely limited financial resources, Reservation roads are in poor condition, especially as compared to state-owned roads. Reconstruction projects of this scale need to be supplemented with significant grant funding to come to fruition. This project has been in the Tribe's TIP since 2007 when they took over the roads program. Funding for this project keeps getting pushed back due to other projects needing emergency funding.

Along with the prevalent issues of poverty and limited resources, the federally declared midwestern storm of 2019, followed by the COVID-19 pandemic, has decimated the Tribe's already strained financial system. Construction costs have doubled but annual TTP funds have remained essentially the same. The current US administration has increased funding allocation to the Tribes but not to the degree to overcome inflation. There is no way to recover this loss of resources as they relate to the recent storm damage, pandemic, and inflation.