Project Description

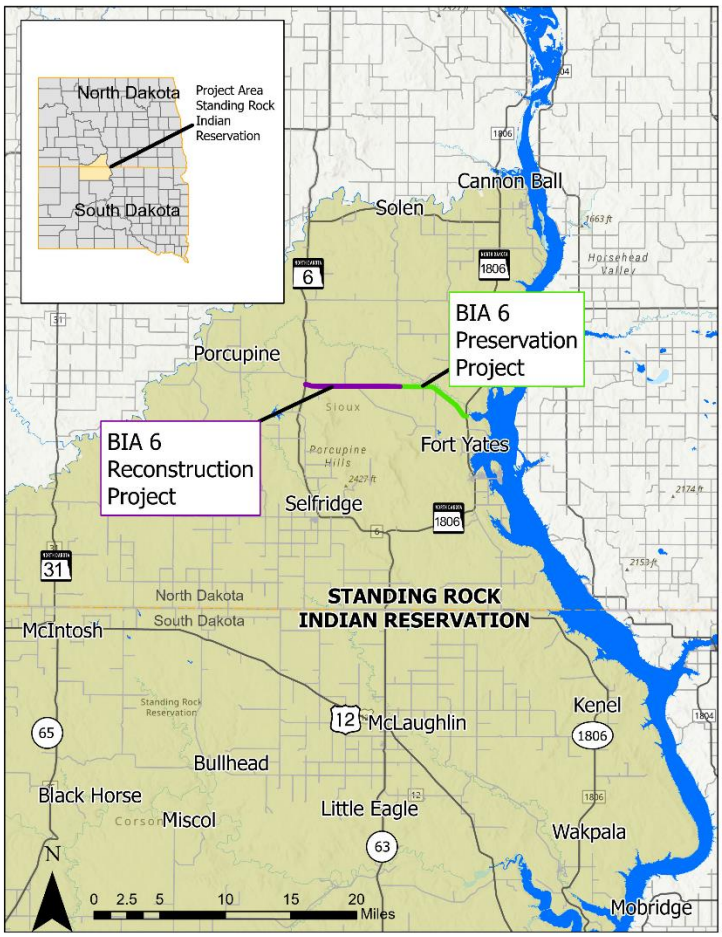
The Bureau of Indian Affairs Route (BIA) 6 Reconstruction and Preservation Project (Project) will renew and preserve a rural two-lane roadway, address a rapidly deteriorating roadway surface, and restore a consistent roadway width of 28 feet with 2-foot shoulders. The Project also corrects deficient cross-slopes, improves vertical curves, and enhances safety through proactive countermeasures.

Construction will occur along the entire length of BIA 6, approximately 13-miles, from North Dakota Highway (ND) 6 on the west to ND 24/1806 on the east. The Project consists of two phases:

Phase 1 – BIA 6 Reconstruction (Phase 1): Reconstruction of the western 7.44 miles of the Project corridor from ND 6 (Station 100+14) to Station 493+00.

Phase 2 – BIA 6 Preservation (Resurfacing): Resurfacing of the eastern 5.71 miles of the Project corridor from Station 493+00 to ND 24/1806 (Station 794+48).

Figure 1. Project Location



Current Transportation Challenges

Challenge 1 – Deteriorating Pavement Condition

Improving the pavement condition for BIA 6 is a primary objective of the Project. The Standing Rock Sioux Tribe stretches funding as far as it can to perform basic routine maintenance on the BIA and Tribal roadway networks. Given the existing condition of BIA 6, current funding sources for basic routine maintenance are insufficient to bring the pavement into a state of good repair. Exacerbated by the extreme weather conditions of the Upper Great Plains, the pavement condition has deteriorated to the point where it is unsafe to travel at the posted speed limit (65 MPH) for a majority of BIA 6. Roadway reconstruction and pavement preservation (resurfacing) are needed to bring the roadway into a

Figure 2. BIA 6 Pavement Condition

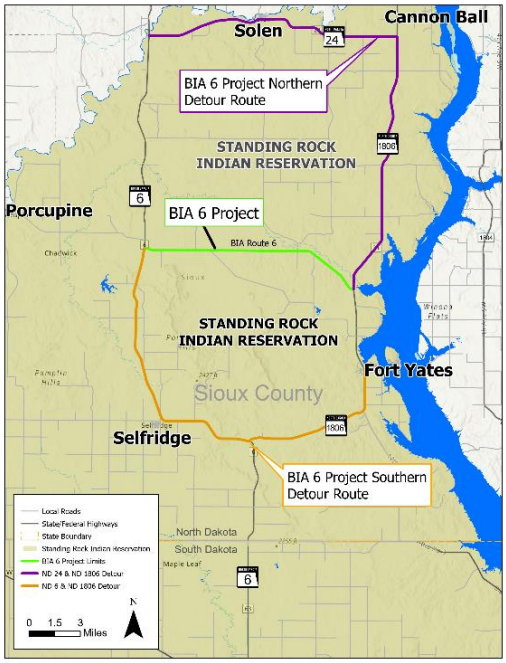
safe and operable condition. If the Standing Rock Sioux Tribe is unsuccessful in their 2023 RAISE grant pursuit, the pavement condition is expected to degrade to a level where it is unsafe for travel and fiscally irresponsible to maintain. Without the Project, in the next three years, the Tribe will have no choice but to: A) close the roadway; and B) grind BIA 6's asphalt pavement, overlay with gravel surfacing which will cause traffic diversion and decreased mobility across the Reservation.

The pavement condition of BIA 6 was evaluated in the Tribe's 2017 Long-Range Transportation Plan (LRTP) using the Pavement Surface Evaluation and Rating System (PASER). Roads were scored on a scale of 1 to 10, where 10 indicates perfect condition (new pavement) and 1 is a gravel road. At the time, most of BIA 6 was scored as 4 to 6 (fair to good). In 2023, over five years since BIA 6 conditions were evaluated, the Tribe estimates that the surface condition has fallen to 3 to 5 (poor to fair). A PASER rating of 3 is the lowest score for paved surfaces on the Standing Rock Indian Reservation. A score of 2 (very poor) is given to failed pavement that has been graveled over.

Challenge 2 – Regional Mobility & Quality of Life

Due to the rural context of the Standing Rock Indian Reservation, BIA 6 provides a critical east-west roadway, with few alternate routes available to travelers. Together with BIA 7 located just northwest of the western Project termini, BIA 6 is one of only four highways that provide full east-west connectivity across the Reservation. BIA 6 provides mobility to and from rural areas and Tribal communities to Fort Yates, ND. Fort Yates provides the centers of government for Standing Rock Sioux Tribe and Sioux County, education including higher education, healthcare, social services, cultural and heritage events and activities, and historical sites. BIA 6 contributes to the quality of life for residents of the Reservation. For example, if BIA 6 between Fort Yates and the community of Porcupine (2020 pop. 162) near the western edge of the Reservation were to be closed or have significant mobility constraints, traffic would either detour to ND 6 and ND 24 to the north, adding about 17 miles and 20 minutes to the trip; or to ND 6 to ND 1806, adding about eight miles and eight minutes to the trip. BIA 6 serves as the most direct path to and from Porcupine, Fort Yates, and the Prairie Knights Casino. The detour map illustrates these detours and natural traffic diversions that may occur if the Tribe closes or converts BIA 6 to gravel.

Figure 3. BIA 6 Detours



In addition, one of the quickest routes from Fort Yates to the Bismarck-Mandan metropolitan area utilizes BIA 6 to ND 6. If BIA 6 were to close, travel to and from Bismarck would detour to ND 1806 or another alternate route. Trips to the Bismarck-Mandan metropolitan from the Reservation are significant and vary by purpose including meeting essential needs and purchasing everyday goods, to healthcare for emergent or chronic conditions not available through Indian Health Service's Fort Yates Hospital (Level IV trauma center). If BIA 6 pavement conditions continue to deteriorate, this would force the Tribe to close the road or convert it to a gravel surface.

Either scenario would reduce mobility, as conversion to gravel surface would reduce the speed from 65 MPH to 50 MPH. Negative impacts to regional mobility and quality of life are expected with a no-build.

Challenge 3 – Safety

Figure 4. BIA 6 Ditch Slopes or Inslopes

The current condition of BIA 6 jeopardizes safety for users. Roads with a PASER rating of 3 (poor condition) cannot be traveled safely at the posted speed limit, according to the Tribe's LRTP. In many locations, roadway shoulders have completely deteriorated, with erosion extending into the travel lane. Striping is non-existent in some locations. Narrow or nonexistent shoulders increase the risk and incidence of run-off-the-road crashes.

BIA 6 also suffers from variable cross-slopes, increasing the risk of hydroplaning and damage caused by stormwater runoff. Vertical curves are deficient, decreasing sight lines for drivers, creating hazardous perception-reaction times, and stopping sight distances. Steep ditches or inslopes increase the risk of dangerous rollover collisions and increase the severity of run-off-road crashes. In addition, the failing subsurface of the Phase 1 segment increases the risk of washouts resulting from heavy rain events. The Standing Rock Sioux Tribe has a long and troubled history with washouts and in 2019, a portion of ND Highway 1806 failed in inclement weather, causing a crash that killed two people and injured two others[1]. Poor roadway conditions, combined with other factors such as variable terrain, travel speeds, unpredictable weather events, and collisions with wildlife make BIA 6 less safe.

Proposed Improvements

Pavement Condition

The Project is nearly 100 percent (see Project Readiness) ready for construction in 2024 & 2025. Following roadway construction, BIA 6 will remain in excellent condition through 2030 and in good condition through 2040.

Regional Mobility and Quality of Life

The Project will improve and sustain mobility for residents and visitors of the Reservation by providing a reliable and safe pavement surface, ensuring BIA 6 remains open for the foreseeable future. The enhanced mobility and safety will increase the quality of life on the Reservation by providing access to economic opportunities, historical and cultural events or sites, education including higher education, healthcare, social services, and other essential goods and services. The Project also improves the resiliency of Standing Rock Public Transit, emergency service response times, and school busing to and from rural Tribal communities.

Safety

New pavement will provide a smoother driving surface and improved friction to help drivers maintain control and to reduce the incidence of collisions and hydroplaning. A 2014 study[2] showed rural, two-lane highways with pavement kept in good condition, reduced fatalities and injuries by 26 percent when compared to roadways in poor condition. Cross slope correction will fix variability and inconsistencies on BIA 6, decreasing the risk of

[1] https://talkpoverty.org/2021/03/24/failing-infrastructure-indigenous-reservations/
[2] https://tinyurl.com/mr8zzad6

hydroplaning and reducing damage to the roadway and shoulder through stormwater runoff, reducing the risk of hazardous conditions caused by storm related weather events. The Project will correct deficient ditches or inslopes where applicable, improving safety and reducing the severity of crashes involving road departure[3]. In addition, new striping and the addition of centerline and edge line rumble strips will be installed on the new roadway surface for the entire length of the route. Rumble strips are a highly effective, low-cost safety improvement. Rumble strips are proven to reduce single vehicle run-off-the-road fatalities and injury crashes by

Figure 5. BIA 6 Striping

Figure 6. BIA 6 Intersection with ND 6

29 percent[4]. Phase 1, or the reconstruction portion of the Project will improve existing vertical curve deficiencies, increasing sight lines, enhancing perception-reaction time, and improving stopping sight distance[5].

Detailed Statement of Work/Design Status

The BIA 6 project will be constructed in two separate phases beginning in 2024. These phases comprise one project with different letting or bid dates and will restore the 28-foot-wide roadway with 2-foot shoulders. BIA 6 will remain open during both phases, maintaining local traffic and emergency vehicle access.

Phase 1 – Reconstruction: 2017 condition of poor to fair (PASER of 3 to 4). This phase will consist of reconstructing the western portion of BIA 6 in 2024, a span of 7.44 miles beginning from the ND 6 intersection on the west. Reconstruction will include subgrade/roadbed repair, vertical curve and cross slope correction, inslope or ditch-slope improvements, roadway striping, and centerline and edge line rumble strips.

Phase 2 – Preservation (resurfacing): 2017 condition of fair (PASER of 5). This phase will follow phase 1, to occur in 2025, with resurfacing (mill and overlay) a span of 5.71 miles beginning at the ND 1806/ND 24 intersection. Phase 2 includes aggregate allotments for subcut repairs, asphalt mill and overlay, cross slope correction, inslope or ditch-slope improvements, roadway striping, and centerline and edge line rumble strips.

Project History

Preliminary design (Phase 1 & 2) is complete, environmental documentation (Phase 1 & 2) is complete, and final design is complete for Phase 2. Phase 1 final design is approximately 90 percent complete. Minimal right-of-way acquisition for Phase 1 is anticipated to be completed later this year; ROW impacts will be temporary in nature

[3] https://safety.fhwa.dot.gov/roadway_dept/countermeasures/horicurves/fhwasa15084/ch6.cfm
[4] National Cooperative Highway Research Program (NCHRP) Report 641
[5] https://safety.fhwa.dot.gov/older_users/handbook/ch4.cfm#ss2

to facilitate project construction. Bid letting and construction is scheduled for 2024 (Phase 1) and 2025 (Phase 2).

Project Location

As shown in Figure 7, the BIA 6 Project is in Sioux County, North Dakota, and the Standing Rock Indian Reservation. BIA 6 runs generally east-west from the intersection of ND 6 to ND 24/1806. It extends 13.2 miles and is centrally located between the communities of Fort Yates, Porcupine, Cannon Ball, and Selfridge. The project area is entirely rural and is not part of a Census designated urban area. The entire project is located within Census Tracts 9408 & 9409 with a geospatial location of 46.112264°, -100.483155°. Census Tracts 9408 & 9409 are both defined as areas of persistent poverty, having poverty rates consistently above 40 percent. The project route is located entirely within the Standing Rock Indian Reservation on Tribal land, a historically disadvantaged community[6]. As illustrated by Table 1, Sioux County consistently has one of the highest rates of poverty in the country.

Figure 7. BIA 6 Census Tracts

Table 1. Income and Poverty 1990-2018, Sioux County and North Dakota

Survey/Census year	Sioux County		North Dakota	
	Poverty Rate (%)	Median Household Income ($)	Poverty Rate (%)	Median Household Income ($)
1990 Census	47.4	14,838	14.4	23,213
2000 Census	39.2	22,483	11.9	34,483
2020 Census	28.3	41,893	10.2	65,315
2010 SAIPE[7]	41.3	28,338	12.5	48,878
2018 ACS 5-year	36.5	40,862	10.7	63,837
2020 ACS 5-year	32.9	41,893	10.5	65,315

The Project is in one of the poorest areas in the nation with severely limited access to essentials, including groceries, fuel, basic health care needs, and has a population with disproportionately high mortality rates.

Supporting Documents

Links to supporting documents are included throughout this narrative. All supporting documents and the RAISE grant application narrative are available to view at the following webpage:
https://www.srfconsulting.com/srst-bia-rt-6-raise/

[6] Areas of Persistent Poverty & Historically Disadvantaged Communities. U.S. Department of Transportation.
[7] 2010 Small Area Income and Poverty Estimates. United States Census Bureau.