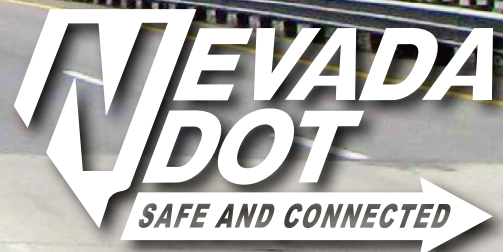


FISCAL YEARS 2023 & 2024 // BRIDGE INVESTMENT PROGRAM

I-80 WEST, RENO BRIDGE REPLACEMENTS PROJECT

BRIDGE GRANT



MARCH 19, 2024

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I. Basic Project Information

Project Description

The Interstate 80 (I-80) West, Reno Bridge Replacements Project includes seven structures (one stand-alone bridge and three bridge pairs) just west of the Reno, Nevada area along I-80 (I-770, I-774 E/W, I-775 E/W and H-767 E/W), with the intent to remove and replace each bridge.

These bridges were built approximately 60 years ago and do not meet today's design standards. In particular, the bridges have joint issues, spalled concrete on the superstructure and substructure, clogged deck drains, and deteriorating rails, and require erosion repair. In addition, each bridge needs to be raised to meet current vertical clearance standards. As I-80 is a major interstate corridor that carries high volumes of truck freight, meeting the vertical clearance standard is essential to avoid lengthy detours.

The average lifespan of contemporary bridges is 75 years. However, when these bridges were built, they were designed with an intended lifespan of 50 years. Thus, **they have already surpassed their expected service life, and extensive retrofitting and rehabilitation are already due** in order to extend their service life, as confirmed by recent inspections. **Without such improvements, these bridges would only last an additional ten years at most.** The proposed replacement bridges, however, would be built to last 75 years.

Regional Context

I-80 is the second-longest interstate highway in the United States (after I-90), and extends from San Francisco, California to Teaneck, New Jersey. It is an east-west transcontinental freeway traversing various terrain across 11 states. The facility spans nearly 3,000 miles in

length, connecting a wide array of population and geographical diversity. I-80 also intersects with dozens of other interstate systems across the country and parallels the Union Pacific Railroad's (UPRR) Class 1 Overland Route.

This section of I-80 holds significant importance as a crucial freight facility, linking ports in Oakland and San Francisco to the rest of the United States. The Reno, Nevada area serves as a pivotal warehouse and distribution hub for freight, hosting the Tahoe Reno Industrial Center (TRIC), an expansive 107,000-acre industrial park. TRIC is the largest center of its kind in the United States and is the third largest globally. It is home to more than a hundred companies including Home Depot, Walmart, and Tesla. This area operates as a foreign trade zone, allowing goods from Oakland to be unpacked in Reno, enhancing its role in international trade.

In October 2023, President Biden designated the Reno area as a Regional Innovation and Technology Hub (Nevada Lithium Batteries and Other UV Material Loop Tech Hub). These areas will catalyze investment in technologies critical to economic growth, national security, and job creation, and will help communities across the country become centers of innovation critical to American competitiveness. I-80 is vital to the success of this Tech Hub for the transport of people and goods.

Challenges and Needed Improvements

Over the past few decades, these bridges have experienced significant deterioration and degradation, which has necessitated excessive maintenance and inspection sessions, often resulting in partial/full traffic closures. The I-80 West Bridge Replacements Project aims to address the following issues, challenges, and deficiencies:

Vertical clearance deficiencies: Raising the crossover at each bridge to meet today's minimum vertical clearance standards is essential for compliance and optimizing freight flow in these areas. As a critical freight corridor through Nevada and the United States, ensuring that today's standard size trucks do not need to detour off the highway is economically important. This adjustment aims to streamline truck traffic, ensuring smoother logistics and enhancing the usability of these I-80 bridges for larger freight vehicles.

Deteriorated reinforced concrete bridges: These bridges have extensive, visible concrete spalling, delamination, cracking, and corroded rebar exposure in the superstructure and supports. The deck surface displays scaling issues with insufficient cover, exposing reinforcement and necessitating ongoing maintenance, thereby impacting traffic operations. The bearing steel plates are distressed and have visual signs of corrosion.

Excessive deterioration due to winter weather and traffic: Temperature fluctuations contribute to additional stress and cracking in the structures. Because of the heavy chain and snow tire traffic experienced over the Sierra Nevada Mountain Range, bridge decks deteriorate more quickly than on other corridors and require a higher degree of maintenance costs. Further, as a safety measure, de-icing salts are used on the bridge decks during cold and icy weather to

prevent traffic incidents. High chloride levels from de-icing salts contribute to further road deterioration at a faster rate than other bridges that do not experience high volumes of traffic in winter weather conditions.

Traffic congestion for frequent maintenance and inspection:

Temporary lane closures for frequent, necessary inspection and maintenance of these deteriorating bridges have resulted in significant traffic congestion.

Bridges on heavy traffic I-80 corridor:

The design of the replacement bridges will address and accommodate projected traffic increases on the I-80 corridor, including wider shoulders to decrease the need for lane closures during traffic incidents and maintenance/inspections.

Visibility deficiencies under decks:

Given the width of the overpass structures, the design of these bridges will implement under deck lighting for both sets of I-775 E/W and I-767 E/W bridges. This addition contributes to the overall safety and visibility for motorists. The incorporation of under deck lighting serves as a proactive measure to address potential challenges, ensuring optimal

The I-80 West bridges carry I-80 from the gateway of the Sierras at the California/Nevada border over multiple river and canal crossings, canyon terrain, lifeline utilities, and multiple UPRR mainline tracks. The bridges have exceeded their usable service life and could be susceptible to collapse from the design post-winter flood event. Such an event would cripple east-west goods movement and recreational travel across the West.



Spalled concrete with corroded rebar in the deck opening overhang (I-774E bridge)



Distressed bearings (I-774W bridge)



Spalled concrete with corroded rebar in the deck overhang (I-774E bridge)



Spalled concrete (I-774W bridge)

illumination during varying weather conditions or low-light scenarios.

History

I-80 spans northern Nevada for 410 miles of the 3,000 miles that it traverses the United States. It is one of two interstate highways in Nevada and is continuously preserved and improved to maintain this critically important corridor on the Primary Highway Freight System. NDOT has completed a series of long-range planning studies for I-80 that establish the vision of corridor operations and outline future improvement needs based on expected

travel patterns, with deep consideration of nationally transported freight originating from the Ports of Oakland and San Francisco. The initial plan was developed in [2009](#), with an update in [2014](#), and a third update currently underway. Several recommended improvements from these plans have been and continue to be implemented on an annual basis, with \$1.7 billion worth of improvements on I-80 currently in NDOT's [10-Year Transportation Plan](#).

In 2022, NDOT completed a [Bridge Replacement Scoping Report](#) that documents

needs, concerns, and costs to replace or rehabilitate 27 bridges across the NDOT system. These seven bridges are included in this document and due to the findings, quickly advanced through preliminary engineering (30% design completed in November 2023) and NEPA (completed in January 2024).

Project Location

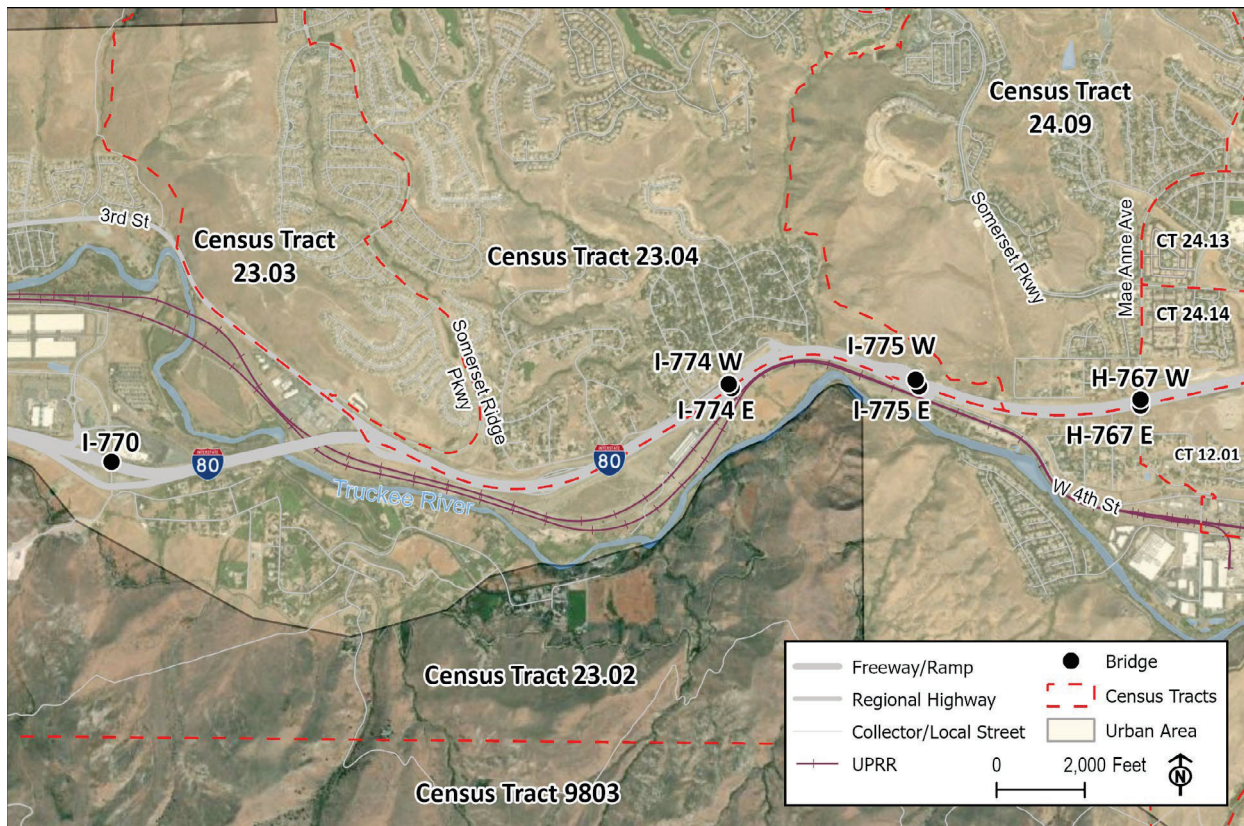
The I-80 West bridges (seven bridges, including one single bridge and three twin-bridge structures) are located along I-80 within a 4-mile radius of each other just west of Reno, Nevada in Washoe County, as shown in **Exhibit 1**. The bridges are positioned near the California/Nevada border on the westernmost side of the county.

- **I-770** supports an overpass over I-80 at Garson Road, providing access to major retail and industrial sites. This bridge

is located within census tract 23.02 (32031002302).

- **I-774 E/W** are located at the I-80/ Mogul interchange ramps, connecting neighborhoods and industrial development on both sides of the interstate. I-80 forms the boundary between census tracts 23.02 (32031002302) and 23.04 (32031002304).
- **I-775 E/W** are located at the I-80/Lawton interchange ramps, connecting the Truckee Meadows Fire Station and the interstate frontage roads. These bridges also fall within census tracts 23.02 (32031002302) and 23.04 (32031002304).
- **H-767 E/W** are located on I-80 at Mae Anne Avenue, which crosses beneath the interstate. These roads form the boundary between four census tracts: 24.09 (32031002409), 24.14 (32031002414), 23.02 (32031002302), and 12.01 (32031001201).

Exhibit 1: Project Location Map



This entire area is within the **Reno, NV-CA Urbanized Area** (census tracts noted above and illustrated in **Exhibit 1**. None of the project's census tracts are categorized as Areas of Persistent Poverty or Historically Disadvantaged Communities. A geospatial file illustrating the location of these bridges is appended to this grant application.

I-80 not only serves as a vital artery for trucking, but also integrates rail services from UPRR, a major class 1 railroad facility. The I-80 West bridges play a critical role in sustaining the local, regional, and national economies – which all rely on a functional I-80 corridor – and they will continue to enable economic growth in the future.

Lead Applicant

NDOT is the lead applicant for the I-80 West Reno Bridge Replacements Project. NDOT has substantial experience in planning, designing, and maintaining bridges across the state. NDOT owns and maintains 1,221 bridges across the State of Nevada as part of our bridge program. Responsibilities for development and operation of this program lie with the Structures section of the NDOT Engineering Division. NDOT monitors the health of its structures through a bridge inspection program conducted on a bi-annual basis for each structure.

NDOT also has extensive experience with receipt and expenditure of Federal-aid highway programs. We are the lead recipient of a variety of federal funding, including formula and discretionary funds. The agency is highly experienced in collaborating with federal agencies from regulatory, compliance, and stakeholder perspectives.

Within the agency, NDOT has a formal Grants Department. This department prepares discretionary grant applications, coordinates with local agencies seeking federal support,

and assists other divisions with federal reporting requirements upon receipt of funding (e.g., quarterly SF-425). We also communicate frequently with the FHWA Nevada division on state and local project priorities.

Currently, NDOT is facilitating and/or supporting four FY 2022 and 2023 awarded grant projects under RAISE and MPDG/INFRA, with several other project selections pending. NDOT was also the recipient of prior Competitive Highway Bridge Program funding.

Other Public and Private Parties

There are no other public or private parties involved in the delivery of this project, however several agencies will be involved in consultations during the design and environmental approval process. No entities will receive a direct or predictable financial benefit if the project is awarded.

Additional Eligibility Requirements

Maintenance Commitment

NDOT will oversee the maintenance and/or preservation of each bridge as part of the agency's bridge program. Routine maintenance activities will be conducted by NDOT District 2, the district where the bridges are located. Additionally, these structures will be included in NDOT's regular bi-annual bridge inspection cycle, which assigns a bridge rating, monitored over time. Documentation of bridge conditions are included in [NDOT's State Highway Preservation Report](#).

Additionally, this project is consistent with [NDOT's BIL-Compliant Transportation Asset Management Plan \(TAMP\)](#), updated in May 2022. NDOT's TAMP serves as an important



I-80 connects with major transportation infrastructure and metropolitan areas across the U.S.. A bridge closure will along this interstate route will impede both passenger and freight travel and be detrimental to the economy.

communication and accountability tool that will guide transportation asset investments. The TAMP summarizes the quantities and condition of certain assets (pavement, bridge, and ITS assets) and the agency's plans for managing these assets for the next 10 years.

Issues identified during inspections that exceed routine maintenance requirements will either be integrated into the District's maintenance program or prioritized and added to the Department's preservation program, referred to as 3R (Resurfacing, Restoration, and Rehabilitation), funded through the Statewide Transportation Improvement Program (STIP). These issues will be addressed within regularly scheduled projects or in projects specifically tailored to tackle the preservation needs. The 3R cycle occurs

approximately every 7 to 10 years, and bridges generally operate on a 75-year replacement cycle.

Bike and Pedestrian Accommodation

There are no accommodations for bicyclists and pedestrians on the bridge structures, as this is not a safe or allowable use on the interstate highway system (no connectivity is allowed at either end).



II. National Bridge Inventory Data

Exhibit 2 provides the National Bridge Inventory data for the seven structures. Twin-bridges are presented in the same column, as the data is shared for both the eastbound and westbound directions unless otherwise noted in the table. (If two values are presented, they follow the pattern of eastbound data/westbound data.)

Exhibit 2: *National Bridge Inventory Data*

No	Item	I-770	I-774 E/W	I-775 E/W	H-767 E/W
Identification					
1	State Code & Name	NV	NV	NV	NV
8	Structure Number	I-770	I-774E / I-774W	I-775E / I-775W	H-767E / H-767W
5A	Record Type	1	1	1	1
3	County Code	031	031	031	A
6A	Feature Intersected	I 80	FRONTAGE ROAD	SR647 W 4 TH ST	MAE ANNE AV
7	Facility Carried	GARSON RD	I-80E / I-80W	I-80E / I-80W	I-80E / I-80W
16	Latitude	39303892	39305214 / 39305284	39305256 / 39305345	39304926 / 39305037
17	Longitude	119540165	119553322 / 119553390	119545134 / 119545203	119540165 / 11954037
98A	Border Bridge	0	0	0	0
99	Border Bridge Structure Number				
Classification					
20	Toll	3	3	3	3
21	Maintenance Responsibility	01	01	01	01
22	Owner	01	01	01	01
26	Functional Classification	09	01	01	11
104	Highway System of Inventory	0	1	1	1
110	Designated National Network	0	1	1	1
112	NBIS Bridge Length	Y	Y	Y	Y
Age and Service					
27	Year Built	1964	1964	1964	1966
106	Year Reconstructed	1975	0	0	0
42A	Type of Service	1	1	1	1
28A	Lanes on the Structure	2	2	2	2
29	Average Daily Traffic	2600	23250	22750	18750
109	Average Daily Truck Traffic	19	1	15	17
19	Bypass, Detour Length	5	1	1	1
Structure Type and Material					
43A	Structure Type, Main	2	2	2	2

No	Item	I-770	I-774 E/W	I-775 E/W	H-767 E/W
Condition					
58	Deck Condition	6	6 / 7	6 / 7	7
59	Superstructure Condition	6	7 / 6	6 / 7	8
60	Substructure Condition	6	7 / 6	7	7
61	Channel and Channel Protection	N	N	N	N
62	Culverts	N	N	N	N
Geometric Data					
49	Structure Length	76.8	37.8	46.3	36.6
50A	Curb of Sidewalk Widths, Left curb or sidewalk width	0	0	0	0
50B	Curb of Sidewalk Widths, Right curb or sidewalk width	0	0	0	0
51	Bridge Roadway Width, curb-to-curb	8.5	11.6	11.6	12.2
52	Deck Width, out-to-out	9.4	13.1	13.1	12.8
32	Approach Roadway Width	8.5	11.6	11.6	11.6
47	Inventory Route, Total Horizontal Clearance	8.5	11.6	11.6	12.2
53	Minimum Vertical Clearance over Bridge Roadway	99.99	99.99	99.99	99.99
54A	Minimum Vertical Underclearance, Reference Feature	H	H	H	H
54B	Minimum Vertical Underclearance	4.63	4.54	4.69	4.72
55A	Minimum Lateral Underclearance on Right, Reference Feature	H	H	H	H
55B	Minimum Lateral Underclearance on Right	1.9	2.2	1.9	1.5
56	Minimum Lateral Underclearance on Left	6.3	0	0	0
Navigation Data					
111	Pier or Abutment Protection	0	0	0	0
39	Navigation Vertical Clearance	0	0	0	0
40	Navigation Horizontal Clearance	0	0	0	0
Load Rating and Posting					
70	Bridge Posting	5	5	5	5
41	Structure Open, Posted, or Closed to Traffic	A	A	A	A
Appraisal					
113	Scour Critical Bridges	N	N	N	N
Inspections					
90	Inspection Date	522	522	522	322

III. Project Budget – Grant Funds, Sources, and Uses of All Project Funding

Project Budget

NDOT is requesting a Bridge Investment Program Grant in the amount of **\$49 million** which represents 80% of the estimated total project construction cost of \$61.2 million. This project includes the replacement of seven structures (one stand-alone bridge and three bridge pairs) just west of the Reno, Nevada area along I-80 (I-770, I-774 E/W, I-775 E/W and H-767 E/W), with the intent to remove and replace each bridge.

Preliminary design (30%) was completed in November 2023, with 70% plans expected to

be complete in April 2024 and final design in July 2024. Plans, Specifications, and Estimates (PS&E) will be submitted in September 2024. NEPA (categorical exclusion) was completed in January 2024.

Construction is anticipated to begin in March 2025, and is expected to be complete by March 2027. **Exhibit 3** presents the costs for the proposed bridge project. Costs are presented as a total for the entire proposed bundled project. The budget presented includes a 30% contingency cost element, totaling \$13.3 million.

Exhibit 3: Project Budget

Description	Total Bridge Bundle
Demolition	\$625,666
Excavation	\$823,211
Landscape and Aesthetics	\$1,150,000
Roadway	\$4,502,860
Safety	\$3,036,550
Bridges	\$23,513,600
Drainage	\$2,119,327
Drainage/Stormwater/Erosion Control	\$46,350
Pedestrian/Accessibility	\$191,950
Retaining Walls	\$2,787,250
Maintenance of Traffic	\$2,000,000
Mobilization	\$3,000,000
Pavement Markings	\$198,425
Utilities	\$374,830
<i>Subtotal</i>	\$44,370,018
Contingency (30%)	\$13,311,005
Construction Management	3,549,601
Total Project Cost	\$61,230,625

Notes: Escalation assumes construction from 2025 to 2027.

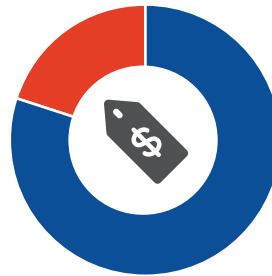
Funding Sources

As the Bridge Grant program requires a local match of 20% of total project dollars, NDOT will bring \$12.2 million to the project. This \$12.2 million is comprised of non-Federal funding, from NDOT's State Highway Fund.

Financial Completeness

NDOT's State Highway Fund is a healthy and stable funding source. State Highway Funds are populated from proceeds from licensing, registration, and other charges related to motor vehicle operations, in addition to fuel taxes. Any cost overruns on this project can be taken from this fund. The State Highway Fund is also the primary source for maintenance activities, with \$250 million every year for this purpose across the state highway system.

Exhibit 4: Funding Sources



\$49M

Federal Funding

\$12.2M

Non-Federal Funding

\$0M

Other Federal Funds



NDOT performs roadway and structural maintenance activities themselves throughout the state.

IV. Merit Criteria

Criterion #1: State of Good Repair

These bridges were built approximately 60 years ago and do not meet today's design standards. In particular, the bridges have joint issues, spalled concrete on the superstructure and substructure, clogged deck drains, and deteriorating rails, and require erosion repair. In addition, each bridge needs to be raised to meet current vertical clearance standards.

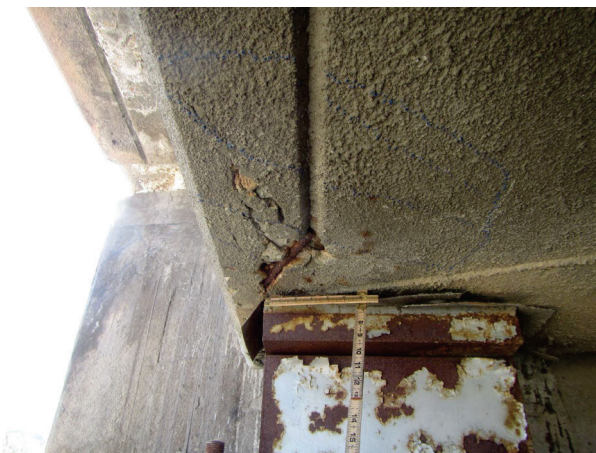
This project will contribute to a state of good repair by addressing vertical clearance deficiencies, improving the bridge deck and approach slab of two structures, and implementing under deck lighting for both sets of I-775 E/W and I-767 E/W bridges. This resiliency is particularly important in the face of climate change and the associated changes in weather patterns.

Continuing to rehabilitate bridges as they move past their useful life can be a time-intensive and costly endeavor. There are deep sump drop inlets west of the bridges to capture run-off, but water is infiltrating into the ground and impacting bridge piers, becoming a greater maintenance concern and burden. Some of the approach drains are filled with

debris, and cracking is evident on several of the bridges. Bridge fascia are exhibiting spall and exposed rebar, and pavement relief joints are in a state of failure.

Additionally, these bridges suffer from high chloride contents. Due to the winter weather in this part of the state, chloride can diffuse into concrete from external salting, inducing steel erosion. From a measurement perspective, chloride pounds per cubic yard over 2.0 should be removed and replaced. **Chloride samples taken from these bridges all average over the corrosion threshold of 2.0, with some samples in excess of 12 pounds per cubic yard.** Generally, these bridges experience greater wear and tear than in other parts of Nevada due to the winter weather conditions, truck chains, snow tires, salts, and plowing, as well as very high heavy truck volumes originating from the deepwater seaports in California. These factors lead to more rapid deterioration of the roadway through this portion of I-80.

NDOT typically assumes maintenance costs of \$1.00 per square foot of deck area per year. However, the **actual maintenance expenses**



Example of spall with corroded rebar in the girder on bridge abutment.



Failure of relief joint.

associated with these bridges have exceeded this estimate by three to five times. Thus, replacing this series of bridges will reduce future maintenance costs for the Department. The new bridges will have a predicted standard lifespan of 75 years, with regular maintenance.

Criterion #2: Safety and Mobility

These bridge replacements will protect the traveling public, including freight and general passenger traffic, from future risks should the bridges continue to deteriorate, while also improving general operating conditions. The bridge replacement projects will remove a number of known safety issues while also protecting motorized travelers and the surrounding community from potential harm. Key safety issues and proposed improvements include:

Shoulder Widening: The proposed design for the bridge replacement projects being applied for as part of this grant application includes widening both inside and outside shoulders, while preserving the existing 12-foot travel lanes. Existing and proposed shoulder widths are summarized in **Exhibit 5**.

In addition to the proposed shoulder improvements, bridge I-770 along Garson Road will be widened from one lane in each

direction to one northbound lane and two southbound lanes, along with a two-way multiuse trail.

The wide inside shoulder of all three bridge pairs along I-80 will allow a future configuration of three lanes in each direction with 12-foot inside and 12-foot outside shoulders.

Widened shoulders will preserve the possibility of adding an additional travel lane in the future in some locations, while improving safety via improved crash response. Shoulder upgrades may also result in overall crash reductions or secondary crash reductions attributed to improved emergency response and clearing times. These improvements also bring the potential to increase travel time reliability following incidents.

Recent structural inspections of the bridges have caused significant travel delays and traffic build-up across the state line. These disruptions to the flow of traffic reduce speeds through the mountainous area along the Nevada-California border, creating a dangerous condition for both travelers and maintenance personnel. The widening of both inside and outside shoulders will allow for the specialized bridge inspection trucks to access both sides of the bridges. This is necessary,

Exhibit 5: Existing and Proposed Shoulder Widths

Bridge	Existing Inner	Proposed Inner	Existing Outer	Proposed Outer
I-770	None	4', including 3' raised median	2' 8"	5'
I-774E	4'	24'	8'	12'
I-774W	4'	24'	8'	12'
I-775E	4'	24'	8'	12'
I-775W	4'	24'	8'	12'
I-767E	4'	24'	8'	12'
I-767W	4'	24'	8'	12'

as the bridge superelevations often prevent the trucks from accessing the lower edge of the structure as it puts the vehicles at risk of tipping.

Vertical Clearance: As part of the proposed bridge replacement projects, all seven bridges will be raised to meet modern clearance requirements. This upgrade is particularly important given the volume of freight traffic that regularly makes use of this section of I-80. The existing and proposed clearance heights on the seven bridges is summarized in **Exhibit 6**.

Lighting: Given the width of the overpass structures, the design of these bridges will implement under deck lighting for both sets of I-775 E/W and I-767 E/W bridges. This addition contributes to the overall safety and visibility

for motorists. The incorporation of under deck lighting serves as a proactive measure to address potential challenges, ensuring optimal illumination during varying weather conditions or low-light scenarios.

Criterion #3: Economic Competitiveness and Opportunity

I-80 is primarily an east-west corridor, spanning the 2,901 miles between San Francisco, CA and Teaneck, New Jersey. As the second-longest interstate in the United States, I-80 connects a number of major cities, including Oakland and Sacramento, CA; Reno, NV; Salt Lake City, UT; Cheyenne, WY; Omaha, NE; Des Moines, IA; and Toledo, OH. The facility also passes with 10 miles of Chicago, IL; Cleveland, OH; and New York City, NY.



View of I-770 existing vertical clearance at 15'-3". The minimum required clearance by today's standards is 16'-6".

Exhibit 6: Existing and Proposed Bridge Clearance Heights

Bridge	Existing Clearance	Proposed Clearance
I-770	Signed 15'3", measured 15'7"	16'6"
I-774E	Signed 14'9", measured 14'11"	16'6"
I-774W	Signed 14'9", measured 14'11"	16'6"
I-775E	Signed 15'0", measured 15'5"	16'6"
I-775W	Signed 15'0", measured 15'5"	16'6"
I-767E	Signed 15'3", measured 15'6"	16'6"
I-767W	Signed 15'3", measured 15'6"	16'6"

As a transcontinental interstate, I-80 serves as an important connector of some of the nation's largest ports, including the Port of Oakland and the Port of New York and New Jersey – the largest US East Coast container port.

As one of the country's few transcontinental freeways, this facility is especially significant for freight movement. Some sections of the interstate see incredibly high percentages of truck traffic, especially during summer and fall harvest seasons in the Western United States. A relatively large number of refrigerated trucks use I-80, in part due to the C.R. England headquarters located along I-80 in Salt Lake City. Reliability is particularly important for these trucks, as their deliveries are typically time sensitive. Many of these trucks transport high value fruit and vegetable crops from California to other markets across the United States.

Thus, I-80 is often the preferred route for transcontinental freight shipping due to the desire of many trucking companies to avoid the steep grades and the potential for treacherous winter conditions along I-70 west of Denver. In addition to agriculture, I-80 is also an important route for the manufacturing and trade sectors.



Trucks traveling on I-80 through Nevada.

The I-80 West Reno Bridges provide a critical link in this transcontinental interstate. Detours in this area are potentially costly due to time lost and can be logistically challenging due to the mountainous terrain in the surrounding region.

Criterion #4: Climate Change, Sustainability, Resiliency, and the Environment

Because the I-80 West Bridge Replacements Project is located just west of Reno, the I-80 corridor would serve as a critical evacuation route in the event of a natural disaster. According to population estimates released by the U.S. Census Bureau in 2018, the population of the Reno-Sparks metro area was 469,764, with Reno ranking as the third-largest city in Nevada.

23.3% of Reno's population speaks a language other than English, and 23.6% of the population identifies as Hispanic or Latino. 12.7% of the population of Reno lives in poverty. Environmental Justice provisions protect people against discrimination due to race, color, national origin, age, sex, disability, or limited English proficiency, as well as people who are low-income. The project team will ensure the planning and construction process does not result in projects that are likely to have a disproportionate negative impact to environmental justice populations, such as displacing or creating barriers between them and the rest of the community.

Nearly the entire State of Nevada is at risk of wildfires. Historical records and current data show that climate change has led to a significant increase in the likelihood, scale, and severity of consequential wildfires throughout the state. According to the 2018 Nevada Enhanced Hazard Mitigation Plan, the Mogul/I-80 corridor and Reno were both rated

as moderate risk areas for Wildfire Hazard.¹ With the frequency and unpredictability of extreme weather events increasing, it is imperative to replace these bridges before such disasters occur. Bridge failure could result in a complete disruption of the I-80 corridor, potentially leaving hundreds of thousands of people unable to evacuate to shelter and leaving emergency response unable to reach the area.



I-80 through the western U.S. is prone to extreme weather events, including heavy snow and wildfires

Even without the threat of natural disasters, bridge failure would necessitate detours on a major interstate throughfare, increasing vehicle miles traveled (VMT) and emissions.

No natural resource issues are anticipated in these locations, so replacement of these bridges would not result in undue environmental impact. Best management practices (BMPs) will be utilized, including using concrete girders for the bridges, which

are more resilient to fire than steel girders. Current seismic design requirements will be included in the construction, making the new structures more resilient to earthquakes than the existing bridges. This approach will protect the bridges against potential impacts of future extreme weather events, enhancing the overall safety and resiliency of the transportation infrastructure.

Criterion #5: Equity and Quality of Life

I-80 serves as a vital freight corridor for transporting both people and goods across the country, while also acting as a crucial link to the Reno-Sparks metropolitan area. Many individuals in Western Nevada rely on I-80 to access employment opportunities and essential goods and services. As noted previously, the Tahoe-Reno Industrial Center is one of many major employment hubs along I-80 in this metropolitan area, employing more than 25,000 people today, with extensive growth planned in the high-tech sector. This area is also home to more than a hundred companies and their warehouse logistics centers and fulfillment centers.



Aerial image of warehouse/distribution development at the Tahoe Reno Industrial Center - the region's largest employment area. Due to the mountainous terrain, I-80 is the only access route from the Reno-Sparks metropolitan area.

¹ <https://data.nbmj.unr.edu/Public/NEHMP/StateOfNevadaEnhancedHazardMitigationPlan2018.pdf>

I-80 also provides a key connection to California. The potential failure of these bridges would not only disrupt the regional freight economy but also profoundly impact the lives of individuals in this area.

NDOT is currently working towards completing 70% design plans for the proposed bridge replacement structures and expects to have 90% design completed in July of 2024. The agency will be conducting both public and stakeholder outreach in the summer of 2024 to solicit final comments on the plans before an anticipated PS&E submittal in the fall.

NDOT will be providing a virtual public meeting via an interactive website with project information, including the project schedule. The virtual public meeting will be advertised in the Reno Gazette Journal and promoted in community mailers.

Throughout the early design work, NDOT has been working with key stakeholders including the Regional Transportation Commission of Washoe County and the City of Reno on this project and will continue to coordinate with these agencies as design moves ahead into construction. NDOT will also be reaching out to Washoe County, Boomtown Casino, and Cabela's as part of our outreach efforts.

Criterion #6: Innovation The project will deploy innovative designs and construction techniques to facilitate the rapid and safe reconstruction of these bridges. Throughout the construction phase, the implementation of maintenance of traffic methods will ensure the continuous flow of two-way traffic, preventing disruptions of freight and passenger vehicle traffic. This approach is crucial for a vital freight corridor connecting Oakland and San Francisco to the Eastern United States. By enabling maintenance of traffic, the project aims to achieve accelerated bridge construction, significantly reducing detours

and alleviating major construction-related traffic concerns in the area.

Specifically, two lanes will remain open in each direction throughout the 18-month duration of construction, with the exception of a few 30-minute closures at key transition points.

The project will also utilize BMPs to remove existing piers, employing measures like silt fences on slopes to minimize erosion and safeguard the environment during the replacement process.

WHY THIS BRIDGE BUNDLE?

Nevada is one of the nation's leading states for proactive bridge maintenance, meaning that we have the least number of bridges in poor condition.

As part of the NDOT Transportation Asset Management Plan (TAMP), the Department has established performance goals related to the overall condition of the State's bridge inventory. These performance targets include maintaining an inventory that has greater than 35% of bridges in good condition and less than 7% in poor condition. Maintaining an inventory with less than 10% of bridges classified as structurally deficient (SD) is a federally mandated performance requirement.

- NDOT has replaced a number of bridges since the TAMP baseline was established, leading to a net decrease in the overall number of SD bridges.
- The eight SD structures listed in the 2023 NBI reporting - which correspond to the percentage of bridge deck area in poor condition (less than 1%) - include four NHS and four non-NHS bridges statewide.
- All the state-owned SD bridges are currently in various stages of planning, design, or construction.

- The overall good condition of our inventory has allowed us to shift from a previous “worst first” approach to a more proactive preservation approach. NDOT recognizes that our aging inventory is trending more rapidly from good to fair and we realize the importance of extending the service life of our structures. To meet the targets established in the TAMP, we are addressing this decline on several fronts.
- We are analyzing our inventory from a regional perspective to focus our efforts on those structures that would benefit most from preservation activities.
- The Structures Division and Districts continue to work closely to prioritize necessary bridge work in every county.
- Analysis has shown that the bridge decks are primary drivers for overall bridge condition, and we recognize that preservation starts with construction. Requirements for regional multi-layer and polymer overlays on new bridge decks have been added to the NDOT Structures Manual to aid in preserving and extending the service life of our bridges.

This bundle of seven bridges along I-80 proposed for replacement as part of this grant application are not rated poor, however, the decks are rated fair – meaning they will be some of the next to fall into a poor state of disrepair. Based on recent trends of maintenance and reconstruction activities, we are being proactive in replacing these bridges before they put us in an emergency situation on a major interstate corridor.

V. Benefit-Cost Analysis

The Benefit-Cost Analysis (BCA) showcases a projected Net Present Value (NPV) of \$189 million for the I-80 West, Reno Bridge Replacements Project. **The Benefit Cost Ratio (BCR) for the entire project is computed at 4.11, indicating that the anticipated benefits to the region exceed the investment by more than fourfold.** The BCA also reveals positive NPVs for each individual bridge replacement, indicating the cost-effectiveness of all project components.

Exhibit 7 presents the summary-level BCA findings. The full detailed memo and excel workbook are appended to this application on grants.gov.

Exhibit 7: *BCA Results (2022 \$ - Discounted)*

Measure	I-770	I-774 E/W	I-775 E/W	H-767 E/W	Entire Project
Total Discounted Benefits	\$34,451,579	\$37,307,389	\$58,721,781	\$11,632,673	\$249,775,267
Total Discounted Costs	\$8,684,867	\$8,684,867	\$8,684,867	\$8,684,867	\$60,794,072
Benefit Cost Ratio (BCR)	3.97	4.30	6.76	1.34	4.11
Net Present Value (NPV)	\$25,766,712	\$28,622,522	\$50,036,913	\$2,947,806	\$188,981,194

VI. Project Readiness and Environmental Risk

Technical Feasibility and Technical Competency

Technical Capacity

NDOT is the lead applicant for the I-80 West Reno Bridge Replacements Project and has substantial experience with the planning, design, and construction of bridge structures, overseeing over 2,000 bridges statewide.

We are the lead recipient of a variety of federal funding sources, including formula and discretionary funds. The agency is highly experienced in collaborating with Federal agencies from regulatory, compliance, and stakeholder perspectives. Coordination with several Federal agencies is already underway with the permitting process of these bridge structures.

Within the agency, NDOT has a formal Grants Department. This department prepares discretionary grant applications, coordinates with local agencies seeking Federal support, and assists other divisions with Federal reporting requirements upon receipt of funding (e.g., quarterly SF-425). We also communicate frequently with the FHWA-Nevada division on state and local project priorities. Currently, NDOT is facilitating and/or supporting four FY 2022 and 2023 awarded grant projects under RAISE and MPDG/INFRA, with several other project selections pending. NDOT was also the recipient of prior Competitive Highway Bridge Program funding.

More broadly, our agency complies with various civil rights laws and regulations, including Title VI of the Civil Rights Act of 1964 and accompanying DOT regulations, ADA, and Section 504 of the Rehabilitation Act.

Our Civil Rights Division recently updated our [Title VI Implementation Plan](#).

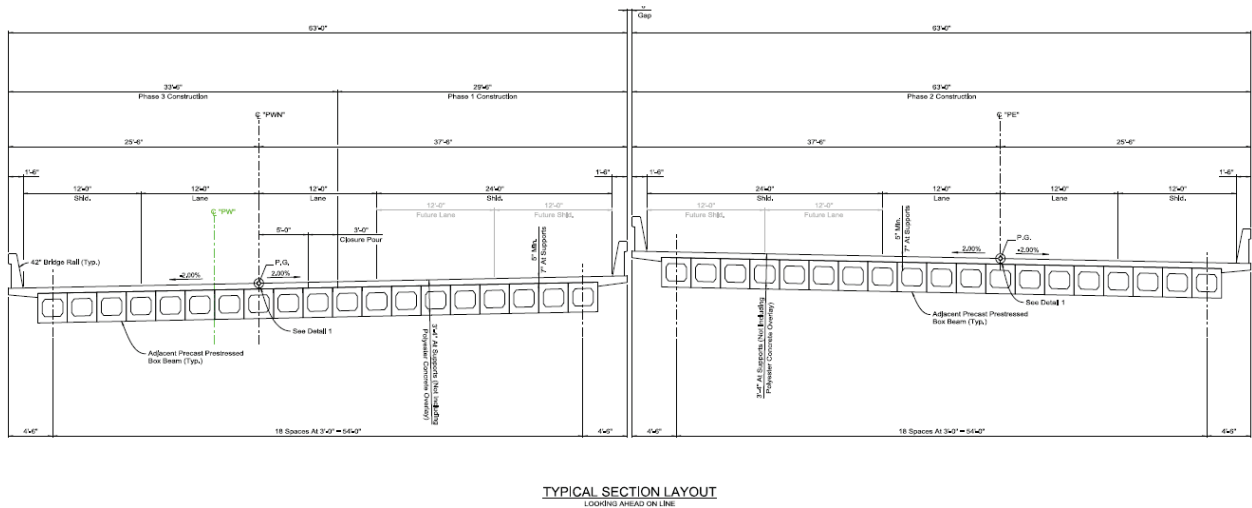
Technical Feasibility

The project need has been identified through a [Bridge Replacement Scoping Report](#) developed by NDOT and completed in April 2022. A thorough analysis of each of the bridges was conducted and includes an inventory of needs and concerns as well as proposed delivery method; recommendations on pavement, materials, and geotechnical applications; structure details; and roadway/constructability, traffic, safety, environmental, utility, right-of-way, and hydrology/hydraulics considerations.

A construction alternatives analysis was conducted for each bridge resulting in a final recommendation complete with typical sections and cost estimates. **Exhibit 8** illustrates one of these typical sections.



Exhibit 8: Sample Typical Section Schematic for I-775 Bridges



TYPICAL SECTION LAYOUT
LOOKING AHEAD ON LINE

Exhibit 9: Schedule

Task Name	2023		2024				2025				2026				2027				2028				2029				
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Preliminary Engineering	Gray	Gray																									
Intermediate Design/NEPA			Gray	Blue	Blue																						
Final Design					Blue	Blue																					
Advertise/Award for Construction							Blue																				
Construction								Blue	Blue	Blue	Blue	Blue	Blue	Blue													
Closeout																	Blue	Blue									

Project Schedule

Exhibit 9 presents the schedule to fully complete the I-80 West Reno Bridge Replacements Project. Items in gray are underway and/or will be completed prior to the execution of this grant request, allowing construction-related activities to advance quickly.

Required Approvals

Environmental Permits and Reviews

For each of the proposed bridge replacements, NDOT owns sufficient right-of-way (ROW) for

the recommended improvements. Additional ROW or easement needs are not anticipated for any of the locations. The following section describes anticipated environmental permits and reviews for each bridge.

I-770

- Will require approval of a Categorical Exclusion (CE). 404/401/408 permitting is not anticipated.
- May have key cultural resource impacts depending on staging, which would require additional permitting.

- Inspection for asbestos, lead in paint coating materials, and bat roosting will be required.
- Standard specifications would dictate any further requirements for bird nesting.
- All environmental technical studies shall be delegated to the design consultant.
- Type 1 noise analysis will be required at this location.

I-774 E/W

- Will require approval of a Categorical Exclusion (CE). 404/401/408 permitting is not anticipated.
- No natural resources issues are anticipated at this location.
- Inspection for asbestos, lead in paint coating materials, and bat roosting.
- Standard specifications would dictate any further requirements for bird nesting.
- All environmental technical studies shall be delegated to the design consultant.
- Type 1 noise analysis will be required at this location.

I-775 E/W

- Will require approval of a Categorical Exclusion (CE). 404/401/408 permitting is not anticipated.
- Construction of this bridge may have impacts on cultural resources depending on staging.
- Inspection for asbestos, lead in paint coating materials, and bat roosting.
- Standard specifications would dictate any further requirements for bird nesting.
- Type 1 noise analysis will be required at this location.
- All environmental technical studies shall be delegated to the design consultant.

H-767 E/W

- Will require approval of a Categorical Exclusion (CE). 404/401/408 permitting is not anticipated.
- No natural resources issues are anticipated at this location.
- Construction of this bridge may have impacts on cultural resources depending on staging.
- Inspection for asbestos, lead in paint coating materials, and bat roosting.
- Standard specifications would dictate any further requirements for bird nesting.
- Type 1 noise analysis will be required at this location.
- All environmental technical studies shall be delegated to the design consultant.

State and Local Approvals

No additional state or local approvals are required for this project. However, RTC Washoe completed the Verdi Area Multimodal Transportation Study in July 2023, which looked at existing and future transportation issues and opportunities within the Verdi area. This plan was developed in close coordination with NDOT and had extensive public engagement opportunities. One of the major project recommendations to come out of the study was to widen or reconstruct the Garson Road Bridge/Interchange and include a pedestrian/bicycle facility, which is being fulfilled through this project. This project recommendation had significant support from the public.

Federal Transportation Requirements Affecting State and Local Planning

The [Statewide Transportation Improvement Program](#) (STIP) is a four-year fiscally constrained plan that NDOT updates annually, with amendments allowable throughout the year. The current STIP includes projects for [FY 2023-2026](#).

The I-80 West Bridge, Reno Bridge Replacements [project](#) is included in the existing STIP, with construction shown beginning in federal fiscal year 2024. All bridge structures are located outside of Washoe County Hydrographic Area 87, which Northern Nevada Public Health – Air Quality Management Division utilizes to define the maintenance area for transportation conformity purposes.

Project Risks and Mitigation Strategies

At this time, NDOT does not foresee many risks with completion of this project. Design is well underway. No new right-of-way is required. The NEPA effort will be completed in-house through routine CEs, with minimal permitting or constraints anticipated. At worst, material orders may cause some schedule delay, but this project is anticipated to be complete in a relatively short timeline, allowing some flexibility.



VII. Administration Priorities and Department Strategic Plan Goals

Safety

These bridge replacements will protect the traveling public, including freight and general passenger traffic, from future risks should the bridges continue to deteriorate, while also improving general operating conditions. The bridge replacement projects will remove a number of known safety issues while also protecting motorized travelers and the surrounding community from potential harm.

Key safety issues and proposed improvements include:

- **Shoulder widening:** Both inside and outside shoulders will be widened, while preserving the existing 12-foot travel lanes. Widened shoulders will preserve the possibility of adding an additional travel lane in the future in some locations, while improving safety via improved crash response. Shoulder upgrades may also result in overall crash reductions or secondary

crash reductions attributed to improved emergency response and clearing times.

- **Clearance improvements:** All seven bridges will be raised to meet modern clearance requirements. Correcting existing substandard clearance heights is particularly important given the volume of freight traffic that regularly makes use of this section of I-80.
- **Lighting:** Given the width of the overpass structures, the design of bridges I-775 E/W and I-767 E/W will implement under deck lighting. This addition contributes to the overall safety and visibility for motorists.

Climate Change and Sustainability

Preserving the functionality of this series of bridges along I-80, which in turn preserves the continuity of a critical transcontinental travel route, ensures the availability of the most direct and efficient route for both freight and



Missing posts on approach rail transition can lead to barrier failure in case of a traffic incident.

passenger travel. Potential detours caused by failure of these bridges would result in significant out-of-direction travel, increasing vehicle miles traveled by both passenger vehicles and large truck traffic, along with associated emissions.

As the I-80 West Bridge Replacement Project is located just west of Reno, the I-80 corridor would serve as a critical evacuation route to the third largest city in Nevada in the event of a natural disaster. Nearly the entire State of Nevada is at risk of wildfires. With the frequency and unpredictability of extreme weather events increasing, it is imperative to replace these bridges before such disasters occur. Bridge failure could result in a complete disruption of the I-80 corridor, potentially leaving hundreds of thousands of people unable to evacuate to shelter and leaving emergency response unable to reach the area.

Equity

The proposed bridge replacement projects are located just west of Reno, which ranks as the third-largest city in Nevada with a population of 469,764. 23.3% of Reno's population speaks a language other than English, and 23.6% of the population identifies as Hispanic or Latino. 12.7% of the population of Reno lives in poverty. Minorities, individuals with limited English proficiency, and those living in poverty often experience greater transportation challenges as compared to the general population, due to the economic burden of car ownership. I-80 is an important travel route for individuals to access nearby goods and services, including medical care. Closures or detours could be especially problematic for individuals whose transportation options are limited or already somewhat marginal.

The replacement of this series of bridges will maintain the integrity of one of our

nation's most critical travel routes. In addition to the important role I-80 plays in the transcontinental movement of people and goods, this facility also provides an important connection to the Reno-Sparks metropolitan area for areas to the west. Residents of the towns west of Reno (including those in western Nevada and eastern California) rely on I-80 to access jobs, goods, and services. Likewise, I-80 provides an important connection for western Nevada residents into California.

Workforce Development, Job Quality, and Wealth Creation

Typically, several years of planning, design, environmental clearance work, and engineering must occur before bridge construction can begin. These first several tasks support high-wage jobs across multiple sectors. In addition to competitive salaries, these types of jobs typically offer benefits like health insurance and retirement packages that support the creation of wealth in individuals and families over time.

The construction of a bridge structure also supports local businesses and jobs, often over the span of multiple years. Although construction jobs tend to bring lower wages than professional services such as engineering, they are still important, reliable jobs that feed into the regional and state economies. Further, these types of large infrastructure construction projects have been shown to have a powerful multiplier effect, producing broad economic benefits across multiple sectors.

Recent research² by the Council of Economic Advisers (CEA) within the Executive Office of the President has estimated that every \$1 billion in Federal highway and transit investment would support 13,000 jobs for

2 <https://www.fhwa.dot.gov/policy/otps/pubs/impacts/>

one year. This figure includes direct, indirect, and induced jobs. Using this ratio as a rough estimate, an investment of \$61.2 million (total project cost) in the proposed bridge replacement projects could produce up to 800 jobs per year, or 3,200 jobs over the life of the projects (assuming a total project schedule spanning approximately four years).

NDOT has also developed and abides by a [Disadvantaged Business Enterprise \(DBE\) program](#), as described in their [2023](#)

[DBE Program Plan](#). The DBE program was established and is maintained in accordance with federal requirements, including 49 CFR Part 26. The provisions of the program apply to contractors, consultants, professional service agreements, and architectural/engineering contracts. Thus, the majority of the work involved in planning, designing, and constructing a bridge is likely covered – meaning there is the potential for some of this important work to go to DBEs.



Workforce development takes many forms at NDOT, including paid summer internships.



VIII. DOT Priority Selection Considerations

The proposed projects do not meet the criteria required to receive priority consideration. The projects are not currently in poor condition and are not at risk of falling into poor condition within the next 3 years. However, it is important to note the significance of this series of bridges on the I-80 network, particularly as it relates to the transcontinental movement

of freight and general passenger traffic. We feel that a proactive approach to preserving this critical link in the interstate system is both prudent and warranted, as highlighted in the Economic Competitiveness and Opportunity section of this grant narrative.



Bridge I-774E conditions, west of Reno.

