



PROJECT INFORMATION	
Sponsoring Organization	Oklahoma Department of Transportation
DUNS Number	8247000740000
EIN	736017987
Name of Project	Reconstruction of US-281 "Bridgeport" Bridge over Canadian River
Type of Project	Bridge
Location of Project	Canadian and Caddo Counties, Oklahoma
Urban/Rural	Rural
Congressional District	3rd
BUILD Application Amount Requested	\$22,000,000
BUILD Application Agency Match	\$12,895,000
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1.0 PROJECT DESCRIPTION

The Oklahoma Department of Transportation (ODOT) is presenting this application for Better Utilizing Investments to Leverage Development (BUILD) funding for the reconstruction of the structurally deficient multi-span pony truss bridge on current US-281 (old Route 66) over the Canadian River between Canadian and Caddo Counties in Oklahoma. The bridge and 17.7-mile corridor of roadway on which it is located is listed on the National Register of Historic Places (NRHP). Utilizing innovative methods, ODOT wishes to address the deficient conditions of the bridge and preserve the historic integrity of this corridor. ODOT is eager to present the merits of this project for consideration and **is requesting \$22,000,000 in BUILD funds** to assist with construction costs associated with this historic bridge reconstruction project.

Officially commissioned in 1926, Route 66 traversed 2,448 miles from Chicago, Illinois to Santa Monica, California (**Figure 1**). More than 400 of those original road miles ran through the State of Oklahoma. ODOT maintains several hundred miles of the original Route 66 road alignment along with the associated original bridge structures. In cooperation with United States Department of Transportation (USDOT) guidelines and in consultation with the Oklahoma State Historic Preservation Officer (SHPO) and other interested parties, ODOT is committed to prioritizing the historic preservation of these segments.



Figure 1 – Original Route 66 Corridor through the U.S.

The existing bridge was constructed in 1933 as part of the original Route 66 corridor. The approximately 3,945-foot long Warren pony truss structure consists of 38 100-foot long “camelback” pony truss spans, with two 36-foot long multi-beam approach spans at either end (**Figure 2**). The bridge is evaluated and inspected by ODOT on a biannual basis and is summarized in a “Fracture Critical Bridge Inspection Report.” According to the latest report (October 2019), the bridge is rated as structurally deficient (SD), having several critical elements that are rated in poor condition, including the deck and superstructure (see bridge inspection reports (BIR) at [US-281 Bridgeport BUILD](#)).



Figure 2 – Bridgeport Bridge (historicbridges.org)

In 2019, the bridge was posted for the restriction of heavy traffic loads, first with a maximum of 15 tons, then lowered to a maximum of 9 tons after worsening cracks and corrosion were discovered in gusset plates (**Figure 3**), floor beams and stringers. Due to the quickly deteriorating condition of the bridge, as of May 2020, ODOT has determined that even with ongoing inspection and maintenance, the **bridge will have to be closed to all traffic within 7 months**.



Figure 3 – Worsening Cracks and Corrosion in Gusset Plates

The bridge is currently 24 feet wide with one driving lane in each direction. The roadway approaches at either end of the bridge consist of an 18-foot wide concrete (with asphalt overlay) driving surface (two 9-foot driving lanes) with no shoulders, part of the original Route

66 roadway. The current average annual daily traffic (AADT) on US-281 across the bridge is 1,800 vehicles per day. Approximately 21% of the daily vehicles are trucks and 12% are heavy trucks (see traffic information at [US-281 Bridgeport BUILD](#)). The high truck volumes are a concern for the aging structure, and field observations indicate that many overweight vehicles continue to use the bridge, despite its load posting.

21% of the 1,800
vehicles driving on the bridge each day are trucks, despite a 9-ton maximum load posting.

The project proposed in this application will reconstruct the bridge on its current alignment with a 28-foot width. The reconstruction of the bridge will include replacing the substructure, deck and entire superstructure. The historic pony trusses will be re-attached to maintain the historic integrity of the original bridge. The bridge will also be repainted and restored to its original look. Maintaining the bridge's original look and feel, as well as the majority of its original truss members, will preserve the historic context for years to come. The improvements will be completed in accordance with AASHTO Guidelines for Historic Bridge Rehabilitation.

The Oklahoma legislature designated the Historic Route 66 as a State Scenic Byway in January 2005. In 2009, the U.S. National Park Service designated the entirety of Route 66 in Oklahoma as a National Scenic Byway. ODOT is seeking the BUILD grant funds in order for the Bridgeport Bridge to be restored and open to traffic in time with the planned 2026 Route 66 Centennial celebrations.

1.1 Project History

As the bridge has aged and the size and number of vehicles using the bridge has increased, ODOT has recognized the need to make improvements to the structure. In 2014, ODOT began an alternatives analysis of the bridge, understanding that the historic significance of the bridge would demand a thorough review of all possible options to meet the requirements of Section 106 of the National Historic Preservation Act and Section 4(f) of the Department of Transportation Act. ODOT also saw the need to engage stakeholders early, knowing that there would be many preservation-focused groups interested in the project.

The Bridgeport Bridge is widely considered Oklahoma's most significant historic bridge.

Completed in 2016, the Alternatives Analysis evaluated rehabilitation and replacement options for the Bridgeport Bridge, in accordance with FHWA's *Programmatic Section 4(f) Evaluation and*

Approval for Projects that Necessitate the Use of Historic Bridges. The 2016 report compared the impacts of the various alternatives (including the No Build alternative) on roadway geometry, bridge condition, hydrology, constructability/traffic, right-of-way, utilities, environmental resources, and the local economy (**Figure 4**).

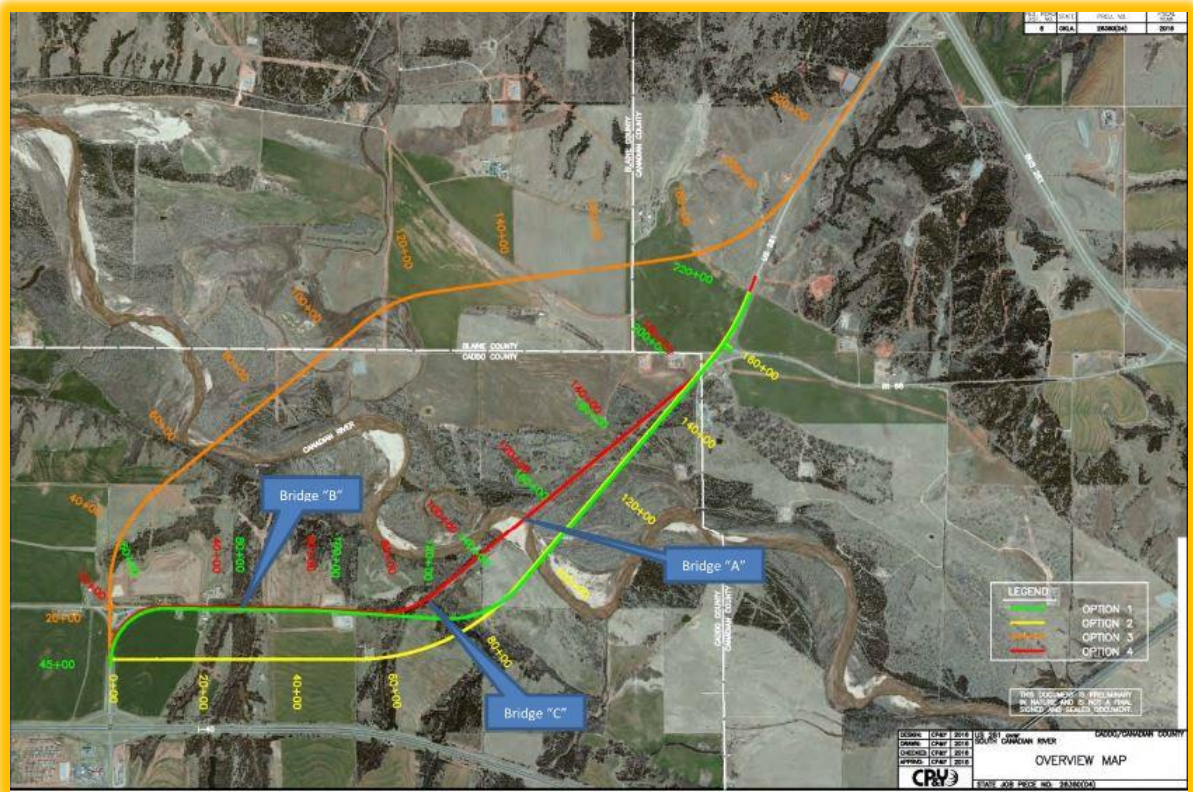


Figure 4 – 2016 Alternative Analysis Overview Map

Through the Alternatives Analysis and stakeholder consultation, ODOT has identified an innovative solution to achieving its goals of:

- 1. Safety*
- 2. Historic Preservation*
- 3. Support for the Tourism Economy*

1.2 Transportation Challenges

The Bridgeport Bridge is widely considered Oklahoma’s most significant historic bridge. It is significant for its scale and length, as the second longest bridge in Oklahoma and the longest Route 66 bridge west of the Mississippi River. It is also significant for its repeating camelback truss configuration. Finally, the bridge is significant as a contributing element to the NRHP-listed segment of Route 66 from Bridgeport Hill-Hydro, which is also part of the Route 66 National Scenic Byway. As such, any alternative to improve the bridge must consider not only preserving the historic integrity of the bridge itself, but of the overall Route 66 roadway.

The condition of the bridge demands that any rehabilitation alternative would require repair or replacement of so many of the truss elements that it would be difficult to maintain the integrity of the original materials and workmanship. Preserving the bridge as a monument was also not feasible, given that a new bridge in reasonably close proximity would negatively affect the setting, feeling, and association of the historic structure. In addition, closing the bridge to traffic would have negative impacts on the visitor experience of Route 66, and could have a negative economic impact on the region as tourist traffic would be diverted elsewhere.

Despite its narrow width and recent load postings, high volumes of truck traffic (including loads much heavier than currently allowed) continue to use the bridge, preferring the shorter route rather than detour the 11.5 miles on US-281 BUS (**Figure 5**). ODOT considered an alternative that would close the bridge to trucks and only allow passenger vehicles; however, enforcing such a closure would be difficult, and a restriction of this kind would also preclude use of the bridge by recreational vehicle (RV) users wanting to drive Route 66.

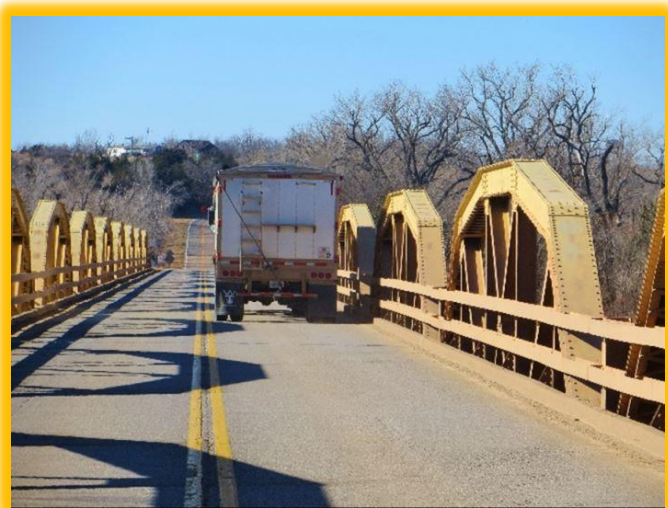


Figure 5 – Heavy Truck Traffic on the Bridge

Due to the age of the bridge (over 35 years past its design life) and to the continual use by heavy trucks, the **condition of the bridge has deteriorated rapidly over the past 10 years**, and an accelerated schedule for replacement is now critically necessary. The proposed project will address the transportation challenges by replacing the superstructure with a new multi-beam steel structure and a concrete deck. The substructure will also be replaced, and the original

pony trusses will be reattached to the outside of the steel beams. In this manner, the trusses are no longer bearing the full structural load but would still appear in the same configuration as the original structure for drivers and for observers (see **Figure 6**). The restored bridge will be able to support the current and future anticipated heavy truck traffic while maintaining its historic significance.

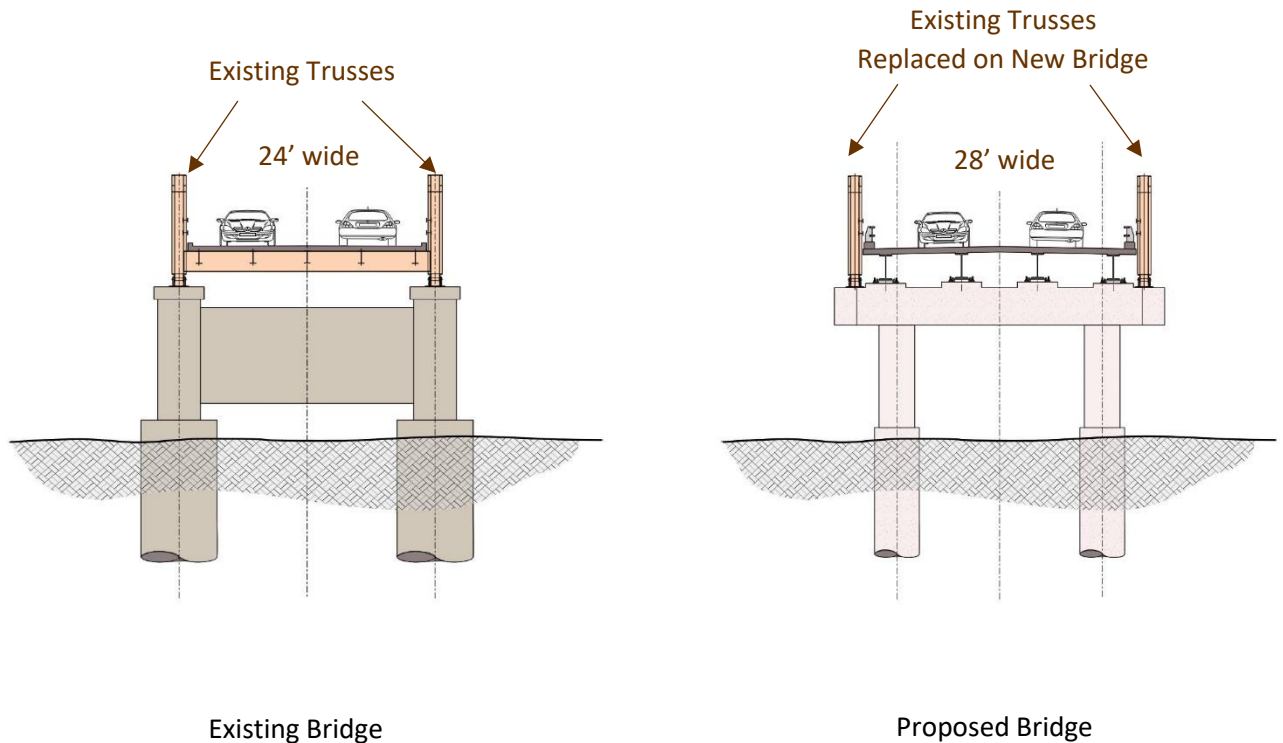


Figure 6 – Existing and Proposed Bridge Cross Sections

The existing bridge railings will be replaced with modern crash-tested railings with a design consistent with the historic context of the bridge, in accordance with the Secretary of the Interior’s Standards for Rehabilitation as outlined by AASHTO NCHRP Project 25-25, Task 19 (March 2007). ODOT has had previous success using modern railings that are historically consistent with Route 66-era originals.

2.0 PROJECT LOCATION

The US-281 Bridgeport Bridge is located in the far northeast corner of Caddo County, Oklahoma and spans approximately 3,945 feet across the South Canadian River and the associated flood plain ([Latitude 35°32'30.0" N / Longitude 98°19'14.5" W](#)). The project is not within a U.S. Census-designated urbanized area, and is considered to be in a rural location (**Figure 7** and “Project Location Map” at [US-281 Bridgeport BUILD](#)). US-281 and the Bridgeport Bridge connect US-281 to Route 66 and I-40. While the bridge is load posted and not appropriate for large trucks, many freight shipping companies and other trucks still choose to use US-281 rather than US-281 BUS, since that route adds 11.5 miles to a trip to/from the north or west. However, if the Bridgeport Bridge is forced to close, all traffic would be required to use this detour.

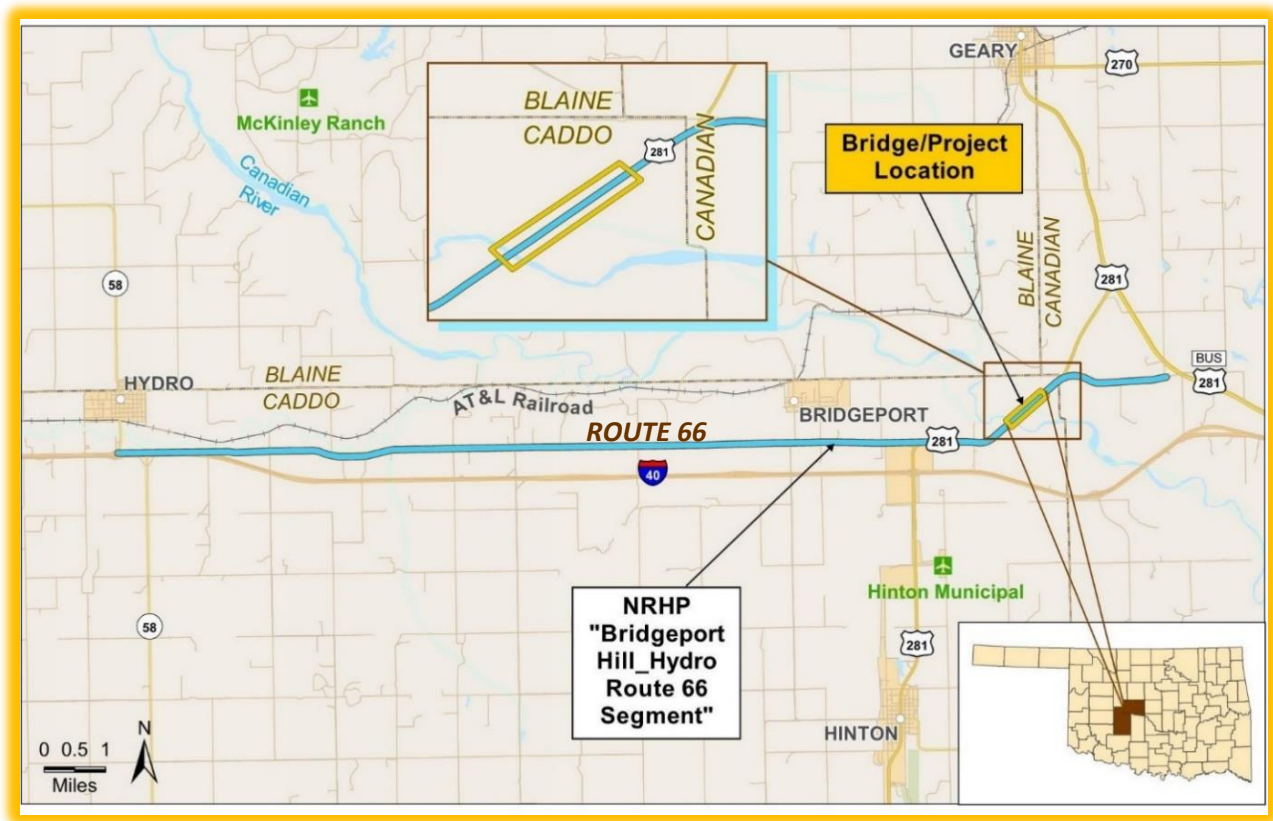
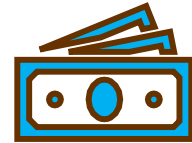


Figure 7 – Project Location Map

The Bridgeport Bridge is adjacent to other transportation infrastructure including the Austin, Todd and Ladd (AT&L) Railroad approximately 1.5 miles to the north, and Hinton Municipal Airport 2 miles to the southeast.

3.0 GRANT FUNDS, SOURCES AND USES OF PROJECT FUNDS

ODOT is the project sponsor and is **requesting \$22 million in BUILD funds** to contribute to the construction of the project. The total future eligible costs are \$34,895,000 and ODOT proposes to contribute **37% matching funds** toward the project.



3.1 Funding Sources

ODOT has committed to provide matching State funds, totaling approximately \$12.9 million. A summary of the funding sources is listed in **Table 1** below:

TABLE 1 - PROJECT FUNDING SOURCES

	SOURCES of FUNDS						FUTURE ELIGIBLE COSTS	TOTAL PROJECT COSTS
	NON-FEDERAL (ODOT)		BUILD		OTHER FEDERAL			
	Pre-Incurred	Future	Pre-Incurred	Future	Pre-Incurred	Future		
Pre-Construction	\$137,602	\$164,512	\$0	\$0	\$550,407	\$658,050	\$0	\$1,510,571
* Construction	\$0	\$12,895,000	\$0	\$22,000,000	\$0	\$0	\$34,895,000	\$34,895,000
TOTAL ELIGIBLE COSTS	\$0	\$12,895,000	\$0	\$22,000,000	\$0	\$0	\$34,895,000	\$36,405,571
% OF FUTURE ELIGIBLE COSTS		37%		63%			100%	

* Construction Estimate includes 15% Contingency

3.2 Project Budget

A detailed summary of project fund uses by individual project element is in **Table 2** below. A detailed cost estimate can be found at [US-281 Bridgeport BUILD](#). In summary, ODOT is proposing to fund approximately \$12.9 million of the total future eligible project costs of \$34.9 million through obligated State sources and is requesting \$22 million in BUILD funds from USDOT. The contribution from ODOT’s State match represents 37% of the total project cost, which it intends to use for construction of the project. Pre-construction costs are currently receiving other federal assistance and are not included in the funds eligible for BUILD assistance.



ODOT has invested \$688,009 (including a portion of its Federal Aid allocation) in prior work on this project, which has been part of ODOT’s 8-year Construction Work Plan since 2008. Prior expenses have included reconnaissance data

ODOT Share: \$12.9 million (37%)
BUILD Share: \$22.0 million (63%)
TOTAL Eligible Costs: \$34.9 million

collection, preliminary engineering and alternatives analysis, stakeholder meetings, environmental analysis, and final design. Funds for the remainder of the pre-construction costs are under contract to ODOT’s consultant.

TABLE 2 - USES OF FUNDS AND PROJECT BUDGET

DETAILED USE of FUNDS					
PROJECT CATEGORY	PROJECT ELEMENT	AMOUNT	FUNDING SOURCE	% OF TOTAL	SPLIT IN DOLLARS
Pre-Construction (Pre-Incurred)	Environmental	\$160,637	ODOT		\$ 32,127
			OTHER FED		\$ 128,510
	Design	\$1,349,934	ODOT		\$ 269,987
			OTHER FED		\$ 1,079,947
R/W & Utility Relocation	\$0			\$ -	
Sub Total	Total Pre-Const.	\$1,510,571	100% ODOT	N/A NOT ELIGIBLE	\$ 1,510,571
Construction *	Substructure Replacement	\$10,902,000	ODOT	11.5%	\$ 4,028,000
			BUILD	19.7%	\$ 6,874,000
	Superstructure Rehabilitation	\$18,166,000	ODOT	19.3%	\$ 6,720,000
			BUILD	32.8%	\$ 11,446,000
	Bridge Painting	\$1,102,000	ODOT	1.2%	\$ 405,000
			BUILD	2.0%	\$ 697,000
	Removal and Resetting Trusses	\$2,570,000	ODOT	2.7%	\$ 949,000
			BUILD	4.6%	\$ 1,621,000
	Roadway & Traffic Control	\$750,000	ODOT	0.8%	\$ 275,000
			BUILD	1.4%	\$ 475,000
Mobilization	\$1,405,000	ODOT	1.5%	\$ 518,000	
		BUILD	2.5%	\$ 887,000	
TOTAL ELIGIBLE COSTS	Total Construction	\$34,895,000	ODOT	37.0%	\$ 12,895,000
			BUILD	63.0%	\$ 22,000,000

* All Construction Elements Include a 15% Contingency

4.0 SELECTION CRITERIA

4.1 Primary Selection Criteria

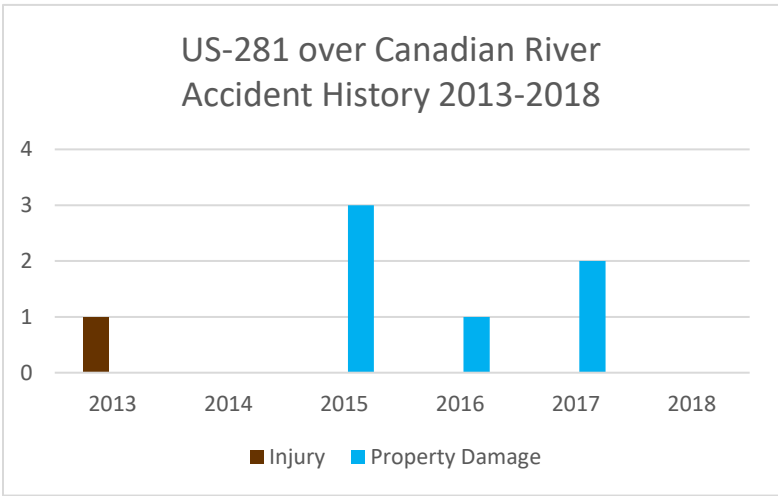
4.1.1 Safety

Safety is of primary concern in the planning, design and construction of all ODOT projects. ODOT’s mission statement reads, in part, “...to provide a safe, economical and effective transportation network for the people, commerce and communities of Oklahoma.” Of special focus at ODOT over the past 15 years has been the replacement or rehabilitation of structurally deficient (SD) bridges throughout the State. Since 2005, when the SD bridge focus began, the number of highway system SD bridges in Oklahoma has been reduced from 1,168 down to 132 at the end of 2018 (https://www.ok.gov/odot/Highway_System_Conditions.html).



The Bridgeport Bridge is one of ODOT’s remaining SD bridges and is quickly deteriorating to the point of closure in coming months. The proposed reconstruction of the bridge with modern steel beams and precast deck panels using ultra high-performance concrete (UHPC) will improve the bridge to current load bearing standards which will be able to safely carry high truck volumes. Providing a safe crossing of the Canadian River will enhance mobility for the region and increase the efficiency of freight traffic. This project is consistent with the USDOT’s Rural Opportunities to Use Transportation for Economic Success (ROUTES) initiative to improve deteriorating infrastructure conditions, promote regional connectivity, and facilitate economic growth and competitiveness in rural areas.

The Bridgeport Bridge project is consistent with the USDOT’s ROUTES initiative



The current collision data ([US-281 Bridgeport BUILD](#)) for the bridge corridor is shown in **Figure 8**.

The safety of the bridge is anticipated to be improved with the installation of a wider deck surface (28 feet vs. 24 feet). Crash modification factors (CMFs) of this countermeasure show a **23%**

Figure 8 - Accident History on the Bridgeport Bridge, 2013-2018

reduction in crashes with the lane width increases (www.cmfclearinghouse.org). The monetary value of safety benefits is calculated in the benefit-cost analysis (BCA) as \$61.8 million or \$17.7 million discounted at 7%.

Estimated Safety Benefit of the Project (Discounted 7%):

\$17.7 Million

4.1.2 State of Good Repair

The existing Bridgeport Bridge is 85 years old and had an original anticipated design life of 50 years. The **bridge has a sufficiency rating of 5 out of 100 and is classified as structurally deficient (SD)**. This rating has dropped from 21 in 2018. A bridge is classified SD if the deck, superstructure or substructure is rated in "poor" condition (0 to 4 on the NBI rating scale). Sufficiency ratings are determined during the biennial bridge inspection and are intended to indicate a measure of the ability of a bridge to remain in service. As discussed above, ODOT has focused on correcting SD bridges and this has been reflected in the Department's 8-Year Construction Work Plan. This plan is ODOT's means of maintaining its transportation facilities in a state of good repair and addressing current and projected vulnerabilities. The Bridgeport Bridge project is currently in the 8-Year Work Plan for construction in 2022.



Because of the critical condition of the bridge and the need for careful monitoring, annual maintenance cost is averaging \$93,000 and it has been determined that the **without improvement, the bridge will need to be removed from service within 7 months**. A closure would threaten future transportation network efficiency, mobility of goods and people, and economic growth. Should the bridge be closed to traffic, mobility in the area would be adversely affected by the 11.5-mile detour (see **Figure 9**). Similarly, the Bridgeport Bridge is also used as a detour if there is an incident or congestion on I-40. Given the potential for higher severity accidents on the interstate, a serious incident can close the facility for several hours. Should the Bridgeport Bridge be closed, freight, emergency response vehicles, and the traveling public on I-40 would have no option but to wait for traffic to clear.

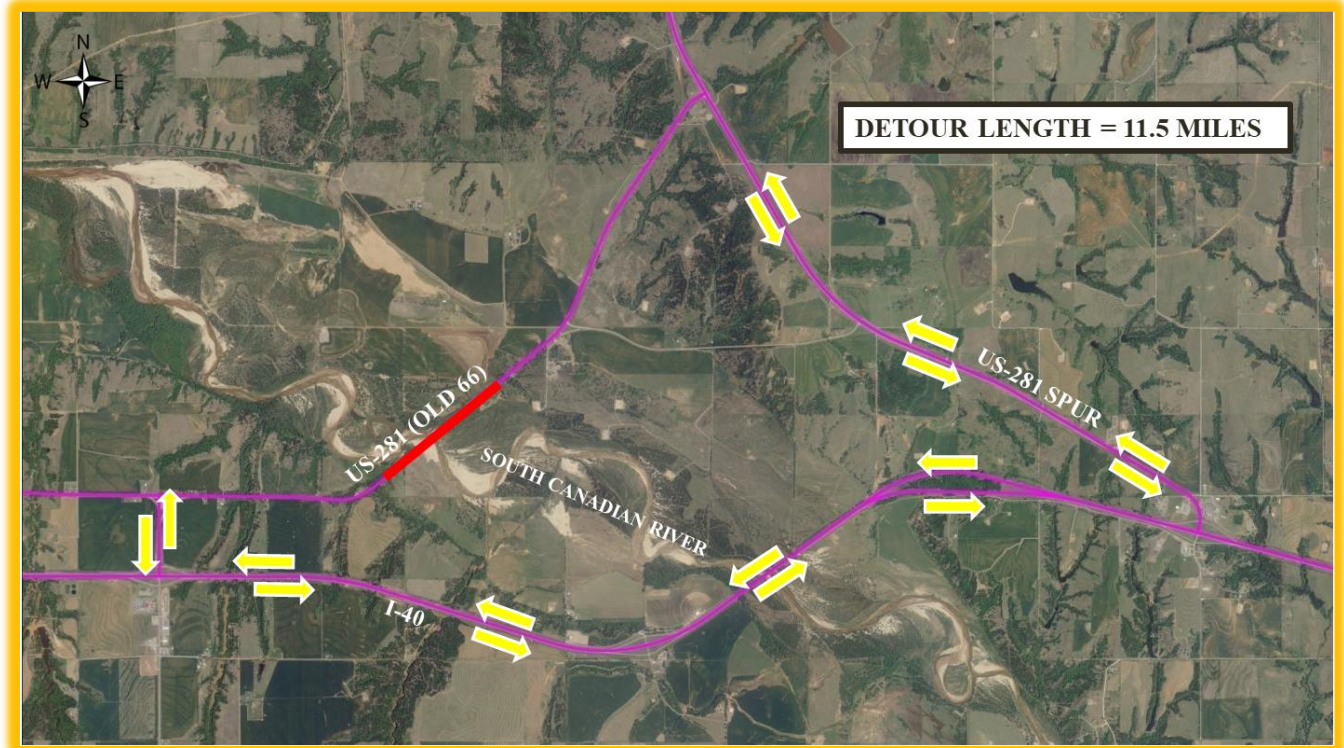


Figure 9 – Bridgeport Bridge – Detour Route

The improvements as a result of the bridge reconstruction will provide a safe and stable structure with an extended design life of 75 years. ODOT would continue to use State funds for maintenance which is estimated to be approximately \$4.7 million over the next 20 years (see bridge maintenance costs at [US-281 Bridgeport BUILD](#)). Compared to the costs of maintaining the current bridge, even after closure, the new bridge is estimated to result in a savings of \$1.0 million in agency cost (discounted at 7%). This project will ensure good condition of this important rural connection. **Table 3** below summarizes the reconstruction option over the project lifecycle.

***Estimated Maintenance Savings of
the Project (Discounted 7%):***

\$1.1 Million

TABLE 3 - SUMMARY OF COSTS IN MILLIONS OF 2018 DOLLARS

	Over the Project Lifecycle		
	In Constant Dollars	Discounted at 7 Percent	Discounted at 3 Percent
Construction & Development Costs	\$35.0	\$27.9	\$31.7
Operations and Maintenance	\$13.3	\$2.2	\$5.8
Total	\$48.3	\$30.1	\$37.5

4.1.3 Economic Competitiveness

This section demonstrates the Project’s benefits in terms of:



1. *Reduced transportation costs and improved access*
2. *Improved long-term efficiency, reliability, and costs in the movement of workers and goods*
3. *Increased economic productivity of capital and labor*
4. *Create long-term job and other economic opportunities*
5. *Help the U.S. compete in a global economy*

These benefits flow from the Project’s **improved travel times and travel time reliability**. Travel time reliability increases the efficiency of movement of goods and people and is an important element in business travel and freight movement, especially with demand for efficient “just in time” freight delivery, and truck driver “hours of service” rules. The Bridgeport Bridge currently carries over 1,800 vehicles per day, including 360 truck trips per day and is an important link for the local and regional movement of both goods and people. This link is in imminent danger of closing due to the poor condition of the bridge. If this bridge is closed, traffic would be forced to use an 11.5-mile detour route, increasing travel times by approximately 13 minutes, as well as costs. Travel time savings would result from avoidance of detours, which would be longer than the existing route. Vehicle operating costs were calculated for the additional miles traveled under a detour.

The Project would result in improved travel times and vehicle operating cost savings. Results suggest a benefit of **\$30.0 million in travel time savings and \$29.3 million in vehicle operating**

**Estimated Travel Time Savings
(Discounted 7%):**

\$30.0 Million

costs (discounted at 7%) over the life of the Project, improving long-term efficiency, reliability, and costs of the movement of workers and goods.

The economic outcomes generated by the project improve the connectivity between home and workplaces and between production

and consumption sites. At the same time, these outcomes **increase the competitiveness of the United States by increasing efficiency in the movement of goods**. In addition to the monetized travel time savings, the higher speeds and increased reliability along the corridor provided by the project imply that trucks spend less time on the road and can reach their destinations faster. The delivery times will lead to inventory cost savings, which are important to improve connectivity between production and consumption sites and to increase the fluidity of the movement of goods.

Estimated Vehicle Operating Cost Savings (Discounted 7%):

\$29.3 Million

Job Creation

Economic impact of the proposed project was also assessed in terms of the jobs and other measures of economic activity generated by construction and related project expenditures. The construction of the Bridgeport Bridge project would trigger incremental expenditures on construction, equipment, supplies, maintenance, etc. Economic impacts are typically presented as estimates of incremental employment, business output, employment income, and value added attributable to the project. The analysis considers direct, indirect, and induced impacts.



Direct impacts are the immediate effects of project expenditures such as employment of construction workers and business revenues of the construction company. Indirect impacts are employment of workers and business revenues of firms supplying input materials and services to the construction company and throughout the supply chain. Induced impacts capture the effects of re-spending of workers' income on consumption goods and services. More detail on the methods for calculating these impacts are presented in the BCA Tech Memo at [US-281 Bridgeport BUILD](#).

Table 4 illustrates the anticipated job creation as a result of the project. For the local economy (Caddo and Canadian Counties), construction activities related to the project are expected to generate a total of **47 jobs, \$12.7 million in business output, \$2.4 million in employment income, and \$6.7 million in value added**. Over 90 percent of the impacts are due to the general construction expenditures.

For the state of Oklahoma, construction activities related to the project are expected to generate a total of **419 jobs, \$74.9 million in business output, \$20.7 million in employment income, and \$38.9 million in value added**. As with the local impact, over 90 percent of the impacts are due to the general construction expenditures.

TABLE 4 - SUMMARY OF JOB CREATION AND ECONOMIC IMPACT

	Local Impact (Caddo & Canadian Counties)	Statewide Impact
Jobs	47	419
Business Output	\$12.7 million	\$74.9 million
Employment Income	\$2.4 million	\$20.7 million
Value Added	\$6.7 million	\$38.9 million

Route 66 Tourism

Beyond job opportunities presented by construction of the bridge, the project has potential to contribute to the functioning and growth of the economy.

The National Trust for Historic Preservation notes that in 2013, cultural heritage tourism generated \$171 billion nationwide, and that **average annual spending along Route 66 was \$132 million**¹. The *Oklahoma Travel Impacts 2010-2016* report produced by the Oklahoma Tourism and Recreation Department suggests that travel-related spending, earnings, employment, and tax revenue have steadily increased over the last several years. The Bridgeport Bridge project will enhance the growing economic potential of Route 66 as a tourist destination by maintaining this historically significant bridge and preserving the route for similar, potential tourist-driven, economic development.

**Average annual spending
along Route 66 in 2013:**

\$132 Million

¹ <https://savingplaces.org/stories/route-66-economic-benefits#.XoyVLshKi70>

4.1.4 Environmental Sustainability

The project will reduce energy consumption by shortening the trip required to travel US-281. One benefit to the environment can be measured in the reduction of fuel emissions that would occur as a result of maintaining the Route 66 corridor. Currently the bridge is unsafe for larger trucks and is posted at a 9-ton load limit. Larger trucks are currently directed to detour 11.5 miles around the bridge. Approximately 1,800 vehicles a day travel this route, and should the bridge be closed, as it would without this project and BUILD funding, all vehicles would have an additional travel distance of 11.5 miles. The environmental benefits to the reduced fuel emissions is calculated in association with the vehicle operating cost in the BCA. This amounted to \$0.6 million in constant 2018 dollars or **\$0.2 million in dollars discounted at 7 percent**. Therefore, the project would provide a modest reduction in emissions, compared to the baseline.



**Average emissions savings
(Discounted 7%):**

\$0.2 Million

The project will be constructed to avoid adverse environmental impacts to water quality, wetlands, and endangered species as much as possible. The Canadian River provides designated critical habitat for the Arkansas River Shiner, listed by U. S. Fish and Wildlife Service (USFWS) as a threatened species (**Figure 10**). Any construction within 300 feet of the ordinary high-water mark of the river is considered an impact to this habitat and requires formal Section 7 consultation with the USFWS. **Work in the river can**



Figure 10 – Arkansas River Shiner

be completed outside of the shiner spawning season (approximately May 1 – Aug 30), thus minimizing impact to the ongoing sustainability of this species and the water resources. ODOT will coordinate the USFWS consultation through its designated liaison, which will streamline the process while resulting in outcomes that protect the species and its habitat.

Finally, the project sustains the cultural environment of the surrounding region as the best construction option to preserve the historic bridge and NRHP-listed historic Bridgeport Hill-Hydro district. The project preserves the historic integrity and viewshed, maintains the driver experience of Route 66, and provides a safe reliable structure.

4.1.5 Quality of Life

The Route 66 corridor continues to grow in popularity as a nostalgic road trip adventure and is certain to surge in popularity with the upcoming 2026



Centennial anniversary. The Bridgeport Bridge is not only an essential historic link in the Route 66 story, it is also an essential physical link, connecting nearby Route 66 tourist attractions both east and west, from Robert’s Grill (since 1926) in El Reno, OK to the Cherokee Trading post in Calumet, OK.

The bridge is situated between the two cities of Weatherford and El Reno, connected by the historic Route 66 corridor (see **Figure 7**).

Just west of the bridge is the Route 66 Museum down the road in Clinton, OK (**Figure 11**). The 2011 *Route 66 Economic Impact Study* conducted by Rutgers University cited the Route 66 Museum as an example of a successful Oklahoma economic generator along Route 66. The museum has approximately 35,000 visitors per year (near 4 times the City population). Local



Figure 11 – Route 66 Museum – Clinton, OK

communities stand to benefit economically from an increase in tourism with the announcement of the restored historic bridge in time for the national 100-year celebration. Thousands of enthusiasts from all over the world drive the old Route 66 corridor and renewed national attention from the planned 2026 Centennial initiative, along with the popularity and significance of the bridge is sure to create a surge in tourism and economic opportunities.

By restoring the historic Bridgeport Bridge and preserving this portion of the NRHP-listed Route 66 historic district, the project preserves the existing transportation choices offered to freight, residents, and tourists. In addition to vehicle traffic, Route 66 is a popular cycling route. Adventure Cycling maintains Bicycle Route 66, a mapped bike-friendly version of the historic Route 66 roadway (**Figure 12**). Adventure Cycling estimates that 500-800 people ride through Oklahoma on Bicycle Route 66 every year. The route has also been used for large statewide cycling events such as Oklahoma Freewheel. Due to the slower pace of travel, cyclists tend to spend more in the communities through which they pass than vehicles. The Bridgeport Bridge is an important connection for cyclists looking to experience Route 66 as well as an important economic driver for the adjacent communities.



Figure 12 – Bicycle Route 66 (www.adventurecycling.org)

Estimates Indicate

500-800

*Cyclists Ride Route 66 in
Oklahoma Every Year*

Without the project, travelers would no longer be able to experience this portion of Route 66 and would have to bypass the scenic and culturally historic area by using I-40. This would also negatively impact the economic potential of the local area, as access to Route 66 tourist destinations may become important economically for the rural community in the near future with the renewed national promotion efforts underway. The potential for tourist-oriented development could lead to other growth in the way of jobs, and more local and convenient services for the community.

The project would also allow for the transport of essential services (emergency vehicles, school bus and U.S. mail routes) through the rural community which would otherwise be rerouted to the next available river crossing on I-40. Detouring these services would result in increased response times and less desirable use of the interstate for school bus routes. Constructing the project would maximize efficient access to jobs, health care, and social services for this rural population.

4.2 Secondary Selection Criteria

4.2.1 Innovative Technology

ODOT plans to employ several innovative and cost-effective design solutions which include pre-cast concrete components that can be constructed in large quantities off-site and can be easily delivered and assembled in sections according to a predetermined order and schedule.



One planned innovation is an Accelerated Bridge Construction (ABC) system which will allow the construction contractor the flexibility to plan and schedule the construction of individual components in harmony with available company labor forces. The precast prefabricated abutment system is an innovation to help reduce bridge construction time (**Figure 13**). The technology consists of prefabricated precast abutment elements cast on or off-site utilizing standard materials. The precast elements create an efficient system that is compatible with conventionally constructed abutment elements and are capable of carrying bridge loads with predictable and reliable performance.



Figure 13 – Construction with Pre-Cast Abutment

Using this approach, the designer places the bridge directly on the substructure unit, creating a seamless and smooth transition between the bridge and approach roadway without cast-in-place concrete. The smooth transition from the roadway to the bridge helps alleviate the “bump at the end of the bridge” problem caused by differential settlement between the bridge abutment and the approaching roadway. ABC offers the following advantages:

- ***Reduced Time:*** Precast abutment construction employs commonly available equipment and materials and does not require specialized labor. Constructing a precast abutment can potentially result in appreciable user cost savings over the duration of the project versus abutments built with conventional methods by reducing the overall closure time.
- ***Equivalent Maintenance:*** Once constructed and installed, precast prefabricated abutments are also durable and easy to maintain. These units do not increase the cost or frequency of maintenance.
- ***Convenience and Flexibility:*** Precast prefabricated bridge abutments also perform well and can be designed for a wide range of loading conditions, such as in seismic areas and rapidly changing water elevations.

Along with the abutments, the bridge deck will be designed and constructed using prefabricated full depth deck panels with **ultra high performance concrete** (UHPC) connections with a surface overlay to create uniformity along the bridge. The ABC systems are promoted by the Federal Highway Administration (FHWA) Every Day Counts (EDC)

Accelerated Bridge Construction and UPHC are promoted by the FHWA Every Day Counts initiative

Program. The EDC program is a State-based model that identifies and rapidly deploys proven, yet underutilized innovations to shorten the project delivery process, enhance roadway safety, reduce traffic congestion, and improve environmental sustainability. Proven innovations promoted through EDC facilitate greater efficiency at the State and local levels, saving time, money and resources that can be used to deliver more projects.

4.2.2 Innovative Project Delivery



ODOT’s ABC system approach will also allow ODOT to maintain a project delivery schedule that can quickly address the challenges and reduce the amount of time the bridge would need to be closed to traffic. As noted above, using the precast materials will reduce the amount of time it will take the contractor to mobilize and construct since concrete bridge elements will not be cast in-place.

The project will also streamline other preconstruction project delivery requirements such as environmental study, documentation, and permitting. ODOT will pursue environmental approval as a Categorical Exclusion (CE) under the National Environmental Policy Act (NEPA). A schedule challenge in obtaining timely approval would be USFWS consultation for the Arkansas River Shiner and Section 404 permit coordination with the U.S. Army Corps of Engineers (USACE). ODOT currently has liaison staff in place at both the USFWS and USACE to review ODOT projects. At ODOT’s direction, these staff can prioritize the Bridgeport project as needed to meet schedule milestones.

ODOT may also consider other proven strategies to reduce construction contract time such as Cost-Plus-Time Bidding (A+B bidding) and Lane Rentals.

4.2.3 Innovative Financing



ODOT has a practice described in State statute (Oklahoma Statutes, Title 69, O.S. 2016 § 1001-1004) of recycling **revenue from the sale of excess or unused publicly owned land or assets** through authorization by the State Transportation Commission and managed through ODOT’s Facilities Management Division. By statute, the recycled funds from the sale of land or equipment is deposited in the State Highway Construction and Maintenance Fund. These funds remain dedicated to being used toward design, permitting, construction or maintenance of authorized and programmed highway and bridge projects, and cannot be reallocated by the State legislature. Should the BUILD grant be awarded these recycled funds would be available for use as a portion of the State’s matching funds.

4.2.4 Partnership

There have been project information and stakeholder meetings held for this historic bridge project, most notably in June of 2015, and September of 2016, both at the Oklahoma History Center. At these meetings, alternate design options were discussed, and comments were received from the following consulting parties: FHWA, SHPO, Oklahoma Tourism & Recreation Department, Preservation Oklahoma, Inc, Historic Bridge Foundation, National Park Service, Oklahoma Historic Bridge and Highway Group, and Oklahoma Route 66 Association. Notes from these meetings can be found at [US-281 Bridgeport BUILD](#). Overall, the project has received support from the consulting parties, who agree that keeping the bridge open to traffic and preserving historic integrity are equally critical. All entities have expressed support for the preservation options. Twenty-four comments have been received on ODOT’s Cultural Resources website as a result of these stakeholder discussions, all in support of Bridgeport Bridge preservation. Additional **letters of support** have been received from US Senators Inhofe and Lankford as well as US Representative Lucas in a joint letter of support, Oklahoma Lt. Governor Matt Pinnell, the State Chamber of Oklahoma, the Oklahoma Historical Society, the Southwest Oklahoma Regional Transportation Planning Organization (SORTPO) and Adventure Cycling. Letters and statements of support can be found at [US-281 Bridgeport BUILD](#).



5.0 ENVIRONMENTAL RISK REVIEW

5.1 Project Schedule

The illustration of the major project milestones is outlined in the summary of schedule highlights below (see **Figure 14**), and the detailed project schedule is included in [US-281 Bridgeport BUILD](#). The schedule shows the completion dates for design, permits, required approvals, and construction, meeting all BUILD-required milestones. Environmental (NEPA) approvals are anticipated by January 2021. Right-of-way acquisition and utility relocations are not anticipated. All necessary activities will be completed to allow BUILD funds to be obligated by late 2021, well in advance of the September 30, 2022 deadline, and for construction to be completed by 2023 in order to be open to traffic in advance of the Route 66 Centennial in 2026.



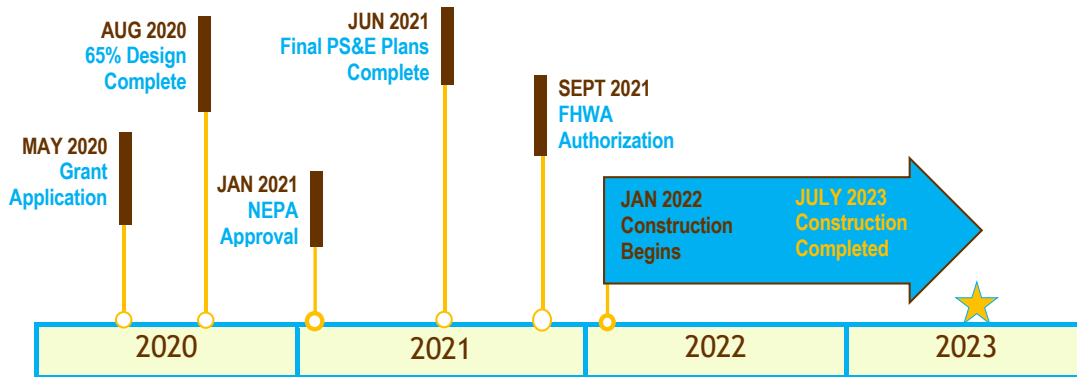


Figure 14 – Summary of Schedule Highlights

Project construction will begin no later than January 2022, and BUILD funds will be expended according to the construction invoicing and payment schedule. With construction estimated to be complete in July 2023, ODOT can ensure that all construction claims can be paid, and all BUILD funds will be expended in advance of the September 30, 2027 deadline.

5.3 Required Approvals

5.3.1 Environmental Permits and Reviews



NEPA Approval

The environmental studies (detailed research including but not limited to topics such as biology, cultural resources, hazardous materials, and wetlands) have been completed and are undergoing agency review. A public involvement plan is also underway to present the project to the public and obtain input. It is anticipated that formal consultation with USFWS may be required for the impacts to the Arkansas River Shiner critical habitat as mandated in Section 7 of the Endangered Species Act of 1973. Once environmental studies, preliminary engineering, and public involvement are complete, ODOT will submit a single National Environmental Protection Act (NEPA) document to FHWA for approval. It is anticipated that this **project will be processed with a Categorical Exclusion (CE)**. ODOT has scheduled the remainder of the study, coordination and permitting efforts and is committed to obtaining **FHWA approval of the document by January 2021** per the project schedule.

Section 4(f)

Preliminary environmental data and constraints have been identified and were factors considered in the 2016 design Alternatives Analysis. The Alternatives Analysis in support of Section 4(f) of the DOT Act of 1966 for the historic bridge began in 2015, and coordination with the Oklahoma SHPO and consulting parties is well underway. The parties have provided their

feedback, comments and concerns. While the alternative design described in this BUILD grant application was not specifically considered during that analysis, discussion of the goals of the project was conducted within ODOT, and a consensus was reached regarding the final bridge design and reconstruction. The project meets the goals of ODOT and the consulting parties of providing a safe facility, keeping the bridge open to all traffic, and preserving historic integrity.

Completion of the *Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges* should follow a standard review timeline once the detailed cultural resources study is completed and concurrence is received on the Section 106 consultation. The archeological survey has been completed and the SHPO has concurred with a finding of no historic properties affected (beyond the bridge itself).

USFWS Section 7

Formal consultation with USFWS can be time consuming; however, ODOT has consulted on several projects and has a good coordination process with a **dedicated USFWS staff liaison**. Once the Section 7 formal consultation begins, USFWS typically requires a 135-day (4 ½ month) review period to determine species effect and consult regarding mitigation requirements. ODOT is prepared to streamline this process and design for anticipated mitigation, such as avoiding construction activities during the threatened species spawning season, and to phase the project so that construction work roads do not impact more than 50% of the OHWM at a given phase. The **biological studies were completed in January 2020** and ODOT has begun the USFWS consultation process.

Environmental studies and consultation are underway:

Section 4(f) *Protects the historically significant bridge*

NEPA *Anticipated Categorical Exclusion*

USFWS Section 7 *Formal consultation on Arkansas River Shiner*

Public Involvement *Obtain public input on alternatives and disclose impacts*

Section 404 Permit *For work in Canadian River (anticipated April 2021)*

Public Involvement

The coordination regarding the historic bridge and associated NRHP-listed district has been ongoing since 2015, including two official consulting party meetings. After additional Section 106 consulting party comments have been reviewed and preliminary engineering design is complete for the selected alternative, ODOT will schedule a public meeting to obtain input from the local residents, as well as interested parties and stakeholders. **This meeting is planned for October 2020.** Questions and comments from the public will be addressed and included in the NEPA document. Section 106 consulting party meetings will also continue to be a primary element in obtaining stakeholder comments.

Section 404 Permitting

The only permitting anticipated for the project is a Section 404 Permit, to be coordinated with the U.S. Army Corps of Engineers (USACE) in accordance with the Clean Water Act of 1972. ODOT has identified known wetlands and is prepared to design to minimize impacts to jurisdictional waters and anticipates a streamlined review and permit schedule. The permit application will be submitted for approval with the final set of design plans and is **anticipated to be approved by April 2021.** ODOT has a **dedicated staff liaison at the USACE** who reviews and permits only ODOT projects, and who prioritizes reviews in response to ODOT's priorities. ODOT will direct this individual to provide review and approval in a timely manner in accordance to the schedule.

5.3.2 State and Local Approvals

The project is currently programmed in the ODOT 8-Year Construction Work Plan and Statewide Transportation Improvement Program (STIP). No additional state or local approvals are needed.

Support for the project by state and local entities is indicated by several letters of support. The project

has the support of the ODOT Director, who has resolved to commit State funds and expedite the project schedule in order to ensure the project is completed in time for the 2026 Route 66 Centennial celebrations. Copies of the certifications as assurances and letters of support can be found at available at [US-281 Bridgeport BUILD](#).

Included in the letters of support are testimonials from the Route 66 and historic preservation community as to the importance and significance of this corridor and cultural preservation project and appreciation of ODOT's commitment to the preservation of historic Route 66 infrastructure.

***The Project is included in
ODOT's 8-Year
Construction Work Plan
and the STIP***

5.3.3 Federal Transportation Requirements Affecting State and Local Planning

The bridge project, including roadway approach improvements, has been programmed in ODOT’s 8-year Construction Work Plan (CWP) 2020-2027 (scheduled for Federal Fiscal Year (FFY) 2022 construction) and in the ODOT STIP. The project is consistent with the goals set out in ODOT’s 2018-2027 Transportation Asset Management Plan (TAMP) with the goal of maintaining and preserving Oklahoma’s transportation network. Additionally, the application supports the mobility, connectivity, accessibility and economic vitality goals of the Oklahoma Freight Transportation Plan, 2018-2022².

5.4 Assessment of Project Risks and Mitigation Strategies



There is some risk to the preconstruction schedule for this project given that design and environmental work are not yet complete. A typical environmental study and CE documentation process for ODOT spans approximately nine to 12 months from the start of studies to the completion of the NEPA document. This process is well underway, and the BUILD schedule allows for an 18-month duration for this process. The risks stem from that fact that the environmental studies for this project are not typical and would likely require the additional time shown in the schedule. The factors that influence the risk are the likely need for a formal Section 7 consultation with USFWS, completion of the historic preservation (Section 4(f) and Section 106) processes, along with public involvement and the subsequent response and documentation.

The schedule risk is mitigated by the fact that much of the preliminary work (environmental reconnaissance, alternatives analysis, Section 4(f) and Section 106 coordination) has already been completed or is nearing completion. Another factor mitigating this risk is that engineering design and environmental study services are already under contract as shown in the schedule. ODOT’s experience on similar projects is also a factor mitigating this risk.

ODOT recently completed the replacement of the historic US-77 Purcell to Lexington Bridge over the Canadian River approximately 65 miles southeast of the Bridgeport Bridge (**Figure 15**). Similar to the Bridgeport Bridge, the Purcell-Lexington Bridge was experiencing rapidly deteriorating truss conditions and was ultimately forced to close. The Purcell-Lexington Bridge

²https://www.ok.gov/odot/Programs_and_Projects/Transportation_Programs/ODOT_Freight_Transportation_Plan.html

is a vital link between two communities and required a detour of over 40 miles. ODOT accelerated the design, environmental approval, and permitting and let the project within 18 months of closure. Many of the same environmental (USFWS) and historic consultations (SHPO) were necessary, as well as a critically time sensitive project schedule due to deteriorating bridge conditions. ODOT will apply lessons learned and use the same agency contacts and coordination methods that successfully delivered that project to completion on schedule.



Figure 15 – Historic Purcell-Lexington Bridge

One other project risk worth noting is ODOT’s planned use of innovative construction methods that have not been completed at the size and scale of this project. While construction of small bridges using precast components has been

The Purcell-Lexington Bridge highlights ODOT’s success with historic bridge replacement on an accelerated timeline.

successful on many ODOT projects, the particular combination of techniques and the number of bridge spans has not yet been attempted by ODOT. The innovative solution of re-attaching the original steel trusses to the new bridge is also untested in Oklahoma. To mitigate these risks, ODOT will continue consult with other DOT agency partners, FHWA and industry experts for guidance to benefit from lessons learned and implement strategies that have been most successful.

6.0 BENEFIT COST ANALYSIS

6.1 Summary of Findings and BCA Outcomes

The tables below summarize the BCA findings. The complete BCA Technical Memo and model can be found at [US-281 Bridgeport BUILD](#). Annual costs and benefits are estimated over the life cycle of the project (years from 2019 to 2053). Construction is expected to be completed by July 2023. Benefits accrue during the operation of the project (over the years 2023-2053), beginning in August 2023.

Considering all monetized benefits and costs, the estimated internal rate of return of the project is 19 percent. With a 7 percent real discount rate, the \$27.9 million investment would result in \$78.4 million in total benefits, Net Present Value of \$48.3 million, and a **Benefit/Cost ratio of approximately 2.73**. With a 3 percent real discount rate, the Net Present Value of the project is \$114.0 million, with a Benefit/Cost ratio of 4.60 (Table 5).

TABLE 5 – SUMMARY OF BENEFIT COST ANALYSIS OUTCOMES IN MILLIONS OF 2018 DOLLARS

Project Evaluation Metric	Undiscounted	Present Value at 7% Discount Rate	Present Value at 3% Discount Rate
Total Benefits	\$272.0	\$78.4	\$151.5
Total O&M Costs	\$13.3	\$2.2	\$5.8
Total Costs	\$35.0	\$27.9	\$31.7
Net Present Value	\$223.7	\$48.3	\$114.0
Benefit / Cost Ratio	7.39	2.73	4.60
Internal Rate of Return (%)	19.0%		

BENEFIT COST ANALYSIS RESULTS

2.73 *Benefit / Cost Ratio*
at the **7%** *Discount Rate*

4.60 *Benefit / Cost Ratio*
at the **3%** *Discount Rate*

Table 6 below compiles all project benefits evaluated. The table demonstrates that the majority of project benefits (75.6 percent) is accounted for by travel time savings and vehicle operating cost savings. The avoidance in accident costs accounts for 22.6 percent of the overall benefits, while agency cost savings (maintenance savings) account for 1.4 percent. Environmental cost savings account for 0.3 percent.

TABLE 6 - OVERALL BENEFITS IN MILLIONS OF 2018 DOLLARS

Benefit Categories	Over Project Lifecycle		
	Undiscounted	Present Value at 7% Discount Rate	Present Value at 3% Discount Rate
Travel Time Savings	\$104.6	\$30.0	\$58.1
Vehicle Operating Cost Savings	\$102.1	\$29.3	\$56.7
Reduction in Accident Costs	\$61.8	\$17.7	\$34.4
Environmental Cost Savings	\$0.6	\$0.2	\$0.4
Agency Cost Savings	\$3.0	\$1.1	\$1.9
Total Benefits	\$272.0	\$78.4	\$151.5

6.2 BCA Sensitivity Analysis

The BCA outcomes presented in previous sections rely on a large number of assumptions and long-term projections, both of which are subject to considerable uncertainty. The primary purpose of the sensitivity analysis is to help identify the variables and model parameters whose variations have the greatest impact on the BCA outcomes: the “critical variables.” The sensitivity analysis can also be used to:

- Evaluate the impact of changes in individual critical variables – how much the final results would vary with reasonable departures from the “preferred” or most likely value for the variable; and
- Assess the robustness of the BCA and evaluate, in particular, whether the conclusions reached under the “preferred” set of input values are significantly altered by reasonable departures from those values.

The sensitivity analysis was conducted with respect to changes in the value of travel time, value of statistical life, capital cost estimate, and annual O&M. The changes in the value of statistical life and capital cost estimate are the parameters that have the greatest impact on net present value.

The outcomes of the quantitative analysis for the changes in value of travel time, value of statistical life, capital cost estimate, and rate of growth in traffic estimate using a 7 percent discount rate are summarized in the table below. **Table 7** provides the percentage changes in project net present value associated with variations in variables or parameters (listed in row), as indicated in the column headers. The table demonstrates that this project features strong performance even in situations when key input values change in the direction that reduces net benefits. In all situations examined, BC ratio remains well above 2.

TABLE 7 - QUANTITATIVE ASSESSMENT OF SENSITIVITY, SUMMARY

Parameters	Change in Parameter Value	New NPV	% Change in NPV	New B/C Ratio
Value of Travel Time	Lower Bound of Range Recommended by US DOT (\$10.63 for autos and \$23.58 for trucks)	\$40.0	-17.2%	2.44
	Upper Bound of Range Recommended by US DOT (\$18.17 for autos and \$35.42 for trucks)	\$54.2	12.2%	2.95
Value of Statistical Life	Lower Bound of Range Recommended by US DOT (\$5.4 million)	\$42.8	-11.4%	2.54
	Upper Bound of Range Recommended by US DOT (\$13.4 million)	\$53.3	10.3%	2.91
Capital Cost Estimate	25% Reduction	\$54.9	13.7%	3.59
	25% Increase	\$41.7	-13.7%	2.21
Rate of Growth in Traffic	Reduction from 1.98% to 1% Annually	\$36.8	-23.8%	2.32

