



**OKLAHOMA**  
Transportation



# Northeast Oklahoma Rural Bridge Strengthening Project

*Competitive Highway Bridge Program –  
FY 2024 and FY 2025*



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## A. BASIC PROJECT INFORMATION—PROJECT DESCRIPTION, LOCATION, & PARTIES

### Project Description

The Oklahoma Department of Transportation (ODOT) is pleased to submit this application for the **Northeast Oklahoma Rural Bridge Strengthening Project** (the Project) located in rural Pawnee, Osage, and Creek Counties in northeastern Oklahoma. This application requests \$22.926 million in Competitive Highway Bridge Program (CHBP) funding to replace three deteriorated obsolete bridges to improve safety on rural roadways and increase network reliability. These three bridges are included in the National Bridge Inventory (NBI) as: (1) NBI 01417, the Belford Bridge; (2) NBI 12429, a bridge carrying State Highway 16 (SH-16) over Sand Creek; and (3) NBI 15863, a bridge carrying State Highway 99 (SH-99) over the Cimarron River.

The Belford Bridge (Figure 1) carries County Road E0350 over the Arkansas River as one of only two crossings within 50 miles and serves a critical transportation link for several rural tribal communities. Built in 1927, the bridge is eligible to be listed in the National Register of Historic Places (NRHP) but has a max load of 15 tons, is only 18 feet wide, lacks shoulders, and offers no more than 12-foot vertical clearance, failing to meet modern design safety standards and makes the structure obsolete. The bridge's 200 Annual Average Daily Traffic (AADT) with 15% trucks (as of 2022) are in jeopardy from structural deficiencies given the sufficiency rating of 14.8 out of 100 and poor condition superstructure rating of 4 out of 10. As a rare example of a mixed steel truss construction, the bridge is significant for its size, historic integrity, and condition after nearly 100 years of service carrying two-lanes of traffic along 2,219 feet with one Warren pony and vertical truss, five Parker through trusses, and 32 steel stringer spans.

**Figure 1. Belford Bridge (NBI 01417), Country Road E0350 over Arkansas River**



A new 2,298-foot-long and 34-foot-wide prestressed concrete beam bridge with 17 Type J prestressed concrete spans will be built about 20 feet southwest of the current bridge, keeping the existing structure in service until construction is complete. Importantly, the preferred alignment allows for traffic to continue while construction is underway, and realignment of both approach intersections allows the existing historic bridge to be preserved as a local monument, avoiding an NRHP adverse effect or Section 4(f) use.

The new substructure will consist of 16 multi-column piers with two 6-foot diameter drilled shafts founded on bedrock. The use of 135-foot Type J spans allows for fewer overall spans and piers in the Arkansas River. The bridge will have two 12-foot driving lanes with 4-foot shoulders on each side and crash-worthy concrete traffic rail, meeting modern design safety standards. New roadway bridge approaches will also be constructed to offer two 12-foot driving lanes and 5-foot shoulders, including realigning two intersections, CR 6150 and CR 6301 to the north, and E0350 and S3460 Roads to the south. The bridge-class reinforced

concrete box (RCB) on the E0350 Road bridge over Mud Creek (NBI 08003) will be replaced east of the bridge to accommodate the new southern intersection. The new structure will be built south of the existing RCB and will be a 69-foot-long RCB with concrete aprons and 4-foot curtain walls on either end.

The SH-16 bridge over Sand Creek (Figure 2) was built in 1950 as a 30.8-foot wide, 121.1-foot-long two-lane steel bridge with three main spans. The bridge's 2022 AADT was 2,200 with 15% truck traffic and is in fair condition. The bridge does not have any vertical clearance restrictions but lacks shoulders and is functionally obsolete due to an intolerable deck geometry appraisal with a sufficiency rating of 54.4 out of 100. The replacement bridge shall consist of 12-foot driving lanes with 8-foot shoulders. The existing span will be replaced on alignment (half at a time) with an RCB structure to allow the Project to be constructed without closing the existing road to local and through traffic. The RCB will not extend to clear zone and will therefore require guardrail widening.

**Figure 2. NBI 12429 SH-16 over Sand Creek**



The SH-99 bridge over the Cimarron River (Figure 3) was built in 1963 as a 31-foot wide, 763-foot long two-lane steel bridge with six main spans. The bridge's 2022 AADT was 2,300 with 16% truck traffic and is in fair condition. Traffic has no vertical clearance restrictions but lack shoulders and has a sufficiency rating of 61.4 out of 100. This bridge will be replaced with a 44-foot wide bridge with two 12-foot lanes and 10-foot shoulders on the existing horizontal alignment. The guardrail will also be replaced. The roadway portion will be milled overlaid with 5" asphalt to the new guardrail and tapered down to existing pavement. A shoofly detour will be constructed about 40 feet offset to the west, with a one-lane temporary bridge controlled by a signal.

**Figure 3. NBI 15863 SH-99 over Cimarron River**



### *Transportation Challenges & Needs Addressed*

Project challenges directly come from the poor condition of the existing structures and related geometric deficiencies. **Section C: Merit Criteria** explains how the Project addresses each challenge fulfilling the CHBP Program goals of:

- **State of Good Repair:** To minimize public agency costs that are needed to keep the bridges in service over their lifecycle while maintaining the bridges in Good and Fair condition.



- **Mobility:** To minimize highway user impacts, including pedestrian and bicyclist accommodations if the bridge is located on a highway on which pedestrian or bicyclists are permitted to operate at each end of the bridge, over the lifecycle of the bridges, from substandard geometry, inadequate accommodations, or service interruptions from extreme weather, geologic events, or other hazards.
- **Safety:** To maintain or improve highway user safety, including pedestrian and bicyclist.
- **Innovation:** To reduce costs and achieve other efficiencies in project delivery, including construction, through bundling.

## Bundle of Bridges

A summary of existing conditions as detailed in the NBI is included as Table 1. Note that nearly all major structural components of each bridge are rated as in fair condition or worse with the conditions of the Belford Bridge warrant the bridge to be load posted.

**Table 1. National Bridge Inventory (NBI) Data**

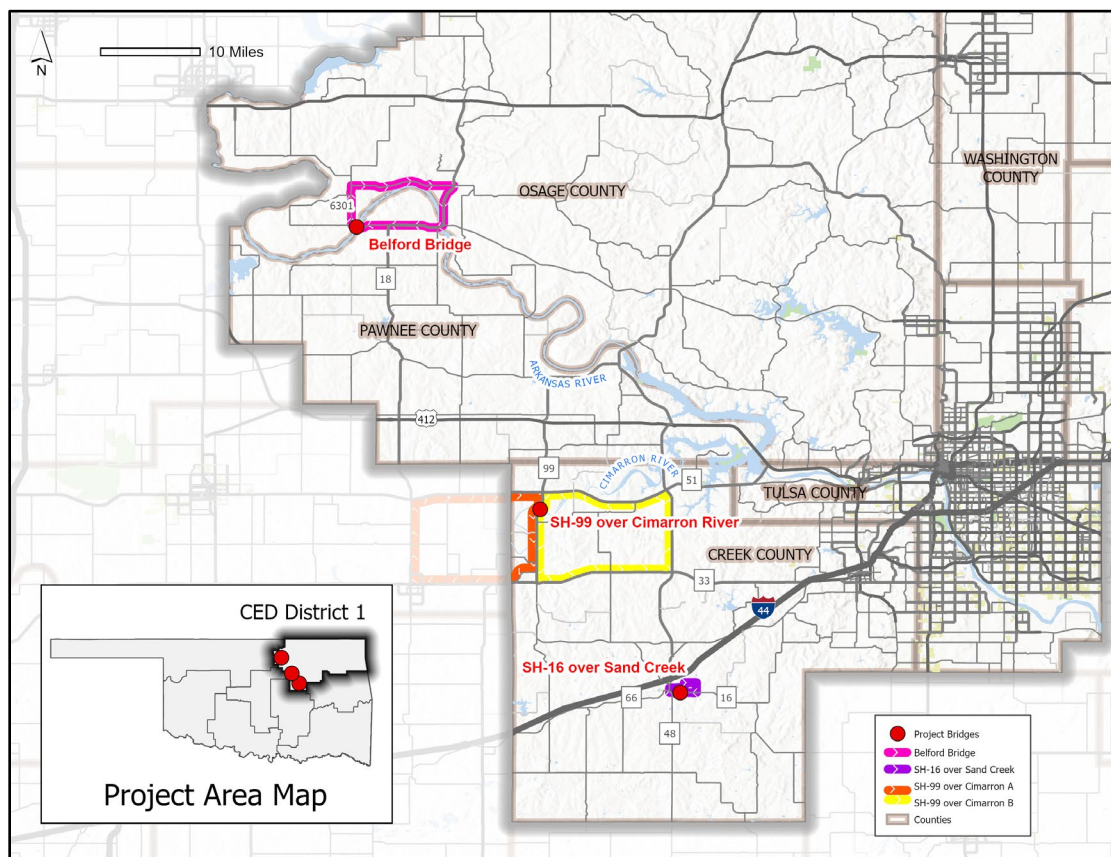
Item	Belford Bridge	SH-16 over Sand Creek	SH-99 over Cimarron River
Planned Work	Replacement	Replacement	Replacement
Structure Number	01417	12429	15863
<b>Condition Data</b>			
Item 58 - Deck Condition Rating	5 – Fair Condition	5 – Fair Condition	5 – Fair Condition
Item 59 – Superstructure Condition Rating	4 – Poor Condition	5 – Fair Condition	5 – Fair Condition
Item 60 – Substructure Condition Rating	5 – Fair Condition	6 – Satisfactory Condition	5 – Fair Condition
Item 61 – Channel and Channel Protection Condition Rating	5 – Channel remediation in poor condition	7 – Channel Remediation is in satisfactory condition	6 – Channel remediation in fair condition
Item 62 – Culverts Condition Rating	N – Not a culvert	N – Not a culvert	N – Not a culvert
<b>Load Rating and Posting Data</b>			
Item 41 – Structure Operational Status Code	P – Posted for Load	A – Open	A - Open
Item 63 – Operating Rating Method Code	2 – Allowable Stress (AS)	1 – Load Factor (LF)	1 – Load Factor (LF)
Item 64 – Operating Rating, US Tons	24.8	47	55
Item 65 – Inventory Rating Method Code	2 – Allowable Stress (AS)	1 – Load Factor (LF)	1 – Load Factor (LF)
Item 66 – Inventory Rating, US tons	9.8	28	33
Item 70 – Bridge Posting Code	0 – greater than 39.9% below	5 – Equal to or above legal loads	5 – Equal to or above legal loads

Item	Belford Bridge	SH-16 over Sand Creek	SH-99 over Cimarron River
<b>Functional Classification</b>			
Item 26 – Functional Class of Inventory Route	7 – Rural Major Collector	7 – Rural Major Collector	6 – Rural Minor Arterial
<b>Current Average Daily Traffic</b>			
Item 29 – Average Daily Traffic	200	2,200	2,300
<b>Current Average Daily Truck Traffic</b>			
Item 109 – Average Daily Truck Traffic (% ADT)	15	15	16

## Project Location

The Belford Bridge carries E0350 Road over the Arkansas River, which spans the Pawnee and Osage County lines in northeastern Oklahoma, about 6.5 miles west of Ralston (Latitude/Longitude 36.50480, -96.84007). The SH-16 bridge passes over Sand Creek in the central portion of Creek County east of Bristow, about 0.7 miles east of the junction with SH 48 (Latitude/Longitude 35.828178, -96.375242). The SH-99 bridge passes over the Cimarron River in the northwestern portion of Creek County north of Oilton, about 4.4 miles southeast of the Payne County line (Latitude/Longitude 36.094297, -96.579042). Figure 4 shows the location of each of these bridges as well as the shortest available detour in the event of a bridge closure or load posting.

**Figure 4. Project Location**



## Lead Applicant

ODOT is the Lead Applicant on the Project and has the technical capacity and competency to successfully complete this Project leveraging a close partnership with the FHWA Oklahoma Division for regular federal aid allocations and discretionary grant funding. ODOT has been awarded several discretionary grants from various programs, including CHBP, and is familiar with developing grant agreements, administering grant funding, and complying with regulatory reporting requirements. ODOT also has dedicated technical expertise and resources to provide quality control over design and construction, ensure all federal requirements are met, and keep the public informed of the Project's progress. ODOT has significant experience securing and implementing federally funded transportation projects. Since 2020, ODOT has been awarded and has successfully administered \$495 million in discretionary grants.

## Other Public & Private Parties

No private or non-private entity will receive a direct and predictable financial benefit if the Project is selected for an award.



## B. GRANT FUNDS, SOURCES & USES OF PROJECT FUNDS

### *Project Costs*

The Project's anticipated future eligible cost is \$38,210,000 for new construction based on 90% design and includes an overall 14% contingency covering the total Project cost, which is sufficient to cover unanticipated cost increases given design level. ODOT is requesting \$22,926,000 in CHBP funds with anticipation of receiving a combination of state and other federal funds to cover remaining Project costs. No other U.S Department of Transportation (USDOT) discretionary grant funding for this Project has been previously requested or received.

### *Funding Sources & Amounts*

Table 2 shows a breakdown of the project funding by funding source.

**Table 2. Budget Breakdown by Funding Source**

Bridge	CHBP Request	Other Federal Funds	State Funds*	CIRB Funds	Total Funding
Belford Bridge	\$11,790,000.00	\$3,930,000.00		\$3,930,000.00	\$19,650,000.00
SH-16 over Sand Creek	\$4,872,000.00	\$1,624,000.00	\$1,624,000.00		\$8,120,000.00
SH-99 over Cimarron River	\$6,264,000.00	\$2,088,000.00	\$2,088,000.00		\$10,440,000.00
Total	\$22,926,000.00	\$7,642,000.00	\$3,712,000.00	\$3,930,000.00	\$38,210,000.00
Total Federal	\$30,568,000.00			80%	
Total Local Match			\$7,642,000.00	20%	

\* See Project website for Funding Commitment Letters <https://oklahoma.gov/odot/progress-and-performance/federal-grant-awards/chbp/24-25/belford.html>.

The local match contribution will come from state funds as part of ODOT's [Rebuilding Oklahoma Access and Driver Safety \(ROADS\)](#) fund and ODOT's [County Improvements for Roads and Bridges \(CIRB\)](#) fund for using state dollars specifically to improve county roads and bridges. The CIRB fund is administered equally to ODOT's eight Circuit Engineering Districts (CEDs), and CIRB funds are committed and available for the Project. CED #1, the district where this Project is located, has committed \$3,930,000 of its CIRB allocation as matching funds for the Belford Bridge which are currently programmed in the fiscally constrained ODOT [FY 2025-2029 CIRB Work Plan](#) part of the ODOT [Statewide Transportation Improvement Program \(STIP\)](#). In addition to the 20% matching funds for construction, CED #1 has previously spent about \$904,360 state funds for design, right-of-way (ROW), and environmental activities.

CIRB funds would be reallocated to other CED #1 projects if the CHBP grant is received. The SH-16 bridge over Sand Creek and the SH-99 bridge over the Cimarron River have \$3,712,000 in other federal funds with the same amount of state funding programmed as a local match. Both of these bridge replacement

projects are programmed in ODOT's [2025-2032 Construction Work Plan](#). Funding commitment letters from CED #1 and from ODOT can be found in the [ODOT Project website](#).

## Bridge Budgets: Funding Sources & Funding Amounts

As shown in Table 2, Belford Bridge will program \$11.8 million of the \$22.9 million requested CHBP funding, supplementing the remaining amount with \$3.9 million in other federal funding, and another \$3.9 million in state funding as a local match. The SH-16 bridge over Sand Creek will use \$4.9 million of the CHBP requested funding, with \$1.6 million coming from other federal funding and \$1.6 million coming from state funding as the local match. The SH-99 bridge over Cimarron River will use \$6.3 million of the requested CHBP funding, with \$2.1 million coming from other federal funding and \$2.1 million coming from state funding as the local match.

Table 3 shows a breakdown of the Project funding by major Project activity for all three bridges. The Belford Bridge is estimated to cost over half of the total Project budget, with the SH-16 bridge over Sand Creek and the SH-99 bridge over Cimarron River each representing 21% and 27% of the remaining budget, respectfully.

**Table 3. Budget Breakdown by Major Project Activity**

Major Project Activity	Belford Bridge	SH-16 over Sand Creek	SH-99 over Cimarron River	Total
Roadway	\$2,642,907.50	\$2,664,236.50	\$961,492.75	\$6,268,636.75
Bridge	\$11,147,045.50	\$3,562,390.00	\$6,740,890.90	\$21,450,326.40
Construction	\$625,000.00	\$0.00	\$406,500.00	\$1,031,500.00
Signing and Striping, Staking, and Traffic Control	\$31,562.40	\$278,583.70	\$261,730.20	\$571,876.30
Total Cost (to nearest million)	\$15,000,000.00	\$7,000,000.00	\$9,000,000.00	\$31,000,000.00
Contingency and 6% E&C	\$4,650,000.00	\$1,120,000.00	\$1,440,000.00	\$7,210,000.00
Total	\$19,650,000.00	\$8,120,000.00	\$10,440,000.00	\$38,210,000.00
Percent (%)	51%	21%	27%	100%

## Budgeted Contingency

ODOT has budgeted \$5,350,000 for contingencies (or 14% of the overall budget) to cover unanticipated cost increases, which breaks down to 25% of the cost for Belford Bridge and 10% of the estimated cost for both the SH-99 bridge over Cimarron River and the SH-16 bridge over Sand Creek. This contingency allows for inflation and future labor and supply chain-driven cost increases. In the event of cost overruns, ODOT will cover 100% of the additional cost through state ROADS funding.

## C. MERIT CRITERIA

This section summarizes the identified merit criteria of the state of good repair, safety and mobility, and innovation. This includes a benefit-cost analysis quantifying the benefits of each criterion.

### State of Good Repair

This Project will improve the state of good repair by replacing three rural bridges in Oklahoma which is necessary due to age, disrepair, and updated construction safety standards. Two bridges (the Belford Bridge and the SH-16 bridge over Sand Creek) are functionally obsolete. All three bridges show severe corrosion and cracking like in the existing supports for the SH-16 bridge over Sand Creek (Figure 5).

The Belford Bridge has been assigned “fracture-critical” status, meaning one or more steel members are under tension and will cause the bridge to collapse. The May 2023 inspectors noted fatigue, cracking, distortion, section loss, and corrosion of steel beams and trusses, bowed gusset plates, expanded bearings, fractured rail posts, deck deterioration, as well as spalling and delamination across concrete curbs. Scour had occurred around several piers, exposing bridge foundation. New construction will guarantee safe passage, improve seismic protection, and reduce maintenance costs from repairing obsolete infrastructure.

As explained above, the Belford Bridge has a max load of 15 tons, is only 18 feet wide, lacks shoulders, and offers low 12-foot vertical clearance blocking large commercial trucks, which fails to meet modern safety standards and makes the structure functionally obsolete. Vehicles with wide loads require oncoming traffic to slow or stop until exiting the bridge. Large trucks and farm equipment cannot use the bridge and must detour given load limits, extending travel times and operating costs, hindering overall growth.

The existing 21-foot long and 26-foot wide RCB roadway over Mud Creek allows for two lanes of traffic, but no shoulders and needs to be replaced to accommodate the new roadway width and alignment of the E0350/S3460 intersection. The Project will reconstruct the bridge approaches with two 12-foot driving lanes and 5-foot shoulders and replace the RCB on E0350 Road over Mud Creek as the CR 6150/CR 6301 intersection to the north and the E0350/S3460 intersection to the south will also both be realigned.

For the SH-16 bridge over Sand Creek, the existing bridge is functionally obsolete, lacks shoulders, has 17 exposed concrete piles, and moderate to heavy section loss of bearings and beam ends for the steel section, among other concerns. The replacement bridge shall consist of 12-foot driving lanes with 8-foot shoulders. The existing span will be replaced on alignment (half at a time) with an RCB structure to allow the Project to be constructed without closing the existing road to local and through traffic.

The SH-99 bridge over the Cimarron River also lacks shoulders, shows sagging on the first and sixth spans, and has cracking throughout and will be replaced with a 44-foot wide (two 12-foot lanes with 10-foot shoulders) bridge on the existing horizontal alignment. The guardrail will also be replaced, and the roadway portion will be milled overlaid with warm mix asphalt to the new guardrail and tapered down to existing pavement. A shoofly detour will be constructed during construction to maintain access about 40-foot offset to the west, with a one-lane temporary bridge controlled by a signal.

**Figure 5. SH-16 over Sand Creek, March 2024**





## 1. Long-Term Cost-Effectiveness of Selected Work Types and Work Scopes

Overall cost effectiveness across Project administration includes shared administrative costs and coordinated maintenance schedules as well as mobilization. ODOT is exploring construction material discounts and other cost-saving bundles as well. Maintenance savings are explained further below.

The new Belford Bridge will have 17 Type J prestressed concrete spans and 16 multi-column piers substructure with two 6-foot diameter drilled shafts into bedrock. Using 135-foot Type J spans allows for fewer overall spans and fewer piers in the Arkansas River. The bridge will have two 12-foot driving lanes with 4-foot shoulders on each side and crash-worthy concrete traffic rail.

## 2. Long-Term Maintenance and Preservation Benefits from Design, Details, and Material Technologies

All three replacement bridges will be designed to meet today's geometric and load rating standards with a 75-year design life. New structures will resolve existing structural and geometric deficiencies and provide a reliable route for users. Eliminating fracture-critical truss spans and other structural problems will lower long-term maintenance costs. In addition, giving each bridge Silane surface treatment along with other routine maintenance after five years of use will help seal bridge decks by creating a hydrophobic barrier to prevent water and salt from getting below the bridge decking surface.

## 3. Risk Resilience and Functional Sustainability Under Natural and Human-Induced Hazards

All bridges will be designed to meet AASHTO design standards for modern-day scour and seismic protection to reduce scours and seismic risk and better position the bridges against weather events. These bridges are critical connections to area residents and services, serving vehicular and active transportation modes and integral links Pawnee, Osage, and Creek Counties. Doing nothing to the bridges risks complete closure from damage, threatening future transportation network efficiency, mobility of goods, as well as accessibility and mobility of people. Without these bridges, vehicles will be forced to take long detours, adding time and cost. Maintaining crossings is critical for communities to maintain transportation network efficiency, reliability of travel times for all vehicles including emergency response vehicles, and accessibility and mobility of people and goods.

## 4. Post-Construction Maintenance Strategy and Integration into Preventive Maintenance Programs

The Project will reduce current regular maintenance costs on all three bridges by providing new structures meeting modern design standards and in a state of good repair to maintain. The combined existing maintenance costs on all three bridges are estimated to total \$10.8 million over the 30-year Project, attributed to costly regular maintenance, rehabilitation and inspections necessitated by the bridges' critical state. The anticipated maintenance costs for the three bridges, after project implementation, is estimated at just \$1.2 million over the same period bridge operation. Total maintenance savings associated with the Project are anticipated to be \$9.8 million (\$4.0 million, discounted to 2023 dollars) consistent with methodology presented in ODOT's Transportation Asset Management Plan (TAMP). Maintenance costs will be funded through the Field District Maintenance Budget through ODOT CBRI funding, and the Counties will maintain the bridges in a state of good repair.

## Safety & Mobility

The Project will directly address safety shortcomings related to the existing structure and associated approaches, fulfilling multiple goals and strategies outlined in the USDOT's National Roadway Safety Strategy (NRSS). Modern bridge designs will offer safety benefits to drivers and other users with the addition of shoulders and textured pavement markings to separate travel lanes, benefiting all travelers within and beyond the Project limits.

## 1. Safety Benefits: Reducing Accidents, Injuries, and Fatalities Through the Project

Without the Project, all three bridges are likely to close by 2052 due to poor condition. The Belford Bridge's ongoing deterioration has already led to a partial truck ban, expected to become a full ban by 2033. Consequently, vehicles will be forced to take longer routes, increasing vehicle miles traveled (VMT). Based on historical data from the Oklahoma Department of Public Safety, Highway Safety

Office, Creek and Pawnee County experience the following crash rates per 100 million VMT shown in Table 4:

**Table 4. County Crash Rates**

County	Bridges	Fatal Crash Rate	Injury Crash Rate	Property Damage
Creek	SH-99 over Cimarron River SH-16 over Sand Creek	1.325	32.0375	47.58
Pawnee	Belford Bridge	1.3775	25.2725	52.235

The Project, by replacing the bridges and preventing closures, will significantly reduce VMT and the associated crash risks, generating an estimated \$31.9 million (discounted to 2023 dollars) in safety benefits over its lifespan.

## 2. Addressing Documented Safety Issues in Bridge Structures and Approaches

Targeting known, documented safety problems across the bridges will improve safety for all users within and beyond the Project limits. Each of the bridges to be replaced has significant structural concerns that will be remedied through this Project.

Narrow bridge decks on the Belford Bridge prevent vehicles from passing and only allow one lane of traffic to safely travel. Osage and Pawnee County Commissioners report oncoming vehicles typically stop on the opposite side until the bridge is clear. No shoulders inhibit safe pullovers, requiring all traffic to detour until an incident is cleared. Cyclists use the bridge but lack safe infrastructure; pedestrians do not walk across the bridge due to insufficient infrastructure. Existing truss structures have low 12-foot vertical clearances, substantially below the 14-foot 6-inch minimum recommended by AASHTO for local roadways, and below ODOT's recommended 16-foot 9-inch minimum.

The SH-16 bridge over Sand Creek also lacks shoulders, preventing safe pullovers on the bridge. The March 2022 bridge inspection report cited critical structural issues including weakened concrete wingwalls, moderate to heavy section loss of steel bearings and beam ends, severe section loss over straight girder diaphragm piers, and severe cracking on wearable surfaces developing potholes.

The SH-99 bridge over the Cimarron River is in similar poor condition and also lacks shoulders. The June 2023 bridge inspection report notes concrete cracking, moderate spalls with exposed rebar at soffit joints, moderate section loss with holes across the straight girder diaphragm, exposed drill shafts at multiple piers, and moveable bearings need to be reset (Figure 6).

**Figure 6. Concrete Failure on SH-99 over Cimarron River Bridge**



## 3. Construction Phase Safety: Methods for Minimizing Risk and Enhancing Public Awareness

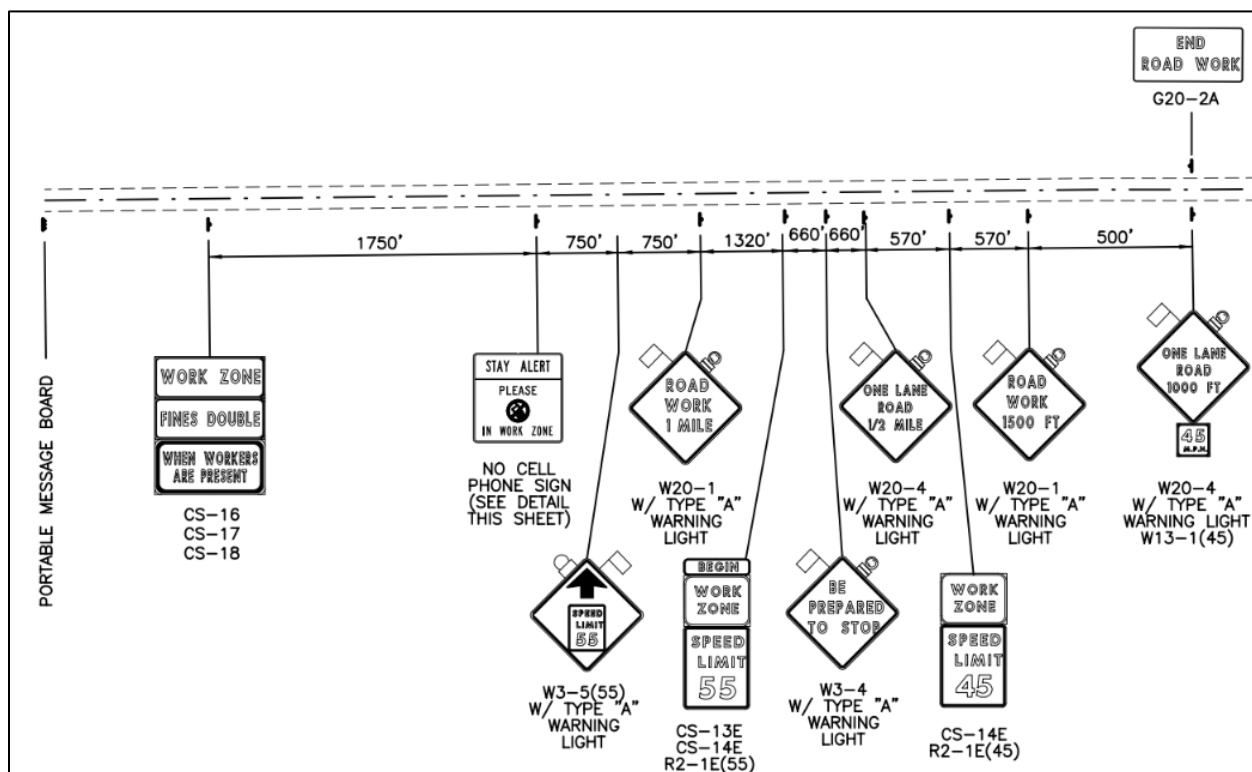
ODOT is committed to construction zone safety through various initiatives and campaigns. Drivers across the state are encouraged to "play their part" to keep road workers safe. Specific campaigns and programs desired to minimize risk and enhance public awareness around work zones include:

- **Work Zone Awareness Week:** A key partnership between ODOT and the Oklahoma Turnpike Authority to promote safety for workers and drivers across Oklahoma's work zones. This partnership is instrumental to ODOT's success across projects and clean track record.

- [Work Zone Safe Course](#): An online course targeted towards teen drivers to teach safe driving through work zones.
- [Drive Oklahoma App](#): Provides up to date information on roadway conditions, including construction zones.

In addition to ODOT's regular commitment to work zone safety, the plans, specifications, and estimates (PS&Es) for each bridge include defined construction plans to keep workers as separated from traffic as possible. The Belford Bridge will remain open for current traffic during construction. After the Project is completed, the existing bridge will be permanently closed to the public and preserved as a historic local monument. The existing SH-16 span over Sand Creek will be replaced half at a time on alignment with an RCB structure to allow the Project to be constructed without closing the road to local and through traffic. A shoofly detour will be constructed for the SH-99 bridge over the Cimarron River about 40-feet to the west, with a one-lane temporary bridge controlled by a signal and ample advanced warning signage (Figure 7).

**Figure 7. Proposed Advanced Warning Signage for SH-99 over Cimarron River**



#### 4. Enhancing Mobility by Resolving Structural and Functional Deficiencies

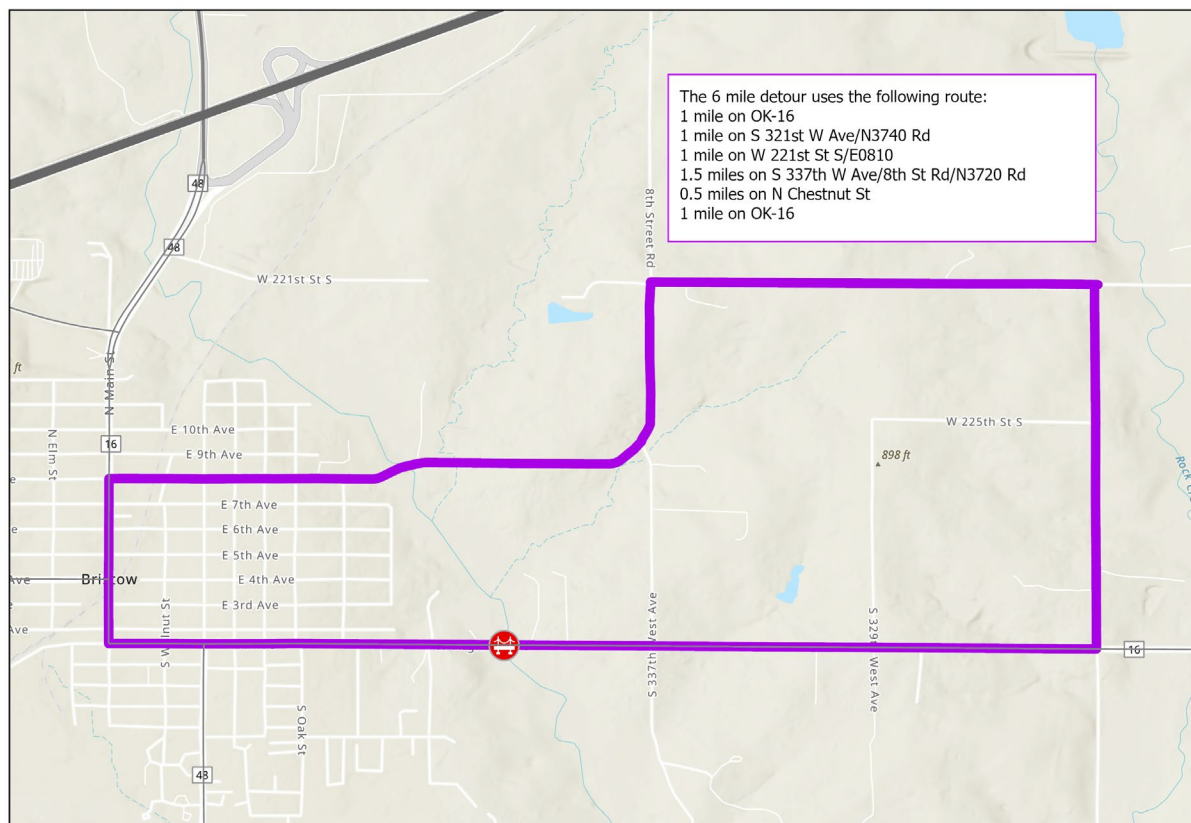
Replacing these bridges will extend respective useful lives to 75 years and significantly reduce bridge failure risk. Replacing these bridges is anticipated to reduce VMT by 763.1 million miles. Replacing the Belford Bridge will give more trucks access, reducing time and cost for delivery routes. Present truck traffic is limited due to weight restrictions on this bridge as well as inadequate overhead clearance.

The existing bridges are likely to fail due to poor condition, which would force traffic to make long detours to reach other crossings and roadway connections, with most vehicles traveling an extra 13 miles around the Belford Bridge, 41 miles around the SH-16 bridge over Sand Creek, and 26 miles around the SH-99 bridge over the Cimarron River. Some vehicles may use shorter detours given relatively lighter load limits but would still wear down local roadways not designed for higher traffic volumes. Figure 8 illustrates a direct six-mile detour around the SH-16 bridge over Sand Creek with multiple mobility challenges, endangering travelers. As displayed in Figure 9, the six-mile detour lacks



shoulders and pavement lines on top of extremely poor pavement conditions and no centerline or other safety markings. NBI recommends the 41-mile detour, 35 miles longer than the six mile “direct” detour from these types of constraints.

**Figure 8. Map of SH-16 over Sand Creek Detour**



**Figure 9. Roadway Conditions of SH-16 over Sand Creek Detour**



**Detour Route: E0815, February 2023**  
 Google Streetview



**Primary Route: SH-16, December 2024**  
 Google Streetview

### 5. Improving Safety and Mobility for Pedestrians, Cyclists, and Individuals with Disabilities

The new bridges will offer wide shoulders to provide a safe space for vehicles to pull over or for other users to separate themselves from vehicle traffic. The Belford Bridge will have 5-foot shoulders, the SH-16 bridge over Sand Creek will have 8-foot shoulders, and the SH-99 bridge over the Cimarron River will have 10-foot shoulders. Expanding roadways with shoulders gives cyclists room to safely keep using each bridge. While some cyclists currently use these bridges, the bridges are in remote areas, and pedestrian facilities are not present on either side of these bridges. Pedestrians do not currently and are not expected to use these bridges, and therefore pedestrian facilities are not being added.

## Innovation

The Project leverages innovative techniques to reduce Project delivery costs and construction time, expediting overall efficiencies and economies of scale, capturing significant savings from bundling bridge fixes. Bridges have been screened together for necessary fixes to align work plans and material needs, enabling standard design fixes and construction to complete replacements, increase efficiencies, speed delivery, and drop overall costs by capturing savings. Work will be completed through a single contract, further keeping costs down.

### 1. Estimated Contractor and Agency Cost Savings from Bundling and Supporting Rationale

The Project is utilizing a traditional financing partnership combining federal, state, and local funds to develop and maintain these three new bridges as community assets.

### 2. Compatibility of Bundled Work Across Bridges: Materials, Methods, and Scheduling Efficiencies

The Project leverages best practices in bridge construction techniques and materials, with efficient multi-step coordinated mobilization measures, quality checks, and overall supervision across management teams to ensure smooth construction delivery.

### 3. Estimated Cumulative Construction Time Savings from Bundling and Basis of Calculation

Bundling the bridges is estimated to save 18% (316.8) of total construction labor hours across the Project. All three bridges are estimated to take 1760 total hours to construct without bundling but bundling the bridges will result in only requiring 1443.2 total construction labor hours.

Estimated construction hours saved assumes no overtime or weekend work is needed and is calculated from 11 total months of construction across all three bridges. Four weeks per month yields 44 total construction work weeks, and, assuming 40 hours of construction work per week, results in 1760 total construction hours needed across the three bridges. The reduction of 316.8 total construction hours results in 1443.2 total construction labor hours ( $1760 - 316.8$ ) required to construct all three bridges simultaneously.

### 4. Additional Project Delivery Efficiencies Through Innovation

ODOT will use 135-foot Type J concrete beams to construct the new Belford Bridge. These beams are not typically used on county bridges but have been selected for this Project as an innovative construction technique to minimize the number of piers required in the Arkansas River. This innovation will enhance wildlife connectivity and will also streamline the Section 404 permitting process by avoiding impacts to the stream. ODOT also uses an innovative environmental review process involving staff liaisons at the USFWS and USACE to prioritize ODOT reviews.

Other innovative construction techniques include working required Work-Zone Management and Traffic Incident Management strategies into construction documents to reduce work-zone delays and secondary crashes.

## D. PROJECT READINESS & PERMITTING RISK

### Technical Feasibility

ODOT delivers projects in full compliance with all applicable federal requirements. Oklahoma has been awarded over \$300 million across numerous grants shown below (Table 5).

**Table 5. Recent ODOT Federal Grant Awards**

Grant Name	Grant Program	Amount
2024 I-35 Ped Bridge BUILD (RAISE) Grant	BUILD (RAISE)	\$17,400,000
2024 Large Bridge Grant Award for Roosevelt Memorial Bridge Investment Project	Bridge Investment Program	\$123,850,000
2022 Bridge Grant Award for Improving Rural Bridges in Northwest Oklahoma	Bridge Investment Program	\$11,505,044
2022 Planning Grant for Roosevelt Memorial Bridge (US-70) over Lake Texoma in Bryan and Marshall Counties	Bridge Investment Program	\$957,300
2022 MPDG MEGA Grant I-44/US-75	MPDG MEGA	\$85,000,000
2021 INFRA Grant I-40/Douglas Boulevard Interchange	INFRA	\$65,254,916
FY 2018 Grant Award for Grant County Bridge Replacement Project	Competitive Highway Bridge Program	\$3,468,000

Bridge improvement efforts reflect ODOT's commitment to safety and regulatory compliance across transportation development. The Project's technical feasibility is demonstrated by studying multiple alignment alternatives, conducting necessary environmental analyses, consulting with resource agencies, as well as completing 90% design plans including survey, geotechnical investigations, and updating construction estimates.

ODOT has determined that all three projects qualify for a Categorical Exclusion (CE). The Belford Bridge project has completed its draft CE, and ODOT is in the process of finalizing a Biological Evaluation for submission to U.S. Fish and Wildlife (USFWS). Final CE approval is expected in 2026.

ODOT's successful management of billions of dollars' worth of federally funded projects and strong partnership with the Oklahoma Division of the FHWA reflects ODOT's experience with the receipt and expenditure of federal-aid Highway Program funds. Should funding be awarded for construction, ODOT is confident that it will be ready for work initiation and completion within the guidelines established in the Notice of Funding Opportunity.

### Financial Completeness Assessment

There is a low risk of Project delays due to available funding. Project cost estimates are based on 90% design with an overall 14% contingency across the entire Project budget for the three bridges. All three bridges are included in the [2025-2032 Construction Work Plan](#) and [2025-2029 CIRB Plan](#) fiscally constrained plans. ODOT plans for potential cost overruns, as outlined in the Design State and Cost Estimate Uncertainty, to show full ability to fully fund Project construction.



## Complete Funding Package

The Project's anticipated future eligible cost is \$38,210,000 for new construction based on 90% design and includes an overall 14% total contingency (\$5,350,000), which is sufficient to cover unanticipated cost increases given design level. ODOT is requesting \$22,926,000 in CHBP funds and utilizing \$7,642,000 in ODOT's STBG apportioned federal funding, totaling \$30,568,000 in federal funds, with a local match of \$7,642,000 in state funds.

## Design State & Cost Estimate Uncertainty

ODOT has budgeted 14% of the overall Project budget (\$5,350,000) for contingencies to cover unanticipated cost increases, which breaks down to 25% for the estimated cost for Belford Bridge and 10% of the estimated cost for both the SH-99 bridge over Cimarron River and the SH-16 bridge over Sand Creek. The total 14% contingency allows for inflation and future labor and supply chain-driven cost increases. ODOT will cover 100% of any additional cost overruns through state ROADS funding.

## Plan for Future Maintenance & Preservation

As stated in the [ODOT LRTP](#), ODOT has set a goal to keep structurally deficient bridges below 1% through preventive maintenance and innovative practices which requires inspecting bridges at least once every two years. ODOT uses AASHTO Bridge Management (BrM) software to monitor conditions, optimize maintenance, and forecast future needs. This tool supports the goal of maintaining structurally deficient bridges below 1%. Additional preservation strategies, including the use of advanced materials and scheduled maintenance, extend bridge lifespans.

## Permitting Risk Assessment – Project Risks & Mitigation Strategies

Project risks and mitigation strategies have been identified in Table 6. All necessary environmental approvals have been received and/or are underway. ODOT has identified a potential minor risk to the schedule concerning utilities for the SH-16 bridge over Sand Creek and will coordinate with the Town of Slick with utility needs, including drafting and signing an agreement.

**Table 6. Project Risks & Mitigation Strategies**

Project Risk	Mitigation Measure		
	Belford Bridge	SH-99 - Cimarron River	SH-16 - Sand Creek
<b>NEPA Approval Delay</b>	All environmental studies have been completed. The only remaining step prior to completion of the NEPA CE is obtaining concurrence from the SHPO on the "no historic properties affected" finding for the Project which should be received as the historic bridge will remain in place. Once SHPO concurrence is received, NEPA completion is anticipated within 60 days. Should this be delayed, it		NEPA has been approved.

Project Risk	Mitigation Measure		
	Belford Bridge	SH-99 - Cimarron River	SH-16 - Sand Creek
	could affect the letting schedule. The schedule does allow for some delay while still meeting the proposed funding obligation and construction dates.		
<b>Section 404 Permit Delays</b>	A Section 404 Nationwide Permit 14 was completed and approved by USACE for the project in September 2020. The permit expired October 2023 and reauthorization will be necessary, which ODOT/CED #1 are currently working on and expect approval in November 2024.	A Section 404 Nationwide Permit 14 was completed and approved by USACE for the Project. Permits will expire in March 2026. Re-evaluation is scheduled for 2026 before funding obligation is expected.	<b>Section 404 Permit Delays</b>
<b>Utility Coordination Issues</b>	No utility relocations are anticipated.		ODOT will provide an agreement with the Town of Slick on utilities.
<b>Weather Related Construction Delays</b>	ODOT will work closely with the selected contractor to track Project time and make necessary adjustments while still meeting Project commitments.		
<b>Cost Increases</b>	25% contingency is built into the project budget	10% contingency is built into the project budget	10% contingency is built into the project budget
<b>Geotechnical</b>	Eighteen (18) geotechnical borings were completed and informed design of drilled shafts. There is always a risk that subsurface condition may vary from what is anticipated. However, this risk is low given the extensive testing that has been performed.		
<b>Public Engagement</b>	Over the course of the Project development, no substantive concerns have been raised.		

## Project Schedule: Major Milestones – Completion

ODOT is well-positioned to meet CHBP grant funding schedule requirements with construction anticipated able to begin shortly after funds are obligated. The schedule presented in Table 7 demonstrates the Project will meet all required milestones in the 2025 CHBP NOFO. Specifically:

- The Project has completed all aspects of project development, except for the approved CE and updated Section 404 permits for the Belford Bridge, as well as re-evaluation of 404 Permits for the latter two bridges, which are all anticipated by Q3 2026.
- All necessary activities will be completed to allow CHBP funds to be obligated by the obligation deadline of **September 30, 2028**, to allow sufficient time for unexpected delays and ensure no funding is at risk of expiring before being obligated.
- ROW acquisition for the Belford Bridge was completed in 2018 in accordance with the Uniform Relocation Act and is expected to be completed for the SH-16 bridge over Sand Creek in Q1 2026 and the SH-99 bridge over Cimarron in Q3 2026.
- The Project can begin construction within 18 months of obligation.

**Table 7. Project Schedule – Milestone Completion Dates**

Milestone	Belford Bridge	SH-16 over Sand Creek	SH-99 over Cimarron River
PE Complete	Q1 2022	Q1 2022	Q1 2022
Survey	Q1 2022	Q1 2022	Q1 2022
NEPA	Q3 2026	Q2 2022	Q1 2022
404 Permit (Re-eval)	Q3 2026	Q3 2026	Q3 2026
RW	2018	Q1 2026	Q3 2026
UT	2018	Q1 2027	Q1 2027
PS&E	2018	Q3 2026	Q3 2026
Funding Obligation	Q1 2027	Q1 2027	Q1 2027
Letting	Q3 2027	Q3 2027	Q3 2027
Construction	Q3 2028	Q3 2028	Q3 2028

## Required Approvals - Environmental Clearance & Permits, State & Local Plans, Funding

Since its inception in the early 1990s, CED #1 and ODOT have partnered to construct and manage the replacement of hundreds of bridges across northeastern Oklahoma. ODOT will administer the CHBP funding for the SH-99 bridge over Cimarron River, the SH-16 bridge over Sand Creek, and on behalf of the CED for the Belford Bridge, ensuring compliance with applicable rules and regulations including Title VI of the Civil Rights Act and Federal procurement requirements.

### Environmental Permits & Reviews

#### Belford Bridge

##### Environmental Permits & Reviews

The Project is subject to ODOT design and construction specifications as work is partially being funded from CIRB funds. Preliminary and final plans have been completed. NEPA is nearly complete with concurrence on the effect finding from SHPO anticipated in the coming months. Project design criteria follow ODOT's Roadway Design Standards, Drainage Manual, and Standard Specifications for Highway Construction. Cost estimates were based on ODOT's Roadway Pay Quantities and Notes with a 25%



contingency appropriate for this advanced stage of design. Table 8 provides an overview of the required approvals and provides a status of the actions, including expected timelines for approval.

**Table 8. Belford Bridge Status of Required Approvals**

Milestone	Status
PE	Complete
Survey	Complete
NEPA (CE)	Estimated 2026 - Awaiting final SHPO consultation and CE approval
404 Permit (Re-eval)	Estimated 2026 - Re-evaluation of 2020 permit required after NEPA
RW	Completed 2018
UT (Complete 2018)	Completed 2018
PS&E (Complete 2018)	Completed 2018
PE	Complete
Survey	Complete
NEPA (CE)	Estimated 2026 - Awaiting final SHPO consultation and CE approval
404 Permit (Re-eval)	Estimated 2026 - Re-evaluation of 2020 permit required after NEPA
RW	Completed 2018

## Environmental Studies & Documentation

Completed plans, environmental studies, and permits are completed for the Belford Bridge and any concurrence dates or commitments can be found at the [ODOT Project Website](#). No significant environmental impacts were noted.

## NEPA & Federal Environmental Compliance

CED #1 initiated the NEPA process in 2011 with the understanding that the Project would require federal funds for construction. ODOT completed environmental studies and consultation with the USFWS and began consultation with the State SHPO. Pawnee and Osage Counties evaluated design alternatives to avoid affecting the historic bridge, but in 2011, determined removing and replacing the Belford Bridge was the preferred choice. Pursuant to Section 4(f) of the Department of Transportation Act, Pawnee County published a public notice soliciting comments on the Project, and ODOT completed Historic American Engineering Record (HAER) archival documentation for the bridge as mitigation for an anticipated adverse effect under Section 106 of the NHPA.

After these activities, CED #1 decided to pursue construction of the new bridge without federal funds, but the Section 4(f) process was halted, and ODOT issued a Completion of Environmental Studies Memo for non FHWA funded Local Government Projects in October 2013. CED #1 determined federal funds would be necessary following several failed attempts to find state and local funds for the Project. Pawnee and Osage Counties agreed to preserve the existing bridge, negating the need to complete the Section 4(f) process. ODOT re-initiated the NEPA document in 2023 which will be complete once concurrence on a “no historic properties affected” is received from SHPO. ODOT will then complete a Categorical Exclusion (CE) for the Project which is anticipated for September 2026.

## Public Engagement & Community Involvement

As stated in ODOT’s [Public Involvement Plan](#), Public Involvement is a primary component of NEPA. For the Belford Bridge, Pawnee County solicited public input in November 2011 through published notification and received no public comments.

As part of the Section 106 process, ODOT consults Native American Tribes and Nations regarding the potential effects proposed projects may have on resources of importance to the community. Both Pawnee and Osage counties coordinated with Pawnee and Osage Nations about the Project and both tribes are in full support with no substantive concerns raised. The Project has the support of state and local officials, as seen through the letters of support provided in the [ODOT Project Website](#)

## SH-99 over Cimarron River

### Environmental Permits & Reviews

Preliminary plans and NEPA have been completed. Design criteria established for the Project follow ODOT's Roadway Design Standards, Drainage Manual, and Standard Specifications for Highway Construction. Cost estimates were based on ODOT's Roadway Pay Quantities and Notes and include a 10% contingency is appropriate for this advanced stage of design. Table 9 provides an overview of the required approvals and provides a status of the actions, including expected timelines for approval.

**Table 9. SH-99 over Cimarron River Status of Required Approvals**

Milestone	Status
PE	Complete
Survey	Complete
NEPA (PCE)	Complete
404 Permit	Complete (expires March 2026)
RW	Estimated Completion 2026
UT	Estimated Completion 2026
PS&E	Estimated Completion 2027

### Environmental Studies & Documentation

Completed plans, environmental studies, and permits completed for the SH-99 bridge over Cimarron River and any concurrence dates or commitments can be found at the [ODOT Project Website](#). No significant environmental impacts were noted.

### NEPA & Federal Environmental Compliance

ODOT completed a Programmatic Categorical Exclusion (PCE) in May 2020 and determined the Project does not individually or cumulatively have a significant impact of the environment, and the Project will require no environmental commitments on plan for ROW and Utility.

### Public Engagement & Community Involvement

As stated in ODOT's [Public Involvement Plan](#), public involvement and community outreach are an essential component of the development and implementation of transportation plans and projects. ODOT will follow all necessary public engagement requirements during the planning and implementation of this Project.

As part of the Section 106 process, ODOT consults Native American Tribes and Nations regarding the potential effects proposed projects may have on resources of importance to the community. Both the Muscogee and Osage Tribes identified the Project study area as an area of interest but raised no substantive concerns, as demonstrated through the correspondence with ODOT's Tribal Liaison, accessible at the [ODOT Project website](#).

## SH-16 over Sand Creek

### Environmental Permits & Reviews

Preliminary plans and NEPA have been completed. Design criteria established for the Project follow ODOT's Roadway Design Standards, Drainage Manual, and Standard Specifications for Highway Construction. Cost estimates were based on ODOT's Roadway Pay Quantities and Notes with 10% contingency appropriate for this advanced stage of design. Table 10 provides an overview of the required approvals and provides a status of the actions, including expected timelines for approval. ROW clearance and Utility relocation activities are expected and will require an agreement with the Town of Slick, which is identified as a potential risk where mitigation strategies are discussed in Table 6.

**Table 10. SH-16 over Sand Creek Status of Required Approvals**

Milestone	Status
PE	Complete
Survey	Complete
NEPA (ICE)	Complete
404 Permit	Complete (expires March 2026)
RW	Estimated Completion 2026
UT	Estimated Completion 2027
PS&E	Estimated Completion 2026

### Environmental Studies & Documentation

Completed plans, environmental studies, and permits completed for the SH-16 bridge over Sand Creek and any concurrence dates or commitments can be found at the [ODOT Project website](#). No significant environmental impacts were noted.

### NEPA & Federal Environmental Compliance

ODOT completed an Individual Categorical Exclusion (ICE) in May 2020 and determined the Project does not individually or cumulatively significantly impact the environment. The October 22, 2021, Relocation Plan, based on August 2021 ROW Submission Plans, identified four (4) single-family residences with a potential for relocation and one (1) personal property relocation. A Community Impact Assessment was completed in January 2022 and concluded the Project will not cause disproportionately high or adverse effects on any minority or low-income populations, and no further analysis is required.

### Public Engagement & Community Involvement

As stated in ODOT's [Public Involvement Plan](#), public involvement and community outreach are an essential component of the development and implementation of transportation plans and projects. Notifications were sent out to affected property owners as part of the NEPA process. As the Project progresses, ODOT will follow all necessary public engagement requirements during the planning and implementation.

As part of the Section 106 process, ODOT consults Native American Tribes and Nations regarding the potential Project effects on important community resources. The following tribes were consulted on May 4, 2018, and February 23, 2022: Alabama Quassarte Tribal Town, Kialegee Tribal Town, Muscogee (Creek) Nation, Osage Nation, Thlopthlocco Tribal Town, United Keetoowah Band of Cherokee Indians, and Wichita and Affiliated Tribes. There were no objections to the Project, and there were no historic or traditional cultural properties affected in the Project area.

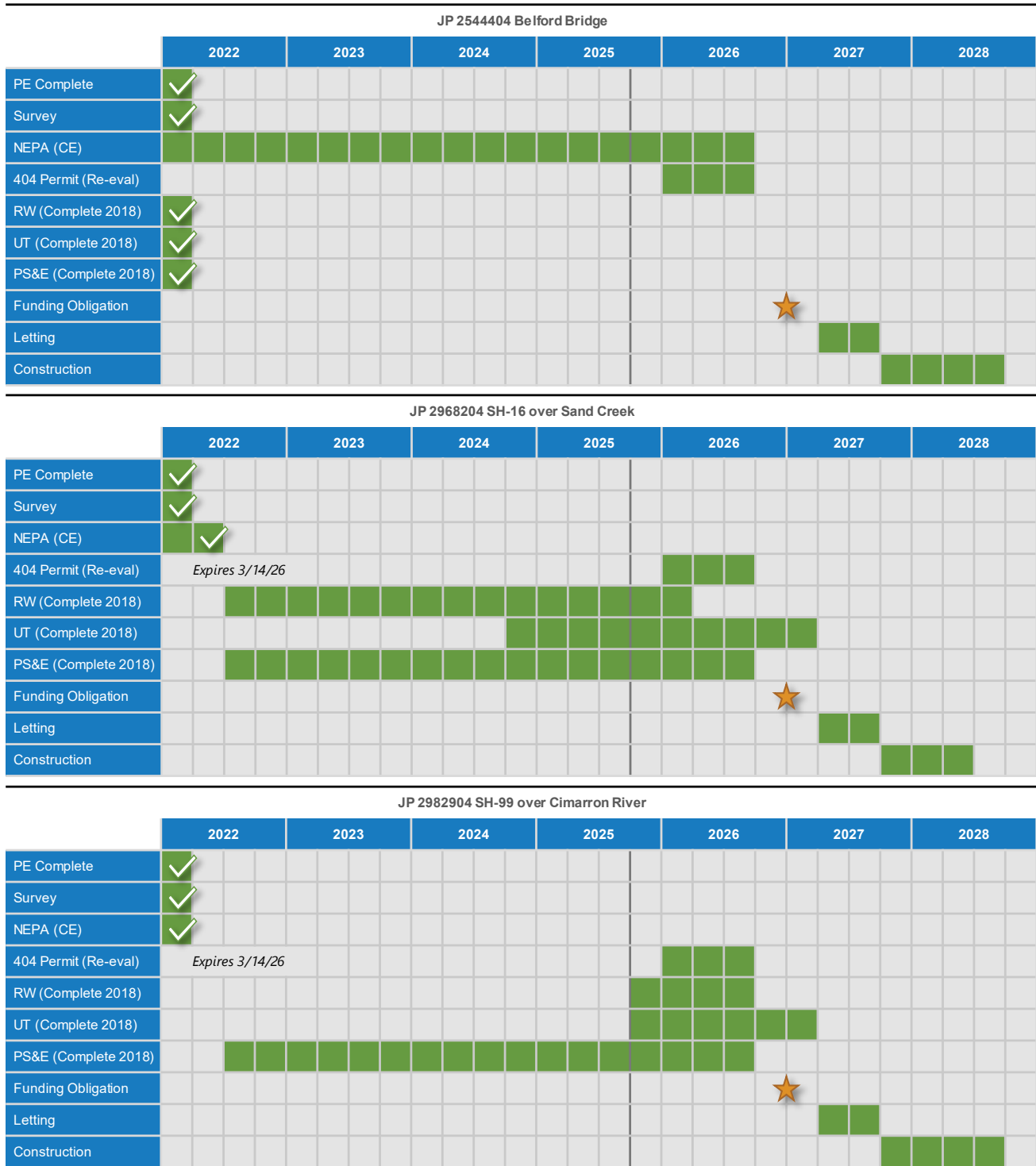
## State & Local Approvals

Figure 10 provides the anticipated schedules for receipt of state and local approvals. CED #1 and ODOT are committed to completing the three bridge projects. The [2024-2027 STIP](#) incorporates the [2025-2029](#)



[CIRB Plan](#) and [2025-2032 Construction Work Plan](#) by reference with all three bridge replacements included in the STIP. These bridge replacements are grouped projects and are referred to as line items, listed before they are authorized based on an agreement between FHWA and ODOT. None of the bridges are required to be listed in the respective TIPs because they are in rural areas outside of boundaries of Metropolitan Planning Organizations (MPO).

**Figure 10. Schedule of State and Local Approvals**



## *Federal Transportation Requirements Affecting State & Local Planning*

The Project is included in the following state and local planning documents:

- **Statewide Transportation Improvement Program:** All three bridge projects are included in the STIP. The [2024-2027 STIP](#) incorporates the [2025-2029 CIRB Plan](#) by reference, and the first four years of the Statewide Construction Work Plan align with the STIP. As explained above, these bridge replacements are grouped in projects and are referred to as line items, listed before they are authorized based on an agreement between FHWA and ODOT.
- **County Improvements for Roads and Bridges:** The Belford Bridge, identified as 25444(04), is included in the [2025-2029 CIRB Plan](#) (PDF page 51).
- **8-Year Construction Plan:** The SH-99 bridge over Cimarron River, identified as 29829(04), and the SH-16 bridge over Sand Creek, identified as 29682(04), are in the [2025-2032 Construction Work Plan](#) (PDF page 31).
- **Statewide Long Range Transportation Plan (LRTP):** Oklahoma's [draft LRTP](#) states, "ODOT aims to keep bridges below 1% through preventive maintenance and innovative practices... Preventing this deterioration is critical for ensuring long-term structural health and system resilience." All three bridges were identified as structurally obsolete or deficient, justifying rehabilitation or reconstruction to support Oklahoma's goal of maintaining state bridges.

## E. FHWA PRIORITY SELECTION CONSIDERATIONS

### Statutory Evaluation Requirements

All three bridges included in the Project offer significant benefits and fully satisfy each of the four statutory evaluation criteria established by the FHWA, as summarized in Table 11. However, without the CHBP grant, the Project is unlikely to be constructed as described. In that case, all three bridges would continue to deteriorate, posing increasing risks to travelers until eventual structural failure. Replacing all three bridges simultaneously would exceed ODOT's financial capacity and would significantly delay or halt progress on other critical ongoing and planned infrastructure projects.

**Table 11. Summary of Statutory Evaluation Requirements**

Requirements	Response
Plans to improve the condition of a bundle of bridges in poor condition as demonstrated by having one or more components in condition rating 4 or less, or in fair condition and at risk of falling into poor condition as demonstrated by having one or more components in condition rating 5, based on NBI data as of June 2023.	Yes. All three bridges have multiple components in condition rating 5, with the Belford Bridge having a rating of 4 for the Superstructure Condition (see Table 1).
The Project will be ready to obligate funds for construction within 18 months of an CHBP grant award.	Yes. The details can be found under <b>Project Readiness – Financial Completeness</b> .
Replacement bridges provide safety and/or mobility benefits from the improvement of traffic safety features, geometry, and/or hydraulics.	Yes. See benefits described under <b>State of Good Repair</b> .
Rehabilitation bridges are demonstrated as being more cost effective over the long-term than replacement and do not have safety and mobility needs that are not addressed by rehabilitation.	Yes. New bridges lower regular and long-term maintenance costs by \$9.8 million over 30 years (\$4.0 million, discounted to 2023 dollars).

A total of \$9.8 million (\$4.0 million, discounted to 2023 dollars) in maintenance costs are being saved over 30 years across all three bridges through bundling improvements, partial roadway closures, and/or maintaining existing roadway access while new bridges are being constructed. Innovative design and construction across the Project reduce costs, increases efficiencies, and expedites overall delivery. Bundling improvements saves on materials and shares construction techniques as well as labor resources, further leveraging overall economies of scale. Benefits outweigh costs as shown through the benefit cost ratio (BCR) of 6.76, and funding is committed to support ongoing maintenance and preservation.

Modern scour and seismic protection measures will be installed to safeguard each bridge against earthquakes and other ground tremors. Replacing each bridge reduces future maintenance costs by \$9.8 million because upkeep will be on new construction and not trying to repair existing crumbled material. ODOT has worked hard to maintain all transportation assets, especially bridges, and replacing these three bridges aligns with ODOT's goals in current asset management plans. New construction realigns roadways and adds necessary safety measures like adequate shoulders and clear pavement markings, improving safety for users, reducing potential accidents and any accident-related costs. New bridges with realigned approaches bring personal and freight mobility benefits from reducing congestion and increasing overall reliability for truck trips to keep deliveries on time.

Maintaining these three key water crossings is vital for regional economic stability and future growth to safely allow residents, farmers, and other travelers to complete their trips. Current bridges cannot withstand weather or storms with roadways flooding from poor drainage, and new bridges with proper stormwater



management will keep roadways clear in poor travel conditions. These rivers are home to numerous wildlife habitats and ecosystems, and widening roadways gives vehicles a safe place to pull over and avoid damaging any wetlands. While pedestrians do not use the bridge, cyclists do, and providing adequate shoulders will give cyclists a safer crossing over these rivers.

The Project will be ready to proceed to final design immediately upon receipt of the final approved NEPA Categorical Exclusion as illustrated by the schedule described above, with funding anticipated Q1 2027 and construction starting Q3 2028. With final design nearly complete and ROW acquisition already complete for the Belford Bridge, CED #1 intends to have ROW acquisition completed in 2026 for the other two bridges.

CHPB funding will help ODOT support creating good-paying jobs with the free and fair choice to join a union and the incorporation of strong labor standards with project labor agreements, registered apprenticeship programs, and other training and placement programs. According to the Bureau of Labor Statistics, Oklahoma's highway, street, and bridge construction workers make a higher mean hourly wage than any other construction related jobs or industries. These wages then create indirect economic benefits to the communities housing the workers. Executing this construction contract across three bridges will require many workers, attracting new labor to Oklahoma and expand economic benefits statewide.

## Benefit-Cost Analysis

### *Baselines*

#### The “No-Build” Alternative

Without the Project, the three rural bridges – the Belford Bridge, the SH-16 bridge over Sand Creek, and the SH-99 bridge over the Cimarron River – will continue to deteriorate, increasing safety risk and maintenance costs, and ultimately resulting in closure of all three bridges by 2052. The Belford Bridge in particular is already classified as fracture-critical and will likely face a full truck ban by 2033, further limiting regional mobility. Without constructing the Project, long detours will likely be needed due to bridge closures which will increase travel times, vehicle operating costs, and crash exposure.

#### The “Build” Scenario

The Project will replace the three deteriorated bridges with modern, safe, and reliable infrastructure. Bridge upgrades will eliminate the eminent risk of closure and related detours, which will reduce VMT and the associated travel time as well as vehicle operating, environmental and safety costs. Furthermore, new bridge infrastructure will be drastically less costly to maintain, \$9.8 million less to be exact. Project construction is expected for 2027 and 2028, with facilities opening in 2029 and operating for 30 years.

### *Operations & Maintenance*

The new bridges are expected to eliminate costly and frequent repairs and inspections associated with the current poor conditions and will generate significant operations and maintenance costs, saving a total of \$9.8 million over 30 years across the three bridges. The Belford Bridge is anticipated to have \$0.4 million in undiscounted operations and maintenance cost under the No Build and \$0.01 million in undiscounted costs under the Build. The discounted operation and maintenance costs savings under the Build are estimated at \$0.1 million (2023).

The SH-99 bridge over the Cimarron River is anticipated to have \$6.2 million in undiscounted operations and maintenance cost under the No Build and \$0.5 million in undiscounted costs under the Build. The discounted operation and maintenance costs savings under the Build are estimated at \$2.3 million (2023). The SH-16 bridge over Sand Creek is anticipated to have \$4.2 million in undiscounted operations and maintenance cost under the No Build and \$0.5 million in undiscounted costs under the Build. The discounted operation and maintenance costs savings under the Build are estimated at \$1.5 million (2023).

## Posting & Detours

Under current conditions, all three bridges are likely to close by 2052. Furthermore, the condition of the Belford Bridge has already required a partial truck ban affecting half of all truck traffic, which is expected to become a full ban in less than eight years, by 2033. Without bridge access, vehicles are required to take long detours (Table 12). The estimated detours as required under the “No Build” are consistent with NBI detour and conditions data and are expected to generate 763 million miles of VMT, equivalent to roughly 14 million hours of travel time avoided under the Build Scenario.

**Table 12. Required Detours Without Project**

Bridge	Detour (miles)	Approximate Additional Travel Time (minutes)
Belford Bridge	13 miles	16.6 minutes
SH-16 Bridge over Sand Creek	41 miles	46.4 minutes
SH-99 Bridge over Cimarron River	26 miles	29.4 minutes

## Benefits from Avoided Detours

The Project is expected to generate significant savings across travel times and vehicle operating costs as well as safety risk reductions and environmental benefits from less VMT by avoiding expected bridge closures and load postings under the No Build alternative. Avoiding 14 million hours of travel time generates approximately \$68.5 million (2023) in discounted travel time savings. Not driving 763 million miles of VMT brings about \$70.4 million (2023) in discounted vehicle operating cost savings, \$1.2 million (2023) in discounted benefits from less CO<sub>2</sub> emissions, and \$0.1 million (2023) in discounted benefits following other environmental impact reductions. Based on the fatality, injury, and property-damage only crash rates per 100 million miles for Pawnee and Creek County, avoiding 763 million miles of VMT, additionally generates roughly \$31.9 million (2023) in discounted safety benefits.

## Benefit Cost Analysis Results

Presented in Table 13 below, the results of a Benefit Cost Analysis comparing Project benefits to the expected Project costs produces a Net Present Value (NPV) of \$151.2 million, and a Benefit Cost Ratio (BCR) of 6.76 which includes a residual value of assets based on an assumed 75-year life (45 years beyond the 30-year operation period assumed in the analysis), consistent with FHWA recommendations for bridge projects.

**Table 13. Summary of Benefit Cost Analysis Results**

Category	Total Discounted Benefits (2023\$)	Percent (%) of Total Benefits
Safety - Crash Reduction	\$31,935,921	18.0%
Travel Time Savings	\$68,557,459	38.6%
Vehicle Operating Cost Reduction	\$70,420,336	39.7%
Non-CO <sub>2</sub> Emissions Reduction	\$1,235,928	0.7%
Other Environmental Impacts Reductions	\$81,427	0.0%
Reduced Maintenance Costs	\$3,968,084	2.2%
Residual Value	\$1,334,856	0.8%
Total Benefits	\$177,534,012	100%
Total Discounted Costs	\$26,247,615	N/A
BCR	6.76	N/A
Net Present Value (NPV)	\$151,286,397	N/A