

Roosevelt Memorial Bridge Investment Project

Bryan and Marshall Counties, Oklahoma
May 2024

Merit Criteria

1 Safety

Safety is a primary purpose of the Roosevelt Bridge Project. The bridge has a demonstrated history of high collision rates on and near the bridge, particularly severe collisions such as injuries and fatalities. From 2016 to 2020 there were 58 total collisions, including 18 injury collisions and 4 fatal collisions (**Figure 1**). The corridor crash rate (85 crashes per 100 million vehicle miles traveled [MVMT]) was somewhat higher than the statewide crash rate (75 per 100 MVMT). However, the **fatal crash rate for the corridor** was over twice as large at 5.9 per 100 MVMT than the statewide fatal crash rate at 2.6 per 100 MVMT. The locations of the fatal collisions are shown on the Fatality Analysis Reporting System (FARS) map in **Figure 4**. As the Project will make safety improvements to the entire 4-mile area between State Park Road and Willow Springs Road, all the collisions within this portion of US-70 were included in the analysis. All collision data and maps are available at [ODOT Roosevelt Bridge](#).

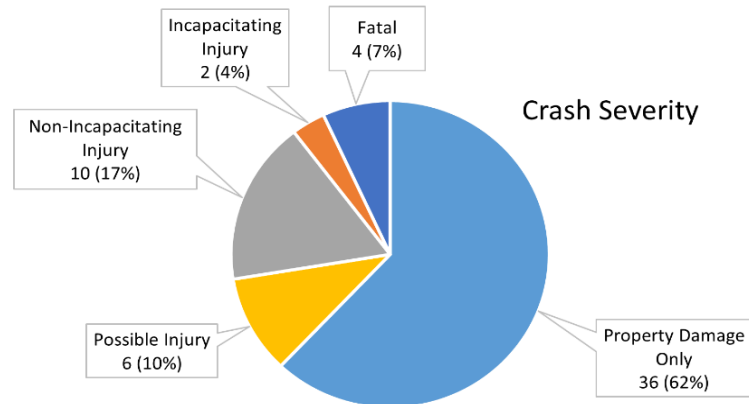


Figure 1: Roosevelt Bridge Crash Severity, 2016-2020

**The Roosevelt Bridge has a
fatality rate**

127%

**higher than the statewide
average**

Almost 20% of the collisions involved head on or side swipes which tend to result in more severe outcomes. Close to half of the collisions were documented as “no improper action”, indicating



Figure 2: Fatal Collision, March 2018

conditions on the bridge and roadway may have contributed. “Left of center” was the cause of one fatal collision (**Figure 2**), likely due to the narrow width of the bridge and lack of separation between the two directions of traffic. As seen in **Figure 3**, the existing bridge railing does not have sufficient capacity to withstand the impact of a crash and contain the vehicle(s) on the bridge. ODOT’s analysis of

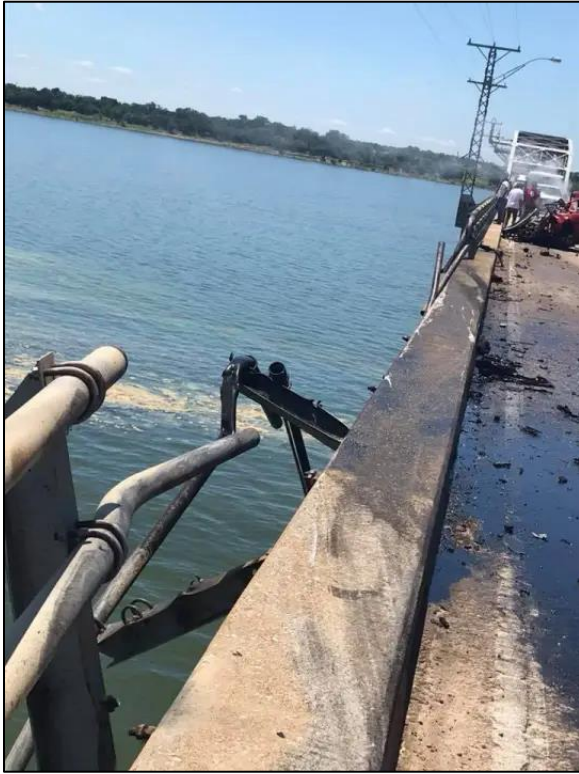


Figure 3: Fatal Collision, June 2018

existing bridge condition showed that **approximately 1/3 of the metal railing attachments are missing, providing no protection.**

A closer look at the collision locations suggests that two areas related to the bridge have experienced a high number of collisions (**Figure 4**): the west approach, where the 5-lane US-70 roadway to the west transitions to the 2-lane bridge, and at the location of the truss span on the bridge itself. The intersections at either end of the project also have higher numbers of collisions.

The US-70 roadway in the vicinity of the bridge has characteristics that contribute to safety issues (**Figure 5**). There are no shoulders, median, or rumble strips on the bridge, leaving little room for error should a driver leave his/her lane. While there is lighting on the bridge, the roadway to the east and west is not illuminated. The west approach transitions from 5 lanes to 2 lanes on a steep grade (4.7%), and there is limited sight distance at the intersections on either end.

The current configuration of the bridge (two 12' lanes with no shoulders) is narrow and provides no opportunity for passing or safe refuge for vehicles. Widening the route from one lane to two lanes in each direction will provide additional passing opportunities and a safer route for the projected traffic volumes along US-70. The new Roosevelt Bridge will have four 12-foot driving lanes and two 10-foot outside shoulders with a center median barrier. While additional lanes are needed to accommodate future traffic volumes, they are also anticipated to increase safety. The Project will remove all vehicular traffic from the truss structure, eliminating the safety concerns related to the low vertical clearance. Modern crash-tested railing will be provided to minimize the potential of vehicles leaving the bridge. The Project will significantly protect vulnerable and non-

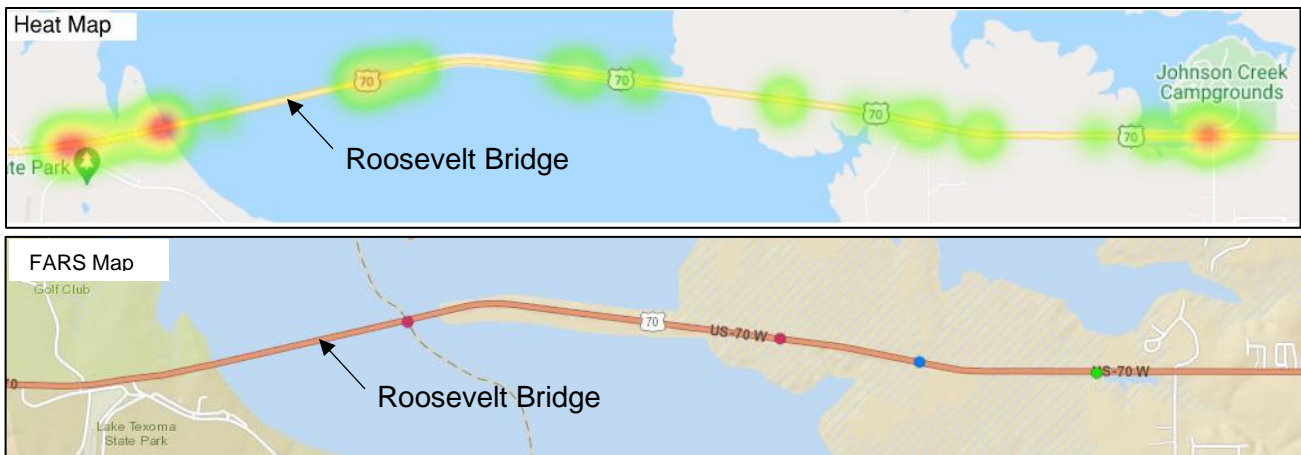


Figure 4: Collision Frequency Heat Map and FARS Map, 2016-2020

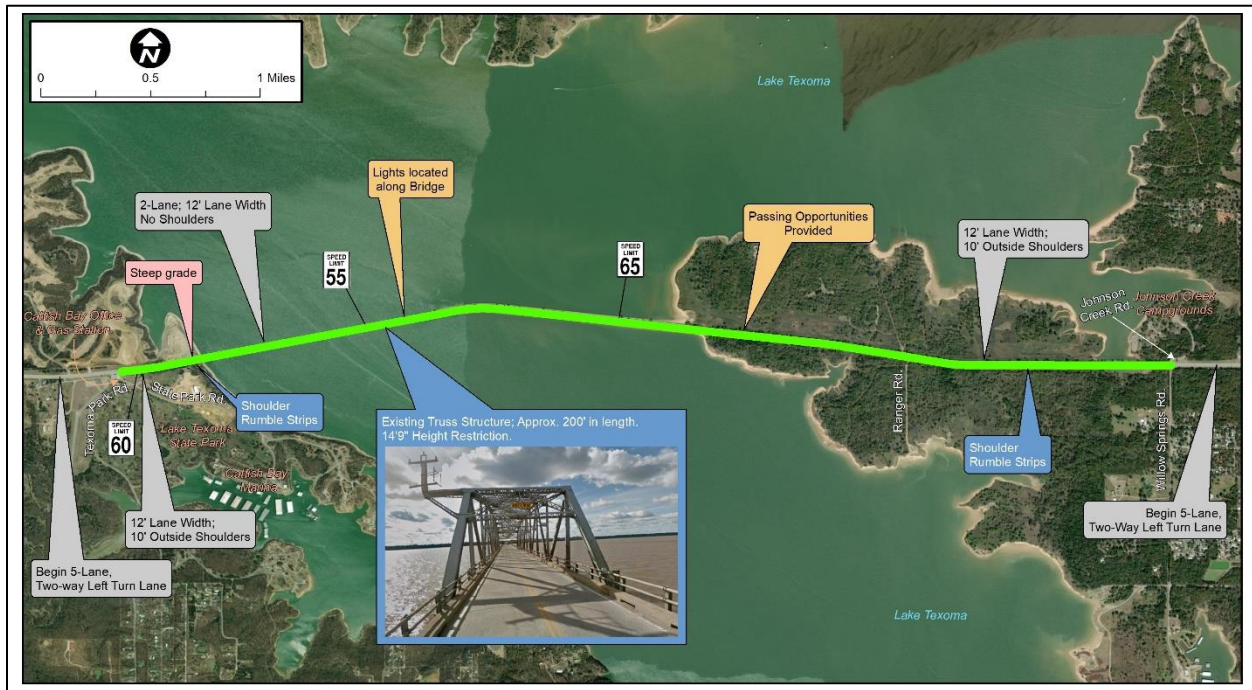


Figure 5: Existing Safety Considerations

motorized users from safety risks posed by the current bridge. Pedestrians and bicycles will be provided with a barrier-separated designated path to provide a safe multi-modal crossing of Lake Texoma where none exists today.

The Roosevelt Bridge Project is consistent with the National Roadway Safety Strategy Safe System Approach by providing a safer road, a safe speed appropriate to the new bridge, and by increasing the expediency of post-crash care. The Traffic Analysis Memo at [ODOT Roosevelt Bridge](#) describes the methodology used to predict potential future collision reductions as a result of the Project. Quantified safety benefits include reduction in expected number of crashes through safety enhancements including widening from 2-lanes to 4-lanes, shoulder rumble strips, improved lighting, and median barrier. A crash modification factor (CMF) is used to compute the expected number of crashes after implementing a countermeasure on a road or intersection. Several countermeasures with beneficial CMFs will potentially apply to the Project to reduce the number of collisions that occur on the route:

- Convert 2-lane roadway to a 4-lane divided roadway = 66% reduction (CMF ID: 7566)¹
- Installation of any type of median barrier = 43% reduction (CMF ID: 42)
- Installation of street lighting (along the entire route) = 37% reduction of night-time collisions (CMF ID: 7774)

Intersection-related and fixed object collisions accounted for a significant number of crashes within the study area. According to the *CMF Clearinghouse* online database, removing or relocating fixed objects outside of a clear zone could result in a 38% reduction of crashes (CMF ID: 1024). The potential addition of an outside shoulder width would also allow additional clearance from objects located on the route (such as guardrails, trees, and signs as previously

¹ Selected due to the anticipated traffic volume range and future signal need at State Park Road

mentioned). Adding rumble strips on the outside shoulders of the non-bridge segments could also assist in reducing the number of fixed-object collisions by alerting drivers prior to vehicles departing the travel lane, which would result in a 16% crash reduction (CMF ID: 3442).

For simplicity, the BCA analysis selected one CMF (ID: 7566) to predict collision reduction. CMF 7566 is for conversion of urban and rural 2 lane roadways to 4-lane divided roadways². This was considered appropriate since the Project will widen US-70 from a 2-lane undivided roadway to a 5-lane roadway (4 lanes with center turn lane). The new bridge will also be widened to 4 lanes divided with a center median barrier. ID 7566 produces a CMF of 0.34, or a **66% reduction in crashes**. These safety improvements will result in a reduction of 7.6 crashes per year (including 0.79 incapacitating injury and fatal crashes), bringing the collision rate below the statewide average. This translates to \$7.3 million in avoided crash costs per year, and a total safety benefit of \$128.6 million.³

**Safety elements on the bridge
could reduce collisions by**

66%

Safety was also the number one factor cited by the public in their overwhelming support of the project. In the over 280 comments received during the six-week public comment period, the vast majority cited safety as a major concern. Most individuals indicated the need for a new bridge, with many mentioning the need to widen the bridge with additional lanes and shoulders. Pedestrian and bicycle facilities were also mentioned frequently, either on the new bridge or on the existing bridge converted to that purpose.

2 State of Good Repair

Constructing and maintaining a new crossing of US-70 over Lake Texoma in a state of good repair is a primary purpose of the Project. The Roosevelt Bridge is composed of 86 approach spans (concrete deck on steel floor beams and girders) and one truss span (250' steel Warren through-truss) all of which are supported on a variety of concrete substructure elements. The bridge is rated in Fair condition and is at risk of becoming structurally deficient. The truss span is considered fracture-critical, meaning failure of certain portions under tension could cause the bridge to collapse. ODOT restricted the bridge to overload traffic in 2020 due to the superstructure condition, specifically related to section losses to floor beam members. Emergency repairs completed in 2021 allowed ODOT to again open the bridge to all traffic. More detail on the existing bridge conditions can be found in the *Analysis of Existing Bridge Report* (March 2021), available at [ODOT Roosevelt Bridge](#).

The bridge is currently classified as functionally obsolete due to the substandard vertical clearance on the truss span (14'-9") and its narrow clear roadway width (24'). Based on 2021 traffic counts, existing average annual daily traffic (AADT) volumes on the Roosevelt Bridge are approximately 8,500 vpd, with trucks 9% trucks. Analysis using Highway Capacity Software 7 (HCS7) determined that the bridge currently operates at a Level of Service (LOS) C.

² [CMF Clearinghouse](#)

³ In 2022 discounted dollars. See BCA Tech Memo

Using a background growth rate of 1.5% alone, traffic volumes on the bridge are anticipated to grow to 12,200 vpd by 2050⁴. However, Point Vista is planning 11 phases of development at the west end of the bridge on what today is a golf course and undeveloped land. By 2034, Pointe Vista will include approximately 2,700 acres of mixed-use development including 2,100 homes, three resort hotels, a convention/conference center, golf course, casino, marina, shops, restaurants, a water park, and entertainment venues. The additional demand of this development would significantly increase traffic volumes on the Roosevelt Bridge (**Figure 7**). The additional demand of this development will significantly increase traffic volumes on the Roosevelt Bridge. Projected 2050 traffic volumes inclusive of the development were estimated at approximately 27,300 vpd based on a trip generation procedure consistent with the *ITE Trip Generation Manual*. With no improvements to the bridge, the 2050 LOS is expected to worsen to LOS E, resulting in a significant bottleneck on the two-lane bridge. Adding two driving lanes for a total of four 12-foot lanes and 10-foot outside shoulders would improve LOS to B in 2050 (**Table 1**)⁵.

By 2050, traffic volumes on the Roosevelt Bridge are anticipated to reach

27,300
Vehicles per day

Table 1: Bridge Level of Service Results

<i>Scenario</i>	AADT	Level of Service (LOS) Results	
	<i>Vehicles per day</i>	<i>No-Build Condition</i>	<i>Build Condition</i>
2021	8,500	C	A
2050 (with Development)	27,300	E	B

As part of the planning process to improve the condition of the Roosevelt Bridge, ODOT performed an evaluation of the existing structural condition of the bridge. Results of that analysis indicate the concrete deck has multiple large spalls throughout and areas where the deck lifts off the steel floor beams due to pack rust. All joints have lost their seals allowing water to flow onto the steel beams and girders supporting the deck. Many of the steel floor beams in the approach spans have significant corrosion and section loss resulting in substantial member capacity reduction. Numerous bearings have sheared bolts and shifted bearing plates. The metal bridge rail has numerous connections that are sheared, missing, or other failed connections. The rail has also been impacted multiple times by vehicles resulting in misalignment and damaged posts throughout. The steel truss members have minor corrosion throughout. Due to the low vertical clearance, the bracing in the portal frames of the truss has impact damage from vehicular collisions. The concrete substructure elements have minor spalls and cracks throughout. **Figure 6** shows select photographs of existing bridge conditions. More photographs can be found at [ODOT Roosevelt Bridge](#).

⁴ Based on historic traffic counts on US-70, Sites 480031 and 070016, [AADT Traffic Counts | ODOT](#)

⁵ See Traffic Analysis Memo at [ODOT Roosevelt Bridge](#)



Figure 6: Roosevelt Bridge Inspection Photos (2021)

The latest routine bridge inspection report (1/29/2024) gives the existing deck and superstructure NBI ratings as “5 = Fair”; however, this is based on emergency repairs conducted in 2021 to avoid load posting the bridge and otherwise would have been rated “4 = Poor”, resulting in a load posting of the structure. The emergency repairs were not intended to be long term and did not address deficiencies such as the railing. Should no major rehabilitation or replacement occur, per the National Bridge Investment Analysis System (NBIAS) estimates used in the BCA, the existing bridge will require load posting in 2033, full posting (all trucks and buses) in 2048, and closure in 2052. This is a conservative estimate according to Justin Hernandez, P.E., ODOT Director of Project Design: “if this bridge makes it 5 years without cause for action (posting at least), I’d say we’re on borrowed time” (see [ODOT Roosevelt Bridge](#) for the latest inspection report)⁶.

Load posting and potential closure of the bridge will threaten the future transportation network efficiency of southeastern Oklahoma. As discussed in Section 3 below, US-70 is a critical freight link, connecting

“If this bridge makes it five years without cause for action (posting at least), I’d say we’re on borrowed time”.

**Justin Hernandez, P.E.
ODOT Director of Project Design**

⁶ A sensitivity analysis was performed with ODOT’s estimates. See the BCA Tech memo for more details.

the major freight routes of US-75 and I-35. Should the bridge be load posted or closed, freight and passenger vehicles would be forced to detour 21.5 miles, adding significant user costs, and severely affecting the mobility of goods and people. Restricting or removing the Lake Texoma crossing would stifle the region's economy by limiting freight movement, population growth, local investment, and recreational access.

The Roosevelt Bridge Project will provide a new structure designed to meet today's geometric and load rating standards with a 75-year design life. A new structure would resolve the structural and geometric deficiencies of the existing bridge and would provide a reliable route for freight and passenger traffic. The Project would restore and modernize this structure through elimination of the fracture-critical truss span and will result in lower long-term maintenance costs. According to ODOT estimates, 20-year maintenance costs for the existing bridge (through 2048 and the end of the BCA analysis period) are estimated at \$18.9 million.⁷ With the Project, a net savings in maintenance costs is anticipated of approximately \$13.2 million in discounted costs. ODOT is responsible for maintenance for on-system facilities throughout the state. As such, ODOT has a \$500M 4-Year [Asset Preservation Plan](#) which is both federally and state funded to address pavement and bridge condition throughout the state.

When user costs are considered, the cost of doing nothing becomes significantly larger. The high user costs are associated with an approximate 21.5-mile detour required if the bridge were closed. As expressed in user costs, closing the Roosevelt Bridge would have significant negative impact to transportation network efficiency, accessibility and mobility of people and goods, and economic growth. The costs of closing the bridge far outweigh the costs of a new structure when travel time and vehicle operating cost savings are considered. See the BCA Tech Memo for more discussion of avoided detours.

3 Economic Impacts, Freight Movement, and Job Creation

ODOT has explicitly considered the impact of the project on freight movement and supply chains, specifically how the project will reduce congestion and improve travel times and reliability for both passengers and freight. Adding capacity to the Roosevelt Bridge will improve freight reliability and efficiency by addressing a freight and supply chain bottleneck. The existing Roosevelt Bridge currently carries 8,500 vpd with 9% trucks. This number is expected to increase to 27,300 vpd by 2050. The Pointe Vista development currently under construction on the west side of the bridge is contributing heavily to the future demand (**Figure 7**). At full build-out, Pointe Vista is anticipated to generate 30,000 trips per day with over half of those projected to use the Roosevelt Bridge (see Traffic Analysis Memo at [ODOT Roosevelt Bridge](#)). As of January 2024, the Pointe Vista development will also include a Hard Rock Hotel scheduled for completion in 2026. Without improvements, LOS on the US-70 mainline is anticipated to worsen to LOS E by 2050. Intersections at State Park Road and Willow Springs Road will be LOS F for some movements and result in significant congestion. The additional two lanes planned as part of the Roosevelt Bridge Project will improve safety and LOS on the bridge to LOS B and remove a critical freight bottleneck.

US-70 is an important link on the National Highway System (NHS) and provides critical east-west connectivity across southern Oklahoma, linking major freight routes such as I-35, US-69, and US-75 (**Figure 8**). US-69 carries approximately 5,300 trucks per day and represents a key north-south

⁷ See BCA Tech Memo

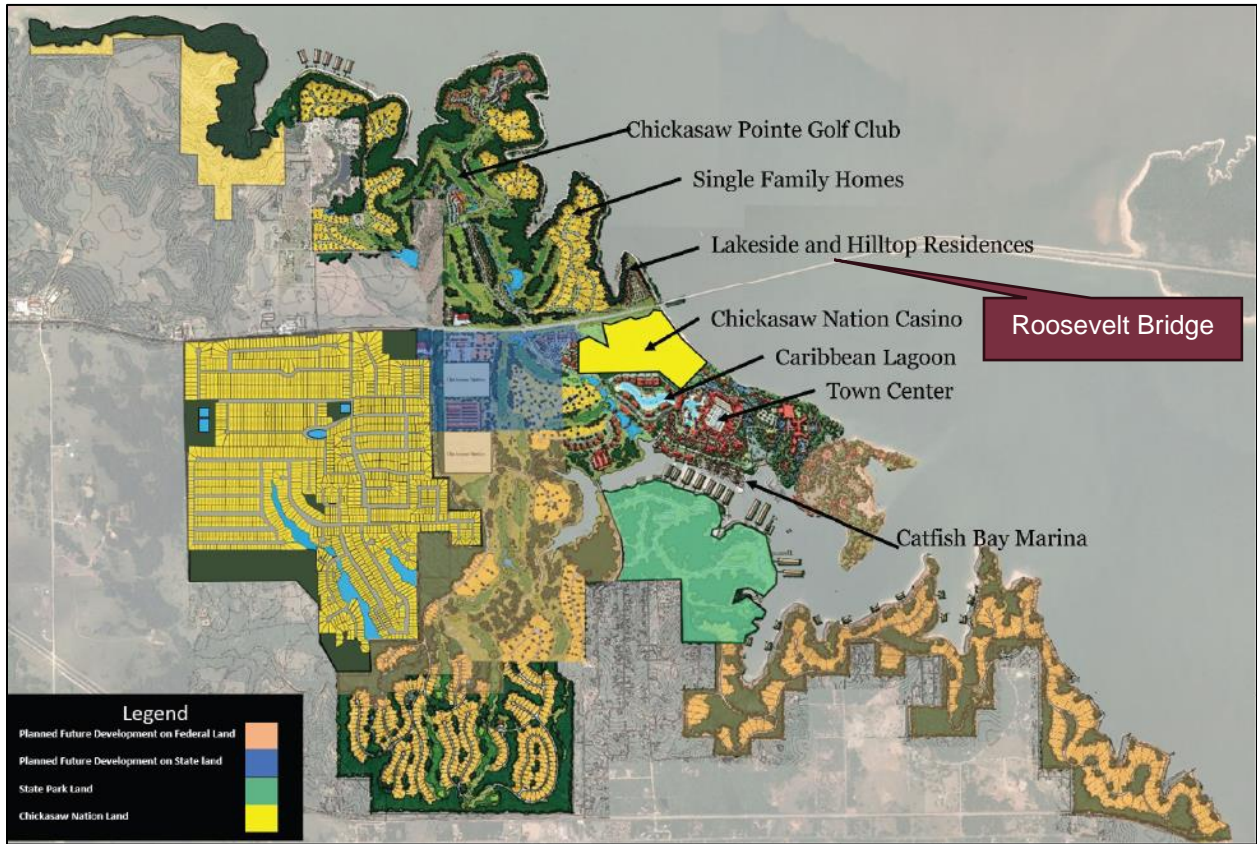


Figure 7: Proposed Pointe Vista Development

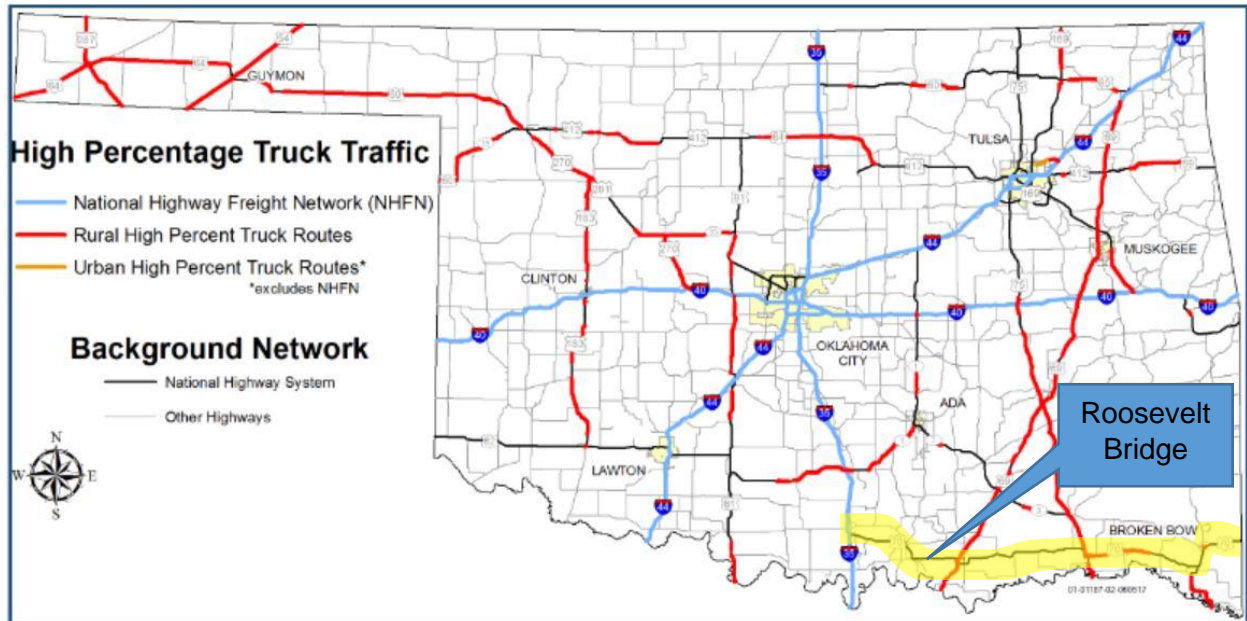


Figure 8: Oklahoma Truck Freight Routes (US-70 highlighted in yellow)

route that runs from Minnesota to Texas, forming an important connection between the Midwest and Dallas ([Oklahoma State Freight Plan 2023-2030](#)). With improvements to US-69 nearing completion near Durant, freight mobility on this corridor will be improved and volumes are expected to increase. I-35 is the highest volume freight route in the state, with over 8,000 trucks per day in 2021.

As discussed in **Section 2**, the existing Roosevelt Bridge does not have sufficient capacity to accommodate the anticipated traffic demand. The City of Ardmore at I-35 and US-70 is the home of several large distribution centers including DOT Foods, Dollar General and Best Buy. Congestion on I-35 is well documented and is the subject of a major study underway by ODOT. As congestion worsens on I-35, US-70 to US-69 becomes a more attractive route for the freight supply chain to the Dallas Metroplex. The Roosevelt Bridge becomes an even more critical transportation link in the light of regional freight patterns and lack of alternative routes. Posting and eventual closure of the Roosevelt Bridge would result in a net detour of approximately 21.5 miles. Providing a new bridge would relieve the costs of thousands of vehicles per day using this lengthy detour.

In addition to improving freight mobility, the Project will enhance recreational and tourism opportunities by providing direct access to Federal land and a State Park. US-70 provides direct access to Lake Texoma State Park and multiple federal recreational areas surrounding Lake Texoma that are owned and managed by the USACE (**Figure 9**). Improving the Roosevelt Bridge and providing an adequate LOS will enhance recreational and tourism opportunities offered by these areas. Without improvement, future congestion on US-70 or detours would discourage (or



Figure 9: Recreational Lands Surrounding the Roosevelt Bridge

eliminate) traffic from reaching Johnson Creek Public Use Area, Lake Texoma State Park, Chickasaw Nation casino, and Pointe Vista development. The Project will provide a separate bicycle and pedestrian crossing of Lake Texoma. Currently, no multimodal accommodation exists, and non-vehicular modes have no safe way to cross. With the multiple recreational sites located in direct proximity to the Roosevelt Bridge, a pedestrian/bicycle path would provide opportunity for visitors to the area parks to access nearby amenities and connect to local hiking trails. While not quantified, it is anticipated that some vehicle trips may shift to non-vehicular modes with the provision of a safe, separated crossing. With the build-out of Pointe Vista, additional recreational trails are planned that could be connected to the lake crossing.

Increasing job opportunities and improving business performance are particularly important for regional economic well-being, as Oklahoma has historically lagged other states in measures of economic well-being such as per capita and median household income. Based on multipliers provided by the Bureau of Economic Analysis' Regional Input-Output Modeling System (RIMS II), the Roosevelt Bridge Project is projected to generate over 1,500 good-paying jobs both in the construction of the project and in indirect employment generated by the project⁸. As a predominantly tribal area classified as HDC/APP, Bryan and Marshall Counties had only 51-58% of the population over 16 in the workforce, with total employment at 16,493 jobs in 2021⁹. An increase of over 1,500 jobs will have a significant impact on local employment, even though not all of these jobs will necessarily be filled with local labor. The Project is also anticipated to result in an increase in economic output of all industries by over 30%, providing direct benefit to the community⁸. The RIMS II model produces multipliers specific to construction projects in the Bryan and Marshall County areas. These multipliers are then applied to the anticipated construction cost of the project. The RIMS II multipliers used in this calculation are provided at [ODOT Roosevelt Bridge](#). The Project will provide good-paying jobs that will support a strong economy and labor market.

4 Climate Change, Resiliency, and the Environment

The Roosevelt Bridge Project will address climate change through the reduction of greenhouse gas (GHG) emissions from motor vehicles and providing opportunity for lower-carbon travel modes such as walking and cycling that does not exist today. In addition, the Project will improve resiliency of the existing roadway and bridge by raising the grade of the bridge and approaches above recently observed flood levels. As discussed in **Section 2**, without improvement, US-70 is anticipated to experience severe congestion and stop and go conditions. These conditions tend to increase air pollution as vehicles spend more time idling. In addition, without improvements the bridge would require load posting and eventual closure. Emissions savings includes avoiding thousands of vehicles using this detour, resulting in a total benefit of \$27.7 million¹⁰. These numbers do not include any reduction in vehicle trips as a result of a shift to pedestrian or bicycle modes. While difficult to quantify, some percentage of vehicle trips could be expected to make this shift once a safe bicycle/pedestrian facility is provided.

Bicycle/pedestrian accommodations could take one of two forms, either rehabilitating the existing bridge for bicycle/pedestrian use or adding bicycle/pedestrian accommodations to the new bridge.

⁸ RIMS II Type II multipliers, US Bureau of Economic Statistics, 2021

⁹ US Census Bureau QuickFacts, Bryan and Marshall Counties, OK [U.S. Census Bureau QuickFacts: United States](#)

¹⁰ In 2022 discounted dollars. See BCA Tech Memo.

The project will address the need for pedestrians and cyclists to safely cross Lake Texoma, where no opportunity exists today. **Figure 10** shows the narrow deck on the existing bridge that currently does not provide space for bicycles or pedestrians. With limited crossings of Lake Texoma, the Roosevelt Bridge project would provide a critical link for non-vehicular users.



Figure 10: Narrow Deck on Roosevelt Bridge

Multiple stakeholders including Oklahoma State Parks, the Lake Texoma Association, and Pointe Vista have expressed an interest in providing bicycle/pedestrian accommodations. The USACE maintains recreational sites and hiking/biking trails across Lake Texoma (see Lake Texoma Recreational Map at [ODOT Roosevelt Bridge](#)). Increasing connectivity across the lake for campers and trail users would not only reduce emissions and further reduce air pollution but would also support one of the USACE’s Recreational Objectives of expanding existing trails and developing new ones.

The Roosevelt Bridge Project will improve the resiliency of at-risk infrastructure by raising the profile grade of the bridge and approaches to reduce flood risk. The entire Roosevelt Bridge Project is located within a mapped FEMA flood hazard area (Zone A/AE, see floodplain map at [ODOT Roosevelt Bridge](#)). As mentioned in the Project Description, historic floods have forced closure of the Roosevelt Bridge for several days. The most recent, in 2015, saw record floodwaters (645.72 feet, the highest since the lake was constructed in 1945), and resulted in a full closure in both directions for nine days. To improve disaster preparedness and upgrade infrastructure in a

Frequency	Annual Frequency	Pool Elevation
0.99	1-Yr	611.0
0.5	2-Yr	621.0
0.2	5-yr	628.8
0.1	10-Yr	636.0
0.05	20-Yr	641.0
0.04	25-yr	642.0
0.02	50-Yr	646.0
0.01	100-Yr	646.5
0.005	200-Yr	647.0
0.004	250-Yr	647.1
0.002	500-Yr	647.3

Figure 11: Lake Texoma Storm Event Summary (USACE)

floodplain, the Roosevelt Bridge Project will construct the new bridge approximately 5-10 feet higher than the existing (depending on location). The elevation of the bridge approaches (causeway) will be raised approximately five feet to 650 feet and the bridge will be raised to 655 feet to allow the low beam of the new bridge (with an assumed 8-foot structural depth) to remain above the water surface elevation at the 200-year storm event. The entirety of the Project will be above the elevation of the 500-year storm (**Figure 11**) and above the elevation of the 2015 flood level. Savings from these resiliency improvements is estimated at \$2.1 million¹¹ The project will be consistent with the Federal Flood Risk Management Standard.

¹¹ In 2022 discounted dollars. See BCA Tech Memo.

5 Equity, Multimodal Options, and Quality of Life

The Roosevelt Bridge Project is within a Historically Disadvantaged Community (HDC) and Area of Persistent Poverty (APP) and will significantly benefit the population in the area. As a critical east-west link, the Roosevelt Bridge provides one of only two crossings of Lake Texoma within the 30 miles between Tishomingo, OK and Denison, TX. Improving the bridge to provide a safe, multimodal crossing with sufficient capacity to meet current and future demand will improve mobility for all users for future generations. While congestion on the bridge is not common today unless there is an incident, future traffic volumes of over 27,000 vpd will far exceed the capacity of the existing two-lane facility. Reliability will be improved with increased capacity providing improved traffic flow, as well as additional bridge width to provide a safer facility, allow collisions to be cleared more quickly, and provide emergency responders better access. Today, if there is a collision on the bridge, there is no room to clear vehicles from the roadway and traffic can quickly back up, causing delay for travelers and acting as an obstacle for police and ambulances trying to reach the scene. Regional emergency care and other essential services such as jobs, healthcare, and post-secondary schools are concentrated in Durant, approximately 12 miles east of the Roosevelt Bridge. The bridge serves as a critical link for access to these services for residents in Kingston, Madill, and other communities on the west side of Lake Texoma.

As discussed in **Section 4**, the Project will provide accommodation for pedestrians and bicyclists where none exists today. It is desirable that these users have a safe, separated space to travel separately from vehicles. As a major recreational destination also serving to manage water and wildlife resources, Lake Texoma would benefit from a potential reduction in vehicle trips that would reduce emissions and provide better connectivity for its visitors. With the multiple recreational sites located in direct proximity to the Roosevelt Bridge, a pedestrian/bicycle path will provide opportunity for visitors to the area parks to access nearby amenities and connect to local hiking trails.

Lake Texoma sees more than 6 million visitors per year. The lake offers 580 miles of shoreline with two wildlife refuges, two state parks, 54 USACE-managed parks, and 23 commercial campgrounds¹². The lake's primary attractions include camping, boating, fishing, and hiking (**Figure 12**). As primarily public land with abundant access, Lake Texoma provides a relatively affordable recreation option for residents of Oklahoma, Texas, and surrounding states. Given the location of Lake Texoma within an HDC/APP, providing bicycle and pedestrian accommodations on the bridge will increase mobility options for local underserved communities. It would also allow park users to cross this part of Lake Texoma without having to drive. With Catfish Marina on the west end of the bridge, offering food, gas, and other services, users would be able to access these destinations on the new bridge. With a safe, separated pedestrian and bicycle facility, the

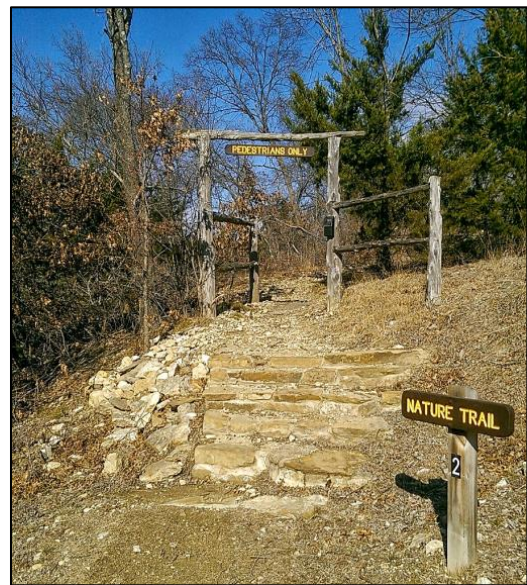


Figure 12: Hiking Trail at Lake Texoma

¹² [Tulsa District > Locations > Tulsa District Lakes > Oklahoma > Lake Texoma \(army.mil\)](https://www.army.mil/locations/tulsa-district-lakes/oklahoma-lake-texoma)

bridge could become a recreation destination in and of itself, offering a unique perspective on Lake Texoma not often experienced outside a vehicle.

According to the [USDOT Equitable Transportation Community \(ETC\) Explorer](#), the area is also disadvantaged due to transportation insecurity and social vulnerability. Transportation access, cost burdens, and safety barriers are all above the 65th percentile nationwide. Additional time and cost caused by unreliable and deficient infrastructure places a disproportionately high burden on these already overburdened communities. Social vulnerability is high based on high poverty and high rates of disability, lack of insurance, lack of internet, and poor housing. The Project will improve transportation safety and will avoid further impacts of access and cost burdens by providing a modern, reliable bridge before load postings and closure cause costly detours. Affordable bicycle and pedestrian options will also be added.

ODOT participates in a state comprehensive plan to promote equal opportunity, including removing barriers to hire and preventing harassment on work sites. ODOT requires contractors to comply with the Equal Employment Opportunity (EEO) Program requirements and create an inclusive environment. To further the initiative of inclusion and equity, ODOT set a 2023-2025 Triennial DBE goal of 16.0% and efforts to promote the program resulted in the FFY 2023 goal attainment of 17.33%. These efforts increased total dollars to DBEs almost 40% from 2022 to 2023, going above and beyond the federal requirement. ODOT was able to reach this goal by providing supportive services to DBEs ([ODOT DBE Information](#)). Specifically, ODOT provides an on-boarding program for DBEs to assist them in becoming certified in the state and then upon certification provides training and further assistance. Oklahoma's project-level goal setting is data-driven, utilizing current DBE certification information and historical DBE pay item performance to identify the project goal achievement possibility.

ODOT completes contractor compliance reviews on all projects to monitor the utilization of minorities and women on ODOT projects. Contractors must practice affirmative action in recruiting and hiring. Contractors must determine the availability of minority and women within their recruitment area to determine the degree to which action must be taken to seek minority and female recruits. Each contractor must appoint a responsible company official to serve as their EEO officer. Additionally, contractors must develop and post complaint procedures and promptly investigate all alleged complaints of discrimination within a reasonable timeframe.

ODOT has begun engaging stakeholders in the planning of the Roosevelt Bridge Project. Initial stakeholder meetings have been held with local elected officials and agencies including the USACE, Chickasaw Nation, Choctaw Nation, Oklahoma State Historic Preservation Office, Oklahoma Archaeological Survey, Oklahoma State Parks, Lake Texoma Association, and nearby Chambers of Commerce. These agencies were briefed on the existing condition of the bridge and the potential alternatives to provide a safe crossing of Lake Texoma that meets future demand. Alternatives that preserve the historic integrity of the existing structure as well as replacement alternatives have been presented. Stakeholder meeting notes are included at [ODOT Roosevelt Bridge](#). The project also has widespread support from local agencies and elected officials. Letters of support are included with this application.

6 Innovation Areas: Technology, Project Delivery, and Financing

Innovative Technology

ODOT commits to providing 3D computer models of the project as part of the contracting process. This technology will allow contractors to utilize the most recent GPS controlled equipment with Automated Machine Guidance in the construction process. Using and following the 3D model will minimize the potential for human error in establishing grades and elevations while improving efficiency in earthmoving during the construction process. These efficiencies improve quality while reducing the overall cost of construction. E-Construction methods will include mobile inspection and video monitoring and reporting of construction progress.

ODOT will incorporate stipulations that the contractor can make use of embedded strain gauges to serve as maturity meters in newly placed concrete. Current wireless technology allows for smart-phone connection or remote logger with cloud connections to track strength of concrete. The readings from these meters would be utilized by the contractor and ODOT to make critical real-time decisions during concrete curing. This allows for removal of concrete forms and opening to traffic earlier than conventional time constrained specifications.

Innovative Project Delivery

Progressive Design Build

ODOT intends to deliver the Roosevelt Bridge Project as the state's first Progressive Design Build (PDB) project. PDB is an alternative delivery procurement method that uses a primarily qualifications-based selection process to select a Design-Builder. Once selected, ODOT and Design-Builder then progress towards an agreed upon design and construction price (thus the term "progressive"). The complexity of the US-70 over Lake Texoma Bridge has many features that will benefit from early owner and contractor collaboration, including the size of the drilled shafts, the depth of the lake, the length of the bridge, and the potential for Accelerated Bridge techniques. PDB delivery allows for:

- Early selection and involvement of a Design-Builder to ensure that design and construction related decisions are informed by cost, schedule, risk, and other input from the Design-Builder.
- Project cost and schedule development and refinement during the preconstruction phase.
- Design advancement and risk mitigation which improves cost and schedule accuracy.
- Participation of an independent cost estimator (ICE). The role of the ICE is to develop independent cost estimates for the project that validate the costs submitted by the Design-Builder at pricing milestones.
- Incremental progression of the project over two phases (preconstruction and construction) with an option for ODOT or the Design-Builder to terminate, i.e., "off-ramp", if the project is not progressing to the mutual satisfaction of the parties.

PDB allows ODOT enhanced ability to minimize unnecessary contingency during the preconstruction phase. If not needed, contingency can create a windfall to the contractor. If the contractor doesn't estimate contingency correctly, it can cause shortfalls which have a significant negative impact on the overall health of the project and can result in delays and disputes. Use of PDB will improve the return on investment for ODOT because more project funding will go to actual design and construction instead of contingency which may or may not be needed. PDB is anticipated to result in time savings in project delivery, as designer and contractor coordination is

initiated early in the process and these entities collaborate with the owner to develop contract requirements. Early constructability input from the contractor can mitigate long lead times and allow for expedited delivery. Permitting is streamlined and the potential for National Environmental Policy Act (NEPA) reevaluation is minimized.

While not calculated in the BCA for the Project, the benefits of the PDB delivery method were quantified. Compared to a traditional Design-Bid-Build delivery for the Roosevelt Bridge Project, PDB is anticipated to save ODOT approximately 16 months. This time delay would result in increased costs due to inflation. In general, costs of materials and labor are anticipated to increase year over year, resulting in a higher total project cost the longer a project takes to deliver. Using the FHWA's National Highway Construction Cost Index (NHCCI), construction costs increased by 15.9% from Q2 of 2022 to Q2 of 2023¹³. If increasing the delivery schedule of the Project by 16 months meant 15.9% per year increase in cost, this would result in a substantial overall Project cost increase:

- Cost assuming project is delivered in 4 years (from PDB contract award to construction completion as presented in this application): \$250,633,846
- Cost assuming project is delivered in 5.3 years through traditional Design-Bid-Build: \$306,097,688
- Cost increase: \$55,463,842

Accelerated Bridge Construction

ODOT will consider Accelerated Bridge Construction (ABC) techniques for the new bridge over Lake Texoma. The use of ABC techniques has the potential to shorten construction time, reduce construction costs, reduce traffic impacts, improve worker safety, and improve the quality control of materials. Float-in Modular Spans, Precast Concrete Pier Caps and Precast Concrete Deck Panels are some of the techniques that could be further studied for benefit to the project. This potential ABC method would improve safety of the construction laborers by removing many activities from the hazards associated with lake construction. Construction time would be reduced because the superstructure can be constructed at the same time as the substructure. Repetition, efficiency, speed, safety, and control could be some of the benefits of this method.

Innovative Financing

TIFIA and RETRO Funding

The size of the Roosevelt Bridge Project demands that ODOT pursue alternative funding sources to construct the project before potentially severe consequences force closure of the bridge. On other major projects, phased construction with separate projects of independent utility allows ODOT the ability to spread out project funding over multiple years; however, this project must be built as one and has a very high upfront cost. In addition to MPDG funds, ODOT intends to pursue a TIFIA loan to overcome this challenge. This Project will be the single largest infrastructure investment in rural Oklahoma for the foreseeable future. In addition, the Oklahoma legislature have appropriated \$200 million in the [Rural Economic Transportation Reliability and Optimization Fund](#) (RETRO) for projects to enhance economic development in rural areas. These funding mechanisms demonstrate Oklahoma's commitment to improving safety and enhancing economic vitality in rural areas.

¹³ [National Highway Construction Cost Index 2023 Q2 \(dot.gov\)](#)