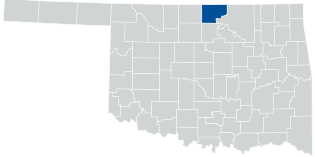
FY 2023-2024 Bridge Investment Program

Hunnewell Bridge Replacement Planning Project

Kay County, Oklahoma
October 1, 2024



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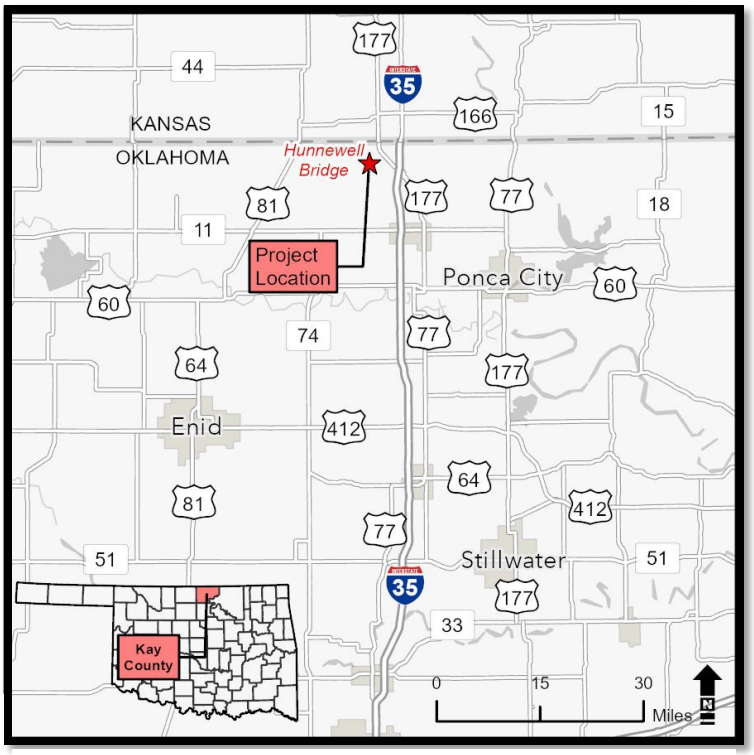
I. Basic Project Information

Project Description

Kay County, Oklahoma is seeking $279,158 in federal funding from the Bridge Investment Program (BIP) to complete planning activities for the Hunnewell Bridge Replacement Planning Project. When originally built in 1925, the Hunnewell Bridge provided a critical north-south connection over the Chikaskia River in north-central Oklahoma **(Map 1)**. In 2009 the bridge fell into poor condition and was classified as structurally deficient. A flood in 2019 finally forced Kay County to close the bridge due to poor substructure conditions. (See Resolution of Closure in the Appendices.) The Hunnewell Bridge is a 223-foot-long concrete arch bridge with three 75-foot spans and has been determined eligible for listing in the National Register of Historic Places (NRHP). The bridge is just under 16 feet wide, providing insufficient width to carry two-way traffic. Prior to closure, the Hunnewell Bridge carried 50 vehicles per day with 15% trucks. The bridge was an important connection to productive agricultural land, Lake Blackwell recreational area, and the major regional and interstate routes of US-177 and I-35. These routes connect the residents of the project area to the metropolitan areas of Wichita, KS (57 miles north) and Oklahoma City (110 miles south). Closure of the bridge has impacted access for local residents and emergency services as well as the economic productivity of the region.



Map 1: Project Location Map

History and Challenges

Due to chronic funding shortages, Kay County has been unable to make the necessary repairs to keep the Hunnewell Bridge in service. The closure of the bridge in 2019 has created a service gap in this rural area of Kay County. Residents, school buses, first responders, and farmers must now detour approximately 11.4 miles to the closest bridge over the Chikaskia River. First and foremost, this poses a safety issue for the public because it increases emergency response times to incidents in the area. According to Kay County Emergency Management's Director, Holly Wallen, prior to closing of the bridge, response times to emergencies within the immediate proximity of the bridge was 35 minutes, and

with the closure of the bridge, response time has increased to 55 minutes.[1] This is a 57% increase in emergency response time. Use of the detour also increases collision exposure to travelers including children on school buses. From 2018-2022 crash data shows there was one crash on N 108th St., the street on which the bridge is located, compared to 18 on the detour route. **(See Appendices.)** Closure of the bridge also decreases economic productivity of rural farmland and creates additional transportation burdens for an area of persistent poverty. The detour creates longer distances and travel times to reach agricultural and wind farms and oilfield activity, increasing transportation operating costs for the agricultural and energy sectors. The additional time and distance it takes to arrive at destinations such as schools, medical clinics and grocery stores decreases the transportation equity of the census tract. A more detailed explanation can be found under the **Merit Criteria** of the narrative.

Figure 1: Debris Field in the Chikaskia River

The Hunnewell bridge is in a FEMA flood hazard area **(See Map 6 in Merit Criteria)** and has a history of closing during flood events. Prior to 2019 when a flood disaster caused permanent closure, overtopping of the bridge was a common maintenance issue. According to County officials, the bridge would overtop every couple of years and cause closures lasting for several days. These closures impacted the traveling public and placed additional maintenance costs upon Kay County.

The bridge also acts as a barrier, trapping fallen trees and debris during storm events (**Figure 1**). Fallen trees and other debris continue to pile up around the bridge. With every high-water event the condition of the bridge deteriorates and the build-up of debris behind the bridge continues to cause erosion of the adjacent farmland. (**See Figure 5 in Merit Criteria.**)

Kay County intends to use BIP planning funds to complete the necessary studies and analysis to replace the existing bridge. This includes a bridge feasibility study and alternatives analysis to support a Section 4(f) evaluation, survey, hydrology & hydraulic study, geotechnical investigations, and public involvement, all leading to feasibility plans. The end goal of the project aligns with BIP program goals to improve the safety, efficiency, and reliability of the movement of people and freight. Ultimately the project will remove a bridge in poor condition, increase the clear roadway width for safer crossings, and ensure the bridge can accommodate future flood events through improved hydraulic capacity.

[1] H.Wallen, Director of Kay County Emergency Management, August 2024, hwallen@courthouse.kay.ok.us , Emergency Management | Kay County, OK

Project Location

The Hunnewell Bridge is located in northwest Kay County, OK on N. 108th St. over the Chikaskia River (**Map 1**). It is approximately 1.6 miles west of US-177 and 5.7 miles west of I-35, two major transportation corridors in and through Kay County. The closest urban area, as defined by the 2020 U.S. Census, to the project is Blackwell, OK, approximately 14 miles southeast from the bridge with a population of 6,072[2]. According to the USDOT's Grant Project Location Verification site, the Hunnewell Bridge is in Census Tract 40071001302, is defined as an Area of Persistent Poverty (APP) and is considered a rural area. The census tract is not considered a Historically Disadvantaged Community (HDC) on the USDOT site but is shown as partially disadvantaged by the Climate and Economic Justice Screening Tool (CEJST) [3], and though the project location is outside of the designated HDC area, residents within the surrounding HDC locations would be beneficiaries of the Project. Total population for the census tract itself is 3,987 and of the entirety of Kay County is 43,700.[4]

Parties

Lead Applicant

Kay County is the applicant for the project. The County has a history with both the Oklahoma Department of Transportation (ODOT) and Circuit Engineering District 8 (CED 8) on road and bridge projects. Examples include design and construction of bridges and approaches of a two-lane bridge on W. Hubbard Rd. and grade, drain, and surface of a 1.3-mile section of Peckham Rd., a two-lane road that includes two bridges east of I-35. Both projects were funded using both federal and state funds. In addition, the county has experience managing FEMA grants, which follow the same grant administrative requirements as USDOT BIP grants (2 CFR 200). The County also follows the State of Oklahoma Competitive Bidding Act of 1974. This act refers to the regulations governing the procurement process for public contracts. ODOT oversees the construction of all county projects built with state funds and ensures these projects meet applicable state and federal requirements.

Other Public and Private Parties

Oklahoma Circuit Engineering District 8 (CED 8) will be involved in the financial support, planning, design, and future construction of the project. In 1992, CEDs were formed by Oklahoma state law. The law allowed counties to come together as a cooperative and provide efficiencies that are not available to an individual county. The matching funds for the Project will come from CED 8's allocation of ODOT's County Improvements for Roads and Bridges (CIRB) fund. Each CED across the state produces a 5-year plan showing how CIRB and other funds will be programmed based on local priorities. ODOT compiles the CED plans into a Statewide 5-Year CIRB Plan which is updated annually. Individual counties are then responsible for developing their CIRB-funded projects. CED 8 has experience managing USDOT grants, most recently with a FY 2022 BIP Bridge grant for a bridge bundle in Grant County. A letter of funding commitment from CED 8 can be found in the Appendices.

[2] U.S. Census Bureau QuickFacts: Blackwell city, Oklahoma
[3] CEJST Screening Tool
[4] United States - Census Bureau Profile

The project will be let by ODOT and ODOT will provide construction oversight for the project. ODOT's experience with federal reimbursement programs including discretionary grants will ensure CED 8 complies with all federal requirements. ODOT routinely receives and expends Federal-aid highway program funds under 23 U.S.C. and provides assistance to the CEDs in administering these funds. ODOT has also been awarded several discretionary grants from various programs, including BIP, and is familiar with developing grant agreements, administering the funding, and providing the necessary reporting. ODOT is currently assisting CED 8 with the BIP funding they were awarded in 2022. ODOT's Contract Compliance Division oversees the Department's Disadvantaged Business Enterprise (DBE) program and ensures that ODOT and all its consultants and contractors comply with applicable Civil Rights requirements.

II. National Bridge Inventory Data

NBI data for the Hunnewell Bridge (NBI 01630) is provided in the application template. An exception to the NBI data is also noted in the application template.

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

The estimated cost of the planning project associated with the Hunnewell Bridge project is $348,948 (see **Table 1**). The future eligible cost is for the following planning activities and does not include any previously incurred expenses:

- Bridge feasibility study
- Public Involvement
- Section 4(f) evaluation
- Survey
- Hydraulics & hydrology analysis
- Geotechnical investigations
- Feasibility plans

Kay County is requesting $279,158 in BIP funds with the remainder of the Project cost coming from CIRB appropriated state funds **(Table 1)**. No other U.S. Department of Transportation (USDOT) discretionary grant funding for this project has been previously requested or received and Kay County has no current plans to request funding from any other federal program.

Funding for the local match will come from ODOT's County Improvements for Roads and Bridges (CIRB) fund. The CIRB fund consists of state dollars specifically set aside for road and bridge improvements on Oklahoma's county system. The CIRB fund is allocated equally to ODOT's eight districts. CED 8 has committed $69,790 of its CIRB allocation as matching funds for this BIP grant request. The Hunnewell bridge is currently programmed for design in 2029 in the FY-2024-2029 CIRB

Plan. If the grant is awarded, the project will be advanced in the Plan so that the matching funds will be available in 2025. A funding commitment letter from CED 8 can be found at the Project webpage.

Hunnewell Bridge Replacement Planning Project Budget				
Use of Funds	**ODOT CIRB Funds**	**Other Federal Funds**	**BIP Funds**	**Total Future Project Cost**
Feasibility Study and Alternatives Analysis	$18,309	$0	$73,236	$91,545
Section 4(f) Evaluation	$4,308	$0	$17,232	$21,540
Public Involvement	$4,308	$0	$17,232	$21,540
Survey	$10,770	$0	$43,080	$53,850
Hydrology & Hydraulics	$8,616	$0	$34,464	$43,080
Geotechnical Investigations	$17,232	$0	$68,928	$86,160
Feasibility Plans	$12,924	$0	$51,696	$64,620
Subtotal:	$58,158	$0	$232,632	$290,790
Contingency (20%)				**$58,158**
TOTAL	**$69,790**	**$0**	**$279,158**	**$348,948**
Percent (%)	20%	0%	80%	100%

Table 1: Project Budget

IV. Merit Criteria

Program Goals

This BIP planning grant will assist Kay County to determine the feasibility of the Hunnewell Bridge Project and provide the necessary studies to establish an appropriate solution that would ultimately lead to a BIP Bridge construction project and ultimately achieve the following BIP program goals:

To improve the safety, efficiency, and reliability of the movement of people and freight. This planning grant is the first stage in the long-term goal of delivering a safe, efficient, and reliable bridge that will reduce travel time and operating costs for people and freight. Before the bridge was closed, it was neither safe due to the conditions of the super and substructures, and it was not reliable due to the increased frequency of overtopping.

To improve the condition of bridges in the United States by:

1. **Reducing the number of bridges that do not meet current geometric design standards or cannot meet the load and traffic requirements typical of the regional transportation network**. The planning grant will look at the feasibility of updating the bridge to two driving lanes with standard-width shoulders that meet today's design standards. Safety features such as

guardrails will also be evaluated. The new bridge will be designed according to current load ratings to make it safe for school buses and agricultural and energy sector equipment and will provide a 75-year design life.

2. **Reducing the number of person miles traveling over bridges that do not meet current design standards or cannot meet the load and traffic requirements typical of the regional transportation network**. The ultimate desire is to construct a bridge that will meet current design standards and can meet the load and traffic requirements. This end goal will decrease the number of people in Kay County traveling on bridges rated as poor and structurally deficient.

To provide financial assistance that leverages and encourages non-Federal contributions. The Project will leverage state funds currently available for this project.

Project Description

In 2019, a flooding event caused the permanent closure of the Hunnewell Bridge. Temporary closure of the bridge had become a reoccurring event over the past decade due to the increase in high water events. The last inspection report rated bridge #01630, the Hunnewell Bridge, at 0, meaning it is an inoperable bridge. The bridge rail, transition, approach rail, and approach ends are all rated "0" substandard. In addition, the width is only 15.8' wide. The current bridge does not include any railings and does not meet AASHTO standards. Field review also indicated that the exposed foundations are experiencing significant scour. Lastly, as seen in **Figure 2**, the deck has completely eroded and is impassable. BIP Planning funds will be used to conduct a bridge feasibility study and alternatives analysis to support a Section 4(f) evaluation, survey, hydrology & hydraulics, geotechnical investigations, and public involvement, all leading to feasibility plans.

Figure 2: Driving surface erosion due to flooding, 2019

This planning project will evaluate a Bridge Project that will, when constructed, provide a safe crossing of the Chikaskia River that meets all current loading factors and design criteria, improve the efficiency and reliability of the movement of people and freight, increase resiliency, and reduce the additional transportation costs currently born by the disadvantaged communities that are forced to use an 11.4-mile detour due to the closure of the bridge. The project will not only meet the BIP Program Goals, but it is anticipated to be highly responsive to USDOT's selection criteria for Bridge projects. More detail on these criteria is provided below.

When originally built in 1925, the bridge's purpose was to provide connectivity in rural Oklahoma. It was a critical north-south connection. The State of Oklahoma was originally surveyed for a systematic subdivision into a rectangular grid system, referred to as section-line roads. The bridge provided a connection over the Chikaskia River, to productive agricultural land, an active oilfield, a growing

sustainable wind energy sector, to Lake Blackwell recreational area, and to US-177. US-177 bisects I-35, a major national transportation route that connects the residents of the project area to the metropolitan areas of Wichita, KS. (57 miles north) and Oklahoma City (110 miles south). Buses for Newkirk School District also used the bridge to transport students to and from their houses to school.

Criterion #1: State of Good Repair

Figure 3: Load cracks on Hunnewell Bridge

The Hunnewell Bridge was built in 1925 using a concrete-cast-in-place method with 3 x 75' concrete arch spans. The bridge is 223' in total structural length and 15.8' in width, curb to curb, has no shoulders, and no guardrails. The bridge has a sufficiency rating of 17.90, is rated as poor, and has been closed since 2019 after major storm events caused much of the deck of the bridge to be washed away. (**See Figure 2.**) Due to the condition of both the super and substructures, it was deemed that short-term emergency repairs would not suffice for safe daily use.

The Hunnewell Bridge was in use for 94 years before it deteriorated to the point of closure. As shown in **Figure 2**, there is fill between the two walls (spandrels) of the bridge and the fill is topped with an asphalt driving surface that has nearly washed completely away. In addition, as can be seen in **Figures 1 and 3**, there is cracking, delamination and scaling of the concrete on the spandrels of the arch spans. Additionally, there is debris accumulation on the roadway surface of the bridge and in the arch openings which reduces the hydraulic capacity of the crossing. The substructure photos in **Figure 3** show cracks that may affect the overall stability of the structure in the long-term, which could ultimately lead to collapse. In addition, there are signs of scour on the bridge abutments. As seen in **Figure 4**, the wingwall is cracked where it attaches to the substructure and has begun to separate from the bridge. According to the bridge's Historical Condition Rating, the superstructure has been rated a 5, at risk of becoming structurally

Figure 4: Cracked Wingwall

deficient, since 1996, and the substructure has been rated between a 4 and 2, structurally deficient, since 2009. Prior to closure, the bridge was load posted for the mandatory load rating vehicles.

The existing bridge is a 1-lane bridge serving 2-way traffic flow on N. 108th St. which is classified as a rural major collector. Before the bridge closed, ADT was 50 vehicles per day (vpd) with 15% trucks. By 2042, ADT is estimated to be 80 vpd. The new bridge will provide a structure designed to meet today's load ratings and will have two driving lanes and standard width shoulders to accommodate existing and future traffic volumes and meet today's design standards. This new bridge will provide a safe crossing that will increase efficiency and reliability for people and freight that currently must use a 11.4-mile detour. Kay County estimated maintenance costs to be $5,000 annually, pre-2019. If a high-water event occurred that year, maintenance costs could be as high as $27,500 as was the case after the 2008 flood. Construction material and costs have significantly increased since 2008, and when using the U.S. Department of Labor's Consumer Price Index, this calculates to $39,902 in 2024 dollars. From 1957 to 2019, there have been 23 major flood events on the Hunnewell bridge.[5] This averages out to about 1 major flood event every 2 ½ years. Maintenance for high water events included bank stabilization, debris removal, and gravel loads for the bridge and bridge approaches. A new bridge is anticipated to result in maintenance savings over the life of the project. The new bridge would be raised to 100-year storm events to pass without overtopping and would be sized appropriately per the hydraulics & hydrology analysis.

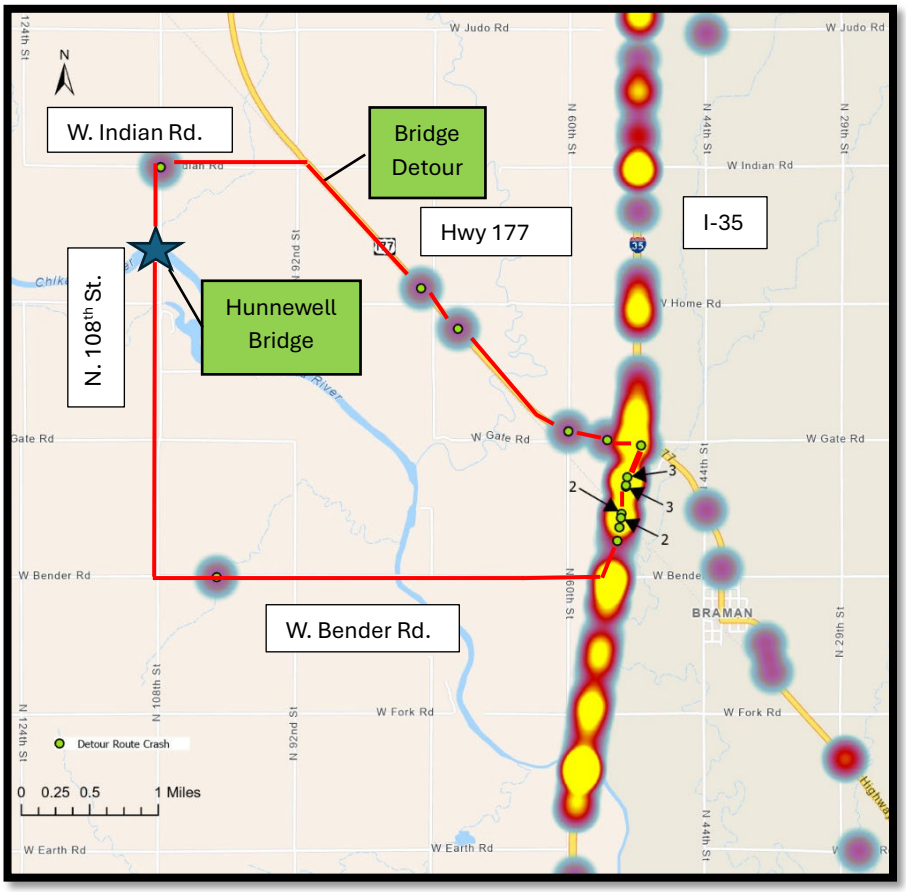
Kay County is committed to maintaining the Hunnewell Bridge in a state of good repair. Maintenance costs will be funded via the County Bridge and Road Improvement (CBRI) Fund which comes from a portion of the state's gasoline, diesel, special fuel, and gross production tax on oil. It is apportioned monthly to the counties by the County Road (CR) factor which is updated yearly by ODOT and provided to the Oklahoma Tax Commission. The CBRI fund is statutorily available for bridge and road inspection, engineering, right-of-way and utility costs, pavement overlays, and roadway-class culvert replacements[6].

Criterion #2: Safety and Mobility

The traffic fatality rate for Kay County, with a total population of 43,700, is 16.02 (per 100,000 people). Even though this rate is lower than the national median value of 18.15 for all counties, Kay County is labeled as a county with a high fatality rate but with fewer people[7]. Because of this, Census Tract 40071001302 is considered disadvantaged for traffic safety, at the 89th percentile, per USDOT's Equitable Transportation Community Explorer.[8] In general, fatality rates per 100 million vehicle-miles traveled are 1.7 times greater in rural areas.[9] As can be seen in **Map 2**, there is a higher exposure to potential crashes via the detour compared to the normal route if the bridge were open. Data from the Oklahoma Department of Transportation's Statewide Analysis for Engineering & Technology (SAFE-T) show there was one crash on 108th St N., within ½ mile from the Hunnewell Bridge, but a total of 18

[5] Per Kay County maintenance records on file
[6] Oklahoma Administrative Code Title 69 § 665 (oscn.net)
[7] National Roadway Safety Strategy, *Our Nation's Roadway Safety Crisis*, Story Map, Our Nation's Roadway Safety Crisis (arcgis.com)
[8] ETC Explorer - State Results | USDOT Equitable Transportation Community (ETC) Explorer (arcgis.com)
[9] Rural Transportation Statistics | Bureau of Transportation Statistics (bts.gov)

crashes on the detour route between 2018-2022. Of the 18 crashes, one involved incapacitating injury. (**See Appendices.**) The detour requires local traffic, including school buses and farm equipment to use Hwy 177 (60 mph) and I-35 (75 mph), that have higher posted speed limits than that of the county roads (55 mph).



Map 2: 2018-2022 Heat Map of Crashes and Detour Route

Closure of the Hunnewell Bridge has resulted in a 11.4-mile detour for all traffic. The detour increases exposure risk for a potential accident. This risk is estimated to affect 18,650 vehicles per year that would otherwise use the Hunnewell Bridge, including emergency vehicles and school buses. The lag in first responders' response time to emergencies due to the closure of the bridge is a major safety issue. Anytime there is a bridge closure, it causes a ripple effect for public safety. The 11.4-mile detour has increased first responder time by 57%. Before 2019, the average time it took for emergency responders to arrive at a destination within proximity of the bridge was 35 minutes. Now, according to Kay County Emergency Management, response time is 55 minutes.[10] Depending on the emergency, an extra 20 minutes could be the difference between life or death.

The closure of the bridge has prevented single occupancy vehicles, school buses, and trucks from using the bridge, but all-terrain vehicles (ATVs) continue to ignore the safety warnings. ATVs drive over the bridge, and even park on top of the bridge. This poses a high risk due to the poor condition rating of the bridge. Because it is a continual struggle to keep people and ATVs off the bridge, the county has had to install even more substantial barriers, and even though this may prevent ATVs from accessing the bridge, it does not fully prevent people from reaching the bridge to jump off it.

Even though Kay County's traffic fatality rates are lower than the national average, the county believes one death is too many. In addition, Kay County's goals align with USDOT's Safe Systems Approach and have firm convictions that safety is proactive. The county is committed to the responsibility of creating

[10] H. Wallen, Director of Kay County Emergency Management, August 2024, dhesson@courthouse.kay.ok.us , Emergency Management | Kay County, OK

a safe transportation system rather than being reactive. Kay County does not believe a fatality has to happen first before proven safety countermeasures are planned for and implemented. Per state statute, the default speed limit on all county roads is 55 mph. The Board of County Commissioners initiated and approved a resolution to reduce the speed limit on all county roads to 45 mph. (See Appendices for Resolution.) This was done for safety purposes. Kay County did not think 55 mph was a safe speed on two-lane county roads. Promoting safer speeds on all roadways is one of the five pillars of the Safe Systems Approach under the National Roadway Safety Strategy. By the time this project is to kick-off, the lower speed limit signs will have already been installed.

The Project aligns with a publicly approved transportation plan that includes a public involvement component. The Kay County 2035 Long Range Transportation Plan (LRTP) was undertaken by Northern Oklahoma Regional Transportation Planning Organization (NORTPO) for the purpose of establishing a regional concept to address transportation programs. An objective of the LRTP is to, "improve the safety and security of the transportation system by implementing transportation improvements that reduce fatalities and serious injuries as well as enabling effective emergency management operations." Approved policies that support this objective include, "Improve the transportation infrastructure to better support emergency response and evacuations and coordinate county and regional actions with the Statewide Highway Safety Plan." Challenges facing the transportation system in Kay County include a "Lack of significant financial resources necessary to make improvements as necessary and a lack of interconnection of transportation systems."[11]

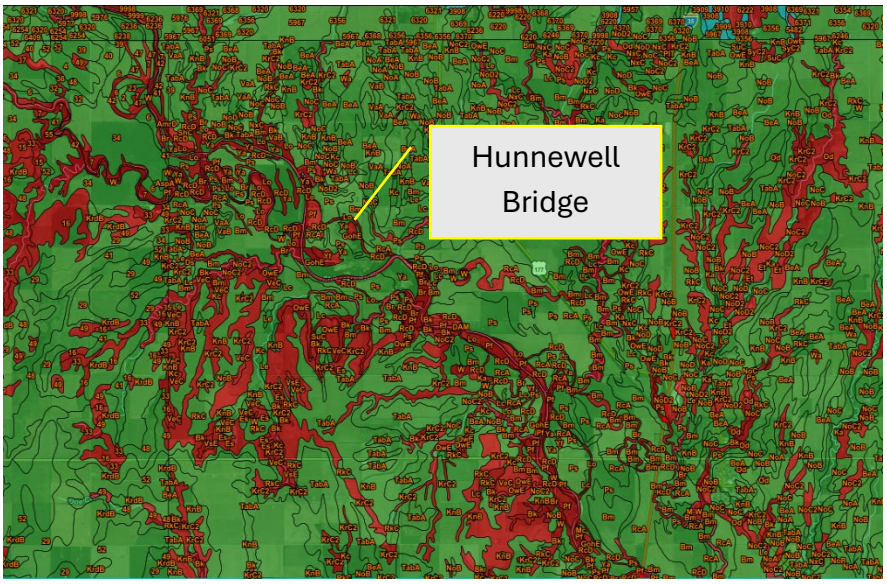
The end-goal of the Project will address known safety concerns posed by a single lane bridge on a two-way roadway that is rated poor and geometrically obsolete as well as documented safety risks posed by the current detour. The new bridge will provide a structure in good condition that meets today's structural and geometric design standards, including standard width for two-way traffic flow. Safety features such as pavement markings and railings will be considered in the study. Travel times and operating costs will be reduced for both residents and industry within the project area in addition to the county-wide transportation network, ultimately, improving mobility.

Criterion #3: Economic Competitiveness and Opportunity

Rural Oklahoma is an economically productive, vital part of the state and the nation. In 2022, Oklahoma generated approximately $9.8 billion in agricultural cash receipts, roughly 4.06% of State GDP.[12] According to the Natural Resources Conservation Service (NRCS) Land Use and Cover Inventory Database, 63% of Kay County is prime farmland.[13] **Map 3** shows the prime farmlands surrounding the Hunnewell Bridge. According to the Kay County Assessor's property ownership database,[14] properties are bisected by the river, or farms on both sides of the river are owned by the same families. These families can no longer use the Hunnewell Bridge to access their lands and must use a 11.4-mile detour,

[11] Kay-County-2035-LRTP.pdf (nortpo. org), pp. 9-10
[12] https://economic-impact-of-ag.uada.edu/oklahoma/
[13] LUCID (nrisurvey.org) (2017 data)
[14] Map - actDataScout

including trips with large agricultural vehicles. The modern tractor top s out at 25 mph.[15] Time is money when harvesting or tilling fields, and the detour causes farm equipment to take twice as long to get to the fields in comparison to a passenger vehicle driving at 55 mph (legal speed limit) to arrive at the same destination. The detour also affects other vehicles in the agricultural supply chain including trucks that transport products to market. It is estimated that approximately 7-8 trucks used the bridge every day before it was closed. This number is expected to grow to roughly 12 per day by 2042. The bridge was only 16 feet wide which did not allow both directions of traffic to use the bridge at the same time. Trucks and other large vehicles in particular would have to wait to ensure the bridge was clear before crossing. The new bridge will provide two 12-foot lanes to allow north and southbound traffic to use the bridge safely.



Map 3: Map of Prime Farmlands (in green) surrounding the Hunnewell Bridge (NRCS)

Agricultural productivity is also negatively affected by the existing bridge. Due to the inadequate openings in the concrete arch spans, debris tends to block river flow, increasing downstream velocity. This has led to the loss of adjacent farmland due to erosion **(Figure 5)**. The planning study will conduct a hydraulics & hydrology analysis to determine the appropriate hydraulic opening size for the new bridge. A new bridge with adequate openings would alleviate this issue. The debris load in the river would also be a consideration in the design of the new bridge.

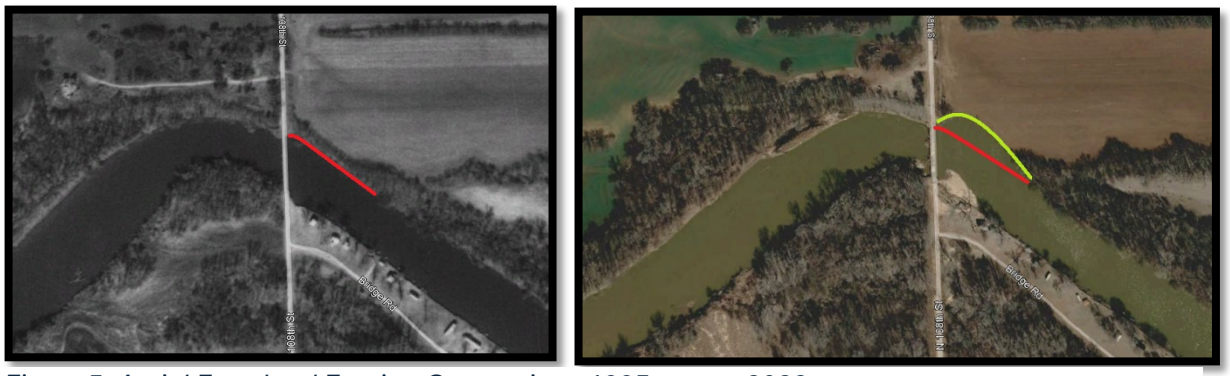
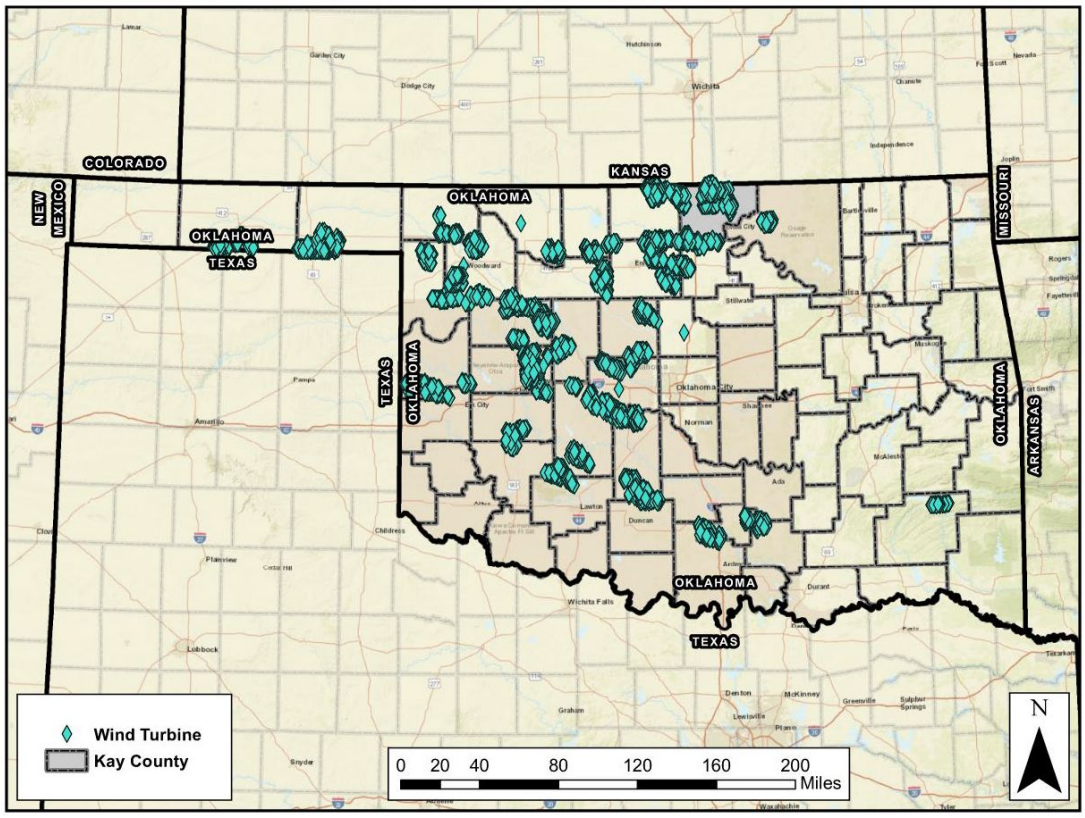


Figure 5: Aerial Farmland Erosion Comparison 1995 versus 2023

[15] How Fast Can a Tractor Go? | Farming Base

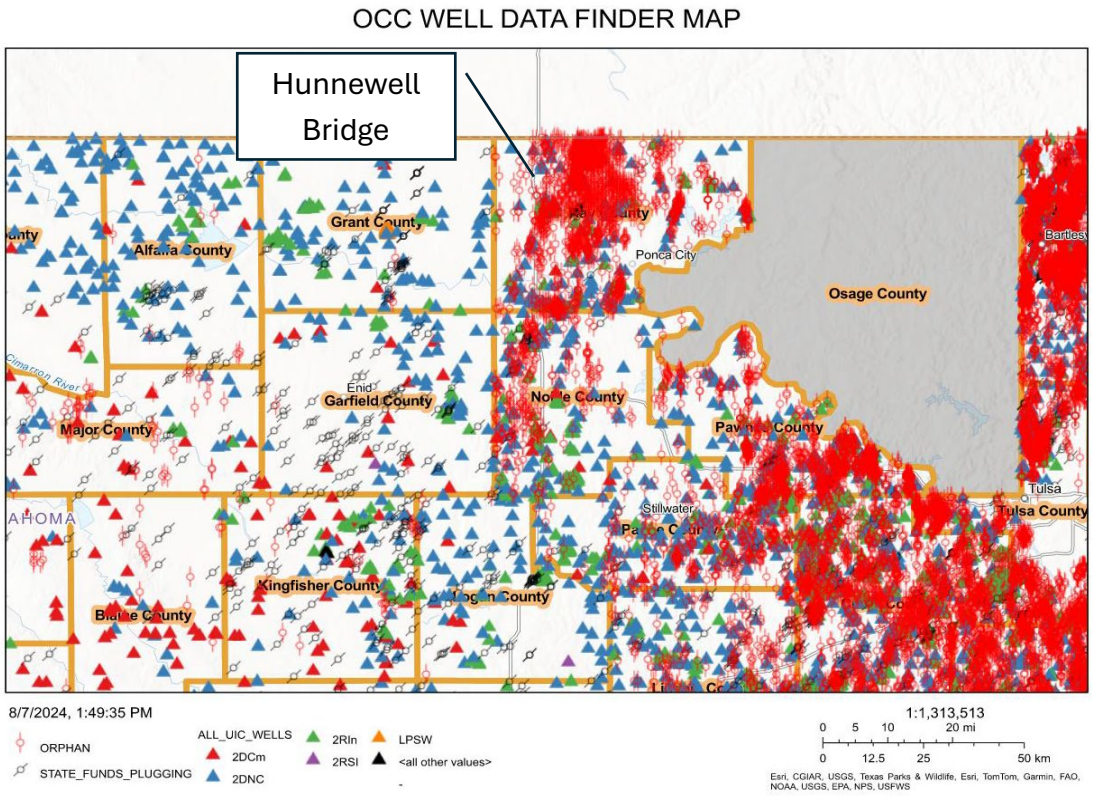
The energy sector drives roughly one third of Oklahoma's economic activity, with wind energy **(Map 4)**, oil, and gas located primarily in the State's rural areas. This Project will directly support the mobility necessary to keep this sector growing in Kay County**.** The project is located in a high-density oilfield development area as shown on **Map 5**. Water, sand, and oil trucks frequently use the Hunnewell Bridge to access well sites and production facilities. While critical to the state's economy, these heavy vehicles accelerate wear and tear on the state's roads and bridges. The County system bears most of this burden given the rural location of most wells.



Map 4 Wind Turbine Locations in Oklahoma (USGS Wind Turbine Dataset)

The large-scale deployment of wind energy is crucial to the future energy mix of the United States, and Oklahoma is leading the way. In 2022, Oklahoma ranked third in the nation in electricity generation from wind, which supplied the largest share of Oklahoma's electricity generation at 44%.[16] There is tremendous potential to expand this wind energy, particularly in north-central Oklahoma where many windfarms have been established (s**ee Map 4**). Similar to the agricultural traffic discussed above, constructing and repairing these large pieces of equipment requires travel by oversize vehicle, and the safety and state of good repair improvements will enhance their mobility.

[16] U.S. Energy Information Administration - EIA - Independent Statistics and Analysis



Map 5: Well Map of Kay County and Surrounding Area (Oklahoma Corporation Commission)

Widening the bridge from one to two-lanes, including guard rails, and accounting for an appropriate hydraulic opening of the bridge will improve the traffic flow of the regional network and increase the reliability of the bridge resulting in an increase in private investment in land-use productivity. 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. A healthy growing economy is a stated goal in Kay County's LRTP. A listed objective aims to improve the economic vitality of the county by supporting a transportation system that will efficiently move delivery vehicles. Restoring the connection lost with the closure of the Hunnewell Bridge will allow freight vehicles a shorter route that will improve travel times and reduce operating costs in alignment with the LRTP.

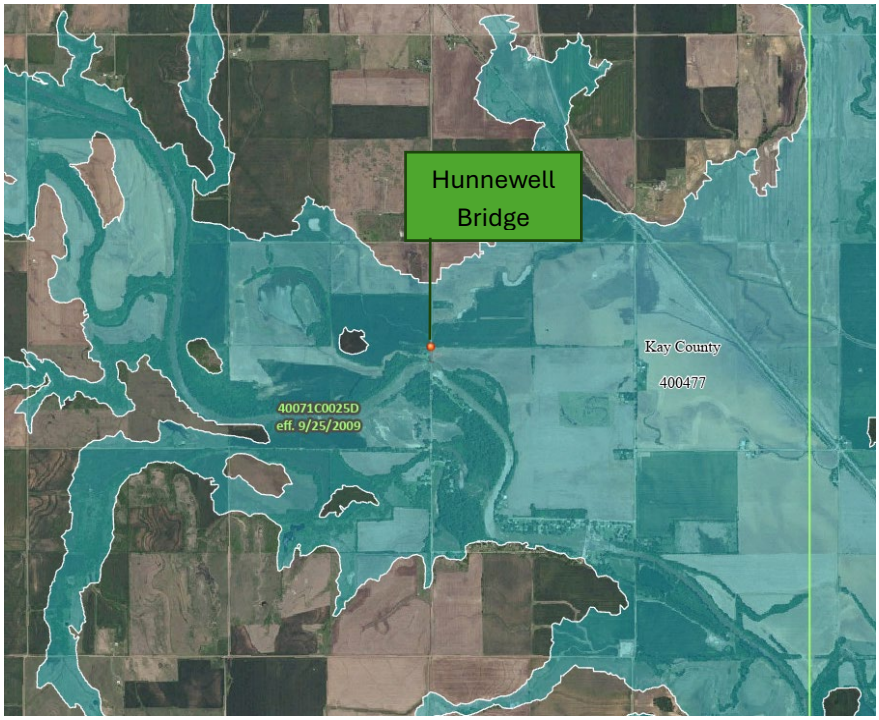
The Project will comply with all ODOT policies and procedures related to equal opportunity employment. ODOT participates in a state comprehensive plan to promote equal opportunity, including removing barriers to hire and preventing harassment on work sites. ODOT requires contractors to comply with the 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% 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. 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. Because this project will be using state funds, ODOT will let the project. 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.

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

The Project will address climate change through a reduction in air pollution and greenhouse gases from motor vehicles. The bridge is currently closed, forcing all vehicles to travel an additional 11.4 miles creating additional vehicle miles traveled and emissions output. Emissions savings includes avoiding thousands of vehicles using a 11.4-mile detour over the life of the Project. In 2022, the average new vehicle in the U.S. emitted 337 CO2 grams/mile[17]. The current detour is approximately 11.4 miles, meaning every vehicle required to take the detour emits an additional 3,842 grams of CO2 emissions, and when calculated for a round-trip, it increases to 7,684 grams, or 17 lbs. of CO2 for 1 vehicle. In the rural context of the project, and the fact that it is a designated area of persistent poverty, this can add up to negative climate consequences for the surrounding community. A new bridge would provide sufficient capacity to allow both directions of traffic to flow freely and would eliminate the additional detour miles. Air pollution and greenhouse gas emissions would be reduced.

The Project will improve the resiliency of at-risk infrastructure. The Hunnewell bridge and approximately 1.5 miles of 108th St N are in a mapped FEMA floodplain (**Map 6**). High water events that overtop the existing bridge are frequent, occurring every 2 1/2 years between 1957 and 2019, according to CED 8. Many of these would close the Hunnewell Bridge for several days while water receded, and repairs could be made. A flood in 2019 ultimately forced Kay County to close the bridge. As part of this planning project, Kay County will evaluate a raise in profile grade of 108th St N and the new bridge to allow the 100-year



Map 6 FEMA Flood Plain

[17] Highlights of the Automotive Trends Report | US EPA

storm to pass and not overtop the bridge. The new bridge will be designed to minimize impacts on the floodplain in accordance with FEMA, state, and local floodplain regulations.

Criterion #5: Equity and Quality of Life

As part of the planning grant activities, the public will be engaged in the Project in accordance with ODOT Public Involvement Policies and relevant NEPA and Section 4(f) policies. Due to its rural setting, there are few community organizations or nearby residents directly impacted by this project. Public involvement is anticipated to utilize mailings, local publications and community facilities to solicit input. An on-line component will also be considered.

The Hunnewell Bridge Planning Project is expected to improve the quality of life for an area of persistent poverty, and regional users. A new bridge would be planned for a safe crossing that would provide sufficient capacity to meet current and future travel demands. According to USDOT's Bureau of Transportation Statistics, "Large volumes of freight either originate in rural areas or are transported through rural areas on the nation's highways…Rural bridges that are closed…require American travelers to make detours nearly twice as long as those necessitated by their urban counterparts."[18] The current condition of the bridge requires school buses, first responders, farm and oilfield equipment, and single occupancy vehicles to detour approximately 11.4 miles to the fastest route over the Chikaskia River.

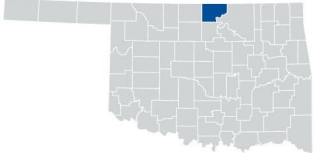
Reconnecting the section line roads will positively impact the rural residents of the entire county and Project census tract, not just a small subset of residents. In an urban environment, there are often minor collectors that can be used when a major arterial is closed, but this is not the case in rural America. The disruption of the county road grid directly affects the transportation insecurity of the Project census tract. The Project location census tract is above the national average for transportation insecurity at 84% considered disadvantaged.[19] The Project will restore access for residents to jobs, schools, and other services. The Hunnewell Bridge was used as a bus route for Newkirk Public Schools. The closure of the bridge has caused a permanent detour, increasing transportation costs for the school district and exposing school children to a higher risk of collisions on the detour route.

Criterion #6: Innovation

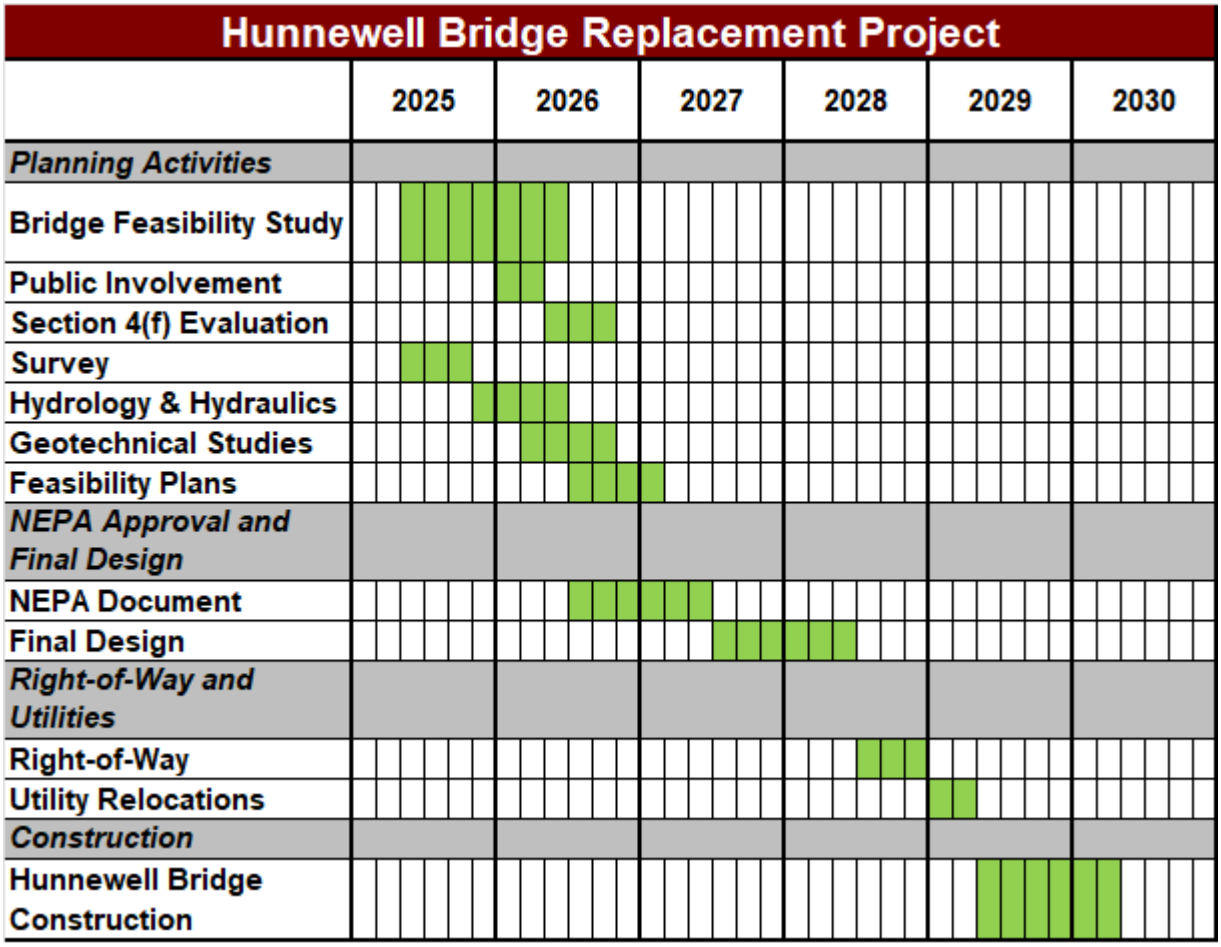
The planning Project will evaluate potential design and construction innovations that could be implemented in a future Bridge Project. Every Day Counts (EDC) innovations have been proven successful, and include:

- e-Ticketing and Digital As-Builts- Converting paper-based materials ticketing systems and as-built plans into electronic workflows and digital as-builts enhances the accessibility of highway project data. It improves the tracking, exchange, and archiving of materials tickets.
- Collaborative Hydraulics: Advancing to the Next Generation of Engineering (CHANGE)- Advances in hydraulic modeling tools are providing a more comprehensive understanding of complex flow patterns at river crossings versus traditional modeling techniques.
- Safety Edge- A simple and effective solution for mitigating pavement edge-related crashes.

[18] Rural Transportation Statistics | Bureau of Transportation Statistics (bts.gov)
[19] ETC Explorer- Add Your Data (National and State Results) | USDOT Equitable Transportation Community (ETC) Explorer (arcgis.com)



Project Schedule



To date, Kay County has not begun work on the Hunnewell Bridge project. Funding constraints have prevented Kay County and CED 8 from completing the required studies for the bridge and from programming any construction.

The schedule for the activities proposed as part of this BIP Planning grant are presented in the **Appendices** and can be found in the figure above and on the grant website. Assuming a BIP award in January 2025 and a grant agreement by mid-2025, planning activities related to the grant would be concluded at the beginning of 2027. The schedule also shows the estimated timeframe to complete full design, NEPA, right-of-way, utility relocations, and construction. Future BIP construction funding would allow Kay County to advance the project. Environmental review would be completed by ODOT and could begin upon initiation of the planning study. Final Design would be completed mid-2028 and right-of-way and utility relocations would begin in 2028 and end the beginning 2029. Construction would start in the Summer of 2029 and would take 1 year, completing the entire project the Spring of 2030.

Project Budget

The project budget is presented in detail in Section III of this application.

V. Administration Priorities and Departmental Strategic Plan Goals

a. Safety- The end-goal of the Project will address known safety concerns posed by a single lane bridge on a two-way roadway that is rated poor, has no guardrails, and geometrically obsolete as well as documented safety risks posed by the current detour. The Project aligns with a publicly approved transportation plan. The Kay County 2035 Long Range Transportation Plan (LRTP) was undertaken by Northern Oklahoma Regional Transportation Planning Organization (NORTPO) for the purpose of establishing a regional concept to address transportation programs. (**See Merit Criterion 2.**) No significant safety risks are anticipated to result after project completion. The Project will improve, rather than negatively impact, the overall safety of the traveling public.

b. Climate Change and Sustainability- The Project will consider climate change in planning and project delivery. Eliminating the current 11.4-mile detour will significantly reduce emissions (17 lbs. of CO2 per vehicle) in the rural context. The bridge will be designed to pass the 100-year storm and will be adequately sized according to hydraulic analysis to accommodate flows in the Chikaskia River and reduce the accumulation of debris. This should slow the ongoing erosion occurring on farmlands downstream of the bridge. Finally, the project will provide a resilient bridge to an area of persistent poverty that is overly burdened by climate change impacts and transportation insecurity. (**See Merit Criterion 4.**)

c. Equity- The ultimate project will ensure reliable access to a region with demonstrated transportation insecurity. 84% of the residents within the project census tract are considered transportation insecure. In addition, detours in rural areas are usually twice as long as detours in urban settings. The project will improve equity, safety, and connect rural residents to employment, medical facilities, and schools. (**See Merit Criterion 5.**)

d. Workforce Development, Job Quality, and Wealth Creation- Kay County and CED 8 participate in ODOT's statewide comprehensive plan to promote equal opportunity. ODOT has an extensive process which directly addresses all FHWA's Considerations to Support Good Paying Jobs and Strong Labor Standards. (**See Merit Criterion 3.**)

VI. DOT Priority Considerations

As discussed, a lack of funding has prevented Kay County from completing the needed studies for the Hunnewell bridge. Currently, engineering is programmed in FY 2029, but the bridge feasibility analysis, public involvement, and other activities proposed in this planning grant application need to be completed first to provide the basis for future design plans. Without the BIP Planning grant, Kay County will not be able to complete the planning process for the Hunnewell Bridge. This grant will allow Kay County to begin and complete the planning process for a future Bridge Project that will replace a bridge in poor condition on the NBI. Once the planning grant is complete, Kay County will apply for a Bridge Project grant for construction.