FY 2022 Bridge Investment Program (BIP) Planning Projects
Oklahoma Department of Transportation

I-35 Bridge Replacement and Trail Connections over the Oklahoma River

July 25, 2022

Basic Project Information

Project Name	I-35 Bridge Replacement and Trail Connections over the Oklahoma River

Project Description

The Oklahoma Department of Transportation (ODOT) is requesting $500,000 of Bridge Investment Program (BIP) Planning grant funds to conduct a planning study to replace the I-35 north bound (NB) and south bound (SB) bridges, ramps, and trail connections located roughly 1.5 miles east and 0.5 miles south of downtown Oklahoma City. The 2019 average daily traffic (ADT) on both bridges is 174,600 and is projected to grow to 227,000 and 279,400 by 2030 and 2040, respectively. The average daily truck traffic is currently 10 percent; on average there are nearly 18,000 trucks per day cross the I-35 NB and SB bridges. The I-35 NB and SB bridges provide four 10-foot lanes in each direction. The I-35 NB bridge was constructed in 1986 (36 years ago) and the I-35 SB bridge was constructed in 1987 (35 years ago). Based on the 2022 National Bridge Inventory (NBI), the condition rating of the deck, superstructure, and substructure is rated as a 5, is in Fair condition, and is at risk to be Structurally Deficient (SD).

I-35 begins in Laredo, Texas, and extends north through Texas, Oklahoma. Kansas, Missouri, Iowa, and then ends in Duluth, Minnesota. I-35 is a critical national corridor as it is on the National Highway System (NHS), the Strategic Highway Network (STRAHNET), and the National Highway Freight Network (NHFN).

Due to the current I-35 NB and SB bridge configuration, daily traffic volumes, and truck volumes, there are safety and congestion challenges along the mainline bridge and ramps. The following provides the ODOT work history to address these challenges.

- **August 2016**: ODOT commissioned an Interchange Capacity Study
- **September 2017**: Interim I-35 ramp improvement plans developed
- **October 2017**: Preliminary river bridge concepts discussed with stakeholders
- **December 2017**: Stakeholder meeting to review bridge concept options
- **Spring 2018**: Constructed an additional lane on both the NB and SB bridges by utilizing the shoulders to provide additional capacity. However, this capacity improvement resulted in both bridges being functionally obsolete due to the minimal shoulder width on the bridges.
- **August 2018**: Began traffic operational analysis on bridge concepts
- **January 2019**: OKC Boulevard traffic opened
- **Spring 2020**: ODOT initiated a Long Span Bridge Study
- **October 2021**: Long Span Bridge Study completed

As summarized below, ODOT has incurred nearly $7.3 million studying and improving the I-35 NB and SB bridges, to-date:

- **Interchange Capacity Study** – Design Concepts (Engineering Fee) and Long Span Bridge Study - $1.18 million
- **Improvements to Relieve Capacity and Rehab Bridge** (Engineering Fee) –$245K
- **Improvements to Relieve Capacity and Rehab Bridge** (Construction Cost) – $5.64 M
- **Other Maintenance Costs** (2017 to 2022) – $147,839

The I-35 NB and SB bridges cross the scenic Oklahoma River, a 7-mile-long waterway and 13 miles of paved trails that has reinvented outdoor recreation in the capital city. The Oklahoma River accommodates activities like kayaking, canoeing, dragon boating, and more and world-class facilities on its banks house impressive fitness and training areas. Recognized as a U.S. Olympic and Paralympic Training Site, the river attracts athletes worldwide. The existing I-35 NB and SB bridges have five piers each in the river and this constrains the types of Olympic and Paralympic events that the river can accommodate. During the bridge concept stakeholder engagement process, Oklahoma City and the Riversport Adventures OKC requested the new bridge(s) be constructed with no piers in the water to broaden the Olympic and Paralympic events conducted at this world-class facility.

The $500,000 in BIP Planning grant funds will be used to conduct a planning study – I-35 Bridge Replacement Study – to identify safety, operational, and multimodal mobility needs on and adjacent to the I-35 bridge(s). During the planning study, ODOT will also determine if a long span bridge over the Oklahoma River is feasible or if the design should include piers in the water. The public involvement process will reengage the stakeholders that participated in the Interchange Capacity Study and it will also engage diverse input from community-based organizations and Historically Disadvantaged Communities and Areas of Persistent Poverty to ensure the equity considerations are integrated into the planning study. The I-35 bridges are located in Census Tract 1053, Oklahoma County, Oklahoma, and this tract is a Historically Disadvantaged Community and an Area of Persistent Poverty. The I-35 Bridge Replacement Study will engage the public and stakeholders to review and develop a consensus on the type of bridge to construct and improvements for multimodal access on the bridge and the connections to the paved trails and recreational activities along the Oklahoma River. The planning study results will provide the information needed to submit a BIP Large Bridge grant. The Appendix includes support letters from the City of Oklahoma City, Association of Central Oklahoma Governments (ACOG), Greater Oklahoma City Chamber, Oklahoma City Riverfront Redevelopment Authority, and Riversport for the I-35 bridge replacement and trail connection project over the Oklahoma River.

State(s) in which project is located	Oklahoma
Does the project serve an urban or rural community?	Urbanized Area: Oklahoma City, Oklahoma
Total Project Cost (Estimated to include planning and construction costs)	Estimate in year-of-expenditure dollars: $600,000
Who is the Project Sponsor?	State: Oklahoma Department of Transportation
List all Project Co-Applicants	None
Identify the Lead Applicant (who will also be responsible for administration of BIP funds if application is selected and point of contact for the application)	Lead Applicant: Oklahoma Department of Transportation Point of Contact: Daniel Nguyen Project Management Division Manager (405) 522-3618 dnguyen@odot.org
Was an application for USDOT discretionary grant funding for this project previously submitted?	No

National Bridge Inventory Data

Identification (I-35 North Bound Bridge)

Item 1 – State Code & Name	40
Item 8 – Structure Number	21356
Item 5A – Record Type	1
Item 3 – County Code & Name	109
Item 6 – Feature Intersected	Oklahoma River
Item 7 – Facility Carried	I-35 North Bound
Item 16 - Latitude	35273609
Item 17 – Longitude	97292941
Item 98 – Border Bridge	Unknown (P)
Item 99 – Border Bridge Structure Number	Unknown

Classification

Item 112 – NBIS Bridge Length	Y, Long Enough
Item 21 – Maintenance Responsibility	1
Item 22 – Owner	1

Age and Service

Item 42 – Type of Service	42A On = 1 Highway; 42B Under = 5 Waterway

Condition

Item 58 – Deck Condition	5
Item 59 – Superstructure Condition	5
Item 60 – Substructure Condition	5
Item 62 – Culverts	N

Geometric Data

Item 49 – Structure Length	244.4

Load Rating and Posting

Item 70 – Bridge Posting	5
Item 41 – Structure Open, Posted, or Closed to Traffic	A

Appraisal

Item 113 – Scour Critical Bridges	8

Inspections

Item 90 – Inspection Date	720

Identification (I-35 South Bound Bridge)

Item 1 – State Code & Name	40
Item 8 – Structure Number	21723
Item 5A – Record Type	1
Item 3 – County Code & Name	109
Item 6 – Feature Intersected	Oklahoma River
Item 7 – Facility Carried	I-35 South Bound
Item 16 - Latitude	35272789
Item 17 – Longitude	97293055
Item 98 – Border Bridge	Unknown (P)
Item 99 – Border Bridge Structure Number	Unknown

Classification

Item 112 – NBIS Bridge Length	Y, Long Enough
Item 21 – Maintenance Responsibility	1
Item 22 – Owner	1

Age and Service

Item 42 – Type of Service	42A On = 1 Highway; 42B Under = 5 Waterway

Condition

Item 58 – Deck Condition	5
Item 59 – Superstructure Condition	5
Item 60 – Substructure Condition	5
Item 62 – Culverts	N

Geometric Data

Item 49 – Structure Length	244.4

Load Rating and Posting

Item 70 – Bridge Posting	5
Item 41 – Structure Open, Posted, or Closed to Traffic	A

Appraisal

Item 113 – Scour Critical Bridges	8

Inspections

Item 90 – Inspection Date	720

Project Costs

BIP Request Amount	Exact amount in year-of-expenditure dollars: $500,000
Estimated Total of Other Federal Funding (excluding BIP Request)	Estimate in year-of-expenditure dollars: $40,000
Estimated Other Federal Funding (excluding BIP), further detail	List each Federal Program and identify Formula or Discretionary and the amount for each Federal Program. For example: Program: National Highway Performance Program (NHPP) Amount:$40,000
Estimated Non-Federal Funding	Identify each source of non-Federal funding and estimated amount. For example: Source: State Amount: $60,000
Total Planning Project Cost	Estimate in year-of-expenditure dollars: $600,000

Project Outcome Criteria

Criteria #1 BIP Program Goals

Based on the 2022 National Bridge Inventory, the condition rating of both the I-35 NB and SB deck, superstructure, and substructure is a 5 (Fair condition) and does not meet current design standards due to the four 10-foot travel lanes and reduced shoulder widths. Neither of the bridges meet existing and future traffic requirements, since the mainline and ramps Level of Service (LOS) is E and will be LOS F in 2030. Due to the existing condition of both bridges, they are both at risk of becoming Structurally Deficient (SD) over the next three years. The last bridge inspection occurred in July 2020 and ODOT is on a 2-year inspection cycle so the bridge deck, superstructure, and substructure will be inspected this month in July 2022.

As noted in the Basic Project Information, the 2019 ADT on both bridges is 174,600, and ADT is projected to grow to 227,000 and 279,400 by 2030 and 2040, respectively. The average daily truck traffic is currently 10 percent so on average there are nearly 18,000 trucks per day that cross the I-35 NB and SB bridges. Replacing both bridges will address the BIP goal to reduce the number of bridges that do not meet current geometric design standards and traffic requirements. Since both bridges are at risk of becoming SD over the next three years, replacing the bridges would address the BIP goal to reduce the number of bridges at risk of falling into Poor condition.

ODOT is committed to financially supporting the planning, design, and construction to replace the I-35 NB and SB bridges. A BIP Large Bridge grant replacing the I-35 bridges would help accelerate replacing bridges that are at risk of falling into poor condition. If ODOT is successful in being selected for the BIP Planning grant, the I-35 Bridge Replacement Study will coordinate with stakeholders such as Oklahoma City, Chickasaw Nation, First Americans Museum, Association of Central Oklahoma Governments (ACOG), OKC Chamber, Oklahoma River Authority, OKC Boathouse Foundation/Riversport, and community-based organizations. ODOT will work with these stakeholders and reiterate the importance of the BIP goal of leveraging non-federal contribution to support the planning, design, and construction of the I-35 bridge over the Oklahoma River.

Criteria #2: Project Description

The I-35 bridge replacement project is a marquis project in the downtown core of Oklahoma City. The I-35 bridges are perilously close to becoming Structurally Deficient at any future bridge inspection as three of the key inspection criteria currently carry a rating of 5; if any of them drop to a rating of 4 then the bridges will be SD.

Perhaps the most unique aspect of this I-35 bridge replacement project is the tremendous community impacts that the bridge replacement will offer the Oklahoma City community. Since these bridges were built over three decades ago, the Oklahoma River has been dammed and is now host to elite national rowing races. In addition, near the edge of the river is the new Riversports Complex which is home to US Olympic Team training.

The current I-35 bridges have 10 piers in the Oklahoma River, which limit boat racing from being classified at the highest level. A primary goal of major stakeholders in this project is that the new I-35 bridges will have no piers in the water and span the entire Oklahoma River. This brings additional cost to the project, but it is paramount that this is the design to support the tremendous investment community stakeholders have made in and along the Oklahoma River.

Based on the Interchange Capacity Study and Long Span Bridge Study, there is local momentum and support to construct a long span bridge over the Oklahoma River. The current I-35 NB and SB bridges are 803 feet in length, with eight approximate 100-foot spans. The new long span bridges would be 820 feet in length, with one 520-foot signature span and three 100-foot conventional back spans. The new long span bridges would provide six 12-foot lanes in each direction, 12-foot inside shoulders, and outside shoulders varying between 12-feet-0-inches and 18-foot-10-inches. Currently, the I-35 bridges have four

10-foot lanes in each direction, but the travel lanes and shoulder widths are inadequate and both bridges are functionally obsolete.

Along the edge of downtown Oklahoma City runs the scenic Oklahoma River which has reinvented outdoor recreation in the capital city. The new I-35 bridge would accommodate bicycles and pedestrians on the bridge, separated from traffic with a concrete barrier. Access to the paved trails, on both sides of the river, will be provided off of the new I-35 bridge. This will improve the access to the recreational trails and provide direct bicycle and pedestrian access in and out of downtown Oklahoma City. The new bridge and trail connections would also provide unique and needed access to the largely Hispanic Capitol Hill district, a Historically Disadvantaged Community, and an Area of Persistent Poverty located on the south side of the Oklahoma River.

How would the new I-35 Bridge meet the Large Bridge Evaluation Criteria?

Project Outcome Criteria #1: State of Good Repair

In 2019, an interim ramp project was completed on the I-40 to I-35 ramps to add a lane and shoulder to reduce queuing on I-40. The project added a lane to both the NB and SB I-35 bridges over the Oklahoma River by reconfiguring the striping and reducing the shoulder widths. The existing shoulder width was reduced from 10 feet to 4 feet to accommodate the additional 12-foot driving lane. This project, while helping provide a solution to the long queuing of traffic and improving associated safety concerns, caused the existing bridges to become functionally obsolete. The current bridges' lane configuration reduces traffic backups on I-40 that were leading to a high density of rear end collisions in the ramp queues. The ramp project did not relieve capacity and collision issues south of the I-35 bridges that are anticipated to increase with Oklahoma's growing population and the increasing ADT numbers, which are expected to nearly double by the year 2040.

Currently, the existing bridges are at risk of becoming Structurally Deficient within the next few years. In the 2022 NBI bridge inspection report, the deck, superstructure, and substructure had a condition rating of 5 (Fair). If any of the three ratings were to decrease to a rating of 4 (Poor), the bridges would become SD. ODOT has previously rehabbed these bridges to prolong their life (in years 2017 to 2022 for $147,839); however, these 1980s bridges are nearing the end of their useful lifespan. If the bridges become SD before they are replaced, ODOT would need to spend additional money to perform rehabilitation efforts. Rehabilitation efforts would not remove the need to replace the bridge and come at a fee that could be avoided if funding can be granted to replace the bridges sooner rather than later.

A Structurally Deficient bridge along this corridor would be detrimental to the viability of I-35. I-35 spans from Laredo, Texas, to Duluth, Minnesota. Oklahoma is the midpoint of this route and one of the most traveled north-south corridors in the country. The I-40 and I-35 Interchange provides a strategic connection point for two of the most vital travel and freight corridors in the country. ODOT would need to take extensive measures to ensure the bridges remained in use with additional monitoring, inspection, and maintenance. If the bridges were to continue to fall in their respective NBI rating levels, ODOT might need to take actions that include restricting heavy gross weighted vehicles (load posting) and restricting traffic flow in an already capacity-constrained section of interstate. If a failure scenario were to occur, bridge closure may be required, which would halt passage over the Oklahoma River and would require vehicles to find alternate routes. This could exacerbate capacity issues at adjacent interstate sections by adding to their capacity strain.

Project Outcome Criteria #2 Safety

The I-35 NB and SB bridges are part of the I-35/I-40 Dallas Junction Interchange. The I-35 NB bridge carries three lanes of traffic for I-235 NB and two lanes of traffic for I-40 EB. There is a one-lane exit for I-40 WB just north of the bridge. The I-35 SB bridge carries two lanes of traffic from I-235 SB, one lane of traffic from I-40 WB, and two lanes of traffic from I-40 EB. Just south of the bridge, one of these lanes

exits, and one merges, constricting the five lanes of traffic entering the bridge into only three lanes of through traffic south of the I-35 bridges.

Due to the large traffic volumes and sudden changes in speed caused by traffic backing up onto the interstate from overcapacity issues south of the interchange, collision rates within the I-35/I-40 Interchange are high. Collision data was obtained from the ODOT Highway System Collision Listing Data to determine the nature and frequency of collisions along the interstates and ramps. Collision history was evaluated for the entire interchange area, extending 2 miles north of the bridges and 1.5 miles south of the bridges along I-35, 0.75 miles north of the interchange along I-235, 1.25 miles west of the interchange along I-40, and 1 mile west of the interchange along Oklahoma City Blvd. The collision information was collected and analyzed over a 10-year period from January 1, 2012, to December 31, 2021.

Crash Summary

For the I-35/I-40 interchange collision frequency, a total of 4,371 collisions were recorded involving 1,130 injured persons and 20 fatalities. This is the equivalent of 1.2 collisions per day over the 10 years. Of those injuries, 110 were of sufficient severity that the injured person was incapacitated. The collisions can be broken down as follows:

Type of Collision	Fatality	Injury	Property Damage	Total
Rear-End	3	646	1,656	2,305
Head-On	4	4	1	9
Right Angle	1	64	81	146
Angle Turning	1	54	149	204
Other Angle		1	3	4
Sideswipe Same Direction	1	137	934	1,072
Sideswipe Opposite Direction	1	5	4	10
Fixed Object	6	143	226	375
Pedestrian	2	6		8
Pedal Cycle		1		1
Animal			1	1
Overturn/Rollover	1	38	23	62
Other Single Vehicle Crash		7	29	36
Other		24	114	138
Total	20	1,130	3,221	4,371

The most prevalent collision type within the I-35/I-40 Dallas Junction Interchange was rear-end (front to rear) collisions, accounting for over half (2,305 of the 4,371 total) of all collisions. This is a scenario that is commonly observed with congested roadways where stopped traffic occurs in the driving lanes and sudden deceleration from vehicles traveling at higher rates of speed is required. The limited bridge travel lane capacity and reduced shoulders as well as the merging of travel lanes directly south lead to conditions that experience traffic stopping and weaving. This further exacerbates the queuing along the highway. Restriping the bridges to add a travel lane in the Spring of 2018 helped reduce the backup on the I-40 to I-35 ramps; however, it narrowed the shoulder of the bridges, making them functionally obsolete.

Potential Safety Improvements with New I-35 Bridge

The proposed replacement bridges for I-35 NB and SB would have six lanes each as well as proper shoulder widths. This would allow for the I-35 NB bridge to have a dedicated lane for I-40 WB and the I-35 SB bridge to have an additional lane from I-40 WB. South of the I-35 SB bridge, the roadway would narrow to four lanes; however, this is still an additional lane from the current design. The additional lane should help reduce the number of rear-end collisions by reducing the backup at the intersection during peak hours which, in turn, increases the capacity of the intersection. The addition of a SB through-lane would lessen some of the weave movements.

The next most common collision type found was sideswipe same direction at nearly 25 percent. The reduction of the five-lane bridge to three lanes south of the bridge causes a weaving movement on both sides of the roadway for I-35 SB and causes a significant number of sideswipe collisions as drivers seek to merge. The I-35 bridge replacement would provide an additional lane and would eliminate the weaving movement on the left side of the road and help reduce the number of sideswipe collisions.

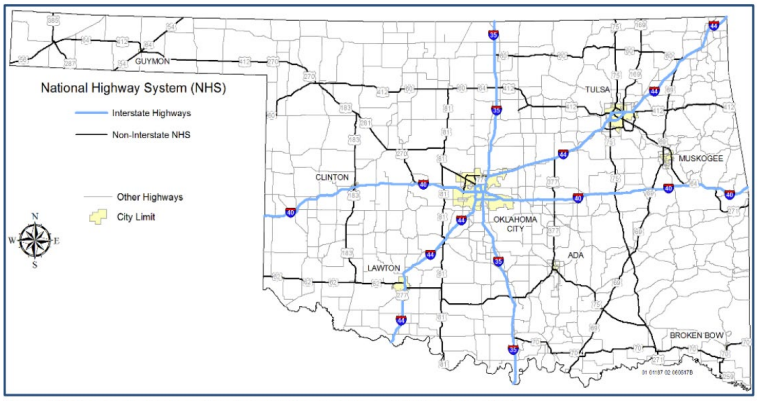
Additionally, the I-35 bridge replacement would restore the inside and outside shoulders to proper widths. Full shoulders are important for the safety of a bridge because they allow for broken-down cars to pull off to the shoulder rather than blocking a lane of traffic. The shoulders also permit emergency vehicles to bypass stopped traffic to access the scene of a crash or incident more quickly, allowing injured persons to receive medical attention sooner.

In summary, the I-35 bridge replacement would help protect motorized travelers by reducing the number of crashes in the I-35/I-40 Dallas Junction Interchange area.

Project Outcome Criteria #3: Mobility and Economic Competitiveness

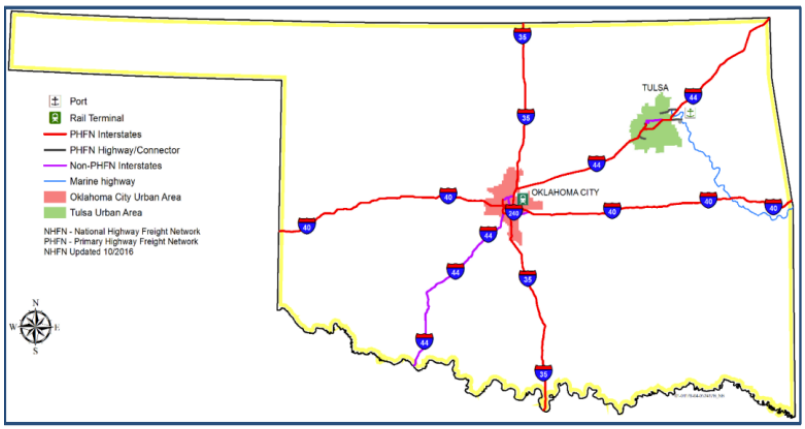
I-35 is the largest single North-South truck freight corridor in the Central United States. It traverses six states and is on the NHS, STRAHNET, and the NHFN (see Figure 1 and Figure 2 below from the 2018-2022 Oklahoma State Freight Plan).

Figure 1: I-35 Within the National Highway System of Oklahoma



Source: IHS Transearch, Oklahoma Department of Transportation, and WSP analysis, 2017

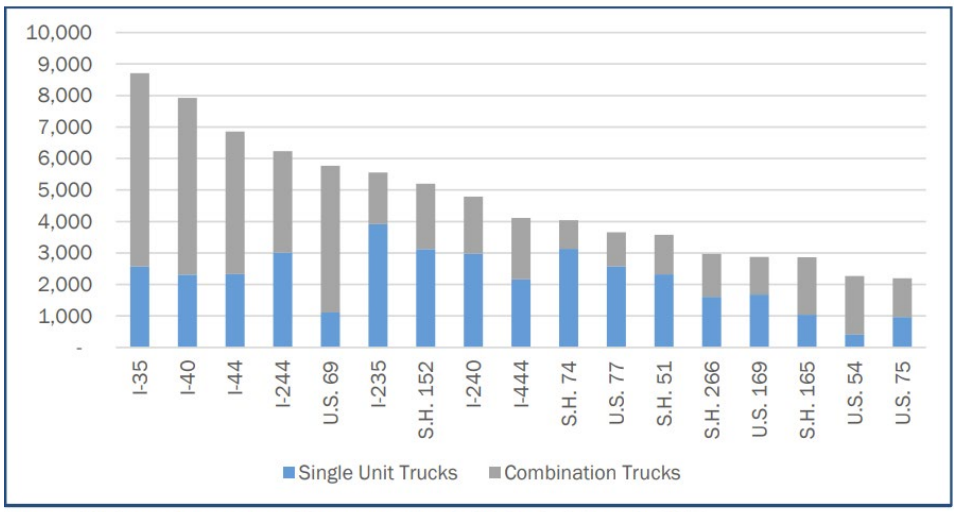
Figure 2: I-35 Within the Oklahoma National Highway Freight Network



Source: Federal Highway Administration; Oklahoma DOT

I-35 is one of the most significant truck freight corridors in the U.S and the highest volume truck corridor in Oklahoma. There are nearly 18,000 trucks per day that cross the I-35 NB and SB bridges with average daily truck traffic at 10 percent. I-35 is the highest volume truck route in the state of Oklahoma (Figure 3).

Figure 3: I-35 is the Highest Volume Truck Route in the State of Oklahoma (2015)



Source: Oklahoma Department of Transportation, Traffic Analysis Branch, 2016.

In Oklahoma City, I-35 intersects other major east-west freight corridors, I-40 and I-44, and thus the I-35 bridge in Oklahoma City is critically located at the crossroads of intercontinental goods movement, linking west and east coast ports to major urban areas throughout the country, and connecting to the major US-Mexican trade route.

As noted earlier in the application, the bidirectional bridge pair is rated as a 5 on the National Bridge Inventory, is in Fair condition, but is at risk to be SD. A Structurally Deficient rating would pose a heightened risk to the safe, efficient, and reliable movement of goods, as it could result in load postings, and slower travel conditions, and would subject the bridge to potential short- and long-term closures. This would risk significant delay at a time when supply chains in the United States have proven to be vulnerable, and where supply chain bottlenecks have had a significant impact on inflation and national economic well-being. Replacing the I-35 bridges would increase mobility for freight movement and improve supply chain logistics.

I-35 is the Backbone of a Major Integrated Economic and Social Megaregion

The I-35 corridor from Oklahoma City to Dallas, in addition to being a major through-corridor, is a magnet for warehousing and distribution services that distribute goods throughout the corridor. Significant numbers of warehousing and distribution facilities are in the Oklahoma City/Moore/Normal areas. The southern border of Oklahoma has also seen major growth over the years in and around Ardmore—where Dollar General, Best Buy, and other national retailers have major distribution centers. The southern border of Oklahoma is strategically located equidistant between Oklahoma City and Dallas and represents a lower cost and less congested location for warehousing and distribution than the much more densely settled Dallas metropolitan area. In effect, I-35 serves as the connecting facility for seamless goods movement and distribution from the northern border of Oklahoma through Dallas down to the southern border of the U.S.

The I-35 corridor has become one of 10 megalopolis regions identified by economists and geographers where commonalities propel economic growth. According to research conducted by Oklahoma State

University (OSU) economists[1], over the past thirty years, the I-35 corridor has been the country's third-fastest growing population center and the fastest growing job center. The OSU research team further identified economic interdependencies between the Dallas metro area and the Oklahoma City metro area, identifying increases in trade flows, commuting, and financial flows. That research found that increases in economic activity in either one of the two metro areas would generate spinoff economic increases in the other area. Strengthening economic linkages to create a more coherent and unified economic megaregion, which would be facilitated by a more reliable modern bridge structure, will add to both regional and national economic prosperity, and lead to employment increases.

The Oklahoma River has Increased U.S.'s Profile in International Rowing Sports

The Oklahoma River was created in 2004 as part of Oklahoma City's first Metropolitan Area Projects (MAPS) capital improvement program for new and upgraded sports, recreation, entertainment, and cultural facilities. The $54 million project, supported by a self-imposed sales tax increase, rejuvenated the dry riverbed of the former North Canadian River by creating a dam-controlled river segment flanked by landscaped recreation trails connected to the larger Oklahoma City Trails network. This transformative public investment drew the privately funded construction of the Chesapeake Boathouse in 2006. There are now numerous boathouses, including the University of Central Oklahoma Boathouse and the $10 million Devon Boathouse which is home to the U.S. Rowing National High Performance Center.

Because of these investments, and a temperate climate that allows year-round training on the water, the Oklahoma River quickly emerged as one of the premier rowing venues in the world for both competition and training. In 2007, the USA Rowing World Challenge drew teams from Canada, Mexico, Australia, New Zealand, and Switzerland and in 2008, the U.S. Canoe and Kayak Olympic Trials for flatwater sprint were held on the Oklahoma River.

However, Olympic-level international rowing events require 2,000 meters of unobstructed linear river. An unobstructed river would allow the Oklahoma River to host future Rowing World Cups, NCAA rowing events, and other officially sanctioned events such as the U.S. Rowing National Championships and Olympic trials for rowing events. The previous investments and the continued economic success of Oklahoma City as a center for athletics depend significantly on replacing the I-35 bridges. As noted earlier, the current bridges have piers in the Oklahoma River which limit boat racing. A primary goal of the I-35 bridge stakeholders is that the future bridge has no piers in the water and spans the entire Oklahoma River to broaden the Olympic and Paralympic events conducted at this world-class facility.

Riversport has estimated the economic impact of the races announced through 2025 will exceed $10 million, with each competition drawing 400 to 800 athletes from more than 60 countries for pre-event training weeks the competitions. Executive Direct Mike Knopp states, "Hosting international races at this level means that some athletes and coaches will actually move to Oklahoma City to live, work and train … You will also have officials, coaches, and family members as well as media. We will see the impact in our hotels, restaurants, transportation, tourism, and entertainment. That is not even taking into account the economic ripples that happen when a city is elevated like this on the world stage."

Project Outcome Criteria #4: Climate Change, Resiliency, and the Environment

Local Air Quality and Public Health may Improve, Benefitting Adjacent Vulnerable Populations

The congestion reduction that a new bridge would bring could offer air quality improvements to the entire Oklahoma City urbanized area, but especially to the Historically Disadvantaged Community and an Area of Persistent Poverty in the Capitol Hill district. New bridge designs would also incorporate connections to the Oklahoma River Trails, enhancing access to infrastructure that promotes healthier, active travel

[1] https://business.okstate.edu/site-files/archive/docs/economy/Dean_2010_Economic_Outlook.pdf

modes like bicycling and walking. The connection to existing active transportation infrastructure may encourage more travel by non-polluting modes, which would also benefit air quality.

Greenhouse Gas Emissions May Be Reduced

As traffic volumes increase, the replacement of the I-35 bridges is paramount to a decrease of congestion on this section of I-35, which may reduce the air pollution from carbon dioxide (CO2). Bridge replacement may also reduce the effect of ozone (O3), for which the Oklahoma City region has worked tirelessly to remain in attainment with EPA air quality standards. Oklahoma City is one of the very few major metropolitan areas in the United States to remain in air quality attainment. This project would be a huge contributor to maintaining attainment in the region.

New Infrastructure Will Be More Resilient

Replacing the existing bridges with new infrastructure and modern materials would address the SD concerns and offer an opportunity to improve resiliency to hazards and disasters of all types (i.e., natural and human-made).

Risk Management Benefit of Removing Piers from the Water and the New Bridge Design

A long span design without piers will not impact water flow and water levels and this pierless bridge design may reduce flood hazards. Scour, or the erosion of soil around a bridge pier, is also one of the main reasons for bridge collapse. The current I-35 bridges have five piers in the water (10 total) and each pier would be removed with the new long span bridge.

Project Outcome Criteria #5: Quality of Life

The I-35 bridge replacement project would improve the quality of life for local residents in Oklahoma City by improving travel time reliability, bicycle and pedestrian access, and the ability to conduct and watch Olympic-quality rowing events. As noted earlier, the Interchange Capacity Study and Long Span Bridge Study brought together a strong partnership with the State (ODOT), Tribes (Chickasaw Nation), local agencies (Oklahoma City, Oklahoma River Authority), community-based groups (ACOG, First Americans Museum, OKC Chamber), and local residents and businesses (Capitol Hill community). This partnership will continue during the development of the I-35 Bridge Replacement Study.

The I-35 bridges are located in Census Tract 1053, Oklahoma County, Oklahoma, and this tract is a Historically Disadvantaged Community and an Area of Persistent Poverty. The public involvement process will continue to partner with Capitol Hill residents – the largely Hispanic area of the city located just south of the I-35 bridge – to ensure the equity considerations are integrated into the I-35 Bridge Replacement Study. The public involvement process will engage diverse input from community-based organizations, Historically Disadvantaged Communities, and Areas of Persistent Poverty. While it is anticipated that the I-35 bridge replacement would be constructed within the existing right-of-way, the I-35 Bridge Replacement Study will mitigate to the greatest extent possible to prevent any displacements. The public involvement process will also engage EMBARK, the OKC's public transportation agency, to get input on whether any public transportation enhancements could be planned within the I-35 bridge replacement project area.

Project Outcome Criteria #6: Innovation

This project will benefit from innovative technology, project delivery, and financing strategies.

Technology Innovations

ITS Deployment During Construction – During construction, ODOT will use Intelligent Transportation Systems (ITS) to ensure work zones on I-35 are safe and to minimize travel delays for drivers. Radar, cameras, Dynamic Message Signs (DMS), and probe data will be used together to monitor travel speeds and congestion and support incident management. Once construction is complete, these ITS assets will remain in place and will be used by ODOT to monitor traffic and provide travel information to the public.

3D Digital Project Plans – ODOT commits to providing 3D digital project plans as part of the contracting process. This technology will allow contractors to use state-of-the-art GPS-controlled automated equipment in the construction process, which reduces the risk of human error in establishing grades and elevations while improving efficiency in earthmoving during the construction process and reducing the overall cost of construction.

Accelerated Bridge Construction – ODOT will use Accelerated Bridge Construct (ABC) to improve site constructability, total project delivery time, and work-zone safety for the public, as well as reduce traffic impacts, onsite construction time, and weather-related delays. ABC uses innovative planning, design, materials, and construction methods safely and cost-effectively to reduce the onsite construction time that occurs when building new bridges or replacing and rehabilitating existing bridges. The project's construction method will utilize barges next to the site to build the superstructure. Once complete, it will be floated and then lowered into place by a series of cranes. This will minimize the interruption of traffic by allowing the existing traffic to stay on the existing bridges during the construction of the superstructure.

Temporary Modular Bridge Construction – This project will use Temporary Modular Bridge Construction, which allows for highway load-carrying capability with quick assembly. The modular bridge sections can be disassembled and repurposed for other projects throughout the state upon the completion of the project. The prefabricated modular bridge pieces would minimize waste by allowing reuse and save construction time. ODOT has made a prior investment in this type of modular structure which could be transferred to applications of this project.

Non-Traditional Bridge Structure – This project will use a non-traditional bridge structure, which is not only technological innovation but a bridge design that is unique to the state. As of 2022, there are no other tied arch or cable-stay bridges in the state and few within the region. For a long span bridge without piers in the waterway, a nontraditional bridge allows for vertical clearance over the river to accommodate navigable boat traffic without the need to significantly raise the roadway grade. Due to the proximity of the interchange, raising the grade of I-35 is problematic due to the number of ramps and bridges that would be impacted.

Aesthetic Improvements – Aesthetic improvements to the bridges will be incorporated to enhance the cultural and innovative development that is occurring directly adjacent to the I-35 corridor. These aesthetic improvements could reflect the local cultures including Native American and Capitol Hill Hispanic District and nearby amenities such as Riversport in the Boathouse District. The improvements will be added by utilizing form liners, reveals, stains, lighting, and other treatments.

Multimodal Bridge Use – A viewing platform and pedestrian walkway on the west side of the bridge will provide connectivity between north and south banks of the Oklahoma River Trail system. A full viewing platform will provide spectator seating and other amenities to enhance the boat racing experience.

Project Delivery Innovations

"No Excuses Bonus" – For construction, ODOT will incentivize contractors to achieve early delivery of the whole project and stages open to traffic early by deploying no excuses bonuses, including a substantial completion incentive valued at 5 to 10 percent of the contract and smaller incentives for internal milestones tied to key project elements.

Project Bundling and e-Contracting – Grant funding will save costs by allowing the project to be bundled into a single construction contract of the kind envisioned in the FHWA's *Every Day Counts* (EDC) Initiative, rather than staggering work over multiple project lettings as regular State and Federal funding becomes available. E-Construction methods will include mobile inspection and video monitoring and reporting of construction progress.

Financing Innovations

Increased Revenue – Bills passed by the Oklahoma State Legislature in 2018 increase state revenue to ODOT by $194.0 million per year, generated from the ownership or operation of a motor vehicle and

reduce transfers of general-purpose state revenue to ODOT by the same amount. Increased state revenue improves ODOT's ability to meet the needs of the project.

Funding Partnerships – ODOT will utilize multiple funding partners to unite the cultural, ethnic, and economic development districts that are accessed by the I-35 corridor. Project partners such as ACOG, City of OKC, Chickasaw Nation, and WATCO railroad all have a history of financial partnership on large transportation projects in Oklahoma. This project would be one of the largest partnership funding efforts in the state of Oklahoma.

Criteria #3: Project Schedule

The following provides the work completed to date to address replacing the I-35 NB and SB brides.

- **August 2016**: ODOT commissioned an Interchange Capacity Study
- **September 2017**: Interim I-35 ramp improvement plans developed
- **October 2017**: Preliminary river bridge concepts discussed with stakeholders
- **December 2017**: Stakeholder meeting to review bridge concept options
- **Spring 2018**: Constructed an additional lane on both the NB and SB bridges by utilizing the shoulders to provide additional capacity. However, this capacity improvement resulted in both bridges being functionally obsolete due to the minimal shoulder width on the bridges
- **August 2018**: Began traffic operational analysis on bridge concepts
- **January 2019**: OKC Boulevard traffic opened
- **Spring 2020**: ODOT initiated a Long Span Bridge Study
- **October 2021**: Long Span Bridge Study completed

ODOT does not have any planning activities for these bridges underway currently. Tables 1 and 2 provide planning and post-planning grant schedules, with the planned start and end dates of all major activities that will need to be completed from the end of the BIP Planning grant through the completion of a BIP Large Bridge Project, including environmental review, design, and construction.

Table 1: Project Planning, Design , and Construction Timelines

Planning/Stakeholder Timeline	
Milestone	**Date**
Grant Received NTP	January-23
Concept Development & ODOT Coordination	April-23
Stakeholder Meeting 1	May-23
Individual Meetings 1 (Approx. 5)	July-23
Public Meeting	August-23
Stakeholder Meeting 2	September-23
Individual Meetings 2 (Approx. 5)	November-23
Comments & Report	December-23

Construction Timeline	
Milestone	**Date**
Letting Date	March-26
End Construction Activities	Btwn Jan-28 and Mar-29

Design Timeline	
Milestone	**Date**
Design Contract NTP	January-24
Design Survey Upgrade	March-24
30% Plans	May-24
30% Review Meeting	June-24
60% Preliminary ROW & Utility Plans	October-24
60% Review Meeting	November-24
65% ROW & Utility Plans	January-25
90% Final Field Review Plans	September-25
90% Review Meeting	October-25
Final PS&E Plan Submission	December-25

Criteria #4: Project Budget

The following Work Plan outlines the work activities, budget, and start and end dates to complete the I-35 Bridge Replacement Study. ODOT has a consultant under contract and ODOT will complete this study under this existing contract to expedite the planning process.

Task 1 - Project Management - The study team will conduct internal and external coordination calls/meetings and perform administrative functions such as QA/QC, invoicing, and monitoring work assignments. The study team will conduct monthly project status meetings with key ODOT staff.

Estimated Budget: $60,000
Start and End Dates: January 2023 to December 2023
Deliverables: Project meeting agendas and notes. Invoices and status reports.

Task 2 - Public & Stakeholder Engagement – The study team will conduct two stakeholder meetings, one public meeting, and up to 10 on-call stakeholder and sponsor meetings during the I-35 Bridge Replacement Study. The following stakeholders have participated in the Interstate Capacity Study and Long Span Bridge Study: Oklahoma City, Chickasaw Nation, First Americans Museum, ACOG, OKC Chamber, Oklahoma River Authority, OKC Boathouse Foundation/Riversport, and Capitol Hill residents. The public and stakeholder process will also engage diverse input from community-based organizations, Historically Disadvantaged Communities, and Areas of Persistent Poverty to ensure the equity considerations are integrated into the I-35 Bridge Replacement Study.

The study will reconvene the I-35 bridge stakeholder group. During the first meeting, the group will discuss the scope and purpose of the I-35 Bridge Replacement Study, introduce the BIP Large Bridge goals and outcome criteria, review existing and future conditions and potential new bridge amenities, discuss the new bridge design, and receive input on from the stakeholders on their needs and priorities.

In between the two stakeholder meetings, the study team will conduct a public meeting and present the purpose of the I-35 Bridge Replacement Study, introduce the BIP Large Bridge goals and outcome criteria, review existing and future conditions, discuss the new bridge design, and receive input on from the public on their needs and priorities.
During the second stakeholder meeting, the study team will present the improvement strategies, conceptual plans, and visualizations for the I-35 bridge, ramps, bicycle and pedestrian amenities on the bridge, and connections to the trail network along the Oklahoma River. The study team will also present potential bridge amenities including bicycle, pedestrian, and viewing areas on the bridge, vertical clearance above the river, and assessment of no piers in the water to meet Olympic standards. The study team will reiterate the importance of leveraging non-Federal contributions from sponsors and stakeholders involved in the planning, design, and construction of the I-35 bridge, ramps, and bike and pedestrian improvements.

The study team will conduct up to ten on-call individual stakeholders and sponsor meetings to discuss the I-35 bridge, ramp, and bike and pedestrian improvements and encourage them to financially support the I-35 bridge improvements to increase the probability of being selected for a BIP Large Bridge grant. Oklahoma City and Tribes have a history of funding transportation projects in Oklahoma.

Estimated Budget: $130,000
Start and End Dates: May 2023 to November 2023
Deliverables: Stakeholder and public meeting presentations, display boards, meeting notes. Individual stakeholder and sponsor meeting notes. Stakeholder and Public Meeting Summary Report.

Task 3 - Existing & Future Conditions and New Bridge Amenities Analysis – The study team will evaluate and document existing and future conditions for the following:

- Bridge and ramps
- Traffic/LOS
- Safety
- Bicycle and pedestrian trails on both sides of the river
- Bicycle, pedestrian, and viewing areas on the bridge
- Vertical clearance above the river
- Assessment of no piers in the water to meet Olympic standards

Estimated Budget: $120,000
Start and End Dates: January 2023 to April 2023
Deliverables: Existing & Future Conditions Report. New Bridge Amenities Report.

Task 4 - Develop Improvement Strategies, Conceptual Plans, and Visualizations – The study team will use the work completed in the Interstate Capacity Study and Long Span Bridge Study, input, and recommendations from the public and stakeholders to develop bridge, ramps, and bike/ped connection improvement strategies. The study team will develop conceptual plans of the improvements and visualization renderings, where needed, to showcase bridge amenities.

Budget: $290,000
Start and End Dates: April 2023 to November 2023
Deliverables: I-35 Bridge Planning Study

TOTAL PROJECT BUDGET: $600,000
FUNDING SOURCES:

- BIP Planning Grant = $500,000
- Other Federal = $40,000
- State = $60,000

Planning Priority Considerations

To date, ODOT has incurred nearly $7.3 million studying and improving the I-35 NB and SB bridges. To keep the public and private momentum going, the BIP Planning grant funding would provide ODOT the opportunity to immediately begin the I-35 bridge replacement planning project and complete it by December 2023. The BIP Planning grant would help ODOT accelerate the planning process to more quickly address replacing the I-35 bridges that are at risk of falling into Poor condition.

Based on the current schedule, ODOT would submit a Large Bridge Project grant application in 2023. If the I-35 Large Bridge replacement application were selected by DOT in 2023, ODOT would start construction within two years of completing the planning process.