



AMERICA'S RIVER CROSSING

Application for
Bridge Investment Program (BIP)
Large Bridge Grant

December 4, 2023

United States Secretary of Transportation Pete Buttigieg:



"I appreciated the chance to see the Hernando de Soto Bridge firsthand, and to learn more about the work to make it safe for use once again. As our national conversation about infrastructure and safety continues, I'll carry the stories I heard in Memphis with me. It's an important reminder to my team and me that the work of the U.S. Department of Transportation has a real, lasting impact on the lives and livelihoods of Americans in Memphis, and in communities across the nation."

—United States Secretary of Transportation Pete Buttigieg, 6/3/21

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I. PROJECT INFORMATION

Project Description

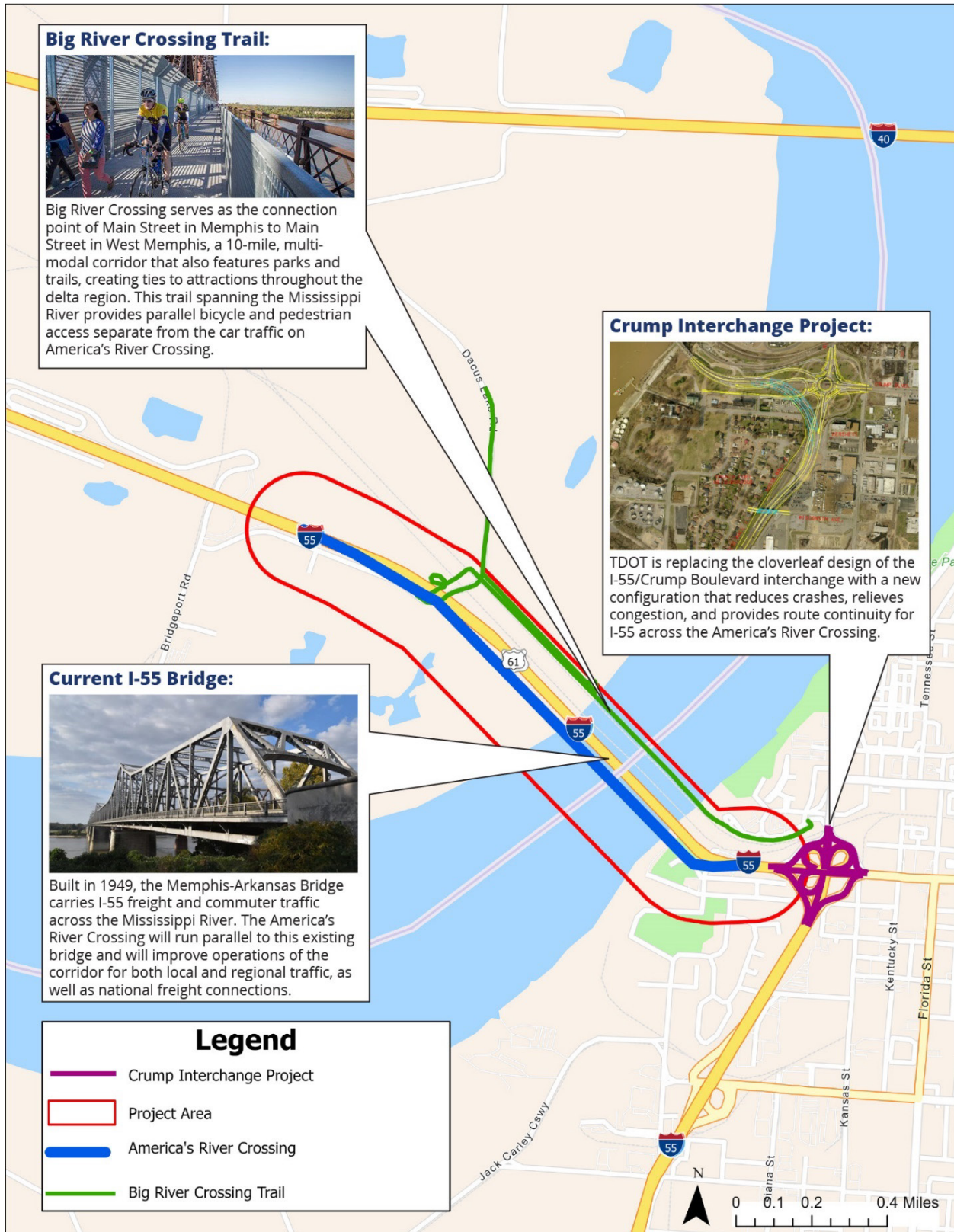
The existing I-55 bridge (also known as the Memphis-Arkansas Bridge) is one of only two highway crossings of the Mississippi River in Memphis, Tennessee, and not only serves as a critical connector for residents, workers, and freight movement between Tennessee, Arkansas, and Mississippi, but as a major crossing linking commerce and country from east to west and north to south serving the country's I-40 and I-55 interstate systems. This infrastructure's vital importance was emphasized by the temporary closure of I-40 Hernando DeSoto Bridge in May 2021. The I-55 bridge stood as the sole alternative crossing of the Mississippi River between Tennessee and Arkansas at that time, servicing this nationally significant corridor.

The bridge is located on both a nationally recognized interstate and freight corridor and in 2001 was placed on the National Register of Historic Places. The proposed Project, the America's River Crossing, consists of a total replacement of the existing bridge, which opened to interstate traffic in 1949. The Project corridor covers just over 1.5 miles and runs parallel to the existing I-55 bridge. It will enhance safety and improve operations in the corridor for both local and regional traffic in the tri-state area and national freight connections by adding capacity, streamlining traffic flow, correcting geometric deficiencies, and maintaining connections to jobs and key transportation corridors.

Figure 1: I-55/I-40 Map



Figure 2: America's River Crossing and Recent Supportive Investments



Project History and Context

The Memphis-Arkansas Bridge was opened in December 1949 and was originally part of the US-40 corridor. It replaced narrow traffic lanes on the Harahan Bridge, constructed in 1916. The Memphis-Arkansas Bridge carries Interstate 55 across the Mississippi River and is the southernmost of the bridges in the Memphis area. The bridge is owned and maintained jointly by the Tennessee Department of Transportation (TDOT) and the Arkansas Department of Transportation (ARDOT).

TDOT and ARDOT have coordinated to complete numerous studies (which can be found on the [Project website](#)). Key achievements to date in the Project development process are briefly summarized below.

- 2006: the Mississippi River Crossing Feasibility and Location Study was conducted to assess the viability of establishing a new Mississippi River Bridge Crossing. The study involved the identification and evaluation of potential transportation solutions to aid TDOT in selecting a preferred corridor alternative for proposed enhancements in cross-river mobility over the Mississippi River. This feasibility study analyzed 13 corridors (12 new, 1 following existing I-55) and a new railroad bridge crossing. A three-level screening process was utilized that recommended five corridors for further study, each with distinct advantages and consequences. All five alignments have been deemed feasible at a planning level.
- 2014: a Benefit-Cost Analysis was conducted to evaluate the five alternatives identified as part of the Southern Gateway Project. This comprehensive analysis served to reinforce the long-term advantages of the project, including enhanced safety, economic competitiveness, and environmental sustainability.
- 2022-2023: the Targeted Approach for Crossing the Mississippi Study (Appendix A) is the latest study examining the previous five alternatives proposed for the Mississippi River crossing. The goal of the study was to supplement the analysis from past studies, develop a preliminary purpose and need and identify the likely National Environmental Policy Act (NEPA) Class of Action. It included the development of high-level traffic analysis and conceptual cost estimates. The study's findings indicated that replacing the existing I-55 bridge is the most cost-effective and resilient option, offering significant benefits for improving vehicle and freight travel when compared to other alternatives. Notably, it demonstrated a favorable Benefit-Cost Ratio for two bridge replacement options, namely Corridors 5A and 5B, underscoring their viability.

Transportation Challenges to be Addressed

The Project's overarching goals are to establish reliable and resilient cross-river connections and rerouting options for Memphis and the broader tri-state region, which includes Tennessee, Arkansas, and Mississippi. It aims to enhance mobility, catering to both current and future growth and employment needs, ultimately preserving and elevating

Memphis's economic vitality and that of the wider tri-state area. It looks to address safety concerns of the bridge's structural integrity, operational safety concerns, as well as the fact that the structure is not resilient to a potential seismic event. Furthermore, it aims to relieve capacity constraints, particularly at existing crossings on I-40 and I-55, to improve overall traffic flow.

The Memphis-Arkansas Bridge has raised concerns based on its condition and appraisal ratings, as per the FHWA National Bridge Inspection Standards (NBIS) and the [Tennessee Inventory and Appraisal report](#) (March 8, 2022). The Memphis-Arkansas Bridge was not designed to withstand earthquakes, despite being located within the New Madrid Seismic Zone (NMSZ). In 2021, TDOT commissioned a seismic vulnerability evaluation of the existing I-55 bridge to investigate the feasibility of using seismic isolation to retrofit the existing structure (Appendix I). The study recommended additional evaluation of the entire structure for the potential of friction pendulum bearings. According to the Targeted Approach for Crossing the Mississippi study (Appendix A), retrofitting the bridge is estimated to cost between \$250 million and \$500 million due to its age and construction type. Consequently, with the additional need of studies and major investments (that would not address existing geometric deficiencies), the existing I-55 bridge is deemed unsuitable for seismic retrofitting.

With traffic forecasts indicating substantial growth, the need for a new bridge becomes apparent, demanding increased capacity and improved traffic operations. The Memphis region is a vital logistics hub, boasting assets like the world's largest air cargo airport, extensive rail connections as one of only four U.S. cities served by five or more Class 1 railroads, facilitating direct rail shipping across North America, and key access to the Mississippi River, the most significant inland waterway system in the United States through the Port of Memphis and West Memphis. According to the Traffic Analysis Technical Memorandum (2023) conducted as part of the Targeted Approach for Crossing the Mississippi (Appendix A), more than 40 percent of the total crossings on the I-55 bridge currently consist of existing truck traffic. It is anticipated that the daily number of trucks crossing the river on I-55 will increase from 20,400 in 2022 to 23,400 in 2050, reflecting a 14.7% increase in truck crossings over the next 28 years. Emphasizing the new bridge's crucial role in facilitating the flow of local, regional, and national freight, particularly for air, rail, and water transportation needs underscores the significance of enhancing the infrastructure to meet growing demands.

Considering these traffic forecasts, it's clear that without any changes (No-Build condition), the Average Daily Traffic (ADT) on the Memphis-Arkansas Bridge is projected to reach over 58,000 in 2030. This entails a substantial annual growth rate of 5.3% from 2022 to 2030. This significant growth underscores the need for a new bridge to increase capacity and enhance traffic operations for bridge crossings.

Anticipated Project Outcomes

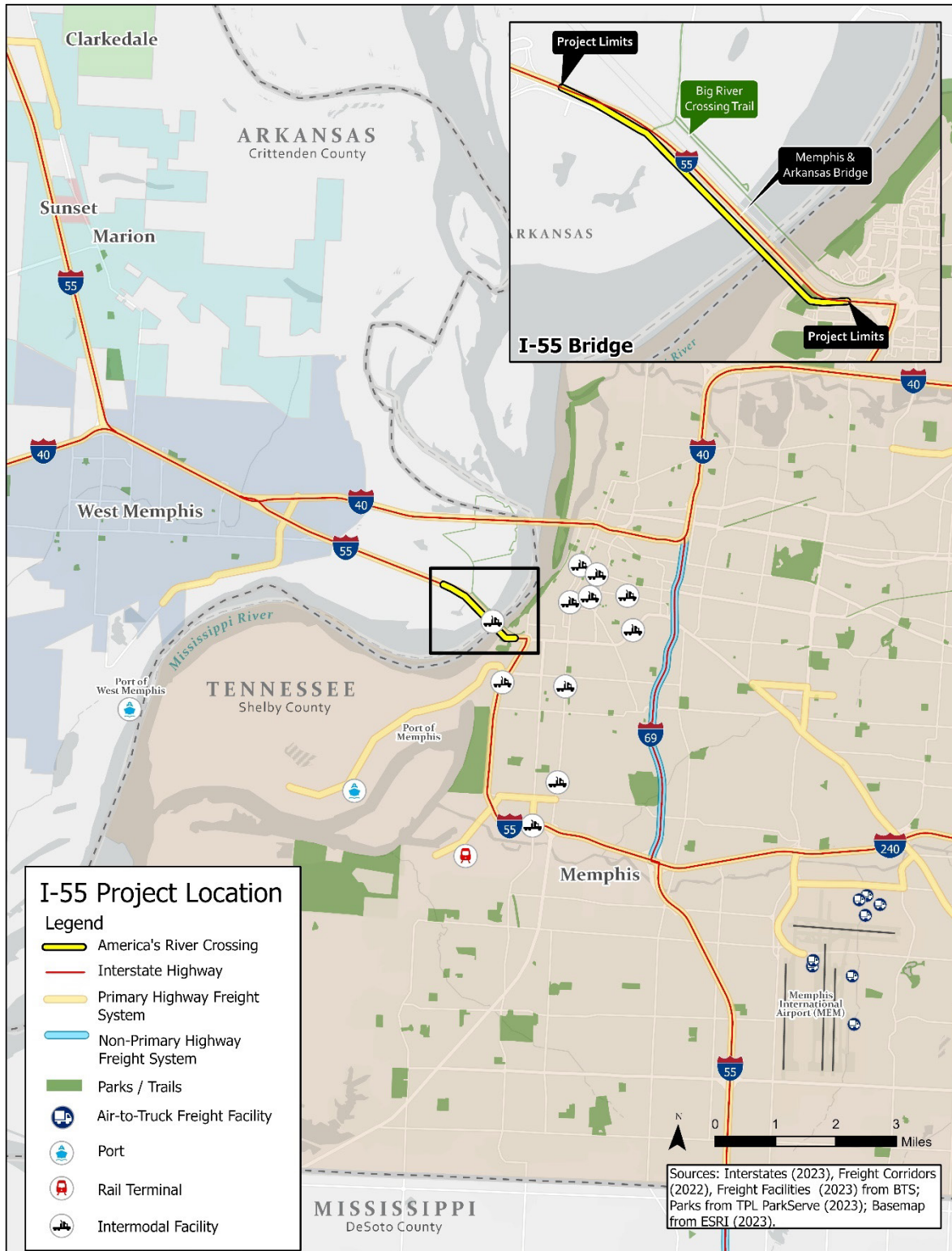
The America's River Crossing (the Project) envisions an improved cross-river connectivity for the tri-state region. It aims to enhance mobility, accommodate growth and employment needs, and elevate the economic vitality locally and for the Greater Memphis Region. Capacity relief and safety are the main goals of the Project, reducing congestion at existing crossings on I-40 and I-55, leading to smoother traffic flow and an improved transportation network. The Project also prioritizes the optimization of local and regional freight movement, supporting economic growth generated by the airport, rail yards, and riverports. By adapting to evolving needs, this comprehensive approach will create a more efficient transportation system, benefiting the region's connectivity, capacity, and overall economic well-being.

Project Location

The study area for the Project encompasses sections of Shelby County, Tennessee, and Crittenden County, Arkansas. The broader Memphis region is a significant hub for several major transportation systems of national and international significance, including interstate highways, railroad intermodal terminals, the Memphis International Airport, and the International Port of Memphis. Specifically, Interstate Highway 40 (I-40), linking California to North Carolina, intersects with I-55 in Memphis, which connects Louisiana and Illinois. Additionally, I-69 will provide a direct route from Canada to Mexico, passing through Memphis and interconnecting with I-40 and I-55. To facilitate the connectivity of these major highways, I-240 forms an approximately 20-mile loop within Memphis.

The Project extends slightly beyond 1.5 miles in length. The western endpoint of this corridor aligns with the existing I-55, located just east of Bridgeport Road in Arkansas at Mile Marker 1. The route generally follows the path of the existing I-55 alignment and the existing I-55 Mississippi River Bridge. The proposed centerline of the new bridge is positioned 200 feet to the south of the outermost southern edge of the existing bridge. Upon entering Tennessee, the corridor traverses E.H. Crump Park and seamlessly connects with the existing I-55, situated just north of the French Fort neighborhood and to the west of the proposed Crump Interchange at Mile Marker 12, which is presently in the construction phase.

Figure 3: Memphis-Arkansas Bridge Location Map



The Project is located within the “Memphis, TN-MS-AR” Urbanized Area (UZA). According to the 2010 Census, of the Memphis UZA population was 1,324,108, and has increased to 1,337,779 per the 2022 American Community Survey. Within the Project area, there is a population of 5,241 individuals that falls within two Census tracts, with both classified as Environmental Justice populations per the USDOT. Census Tract 117 in Shelby County, Tennessee, and Census Tract 306.2 in Crittenden County, Arkansas, qualify as both Areas of Persistent Poverty and Historically Disadvantaged Communities (Figure 4). The Project bolsters connectivity and safety measures for the designated tracts across the majority of the corridor and also amplifies access to employment prospects, healthcare services, educational facilities, and a spectrum of regional resources that extend beyond the Project corridor.

Figure 4: Historically Disadvantaged Communities (HDC) and Areas of Persistent Poverty (APP) within Project Limits



Project Parties

TDOT's mission to provide "a safe and reliable transportation system to support economic growth and quality of life" and ARDOT's purpose to deliver "a modern transportation system to enhance safety and quality of life in Arkansas" are well aligned. As the lead applicant, in addition to overseeing and administering Tennessee's formula federal-aid programs, TDOT has a long history of administering federal discretionary grant awards from programs like BUILD, INFRA, RAISE, CRISI, and ATCMTD.

This application is the result of continued collaboration and coordination between TDOT and ARDOT since 2004 to initiate and move the Project forward and improve cross-river mobility. The two states will continue to advance the Project and have agreed to jointly fund 50% of the Project costs, with TDOT sponsoring and leading this BIP Large Bridge grant application to allow for the most efficient and timely delivery of the Project. The two states have a longstanding agreement to maintain the existing I-55 bridge (Appendix B) that will continue after the Project is complete. TDOT and ARDOT are jointly pursuing the necessary federal funding to advance the Project as demonstrated in the Letters of Commitment provided in Appendix D.

The Project has the support of state and local officials, local communities, major employers and businesses in the area, as demonstrated through the letters of support provided in Appendix E.

II. NATIONAL BRIDGE INVENTORY DATA

The Project will replace the existing I-55 bridge that crosses the Mississippi from Tennessee to Arkansas. In 2023 per the NBI, 898 of 20,373 bridges (or 4.41%) in the state of Tennessee were in poor condition, and 697 of 12,962 bridges (or 5.38%) in the state of Arkansas were in poor condition. As a percentage of deck area in poor condition, 4.91% and 4.95% of the deck area for all bridges was in poor condition in Tennessee and Arkansas, respectively. Bridge inventory data for the existing I-55 bridge, which includes components from both the Tennessee and Arkansas inventories, is summarized in the accompanying Application Template and supplemental NBI Summary (Appendix C).

TDOT and ARDOT have performed routine maintenance of the existing I-55 bridge, including extensive repairs in recent years, allowing this regionally significant corridor to continue operations while minimizing delays. Even with these recent maintenance efforts, the I-55 bridge is currently listed in fair condition, with structural steel deterioration that continues to corrode resulting in maintenance issues. The most recent inspection reports from August 2021 ([Tennessee](#)) and July 2022 ([Arkansas](#)) provide additional detail.

The age of the existing I-55 bridge is 74 years (built in 1949) and has been upgraded over the years. The existing bridge carries four lanes of traffic and consists of five continuous

steel spans with a cast-in-place concrete deck. Based off the NBI, the existing I-55 bridge is currently rated as Fair. The existing deck was given a Satisfactory (6) rating which indicated structural elements shown some minor deterioration. Both the Superstructure and Substructure were given a Fair (5) rating which indicates primary structures are sound but may have minor section loss. Finally, the Channel/Channel Protection was given a 5 rating which indicates bank protection is being eroded.

Appraisal Ratings encompass a scale ranging from zero to nine. The existing I-55 bridge achieved the following scores: a structural rating of 5, indicating it is “Somewhat better than minimum adequacy to tolerate being left in place as is”; a deck geometry rating of 2, signifying it is “Basically intolerable requiring a high priority of replacement”; an underwater clearance rating of 3, suggesting it is “Basically intolerable requiring a high priority of corrective action”; a waterway adequacy rating of 8, demonstrating it is “Equal to present desirable criteria”; and an approach roadway alignment rating of 6, indicating it is “Equal to present minimum criteria.”

III. PROJECT BUDGET

This section describes the Project budget and plan for covering the full cost of the Project from a combination of federal and state sources over several funding cycles. This BIP funding request includes a fully committed non-federal share through Project completion, as described below.

Previously Incurred Cost

Previously incurred costs cannot be considered as part of the local match requirement, nor can they be reimbursed with BIP grant funds. However, previously incurred expenses related to the Project development demonstrates the sustained commitment of TDOT and its partners to complete the Project in a timely manner, while preserving the corridor in good condition. Project development efforts to date have incurred a cost of approximately \$305,000 through 2023 for the Targeted Approach for Crossing the Mississippi River study, and in November 2023 issued a task order for \$1 million initiate the NEPA phase and continue stakeholder outreach. TDOT’s expenditures were comprised of 100% state dollars.

Future Eligible Cost

TDOT has developed a cost estimate for future eligible costs, reflective of the current stage of preliminary engineering. The Project cost is estimated at \$787,500,000, including all activities for project development and construction costs. The cost estimates include a 20% contingency to cover any cost increases as the Project advances through preliminary engineering, design, and construction. This level of contingency is appropriate for the current phase of Project development.

Table 1 below presents the forecasted Project costs across the multiyear Project Development and Construction period for Alternative 5A. Construction will primarily occur between 2026-2030 and in alignment with Standard Form 424C.

Table 1. Project Costs (millions of dollars)

Uses	2024	2025	2026	2027	2028	2029	2030	Total
Administration	\$4.9	\$4.9	\$4.9	\$4.9	\$4.9	\$4.9	\$4.9	\$34
Land, structures, ROW		\$2.5	\$2.5					\$5
Relocation		\$0.5	\$0.5					\$1
Engineering Fee		\$15.2	\$15.2	\$1.9	\$1.9	\$1.9	\$1.9	\$38
Environmental/ Planning	\$5							\$5
Inspection fees			\$12.4	\$12.4	\$12.4	\$12.4	\$12.4	\$62
Site Work			\$2	\$0	\$0	\$0	\$0	\$2
Demolition and removal			\$0	\$0	\$17.5	\$0	\$17.5	\$35
Construction			\$44.3	\$110.8	\$110.8	\$110.8	\$66.5	\$443
Equipment			\$1	\$1	\$1	\$	\$1	\$5
Subtotal	\$9.9	\$23.1	\$82.8	\$130.9	\$148.4	\$130.9	\$104.1	\$630
Contingency	\$2.5	\$5.8	\$20.7	\$32.7	\$37.1	\$32.7	\$26	\$157.5
TOTAL	\$12.3	\$28.8	\$103.4	\$163.6	\$185.5	\$163.6	\$130.1	\$787.5

Note: Totals may not add due to rounding.

Table 2 below presents a breakdown of the anticipated sources of future Project funds, broken out to reflect BIP, other Federal, and non-federal funds by amount and percentage, and assuming a four-year period for federal fund distribution, with a maximum of \$100 million per year starting in 2026, after BIP funds have been obligated. This table also presents the funds over the multiyear Project development and construction period.

Table 2. Project Funding (millions of dollars)

Source	2024	2025	2026	2027	2028	2029	2030	Total
BIP			\$100	\$100	\$100	\$93.8		\$393.8
Other Federal				\$39.4	\$39.4	\$39.4	\$39.4	\$157.5
State (TN/AR) funding	\$12.3	\$28.8	\$3.4	\$24.3	\$46.1	\$30.5	\$90.8	\$236.3
TOTAL	\$12.3	\$28.8	\$103.4	\$163.6	\$185.5	\$163.6	\$130.1	\$787.5

Note: Totals may not add due to rounding.

Federal Funding Request and Non-Federal Funding Commitment

TDOT is requesting \$393,750,000 (50%) in BIP Large Bridge for the Project. The non-BIP share (50% of Project costs) will come from funding commitments from Tennessee and Arkansas. The Tennessee share will be provided from dedicated [Transportation Modernization Act](#) (TMA) funds that will be allocated to Region 4 where the Project is located. The Project has been included as part of a prioritized list of transportation investments to be delivered by TDOT over the next decade as part of the [Build With Us](#) program. ARDOT's 25% share of the Project costs will include federal formula fund allocations and state matching funds from half-cent sales tax dedicated to the Renew Arkansas Highway Program. Both TDOT and ARDOT have provided letters of commitment to provide funding for the Project included in Appendix D.

Funding Stability: The non-federal share of funding committed to the Project is not being used for any other Program(s) and does not include any previously incurred, expended, or encumbered funds. The non-federal share of funding is not subject to any restrictions that would impact the Project schedule.

Ongoing Maintenance: Both TDOT and ARDOT, as the non-federal share funding partners, are committed to maintaining any federally supported infrastructure investments included in this Project scope for their full life cycle. TDOT and ARDOT have a long-standing maintenance agreement (Appendix B) since 1973, where both agencies agree to share 50/50 routine and major maintenance expenses. Both agencies have adopted asset management plans that comply with federal requirements.

IV. MERIT CRITERIA

State of Good Repair

The Project will replace the existing I-55 bridge, construct a new six-lane bridge to increase capacity, improve operations of vehicular traffic, and freight movement, replace the infrastructure assets on the bridge in Tennessee, and bring the Project corridor into a state of good repair (SOGR). Replacing the existing I-55 bridge will modernize the infrastructure to meet current design standards, reduce ongoing maintenance cost over time, and strengthen the resiliency of the regional tri-state network, a need reinforced by the fact that Memphis is located in the NMSZ, which is still one of the most seismically active regions in the United States with hundreds of small events occurring annually. As mentioned in the Project History and Context section, the existing I-55 bridge was not designed to withstand seismic activity, and the cost of retrofitting the bridge ranges between \$250 and \$500 million (if the bridge is not replaced).

If the Project is not completed in a timely manner, maintenance costs will increase as the assets in the corridor continue to deteriorate. Annual maintenance expenses are estimated at \$50,000, with major maintenance around \$10 million every 10 years. There are plans for a full painting job on the existing I-55 bridge estimated at \$50 million, and ARDOT will be undertaking a bridge inspection to identify additional repair needs. These investments are aimed at improving the SOGR but will not address other major deficiencies of the existing I-55 bridge that would be addressed by the Project.

Returning the corridor to a SOGR upon Project completion will reduce maintenance costs for the replaced assets and the need for major rehabilitation work over the decade. The BCA shows that the project will result in approximate \$30.5 million (2021 dollars) in maintenance savings over 30 years.

Both [TDOT](#) and [ARDOT](#) have defined performance targets in their most recent Transportation Asset Management Plans (TAMP) to ensure consistent and cost-effective maintenance of all agency assets. For bridge state of good repair, both states have set targets for bridges in good and poor condition. By replacing the existing I-55 bridge, combined with current asset management practices, TDOT and ARDOT will maintain or improve the current state of bridge assets in both states. The condition of the I-55 bridge crossing will improve from fair to excellent with the replacement project. Both agencies will coordinate on future Project maintenance and shared financial responsibilities in maintaining the bridge as a continuation of the existing maintenance agreement (Appendix B) and will maintain all assets in SOGR.

Safety and Mobility

The existing I-55 bridge was not designed to handle the current or future volume of daily traffic, or truck volume, resulting in significant mobility and safety concerns. The Project will add capacity using current design standards that will improve mobility and will incorporate Proven Safety Countermeasures, as identified by the FHWA, into the highway and local street network. The Project will support the [National Roadway Safety Strategy \(NRSS\) Safe System Approach \(SSA\)](#), a comprehensive approach to reducing serious injuries and fatalities on roadways through the U.S. ARDOT and TDOT will collaborate to design and operate a system that provides safe mobility for all users. The Project will integrate all the five SSA Safety System Elements.

The added capacity at this crossing will accommodate future traffic growth of approximately 17% between 2030 and 2050 (Appendix A). Benefits associated with improved travel times and reduced vehicle operating costs are estimated at \$200.9 million and \$131.3 million (2021 dollars), respectively, over 30 years. Safety benefits from reduced crash costs are estimated at \$107.3 million (2021 dollars) over 30 years.

The existing I-55 bridge experienced significantly higher crash rates per million vehicle miles traveled (MVMT) than the TDOT average statewide crash rate by facility type (four or more lanes divided urban interstate) during the most recently studied period between January 1, 2019, and December 31, 2021, as part of crash data reporting to the FHWA Highway Safety Improvement Program (HSIP). Compared to the statewide average crash rate of 2.027 crashes per MVMT, the bridge crash rate of 3.78 crashes per MVMT is 86% higher. Additionally, the existing I-55 bridge ranks in the top 10% and 12% bottlenecks (in the southbound and northbound direction of travel, respectively) of TN interstate segments. Crash data and bottleneck rankings are provided in Appendix F.

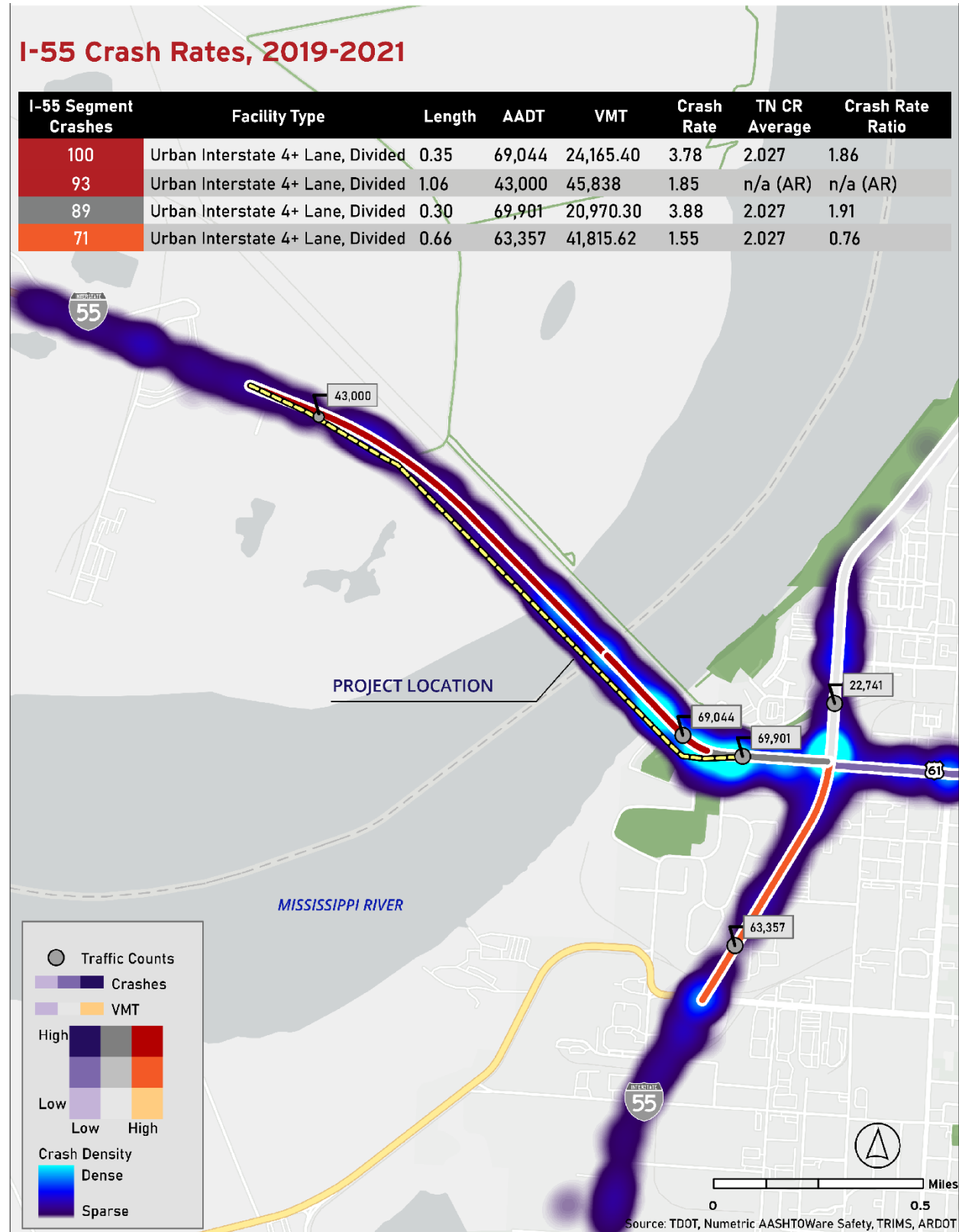
The observed crash rates on the bridge can primarily be attributed to vehicle congestion, geometric deficiencies, alignment, and conflicts with commercial vehicles on the existing bridge corridor. Currently, the corridor provides two, 10-foot travel lanes in each direction separated by a concrete divider, with less than 2-foot shoulders on either side of the roadway. A large proportion of the crashes involve a commercial vehicle (CMV) (46%) which further illustrates the need to accommodate both passenger car and heavy truck volume while improving the capacity and geometry of the bridge and corridor. CMV-involved crashes lead to longer clearing times resulting in greater queue lengths, and longer duration of delays.

The most common manner of collision on the bridge is Angle and Rear-End type (combined 67%) followed by sideswipe same direction, which can most likely be attributed to congestion, capacity, and roadway design. Moreover, this observation combined with the number of CMV-related crashes, can be attributed to the narrow lanes and inadequate shoulders for existing and future traffic volume on the bridge.

Added capacity, realignment, and replacement of the bridge will further improve safety and mobility by reducing truck-involved crashes and total crash rates. The proposed reconfiguration of the replacement bridge to establish acceptable shoulders and lane widths will significantly reduce crash potential. Additionally, the existing truck volume (31-36% from [ARDOT](#) and [TDOT](#) traffic counts) on the bridge corridor paired with the high percentage of CMV-related and angle/rear-end crashes further indicates the need to address the capacity and geometric issues with the bridge replacement and improve safety and mobility for passenger car and freight volume crossing the Mississippi River. Replacing the bridge will improve the overall mobility for historically disadvantaged communities and areas of persistent poverty within the surrounding project area by providing a safe and efficient connection to the greater tri-state region and key employment centers.

Figure 5 examines concentrations of high-crash density, crash frequency, and vehicle miles traveled along the bridge corridor.

Figure 5: I-55 MRB Crash Rates, 2019-2021



Economic Competitiveness and Opportunity

Memphis is a key freight hub for the Mid-South region, as well as the greater U.S. Interstate 55, which runs from Chicago to the Gulf of Mexico across the current bridge that spans the Mississippi River in Memphis. Additionally, throughout the region, the planned I-69 corridor will connect to population centers in Canada. I-40 runs from the East Coast in North Carolina through Memphis and ending on the West Coast in California. Finally, I-22 connects Memphis to the rest of the Southeast.

These connections are vital to access the city of Memphis' vast freight and cargo resources. The Memphis region contains the Memphis International Airport, which is the largest airport cargo in the world in terms of tonnage as of 2022. Memphis is one of only five cities in the U.S. that is served by five or more Class 1 railroads, which allows businesses in the region to ship by rail to any area of North America ([Mid-South Freight Flows & Industry Analysis](#)).

Since the city sits on the Mississippi River, the Port of Memphis and Port of West Memphis are also vital assets to the region and a great example of multimodal activity.

With all of these connections through Memphis, a truck leaving the city can reach roughly 35% of the population of the United States overnight, and 68% in two days. Memphis was ranked as the top logistics hub in the U.S. and globally by [Business Facilities in their 17th Annual Rankings Report](#) for the ability to “move anything anywhere in the world efficiently.”

The existing I-55 bridge across the Mississippi River is essential to freight movement throughout the corridor. Currently, truck traffic makes up over 40% of total traffic on the I-55 bridge (Appendix A). This number is only expected to grow, with I-55 bridge truck traffic forecasted to increase from 20,400 per day in 2022 to 23,400 in 2050.

In 2017, TDOT conducted a study to examine the economic impact of alternative construction scenarios for the I-55/Crump Boulevard Interchange (Appendix L), which included the impact of temporarily closing the Memphis-Arkansas Bridge and diverting traffic to I-40. The study found that average daily direct user costs would increase by \$209,301. These direct user costs include value of travel time, vehicle operating costs, and safety for both auto and truck users. The study also estimated the increase in daily logistics cost resulting from lost trips due to the bridge closure. The logistics cost was calculated as the loss of driver and sales revenue, and it was estimated to be \$174,413 per day.

TDOT is committed to the objectives of the Disadvantaged Business Enterprise (DBE) Program, and it is our policy to fully support and comply with 49 C.F.R. Part 26 and all other applicable statutes, regulations, and guidelines of the United States Department of Transportation (USDOT). TDOT has designated a DBE Liaison Officer (DBELO) within the Office of Civil Rights who is responsible for implementing all aspects of the DBE program. Implementation of the DBE program is in accordance with the same priority as compliance

with all other legal obligations incurred by TDOT in its financial assistance agreements with USDOT. The Small Business Development Office Certification Officers are tasked with certifying eligible DBEs as required by 49 C.F.R. Part 26 to participate in federally assisted contracts. Certified, eligible DBEs are included in a DBE directory. To meet the maximum feasible portion of its overall goal by race-neutral means, TDOT will make this policy statement available to all branches of state government and post it online for public viewing. It will be distributed to DBE and non-DBE communities that perform work on USDOT-assisted contracts by legal notices, and other appropriate means. In meeting its race-neutral participation policy, TDOT will make DBEs aware of contract opportunities and projects.

TDOT recognizes that ongoing coordination with the Department's Civil Rights Division is necessary to ensure that impacts are nonexistent or mitigated throughout. This includes opportunities for local TDOT sponsored job fairs for the Project, as well as strengthening the DBE goal of TDOT to match that of the city of Memphis. Memphis has the highest concentration of DBEs in the state of Tennessee. A DBE goal of 12-15% is recommended for this Project (compared to the proposed three-year DBE goal of 9.66% statewide). As the Project advances through NEPA and design and in preparation for construction procurement, TDOT and ARDOT will align contracting practices with those of USDOT, in an effort to provide good-paying jobs and opportunities that will boost the local economy.

Climate Change, Sustainability, Resiliency, and the Environment

The Project aims to address capacity limitations, with a particular emphasis on reducing congestion at existing bridge crossings, most notably on I-40 and I-55, to enhance the overall flow of traffic. This endeavor is expected to lead to a reduction in Vehicle Hours Traveled (VHT), subsequently resulting in decreased emissions of pollutants such as nitrogen oxides (NOX), sulfur oxide (SOX), fine particulate matter (PM2.5), and carbon dioxide (CO₂). The quantifiable benefits of this emission reduction extend to the overall positive impact on the French Fort neighborhood, a historically disadvantaged neighborhood. The benefits from reduced CO₂ and non-CO₂ emissions are estimated at \$29.4 million (2021 dollars) over 30 years.

Expanding lane capacity offers a dual benefit, as it not only alleviates congestion but also contributes to the reduction of greenhouse gas emissions, ultimately enhancing the overall resilience of the Project corridor. This initiative has a positive impact on underserved and vulnerable communities by improving local air quality and connectivity, while also promoting sustainable and financially responsible regional development.

The Memphis area, situated within the NMSZ, is approximately 120 miles to the south of New Madrid, Missouri, a region known for the remarkable seismic activity it witnessed

between 1811 and 1812. During that period, over 200 significant earthquakes occurred including six events with a magnitude of 8 or higher, and tremors extending as far as Washington, D.C. The NMSZ stands out as the most seismically active zone in central and eastern North America. The operational continuity of the Frisco, Harahan, I-55, and I-40 bridges is of utmost importance, as they facilitate the transportation of rail and truck freight, as well as passenger vehicles. This significance extends not only to Memphis and its neighboring areas but also to the broader tri-state region and the entire nation.

As described in the Project History and Context section, the existing I-55 bridge was not designed with seismic resilience in mind and retrofitting the bridge to meet earthquake resistance standards would entail a substantial financial commitment, with estimates ranging from \$250 million to \$500 million as assessed by TDOT. Consequently, retrofitting the bridge for seismic resilience is deemed unfeasible, necessitating the exploration of alternative strategies to bolster its earthquake resistance. To address this concern, the Project involves the construction of a new bridge engineered to withstand seismic activity, thus enhancing its overall resilience. Resiliency benefits are estimated at \$10.2 million (2021 dollars).

An Environmental Screening, Preliminary Purpose and Need, and Identification of the Likely NEPA Class of Action Technical Memorandum (Appendix A) was completed in 2023. Potential impacts to environmental resources were determined for Corridors 5A and 5B, but the determination of significant environmental impacts remains uncertain. NEPA was initiated in November 2023, which will provide a more detailed evaluation of the Project's environmental effects.

Equity and Quality of Life

Throughout the [Mississippi River Crossing Feasibility and Location Study](#), local residents, stakeholders, public officials, and representatives from government agencies were afforded the opportunity to contribute their input during community meetings. Minutes, agendas, and records of these public meetings were recorded. Documentation showing efforts to reach out to communities around the study area were also documented for the engagement efforts of this study. Future engagement efforts with Historically Disadvantaged Communities or populations will focus on community partnerships with local community organizations or advocacy groups that represent or serve historically disadvantaged communities. Future engagement plans will also be utilized to outline specific strategies for engaging communities as well as steps taken to ensure accessibility for all individuals. Public input gathered from historically disadvantaged communities such as letters, surveys, emails, and comments will be documented.

By integrating community involvement, impact assessments, and ongoing communication into the design phase and maintaining a strong commitment to community engagement,

the Project can effectively avoid, mitigate and minimize potential physical and economic displacements that may be required to construct the Project.

The Memphis-Arkansas Bridge is a vital crossing over the Mississippi River in Memphis and West Memphis, serving as a crucial link for residents, workers, and the transportation of goods between Tennessee and Arkansas. It plays a significant role in both freight and interstate travel. The main goals of the Project are to create robust cross-river connections and alternative routes for Memphis and the tri-state region. This initiative is focused on enhancing mobility to meet the current and future demands of growth and employment, ultimately contributing to the economic prosperity of Memphis and the broader tri-state area. Appendix K shows the location of major trip generators (including major employers, higher education institutions, hospitals, airports) that would benefit from enhanced mobility provided by the Project.

In addition to national and regional connectivity, the Project will expand and strengthen the multimodal network that connects neighborhoods in and near the corridor. The Big River is a pedestrian bridge running parallel to the I-55 bridge spanning the Mississippi. Nearly a mile in length, the Big River Crossing is the longest public pedestrian and cyclist bridge across the Mississippi, creating a connection from Memphis to West Memphis. The Project will provide improved connectivity to existing shared use trails.

Innovation

Innovative project design or construction techniques

TDOT will consider and evaluate alternative delivery methods to expedite this Project and begin construction in 2026. Alternative delivery methods can provide efficiencies in the procurement and project delivery process. Based on the preliminary schedule (Table 4 in the Project Schedule section), the evaluation of alternative procurement options will begin in Q1 of 2024 to determine the preferred delivery method.

TDOT and ARDOT currently use two methods of alternative delivery: Design-Build and Construction Manager/General Contractor (CM/GC). TDOT has developed a proven record of accelerated project delivery and both alternative delivery methods have been used successfully on bridge projects. TDOT has completed seven projects through alternative delivery, with active delivery (design/construction) on several projects, and four projects currently on active procurement. Through alternative project delivery, TDOT can incentivize contractors to meet important deadlines early. TDOT also penalizes contractors for failing to meet agreed upon deadlines. This type of work encourages contractors to streamline their work to finish projects early while also reducing the impacts to the surrounding community, such as travel delays, impacts to business, and construction-related noise. TDOT's alternative delivery program has seen a [\\$22-million cost savings and almost 70% faster delivery compared to traditional delivery.](#)

ARDOT also utilizes progressive design-build method for project delivery. One project using this method is located in West Memphis for I-55/I-40 and Highway 77 interchange, which is approximately 12 miles west of the Project. ARDOT has completed one project through alternative delivery, with active delivery on four projects, and two projects currently on active procurement.

Innovative technology

The Project will incorporate innovations in bridge design and seismic-resilient structures (e.g., structural damping, seismic bearings). During construction, real-time traffic monitoring and deployment of Smart Work Zones and increased Service Patrol and Wrecker coverage will help manage traffic and increase safety for construction workers and the traveling public.

The Project will also replace existing ITS technologies in alignment with TDOT SmartWay system deployment in Memphis. Traditional ITS technologies such Road Weather Information Sensors, Dynamic Message Signs on all approaches to the bridge, including Crump Boulevard and Riverside Drive, expanded camera coverage to include adjoining, intersecting arterials within the project limits, and Weigh-in-Motion systems will be added. Advanced ITS technologies such as Video Detection to monitor activity under and around the bridge for security purposes, Overhead Lane Control Signs for incident management and future maintenance activities, Smart LED Lighting system, and Connected Vehicle infrastructure for applications such as Freight Signal Priority will be included.

Innovative financing

The non-federal share of the Project costs will be provided through local funding commitments from the states of Tennessee and Arkansas. As funding partners, both TDOT and ARDOT will enter into agreements that will lay out funding, maintenance, and contractual responsibilities associated with delivering this project. Precedent maintenance agreements between TDOT and ARDOT (Appendix B) will continue after Project construction is complete and the agencies have provided letters of commitment (Appendix D) to provide the non-BIP funding share, deliver the project and meet all grant reporting requirements.

Innovative planning and environmental review process improvements

Utilizing inclusive outreach tactics and strategies to effectively reach a broad representation of stakeholders, businesses, and the public, including impacted individuals or groups within EJ communities, TDOT will leverage a variety of outreach efforts aligned with [PESO](#) (paid, earned, shared, owned) model. The PESO model allows TDOT to foster more robust engagement and garner meaningful input and feedback, with the goal of increased support of the Project. Leveraging data and insights from current audiences will

allow enhanced reach and relevance to capture new audiences, including utilizing a hybrid paid and organic digital media strategy.

Paid digital media will enable TDOT to break through platform algorithms and connect with audiences that are unlikely to discover TDOT initiatives or messages otherwise. A hybrid strategy simultaneously engages existing audiences while extending the reach of the project.

TDOT will develop a Project [website](#) that encourages public participation and expands opportunities for message reach, in addition to providing performance metrics. Designed for a positive user experience, the website will humanize not only TDOT but also the Project, provide clear and concise project information, and include interactive features (under development) such as maps, comment collection, future impacts and timelines.

In the past, TDOT has also used pop-up events (more recently as part of Project Blue Oval) where participants could stop-by informally, speak with TDOT representatives and provide feedback and comments as part of the public engagement process. This provides an opportunity to area residents who may not use or engage with social media to be part of the conversation.

V. BENEFIT-COST ANALYSIS

A benefit-cost analysis (BCA) was prepared using the Federal Highway Administration Bridge Investment Program Benefit-Cost Analysis Tool (BIP BCA Tool). The BCA Technical Memorandum (Appendix G) and the BCA model (Appendix H) are being uploaded separately as part of this grant application.

The Project produces a B/C ratio of 1.28, indicating that the benefits to society exceed the Project's costs. A summary of the discounted costs and benefits is shown in Table 3. All values are discounted to 2021 dollars at a 7% constant rate except carbon-related benefits which are discounted at 3% per USDOT BCA Guidance.

Table 3: BCA results for the America's River Crossing Project

Factor	Discounted Total (2021\$)
Benefits	
Safety - Reduced Crash Costs	\$107,304,997
Travel Time Savings	\$200,912,791
Vehicle Operating Cost (VOC) Savings	\$131,290,893
Resilience (Seismic)	\$10,154,403
Pedestrian/Bicycle Amenities and Health Benefits	n/a
Reduced CO ₂ Emission	\$26,723,383
Reduced Non-CO ₂ Emission	\$2,716,303
Other Environmental Benefits	\$261,158

Factor	Discounted Total (2021\$)
Maintenance Savings	\$30,507,078
Other Benefits (Maritime)	\$9,829,144
Residual Value	\$9,947,967
Total Benefits	\$529,648,117
Total Discounted Costs	\$414,690,112
B/C Ratio (BCR)	1.28
Net Present Value (NPV)	\$114,958,005

VI. PROJECT READINESS AND ENVIRONMENTAL RISK

This section provides requested information to demonstrate that the Project can begin construction in a timely manner after federal funding support is secured.

Technical Feasibility and Technical Competency

In 2006, the Mississippi River Crossing Feasibility and Location Study was published. This document served as an initial environmental screening tool, analyzing 13 corridors and recommending five corridors for further study. This initial environmental screening provided a general overview of the federal/state environmental regulatory framework and outlined several key environmental areas of concern. This analysis had been used to guide future studies and analyses.

Five corridor alignments were analyzed as part of the Targeted Approach for Crossing the Mississippi River Interstate 55 (US 64) (SR 61) (Appendix A). These alignments were based on corridors refined and analyzed in the Southern Gateway Study Cost-Benefit Analysis (2014).

The Targeted Approach for Crossing the Mississippi River Interstate 55 (US 64) (SR 61) also included a technical memorandum (Appendix A) that documented environmental screening, preliminary Purpose and Need, and identified the likely NEPA class of action. This technical memorandum documented a high-level, “desktop” environmental screening of available GIS and online database sources. The purpose of the document was to evaluate the potential for environmental constraints/fatal flaws that would preclude a corridor option from moving forward as a Build alternative through a formal decision-making process. Like the NEPA process, a No-Build option was given consideration in this preliminary environmental screening.

Based on the results of the preliminary screening, two corridors (Corridor 5A and Corridor 5B) were recommended for further consideration during the NEPA phase. The Targeted

Approach identified an Environmental Assessment (EA) as the likely NEPA class of action for both Corridor 5A and 5B. As of November of 2023, the NEPA phase has been initiated. The NEPA class of action is likely an EA but could be a Categorical Exclusion (CE), pending FHWA review of the environmental classification memo. Environmental clearance is anticipated by Q4 2024. Based on ongoing preliminary design, Corridor 5B will more than likely be eliminated as a preferred option as part of the NEPA phase and Corridor 5A will likely be considered the most viable option for constructing the new bridge at the time of the grant application. After the NEPA phase is complete, Corridor 5A, if it is determined to be the preferred alternative, will be refined and value engineered during final design.

Project Schedule

The proposed schedule for the Project is shown in Table 4 for traditional delivery, with an overall estimated time frame of almost seven years to get the Project from NEPA/preliminary engineering through open to traffic. The BIP Large Bridge Notice of Funding Opportunity (NOFO) indicates that the obligation deadline for FY 2023 funds is September 30, 2026. Based on the proposed schedule under alternative delivery, TDOT would be ready to obligate funds by Q1 2026, with construction scheduled to begin by Q3 2026 (within the 18-month period after obligation of fund). The proposed schedule provides significant time to achieve all key milestones in the project development process. Funds will be expended before the September 30, 2031, deadline. Appendix J includes two project schedules (traditional and alternative delivery) that demonstrate the Project can meet the BIP grant funds obligation, construction, and spending deadlines.

The environmental process is underway and anticipated to be completed within 12 months as required for an EA. If the Project is classified as a CE, the schedule may be accelerated. As part of the project development activities, TDOT will evaluate and determine the delivery method for the Project.

Table 4: Proposed Schedule for the America's River Crossing Project (Traditional Delivery)

Item	Task	Est. Duration	Start Date	Completion Date
1	Public and Agency Coordination		Q4 - 2023	Open to Traffic
2	NEPA	12 months	Q4 - 2023	Q4 - 2024
3	BIP Grant Award			Q2 - 2024
4	Environmental Clearance			Q4 - 2024
5	State/Local Approvals (including	9 months	Q3 - 2024	Q1 - 2025

Item	Task	Est. Duration	Start Date	Completion Date
	TIP/STIP/RTP modifications)			
6	Permitting	9 months	Q4 - 2024	Q2 - 2025
7	Evaluate/Determine Delivery Method	6 months	Q1 - 2024	Q2 - 2024
8	Develop PMP/Financial Plan	9 months	Q3 - 2024	Q1 - 2025
9	Final Design Procurement	4 months	Q3 - 2024	Q4 - 2024
10	Final Design	15 months	Q4 - 2024	Q1 - 2026
11	ROW Acquisition	12 months	Q1 - 2025	Q4 - 2025
12	Utility Relocation	12 months	Q3 - 2025	Q2 - 2026
13	Obligate BIP Funds			Q1 - 2026
14	Construction Procurement	4 months	Q1 - 2026	Q2 - 2026
15	Construction	4 years	Q3 - 2026	Q3 - 2030

Required Approvals

Environmental Permits and Reviews. NEPA was initiated in November 2023. Corridors 5A and 5B will be compared with a “No-Build” alternative to identify the preferred alternative. Target date for environmental clearance is Q4 2024. NEPA tasks currently underway or soon to begin including finalizing the purpose and need, production of the public involvement plan, alternatives screening methodology, traffic/safety operations analysis, and environmental technical studies. Past studies and additional project information can be found on the [Project website](#).

Project permits required prior to construction include:

- USACE Section 404/10 Permit.
- Section 9 USCG Permit for a bridge crossing of the Mississippi River.
- Obtain Tennessee and Arkansas State Historic Preservation Office (SHPO) concurrence with findings and signed Cultural Resources Memorandum of Understanding or Programmatic Agreement between the Tennessee and Arkansas SHPOs, Federal Highways Administration, and other consulting parties regarding mitigation of adverse effects to historic resources (if needed).

State and Local Approvals. The Project’s environmental phase is programmed in the Memphis MPO’s [RTP](#) (Table 6, page 40, RTP ID 62, Southern Gateway Study). Recent coordination between TDOT and both Memphis and West Memphis MPOs has affirmed their commitment to the Project and its inclusion in further updates to the STIP/TIP if the

BIP grant is awarded. The Memphis MPO, West Memphis MPO, TDOT, and ARDOT's commitment to the Project are demonstrated in the attached letters (Appendices D and E).

Federal Transportation Requirements Affecting State and Local Planning. TDOT's [Tennessee Statewide Multimodal Freight Plan](#) (2019) identified I-55 near the Arkansas State line as a freight bottleneck in need of improvement. Improvements to the I-55 Memphis-Arkansas Bridge are a necessary step to improve existing and sustain future efficient freight movement in the area. TDOT's commitment to this goal is seen through other local improvement projects, such as the [I-55 Crump Boulevard Interchange Project](#), which is improving the segment of I-55 directly east of the Memphis-Arkansas Bridge. Improvements to the Memphis-Arkansas Bridge are the next logical step in alleviating the local freight bottleneck and would ensure system resiliency for years to come.

Assessment of Project Risks and Mitigation Strategies. TDOT continually monitors material risks to the Project and develops strategies and mitigations. An overview of potential risks is outlined below. During project development, risks would be continually monitored and managed within the Project Team's controls.

Table 5: Assessment of Project Risks and Mitigation Strategies

RISK	DESCRIPTION / MITIGATION	RISK LEVEL
Material Price Cost Fluctuation & Availability	Due to supply chain issues affecting materials prices, potential for continued price fluctuations, resulting in additional costs.	Low
Labor Availability	Due to other construction projects in region, labor shortages and/or strike for key trades (operators, carpenters, etc.) may result in contractor/labor shortages, causing schedule delays, higher costs.	Medium
Contractor Availability	If contractors are busy on other projects, risk of insufficient bid competition.	Medium
Inflation	Escalation in construction cost. Inflation an issue over the past several months.	Medium
Funding Constraints	Project is not currently programed in the TDOT 2023-2026 STIP nor with the Memphis MPO. However, both have made verbal commitment to the Project.	Medium
Environmental	Environmental clearance is anticipated in late October 2024.	Low

RISK	DESCRIPTION / MITIGATION	RISK LEVEL
Permitting	USACE Section 404/10 approval is required to let first project. Section 9 USGS Permit is also required, as well as Tennessee and Arkansas SHPO concurrence. Delayed approval / change in plan will delay project letting, increasing schedule and cost.	Medium
Right-of-Way Acquisition	Delayed environmental clearance can delay right of way acquisition, which will delay the letting, this would delay Project schedule and increase costs.	Low

VII. ADMINISTRATION PRIORITIES AND DEPARTMENTAL STRATEGIC PLAN GOALS

The Project supports the Administration Priorities and Departmental Strategic Plan Goals as described in the Merit Criteria section of this application and documented in the BIP Large Bridge Project Application Template.

VIII. DOT PRIORITY SELECTION CONSIDERATIONS

The Project fulfills the Project Priority Considerations for Large Bridge Projects. The existing I-55 bridge is in fair condition, and while not expected to fall into poor condition within the next three years, the deck geometric rating of 2 puts the bridge in “high priority for replacement.” Without significant federal funding, the Project sponsors will be unable to complete this vitally important Large Bridge Project. Additional details on the Priority Considerations that the Project supports are documented in the BIP Large Bridge Project Application Template.