

251 MISSOURI BRIDGES PROJECT

Modernizing Missouri's Rural Global Supply Chain Infrastructure

Project Supporters

- Vicky Hartzler, Member of Congress, 4th District
- Boone County
- City of Boonville
- Callaway County
- Columbia Chamber of Commerce
- City of Columbia
- Commerce Bank
- Cooper County
- Quaker Oats



U.S. Department of Transportation Nationally Significant Freight and Highway Projects (INFRA Grants) for Fiscal Year 2019
March 4, 2019

Submitted by: Missouri Department of Transportation

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Cover Page

Basic Project Information:	
• What is the Project Name?	251 Missouri Bridges Project
• Who is the Project Sponsor?	Missouri Department of Transportation
• Prior INFRA Application	Yes, Missouri's Freight Corridors (Rocheport Bridge Element) (submitted November 7, 2017, no award)
Project Costs:	
• INFRA Request Amount	\$172,500,000
• Estimated federal funding (excl. INFRA)	\$63,300,000
• Estimated non-federal funding	\$350,432,900
• Future Eligible Project Cost (Sum of previous three rows)	\$586,232,900
• Previously incurred project costs (if applicable)	\$0
• Total Project Cost (Sum of 'previous incurred' and 'future eligible')	\$586,232,900
• Are matching funds restricted to a specific project component? If so, which one?	Yes
\$344,800,000 in State of MO funds restricted to 250 bridges project	
Project Eligibility:	
• Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on National Highway Freight Network?	100%
• Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on the National Highway System (NHS)?	41%
• Approximately how much of the estimated future eligible project costs will be spent on components constituting railway-highway grade crossing or grade separation projects?	0%
• Approximately how much of the estimated future eligible project costs will be spent on components constituting intermodal or freight rail projects, or freight projects within the boundaries of a public or private freight rail, water (including ports), or intermodal facility?	0%
Project Location:	
• State(s) in which project is located	Missouri
• Small or large project	Large
• Urbanized Area in which project is located, if applicable only 26 out of 251 bridges (10%) are located in urban areas	St. Louis, MO--IL Kansas City, MO--KS
• Population of Urbanized Area	St. Louis, MO—IL, 2,150,706 Kansas City, MO—KS, 1,519,417
• Is the project currently programmed in the:	
○ TIP (for 26 urban bridges)	Yes
○ STIP	Yes, partially
○ MPO Long Range Transportation Plan	N/A
○ State Long Range Transportation Plan	Yes
○ State Freight Plan	Yes

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1.0 Project Summary

Project Description: The Missouri Department of Transportation (MoDOT), requests \$172.5 million in INFRA funds to help offset the cost of reconstructing, rehabilitating, or re-decking 251 bridges throughout the State of Missouri. The total project cost is \$586.2 million. For the 251 Missouri Bridges Project (251 Bridges), INFRA funding represents 29 percent of the total project cost. The scope of work includes: 1) a new Missouri River Bridge at Rocheport (Rocheport Bridge), located on Interstate 70, a USDOT National Highway Freight Network; and 2) reconstruction, rehabilitation, or re-decking 250 rural bridges (26, or 10%, in urban areas). **The 251 Missouri Bridges Project literally, and figuratively, bridges gaps in service in the nation's rural areas.**

As the transportation crossroads for the entire nation, Missouri's strategic location puts it within 500 miles of 43 percent of the U.S. population, 44 percent of all U.S. manufacturing plants, and seven of the top 25 international cargo hubs in the United States. Missouri is also home to the country's 2nd and 3rd largest rail hubs in Kansas City and St. Louis, respectively, and the 3rd and 8th largest inland ports in St. Louis: Port of Metropolitan St. Louis (3rd) and Port of Kaskaskia, IL (8th), respectively. These ports are the northernmost lock- and ice-free ports on the Mississippi River. The planned bridge upgrades will benefit not only Missouri and the Midwest region, but the entire nation, by enhancing the safety and reliability of the I-70 corridor and the rural bridge network that flows into it. Annually, I-70 in Missouri carries almost 100 million tons of freight, worth over \$154 billion. About 30 percent of this tonnage and 60 percent of the dollar value is through-traffic – freight moving through Missouri to and from other states. In addition, over 1.1 million jobs nationwide and \$113 billion of the nation's GDP depend on I-70 in Missouri.

While I-70 carries the heavy load for interstate commerce and global freight transport, Missouri's rural roads and bridges carry the heavy load for intrastate commerce, which in turn feeds the I-70 corridor. In 2016, Missouri's agriculture, forestry, and related industries contributed \$88.4 billion in sales (14.8 percent of Missouri total), 378,223 jobs (10.5 percent of Missouri total), \$7.5 billion in labor income (9.3 percent of Missouri total), and \$6.2 billion in taxes. Rural bridges also contribute to significant agritourism including on-farm B&B's, Christmas Tree Farms, and fee hunting and fishing.¹

The new **Rocheport Bridge** will **replace** an existing 60-year-old 3,000-foot truss-and-beam fracture critical facility that is near the end of its service life. A new 3,000-foot bridge will enable vehicles on

Significance of Missouri's I-70 Freight Corridor

- ✓ Over 1.1 million jobs nationwide depend on I-70 in Missouri
- ✓ \$113 billion of nation's GDP depends on I-70 in Missouri
- ✓ Agricultural products from rural counties comprise one-fifth of freight leaving Missouri via I-70
- ✓ I-70 supports Foreign Trade Zones in Kansas City and St. Louis

¹ Missouri Farm Bureau Presentation. Blake Hurst, President.

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I-70 to continue to pass over the Missouri River, its floodplain, Katy Trail, and the Overton Bottoms Conservation Area. The new Rocheport Bridge will be built to accommodate six lanes between Kansas City and St. Louis (a future \$4 billion initiative). The interim configuration will accommodate two lanes in each direction, with additional room for emergency pull-off areas, where appropriate. Several innovative elements are proposed for Rocheport Bridge, including technology, procurement, and performance. A tiered environmental impact statement (EIS) process determined that the new bridge can be constructed immediately adjacent to the existing bridge, providing significant benefits, including increased worker and driver safety; uninterrupted traffic flow; and minimized environmental, utility, and right-of-way impacts. Replacing Rocheport Bridge is Missouri's top surface transportation priority because of the substantial economic contribution it provides within the state and national freight network.

The balance of the project, 250 bridges throughout Missouri is vital to the farm-to-market and raw-material-to-market transportation network, with many serving as feeder bridges to grain mills, livestock markets, ports, airports, interstates, and major distribution centers. The scope of work includes replacing 159 bridges with an average age of 72 years, rehabilitating 80 bridges (average age 52 years), and re-decking 11 bridges (average age 54 years), which aligns with INFRA's goal to rebuild America's deteriorating infrastructure. In comparison, the average age of bridges nationwide is 43 years.² Projects will be bundled for design-build delivery, when appropriate. It is important to note the disproportionate number of bridges Missouri must maintain given the vast number of waterways in the state. For example, there are approximately 30 million acres of farmland in Missouri and 24,385 bridges. Comparatively, Texas has 130 million acres of farmland and 52,937 bridges. **Missouri has 812 bridges for every one million acres of farmland** while Texas has only 407 bridges for every one million acres.

Partnerships. Recognizing the economic importance of the project, several partners are contributing financially, including the City of Columbia, the City of Boonville, Boone County, and Cooper County. A consortium of merchants near Rocheport have offered to provide a bike-friendly transportation shuttle for users of the Katy Trail, a cross-state recreational rails-to-trails facility passing under the bridge along the Missouri River, during the Rocheport Bridge construction, if needed. Also, immediately after INFRA award and during ramp-up, MoDOT will explore providing STEM opportunities within the local community and create partnerships that may include the University of Missouri-Columbia (MU), Missouri University of Science and Technology (S&T), and local high schools. The USDOT provides over \$1 million annually to fund the University Transportation Center at S&T. MoDOT has a strong history of partnering

Missouri's Roadway System

- 7th largest state highway system in America (33,859 miles)
- 6th most statewide number of bridges in America (24,385 bridges)*
- Ranks 48th in nation in state revenue raised per highway mile

*<https://www.fhwa.dot.gov/factoids/bridges/#>

² The Joplin Globe, September 8, 2018 (cited from American Society of Civil Engineers 2017 Infrastructure Report Card.

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on similar major projects - including the US 54 Champ Clark River Bridge project, in which partnerships were developed between the local high schools and contractor (with respect to engineering trades), and the US 60 Rogersville Freeway Project, in which partnerships were developed with local female and minority STEM students from the surrounding communities.

The 251 Missouri Bridges Project is "project ready" with the following tasks already completed or in progress: preliminary engineering for Rocheport rehabilitation is underway; NEPA is completed for Rocheport (re-evaluation needed) and NEPA for the rural bridges is underway; the 250 statewide bridges are at various design levels based on the level of environmental work already completed; design-build schedules have been developed; permits have been identified; and local match has been secured. MoDOT proposes to advance at least one project element to obligation of construction funds within one year as part of the accountability metric.

Project's History: The existing I-70 Rocheport Bridge was constructed in 1960 and has undergone three rehabilitations. MoDOT has programmed \$14.3 million to conduct a fourth rehabilitation, which is estimated to extend the facility's useful life by only 10 years; thereafter the bridge will need to be replaced. Rehabilitation is currently the only option due to funding constraints, without INFRA funding, rehabilitation will be initiated in 2020. Rehabilitation, however, is not preferred and has several negative economic and operational consequences, including traffic delays, financial losses for businesses, and longer-term overall higher construction costs. The 250 rural bridges represent the most critical farm-to-market bridges out of the almost 1,000 that are in poor condition and in need of repair or reconstruction throughout Missouri. The American Society of Civil Engineers' Infrastructure Report Card gives Missouri's bridges a score of C minus. The 250 bridges represent the heart of the Midwest's livelihood. These bridges support the transport of hogs and cattle to market, corn and soybean to grain mills, hay to pastures in wintertime, minerals to processing facilities, and vehicle and aviation parts to factories. They also enable farm implements (tractors, combines, grain trucks, cultivators, plows, cattle trucks, etc.) to easily and safely travel where needed. The reliability of the rural supply chain infrastructure - the 250 bridges - enables all Missourians to competitively participate in the export industry, which in turn relies on I-70 and the Rocheport Bridge.

Champion for Rural Missouri: While metropolitan areas within Missouri enjoy strong political will and active MPO coordination, there is no "champion" for the 251 bridges proposed herein. MoDOT proposes to be that champion. INFRA funding represents a unique opportunity to leverage an existing **Governor-priority rural bridge initiative** and the timing could not be better. Almost 1,000 bridges (rated poor) throughout Missouri make up the farm-to-market transportation network. Most of these bridges feed

"Rural roads and bridges are the most under-appropriated and under-recognized mode. Railroads and barges wouldn't matter without roads. One hundred percent of all farm output must first move by roads. And the closer you get to the farm, the worse they get."

Mike Steenhoek, Executive Director of the Soy Transportation Coalition

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into the I-70 goods movement corridor and rely on the I-70 Rocheport Bridge for economic vitality. **The**

The Governor's Funding Plan brings \$350 million in new transportation funding from nontraditional sources, bonded by the Missouri Highways and Transportation Commission, which minimizes risk and quickly mobilizes construction.

Governor's Funding Plan is bold and innovative – it will use general revenue funds, for the first time, to fund rural Missouri bridges. The

Governor's Plan, combined with INFRA funding will enable the State to mobilize multiple crews (through bundling) for new construction or rehabilitation, generating multiple benefits that align with the USDOT and INFRA priorities including safety and investing in infrastructure that enables American workers and businesses (especially those in rural areas) to thrive and be competitive, innovative, and accountable.

Transportation Challenges: The proposed network of bridge projects confront and mitigate the following three transportation challenges: 1) safety, 2) reliability, and 3) projected truck freight growth (from 49 percent to 56 percent by 2030).³ The primary goal is to enable the safe and swift movement of freight, workers, residents, and tourists in order to keep the regional and national economy strong.

Rocheport Bridge (safety and reliability). The transportation challenge and engineering need for the Rocheport Bridge is simple – the bridge is 60 years old, and with rehabilitation (for a fourth time), it will last only 10 more years and then it must be replaced. MoDOT has \$14.3 million for the fourth rehabilitation in 2020 and, absent INFRA funding, this is the only option, due to funding constraints. Rehabilitation, however, is not preferred and has several negative economic and operational

consequences. Traffic models predict that rehabilitation would close lanes for seven to nine months with three- to eight-hour backups (some 25 miles long) depending on the extent and number of incidents on any given day."⁴ Commuters, and industries that rely on just-in-time suppliers and workers, will suffer irreparable financial losses and state's ability to attract new industry will be negatively impacted. These delays are unacceptable on a corridor that serves as the main artery through the nation's heartland. Also, Rocheport Bridge is located just 11 miles west of Columbia - home to the region's only Level 1 Trauma Center and the University of Missouri, Columbia – the State's flagship university. Rehabilitation also puts

"The National Bridge Inventory shows that Rocheport Bridge is a condition 5 which is Fair (4 or less is Poor). Typically, condition 5 bridges are not closed in 10 years; however, the reason the Rocheport Bridge is a condition 5 is that the gusset plates are deteriorating and are fracture critical members. Once the gusset plates get too bad, the bridge will have to be weight restricted and then closed. The bridge will drop to a 4 in 2019 or 2020."

Dennis Heckman, PE
MoDOT State Bridge Engineer

³ Missouri State Freight Plan. Executive Summary, p. 12.

⁴ Source: MoDOT Director quote at Columbia Chamber of Commerce event, December 14, 2018.

<https://www.missourinet.com/2018/12/14/modot-director-rehabbing-mid-missouri-bridge-will-cause-three-to-eight-hour-backups-on-i-70-audio/>

*86,400 seconds in one day / 7,400 > 30 ton trucks crossing per day (7,400 stat from 2016 FASTLANE)

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construction crews and drivers at risk. **Traffic delays and increased risk during rehabilitation are estimated to cost the public more than the cost of a new bridge.** From a national and regional point of view, the need translates into uninterrupted economic prosperity. The Rocheport Bridge, quite literally, links Kansas City and St. Louis to each other and to the rest of the United States. **Any** delay at Rocheport Bridge negatively impacts the regional and national economy. For example, Ford's Kansas City auto manufacturing plant, which produces the F-150 and Transit Van, is the largest Ford plant in the world, based on units produced. With this volume, the need for uninterrupted suppliers is crucial.

250 Bridges (safety and reliability). The primary transportation challenge for the 250 statewide bridges is safety and reliability. These bridges are, on average, 60 years old - with several over 90 years old. Most of these bridges were built with a 50-year useful life. Many are weight-restricted and only allow for one lane of traffic at a time. In their current condition, these bridges are impediments to the efficient movement of equipment, commodities, and products. Local planning partners consistently identify the replacement of rural "one-lane" bridges as a priority for their area. The freight transportation system is how Missouri's five largest exports – transportation equipment, chemicals, food products, machinery, and agriculture – are delivered around the world.⁵ These bridges are critical to the industry supply chains feeding those exports and must be improved to compete globally and accommodate future growth. For example, currently trucks move 49 percent of the freight tonnage and 59 percent of the freight value in Missouri. By 2030, trucks are forecasted to move 56 percent of freight tonnage in Missouri.⁶

How Project Addresses Transportation Challenges. Constructing a new Rocheport Bridge will improve safety by eliminating worker and driver conflicts during new construction and eliminating the need to reduce traffic to one lane in each direction. Rehabilitation is currently the only option due to funding constraints. MoDOT recently closed just one lane of Rocheport Bridge for emergency maintenance, and traffic backed up for nine miles. The new bridge can be constructed while the old bridge stays operational, thus preserving the supply chain network, greatly improving safety and system reliability. The bridge upgrades will significantly improve travel reliability - both in the near term, by reducing recurrent and non-recurrent delays, and in the long term, by ensuring that no bridge meets the end of its useful life before being replaced or reconstructed. In addition, the project: 1) **improves** the rural supply chain network for at least 50 years (75 years for some bridges) by eliminating the weight restricted bridges thus improving the economic vitality of the rural area; 2) eliminates delays; and 3) improves reliability for Missouri's agriculture and manufacturing industries. **INFRA funding is critical** to successfully deliver each element of this project; absent INFRA assistance, the Rocheport Bridge new construction project will not be completed.

⁵ Missouri State Freight Plan. Chapter 1, p. 1-1.

⁶ Missouri State Freight Plan. Chapter 1, p. 1-5 & 1-6.

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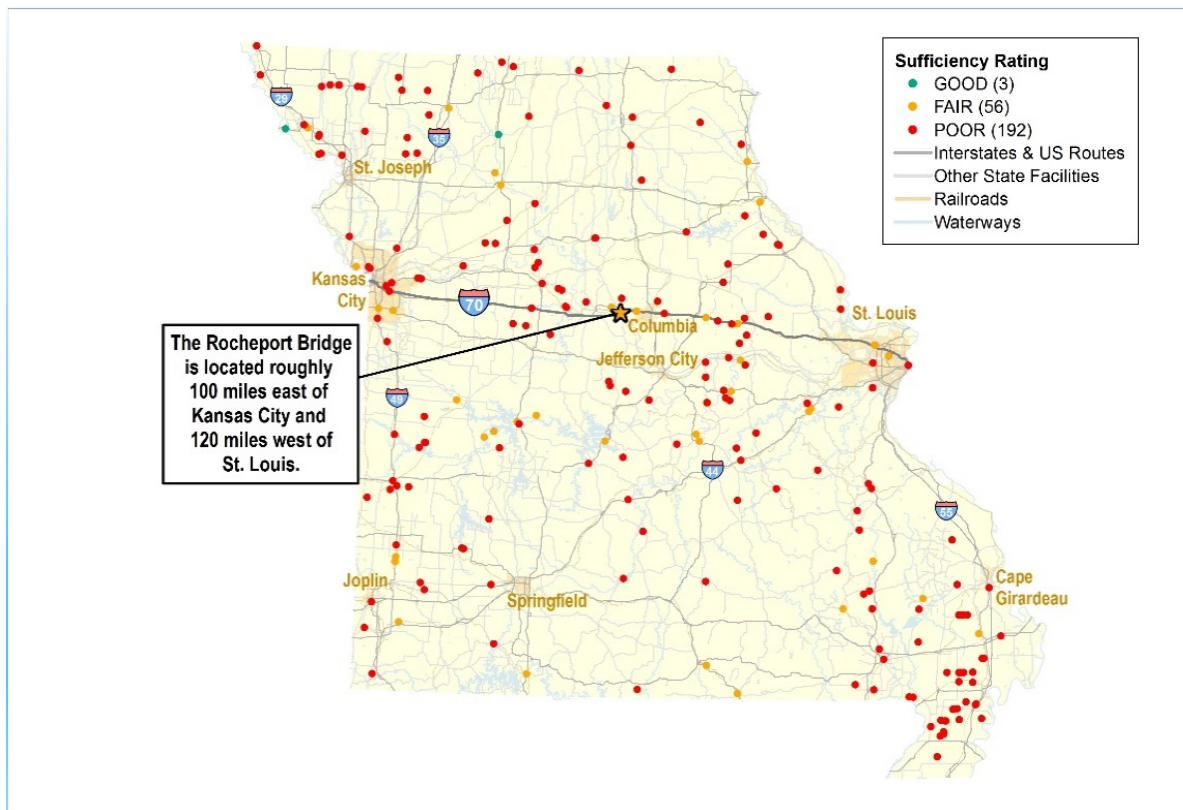
2.0 Project Location

This project consists of 251 elements within a network of projects. One element is located directly on Interstate 70 near Rocheport, Missouri. The other element consists of 250 bridges located throughout the state. The approximately 200-mile east-west corridor consists of rolling hills and valleys, with crop fields and pastures flanking the corridor on both sides. Steep bluffs are at some river crossings. I-70 passes through Columbia, which is the midpoint between Kansas City and St. Louis, and home to the University of Missouri, Columbia. Nationally, the project elements are located within 600 miles of major cities, including St. Paul to the north, Houston to the south, Denver to the west, and Atlanta to the east. The 250 bridges are located throughout the State of Missouri in primarily rural, agriculture or raw material (mining, forestry, etc.) areas. See Figure 1.

Table 1: Geospatial Coordinates

Location	Urban/Rural	Latitude	Longitude
I-70 Rocheport Bridge	Rural	38°57'35.06" N	-92°32'42.10" W
250 Bridges	Rural, 224 Urban, 26	See Appendix	See Appendix

Figure 1: Location of 251 Bridges with Sufficiency Rating



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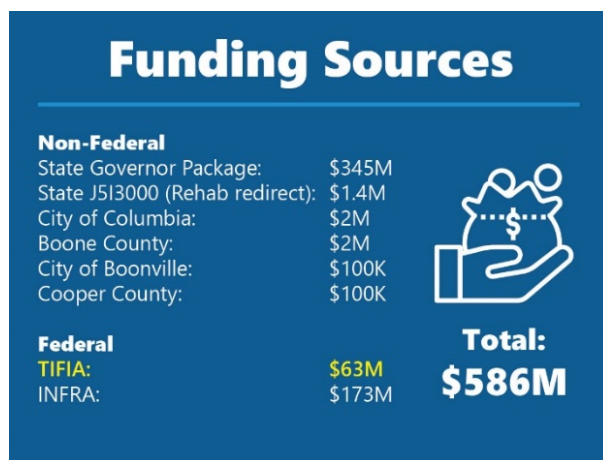
3.0 Project Parties

MoDOT owns all facilities where proposed improvements are located; therefore, no additional public or private entities are required to **deliver** this project. Some right-of-way will be necessary for the Rocheport Bridge element, but these are minimal with no anticipated obstacles.

4.0 Grant Funds, Sources and Uses of Project Funds

INFRA funding is critical to successfully deliver each element of this project and absent INFRA assistance, the Rocheport Bridge new construction will not be completed. As articulated in Merit Criteria #2, the availability of other revenue sources is extremely constrained in Missouri. The match contributions represent maximums MoDOT can contribute while ensuring fiscal health. The local match contributions from several cities and counties are a testament to the critical need for this project and are pledged on the condition of receiving INFRA funds. The required project budget details are summarized below:

- **The project provides for a 60 percent non-federal match.** The project budget, including the **funding sources for each major activity**, is articulated in Table 2.
- The project is **not a phased project** and therefore no phasing is illustrated.
- **There are no previously incurred** costs being counted toward the minimum project size requirement. A minimal amount of work on the 250 rural bridges may take place prior to the date of INFRA award, but this is deemed minor and would not affect the statutory local match requirement.
- **Non-Federal funds:** City of Columbia (\$2 million), Boone County (\$2 million), City of Boonville (\$100,000), Cooper County (\$100,000), State of Missouri Governor Package (\$344.8 million), and re-directed state funds for Rocheport rehabilitation (\$1.432 million). Evidence of these contributions is provided in Appendix A and B. All **non-federal funds are immediately** available and are **not** subject to a fixed time period.
- **The TIFIA loan** is in process and is expected to take approximately seven months to obtain approval. Loan approval does not negatively impact the project schedule.
- **Contingency** amounts (2 percent) have been included in all elements of the project to cover unanticipated cost increases. Also, design-build and lump-sum bidding is proposed, which protects MoDOT and taxpayers by sharing the risk with the successful contractor(s).
- The proposed project components will not count toward the **\$500 million INFRA cap** for port, rail, and intermodal projects.



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- **INFRA funds will be used for construction-related activities** and result in the completion of the new Rocheport Bridge and the reconstruction, rehabilitation, or improvement of 250 rural bridges. Other federal or non-federal funds will be used for all non-construction related items.

Project Budget

Table 2 : Scope of Work and Detailed Project Budget

Table 2: Scope of Work and Detailed Project Budget						
No.	Description	INFRA Funds \$172,500,000	Other Federal \$63,300,000	Non-Federal \$350,432,900	Total Cost \$586,232,900	% of Total Cost
CONSTRUCTION						
1. I-70 Rocheport Bridge (\$240,000,000)						
1.1	Grading and Drainage	\$ 9,720,000			\$ 9,720,000	
1.2	Base and Surface	\$ 26,290,000			\$ 26,290,000	
1.3	Bridge	\$ 129,835,100	\$ 5,865,000		\$ 135,700,100	
1.4	Miscellaneous	\$ 5,222,000	\$ 14,282,000		\$ 19,504,000	
1.5	Estimated Contract Total	\$ 171,067,100	\$ 20,147,000	\$ -	\$ 191,214,100	
1.6	Construction Contingency		\$ 3,824,000		\$ 3,824,000	
1.7	Contract Total + Const. Contingency	\$ 171,067,100	\$ 23,971,000	\$ -	\$ 195,038,100	
1.8	Utilities		\$ 4,547,000		\$ 4,547,000	
1.9	Subtotal Construction Cost	\$ 171,067,100	\$ 28,518,000	\$ -	\$ 199,585,100	
1.10	R/W Acquisition		\$ 5,827,000		\$ 5,827,000	
1.11	R/W Incidentals		\$ 226,000		\$ 226,000	
1.12	Engineering		\$ 22,200,000		\$ 22,200,000	
1.13	Construction Engineering		\$ 6,529,000	\$ 5,632,900	\$ 12,161,900	
1.14	Subtotal Incidentals	\$ -	\$ 34,782,000	\$ 5,632,900	\$ 40,414,900	
1.15	Total Rocheport Bridge	\$ 171,067,100	\$ 63,300,000	\$ 5,632,900	\$ 240,000,000	40.94%
2. 250 Rural Bridges (\$344,800,000)						
2.1	Engineering			\$ 55,084,000	\$ 55,084,000	
2.2	R/W			\$ 3,330,000	\$ 3,330,000	
2.3	Construction			\$ 286,386,000	\$ 286,386,000	
	Total 250 Bridges	\$ -	\$ -	\$ 344,800,000	\$ 344,800,000	58.82%
3. Project and Grant Administration (\$1,432,900)						
3.1	Project Administration	\$ 1,432,900			\$ 1,432,900	
	Total Project Administration	\$ 1,432,900	\$ -	\$ -	\$ 1,432,900	0.24%
Total Project Cost		\$ 172,500,000	\$ 63,300,000	\$ 350,432,900	\$ 586,232,900	100%

5.0 Merit Criteria

Fundamentally, the proposed 251 Rural Bridges Project quite literally “bridges gaps in service in the nation’s rural areas” and is the type of project the USDOT seeks to fund under the INFRA program. Missouri’s central location and diverse infrastructure has made the state a logistics hub for the nation. Companies looking to serve 80 percent of America’s population in two days’ transit time call Missouri home and depend on the reliability of the Rocheport Bridge and rural bridges located throughout the State of Missouri.

#1: Supporting Economic Vitality

Rural Bridges in Missouri are Critically Linked to Growth of America’s Economy.

I-70 Rocheport Bridge. Each year, more than **\$700 billion worth of freight** (almost 4 percent of all freight transported throughout the United States) travels through, to, from, or within Missouri using an interconnected transportation system. Nearly 60 percent of this freight value travels by truck, principally

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on interstate highways, such as I-70, and the primary freight network (PFN) defined under 23 U.S.C. 167(d), on which the 250 other bridges are included. Missouri's transportation network carries **double the national average of freight per square mile**,⁷ and its roads link to **the nation's second largest east-west interstate connection hub just east of St. Louis**. Missouri's strategic location puts it within 500 miles of 43 percent of the U.S. population and 44 percent of all U.S. manufacturing plants. I-70 is an artery of commerce serving the heart of national and regional distribution and commodity flows. Each year, approximately 100 million tons of freight, worth more than \$154 billion, is carried across I-70 in Missouri. **More than 30 percent of this freight is "through traffic,"** traveling from rural areas in the west to New York, New England, and the Mid-Atlantic (Philadelphia, Baltimore, and Washington). The connections to the West, Southwest, and North Central via I-29 and I-35 in Kansas City are critical to businesses and populations in rural and urban areas as well. To the south, American exports reach the Gulf Coast ports through the Missouri and Mississippi River ports served by I-70. In addition, the rail freight that flows to St. Louis from the East Coast and to Kansas City from the West Coast relies greatly on I-70 for inland distribution by truck in Missouri and throughout the Midwest. **All told, more than 1.1 million jobs nationwide, and \$113 billion of the nation's GDP, depend on I-70 in Missouri.** The proposed network of I-70 projects will help provide long-term reliability and resiliency for a freight network that reaches all corners of the United States.

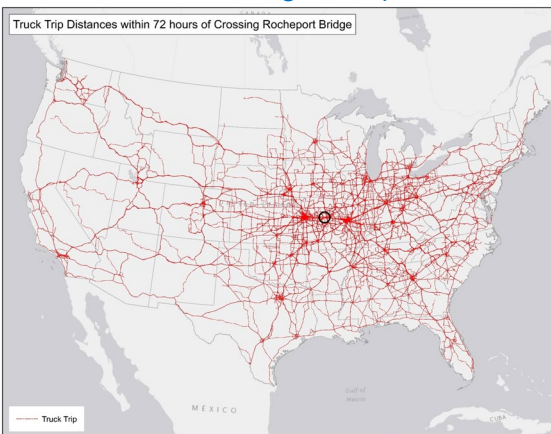
Figure 2: 24- and 72-hours after crossing Rocheport Bridge

Trucks Crossing the Rocheport Bridge take Freight throughout the United States

24 hours after crossing Rocheport



72 hours after crossing Rocheport



Source: American Transportation Research Institute (ATRI)

The project will also support national efforts to retain and grow automobile manufacturing in the United States, a high priority for the Federal Administration. Missouri is the 7th largest auto manufacturing state

⁷ Freight within Missouri makes up 3.65% of the national freight value, while the State comprises only 1.85% of the United States (69,715 square miles in Missouri compared to 3,797,000 square miles in the United States); per square mile, Missouri averages \$10 million of freight annually, compared to \$5 million of freight in the United States.

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in the nation, with 225 auto manufacturing establishments (15 motor vehicle manufacturing, 74 body and trailer, and 136 parts).⁸ Kansas City is the country's second largest auto hub.⁹ The Ford Motor Company's Kansas City Assembly Plant, located in Claycomo, Missouri, is the largest car manufacturing plant in the United States (based on units produced). Located just 10 miles to the north of I-70, the Kansas City plant employs 7,000 workers and relies on the uninterrupted flow of automotive supplies along this important artery, as do many manufacturers throughout the region. On the other side of the state near St. Louis, General Motors employs approximately 4,600 employees at its GM Wentzville, Missouri Assembly Plant. Not only does I-70 bring the materials required to assemble Ford trucks and GM's full-size vans, the Chevrolet Express and GMC Savana, and countless other types of equipment, it also helps bring assembled products and agricultural goods from other manufacturers and producers to retailers and distribution hubs. Nearly all of the top 100 freight generators within Missouri are located along the I-70 corridor.



Approximately 7,000 workers at the Ford Kansas City Assembly Plant rely on equipment, parts and machinery that arrive via I-70 to maintain the plant's status as the largest car manufacturing plant in the nation.

Located along I-70 midway between Kansas City and St. Louis, the **Rocheport Bridge** is a vital part of the National Highway Freight Network and a central connector for the state's two largest cities. The bridge carries 12.5 million vehicles per year, including 3.6 million trucks. While the area immediately surrounding the proposed project site is rural, several mid-sized cities are in close proximity to the bridge (including Columbia, Missouri - 11 miles away and one of the top 100 freight producers in the state), with a combined population of 587,192 people living within 60 miles. And finally, I-70 is the only four-lane, fully limited access, east-west corridor in Missouri. If the Rocheport Bridge required a 30-ton weight restriction or was closed, the detour would require a 39-mile detour resulting in an additional 47 minutes of travel time due to the speed limits and reduced number of lanes and stop lights in rural communities. MoDOT estimates over 7,400 trucks would be impacted daily.

Rural Bridges. Rural Missouri is a major driver of the state's economy, and its roads and bridges support the movement of commodities throughout the state, region, nation, and world. The proposal's 250 rural bridges support Missouri's agricultural economy, a behemoth \$88 billion industry that is among the top five in the state and represents nearly 30 percent of the state's 2017 \$305 billion gross domestic product.

⁸ https://www.mlive.com/auto/index.ssf/2015/03/these_are_the_top_10_states_fo.html. March 24, 2015.

⁹ <https://www.industryweek.com/expansion-management/kansas-citys-auto-hub-keeps-expanding>. November 6, 2015.

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The state's top agricultural commodities include beef cattle (ranked 2nd in the nation), turkeys (ranked 5th), soybeans (ranked 6th), hogs (ranked 7th), and corn (ranked 9th). **These commodities are produced on the state's nearly 100,000 farms, which cover two-thirds of the state's total land acreage.**

Missouri's rural roads and bridges are the backbone of these and other industries, enabling the export of the state's rural commodities throughout the nation and across the globe. The state has identified 250 deteriorating, rural bridges that are at, or near, the end of their useful lives, and as a result, are literally and figuratively 'road blocks' to Missouri's rural economy. Ninety-nine percent of these rural bridges are rated as "fair" (22 percent) or "poor" (77 percent), and Missouri ranks 11th among all states for the most structurally deficient (poor) rural bridges according to TRIP, a non-profit transportation research group.

It is also important to note that Missouri's "harvest season" is January 1 through December 31 (year-round). Grain and grain by-products are allowed to move at up to 10 percent heavier than a truck's licensed weight during harvest season. A large, Class 8 grain truck can have a gross vehicle weight of 88,000 pounds. Milk can move at weights up to 85,500 pounds, livestock can move at weights up to 85,500 pounds, and hay requires over-dimensional permits (width only). In all cases, trucks transporting agricultural products must observe the posted bridge weight limit. Because of weakened bridge structures, especially in the rural areas, trucks transporting agricultural products must travel many extra miles to bypass "sub-standard" bridges – using more fuel and increasing their travel times. This reduces economic competitiveness and increases cost.

The benefit-cost analysis (see Appendix C for detailed analysis) identified the following ways in which the proposed project will further support the economic vitality of the region and the nation as a whole:

Significant Reduction in Traffic Fatalities/Serious Injuries. Between 2011 and 2016, the number of collisions, mainly in the rural segments of I-70, **grew by 2.7 percent**, including 76 fatalities. The project is anticipated to prevent **8,850 injuries and collisions¹⁰ and generate \$142.3 million (discounted by 7 percent) in savings related to safety costs between 2020 and 2053.** These safety benefits are associated with the Rocheport Bridge project. Safety benefits are not estimated for the 250 bridges due to a lack of adequate and robust data. However, the proposed safety enhancements on rural bridges is expected to be significant given available qualitative data. A study by the Transportation Safety Board¹¹ found that bridge-related fatal and non-fatal crashes were higher than average for rural roads. The fatality rate for bridge-related crashes was found to be nearly two times that of the average crash. The majority of the targeted rural bridges do not meet standards for bridge safety, including bridge railings (84 percent do not meet the standard), transitions (78 percent), and guardrails (60 percent). Further, nearly 20 percent are one-lane bridges that carry two-lane traffic. The project will significantly improve safety by

¹⁰ Injuries and collisions include fatalities, non-fatal injuries, and property damage only crashes

¹¹ Mak, K., TRB State of the Art 6, 1987

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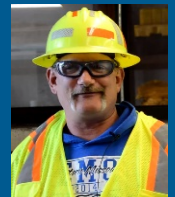
addressing all of these issues, including widening all 51 one-lane bridges to two lanes. These actions will improve safety, affecting those not only in the agriculture industry, but also all who cross bridges, including first responders, school buses, and rural Missourians on their way to work, school, church, etc.

Improved Traffic Movement due to Improved Infrastructure. The project will eliminate costly detours, which average 25 miles (and as much as 123 miles) for the targeted rural bridges. Detours due to weight restrictions, closings, frequent ad hoc repairs, etc., hamper movement of goods within rural areas, and to the interstates, which take the goods throughout the state, nation, and globe. The average age of the 250 targeted rural bridges is 60 years (the national average is 43); the oldest of the targeted bridges is 96 years. An assessment conducted by MoDOT found that many of the 250 rural bridges have “poor” or “serious” ratings for structural features including decking (70 percent), superstructure (34 percent), and substructure (19 percent). Ten percent of the targeted rural bridges are rated scour critical. All of these deficiencies increase the chance that a bridge will be classified as weight-restricted, which significantly affects farmers’ and manufacturers’ ability to move goods to the interstates and beyond. These deficiencies also impact other important and critical rural services. School buses that are too heavy to cross bridges would need to travel additional miles, increasing costs to schools, and increasing time spent on the bus. Emergency response times will climb if a load posting is very low or a bridge is closed. MoDOT maintenance efforts would also be compromised; snow plows that are too heavy to cross load-posted bridges affect the ability to clear roadways during winter operations, and other pieces of heavy equipment would incur additional costs by having to detour.

Work Zone Safety. Building a new bridge (instead of rehabilitation) yields significant work zone safety benefits including no anticipated lane restrictions, minimal traffic in work zones, and significantly reducing interactions between construction crews and motorists. Rehabilitation would place construction workers in close proximity with truck and passenger traffic, navigating through narrow construction zones after already enduring lengthy traffic delays. According to the FHWA, almost 30 percent of all work zone crashes involve large trucks,¹² and in 2015 there were an estimated 96,626 crashes in work zones nationwide, an increase of 7.8 percent over 2014.¹³ A commercial vehicle weighing at least 30 tons crosses the Rocheport Bridge every 12 seconds. In Missouri, between 2012 and 2017, 50 people were killed in work zone crashes on the state system routes and nine on the local system, for a total of 59 fatalities.¹⁴ The proposed construction of a new replacement bridge will minimize

“Working alongside traffic, it’s a lot like working in a war zone. There’s a lot of traffic flying past you at all times. You always have to be on your guard, always have to be aware of what’s going on around you, watching your co-workers. You not only have to get the job done but you have to worry about the traffic flying by.”

-MoDOT
Maintenance
Supervisor



¹² <https://safety.fhwa.dot.gov/wz/resources/fhwasa03010/>

¹³ https://ops.fhwa.dot.gov/wz/resources/facts_stats/safety.htm

¹⁴ <https://www.modot.org/work-zone-awareness>. Site accessed February 18, 2019.

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the likelihood of a work zone fatality as compared to the dangers associated with another rehabilitation project on this bridge.

Eliminate Bottlenecks in the Freight Supply Chain. The proposal to construct a new Rocheport bridge will prevent a future bottleneck that would have resulted from rehabilitation of the existing bridge in the near term and in the longer term when I-70 is widened to six lanes. Transportation modeling predicts the rehabilitation would close lanes for seven to nine months, with three- to eight-hour backups.¹⁵ **Any** delay at Rocheport Bridge negatively impacts the regional and national economy. Uninterrupted suppliers are crucial for the continued operation of the Ford Assembly Plant, GM Wentzville Assembly Plant, and hundreds of other manufacturers. Rural bridge bottlenecks will also be eliminated due to the removal of weight restrictions and converting one lane bridges to two lanes. The proposed project is expected to **save highway users, including freight carriers, over one billion hours of travel time because of diversions between 2020 and 2053.**

Restore the Condition of Infrastructure that Supports Commerce and Economic Growth. The existing I-70 Rocheport Bridge was constructed in 1960 and has undergone three rehabilitations. Rehabilitation is currently the only option without INFRA funding, and would be initiated in 2020. Rehabilitation, however, has several negative economic and operational consequences.

Improved Reliable Connectivity to Employment Centers. Missouri has a higher rural population than most other U.S. states. With approximately one-third of residents – just over 2 million people – living in the state's rural areas, the importance of the rural transportation network and rural bridges cannot be overstated. Rural residents' economic livelihoods depend on reliable bridges to access employment and other destinations. Of these rural residents, nearly 400,000 people work in the agricultural industry. Similarly, the Rocheport Bridge provides employment access for the estimated 587,192 people living in the primarily rural areas within 60 miles of the bridge site, as well as freight/commercial haulers using I-70 to reach manufacturing plants, farms, or distribution hubs.

Within Missouri, the poverty rate remains above the national average. Despite improvements, the 2018 Missouri Poverty report stated that more than 825,000 residents (or 14 percent of the population) live below the federal poverty level (compared to 12.7 percent nationwide). The proposed project will ensure that residents along the I-70 corridor can reach employment centers without lengthy and costly delays. The project will generate significant savings in travel time costs, vehicle operating costs, and other costs **totaling \$7.5 billion (discounted by 7 percent).** These savings will be most felt by low-income, blue-collar, and minimum wage workers, for whom commuting costs are a greater proportion of their overall

¹⁵ Source: MoDOT Director quote at Columbia Chamber of Commerce event, December 14, 2018. <https://www.missourinet.com/2018/12/14/modot-director-rehabbing-mid-missouri-bridge-will-cause-three-to-eight-hour-backups-on-i-70-audio/>

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income. According to the Brookings Institute, the working poor spend approximate 6.1 percent of their income on commuting, compared to 3.8 percent for other workers.

Savings in Operations and Maintenance Costs. With so many of the state's rural bridges past their useful lives and in a structurally deficient state, MoDOT is forced into a "worst first" approach to operations and maintenance. This approach is not cost-effective, as increasing portions of the O&M budget go toward deficient bridges for emergency repairs, frequent inspections, and frequent maintenance; as a result, proactive maintenance projects are underfunded. Replacing, repairing, and/or improving the targeted 250 rural bridges will allow the state to shift to a more cost-effective and proactive preventive approach. O&M for Rocheport Bridge will also be reduced because the new bridge will not require the same level of repairs and maintenance.

Benefit-Cost Analysis Summary. When compared to total project costs, including reductions in operating and maintenance costs over the analysis period, **the combined benefits of the 251 Missouri Bridges Project exceed costs by a ratio of 15.50, yielding a project net present value of \$7.3 billion.**

Table 3: Benefit-Cost Analysis Summary, Rocheport Bridge (millions 2017\$)

I-70 Rocheport Bridge	
Project Evaluation Metric	7% Discount Rate
Total Discounted Benefits	\$2,235.8
Total Discounted Costs	\$158.2
Net Present Value	\$2,077.6
Benefit / Cost Ratio	14.11

Table 4: Benefit-Cost Analysis Summary, Combined Network (millions 2017\$)

Combined Network (w/ Rocheport Bridge)	
Project Evaluation Metric	7% Discount Rate
Total Discounted Benefits	\$7,753.4
Total Discounted Costs	\$500.0
Net Present Value	\$7,253.4
Benefit / Cost Ratio	15.50

There are three primary factors driving the substantial net benefits, and all three are attributed to replacing Rocheport Bridge. First, and most important, the bridge is located on an important national corridor that crosses a large body of water. Closing Rocheport Bridge would lead to a significant number of long detours for travelers and freight haulers. There is no equivalent bridge nearby with the same level of capacity, which leads to an extremely high "time and expense" for re-routing traffic. Second, because the bridge is located in the Central Midwest, on a regional and national corridor, delays and detours reverberate throughout the nation's transportation network. Third, the costs for engineering and construction services are lower than many other parts of the nation, leading to relatively lower total project costs. Closing Rocheport Bridge for a long period of time is unlikely; however, the BCA no-build scenario illustrates the significant negative impacts a closure would have and also **follows feedback from USDOT regarding MoDOT's previous INFRA proposal for Rocheport Bridge.**

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Table 5: Summary of Benefits per Benefit Categories (millions 2017\$)

Benefit Categories		In Constant Dollars	7% Discount Rate
I-70 Rocheport Bridge (as Independent Utility)	Vehicle Operating Costs	\$2,166.9	\$338.0
	Business Time and Reliability Costs	\$4,400.1	\$796.7
	Value of Personal Time and Reliability	\$5,135.1	\$847.4
	Safety	\$929.1	\$142.3
	Environmental: Non-CO ₂	\$201.4	\$32.7
	Logistics/Freight Costs	\$445.7	\$78.7
	250 Bridges Project	Vehicle Operating Costs	\$12,476.0
Travel Time Savings	\$14,198.1	\$2,934.4	
Emissions Cost Savings	\$150.1	\$28.7	
Total Benefit Estimates		\$40,102.5	\$7,753.4

#2: Leveraging Federal Funding

The non-federal share of the project's future eligible project costs is 60 percent.

Private Funding Evaluations. As standard practice, MoDOT evaluates all transportation projects to ensure that private-sector funding is maximized. The following summarizes these efforts:

- **Tolls.** Tolling rural bridges is not a feasible option because there is not sufficient traffic to pay a high enough toll to fully cover financing, construction, maintenance, and toll collection costs.
- **Partnership Development.** MoDOT has a sophisticated and organized "Partnership Development" program that coordinates a variety of private sector participation options, including Transportation Development Districts, Transportation Corporations, Statewide Transportation Assistance Revolving Fund, Community Improvement Districts, Tax Increment Financing, and Economic Development Sales Tax. These options were deemed not viable or appropriate for the proposed project.
- **Private Sector Development.** Large "signature" projects can be candidates for private sector development funding - especially in urban areas. Due to the rural nature of the proposed projects and lack of large-scale, urban development surrounding the proposed infrastructure, this source of funding is not an option.

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Table 6: Leveraging INFRA Grant

Source	Total	% of Total	Federal vs. Non-Federal	Total	% of Total
State	\$ 346,232,900	59%	Total Non-Federal Share	\$ 350,432,900	60%
Local (cities/counties)	\$ 4,200,000	1%	Total Federal Share	\$ 235,800,000	40%
INFRA Grant	\$ 172,500,000	29%			
TIFIA Loan	\$ 63,300,000	11%			
Total	\$ 586,232,900	100%	Total	\$ 586,232,900	100%

Leveraging INFRA Grant					
Description	Non-Federal Funds		Federal Funds		% of Total Cost
	State	Local	INFRA Grant	TIFIA Loan	
250 Bridges					
State of Missouri Governor Package	\$ 344,800,000				58.82%
I-70 Rocheport Bridge & Administration					
State of Missouri Funding (Rocheport Rehab. Redirect)	\$ 1,432,900				0.24%
City of Columbia		\$ 2,000,000			0.34%
Boone County		\$ 2,000,000			0.34%
City of Boonville		\$ 100,000			0.02%
Cooper County		\$ 100,000			0.02%
INFRA Grant			\$ 172,500,000		29.43%
TIFIA Loan				\$ 63,300,000	10.80%
TOTALS:	\$346,232,900	\$4,200,000	\$172,500,000	\$63,300,000	
% of Total	59.06%	0.72%	29.43%	10.80%	100.00%

Broader Fiscal Constraints. INFRA funding represents **hope** for MoDOT in a state that has almost 24,500 bridges; 6th highest in the nation.¹⁶ Almost 65 percent of Missouri's land area is agriculture¹⁷ and there are more than 110,000 miles of running water (including the Missouri and Mississippi Rivers).¹⁸ The overwhelming number of rivers, streams, and channels in Missouri, coupled with its large agriculture industry, makes bridges a mission critical part of the supply chain. It is important to note that there are approximately 30 million acres of farmland in Missouri and 24,385 bridges. Comparatively, Texas has 130 million acres of farmland and 52,937 bridges. **Missouri has 812 bridges for every one million acres of farmland while Texas has only 407 bridges for every one million acres.**

In addition, Missouri's median household income is only \$51,542 (16 percent less than the national median household income of \$61,372)¹⁹ and 13 percent of Missourians live in poverty. But the agriculture community's living conditions are starkly different. Nearly all of Missouri's 100,000 farms are family owned and operated, and therefore competing with large industrial farming corporations. The 400,000 people who work on these family farms depend on a healthy transportation infrastructure system.²⁰

¹⁶ FHWA Highway Bridges by State, Total Count. <https://www.fhwa.dot.gov/factoids/bridges/>

¹⁷ USDA Farmland Information Center. <https://www.farmlandinfo.org/statistics/missouri>

¹⁸ Missouri Department of Conservation. <https://nature.mdc.mo.gov/discover-nature/habitats/rivers-and-streams>

¹⁹ U.S. Census Bureau. <https://www.census.gov/library/publications/2018/demo/p60-263.html>

²⁰ <https://agriculture.mo.gov/topcommodities.php>

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Many of the constraints listed above apply to any transportation project in Missouri and severely limit completing large-scale infrastructure projects. The FHWA has recognized this and selected Missouri as one of seven states to receive a Surface Transportation System Funding Alternatives (STSFA) grant to explore innovative ways to help pay for infrastructure and maintenance. If any new funding strategy was implemented today, it would take several years to raise sufficient funds to complete the proposed projects. **Today, INFRA funding, coupled with the Governor's Funding Plan, represents the most viable and immediate solution.**

#3: Innovation

The proposed project addresses all three Innovation Areas – Technology, Project Delivery, and Financing.

Innovation Area #1: Technology

Innovative **technology** will support the new Rocheport Bridge, including conduit in the barrier or housing under the bridge to facilitate vehicles of the future (e.g. autonomous vehicles, etc.) and additional cameras to monitor traffic in the surrounding area including Missouri River traffic.

Innovation Area #2: Project Delivery

Innovative project delivery strategies will be implemented for all 251 bridges and include:

P3 Project Delivery. MoDOT will seek a **design-build** contract team to complete the proposed work and will use additional innovative approaches in the contract to maximize cost-effectiveness. This includes **Accelerated Bridge Construction (ABC)** techniques to minimize road closure durations, and **bridge bundling** and **progressive design-build** (on one bundled bridge package) that are best suited for these approaches. The successful teams will be responsible for the design and construction of the 251 bridges, adjustment of utilities, and overall project management to ensure environmental compliance. Significantly, the flexibility of the design-build approach will allow the environmental re-evaluation process to proceed concurrently with design, resulting in additional cost and time savings. Bundling bridges allows for economies of scale for structures that are similar in size and design and/or are located near each other. Designs may be standardized, and the fabrication, delivery, and installation of pre-fabricated bridge components will speed the construction process. Progressive design-build maximizes collaboration among key players and ultimately results in an environment that can foster further innovation and cost savings.

Over the past 15 years, MoDOT has had great success with **design-build** projects, completing 11 projects, with three others currently under construction. MoDOT's recent experience has shown that the design-build approach opens the door for innovation, and promotes accelerated construction and added value. Nationally, design-build projects are completed 36 percent faster and six percent cheaper than conventional design-bid-build projects, collectively. MoDOT's design-build projects have been completed \$275 million under budget and 65 months ahead of schedule.

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Bridge Bundling. MoDOT also has experience with **bridge bundling** – on both large and small scales. From 2009-2013, MoDOT delivered the Safe & Sound Bridge Improvement Program, which replaced or repaired 802 of the state's poorest-condition bridges. MoDOT is nationally recognized for the bridge bundling approach. The Federal Highway Administration's Center for Innovative Finance Support highlights MoDOT's Safe & Sound Bridge Improvement Program as a case study²¹ on how to save money through bundling. FHWA has also developed a project bundling resource guide²² as part of its **Every Day Counts** initiative that features MoDOT's innovative projects and further highlights MoDOT's experience, expertise, and capacity for implementing innovative approaches.

With respect to the Safe & Sound Bridge Improvement Program, a single design-build contract was used to replace 554 of the bridges and was awarded in May 2009. Construction of the 554 bridges was completed 14 months ahead of the original schedule. A series of 72 smaller bridge bundles was used for the other 248 bridges in the program; the bundles were grouped by type, size, and/or location. The tremendous success of this program resulted in the project winning the People's Choice Award as the top national project in AASHTO's 2013 America's Transportation Awards competition and the impetus for the USDOT to encourage bridge bundling nationally in the current FAST Act. This approach is now being utilized by other states that need to manage construction of a large number of bridges over a short period of time.

MoDOT also bundled six mainline Interstate 70 bridges in an \$18 million design-build project that was completed in one year, while maintaining four lanes of traffic throughout the construction of the project. More recently, in February 2019, MoDOT selected a contractor for a \$36.1 million bridge bundling design-build project that will replace or rehabilitate 19 bridges along the Interstate 44 corridor in southwest Missouri. For this project, MoDOT illustrated its ability to accelerate procurement (less than three months from project funding to issuance of the RFQ) and environmental review.

- **Alternative Pavement Type Bidding** – Rocheport Bridge and the 250 statewide bridges will include alternative pavement in the design, when pavement is necessary.
- **No Excuse Bonuses** – MoDOT will motivate efficient construction by offering a No Excuse Bonus to contractors.
- **Lump-Sum Bidding** – By definition, lump-sum bidding, but itemized with a cost-loaded schedule and work elements, will be part of the design-build procurement method.
- **Best Value Procurement** – MoDOT will follow a Best Value Procurement process. Seeking quality and expertise will ensure successful and timely completion of the project.
- **Every Day Counts (EDC) Initiative** - MoDOT takes great pride in the EDC program in Missouri. From EDC-1 through the current EDC-5 program, MoDOT has enthusiastically researched and

²¹ https://www.fhwa.dot.gov/ipd/alternative_project_delivery/defined/bundled_facilities/case_studies.aspx

²² https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/docs/project-bundling-webinars-resource.pdf

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adopted all but one of the proposed innovations. One innovation cannot be adopted due to existing Missouri law. MoDOT will strive to incorporate applicable EDC initiatives into every INFRA component.

- **Data-driven Safety Analysis** – MoDOT has incorporated data-driven safety analysis into four out of the last five design-build procurements. Leveraging industry ideas on how to save lives is a fundamental driver in the design-build process at MoDOT and will be incorporated into the INFRA projects, as applicable.
- **Practical Design** - MoDOT is the birthplace of Practical Design,²³ a concept aimed at focusing on core traveler needs and controlling costs during project development. *Tracker* is a public document that not only measures and drives organizational performance, but also provides transparency and accountability to the citizens of Missouri. These processes have produced measurable results and will be used to ensure the proposed INFRA project remains on-schedule and on-budget, and meets the intended purpose and need.

Innovation Area #3: Financing

Innovative **Financing** components include:

- **Revenue resulting from recent or pending increases to sales or fuel taxes.** The Missouri Legislature is considering Senate Bill 201, which would replace the current vehicle registration fee system for certain motor vehicles, based on horsepower, with a fee system that is based on the vehicles' combined city/highway fuel economy. This bill is pending, with Governor support. If passed, implementation would begin August 28, 2021, with revenue starting in FY2022. The net increase in dedicated transportation revenue as a result of SB 201 is estimated at \$118 million annually, effective FY2023 (the first full year of revenue collection) with \$88 million for the State Highway Fund, \$17.7 million for cities, and \$11.8 million for counties.²⁴
- **Revenue from the competitive sale or lease of publicly owned or operated asset.** East of the Missouri River, on the Boone County side, there is significant tourism related to the Katy Trail, a local winery, and access to the Missouri River. The proposed Rocheport Bridge project consists of a new bridge south of the existing, outdated bridge. The right-of-way for the existing bridge could become a frontage road for tourism development. This would create an opportunity for a competitive sale or lease of existing right-of-way.
- **TIFIA Loan.** This project proposes to leverage rural TIFIA loan funding through the FHWA's Build America Bureau, and the Rocheport Bridge element will seek Rural Project Initiative funding enabling MoDOT to take advantage of the rural interest rate.

²³ http://epg.modot.org/index.php/Category:143_Practical_Design

²⁴ Committee on Legislative Research and Oversight, Fiscal Note, February 5, 2019.
<http://www.moga.mo.gov/OverSight/Over20191//fispdf/1119-02N.ORG.pdf>

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#4: Performance and Accountability

Lifecycle Costs: The estimated lifecycle cost for the I-70 Rocheport Bridge is \$158.2 million (discounted by 7 percent). The estimated lifecycle cost for the remaining 250 bridges is \$347.1 million (discounted by 7 percent).

Operations and Maintenance (O&M) Funding: Road and Bridge Maintenance is a line item in MoDOT's annual budget. The current budget includes \$463 million dedicated to O&M. The state constitution guarantees funding to operate and maintain state roads and bridges as promulgated in Article IV Sections 30(a)²⁵ and 30(b).²⁶

Controls for Secured O&M Funding: The state constitution secures O&M funding and prohibits diversion to other uses as promulgated in Article IV Sections 30(c)²⁷ and 30(d)²⁸. In addition, MoDOT has an extensive history of fully funding maintenance on its assets. Most recently, governor-supported SB 201 was introduced to State Legislature in January 2019. This bill will generate an estimated \$118 million/year in revenue by replacing the current registration fee system with one that is based on the vehicles' combined city/highway fuel economy. This act will take effect on August 28, 2021, and will contribute to funding MoDOT transportation projects, including O&M.

Accountability: MoDOT has a successful history of completing construction projects on time and under budget. MoDOT's design-build delivery approach has delivered over \$1.5 billion in projects, saving taxpayers \$275 million. Collectively, MoDOT's design-build projects have been completed 65 months (5 years) ahead of schedule. MoDOT is also the birthplace of *Practical Design*, a concept aimed at focusing on core traveler needs and controlling costs during project development. **Therefore, MoDOT agrees to commit to an obligation of construction funds by November 1, 2020, for at least one element of the 251 Bridges Project (assuming grant is executed by December 31, 2019) and a construction completion date of July 30, 2024.**

6.0 Project Readiness

The readiness of the project is reflected in the estimated implementation schedule. As the State of Missouri owns and operates all the affected facilities that constitute the project components, MoDOT can quickly amend the STIP for the Rocheport Bridge construction element (rehabilitation is already in the STIP) and move ahead with implementation upon securing INFRA funding. All 250 statewide bridges are programmed in the STIP and are at various stages of design based on the level of environmental work

²⁵ <http://www.moga.mo.gov/mostatutes/Consthtml/A04030a1.html>

²⁶ <http://www.moga.mo.gov/mostatutes/Consthtml/A04030b1.html>

²⁷ <http://www.moga.mo.gov/mostatutes/Consthtml/A04030c1.html>

²⁸ <http://www.moga.mo.gov/mostatutes/Consthtml/A04030d1.html>

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completed to date. The alignment for the new Rocheport Bridge has been evaluated and determined to be located adjacent to the existing facility and all right-of-way has been identified.

MoDOT has significant experience in the development and implementation of large and complex transportation capital projects. In addition, MoDOT plans, designs, constructs, and maintains 33,859 miles of highways and 10,385 state highway bridges (24,385 bridges statewide)—the nation's seventh largest state highway system, with more miles than Iowa, Nebraska and Kansas' systems combined. Between 2007 and 2016, MoDOT delivered over 4,600 projects collectively, 7 percent under budget and 94 percent on-time.

Technical Feasibility

The proposed projects were developed, scoped, and costed using MoDOT's policies, which are articulated in a comprehensive Engineering Policy Guide (EPG).²⁹ Because the projects will be delivered using either design-build or progressive design-build, design plans will be finalized during that process. However, MoDOT is still responsible for conducting extensive planning to advance a project to design-build; **these activities have been conducted and are the basis of design, costs, and contingency levels presented herein.** All cost estimates are based on MoDOT's stringent engineer's estimating procedures, which do not allow for project scoping based on cost per mile. The cost estimate utilized cost base analysis, including historic-based estimates using quantities calculated from the preliminary plans as well as historical data from previous bid openings. The costing also utilized the EPG's Engineering Factors Report (EFR) to calculate future engineering costs, construction engineering, and right-of-way incidentals. Engineering costs are based on actual construction costs for projects completed within the last three years.

NEPA Status and Known Project Impacts.

I-70 Rocheport Bridge. To move forward with the Rocheport Bridge element, MoDOT and the FHWA Division Office have conferred on numerous occasions regarding the process and timing to re-evaluate an existing Supplemental EIS (SEIS), which will satisfy the NEPA requirement for the project. Both agencies are confident the re-evaluation process will take less than six months.

Background. In 2006, MoDOT completed a [Tiered Environmental Impact Statement](#) (EIS) to reconstruct I-70 in its present location from Independence to Lake St. Louis with a minimum of three lanes in each direction. Subsequently, as part of FHWA's "Corridors of the Future" program, MoDOT conducted a SEIS on the 200-mile corridor to evaluate the impacts and benefits of an eight-lane I-70 that included dedicated truck lanes against the previously selected alternative. **FHWA issued a [Record of Decision](#)** for the truck-only lane concept in 2009. Within the SEIS, the Missouri River/Overton Bottoms area was identified as needing special focus. This special focus area includes the I-70 Missouri River crossing near

²⁹ (http://epg.modot.org/index.php/Main_Page).

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Rocheport.³⁰ Examples of mitigation actions developed as a result of special studies include ensuring no net loss of wetlands, possible dedication of funds for habitat enhancements and ecosystem restoration, native plantings, replanting two trees for every one tree removed, and preventing rise in flood elevation of water bodies impacted.

250 Rural Bridges. In January of 2019, MoDOT issued a request for an initial environmental review of all remaining 250 bridges that will be rehabilitated or reconstructed. This review will be completed by December of 2019, and MoDOT expects that most of the 250 bridges will be classified as Categorical Exclusions (CE).

STIP. MoDOT is the administrator for the statewide STIP; therefore, amending the STIP can be accomplished relatively quickly (in less than one month). All 251 proposed bridges are programmed in the 2019-2023 STIP. The Rocheport Bridge is programmed for a rehabilitation project; these dollars will be converted to construction should INFRA funding be awarded.

Statement of Work

Assuming the Grant Agreement is executive by December 31, 2019, certain elements will have an obligation of construction funds by November 2020 and fully completed/closed out by December 2024.

Reviews and Permits. Because all facilities are owned by MoDOT, the permitting process and need to obtain reviews and approvals from other agencies is minimal. Permits and coordination that will be required include: U.S. Army Corps of Engineers 404 Permit; EPA 401 and 402 Permits; No-rise Certification Permit from the Missouri State Emergency Management Agency; coordination with U.S. Fish and Wildlife, Missouri Department of Conservation and U.S. Coast Guard for seasonal patterns of pallid sturgeon habitat use; Missouri Department of Natural Resources; Missouri State Highway Patrol; and Missouri State Historical Preservation Office.

³⁰ Improve I-70, Record of Decision. FHWA-MO-EIS-09-01-FSEIS. Interstate 70 Corridor Supplemental Environmental Impact Statement. August 2009.

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Statement of Work and Project Schedule

Table 7: Statement of Work and Project Schedule

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#	Tasks	# of Months	Date Completed	Estimated Obligation Date (red shading)	Estimated Construction Start Date	Estimated Construction End Date	2020	2021	2022	2023	2024
<i>Mandatory Obligation Date, September 30, 2022</i>											
	Submit INFRA grant proposal	N/A	3/4/2019								
	INFRA Grant Agreement executed	N/A	12/31/2019								
	Project and Grant Management	60	12/31/2014								
	NEPA (re-evaluate Rocheport, CE expected for 250)	6	6/30/2020								
	Programming into STIP (Rocheport Construction only)	1	1/1/2020								
1. Rocheport Bridge New Construction (Design-Build)		56 Months									
1a.	RFP/RFQ Preparation	6	6/30/2020								
1b.	Advertise Project	1	7/1/2020								
1c.	RFQ and Industry Meetings for Design-Build	3	10/1/2020								
1d.	Final RFP (Obligate Construction Funds)	1	11/1/2020	11/1/2020							
1e.	Award Design-Build Contract	8	7/1/2021								
1f.	Construction	36	8/1/2024		8/1/2021	7/30/2024					
1g.	Notice of Completion/Ribbon Cutting	1				8/1/2024					
2. 250 Rural Bridges - Replacement/Rehab/Improvement (Design-Build, Progressive Design-Build, Bundled)		26 Months									
2a.	RFP/RFQ Preparation	3	3/30/2020								
2b.	Design, Permitting	6	9/30/2020								
2c.	Construction	16	3/30/2022	5/30/2020	10/1/2020	3/30/2022					
2d.	Notice of Completion/Ribbon Cutting	1	4/1/2022								
	All Project Elements Completed		12/31/2024								
	Records Retention/Audits		On-going								

Public Engagement. Public engagement and feedback is a critical element of MoDOTs planning and design process and the following summarizes efforts to date:

Missouri State Freight Plan. The [Missouri State Freight Plan](#) identifies the Rocheport Bridge project as a top priority project to improve freight movement in Missouri. The Freight Plan pairs freight stakeholder input with detailed analysis. These stakeholders included Metropolitan Planning Organizations (MPO), Regional Planning Commissions (RPC), economic developers, modal operators, business organizations, freight operators/owners, and residents. The proposed projects herein are a direct result of the planning process and align with several public input recommendations, including: 1) maintain and improve the designated Missouri Freight Network; 2) enhance Missouri’s ability to export goods, and 3) focus on maintaining a state of good repair.

“On the Move” Long-Range Transportation Plan. MoDOT initiated *On the Move* stakeholder outreach activities as part of an update to MoDOT’s [Long Range Transportation Plan](#). Missourians from all 114 counties and the City of St. Louis were included in this public outreach initiative. Over 18,700 Missourians strongly articulated the need to preserve the existing system, reduce project costs by minimizing delays, and eliminate freight bottlenecks.³¹

³¹ 2018 Long Range Transportation Plan Update: Technical Memorandums, pp. 10-11.

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The prioritization and selection of the bridge projects for this INFRA proposal is a direct result of this public input. The bridge improvements preserve the existing system and the design-build approach reduces project costs.

Supplemental Environmental Impact Study (SEIS). The SEIS process included a series of public events to gather feedback – specifically seeking comment on the draft SEIS, which described how rebuilding I-70 with six lanes compared to rebuilding I-70 with truck-only lanes. The bridge projects included herein for INFRA funding are the direct result of public input and the SEIS evaluation process.

“When our roads and bridges were created decades ago, builders didn’t have the 21st century in mind, they weren’t designed for semis carrying 900 bushels of soybeans and 950 bushels of corn.”

Mike Steenhoek, Executive Director of the Soy Transportation Coalition

The 21st Century Missouri Transportation System Task Force. In 2017 the state’s General Assembly adopted HCR 47 to establish the [21st Century Missouri Transportation System Task Force](#), a bi-partisan panel comprised of representation of the state government and the private sector. The Task Force held seven public hearings and three working sessions hearing presentations from national and local participants, learning about the condition and performance of area highways and bridges from MoDOT,

and receiving public testimony from concerned Missourians. The Task Force received testimony that the **I-70 Rocheport Bridge will soon need to be replaced and rural bridge projects need priority** among other projects.³²

Other. As recent as this past October (2018), MoDOT Director Patrick McKenna met with mid-Missouri planning partners in Jefferson City. In that meeting, Director McKenna stated that he hopes to see the I-70 Rocheport Bridge replaced and not just repaired.³³ A new bridge would prevent the enormous traffic congestion that would otherwise be created if the bridge were to be merely repaired.

State and Local Approvals for Federal Transportation Requirements

All facilities will be constructed on property owned by MoDOT. Local approvals are not required to deliver the project components; however, as articulated in the previous section, MoDOT conducted significant public outreach to ensure the projects are supported by Missourians. There is strong local support and no known opposition to any of the projects proposed herein.

Assessment of Project Crisis and Mitigation Strategies

The following risks and the strategies to mitigate or avoid any crises were evaluated:

³² Report of the 21st Century Missouri Transportation System Task Force, Submitted to the General Assembly January 1, 2018. (page 50)

³³ Hauswirth, Brian, MoDOT director says I-70 bridge in mid-Missouri should be replaced. Missouri.net. October 10, 2018. Source Online: <https://www.missourinet.com/2018/10/10/modot-director-says-key-i-70-bridge-in-mid-missouri-should-be-replaced/>

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1. **Weather** (rain, snow, severe wind delays): The project schedule will anticipate bad weather days;
2. **Higher costs than originally anticipated**: Value Engineering is a part of the design process and will reduce budget risk. MoDOT has a history of estimating extremely accurately and typically delivers 8-10 percent under budget. The Rocheport Bridge project will be bid as a fixed price variable scope. The budget will be what the contract is executed for with no possibility for additional cost.
3. **Bid protests**: Mitigation will include using procurement best practices and assigning qualified staff to the project during the bidding process; and
4. **Contractor default/bankruptcy**: Mitigation will be achieved by selecting contractors with extensive experience and track records, and both construction and performance bonding will be required.

7.0 Large/Small Project Requirements

Table 8: Large Project Determination

Large Project Determination:	
<ul style="list-style-type: none"> • Generate national or regional economic, mobility, or safety benefits? 	Yes, pp. 1, 2, 5, 8-14
<ul style="list-style-type: none"> • Is the project cost effective? 	Yes, pp. 14, 15, 21
<ul style="list-style-type: none"> • Contribute to one or more of the Goals listed under 23 U.S.C. 150 <ol style="list-style-type: none"> 1) Safety 2) Infrastructure Condition 3) Congestion Reduction 4) System Reliability 5) Freight Movement and Economic Vitality 6) Environmental Sustainability 7) Reduced Project Delivery Costs 	Yes, pp. 1, 2, 5, 8-14, 17-21, 25 Safety, Infrastructure Condition, Congestion Reduction, System Reliability, Environmental Sustainability, Reduced Project Delivery Costs
<ul style="list-style-type: none"> • Is the project based on the results of preliminary engineering? <p>*NEPA process previously completed and will be re-evaluated to ensure compliance. Proposed bridge replacement alignment is designed (see Appendix). Preliminary cost estimates are complete and project is programmed in STIP. As this project will utilize the design-build contracting method, final preliminary engineering activities will take place and be included in the design phase of the design-build contract.</p>	Yes,* p. 7
<ul style="list-style-type: none"> • Does the project have one or more stable and dependable funding or financing sources to construct, maintain, and operate the project? 	Yes, pp. 7
<ul style="list-style-type: none"> • Are contingency amounts available to cover unanticipated cost increases? 	Yes, pp. 7, Table 2 (p. 8)
<ul style="list-style-type: none"> • Is it the case that the project cannot be easily and efficiently completed without other Federal funding or financial assistance available to the project sponsor? 	Yes, pp. 7, 16, 17
<ul style="list-style-type: none"> • Is the project reasonably expected to begin construction no later than 18 months after the date of obligation of funds for the project? 	Yes, p. 3, 17, 18, 20, Table 7 (p. 23)