

ROCHEPORT BRIDGE & MAJOR I-70 FREIGHT CORRIDOR IMPROVEMENTS

Advancing Economic Vitality for Missouri and America

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?	Rocheport Bridge & Major I-70 Freight Corridor Improvements
• Who is the Project Sponsor?	Missouri Department of Transportation
• Prior INFRA Application	Yes, Missouri's Freight Corridors (submitted November 7, 2017, no award)
Project Costs:	
• INFRA Request Amount	\$102,200,000
• Estimated federal funding (excl. INFRA)	\$79,589,000
• Estimated non-federal funding	\$109,420,780
• Future Eligible Project Cost (Sum of previous three rows)	\$291,209,780
• Previously incurred project costs (if applicable)	\$0
• Total Project Cost (Sum of 'previous incurred' and 'future eligible')	\$291,209,780
• Are matching funds restricted to a specific project component? If so, which one?	Yes \$6,489,000 in other federal restricted to truck climbing lanes
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)?	100%
• 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	N/A
• Population of Urbanized Area	N/A
• Is the project currently programmed in the:	
○ TIP	N/A
○ 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

The Missouri Department of Transportation (MoDOT) requests \$102.2 million in INFRA funds to offset the cost of constructing three critical elements within a network of projects on the rural segment of Interstate 70 (I-70) between Kansas City and St. Louis: 1) a new I-70 Missouri River Bridge at Rocheport (Rocheport Bridge); 2) east-west truck climbing lanes at Mineola Hill; and 3) Transportation Systems Management and Operations (TSMO) strategies. For the I-70 Freight Corridor, INFRA funding represents 35 percent of the \$291.2 million total project cost. All three projects are located directly on I-70, which is a route on the USDOT National Highway Freight Network.

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 highway, bridge, and safety upgrades will benefit not only Missouri and the Midwest region, but the entire nation by enhancing the safety and reliability of this critical national freight highway corridor. 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.

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 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

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

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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 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

Eastbound and westbound **truck climbing lanes** will be constructed near **Mineola Hill** to enable traffic (both truck and passenger) to flow more safely and efficiently. Both lanes will be constructed using existing MoDOT right-of-way, with the westbound and eastbound lanes totaling 1.2 miles and 2.8 miles in length, respectively. The American Association of State Highway and Transportation Officials (AASHTO) recommends climbing lanes where vertical grades reduce the speed of trucks 10 mph below the average running speed of the remaining traffic.¹ Truck speed reductions at this location have been observed as high as 35 mph.

The **Transportation Systems Management and Operations** (TSMO) strategies will be initiated along the 189-mile length of rural I-70 between Exit 21 (Northeast Adams Dairy Parkway; near Kansas City) and Exit 210 (Wentzville; near St. Louis). These strategies begin the process of advancing this segment of I-70 to "Smart Highway" status and include: constructing outer road components, additional emergency crossovers, and emergency exit ramps to create alternate routes when incidents occur; improving Traffic Incident Management (TIM) training and collaboration across the corridor; deploying emergency response vehicles across the corridor for faster incident response and motorist assistance; installing road weather management devices providing granular road condition data to assist with maintenance and treatment activities; coordinating with in-vehicle technology services for V2X collaboration; deploying 10 additional closed-circuit television (CCTV) cameras across the corridor; deploying 10 additional dynamic message signs (DMS) for improved traveler information; launching truck parking availability hardware and software to provide advance notice to drivers; and expanding MoDOT's real-time, automated congestion warning system along I-70. The congestion and conflict warning system is a software-based tool that monitors live traffic speeds 24 hours a day and whenever backups occur on the interstate, immediately pushes warning messages to rural DMS, MoDOT's Traveler Information Map, KC Scout (a bi-state transportation management system in Kansas City), and MoDOT's Gateway Guide Transportation Management Center (TMC) in St. Louis whenever backups occur on the interstate.

¹ https://ops.fhwa.dot.gov/freewaymgmt/publications/frwy_mgmt_handbook/chapter5.htm

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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.

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 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 proposed project elements are “project ready” with the following tasks already completed or in progress: preliminary engineering for Rocheport Bridge rehabilitation has been initiated, NEPA is completed (re-evaluation will be needed), schedules have been developed, permits have been identified, and local match has been secured. MoDOT proposes to advance the project to construction within one year as part of the INFRA grant accountability metric.

Project’s History: The I-70 corridor in Missouri was constructed in the 1950s and ‘60s when the national interstate system was being constructed. I-70 was the first segment of the nation’s interstate highway to be “let” by a state highway department. At that time, the highway was designed to meet travel needs for 20 years (about 12,000 to 18,000 vehicles per day). More than 60 years later, the truck counts alone are within these ranges and I-70 is carrying traffic well beyond its intended use, with average daily traffic counts (ADT) along **rural segments** hovering at 65,508² (near Exit 21, Kansas City), 68,898³ (at Columbia), and 82,472⁴ (near Exit 210, St. Louis). 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

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 MoDOT 2016 Kansas City District Traffic Volume and Commercial Vehicle Count Map

³ MoDOT 2016 Central District Traffic and Commercial Vehicle Count Map

⁴ MoDOT 2016 St. Louis District Traffic and Commercial Vehicle Count Map

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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.

Constructing just three lanes in each direction is a \$4 billion initiative that would require MoDOT to shelve nearly all other scheduled projects for a decade if funding through traditional means. The proposed projects are three critical improvements, selected to increase reliability on a corridor that is high on freight movers' priority list, and will be significant steps towards the future I-70 build-out.

A commercial vehicle exceeding 30 tons crosses the Rocheport Bridge every 12 seconds.*

Champion for Rural Missouri: While metropolitan areas within Missouri enjoy strong political will and strong MPO coordination, there is no "champion" for rural I-70 infrastructure projects and the agriculture industry that relies on this critical piece of interstate to move goods. MoDOT proposes to be that champion. INFRA funding will enable the State to mobilize construction crews and generate multiple benefits that align with the USDOT and INFRA priorities – most notably safety and investment 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 I-70 network of projects confront and mitigate the following three transportation challenges: 1) safety, 2) reliability, and 3) communication. The primary goal is to enable the safe and swift movement of freight, workers, residents, and tourists 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.⁵ 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

⁵ 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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State's flagship university. Rehabilitation also puts 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. An uninterrupted supply chain is crucial.

Truck Climbing Lanes at Mineola Hill (safety and reliability). The I-70 segment proposed for truck climbing lanes currently slows travel time by 30-35 percent due to 4- to 6-percent grades. The new climbing lanes will allow vehicles to more safely pass slow-moving trucks and mitigate the relatively high crash rates at this location. Once the climbing lanes are constructed, there will be an overall 20 percent reduction in crash rates for both passenger cars and trucks.

Transportation Systems Management and Operations (TSMO) (safety, reliability, communication). MoDOT has a long history operating effective TSMO programs in Missouri's most urbanized areas. However, crashes on the interstates in the state's rural areas present many more challenges related to response time, incident clearance times, traffic delays, and secondary crashes. In Missouri, rural I-70 accounts for approximately 3,500 crashes per year. FHWA estimates that approximately 25 percent of congestion is caused by traffic crashes. In addition, for every minute a freeway travel lane is blocked during peak travel times, four minutes of delay result. Further, these primary crashes periodically result in more severe secondary crashes. The goal is to improve safety by reducing emergency response times, clearance times, and secondary crashes, and also to move this segment of I-70 to "Smart Highway" status. The INFRA investment is critical to implement now, helping bridge the gap until the six-lane facility can be built and the future "Smart Highway" further developed.

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. The truck climbing lanes at Mineola Hill will improve safety and improve reliability by creating a dedicated lane for commercial vehicles to traverse the steep grades, which in turn will reduce vehicle crashes caused by speed differential. TSMO strategies will improve safety and reliability, and improve overall communication by enabling MoDOT, Missouri State Highway Patrol, other emergency responders, and drivers to have advance notice about crashes and delays along the I-70 corridor, which in turn will reduce secondary crashes and improve traffic flow by providing real-time detour recommendations. **INFRA funding is critical** to successfully deliver each element of this project; absent INFRA assistance, none of the projects will be completed.

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2.0 Project Location

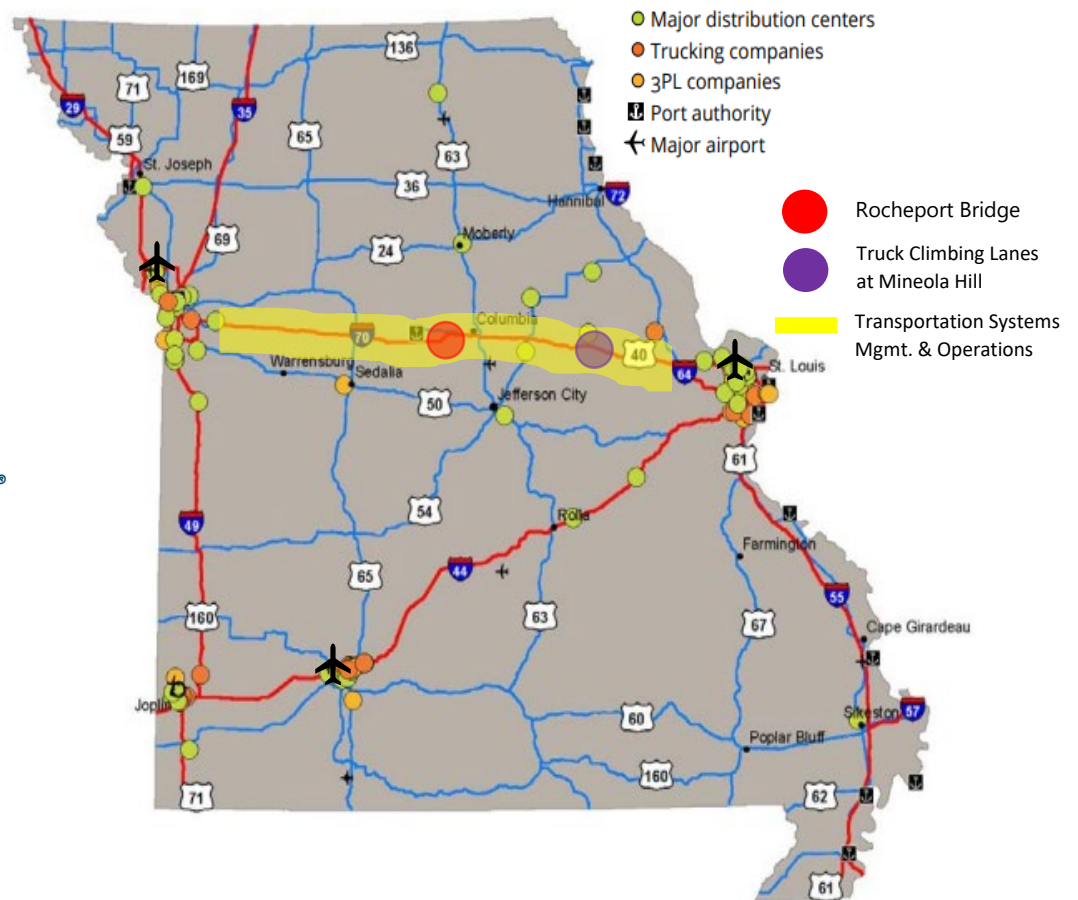
The proposed projects are located on the rural segment of I-70 between Kansas City and St. Louis. The approximately 200-mile east-west corridor consists of rolling hills and valleys, with crop fields and pastures flanking the corridor on both sides. Steep bluffs are at some river crossings. I-70 passes 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.

Table 1: Geospatial Coordinates

Location	Urban/Rural	Latitude	Longitude
I-70 Rocheport Bridge	Rural	38°57'35.06" N	-92°32'42.10" W
I-70 Truck Climbing Lanes at Mineola Hill	Rural	WB 38°53'33.90" N EB 38°54'01.02" N	WB -91°34'25.15" W EB -91°34'48.71" W
I-70 TSMO (end points)	Rural	KC: 39°01'36.83" N STL: 38°48'22.15" N	KC: -94°14'33.56" W STL: -90°50'31.17" W

Figure 1: Location of I-70 Corridor Improvements in relation to existing transportation infrastructure.

Image credit: Missouri Partnership®



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 Use of Project Funds

INFRA funding is critical to successfully deliver each project element; absent INFRA assistance, none will be completed. The availability of other revenue sources, as articulated in Merit Criteria #2, 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:

- **Non-Federal funds:** City of Columbia (\$2 million), Boone County (\$2 million), City of Boonville (\$100,000), Cooper County (\$100,000), and State of Missouri (\$105.2 million). Evidence of these contributions is provided in the Appendix.
- All **non-federal funds are immediately** available and are **not** subject to a fixed time period.
- **Other Federal funds** include a **TIFIA loan** (\$73.1 million), which is in process and expected to take approximately seven months to obtain approval. Loan approval does not negatively impact the project schedule.
- **INFRA funds will be used for construction-related activities** and result in the completion of all three project elements.
- The project budget, including **funding sources for major activities**, is provided in Table 2.
- **There are no previously incurred** costs counting toward the minimum project size.
- The project provides for a **38 percent non-federal match**.
- The project is **not a phased project** and therefore no phasing is illustrated.
- **Contingency** amounts (2 percent) have been included in all phases 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.

Funding Sources		
Non-Federal		
State of Missouri:	\$103M	
State of Missouri, Redirect:	\$2M	
City of Columbia:	\$2M	
Boone County:	\$2M	
City of Boonville:	\$100K	
Cooper County:	\$100K	
Federal		
Federal (J213226)	\$6.4M	Total: \$291M
TIFIA:	\$73.1M	
INFRA:	\$102.2M	

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Project Budget

Table 2: Scope of Work and Detailed Project Budget

Table 2: Scope of Work and Detailed Project Budget						
No.	Description	INFRA Funds \$102,200,000	Other Federal \$79,589,000	Non-Federal \$109,420,780	Total Cost \$291,209,780	% of Total Cost
1. I-70 Missouri River Bridge at Rocheport						
1.1	Grading and Drainage			\$ 9,720,000.00	\$ 9,720,000.00	
1.2	Base and Surface		\$ 15,132,000.00	\$ 11,158,000.00	\$ 26,290,000.00	
1.3	Bridge	\$ 86,400,000.00	\$ 44,868,000.00	\$ 4,433,000.00	\$ 135,701,000.00	
1.4	Miscellaneous			\$ 19,504,000.00	\$ 19,504,000.00	
1.5	Estimated Contract Total	\$ 86,400,000.00	\$ 60,000,000.00	\$ 44,815,000.00	\$ 191,215,000.00	
1.6	Construction Contingency			\$ 3,824,000.00	\$ 3,824,000.00	
1.7	Contract Total + Const. Contingency	\$ 86,400,000.00	\$ 60,000,000.00	\$ 48,639,000.00	\$ 195,039,000.00	
1.8	Utilities			\$ 4,547,000.00	\$ 4,547,000.00	
1.9	Subtotal Construction Cost	\$ 86,400,000.00	\$ 60,000,000.00	\$ 53,186,000.00	\$ 199,586,000.00	
1.10	R/W Acquisition			\$ 5,827,000.00	\$ 5,827,000.00	
1.11	R/W Incidentals			\$ 226,000.00	\$ 226,000.00	
1.12	Engineering			\$ 22,200,000.00	\$ 22,200,000.00	
1.13	Construction Engineering			\$ 12,161,000.00	\$ 12,161,000.00	
1.14	Subtotal Incidentals	\$ -	\$ -	\$ 40,414,000.00	\$ 40,414,000.00	
1.15	Total Rocheport Bridge	\$ 86,400,000.00	\$ 60,000,000.00	\$ 93,600,000.00	\$ 240,000,000.00	
1.16	Rounded Totals	\$ 86,400,000.00	\$ 60,000,000.00	\$ 93,600,000.00	\$ 240,000,000.00	82.41%
2. Truck Climbing Lanes at Mineola						
2.1	Grading and Drainage		\$ 377,000.00		\$ 377,000.00	
2.2	Base and Surface		\$ 796,000.00		\$ 796,000.00	
2.3	Bridge		\$ 4,327,000.00		\$ 4,327,000.00	
2.4	Miscellaneous		\$ 493,000.00		\$ 493,000.00	
2.5	Eastbound & Westbound Climbing Lanes	\$ 3,100,000.00	\$ 2,500,000.00	\$ 704,000.00	\$ 6,304,000.00	
2.6	Estimated Contract Total	\$ 3,100,000.00	\$ 8,493,000.00	\$ 704,000.00	\$ 12,297,000.00	
2.7	Construction Contingency		\$ 496,000.00	\$ 1,173,000.00	\$ 1,669,000.00	
2.8	Subtotal Construction Cost	\$ 3,100,000.00	\$ 8,989,000.00	\$ 1,877,000.00	\$ 13,966,000.00	
2.9	Engineering			\$ 588,086.00	\$ 588,086.00	
2.10	Construction Engineering			\$ 1,247,294.00	\$ 1,247,294.00	
2.11	Subtotal Incidentals	\$ -	\$ -	\$ 1,835,380.00	\$ 1,835,380.00	
2.12	Total Truck Climbing Lanes at Mineola	\$ 3,100,000.00	\$ 8,989,000.00	\$ 3,712,380.00	\$ 15,801,380.00	
2.13	Rounded Totals	\$ 3,100,000.00	\$ 8,989,000.00	\$ 3,712,380.00	\$ 15,801,380.00	5.43%
3. Transportation Systems Management and Operations						
3.1	Technology & Traditional Infrastructure	\$ 12,700,000.00	\$ 10,600,000.00	\$ 12,108,400.00	\$ 35,408,400.00	
3.2	Total TSMO	\$ 12,700,000.00	\$ 10,600,000.00	\$ 12,108,400.00	\$ 35,408,400.00	
3.3	Rounded Totals	\$ 12,700,000.00	\$ 10,600,000.00	\$ 12,108,400.00	\$ 35,408,400.00	12.16%
Total Project Cost		\$ 102,200,000.00	\$ 79,589,000.00	\$ 109,420,780.00	\$ 291,209,780.00	100%

5.0 Merit Criteria

#1: Supporting Economic Vitality

Fundamentally, the proposed project “bridges gaps” in service in the nation’s rural areas and deploys advanced technology - two types of projects 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 or are located within the Midwest region and depend on the reliability of I-70 in Missouri.

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I-70 Corridor in Missouri is Critically Linked to Growth of America's Economy. 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 that includes: Highway: Interstate 70 and other interstate highways traversing the state (59 percent of \$700 billion); Rail: The nation's second and third largest rail hubs – Kansas City and St. Louis (38.5 percent); Water: The Missouri and Mississippi Rivers (1 percent); Air: Three of the nation's top cargo airports – Kansas City, St. Louis, and Springfield (1 percent); and Pipelines: 0.5 percent.

Missouri's transportation network carries ***double the national average of freight per square mile***,⁶ 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.

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 in the nation, with 225 auto manufacturing establishments (15 motor vehicle manufacturing, 74 body and trailer, and 136 parts).⁷ Kansas City is the country's second largest auto hub.⁸ 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

⁶ 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.

⁷ https://www.mlive.com/auto/index.ssf/2015/03/these_are_the_top_10_states_fo.html. March 24, 2015.

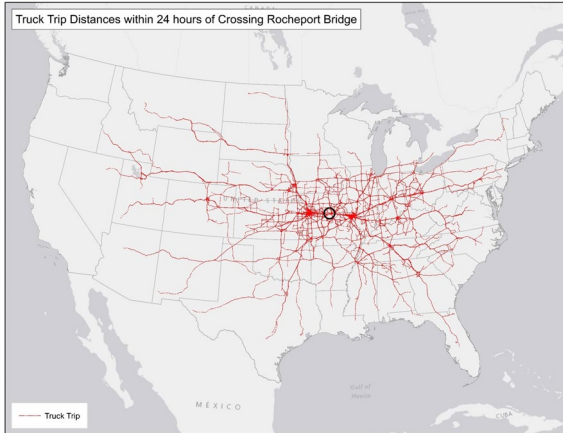
⁸ <https://www.industryweek.com/expansion-management/kansas-citys-auto-hub-keeps-expanding>. November 6, 2015.

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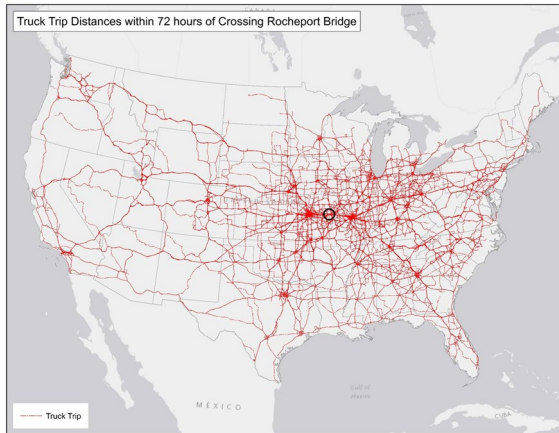
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Trucks Crossing the Rocheport Bridge take Freight throughout the United States

24 hours after crossing Rocheport



72 hours after crossing Rocheport



Source: American Transportation Research Institute (ATRI)

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.

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. The benefit-cost analysis (see Appendix 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:



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.

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Significant Reduction in Traffic Fatalities/Serious Injuries. Between 2011 and 2016, the number of crashes, mainly in the rural segments of I-70, **grew by 2.7 percent**, including 76 fatalities. The Rocheport Bridge project, alone, is anticipated to prevent **8,850 injuries and collisions⁹ and generate \$142.3 million (discounted by 7 percent) in savings related to safety costs between 2020 and 2053.** The proposed technology strategies - including additional closed-circuit television (CCTV) cameras, additional dynamic message signs (DMS), truck parking availability hardware and software, and expansion of MoDOT's real-time, automated congestion warning system along I-70 - to address safety and capacity deficiencies that currently disrupt the flow of national traffic. These added technology strategies are anticipated to prevent **388 injuries and collisions¹⁰ and generate \$17.2 million in savings related to safety costs (discounted by 7 percent over 34 years).** Implementation of these improvements is the first step in making significant gains in safety and reliability on the corridor.

Climbing lanes near Mineola Hill will reduce motorist frustration, and consequently improve interaction between motorists and freight haulers as they travel along I-70. Eastbound and westbound truck climbing lanes will enable traffic (both truck and passenger) to flow more safely and efficiently. Motorists are less likely to engage in illegal or dangerous driving behavior in an effort to pass slow-moving trucks. Improving interactions and reducing collisions along this corridor is anticipated to prevent an additional **73 injuries and collisions and generate an additional \$2.4 million in savings related to safety costs (discounted to 7 percent over 34 years).**

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,¹¹ and in 2015 there were an estimated 96,626 crashes in work zones nationwide, an increase of 7.8 percent over 2014.¹² A commercial vehicle weighing at least 30 tons crosses the Rocheport Bridge every 12 seconds. In Missouri, between 2012 and 2017, 50 people were

"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



⁹ Injuries and collisions include fatalities, non-fatal injuries, and property damage only crashes

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

¹¹ <https://safety.fhwa.dot.gov/wz/resources/fhwasa03010/>

¹² https://ops.fhwa.dot.gov/wz/resources/facts_stats/safety.htm

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killed in work zone crashes on the state system routes and nine on the local system, for a total of 59 fatalities.¹³ The proposed construction of a new replacement bridge will minimize 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 project will eliminate existing bottlenecks caused by truck traffic that must climb the Mineola Hill segment of I-70 without the assistance of a climbing lane. In addition, the proposal to construct a new bridge will prevent a future bottleneck that would have resulted from rehabilitation of the existing bridge now and in the future when I-70 is constructed to six lanes. As previously described, transportation modeling predicts the rehabilitation would close lanes for seven to nine months with three- to eight-hour backups.¹⁴ ***Any*** delay at Rocheport Bridge negatively impacts the regional and national economy. Uninterrupted supplies are crucial for the continued operation of the Ford Assembly Plant, GM Wentzville Assembly Plant, and hundreds of other manufacturers. The climbing lanes alone are expected to ***save highway users - including freight carriers - over 1.3 million hours of travel time, and \$18.1 dollar value over 35 years (discounted by 7 percent). The combined network project will generate more than \$87.1 million in logistics savings and \$807.2 million savings in business time and reliability costs through 2053 (discounted by 7 percent).***

Restore to Good Condition the 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 is planned to be initiated in 2020. Rehabilitation, however, would have several negative economic and operational consequences. ***Not replacing the Rocheport Bridge now will cost users \$338 million in vehicle operating costs through 2053 (discounted by 7 percent), money which they could have spent elsewhere.***

Advance National and Regional Economic Development by Improving Connections to the Nation's Transportation Network. As already mentioned, more than 1.1 million jobs nationwide, and \$113 billion of the nation's GDP, depend on I-70 in Missouri. The benefit-cost analysis identified the ***total net benefit of this project, which improves a critical link in the national freight network, as approximately \$2.3 billion dollars (when discounted at 7 percent).*** The Rocheport Bridge carries approximately 8,227 commercial motor vehicles daily, with roughly 7,400 exceeding 30 tons.¹⁵ I-70 is the only four-lane, fully limited access, east-west corridor in Missouri. Although the Rocheport Bridge is one of four bridges crossing the Missouri River in rural mid-Missouri, all others require traveling along two-lane roadways with narrow or no shoulders, and through small

¹³ <https://www.modot.org/work-zone-awareness>. Site accessed February 18, 2019.

¹⁴ 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/>

¹⁵ 2016 MoDOT Central District Traffic Volume and Commercial Vehicle Count Map

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communities, to complete the east-west route. If the Rocheport Bridge required a 30-ton weight restriction or were to be closed, MoDOT estimates that over 7,400 trucks would be required to take a MoDOT-preferred detour which requires eastbound trucks to exit to Route 65 south to Route 50, travel east on Route 50, then finally north on Route 54 to continue east on I-70. Westbound traffic would do the reverse. This detour route requires traveling through multiple small rural communities at speeds less than 40 mph. The normally 70-mile drive along I-70 would now be 109 miles and require an additional 47 minutes due to the reduced speed limits, reduced number of lanes and stop lights in these rural communities.

Reduce Barriers Separating Workers from Employment Centers. The proposed project will ensure uninterrupted access for workers reaching employment centers, including the 587,192 people living in the primarily rural areas within 60 miles of the project site, as well as the truck drivers using I-70 to reach manufacturing plants, farms, or distribution hubs (many of these workers are economically disadvantaged). 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's savings in travel time costs, vehicle operating costs, and other costs **totaling \$2.3 billion** (discounted by 7 percent over 34 years) will be most felt by low-income, blue-collar, and minimum wage workers, for whom commuting costs are a greater proportion of their overall income.

Benefit-Cost Summary. Overall, the project's **net present value is estimated to be \$2.1 billion** over 34 years, when discounted by seven percent, with a **benefit-cost ratio of 12.07**. **The Rocheport Bridge portion alone is expected to generate all but \$17 million of the total project's net present value**

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 3: Benefit-Cost Analysis Summary, Rocheport Bridge

Benefit Categories	Project Benefits Million \$, 7% Discount Rate			Combined Network Benefits
	I-70 Rocheport Bridge	Climbing Lanes	Transportation Systems Management & Operation	
Savings in Business Time and Reliability Costs	\$796.7	\$6.0	\$4.5	\$807.2
Value of Personal Time and Reliability	\$847.4	\$7.0	\$4.1	\$858.5
Savings in Vehicle Operating Costs	\$338.0	\$0.0	\$0.0	\$338.0
Savings in Safety Costs	\$142.3	\$2.4	\$17.2	\$161.9
Reduced Damages from Vehicle Emissions	\$32.7	\$0.1	\$0.0	\$32.8
Savings in Logistics	\$78.7	\$5.0	\$3.3	\$87.0
Total Benefit Estimates	\$2,235.8	\$20.5	\$29.1	\$2,285.6

Table 4: Benefit-Cost Analysis Summary, Rocheport Bridge

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

Table 5: Benefit-Cost Analysis Summary, Combined Network

Combined Network (including I-70 Rocheport Bridge)	
Project Evaluation Metric	7% Discount Rate (M\$)
Total Discounted Benefits	\$2,285.6
Total Discounted Costs	\$191.0
Net Present Value	\$2,094.6
Benefit / Cost Ratio	12.07

#2: Leveraging Federal Funding

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

- **Tolls.** Tolling rural bridges is not a feasible option because there is not sufficient traffic 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 explored and 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 project and the lack of large-scale, urban development surrounding the proposed infrastructure, this source of funding is not an option.
- **P3 Opportunities.** MoDOT will explore P3 options with the successful vendor(s) for the TSMO component; however, given the necessity to ensure that all non-federal match sources are stable and dependable at the time of application, vendor discounts or P3 participation cannot be included at this time but will be considered during the competitive procurement process. Design-build is proposed for the Rocheport Bridge and Mineola Hill truck climbing lanes, see next Innovation #3 for more details.

Broader Fiscal Constraints. 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 represents the most viable and immediate solution.**

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Table 6: Leveraging INFRA Grant

Source	Total	% of Total	Federal vs. Non-Federal	Total	% of Total
State	\$ 105,220,780	36.13%	Total Non-Federal Share	\$ 109,420,780	37.57%
Local (cities/counties)	\$ 4,200,000	1.44%	Total Federal Share	\$ 181,789,000	62.43%
INFRA Grant	\$ 102,200,000	35.10%			
HBRRP	\$ 6,489,000	2.23%			
TIFIA Loan	\$ 73,100,000	25.10%			
Total	\$ 291,209,780	100%	Total	\$ 291,209,780	100%

Leveraging INFRA Grant							
Description	Non-Federal Funds		Federal Funds			Totals	% of Total Cost
	State	Local	INFRA Grant	HBRRP	TIFIA Loan		
I-70 Rocheport Bridge							
State of Missouri	\$ 87,967,100					\$ 87,967,100	30.21%
State of Missouri (redirect from rehabilitation)	\$ 1,432,900					\$ 1,432,900	0.49%
City of Columbia		\$ 2,000,000				\$ 2,000,000	0.69%
Boone County		\$ 2,000,000				\$ 2,000,000	0.69%
City of Boonville		\$ 100,000				\$ 100,000	0.03%
Cooper County		\$ 100,000				\$ 100,000	0.03%
TIFIA Loan					\$ 60,000,000	\$ 60,000,000	20.60%
INFRA			\$ 86,400,000			\$ 86,400,000	29.67%
SUBTOTAL: I-70 Rocheport Bridge	\$ 89,400,000	\$ 4,200,000	\$ 86,400,000	\$ -	\$ 60,000,000	\$ 240,000,000	82.41%
I-70 Mineola Hill Truck Climbing Lanes							
State of Missouri	\$ 2,991,380					\$ 2,991,380	1.03%
State of Missouri Joint Project	\$ 721,000					\$ 721,000	0.25%
Federal HBRRP				\$ 6,489,000		\$ 6,489,000	2.23%
TIFIA Loan					\$ 2,500,000	\$ 2,500,000	0.86%
INFRA			\$ 3,100,000			\$ 3,100,000	1.06%
SUBTOTAL: I-70 Mineola Hill Truck Climbing Lanes	\$ 3,712,380	\$ -	\$ 3,100,000	\$ 6,489,000	\$ 2,500,000	\$ 15,801,380	5.43%
I-70 TSMO							
State of Missouri	\$ 12,108,400					\$ 12,108,400	4.16%
TIFIA Loan					\$ 10,600,000	\$ 10,600,000	3.64%
INFRA			\$ 12,700,000			\$ 12,700,000	4.36%
SUBTOTAL: I-70 TSMO	\$ 12,108,400	\$ -	\$ 12,700,000	\$ -	\$ 10,600,000	\$ 35,408,400	12.16%
TOTALS:	\$ 105,220,780	\$ 4,200,000	\$ 102,200,000	\$ 6,489,000	\$ 73,100,000	\$ 291,209,780	100.00%
% of Total	36.13%	1.44%	35.09%	2.23%	25.10%	100.00%	

#3: Innovation

The proposed I-70 Freight Corridor Project will address all three Innovation Areas – Technology, Project Delivery, and Financing.

Innovation Area #1: Technology

Innovative **Technology** components include:

- **Applications to Automatically Capture and Report Safety-related Issues** - Cameras for safety will be incorporated as part of the TSMO element. Cameras can also be used to prevent terrorism by detecting suspicious activity along I-70. Currently, there are cameras approaching the Rocheport Bridge to help emergency responders assess the best route to an incident on or near the bridge, help MoDOT assess daily traffic patterns and road conditions, and help the Missouri State Highway Patrol with public safety duties. Camera images are accessible to anyone traveling I-70 via MoDOT’s online traveler information map to help identify traffic

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congestion and road conditions during inclement weather. The ten new proposed cameras will provide similar services at strategic locations along the entire length of rural I-70.

- **V2X Technologies** – MoDOT has executed a Memorandum of Understanding with Traffic Technology Services (TTS), allowing for the exchange of V2X information statewide, including traveler information mapping. Audi and other vehicles that have Dedicated Short-Range Communications (DSRC) for vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) technology can use open API data-capturing in partnership with MoDOT's technology along the I-70 corridor. MoDOT wishes to align these conversations with the proposed INFRA TSMO improvements and will include this element in the selection of the successful vendor(s) and contractor(s).
- **Advanced Communications** – For the past 20 years, MoDOT has participated in a public-private partnership (P3) to provide fiber optics along the entire I-70 corridor, including dark fiber as well as data services. This fiber optic link is the backbone of MoDOT's network of ITS devices along I-70 and will be used to connect the proposed new devices. This P3 will remain in place throughout the proposed project and the agreement MoDOT has with the provider requires the provider to relocate the conduit and fiber optic cable, saving MoDOT costly utility relocation expenses.
- **Closed-circuit television (CCTV) cameras and dynamic message signs (DMS)** – New CCTV's and DMS' will be installed across the I-70 corridor to enhance the existing CCTV and DMS network to improve the safety and reliability of the corridor for all I-70 users.
- **Truck Parking Technology** - Improving the ability for truck drivers to know when parking is available, and to be able to share parking availability as drivers see it, will maximize safety on the highway and efficiency for truck drivers. The improvements help minimize driver fatigue and parking in risky locations such as shoulders, off ramps, or desolate private parking locations. This technology component will impact the entire I-70 corridor.

It is important to note that innovations in V2V and V2I communication, autonomous vehicles, and the like, are creating new opportunities to maximize system efficiency and highway safety in Missouri. Aware of this shift, MoDOT proactively launched its *Road to Tomorrow* program in 2015 seeking new ideas and technologies for creating a 21st-century I-70, an information and innovation corridor across the heart of the country. With such innovation and technology looming, MoDOT is now focusing on implementing the most critical, practical improvements along I-70 to address deficiencies with the most significant national and regional implications.

Innovation Area #2: Project Delivery

Innovative **Project Delivery** components include:

- **Progressive Design-Build** – The TSMO component will be a progressive design-build project.

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- **Design-Build** – The Rocheport Bridge and Mineola Hill Truck Climbing Lanes will be let using design-build.
- **Alternative Pavement Type Bidding** – Both the Rocheport Bridge and the Mineola Hill Climbing Lanes will include alternate pavement bidding into the design.
- **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 for Rocheport Bridge and the truck climbing lanes at Mineola Hill.
- **Best Value Procurement** – MoDOT will follow a Best Value Procurement process. Seeking quality and expertise will ensure successful and timely completion of the project.

MoDOT has great success with design-build projects and looks forward to using progressive design-build for the TSMO component. Since 2005, MoDOT has completed 11 projects using traditional design-build and three others are under construction. As recent experience has shown, design-build opens the door for innovation and promotes accelerated construction and added value on projects. Collectively, MoDOT's design-build projects have been completed \$275 million under budget and 65 months ahead of schedule. Nationally, design-build projects are completed 33 percent faster and 6 percent cheaper than conventional design-bid-build projects.

- **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 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.
- **Practical Design** - MoDOT is the birthplace of Practical Design,¹⁶ 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.
- **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.

¹⁶ <http://epg.modot.org/index.php/Category:143> Practical Design

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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 vehicle’s 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. **This fee will be scalable as consumer preferences change by embracing higher “miles per gallon” vehicles.** 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.¹⁷
- **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 there are components that may qualify for the Rural Project Initiative.
- **P3.** Design-build is proposed for the Rocheport Bridge and Mineola Hill truck climbing lanes. The successful contractor(s) will accept most or all of the risk of any increase in costs associated with a project’s design, eliminating “change orders” that add to the cost of traditional design.

#4: Performance and Accountability

Credible Plan to Address Full Lifecycle Costs

Lifecycle Cost Estimate: The estimated lifecycle cost (discounted by 7 percent) for each element is: 1) I-70 Rocheport Bridge: \$158.2 million; 2) truck climbing lanes at Mineola Hill: \$5.6 million; and 3) TSMO: \$28.8 million. These costs were estimated during the BCA process and verified.

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)¹⁸ and 30(b).¹⁹

¹⁷ Committee on Legislative Research and Oversight, Fiscal Note, February 5, 2019. <http://www.moga.mo.gov/OverSight/Over20191//fispdf/1119-02N.ORG.pdf>

¹⁸ <http://www.moga.mo.gov/mostatutes/Consthtml/A04030a1.html>

¹⁹ <http://www.moga.mo.gov/mostatutes/Consthtml/A04030b1.html>

Controls for Secured O&M Funding: MoDOT has an extensive history of fully funding maintenance on its assets. In addition, Governor-supported SB 201 was introduced to State Legislature in January 2019. **This bill would generate an estimated \$80 million annually by replacing the current registration fee system with one that is based on the vehicle’s combined city/highway fuel economy.** This act would 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 typically 8-10 percent 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 May 30, 2020, for at least one element (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 implementation schedule. As the State of Missouri owns and operates all affected facilities that comprise the project network, MoDOT can quickly amend the STIP for the Rocheport Bridge construction element (rehabilitation is already in the STIP), truck climbing lanes at Mineola Hill, and TSMO, and move ahead with implementation upon securing INFRA funding. Costing has been completed according to stringent MoDOT costing standards; all projects are ready or near-ready to let for design-build or progressive design-build.

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.

In addition, MoDOT has an excellent track record of quickly delivering projects once authorized. In fact, MoDOT has regularly accelerated the delivery of projects when additional funding opportunities have been presented. For example, when Congress passed the FAST Act, MoDOT proactively responded by increasing the state’s construction program because of the stability in federal funding provided by the legislation. Likewise, when a TIGER grant was awarded for the US 54 Champ Clark

Bridge over the Mississippi River in Louisiana, MO, MoDOT moved quickly to procure delivery of the project through the design-build process. Similarly, MoDOT stands ready to deliver the proposed INFRA projects upon award.

Technical Feasibility

The proposed projects were developed, scoped, and costed using MoDOT's policies, which are articulated in a comprehensive Engineering Policy Guide (EPG).²⁰ Because the projects will be delivered using either progressive design-build or 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.

The alignment for the new Rocheport Bridge has been evaluated with a preferred alternative identified to be adjacent to the existing facility. All right-of-way has been identified and hydrologic and hydraulic analysis and reports completed. The truck climbing lanes at Mineola Hill will be constructed within existing MoDOT right-of way. The lanes will be constructed in conjunction with an existing bridge reconstruction project (currently in design) and will be bid as one construction project to save time and money. The TSMO components will be bid as a P3 initiative, with the goal of having the successful vendor provide discounts and incentives for new technology and ongoing operation and maintenance contracts (e.g., wireless service, remote storage of camera footage, etc.).

Statement of Work

Assuming the Grant Agreement is executed by December 31, 2019, certain elements will be under construction by July 2020. All project elements will be under construction by August 2021 and fully completed and closed out by December 2024.

NEPA Status and Known Project Impacts. To move forward with the proposed I-70 improvements, 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

²⁰ (http://epg.modot.org/index.php/Main_Page).

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requirement for the project. Both agencies are confident the recertification process for the entire I-70 corridor will take less than six months.

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
Mandatory Obligation Date, September 30, 2022											
	Submit INFRA Grant Proposal	N/A	3/4/2019								
	INFRA Grant Agreement Executed	N/A	12/31/2019								
	Project and Grant Management	60	12/31/2024								
	Re-evaluate NEPA	6	6/30/2020								
	Programming into STIP	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. Truck Climbing Lanes at Mineola Hill (Design-Build)		24 Months									
2a.	Design, Permitting	6	6/30/2020								
2b.	Construction	17	11/30/2021	5/30/2020	7/1/2020	11/30/2021					
2c.	Notice of Completion/Ribbon Cutting	1	12/31/2021								
3. Transportation Systems Management & Operations (Progressive Design-Build)		25 Months									
3a.	Bidding and Vendor Negotiations for P3, Select Contractor(s)	6	6/30/2020								
3b.	Design, Permitting	6	12/31/2020								
3c.	Construction	12	12/31/2021	12/31/2020	1/1/2021	12/31/2021					
3d.	Notice of Completion/Ribbon Cutting	1	1/31/2022								
	All Project Elements Completed		12/31/2024								
	Records Retention/Audits		On-going								

Background. In 2006, MoDOT completed a [Tiered Environmental Impact Statement](#) 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. The three interrelated projects proposed herein are included within these environmental documents and will be constructed within the same right-of-way and/or footprint as the truck-only lanes alternative.

Within the SEIS, two sensitive areas needing special focus were identified. The first special focus area was the Overton Bottoms, which includes the I-70 Missouri River crossing near Rocheport. The second special focus area is Mineola Hill. A Mineola Hill Subcommittee developed a mitigation and enhancement plan for the Mineola Hill project area.²¹ Examples of mitigation actions developed as a result of special studies include ensuring no net loss of wetlands, possible dedication of funds for

²¹ 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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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.

STIP. MoDOT is the administrator for the statewide STIP; therefore, amending the STIP can be accomplished within one month. The Rocheport Bridge project is programmed in the 2019-2023 STIP for rehabilitation. These dollars will be converted to construction and amended further for INFRA funding. The truck climbing lanes at Mineola Hill and TSMO components will be amended into the STIP upon award of INFRA funds.

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.

Public Engagement. MoDOT has conducted extensive public engagement on how to improve I-70 for almost 20 years and this feedback has been integrated into the project development and design. Examples include:

Missouri State Freight Plan. The [Missouri State Freight Plan](#) identifies the Rocheport Bridge project, the truck climbing lanes at Mineola Hill, and the TSMO component as top priority projects to improve freight movement in Missouri. The Freight Plan pairs freight stakeholder input, obtained from November of 2013 to November of 2014, 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. Over 100 stakeholders at three regional forums developed project evaluation criteria and weightings that focused on the safe, efficient movement of goods supporting economic benefits for Missouri. In 2017, MoDOT updated the Freight Plan to comply with FAST Act requirements. 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, 3) use technology to improve freight movement, and 4) focus on maintaining a state of good repair.

"On the Move" Long Range Transportation Plan (LRTP). During both the 2014 and 2018 [LRTP](#) public engagement processes, approximately 18,700 Missourians strongly articulated the need to

"I wouldn't mind sharing the highway with the truckers if there weren't so many hills and valleys. The truckers are so slow in climbing the hills that really back logs the other motorists."

-Resident's written comment

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preserve the existing system, reduce project costs by minimizing delays, eliminate freight bottlenecks, and use the latest technology to monitor and improve traffic congestion.²² The prioritization and selection of projects for this INFRA proposal is a direct result of this public input. The Rocheport Bridge preserves the existing system; design-build reduces project costs; truck climbing lanes mitigate a freight bottleneck; and the TSMO component uses cutting-edge technology.

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. Four public hearings were held in March of 2009, each at a different location. Approximately 97 people attended the hearings. An online public hearing generated 169 comments and was downloaded twice as many times.²³ The hearings were publicized through press releases across the state, email to a 150+ email list, postcards to a 1,200+ project mailing list, MoDOT’s e-newsletter, and advertising notices in six publications. The comments and feedback provided valuable insight as well as recommendations to address concerns about I-70 and possible solutions focused on truck traffic. All three components included herein for INFRA funding are the direct result of public input and the SEIS evaluation process.

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.²⁴

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.²⁵ A new bridge would prevent the enormous traffic congestion that would otherwise be created if the bridge were to just be repaired.

²² 2018 Long Range Transportation Plan Update: Technical Memorandums, pp. 10-11.

²³ Public Hearing Transcript, I-70 Supplemental Environmental Impact Statement. January 30 through March 16, 2009.

²⁴ Report of the 21st Century Missouri Transportation System Task Force, Submitted to the General Assembly January 1, 2018. (page 50)

²⁵ 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/>

Assessment of Project Crisis and Mitigation Strategies

Many risks, and the strategies to mitigate or avoid any crises, were evaluated as follows:

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. Also, 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, which means 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 and Small Projects

Large Project Determination:	
• Generate national or regional economic, mobility, or safety benefits?	Yes, pp. 1, 2, 5, 8-13
• Is the project cost effective?	Yes, pp. 13-14, Appendix C
• Contribute to one or more of the goals listed under 23 U.S.C. 150 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, 8-13, 15, 17-19, 22-23, 25 Safety, Infrastructure Condition, Congestion Reduction, System Reliability, Environmental Sustainability, Reduced Project Delivery Costs
• Is the project based on the results of preliminary engineering?	Yes,* pp. 3, 21
*NEPA process previously completed and will be re-evaluated to ensure compliance. Proposed bridge replacement alignment has been selected (see Appendix). Preliminary cost estimates have been developed 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.	
• Does the project have one or more stable and dependable funding or financing sources to construct, maintain, and operate the project?	Yes, p. 7, Table 6 (p. 16)
• Are contingency amounts available to cover unanticipated cost increases?	Yes, p. 7, Table 2 (p. 8),
• 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. 4, 15
• 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. 20, Table 7 (p. 22)