



# FY2020 BUILD GRANT APPLICATION

**The I-49 Gateway to Kansas City:**  
Building Reliability for Today and Tomorrow

May 18, 2020

★ CASS COUNTY  
★ *Missouri*

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## I. Project Description

The I-49 Gateway to Kansas City Project will enhance system reliability, efficiency, resilience and traffic capacity throughout the I-49 corridor southeast of Kansas City by improving I-49 between 155<sup>th</sup> Street and North Cass Parkway in Cass County, Missouri. The project will widen the interstate from two lanes to three lanes in each direction, tying in to the six-lane configuration to the north. The extra lanes will be developed using available space in the existing wide median, which has been planned for that purpose to provide system resilience.

This section of I-49 is a major bottleneck in the southern portion of the bi-state Kansas City metro area – hampering regional commute traffic, vital interstate freight commerce, and travel to and from rural areas. Congestion regularly extends back for one to two miles during peak hours. During periods of congestion, access to urgent medical care at the Belton Regional Medical Center located in the northeast corner of the 163rd Street interchange is hindered. Cass County, more specifically in this region, is growing rapidly and planned industrial/warehousing developments in the southern section of the project limits are expected to exacerbate the bottleneck issue.

### Project Overview



**Length:** 4.2 miles



**Type:** Reliability Improvement and Capacity Expansion



**Issues Resolved:** Freight bottleneck, congestion on rural-urban connector



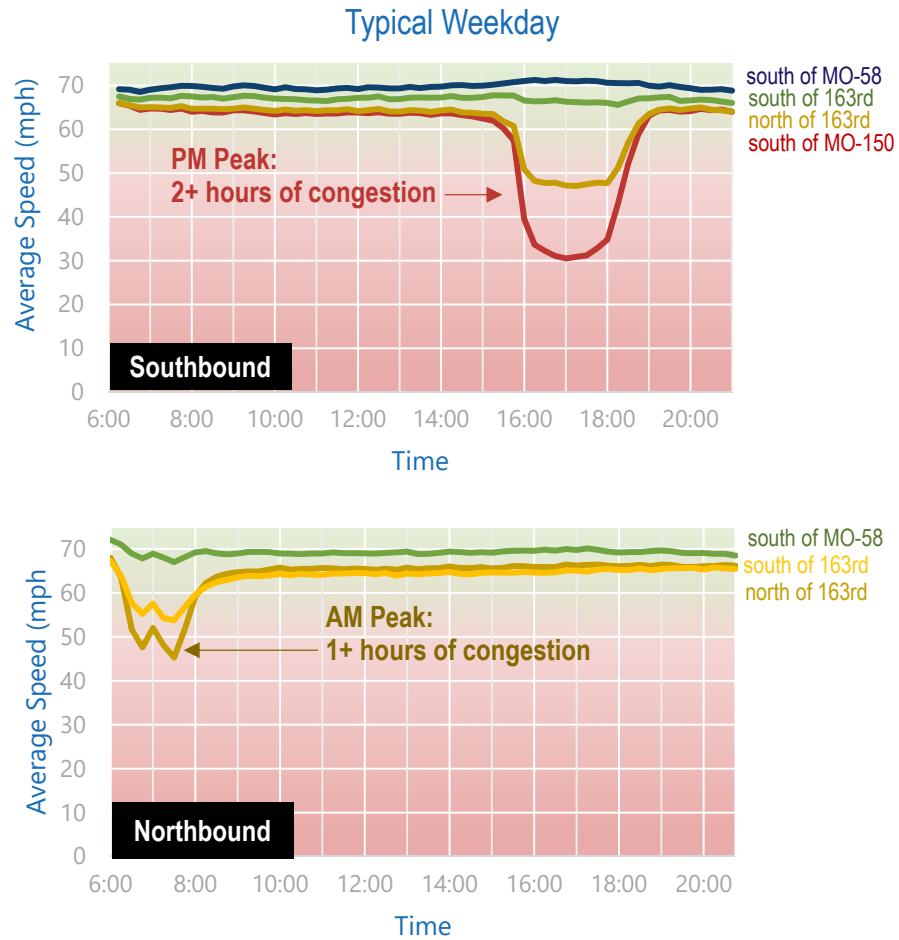
**Location:** Segment of I-49 southeast of Kansas City adjacent to the cities of Raymore and Belton in Cass County, Missouri

**Reliability:** The section of I-49 just north of the project limits is identified in the Regional Transportation Plan of the Mid-America Regional Council (MARC) as the most unreliable section of I-49 in the Kansas City Metro Area – the only segment rated “poor”. (See Figure I-1.) The bottleneck created within the project limits affects southbound reliability further upstream on I-49, as vehicles queue to get through the capacity constraint. Furthermore, the majority of the project limits (along with the segments just to the north) are identified with “poor” freight reliability.

**Figure I-1: I-49 Reliability (MARC)**



**Congestion:** Congestion and backups affect a large portion of the peak period. As can be seen in Figure I-2, this effect is particularly pronounced during the PM peak period, which extends for over two hours – a rarity in Kansas City. Southbound speeds drop as low as 30 mph during this period – a 55-percent decrease. During the AM peak period, speeds drop by 30 percent over a 1+ hour timeframe. The project will greatly improve system reliability and will remove the existing bottleneck by providing additional capacity and significantly reducing the recurring congestion on this vital segment of I-49.

**Figure I-2: Average Speeds Along I-49** (Source: RITIS)

**Safety:** The congestion and lack of reliability described above contribute to safety issues in the corridor. For example, the southbound crash rate in the corridor has exceeded the statewide average for comparable facilities **every year** between 2014 and 2018. The northbound crash rate on the corridor has exceeded the average rate for three out of the past five years.

An additional calculation, based on Highway Safety Manual procedures and shown at right, indicates that the annual number of crashes on this portion of I-49 is much higher than would be predicted for this type of facility, and that the corridor exhibits a large potential for safety improvement through a **crash reduction of 37 percent**.

Expected annual crashes (for <b>this segment of I-49</b> )	94
Predicted annual crashes (for <b>this type</b> of facility)	59
<b>Potential for Safety Improvement</b>	<b>35 (37% reduction)</b>

Source: HDR, based on HSM analysis for 2014-2018

**Corridor History and Importance:** Since the 1950s, efforts have been ongoing to create a continuous interstate-class corridor connecting New Orleans to Kansas City – and, via I-35 and I-29, points much further north, including Winnipeg in Canada and the ports of Duluth, MN. I-49 was listed as the #1 High Priority Corridor (out of 80 priority projects) in the ISTEA legislation. The I-49 International Coalition stated, “completing I-49 from Kansas City to New Orleans will create a 1,700-mile uninterrupted Interstate Trade Corridor from Canada through the heart of America to New Orleans... to Central/South America and points beyond....”<sup>1</sup> The section of I-49 through south Kansas City is a vital piece of the corridor. In 2012, 180 miles of US-71 in Missouri were upgraded and re-designated to I-49, including the section that is the subject of this application. In the last few decades, service interchanges have been built within and near this segment, including North Cass Parkway, 211<sup>th</sup> Street, 283<sup>rd</sup> Street, 307<sup>th</sup> Street, and 327<sup>th</sup> Street. Further north, the Three Trails Memorial Crossing interchange (I-435 / I-49 / US-71 / US-50) – the most recognized interchange in the region – received a major capacity/safety upgrade in 2008, and the regionally important I-49/MO-150 interchange was significantly upgraded in 2011. These major investments underscore the state’s and region’s commitment to I-49 as an interstate commerce asset, the tremendous economic growth occurring in the southern Kansas City area, and the desire to provide strong transportation connections to and through the rural portions of Kansas City.



Source: I-49 International Coalition

To create more capacity for these major investments in economic growth, and to combat current congestion issues along I-49, Cass County and the Cities of Raymore and Belton, in cooperation with the Missouri DOT, propose to **widen I-49 from four lanes to six lanes**. Widening to the inside will ensure minimal impacts to the existing structures, interchanges and right-of-way. Project limits will extend from 155<sup>th</sup> Street to North Cass Parkway.

<sup>1</sup> <http://www.interstate49.org/index.php?page=mission-history>, accessed 8-May-2020

## II. Project Location

The proposed project is in the southeast portion of the Kansas City Metro area directly on I-49. The project limits begin approximately 2,000 feet south of the 155th Street interchange and continue south to the North Cass Parkway interchange. Approximately 50 percent of the work will occur in the city of Belton, while the other 50 percent of the work will be completed in the neighboring community of Raymore.

Directly northwest of the project limits are two Opportunity Zones (US Census Tracts 013405 and 013401), emphasizing that this project helps to serve areas that are ripe for investment.

The terrain surrounding the area is mostly flat. Land uses within the area consist of residential, commercial, industrial, warehousing, and some undeveloped tracts. The 2018 estimated populations of Belton and Raymore are 23,598 and 21,784, respectively. Cass

County was identified in the Missouri Freight Plan as the third-fastest-growing County in Missouri (projected out to 2040). As a whole, Cass County's economy generates \$557 million per year in manufacturer shipments and \$333 million per year in merchant wholesaler sales.<sup>2</sup>

The I-49 corridor (some portions remain to be completed) spans 528 miles from Lafayette, Louisiana to Kansas City, Missouri where the route connects to the 3 Trails Memorial Crossing interchange (north of the project corridor), which provides access to I-435 and I-470, major circulator routes in Kansas City. The project sits at the urbanized area boundary, with Kansas City urban and suburban communities to the north, and rural communities and agricultural producers to the south.



<sup>2</sup> <https://www.census.gov/quickfacts/kansascitymissouri>

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

Table III-1 summarizes the cost of the I-49 Gateway to Kansas City project by component, and by funding source. As the table indicates, the Federal BUILD grant request represents 76.5 percent of the project cost.

**Table III-1: Cost Breakdown and Sources of Funding**

PROJECT ELEMENT	COST	SOURCE OF FUNDING	
		Non-Federal: Cass County	Federal: BUILD
<b>Engineering</b>			
Owner's Rep / Support	\$0.56 M		
Design-Build Services	\$2.23 M		
Design Svcs During Construction	\$0.56 M		
Construction Eng & Inspection	\$1.50 M		
<b>Engineering Sub-Total</b>	<b>\$4.85 M</b>	<b>\$4.85 M (100%)</b>	<b>-</b>
<b>Construction</b>			
Clearing, Grubbing, Excav., etc.	\$0.48 M		
Widening	\$7.85 M		
Overlay	\$3.21 M		
Additional Pavement	\$0.04 M		
Barriers, Rumble Strips	\$1.81 M		
Pipes, Inlets	\$0.98 M		
Signs	\$0.33 M		
Noise Walls	\$0.38 M		
Bridge Widening	\$2.08 M		
Design Contingency (20%)	\$3.43 M		
Other* (32.5%)	\$6.69 M		
<b>Construction Sub-Total</b>	<b>\$27.28 M</b>	<b>\$2.28 M (8.4%)</b>	<b>\$25.00 M (91.6%)</b>
<b>Construction Contingency (2%)</b>	<b>\$0.55 M</b>	<b>\$0.55 M (100%)</b>	<b>-</b>
<b>Total</b>	<b>\$32.68 M</b>	<b>\$7.68 M (23.5%)</b>	<b>\$25.00 M (76.5%)</b>

Source: Project Cost Estimate (See Appendix)

\* Includes items estimated as a percentage of the construction cost: mobilization, removal of improvements, surveying, ITS/innovation elements, maintenance of traffic, signing, lighting, drainage, erosion control, utility relocation, and pavement markings.

As Table III-1 indicates, Cass County is providing the local match of \$7.68 million.

Once the project is constructed, ongoing operations and maintenance (O&M) funding will be included as part of Missouri Department of Transportation's (MoDOT's) regular maintenance activities.

## IV. Selection Criteria

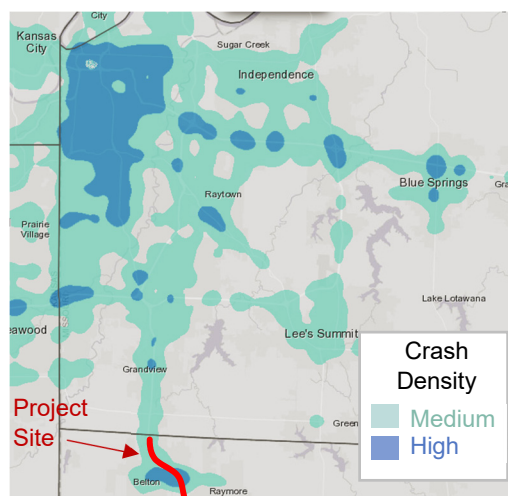
### 1) Primary Selection Criteria

#### a) Safety

Figure IV-1, developed by MARC, shows that the area containing the corridor is among the higher-crash areas in the Kansas City metro area – especially for a location on the fringe. The southbound crash rate is 45 percent higher than the Missouri statewide average. And, as stated in the introduction, the number of crashes on this portion of I-49 is much higher than would be predicted for this type of facility.

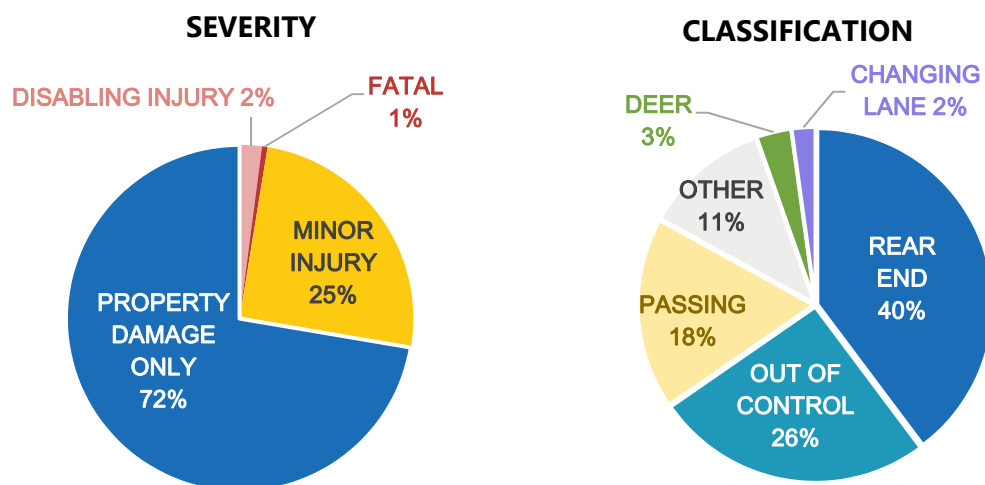
The corridor experienced 4 fatal crashes and 16 crashes involving disabling injuries in a five-year span (2014-2018). Figure IV-2 offers a glimpse at the reasons for the high crash rate. The prominence of rear-end crashes (40 percent of the total) indicates that the daily traffic congestion, especially southbound, is influencing the crash totals. Normally, rear-end crashes are not as common along interstate segments unless congestion is causing queues, which can lead to rear-end collisions – especially at the back of the queue.

**Figure IV-1: Project Crash Density Compared to KC Metro Area**



Source: MARC

**By eliminating the daily congestion, the I-49 improvement project is also expected to dramatically reduce the number of rear-end crashes.**



**Figure IV-2: Safety Statistics (2014-18)**

A number of these incidents were classified as “major” based on data obtained from Kansas City Scout, the regional transportation management system. The number of major incidents is certainly a heavy contributor to the unreliability of this portion of I-49 as described in Section 1. And although none of these incidents were classified as HAZMAT-related, the presence of trucks on this corridor certainly leaves that as a possibility. **By adding a lane in each direction, the I-49 Gateway to Kansas City project will not only reduce incident frequency as described above, but the additional capacity will speed emergency response times and also greatly reduce incident effects on traffic flow as more vehicles will be able to bypass such incidents.**

## Major Incidents

2015-2019

**15**

**Total**

**(3 northbound,  
12 southbound)**

**120+**

**Minutes to clear each one**

Table IV-1 shows the expected reduction in crashes associated with the proposed improvements. As the table indicates, the project is projected to reduce crashes by 34 percent over a 20-year horizon.

**Table IV-1: 20-Year Safety Outcomes (Crash Reduction)**

SEVERITY	NO-BUILD	BUILD	% REDUCTION
Fatal	17	7	59%
Disabling Injury	52	27	48%
Minor Injury	277	255	8%
PDO	1,336	811	39%
<b>Total</b>	<b>1,676</b>	<b>1,101</b>	<b>34%</b>

“ This project is definitely overdue. As a former Police Officer in Belton, I investigated many crashes including fatalities in this stretch of roadway. This will enhance public safety and bring business to the area due to better access. ”

*- Public comment received related to I-49 as part of MARC's Regional Transportation Plan Update*

## b) State of Good Repair

**Pavement Condition:** While the project will enhance capacity through the addition of one travel lane in each direction, it will also replace some or all of the existing pavement in the remaining four travel lanes. MoDOT recently performed joint repairs on the underlying concrete pavement, and provided an asphalt overlay. However, a longer-term pavement solution is needed. As the I-49 improvement project is anticipated to use a Design-Build delivery mechanism, pavement is an area where contractor innovation will be highly encouraged.

**Asset Maintenance:** Once the project is constructed, it will be maintained as part of MoDOT's regular maintenance program. MoDOT's top two priorities statewide are safety and "taking care of the system" (system preservation); thus, maintenance of existing assets is very important to the state. The additional lane-miles are expected to result in only marginal increases in overall maintenance costs in the Kansas City District.

**Operational Resilience:** The additional lane in this particular portion of I-49 will increase the reliability of operations along the corridor. It will reduce recurrent congestion, but it will also reduce the impact of major incidents by providing additional operating space for first responders to clear them, and to divert vehicles around the incident scene.

“

One thing that I have noticed is that this is one of the only spots that KC Scout [the regional transportation management system] will report as having heavy congestion as an incident as well, giving an estimated clearance time. I usually will only see this for accidents or road construction, not congestion.

”

- Public comment received related to I-49 as part of MARC's Regional Transportation Plan Update

### c) Economic Competitiveness

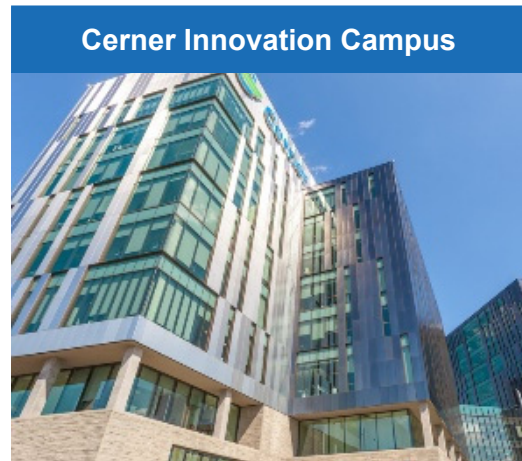
By removing a major bottleneck for the movement of people and goods, the I-49 improvement project will support the BUILD program's economic competitive-ness goals.

The project is uniquely positioned to serve both urban efficiency and rural connectivity needs, essentially straddling the edge of the Kansas City urbanized area. It is estimated that the travel-time savings attributable to the project will result in cost savings of \$15.4 million over a 20-year period, reducing the costs of doing business for commercial users of the corridor. As mentioned in the introduction, I-49 in and near the study limits has been identified in MARC's Regional Transportation Plan as "poor" with respect to both general and freight reliability, and the additional financial benefits associated with more certain delivery timetables will also contribute to the vitality of freight movement along the corridor. The following list includes some of the key employers on or near the corridor, including freight, national security, and medical technology interests:

- **QuikTrip's Kansas City / Belton Distribution Center and Commissary / Bakery** (approximately 360,000 square feet and over 1,000 employees) is one of five in the U.S., and is located within the corridor – adjacent to I-49 just north of the Route Y interchange. QuikTrip, a company with \$9.16 billion in annual revenues and over 22,000 employees, has 826 retail locations throughout the U.S. that are served by these five distribution centers.
- The 1,375-acre **Richards-Gebaur Commerce Park** can be accessed via the I-49 / 155<sup>th</sup> Street interchange at the north end of the project corridor. The park, converted from a former military base, is now a Foreign-Trade Zone that houses office, medical, classroom and warehouse buildings. The Kansas City trade zones handle more volume than those of Chicago, Dallas, Denver, Minneapolis and St. Louis and have more available space than any other area in the U.S. The park is adjacent to (and served by) the **CenterPoint Intermodal Facility**, which has direct connections to the Port of Lázaro Cárdenas in Mexico.



- The **Cerner Innovation Campus** is a \$4.5 billion office complex currently housing two buildings totaling over 1.6 million square feet (completed in 2016), expanding to double that size and expected to ultimately house 16,000 employees. The campus is located north of the I-49 project limits, at the Three Trails Memorial Crossing interchange where I-49 intersects I-435, US-50, and US-71. Cerner's 28,000+ employees supply health information technology solutions, services, devices, and hardware. Many of its employees travel along this section of I-49, and that number can be expected to increase as the campus builds out.
- The U.S. Department of Energy **Kansas City National Security Campus** houses over 5,000 employees, and is located just two miles northwest of the project limits along Missouri Highway 150. The mission of the facility is to ensure the U.S. nuclear deterrent is safe, secure, and reliable. I-49 provides key interstate access to this facility.



Several significant planned private economic development projects will be supported by the I-49 improvement project, a few of which are highlighted below:

- **Southview Commerce Center** is a 142-acre, 2-million-square-foot master-planned warehouse distribution park located near the I-49 /155<sup>th</sup> Street interchange. One building is complete (456,000 square feet), one is under construction (650,000 square feet), and a third is expected to move forward soon. The project is ultimately estimated to create up to 2,900 jobs. NorthPoint, the developer, has provided a letter supporting the I-49 project (see Appendix.)
- **VanTrust** owns a 136-acre parcel in the southeast quadrant of the I-49 / North Cass Parkway interchange that Raymore recently rezoned in preparation for a potential 1.9-million-square-foot warehouse and light industrial complex.<sup>3</sup> VanTrust has provided a letter of support for the I-49 improvement project, included in the Appendix.

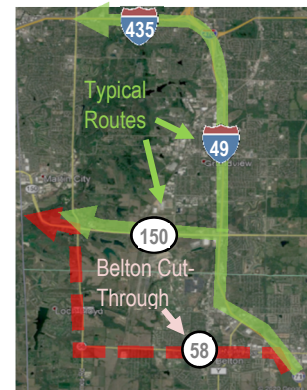


<sup>3</sup> <https://www.raymore.com/Home/Components/News/News/2170/15>

Specifically related to freight connectivity, **this section of I-49 is a Tier 1 facility in Missouri's Statewide Freight Plan, carrying an approximate annual range of 20 to 30 million tons of freight valued at \$35-\$59 billion.** Truck volumes are in the 16- to 18-percent range. As mentioned previously, I-49 is part of an important eight-state freight corridor, and the removal of the bottleneck through Cass County will reduce freight costs and delays.

The I-49 Gateway to Kansas City project will reduce the burdens of commuting by eliminating congestion and shortening the time spent commuting. Of the residents of Cass County who commute to workplaces outside the County, over 60 percent work in Jackson County to the north, and for most of those commuters, I-49 is the most direct route. For residents who live in, but work outside, Bates County – the rural county just south of Cass County – 54 percent commute to Cass County or Jackson County, and almost all would need to use I-49.<sup>4</sup>

This I-49 project will also improve well-being in the city of Belton by curtailing the incentive to cut through the city to access portions of Kansas City further west. Although Missouri Route 58 in Belton is an important east-west regional connector, it is not intended as a substitute for Missouri Route 150, or I-435. When northbound traffic congestion occurs, Route 58 tends to operate as a reliever route – a legitimate function for a state highway, but not desirable on a regular basis.



“This improvement would be very important to commuters. This area becomes a bottleneck every workday afternoon. Having the third lane continue to North Cass [Parkway] would improve flow and keep motorists from taking alternate routes, which potentially hurts businesses along the corridor.”

*- Public comment received related to I-49 as part of MARC's Regional Transportation Plan Update*

<sup>4</sup> Derived from American Community Survey (ACS) 2015 statistics

**Figure IV-3: Future Land-Use Plans Along the Corridor (Composite from Belton and Raymore)**



#### d) Environmental Sustainability

**Efficient use of land:** One of the key sustainability elements of the I-49 improvement project is the plan to increase capacity without increasing the footprint of the interstate. Space has been reserved for decades in the median of I-49, in anticipation of capacity needs that are now emerging. Because of this long-term resilience planning on the part of MoDOT, the project is expected to require no additional right-of-way; and only one structure will be affected (the bridge over 163<sup>rd</sup> Street) – needing only to be widened, not replaced. The project represents an efficient use of resources in this regard.

**Emissions reductions:** It is anticipated that the project will reduce emissions that are occurring when motorists divert to local, lower-speed local streets routes due to congestion along I-49. The quote at right is indicative of this type of behavior.

**Construction:** The applicants plan to require the use of local/regional materials to construct the project, will encourage the use of recycled materials, and will balance earthwork to reduce the need for disposing excavated materials/acquiring fill material.

“

**Traffic along this stretch is horrible! ...I started taking backroads just to avoid it whenever possible. ”**

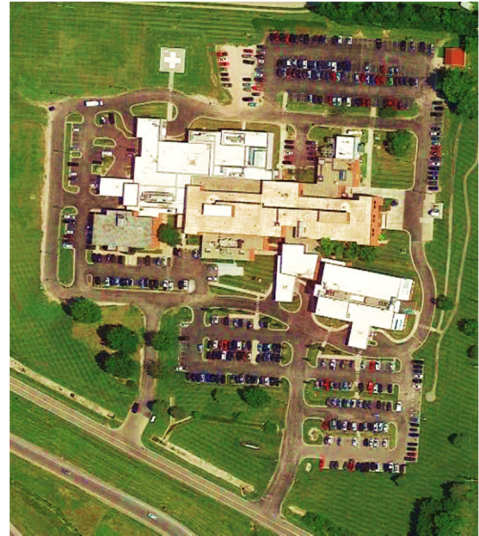
*- Public comment received related to I-49 as part of MARC's Regional Transportation Plan Update*

**Energy:** Existing interchange lighting along the corridor will be replaced with more efficient LED lighting, reducing energy usage associated with this stretch of I-49.

**National Guidance:** The applicants will use national sustainability rating systems (such as ISI's Envision or FHWA's INVEST) as guiding principles for sustainability on this project, whether they seek ratings or not.

### e) Quality of Life

The Belton Regional Medical Center, located adjacent to the interchange of I-49 and Missouri Highway 58, is essential to the quality of life for many in Cass County (including rural areas). The Center had a 24-percent increase in patient visits in 2019, and ICU visits grew by 40 percent between 2016 and 2019. In 2019, the Center completed a \$447,000 renovation to its pharmacy operations, and has continued to invest in state-of-the art technology and facility expansions to meet growing population demands. The Center is currently developing a \$15.5 million expansion of its intensive care unit. These investments underscore the ever-growing need for health-care services in the region – and the I-49 improvement project, by removing a significant traffic bottleneck, will improve access to the center – for patients as well as emergency responders, whose travel times to and from the ER can be life-critical.



As mentioned previously, the project serves as a bridge between rural areas south of the Kansas City metro area, and the more urbanized area of the metro area itself. Thus, the project benefits rural communities in providing them access to employment, health care (see medical center description above), and many of the amenities and essential services available in a heavily populated metropolitan area.

“

**It would be greatly appreciated by this large and expanding community to complete this project with urgency. As a driver for a local senior citizen facility, I am frequently impacted by these backups, especially evenings before holidays. ”**

*- Public comment received related to I-49 as part of MARC's Regional Transportation Plan Update*

## 2) Secondary

### a) Innovation

***Innovative Project Delivery:*** The applicants plan to use Design-Build delivery, which can accelerate schedules and promote innovation in construction practices. The County and Cities will consider the use of schedule incentives to encourage the Contractor to develop innovative construction methods and practices to deliver the project to specifications ahead of schedule.

***Innovative Technologies:*** As described in the “State of Good Repair” section, the County and Cities expect the Design-Build Contractor to develop innovative solutions with respect to pavement design – enhancing the life of the pavement in the existing four lanes on I-49 while constructing two new lanes.

The applicants have already begun discussions with representatives of Operation GreenLight, a cooperative traffic signal coordination effort throughout the Kansas City Metro area, regarding incorporating the I-49 / North Cass Parkway interchange into the system. It is envisioned that such a transition would happen as part of the overall I-49 improvement project.

In addition to leveraging existing Intelligent Transportation Systems (ITS) along the corridor, the project budget includes the addition of two CCTV cameras toward the south end, expanding KC Scout's visibility range in this area (Scout currently has a regional network of well over 350 cameras). The budget also includes conduits and pullboxes for future technology deployments (such as Connected and Autonomous vehicle applications).

***Innovative Financing:*** The project applicants are proposing something somewhat rare in Missouri: Local municipalities have identified a need on the interstate system, and because state funding may not become available to address this need for some time, they have initiated this grant process and committed all of the necessary local funds to bring the project to fruition. Beyond providing the match funding, Cass County will also act as the owner's representative and manage the Design-Build contract (in coordination with MoDOT throughout the project).

## b) Partnership

*Cass County* will be the grant recipient, and has formed the “Cass County Alliance” with the *Cities of Raymore and Belton*, each contributing to this application. Cass County is mostly rural, with Belton and Raymore at the fringe of the Kansas City metro area constituting over 40 percent of the County’s population and less than 5 percent of its land area. The two Cities are key partners with the County in advancing the I-49 improvement project, as I-49 is vital to the growth and vitality of both Cities – it is their lifeblood. A Council resolution from Belton and letters of support from Raymore are included in the Appendix. In addition, the neighboring City of Grandview has provided a letter of support.

*The Missouri Department of Transportation (MoDOT)* will ultimately own and maintain the improved section of I-49. MoDOT will be an important partner throughout the process, as the project will be built to state and federal standards. MoDOT has recognized the importance of this project for years, and thus has submitted a letter of support for the project, included in the Appendix.

Other key supporters of this partnership are described below, and have also submitted letters of support (included in the Appendix):

- *Political Office Holders*: Missouri Governor Mike Parson, along with U.S. Senators Roy Blunt and Josh Hawley and Congresswoman Vicky Hartzler, recognize the importance of this project to the state of Missouri and have indicated their support.
- *Mid-America Regional Council (MARC)*: The region’s Metropolitan Planning Organization is in support of the project, and sees it as consistent with the region’s long-range plan. This project is included as a priority illustrative project in the update to that plan, and close to one hundred comments were received from the public in support of it (see Appendix). Several quotes from the public are included in the body of this application.
- *Belton Regional Medical Center*: As mentioned previously, the access to this regional asset and essential service is right in the heart of the project corridor.
- *Private Developers*: Both VanTrust and NorthPoint have significant real-estate holdings and/or ongoing development projects along the corridor. They recognize the importance of access to the regional, national, and even international transportation asset of I-49.
- *Economic Organizations*: The Chambers of Commerce of both Raymore and Belton recognize that the project is vital for economic growth and in their respective jurisdictions.

## V. Environmental Risk Review

### a) Project Schedule

Table V-1 is a project schedule from planning through construction. As previously mentioned, the applicants intend to let the project via a Design-Build delivery mechanism, promoting expeditious construction. Highlights of the schedule include:

- Completion of environmental documentation by the end of 2020.
- Award of contract to the selected Design-Build Contractor and full Notice To Proceed by October of 2021. This time-frame allows a great deal of flexibility with respect to the obligation deadline of September 30, 2022.
- Completion of construction by the end of 2023, well in advance of the September 30, 2027 deadline specified in the BUILD Notice of Funding Opportunity (NOFO).

**Table V-1: Project Schedule**

		2020				2021				2022				2023			
		Quarter															
TASK	ITEM	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Pre-Planning Activities	Environmental Document Preparation																
	MoDOT Pavement Selection																
	As-Built Collection																
	Utility Coordination																
	Topographic & Boundary Survey																
	Conceptual Design (~15%)																
Pre-Construction Activities	Develop RFQ and Advertise (FHWA involvement)																
	Contractor Teams Develop SOQs																
	Shortlist																
	Finalize and distribute RFP (FHWA involvement)																
	Contractor Teams Develop Proposals (Technical Discussions)																
	Review Proposals and Award																
	Contract Negotiations and NTP1																
	Contractor Setup, Permits, and NTP2 (Break ground)																
Const	Construction																
	Punch-List & Close-Out																

The applicants anticipate submitting the project for a regional Transportation Improvement Program (TIP) amendment as soon as notified of selection for the BUILD award. MARC processes TIP amendments on a quarterly basis, and the most likely date for submission would be October 15, 2020, although the applicants are prepared to submit for the earlier July 15<sup>th</sup> amendment cycle if notified in time. Thereafter, the project would also be forwarded for an amendment to the Statewide Transportation Improvement Plan (STIP) as well.

As mentioned previously, the County will partner with MoDOT throughout the Design-Build process. It is anticipated that MoDOT will serve in a key advisory role and have oversight via its established Local Public Agency programs, but that Cass County and its agency partners would administer the project. MoDOT has served in this capacity before on interstate projects in the Kansas City area – for example, on I-29 in the northern part of the metro area.

Because this project is expected to be built within the existing right-of-way footprint, **no right-of-way acquisition is anticipated for this project**, eliminating a potential source of delay and schedule risk.

#### b) Required Approvals

##### **NEPA**

Most interstate expansion projects must undergo a rigorous environmental review to meet a myriad of regulations and requirements under the National Environmental Policy Act (NEPA), including the National Historic Preservation Act (NHPA), the Endangered Species Act (ESA), and the Clean Water Act, to name just a few. However, this project is well on its way to receiving the needed environmental reviews and permits.

A NEPA review was completed in 2013, and at the conclusion of the review, it was determined that this project would fall under Categorical Exclusion. This means that environmental impacts are expected to be minor as the project would not require the relocation of significant numbers of people; would not have a significant impact on natural, cultural, recreational, or historic resources; and would not involve significant air, noise, or water quality impacts. Under Categorical Exclusion, assessment of all resources must be completed, but the overall NEPA process is abbreviated.

Given the time lapse since the initial review, an updated review will need to be completed. The project applicant will determine if any notable changes in existing conditions have occurred since the NEPA review was completed. Particular attention is already being given to potential noise impacts and assessment of noise attenuation. Every effort will be made to utilize work from the previous effort to minimize costs and complete the additional review expeditiously. A Categorical Exclusion environmental document can typically be completed in 6 months, and in even less time when the project has already undergone preliminary environmental reviews as this project has. The lead federal agency for the NEPA documentation will be the Federal Highway Administration.

Table V-2 contains a list of environmental review factors and the considerations for each.

**Table V-2: Environmental Factors**

ENVIRONMENTAL FACTORS TO REVIEW		NEXT STEPS
<b>Community Impacts</b>	No negative effects on a community and its quality of life including displacements	None.
<b>Wetland/Stream Impacts</b>	Impacts would be minimal, likely below permitting thresholds	Additional review warranted.
<b>Air Quality Impacts</b>	Project would not negatively impact the air quality of the region relative to the attainment/maintenance requirements.	None.
<b>Cultural Resources</b>	No impacts to buildings would occur; disturbed nature of corridor limits potential for archaeological resources.	Updated SHPO review would be needed
<b>Threatened and Endangered Species</b>	Potential for bat habitat.	Updated USFWS review would be needed.
<b>Farmland Impacts</b>	Not applicable to this project.	None.
<b>Water Quality Impacts</b>	No impacts anticipated.	None.
<b>Floodplain Impacts</b>	Floodplain present.	Additional review warranted.
<b>Noise Impacts</b>	Potential for impacts to nearby noise-sensitive receptors.	Additional review warranted.
<b>Section 4(f)/6(f)</b>	No impacts would occur.	None.
<b>Hazardous Waste</b>	No impacts.	None.

### Reviews by Other Agencies

Since the proposed project would have no significant environmental impacts, it is expected to have no violations of Federal, State and local environmental regulations. Agency coordination will be conducted with the applicable resource agencies for NEPA including the Missouri State Historic Preservation Office and U.S. Fish and Wildlife Service, at a minimum.

## c) Assessment of Project Risks and Mitigation Strategies

Table V-3 contains a list of potential risks and the mitigation strategies for each.

**Table V-3: Potential Risks and Mitigation Strategies**

	RISK	MITIGATION
<b>Management And Funding</b>	Review timing / scheduling of project prior to issuing RFP to include coordination requirements on selected contractor.	Proactive execution of inter-agency agreements, designation of project lead, development of change management plan for addressing change in staff and project leadership among all agencies.
	COVID-19 related risks and recurrence of mandatory stay at home orders and quarantine requirements.	Develop COVID-19 project-specific protocols / procedures to limit disruption due to COVID-related project interruptions (communications, meetings, co-location requirements in RFP/contract, project continuity planning / strategies)
<b>Design</b>	Delays due to MoDOT and FHWA approvals of Design-Builder's plans	Multi-agency project-specific partnering agreement to identify / approve design criteria, design exceptions, Alternate Applicable Standards, Alternate Technical Concepts, progress submittals, and release for construction documents.
	Condition and rating of bridges and culverts carrying I-49 worse than anticipated requiring additional repair for widening of I-49.	Conduct early assessment of structures to review condition and capacity and completion of bridge rehabilitation checklist and scoping for each structure with submission to MoDOT for review and concurrence.
<b>Maintenance of Traffic (MOT)</b>	Coordination with other projects	Review timing / scheduling of project prior to issuing RFP to include coordination requirements on selected contractor.
	Congestion and increased incidents in long construction work zone	Develop comprehensive public information campaign to familiarize the public; provide sufficient advance notice through media; include project signage requirements in contract. Include intelligent work zone, queue monitoring and MOT performance requirements in procurement documents in coordination with MoDOT / KC Scout.
<b>Procurement</b>	Familiarity with design build delivery method and procurement requirements.	Prepare procurement guidance document seeking review, input and approvals from MoDOT / FHWA.
	Contractor availability and interest due to multiple alternate delivery projects in procurement at the same time in the region.	Conduct early industry outreach through informational meetings and project presentations to interested contractors to include project scope and advance drafts of procurement documents for industry review / comment.

## VI. Benefit-Cost Analysis

The cost-effectiveness of the I-49 Gateway to Kansas City project was measured through a complete benefit-cost analysis that monetizes the benefits generated under the merit criteria defined in the BUILD program and compares them against the project's costs. A 22-year period of analysis was used in the estimation of the project's benefits and costs, which covers 2 years of construction and 20 years of operation. Benefits are monetized as thoroughly as possible with the data currently available. The results of the analysis show that the project is expected to generate benefits that exceed the project's costs. Considering all monetized benefits and costs, the internal rate of return of the project is estimated at 16.5 percent. With a 7-percent discount rate, the project would result in a net present value of \$30.2 million and a benefit-cost ratio of 1.97. In other words, for each dollar spent in project costs, approximately \$1.97 worth of benefits will be generated by the improvements. Table VI- summarizes the results of the BCA.

**Table VI-1: Preliminary Results of the BCA, Millions of 2018 Dollars**

<b>PROJECT EVALUATION METRIC</b>	<b>DISCOUNTED AT 7 PERCENT</b>
Total Discounted Benefits	\$61.3
Total Discounted Costs	\$31.0
Net Present Value	\$30.2
Benefit-Cost Ratio	1.97
Internal Rate of Return	16.5%
Payback Period	6 years

*Note: The internal rate of return is the discount rate that makes the net present value (NPV) of all cash flows from the project equal to zero. The payback period represents the number of years it would take for the cumulative discounted benefits to become equal to the cumulative discounted costs.*

The project's main benefits are savings associated with avoided crashes and reductions in travel time. Adding a lane in each direction is expected to relieve the bottleneck at the north end of the project and reduce congestion within the project's limits, which will reduce collisions and allow for slightly higher travel speeds. Therefore, the project improvements generate significant crash cost savings and travel time savings for I-49 mainline traffic compared to conditions in the "no build" scenario. Negative cost savings (disbenefits) in vehicle operating costs and emission costs are directly linked to less efficient speeds (in terms of fuel consumption and emission rates) in the "build" scenario compared to the "no build" scenario.

**Table VI-2: Preliminary Benefit Estimates, Millions of 2018 Dollars**

BENEFIT CATEGORIES	DISCOUNTED AT 7 PERCENT
Travel Time Savings	\$15.4
Vehicle Operating Cost Savings (disbenefit)	(\$3.7)
Accident Cost Savings	\$49.5
Emission Cost Savings (disbenefit)	(\$0.1)
<b>Total Estimated Benefits*</b>	<b>\$61.3</b>

*\*Total may not sum up due to rounding.*

This analysis uses Caltrans' Cal-B/C Sketch model to provide an estimate of benefits with the traffic and crash data available. The project team expects to improve on the detail of the analysis and confidence in its inputs in the near future. Once more detailed traffic data are available, the team will produce a more robust BCA model and analysis to assess the benefits of the project.

The project will generate other benefits that have not been monetized due to lack of guidance/methodology from the U.S. Department of Transportation (USDOT) or a lack of relevant data. These benefits are:

- **Additional Safety Benefits:** The traffic data in this BCA do not consider induced demand, and induced demand would increase the number of crashes in the project area (due to an increase in vehicle-miles on the roadway). However, preliminary crash analysis for this project suggests that the crash reduction factors used in this BCA are conservative, and that planned improvements may reduce crashes by 39 to 59 percent, depending on crash severity.<sup>5</sup> Additionally, relieving the I-49 bottleneck will reduce congestion beyond the limits of the project, which will reduce crashes (especially those that occur in queues during congested conditions) on I-49 north and south of the project limits. If monetized, it is expected that the net result of these considerations would be an increase in monetized benefits.
- **Travel Time Reliability:** Reducing congestion and reducing crashes on the roadway will decrease the variability of travel time through the corridor, allowing roadway users and truck drivers to reach their destination on time more consistently. Improved reliability allows drivers to reduce the amount of “buffer” time they need to budget to account for unexpected delays, which will positively impact individual roadway users, local businesses, and communities along the corridor.
- **Pavement Condition and Asset Maintenance:** The additional lane-miles are not expected to result in significant increases in maintenance costs. Further, the project will improve the condition of the existing pavement, which will decrease future maintenance costs and provide journey quality benefits to roadway users.

The inclusion of these benefits would increase the overall benefit-cost ratio.

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<sup>5</sup> The project team retrieved applicable crash reduction factors (CRFs) from the FHWA Clearinghouse website. It is expected that the main project improvement (to increase the number of lanes from 4 lanes to 6 lanes) would reduce fatal and injury crashes by 23.9 percent and property damage only (PDO) crashes by 15 percent.