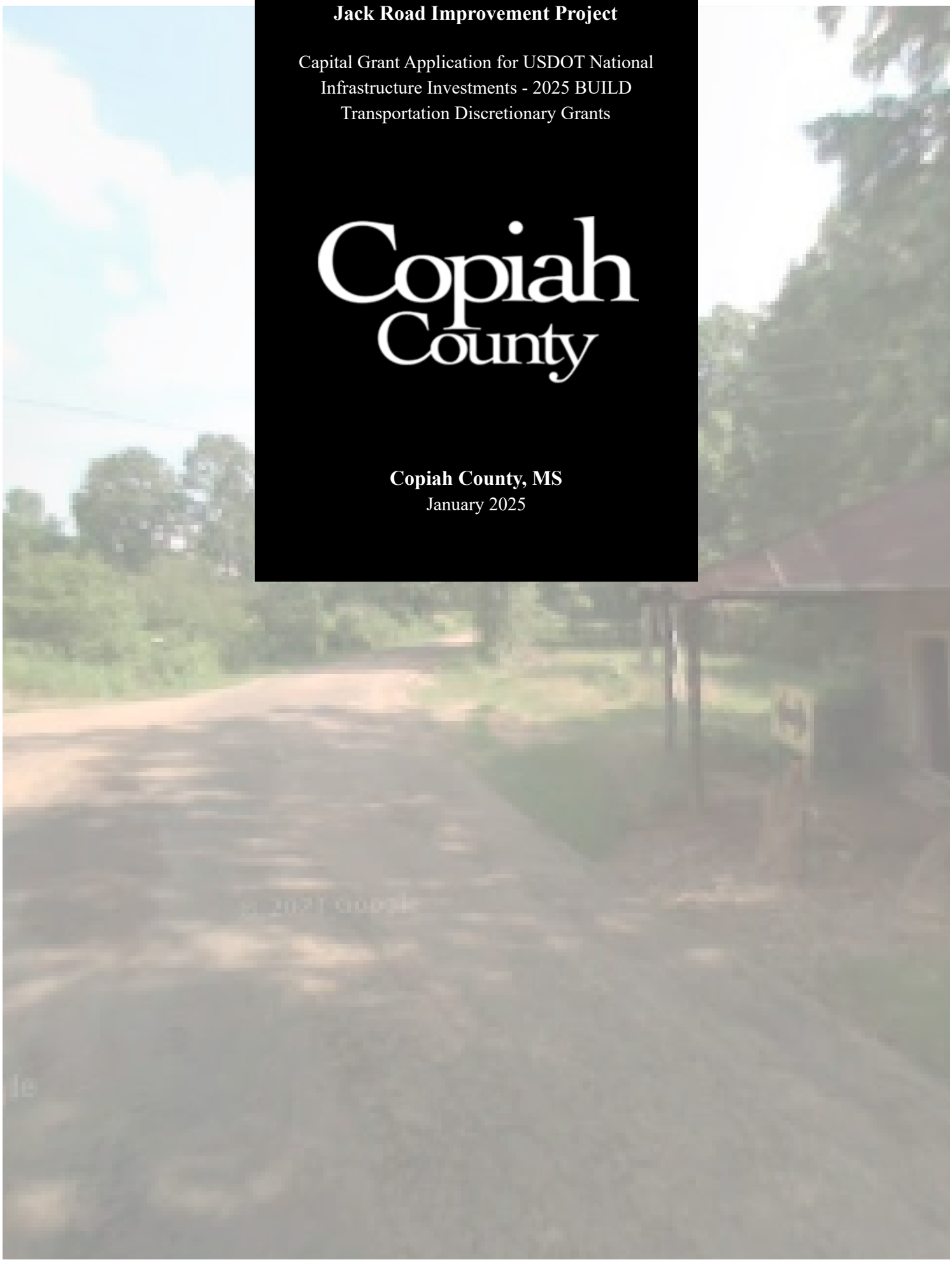


Jack Road Improvement Project

Capital Grant Application for USDOT National Infrastructure Investments - 2025 BUILD Transportation Discretionary Grants

Copiah County

Copiah County, MS

January 2025

Project Description

According to the American Society of Civil Engineers' 2024 Mississippi Infrastructure Report Card, 25% of the state's rural roadways are in poor condition.[1] Moreover, the report also found that nearly 90 percent of state-maintained lane miles were in of repair or rehabilitation, or otherwise required preventative maintenance, underscoring the level of need across the state. Jack Road in Copiah County, Mississippi, is no exception.

Jack Road is functionally classified as a Rural Major Collector. The current facility is narrow, averaging 19 feet in width, unmarked, and the pavement is in very poor condition. A bridge along the route, crossing a tributary to Saddlers Creek, is currently posted for weight, with a tandem axle maximum of 10,000 pounds (0.5 US ton), which has a negative effect on heavy vehicle movement in the area, including household delivery trucks and school buses. Jack Road is limiting the economic success of the surrounding underserved communities and increasing the cost of accessing employment and other daily needs for area commuters; currently, drivers must take lengthy alternative routes between the two larger towns, Utica and Hazlehurst, connected by the road.

With this in mind, Copiah County, Mississippi, is requesting **$19,000,000** in FY 2025 BUILD Grant funds for assistance in the implementation of the Jack Road Improvement Project in Copiah County, Mississippi. This transformative project will improve an approximately 4.2-mile-long single-lane facility by incorporating various engineering improvements throughout the project corridor. These improvements will reduce congestion, improve safety and system reliability and have a positive impact on the economic vitality of the region. With broad support from a wide range of stakeholders, this important project will serve as a catalyst for positive change within the region and ultimately provide the best possible quality of life for residents.

Contact Information

Ron McMaster

County Engineer - Copiah County, MS

212 Waterford Square #300
Madison, MS 39110

Phone
601.605.1090

Email
ron@mcmastereng.com

Key Project Information

Project Type:	Road - Repair/Rehabilitation
Project Location:	Jack Road between New Zion Road and Dentville Road in Copiah County, MS
Urban/Rural Area:	Rural
Project Length:	4.2 miles
Project Website:	buildjackroadcopiah.com
BUILD FY 2025 Funding Amount Requested:	$19,000,000
BUILD FY 2025 Preliminary Engineering Funds Obligation in FMIS Date:	January 2026
BUILD FY 2025 Utility Relocation Funds Obligation Date:	July 2026
BUILD FY 2025 Construction Funds Obligation Date:	January 2028
Project Completion Date:	September 2029

The Jack Road Improvement Project will improve roadway network connectivity within Copiah County, Mississippi, connecting residents and commuters to community facilities, healthcare providers, houses of worship and jobs within the area. This FY 2025 BUILD Grant program request will improve the existing Jack Road corridor to be consistent with current design guidance best practices. The proposed improvements include:

- An 11-foot travel lane in each direction;
- Addition of five-foot paved shoulders with rumble strips;
- Installation of a ten-foot clear zone;
- Replacement of bridge over tributary of Saddlers Creek (currently posted for weight);
- Utility relocations; and
- Incorporation of safety counter measures.

If funded, these improvements will create "ladders of opportunity" that will bolster connectivity, economic growth and stability by providing accessible and efficient connections between residences, schools, parks, offices, retail and recreational destinations.

The corridor is projected to experience Annual Average Daily Traffic (AADT) counts of 533 vehicles per day in the year 2029, a slight increase in AADT from recent years.

Table 01. Project Section Estimated Traffic Data

		AADT	
Route	**Termini**	**2014**	**2029**
Jack Rd.	New Zion Rd. to Dentville Rd.	437	533

Project Location

The proposed Improvements to Jack Road project is located in Copiah County, Mississippi. The BOP is located at the intersection with New Zion Road (32°1'3.27"N 90°34'10.91"W) and extends approximately 4.2 miles to the EOP at the intersection of Jack Road and Dentville Road (31°57'30.04"N 90°33'14.77"W). The project is located in a rural area.

References & Appendices Online

The web address for the Improvements to Jack Road in Copiah County Project is **http://www.buildjackroadcopiah.com**. The references and appendices, including updated letters of support, for this application are located on the website.

Figure 01. Typical Proposed Project Section

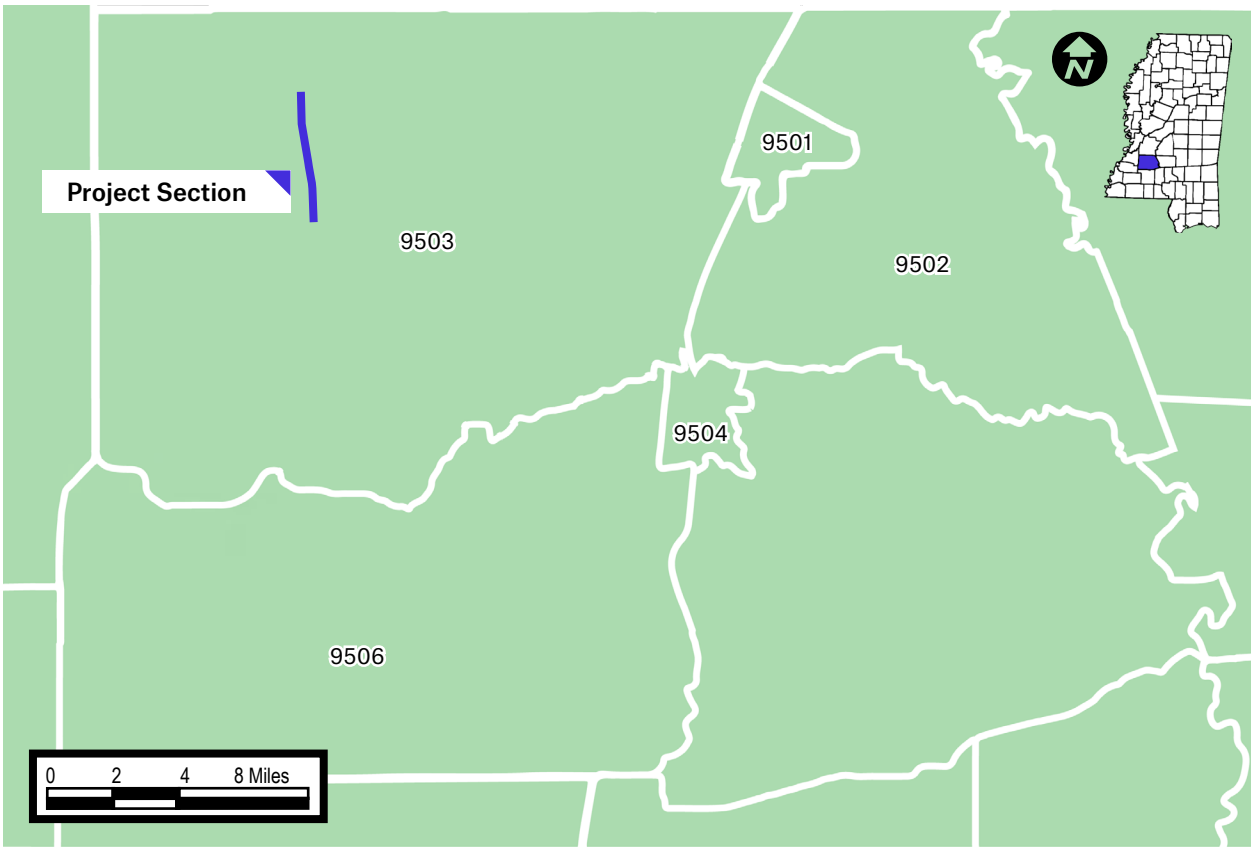
Project Parties

Copiah County (UEI Number: YS3HUDUCXZM7) will serve as the primary sponsor and lead agency for this BUILD grant application. Copiah County has led the successful delivery of numerous previous transportation improvement projects utilizing various types of federal funding. The project will be administered using MDOT's Local Public Agency (LPA) processes.

Areas of Persistent Poverty/Historically Disadvantaged Communities

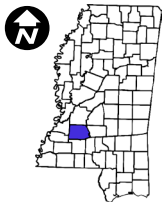
The Jack Road Improvement project is located in census tract 9503, which is an Area of Persistent Poverty/Historically Disadvantaged Community. The entire project is located in Copiah County, Mississippi, which is designated a Persistent Poverty County.

Figure 02. Areas of Persistent Poverty/Historically Disadvantaged Communities near the Project Section



Area of Persistent Poverty/Historically Disadvantaged Community

Note: Copiah County, in which the entire project is located, is a Persistent Poverty County.



Legend

- Community Colleges/Schools
- Healthcare
- Grocery Stores
- Industries
- Places of Worship
- Recreation

Project Budget

A summary of the proposed future cost allocations are provided in Table 03.

Preliminary Engineering (PE) Phase

To date, Copiah County has expended approximately $220K (YOE) on the Preliminary Engineering phase of the project. The remaining $285K to complete the Preliminary Engineering and NEPA will be funded by the requested BUILD grant funds. Copiah County will complete the final design plans, specifications, and estimates (PS&E) for the project by December 31, 2027.

Right-of-Way (ROW) Phase

Copiah County has acquired all the needed additional Right-of-Way in accordance with 49 CFR part 24, 23 CFR part 710 and any other applicable legal requirements, for the construction of this project.

References & Appendices Online

The web address for the Improvements to Jack Road in Copiah County Project is **http://www.buildjackroadcopiah.com**. The references and appendices, including updated letters of support, for this application are located on the website.

Utility Relocation Phase

Upon completion of the required NEPA document, Copiah County will proceed with the needed $4,500,000 utility relocation using the requested BUILD grant funding. All needed utility relocations will be completed by December 31, 2027.

Construction Phase

Copiah County will let the construction project in January of 2028 using $13,950,000 of BUILD grant funding. The construction estimate is based on 90% completion stage design plans and includes 20% for contingencies. Should the construction costs exceed this estimate, Copiah County will fund the overage.

Figure 03. Remaining Project Phase Breakdown

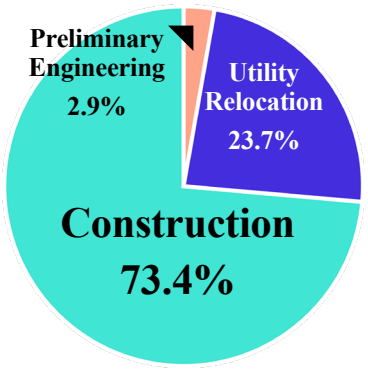


Table 03. Remaining Project Budget

Funding Source	Preliminary Engineering	Utility Relocation	Construction
USDOT	$550,000	$4,500,000	$13,950,000
% Share	*2.9%*	*23.7%*	*73.4%*

Note: All project costs will be expended within census tract 9503.

Table 02. Jack Road in Copiah County - Project Funding Summary †

Funding Source	Previously Completed PE Phase	Remaining PE Phase	Previously Completed ROW Phase	Utility Relocation Phase	Construction Phase	Total	% Share
Copiah County Local Funds	$223,745	$0	$327,801	$0	$0	$551,546	2.9%
Proposed BUILD Grant Funds	$0	$550,000	$0	$4,500,000	$13,950,000	$19,000,000	97.1%
Total	**$223,745**	**$550,000**	**$327,801**	**$4,500,000**	**$13,950,000**	**$19,551,546**	

† A more detailed cost estimate can be found in Appendix C.

Merit Criteria

Safety

Problem: The existing facility along Jack Road fails to meet basic design and maintenance standards for safety – further exacerbating a statewide problem of unsafe conditions on rural roadways.

Mississippi has been the deadliest state in the nation to drive a car since 1999.[2] According to USDOT's National Roadway Safety Strategy plan, "fatalities and fatal crashes occur disproportionately—by both population and vehicle travel—on rural roads."[3] The Jack Road Improvements project takes aim at these statistics by incorporating specific strategies that support the goals of the National Roadway Safety Strategy plan.

The current Jack Road facility is in poor condition. The roadway is only wide enough for one vehicle, and the shoulders are of inconsistent widths. The rutted pavement is completely unmarked and has worn away or formed potholes in many areas, and parts of the road are unpaved. Altogether, these factors equal dangerous conditions for drivers on Jack Road. The FHWA lists common safety hazards on unpaved roads, including:

- "Narrow lanes and shoulders (or no shoulder)
- Sharp horizontal and/or vertical curves
- Limited passing, stopping and horizontal sight distance
- Narrow bridges
- Limited sight distances at intersections
- Frequent roadside obstacles
- Lack of clear roadside recovery area
- Minimal or non-compliant signing and delineation."[4]

Each of these common safety hazards is present along the current Jack Road corridor.

The Jack Road Improvements project aims to create a safe and functional facility by widening the roadway into two lanes, installing paved shoulders, replacing the bridge and fully paving the road.

The proposed project would feature an 11-foot travel lane in each direction, five-foot shoulders, and a ten-foot clear zone.

A review of existing crash data suggests that roadway departure crashes are the predominant crash type along the segment, particularly in wet conditions. The improvements proposed will reduce crash propensity in several ways. The most notable improvement will be the addition of a travel lane, allowing for two vehicles to pass in opposite directions safely.

Improvement of the roadway surface through paving will reduce the roughness and unpredictability of the roadway surface, reducing difficulty for drivers, particularly in wet conditions.

The addition of five-foot shoulders will further reduce the likelihood of crashes. Improved shoulders have been shown to reduce crashes by up to 34 percent in rural areas, with a reduction of roadway departure crashes up to 40 percent.

While the horizontal geometry of the roadway will not change, the improved clear zone will improve sight distance by removing roadside vegetation and other obstacles. The bridge over the tributary to Saddlers Creek will be replaced with a structure that can support two 11-foot travel lanes and the weight of heavier vehicles currently restricted through posting, including household delivery trucks and school buses.

The new facility will feature state-of-the-practice pavement markings and signage – consistent with guidance in the *Manual on Uniform Traffic Control Devices* (MUTCD) – to improve safety. Furthermore, improvements that support the actions and activities identified in the USDOT's National Roadway Safety Strategy, such as Safety Edge and Rumble Stripe, will be implemented with the project.

A review of crash modification factors (CMFs) was conducted for the proposed safety improvements to be implemented with the project. While CMFs were not readily available for all treatments, those applicable to the project suggest that crash likelihood could be reduced by approximately 50 percent.

Problem: The current facility has no provisions for active transportation users.

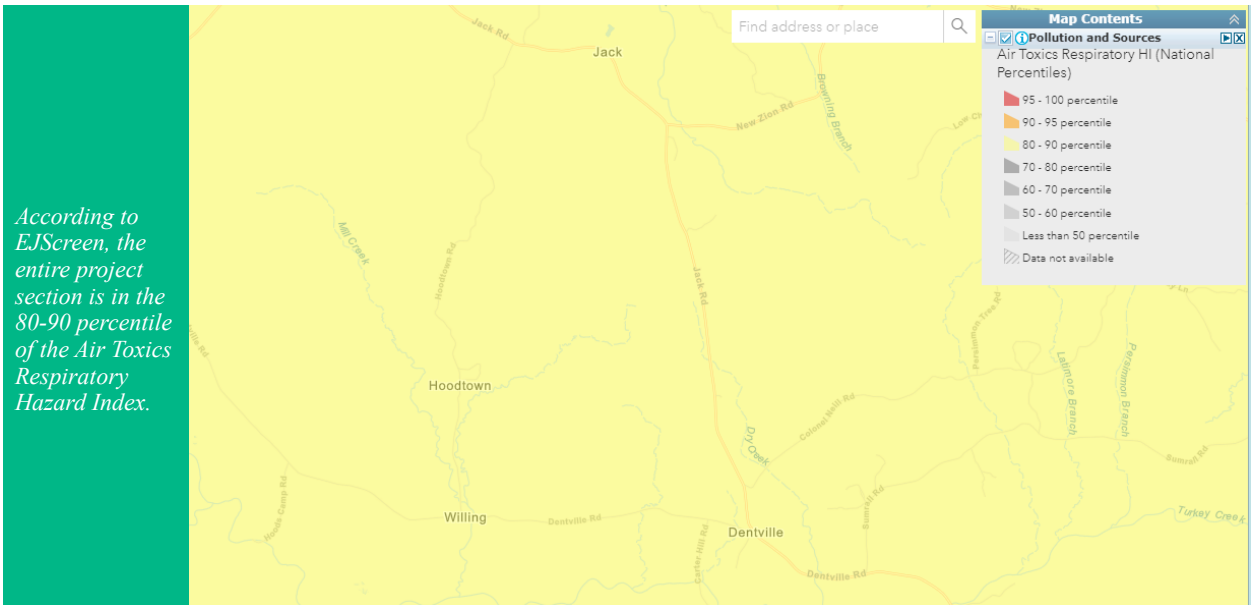
In addition to improved safety for automobile and truck users, the roadway also has context-appropriate features that benefit bicyclists and pedestrians. According to the *FHWA Small Town and Rural Multimodal Networks* guidance document, bicycle and pedestrian accommodation along a corridor similar to Jack Road can be accomplished through the provision of a paved shoulder with a minimum width of five feet. According to the guidance, benefits include:

- Improved bicyclist experience on roadways with higher travel speeds;
- Reduction of pedestrian "walking along the roadway" crashes;
- Advantage for all roadway users by providing space for all users – including automobiles, bicyclists, and pedestrians;
- A stable surface off the roadway for pedestrians and bicyclists to use when sidewalks are not provided; and
- Reduction of "bicyclist struck from behind" crashes, which represent a significant portion of rural road crashes.

Problem: Safety deficiencies were identified along the route as part of the Central Mississippi Planning & Development District's (CMPDD) 2024 Safety Action Plan.

The CMPDD's 2024 Safety Action Plan identified the intersection of Jack Road and Dentville Road – the southern terminus of the proposed project – as a safety deficiency area in need of improvement with a short-term implementation time frame. As part of the Jack Road Improvements project, a safety analysis will be conducted to identify safety deficiencies at this location and the needed countermeasures to address them.

Severely damaged pavement and lack of shoulders on the project section creates hazardous driving conditions.



According to EJScreen, the entire project section is in the 80-90 percentile of the Air Toxics Respiratory Hazard Index.

Environmental Sustainability

Problem: The existing and future deficiencies of the roadway will increasingly result in higher vehicle miles traveled in Copiah County, along with the associated increase in air pollution and greenhouse gas emissions. This will most directly impact residents of an Area of Persistent Poverty and Historically Disadvantaged Community.

The current Jack Road facility is in poor condition. Currently, drivers must either traverse the uneven pavement, risking roadway departure or vehicle damage in the process, or take a detour route approximately 22 miles in length. Either option results in increased emissions over what would be experienced if the roadway were consistent with current design and maintenance standards.

References & Appendices Online

The web address for the Improvements to Jack Road in Copiah County Project is **http://www.buildjackroadcopiah.com**. The references and appendices, including updated letters of support, for this application are located on the website.

According to EJScreen, the project segment is located in the 80 – 90 percentile of the Air Toxics Respiratory Hazard Index, indicating that the residents of this traditionally-underserved community already struggle with the risk of adverse health outcomes related to air quality.

Emissions savings from project implementation are realized in two ways. First, emissions savings can be quantified as a result of improved pavement quality and the associated increased free-flow speed. According to NCHRP Report 720, average fuel consumption impact per 63.4 inches / mile (in/mi) unit International Roughness Index (IRI) change is three percent. While IRI data is not maintained for the current segment, a visual inspection indicates an existing IRI of 200 in/mi, indicating a poor ride quality. It can be assumed that the improved facility would have an IRI of 95 in/mi or less, the maximum value associated with a good ride quality. Under these assumptions, the improved facility would reduce fuel consumption impact along the route by 4.9 percent, at a minimum.

Emissions reductions can also be quantified by examining the impact of a closure of the bridge over a tributary to Saddlers Creek, which is currently posted for weight (tandem axle weight of 10,000 pounds). Based on the current National Bridge Inventory (NBI) of the bridge, a conservative estimate for future closure would assume a probability of five percent in 2030, increasing by 2.5 percent each year thereafter. Using these assumptions, project implementation could potentially reduce emissions over a 20 year period by the following amounts:

- 4.05 metric tons of nitrogen oxide;
- 0.19 metric ton of particulate matter 2.5;
- 4.19 metric tons of volatile organic compounds; and
- 7,795 metric tons of carbon dioxide.

In addition to the quantifiable emissions savings associated with the project, contractors will use warm mix asphalt paving materials to minimize the carbon footprint during construction as well as provide a safer and healthier working environment for the construction crew.

Problem: In the event of a natural or nuclear disaster, the current roadway would not be a suitable route for evacuation or emergency response activities.

An improved Jack Road facility will allow for easier evacuations and emergency response during natural disasters. Copiah County's Emergency Management Agency cites tornadoes, floods and hurricanes as major natural events that have occurred in the area in recent years.

Furthermore, the project segment is located within the Ingestion Exposure Pathway Emergency Planning Zone (EPZ) associated with the Grand Gulf Nuclear Station near Port Gibson. In the event of a nuclear emergency at the facility, evacuation and / or food safety sampling activities could be required, in addition to other necessary emergency response activities.

The single-lane corridor is difficult and dangerous to travel in its current condition, meaning that evacuees must either drive slowly or take lengthy detours. Neither solution is appropriate in a critical situation when time is of the essence. The proposed Jack Road will be a two-lane, fully paved facility that can safely support higher traffic volumes and the weight of emergency vehicles.

Uneven pavement on the project section. Also note that the existing road is too narrow for two vehicles to pass.

Quality of Life

Problem: The current facility degrades quality of life in an Area of Persistent Poverty and Historically-Disadvantaged Community.

The U.S. Census Bureau estimates that approximately 52 percent of Copiah County's residents identify as Black or African American. The project is located in Census Tract 9503, which is both an Area of Persistent Poverty and an Historically-Disadvantaged Community.

Census Tract 9503 is well within the disadvantaged range for poor health outcomes; the region's percentile ranks for asthma, cancer, high blood pressure and diabetes are in excess of 80 percent. The project section in its current state is nearly impassable, which excludes it as a viable route to reach quality healthcare and adds travel time in the event of a medical emergency. As discussed previously, the detours required for vehicles in excess of the segment bridge's posted weight, as well as the likelihood of complete bridge closure in the coming year, will increase emissions, further deteriorating air quality and exacerbating resulting negative health outcomes.

The current facility compromises response in the event of a health emergency. Most fire and EMS vehicles exceed the posted weight of the bridge, potentially increasing response time and transit time to the nearest hospital.

The towns nearest to the project section are Utica, Mississippi, just northwest of the Jack Road section, and Hazlehurst, Mississippi, to the southeast.

Utica is home to Hinds Community College's Utica Campus, a Historically Black College and University (HBCU). The college provides 65 career and technical programs and more than 20 academic programs. The campus is also home to the Utica Institute Museum, which educates visitor's about the school's history as a Historically Black Community College. Hinds Community College's Utica campus has a longstanding tradition of providing transportation for students to and from classes via bus routes which run through local communities. Other daily destinations in Utica include grocery stores, places of worship, retail destinations, a library, a post office and a parks and recreation complex.

The city of Hazlehurst is the county seat of Copiah County. Hazlehurst is home to the Copiah County Medical Center, schools, retail centers, government buildings, industries, churches, recreation and residential neighborhoods.

The proposed project will offer a more convenient route to daily destinations. By reducing drive times and emissions through a more efficient transportation network, this project will ease poor health outcomes and lower household transportation costs. Lower fuel consumption rates, improved air quality and better public health will strengthen "ladders of opportunity" for residents of Census Tract 9503 and beyond.

Problem: Lack of active transportation accommodations to promote public health for a Historically Disadvantaged Community.

The project will feature a paved shoulder facility consistent with the context and facility guidance outlined in the FHWA Small Town and Rural Multimodal Networks guidance document. Currently, there are no dedicated facilities in the immediate area for residents seeking to walk or bike for recreational purposes. The improved facility will include accommodations for active transportation users, including those seeking to walk for leisure or fitness.

According to the American Heart Association, walking at a brisk pace for just 150 minutes per week can reduce the risk of heart disease, stroke, diabetes, and several types of cancer; improve blood pressure, blood sugar, and blood cholesterol levels; and prevent weight gain. All of these benefits are especially important given the previously discussed health profile of the community.

Mobility and Community Connectivity

Problem: The project area is centrally-located among several rural activity centers, but suffers from reduced connectivity due to the existing and future deficiencies of the corridor.

The project will have several direct benefits for mobility and community connectivity in Copiah County by making places to live, work and play more accessible.

The project area is centrally located among several rural activity centers, including Dentville, Tillman and Smyrna. Each of these communities is home to numerous houses of worship and outdoor recreation opportunities. The improved Jack Road corridor will provide a safer and more direct route for these destinations, as well as the regional activity centers of Utica and Hazlehurst.

Currently, people traveling between Utica and Hazlehurst or any other local communities must take unnecessarily lengthy routes to reach their destinations or drive significantly more slowly to traverse Jack Road. Drivers who travel along Jack Road currently drive at approximately 20 miles per hour (mph); the proposed facility would allow for 55 mph, reducing travel time by more than 50 percent. Additionally, every year that Jack Road remains in the current condition, the odds increase that the bridge along the corridor will be closed, making a 22-mile detour mandatory. The detour would take 0.40 hour, versus 0.21 hour for the current facility and 0.08 hour for the proposed project.

Problem: The current facility compromises accessibility for the region's transit services.

The project area is currently served by Southwest Mississippi Accessible Regional Transportation (SMART), a rural, on-demand transit system that serves 13 counties in southwest Mississippi. The services provide transportation for residents in need to local colleges and universities, employment trips to area businesses, as well as non-emergency medical transportation. Currently, residents living on the project corridor may experience access difficulties due largely to the weight restriction on the bridge over the tributary to Saddlers Creek and associated detour route.

Additionally, Hinds Community College's Utica Campus offers students transit via bus routes in local communities. Improved accessibility through the area will increase the convenience of the college's transit program. Though the proposed project does not include bicycle or pedestrian facilities, the significantly widened shoulders and improved pavement markings will create safer conditions for all users, including those who walk or bike.

Problem: The condition of the facility could compromise emergency response activities.

The improvements will reduce response times for first responders, including Copiah County fire and EMS. Most emergency response vehicles would exceed the current posted weight (10,000 pounds) of the bridge over the tributary to Saddlers Creek, potentially endangering both first responders and the individual(s) in need of emergency assistance.

Damaged pavement and lack of clear shoulder area on Jack Road

Economic Competitiveness and Opportunity

Problem: Copiah County needs improved surface transportation facilities – and the improved connectivity these facilities enable – to maximize long-term economic growth.

A key element in the proposed project is to leverage public investments in multimodal surface transportation to promote long-term economic growth and other broader economic and fiscal benefits for Copiah County. Freight and goods movement is a cornerstone economic activity in Copiah County, with the county's forestry industry being of particular importance. Forestry and forest products are a major component of Copiah County's economy. Forest-related economic sectors generate value not only within the forest-related sectors, but also in other sectors of the economy.

Copiah County is an industrial hub for the State of Mississippi. Companies such as Sanderson Farms and Entergy operate in the community. The Copiah County Industrial Park, located just north of the county seat of Hazlehurst, is an approximately 700-acre complex with access to multimodal freight facilities, including Mississippi Freight Network Tier I Highways and Railways, a Tier II Highway and close proximity to the Copiah County airport. The industrial park's strategic location near major highways allows easy access to Gulf Coast ports, as well as Memphis, a major logistics hub.

Moreover, the Copiah County Economic Development District has been working with a major renewable energy company to build a wood pellet plant in Copiah County. After many months of research, preparation, negotiations and regulatory work, the agreements are on track, and the outlook is very good for the concept to be fulfilled. The facility will process and ship an estimated 320,000 tons of wood pellets per year to European utilities via ports on the Mississippi Gulf Coast.

While exact routing of heavy truck and freight routing is difficult to predict, Jack Road's annual average daily traffic (AADT) is known, as well as the associated typical percentage of the truck traffic. Currently, heavy truck traffic cannot use the roadway at all due to the posted weight restriction on the bridge over a tributary to Saddlers Creek.

As part of the project benefit-cost analysis, the increased vehicle miles traveled (VMT) and associated operational costs were analyzed for truck traffic. Absent the proposed project, truck traffic that could otherwise take advantage of Jack Road will need to take a longer, circuitous route. As a result, by 2048, up to two million VMT by truck could be added to overall VMT in the county, resulting in a discounted increase in operational costs of approximately $1.4 million.

Additionally, the improved pavement quality, as measured by the International Roughness Index, is expected to reduce fuel consumption along the route by 4.5 percent, at a minimum, resulting in additional cost savings for freight operators.

An improved Jack Road corridor, taken together with other strategic connectivity investments at both the state and local level, can promote long-term economic growth in a community that already relies on heavily on freight and goods movement.

State of Good Repair

Problem: The current facility is not capable of delivering its required performance safely and reliably.

State of Good Repair (SGR) is typically defined as "the condition of an asset where the asset, at a minimum, is capable of delivering the required performance safely and reliably for a predetermined period of time." The Jack Road corridor improvement project will ensure this segment of the corridor operates as efficiently as possible under both routine daily conditions and emergency situations. This new facility is designed to meet the latest design standards as defined by MDOT and FHWA.

An improved Jack Road will lower Copiah County's maintenance costs for many years to come and improve safety conditions for county employees. Currently, Copiah County personnel are exposed to significant risk while performing routine maintenance work throughout the less-than-ideal corridor. In the rare event that the proposed project may need maintenance, the new corridor can safely accommodate maintenance vehicles and personnel.

Partnership and Collaboration

The project demonstrates support from stakeholders and leaders at the national, state, regional and local levels. (See Appendix A.) In addition to the requested FY 2025 BUILD grant for the project, there has been significant local investment by Copiah County through the use of local funds on preliminary engineering and right-of-way costs to date.

Planning for an improved Jack Road corridor represents planning collaboration between Copiah County and the Central Mississippi Planning & Development District (CMPDD). As part of CMPDD's 2024 Safety Action Plan, the intersection of Dentville Road and Jack Road – the southern terminus of the project – was identified as an area of safety deficiency in need additional study and countermeasures. Implementation of this project provides an opportunity for continued collaboration between the County and CMPDD to continue to address safety deficiencies – specifically those that result in more severe crashes – in the project area.

The lowest responsive bidder on the project shall take all necessary and reasonable steps to ensure that Disadvantaged Business Enterprises (DBEs) can compete for and participate in the performance of a portion of the work in the contract based on the DBE goal. Additionally, the contractor shall make full use of workforce development training programs – i.e., apprenticeships – and on-the-job training programs for the geographical area of contract performance.

Innovation

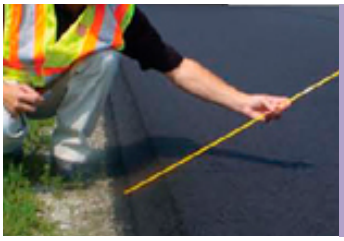
Both the project delivery and financing for this project are unique due to the proactive measures the County has taken to secure project funding and expedite project delivery. Specifically, preliminary engineering and right-of-way acquisition have been funded and completed already.

- Previously completed PE Phase - **$223,745**
- Previously completed ROW Phase - **$327,801**

This locally innovative approach to project delivery will ensure the project timeline can be met. Furthermore, the amount of stakeholder coordination, staff time, and $551,546 of County funds spent on this project to date demonstrates the community's commitment to the project.

Given the urgent needs outlined in this application, Copiah County intends to pursue any practices that can accelerate project delivery to deliver the benefits of the project to the motoring public as soon as possible. To this end, the County will work with contract and MDOT District staff to identify opportunities for accelerated project delivery, including contracting the project as a single contractor design-build.

Additionally, the Jack Road Corridor improvement project has incorporated several innovative technologies into the proposed design.



The Safety Edge℠ is an uncomplicated and effective solution to mitigate pavement edge-related crashes by shaping the edge of the pavement to 30 degrees to eliminate vertical drop-off.

Safety Edge

Safety Edge, an innovation from the first round of FHWA's Every Day Counts (EDC) Program, will be incorporated into the project as a safety countermeasure to mitigate pavement edge related crashes. Data from other state DOTs has indicated that incorporating this edge treatment into pavements results in a reduction of up to 25% in rural run-off the road crashes.[10]

Because WMA makes compaction easier, cost savings are achieved by reducing time and labor spent compacting the mix. Lower temperatures also result in less emissions and safer conditions for workers.

Warm Mix Asphalt (WMA)

WMA, another innovation from the first round of FHWA's EDC Program, will be allowed for contractors to utilize on the project. WMA is produced at lower temperatures than conventional Hot Mix Asphalt, resulting in lower emissions, less fuel consumption during production, improved compaction and portability during construction and a healthier and safer working environment for construction workers. Historically, when specifications allow for contractors to choose to utilize either WMA or HMA for asphalt paving, industry in Mississippi has chosen WMA for approximately 70% of the tonnage placed.[11]

A rumble strip becomes a raised profile stripe when the edge line pavement marking is placed on it. In addition to the auditory benefit, the profile of the marking within the rumble strip provides added nighttime visibility.

Raised Profile Stripe

Copiah County will utilize raised profile edge striping throughout the Jack Road Corridor improvement project. Raised profile striping combines the audible benefits of a rumble strip with the raised profile reflective nighttime visibility of raised pavement markers to reduce roadway departure crashes. A rumble strip becomes a raised profile stripe when the thermoplastic edge line is placed on the rumble strip.

Data Driven Safety Analysis (DDSA)

Copiah County currently applies DDSA throughout their project development processes. By utilizing this innovation from the third round of FHWA's EDC Program on all projects, Copiah County can make informed decisions and target investments which results in improved safety throughout their transportation network. Resources such as the Crash Modification Factors Clearinghouse and the AASHTO Highway Safety Manual is helping to advance the safety of Mississippi's roadways towards zero deaths.

DDSA provides more reliable analysis than previous methods through the application of predictive and systemic tools for analyzing crash and roadway data.

Project Readiness

Environmental Risk

Project Schedule

The schedule shown in Table 04 is based on a projected award date of the requested BUILD grant funds no later than June 28, 2025.

Table 04. Project Schedule

Milestone	Date
USDOT awards requested BUILD funds	Jun '25
Copiah County and USDOT execute needed agreement	Dec '25
Copiah County obligates BUILD Preliminary Engineering funding	Jan '26
Copiah County completes the NEPA process	Jun '26
Copiah County obligates BUILD Utility Relocation funding	Jul '26
Copiah County complete the Utility Relocation phase	Dec '27
Copiah County completes final design plans, specifications and estimates (PS&E)	Dec '27
Copiah County obligates BUILD Construction funding	Jan '28
Copiah County awards construction to the lowest responsive bidder	Jan '28
Construction Completed	Sep '29

References & Appendices Online

The web address for the Improvements to Jack Road in Copiah County Project is **http://www.buildjackroadcopiah.com**. The references and appendices, including updated letters of support, for this application are located on the website.

Required Approvals

Environmental Permits and Reviews

Upon notice of award of the requested BUILD funding, Copiah County will begin the process of performing the needed Environmental documents, including a Cultural Resource Survey, and should be completed with the Environmental phase by June 30, 2026.

Federal Transportation Requirements

There are no further legislative approvals required to implement this project; however, stakeholders and leaders at national, state, regional and local levels have pledged their individual support to this project (See Appendix A).

State and Metropolitan Planning

Since Statewide Transportation Improvement Program (STIP) documents are required to maintain fiscal constraint, and Copiah County does not currently have the available funding to construct the proposed project without the requested BUILD funds, the project is not currently in MDOT's STIP. Once the project is awarded the requested BUILD funding, the necessary adjustments will be made to the STIP document to reflect the project in MDOT's Program.

Technical Feasibility

Itemized project features of this Improvement Project on Jack Road in Copiah County, Mississippi are as follows:

- Construction of a wider (26' paved) two lane facility;
- Widened shoulders throughout the corridor to improve safety;
- Replacement of currently posted bridge;
- Utility relocations; and
- Incorporation of safety measures such as improved signage, asphalt pavement safety edge, raised pavement markers and rumble edge stripe/strip throughout the corridor.

Cost estimates developed for the project are based on recent historical construction bid prices on projects of comparable size and scope and based on design quantities from the 90% completion stage plans.

Assessment of Project Risks and Mitigation Strategies

There is very little risk that would prevent the project from meeting the obligation deadline for FY 2025 BUILD funds (September 30, 2029) and the expenditure deadline for FY 2025 BUILD funds (September 30, 2034) based on the following:

1. Copiah County is well into the Preliminary Engineering phase of the project and should have all Preliminary Engineering activities completed by December 31, 2027.

2. All needed Right-of-Way has been acquired.

3. All needed utility relocations will be completed by December 31, 2027.

4. Copiah County has a previously awarded earmark that could potentially fund the remaining preliminary engineering and a portion of the utility relocation work ahead of the needed agreement between USDOT and Copiah County for the BUILD grant funds. This could serve as a risk mitigation activity to accelerate the delivery of the project.

5. Copiah County has the construction scheduled for a January 2028 letting date, so all BUILD funding will be obligated in FMIS by January 2028 well in advance of the obligation deadline of September 30, 2029, for these funds.

6. Copiah County is estimating the completion of construction would occur prior to September 30, 2029, which would enable the expenditure of all BUILD funding well in advance of the September 30, 2034, deadline for expenditures.

Copiah County Technical Capacity

Copiah County has successfully administered transportation improvement projects funded with federal program funds and is well positioned to administer the proposed BUILD grant for this needed project. The agency has experience completing projects of similar scope to the proposed project and has the resources in place to successfully deliver this project. All needed ROW has been acquired in accordance with all federal and state requirements and as is standard with all MDOT LPA construction projects, specifications containing additional applicable federal requirements such as Buy America provisions, ADA regulations, Civil Rights requirements, etc. will be utilized for the construction of this project.

Table 05. Applicant's Recent Previous Projects Using Federal Funding

Project	Amount
Old Port Gibson Road Construction	$600,000
Delta Regional Authority Sewer Improvement Project	$650,000

Benefit-Cost Analysis (BCA)

Approach

A benefit-cost analysis was conducted to evaluate the expected project benefits against the total project cost, including preliminary engineering, right-of-way acquisition and construction. The overall approach was informed by the November 2024 version of the *Benefit-Cost Analysis Guidance for Discretionary Grant Programs.*

The analysis is based on the total project cost, as provided by Copiah County, MS, and key data points, including anticipated travel time savings, anticipated travel time and operational savings from no diversion of traffic due to bridge closure, anticipated reduction in emissions related to no diversion of traffic due to bridge closure and salvage value of the facility after 20 years. These data points were used to determine and quantify the operational and administrative benefits of the project. Each are described in more detail in the following sections.

Benefit Categories

Operational

Operational benefits of the project were calculated in four primary categories: 1) travel time savings, 2) bridge closure diversion travel time savings, 3) bridge closure diversion operating cost savings and 4) residual savings.

The value of travel time savings was calculated using the recommended hourly value of travel time savings as identified in the *Benefit-Cost Analysis Guidance for Discretionary Grant Programs*.

The current poor condition of the project segment (estimated IRI > 200 in/mi) results in an estimated 85 percentile traveling speed of 20 mph for users through the 4.25 project section. Beginning in 2030, upon completion of the proposed project, the design 85 percentile traveling speed will be 55 mph which will result in a reduction in travel time of 0.14 hour for users. Based on projected annual traffic for both automobiles and trucks, the value of this travel time savings can be quantified using the values contained in the USDOT Benefit Cost Analysis Guidance November 2024 Tables A-2 & A-3.

The existing bridge over Saddlers Creek Tributary is currently posted for 10,000 pounds (0.5 tons) or less. The proposed project will replace this posted bridge with a new structure. If the existing bridge remains in service there is a possibility that it would need to be closed as some point in the future which would create an additional 22 mile detour for users and result in an increase of .32 hour of travel time for users when compared to the “build” scenario. Based on the current condition of the existing bridge, an assumed probability of bridge closure in 2032 with annual increases of 2.5% in subsequent years is factored into the projected bridge diversion travel time savings. Based on projected annual traffic for both automobiles and trucks the value of this bridge diversion travel time savings can be quantified using the values contained in the USDOT Benefit Cost Analysis Guidance November 2024 Tables A-2 & A-3.

Similarly, bridge diversion operational savings can be calculated using the same assumptions. The value of this bridge diversion operation savings can be quantified using the values contained in the USDOT Benefit Cost Analysis Guidance November 2024 Table A-4.

Residual savings were also calculated consistent with the November 2024 version of the *Benefit-Cost Analysis Guidance for Discretionary Grant Programs.*

Environmental Protection

Expected damage costs for pollutant emissions were calculated for the both the No-Build and Build cases, based on calculating VMT as described earlier in this section. The costs associated with each of the criteria pollutants – carbon dioxide, volatile organic compounds, nitrogen oxides, particulate matter, and sulfur dioxide – were applied consistent with the values provided in Table A-6 of the November 2024 version of the *Benefit-Cost Analysis Guidance for Discretionary Grant Programs.*

Projected diversion-related emissions cost savings were determined by evaluating the VMT that would be avoided beginning in 2032 based on the probability of bridge closure which would result in an additional 22 miles of detour travel for users.

Benefit-Cost Ratio

After quantifying the net benefits expected under the Build case and taking into account the residual cost benefits of the project for years beyond the analysis period, the BCR for the project was calculated to be 1.79 suggesting that the project benefits over the analysis period would exceed the expected costs associated with project implementation.

References & Appendices Online

The web address for the Improvements to Jack Road in Copiah County Project is **http://www.buildjackroadcopiah.com**. The references and appendices, including updated letters of support, for this application are located on the website.

Table 06. Benefit-Cost Analysis Summary

	3.1% Discount Rate
Costs (2023 $M)	
Capital Cost	$17.5
Total Costs	**$17.5**
Benefits (2023 $M)	
Operational Benefits	
Travel Time Savings	$11.8
Bridge Closure Diversion Travel Time Savings	$4.9
Bridge Closure Diversion Operating Cost Savings	$6.7
Residual Savings	$3.2
Sub-Total	**$26.5**
Environmental Protection	
Bridge Closure Diversion Emissions Savings	$3.3
Sub-Total	**$3.3**
Total Benefits	**$29.8**
Outcome	
Net Present Value (2023 $M)	$12.28
Benefit-Cost Ratio	**1.70**

Sources

[1]https://infrastructurereportcard.org/wp-content/uploads/2021/07/FullReport-MS_2020-1.pdf

[2]https://mississippitoday.org/2018/07/03/why-mississippi-is-the-deadliest-place-to-drive-a-car/

[3]https://www.transportation.gov/sites/dot.gov/files/2022-02/USDOT-National-Roadway-Safety-Strategy.pdf

[4]https://highways.dot.gov/safety/other/unpaved-roads-safety-needs-and-treatments

[5]Transportation Research Board's National Cooperative Highway Research Program (NCHRP) Report 720: Estimating the Effects of Pavement Condition on Vehicle Operationg Costs

[6]https://www.census.gov/quickfacts/copiahcountymississippi

[7]https://www.hindscc.edu/campuses/utica

[8]http://cmpdd.org/images/counties/copiah/copiah-county-demographic-and-business-summary-2020.pdf

[9]https://copiahworks.com/dev/

[10]https://safety.fhwa.dot.gov/roadway_dept/pavement/safedge/brochure/

[11]Based on historic MDOT construction bid information

[12]https://experience.arcgis.com/experience/0920984aa80a4362b8778d779b090723/page/ETC-Explorer---State-Results/

210 East Capitol Street
Suite 1150
Jackson, MS 39201

601.991.2393
GreshamSmith.com