

# Railroad Crossing Elimination on Shelby County Road 52

Applicant: City of Pelham, Alabama



October 11, 2022

**Application to the Railroad Crossing Elimination Grant Program**



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# 1. COVER PAGE

Project Title	Railroad Crossing Elimination on Shelby County Road 52
Applicant	City of Pelham, Alabama
Federal Funding Requested Under this NOFO	\$41,928,250
Proposed Non-Federal Match	\$10,482,063
Does some or all of the proposed Non-Federal Match for the total project cost consist of preliminary engineering costs incurred before project selection?	No
Other Sources of Federal funding, if applicable	None
Total Project Cost	\$52,410,313
Was a Federal Grant Application Previously Submitted for this Project?	No
City and State Where the Project is Located	City of Pelham, Alabama
Congressional District(s) Where the Project is Located	Alabama 6 <sup>th</sup> District
Is this project identified in:	
The freight investment plan component of a State freight plan, as required under Section 70202(b)(9)	No
A State rail plan prepared in accordance with Chapter 227; or	No
A State highway-rail grade crossing action plan, as required under section 11401(b) of Passenger Rail Reform and Investment Act of 2015 (title XI of Public Law 114-94)	No
Is the Project Located in a Rural Area or on Tribal Land?	Urban
Is the project eligible for a funding set-aside in Section B.1	No
If the Project is located in a Rural Area or Tribal Land, is the Project Located in a county with 20 or fewer residents per square mile, according to the most recent decennial census?	NA
USDOT Crossing Number(s)	352255T, 639539V
Is the Project located on real property owned by someone other than the applicant?	Yes. Shelby County owns the road. CSX owns the track.
The City has created a web site with supplemental information. The web address is: <a href="https://pelhamalabama.gov/960/Shelby-County-Road-52-Railroad-Crossing-">https://pelhamalabama.gov/960/Shelby-County-Road-52-Railroad-Crossing-</a>	

## 2. PROJECT SUMMARY

The *Railroad Crossing Elimination on Shelby County Road 52* (the Project) will construct a bridge over two existing adjacent at-grade crossings—#352255T and #639539V--near Lee Road in Pelham, Alabama. Both crossings will be permanently closed. The community strongly favors the construction of the bridge to address the long-standing and worsening problem of blocked grade crossings that disrupt mobility in the heart of the city and pose risks to safety.

County Road 52 (CR52) is an important east-west arterial that roughly bisects the city in half. When the crossings are blocked, emergency responders east of the tracks cannot respond to calls west of the tracks. During these times, emergency response must be requested from the neighboring town of Helena, lengthening response times. The project will also widen and reconstruct County Road 52 East of US Highway 31 to increase capacity and update the roadway to current geometric and roadside design standards that will result in a safer roadway.

### Quotation from Pelham Police Department Letter of Support

“I am in strong support of this project and ask that the Federal Railroad Administration grant approval of this request through the Railroad Crossing Elimination Program. In my 22 years at the Pelham Police Department, I have personally dealt with many delays involving the crossings and have responded to many crashes, some fatal, that have affected the traffic flow for extended periods of time.”—Chief of Police, Pelham

## 3. PROJECT FUNDING

The estimated cost of the Project is \$52,410,313. The City of Pelham (the City) is the applicant and has partnered with the City of Helena, Shelby County, and CSX, collectively “the Project Partners.” The Project Partners are requesting 80 percent of the estimated Project cost. The Partners will provide the 20 percent balance from local, non-federal funds. Table 1 summarizes the funding as requested in the Notice of Funding Opportunity.

**Table 1: Project Funding Table**

<b>Task</b>	<b>Cost</b>	<b>Percentage of Total Cost</b>
Task 1: Detailed Work Plan, Budget, and Agreement	\$2,748,289	5%
Task 2: Environmental Review		
Task 3: Preliminary Engineering		
Task 4: Right of Way Acquisition and Utility Relocation	\$20,255,336	39%
Task 5: Construction Letting and Construction, Engineering, and Inspection	\$29,406,688	56%
Task 6: Final Performance Report		
<b>Total Project Cost</b>	<b>\$52,410,313</b>	
Federal Funds from Prior Grant	\$ 0	0%
Federal Funding Request Under this NOFO	\$41,928,250	80%
<b>Non-Federal Funding/Match: Cash</b>	<b>\$10,482,063</b>	<b>20%</b>
Non-Federal Funding/Match: In-Kind	\$ 0	0%
Non-Federal Funding/Match: Prelim. Eng.	\$ 0	0%
Portion of Non-Federal Funding from the Private Sector		
CSX	\$2,620,516	5%
<b>Local Match by Source (County/City General Revenues)</b>		
<b>City of Helena</b>	<b>\$7,861,547</b>	<b>15%</b>
<b>City of Pelham</b>		
<b>Shelby County</b>		
Portion of Total Project Costs Spent in a Rural or Tribal Area	\$ 0	0%
<b>Pending Federal Funding Requests</b>	<b>\$41,928,250</b>	<b>80%</b>

## 4. APPLICANT ELIGIBILITY

The applicant is the City of Pelham, Alabama, a political subdivision of Alabama State government, enabled under Code of Ala. 1975, § 11.

## 5. DETAILED PROJECT DESCRIPTION

This section describes the challenges addressed by the Project, the expected outcomes, the expected users and beneficiaries of the project, performance measures, and confirmation of closure.

## 5.1 Challenge Addressed by the Project

County Road 52 is an important link between the City of Pelham and the City of Helena and connects both cities to Interstate 65, which is the major north to south arterial in the State of Alabama with ultimate connections to Mobile, Montgomery, Birmingham, and Huntsville. County Road 52 is a vital east-to-west collector roadway across the southern Birmingham metropolitan area and is currently carrying a higher volume of traffic than any other east-to-west connector in the area except Interstate 459.

There are two at-grade railroad crossings that frequently restrict access across County Road 52 and obstruct emergency vehicles responding to calls. The two crossings are often blocked by stalled trains for extended periods of time. Even on days without a stalled train, normal train activity blocks the travel way and extends travel times for emergency responders and approximately 24,000 vehicles that travel on County Road 52 each day. Due to the close proximity of the crossings, motorists will often discover one crossing will open after a train has



**Figure 1: Traffic Trapped Between Crossings Due to Simultaneous Trains**

passed though only to find the next crossing is blocked and experience double the delay. Train blockages aside, the intersections within this area currently experience poor levels of service during morning and afternoon peak periods. By grade separating and closing these two railroad crossings and providing complementary capacity improvements, this Project will significantly improve the level of service in this area and will improve the safety and mobility of people and goods.

The City has worked with its regional partners to develop a solution to this dangerous and frustrating problem—to address the challenge. This Project will permanently close two CSX Railroad Crossings, Crossing #35225T and Crossing #639539V, on Shelby County Road 52. In order to close these crossings, this Project proposes the realignment of County Road 52 West with the existing County Road 52 East alignment and construction of a bridge over the two crossings. As part of the proposed realignment, the intersection of County Road 52 and US

Highway 31 will be reconfigured and additional improvements will be implemented along Highway 31. The project will also widen and reconstruct County Road 52 East of US Highway 31 to increase capacity and update the roadway to current design standards.

The Eastern Portion of this Project includes improvements on County Road 52 east of the intersection with Highway 31 to Interstate 65 southbound ramps may be expedited as planning work is already complete. Environmental work in the form of a signed Categorical Exclusion and some preliminary engineering have already been completed for this portion of the Project. Field survey for this portion is also complete and the design has progressed to approximately a 30% design phase.



**Figure 2: An Ambulance Waits at a Blocked Crossing on its Way to Help**

The proposed bridge on County Road 52 over the two crossings will be approximately 415 feet long and consist of five lanes with a multi-use path to accommodate pedestrians and cyclists. Two additional bridges will also be required: a bridge over Buck Creek at the west end of the project and a bridge on Northbound Highway 31 in order to reconfigure the intersection to meet

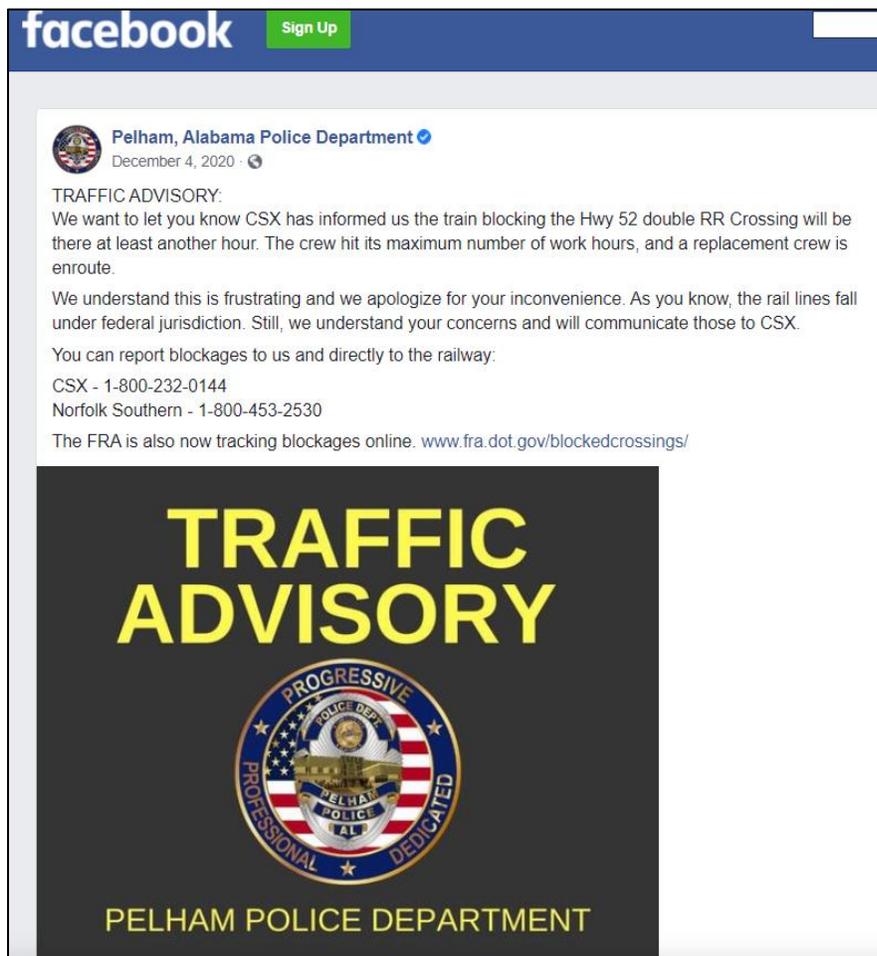
current and future traffic demands. The existing Highway 31 bridge was constructed in the 1950s and will be updated to current design and functional standards.

The roadway realignment, proposed bridges, and additional lanes will increase the capacity and improve the level of service of the facilities throughout the entire area. All infrastructure improvements as part of the Project will include improvements to roadway geometrics and roadside characteristics to facilitate a safer roadway for the traveling public. Bike and pedestrian accommodations will be provided on the bridge.

## 5.2 Expected Outcomes

The realignment of County Road 52 West, proposed bridges and subsequent closure of the two at-grade railroad crossings will result in benefits to safety, emissions, travel time, and road user

operating cost savings. Both the public and the railroad will benefit.



From the perspective of the traveling public, there will be no future crashes at the crossings because they will have been eliminated. Moreover, secondary crashes caused by the queuing and congestion at crossings will be reduced. Road design improvements will further contribute to a reduction in road crashes in the vicinity of the crossings. Emergency service and HAZMAT response times will be reduced as responders will not be held waiting for trains to cross as shown in Figure 3.

**Figure 3: The Duration of Blocked Crossings Makes Travel Less Reliable on County Road 52**

After construction of the Project is completed, traffic will flow unencumbered by the 30+ trains per day that traverse this

corridor, and there will be a reduction in travel times, vehicle operating costs, and emissions. Blocked crossings will also be a thing of the past. There will be a large gain in reliability and a permanently navigable east-west route will be established for emergency responders. The status of the crossings is a frequent subject of the Pelham Police Department’s Facebook page, updating travelers on the status of blocked crossings Figure 3.

CSX has indicated their support for the proposed project as it will result in increased train safety and will lead to a more robust and resilient supply chain with fewer interruptions in operations. CSX is providing financial support for this Project.

### 5.3 Expected Users and Beneficiaries

Expected users include the residents of Pelham, Helena, Alabaster, and unincorporated Shelby County, especially the residents of the two Census tracts that border County Road 52. Residents of these tracts face multiple disadvantages as described in Section 9.3.3.

One of the largest benefits for travelers will be an increase in reliability, as noted in Section 5.2 above. The box to the right highlights the frequency of trains that traverse this corridor throughout a typical day. August 23<sup>rd</sup>, 2022, the day the observations were taken, was a good day. Although the trains stopped road traffic frequently throughout the 24-hour period, none stopped for an extended period of time and blocked the crossing. Oftentimes, motorists experience back-to-back crossing closure due to the close proximity of the crossings when trains are present simultaneously on both tracks.

Aside from the frequency of trains, there is the added consideration that freight trains do not keep to a predictable (and therefore avoidable) schedule. CSX reports that its freight services only use schedules for internal purposes based on demand. The internal schedule is subject to change based on a multitude of factors. Some of the factors taken into account include crew availability, hours of service rules, track maintenance schedules, embargoes, and mechanical issues. Also, the schedule is adjusted regularly, so even if the railroad provided a schedule, it would not be useful to road travelers as a guide for when to avoid the Project area since the train schedule varies day to day.

Train lengths and number of cars also vary significantly based on the type of train and could range in length from 2000’ to 15000’ or more.

**Trains Throughout the Day, Schedule Varies**

**24-Hour Observation 08/23/2022**

12:52:20a - 12:54:29a  
 01:04:28a - 01:08:34a  
 02:00:28a - 02:01:28a  
 02:51:38a - 02:58:05a  
 03:07:11a - 03:10:06a  
 04:35:35a - 04:39:00a  
 05:17:56a - 05:24:14a  
 05:34:09a - 05:39:49a  
 06:18:19a - 06:20:04a  
 07:02:01a - 07:16:11a  
 07:12:48a - 07:16:11a  
 07:17:19a - 07:22:30a  
 07:42:58a - 07:46:50a  
 08:03:04a - 08:06:29a  
 10:16:35a - 10:18:30a  
 10:27:39a - 10:31:04a  
 12:55:07p - 12:57:43p  
 12:56:46p - 12:58:31p  
 1:46:39p - 1:49:18p  
 2:35:07p - 2:37:55p  
 2:58:55p - 3:00:27p  
 3:11:52p - 3:14:25p  
 5:33:37p - 5:37:34p  
 5:47:54p - 5:51:08p  
 6:08:40p - 6:10:59p  
 7:22:25p - 7:24:06p  
 8:33:47p - 8:35:00p  
 8:50:00p - 8:52:16p  
 9:00:13p - 9:03:09p  
 9:55:08p - 9:58:17p  
 10:21:31p - 10:25:34p  
 11:29:45p - 11:34:06p

If it is a local train serving local customers, it could be as little as 40 cars, or as much as 100 cars. Thru trains, while they vary as well, typically carry far more cars than the local trains. CSX estimates that trains can be anywhere from 90 to 190 cars.

The railroad will also benefit. There is less chance for conflict with road traffic, so safety is improved for its employees. In addition, the railroad will save operating costs on maintenance and inspection of the crossing.

## **5.4 Performance Measures**

Constructing this project will eliminate blocked crossings and provide for more reliable travel times. Two proposed performance measures are:

1. Average daily minutes of delay, before and after the project.
2. Number of blocked crossings reported per month, before and after the project.

## **5.5 Confirmation of Closure or Elimination**

The Project will eliminate crossings 352255T and 63539V.

The latitude and longitude for the two crossings are:

**352255T:** 33.2850713 (Latitude) and -86.8135503 (Longitude)

**639539V:** 33.2852116 (Latitude) and -86.8126842 (Longitude)

# **6. HIGHWAY-RAIL GRADE CROSSING SAFETY INFORMATION AND EDUCATION PROGRAMS**

The proposed project is a capital project and does not contain an information or education component.

# **7. PROJECT LOCATION**

The Project is located in Pelham, Alabama along County Road 52. The City of Pelham is located in Shelby County, one of the fastest growing and counties in the southeast and is part of a metropolitan area with approximately 1.15 million residents. County Road 52 is an emergency services route and an estimated 4% and 9%, respectively, of the AADT on this road consists of

trucks and other heavy vehicles. Each day, on average, 9 freight trains and 1 switch train pass through crossing 352255T and 21 freight trains and 1 switch train pass through 639539V.

Approximately 23,876 vehicles per day travel County Highway 52 (between Huntley Parkway and Interstate 65) according to Shelby County traffic counts. Alabama DOT (ALDOT) counts put the volume higher at 26,962. Due to growth patterns in the area, future increases in traffic volumes can be expected.

Centrally located in Alabama (see Figure 4), Pelham is located along the CSX rail in the line that serves the Port of Mobile. Traffic on this line is growing as volumes at the port increase. Future growth on this rail line is expected with the construction of a new inland intermodal container terminal facility in the vicinity of Montgomery<sup>1</sup>. These increases will intensify the existing pressures on Pelham's County Road 52 crossings. The Project is located in Alabama Congressional District 6.



**Figure 4: Pelham is Centrally Located in the State Between Birmingham and Montgomery in Congressional District 6**

## 8. GRADE CROSSING INFORMATION

This section summarizes the grade crossing information requested by the Notice of Funding Opportunity.

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<sup>1</sup> Alabama Port Authority Announces Plans to Build an Inland Intermodal Transfer Facility in Montgomery, February 2022. Accessed: <https://www.montgomeryal.gov/Home/Components/News/News/4184/193>

Crossing Number	Street Location	Improve or Close	Owning Railroad	Incidents Since 2000
352255T	County Road 52	Close	CSX	<b>2019:</b> Stopped on crossing, PDO <b>2012:</b> Other, PDO <b>2006:</b> Stopped on crossing, PDO
639539V	County Road 52	Close	CSX	<b>2021:</b> Unknown, PDO <b>2016:</b> Unknown, Injury <b>2011:</b> Other, Injury <b>2004:</b> Stopped on crossing, PDO

## 9. EVALUATION AND SELECTION CRITERIA

This section responds to the evaluation and selection criteria in the order they are listed in the Notice of Funding Opportunity (NOFO).

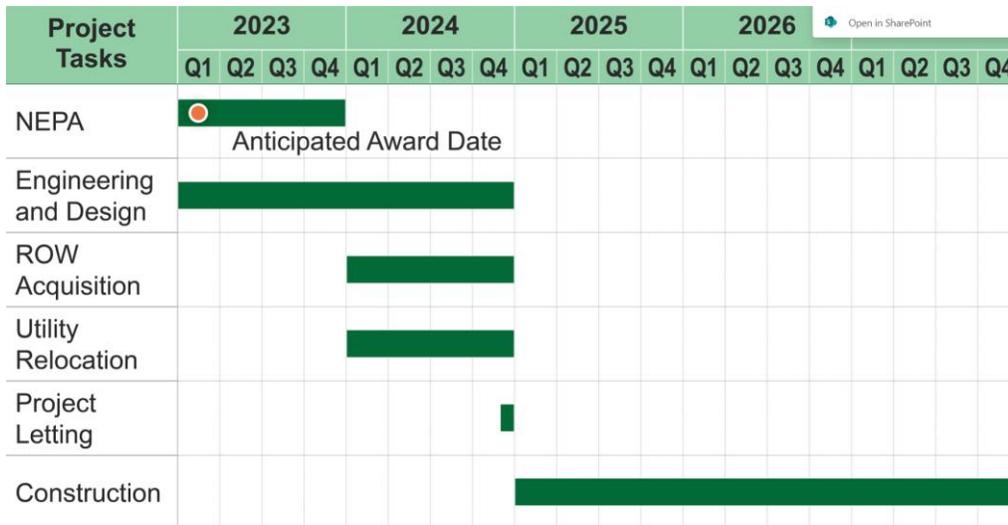
### 9.1 Project Benefits

The City’s Project delivers multiple benefit types listed in the NOFO. Of the project types listed that are delineated items A through H, the Project: addresses items B, C, D, E and F.

- B) Proposes to grade separate, eliminate, or close two highway-rail crossings;
- C) Improves the mobility of both people and goods as auto and truck traffic is not held at the crossings for long periods of time as trains pass or are stopped;
- D) Reduces emissions as vehicles are not stopped and idling;
- E) Improves access to emergency services (see Section 8: Safety); and
- F) Improves access to communities as County Road 52 is a major thoroughfare for Pelham and serves as the main connecting route to Helena (west of the crossings) and I-65 (east of the crossings).

### 9.2 Technical Merit

The City has developed the Project through a careful alternatives analysis process. Impacts to the natural and built environment, residents and surrounding communities were considered. A Statement of Work, schedule and budget describe how the City will deliver the Project. The railroad, CSX, is a strong partner in this work and has written a letter of support. The City considered several design options; the one selected offers the most advantageous means to grade separate the crossings, in a manner that preserves access for nearby businesses at the lowest cost.



**Figure 5: Project Schedule by Task**

The City of Pelham has adequate staff and employs several professional engineers experienced in the design and project management of a multimillion-dollar yearly capital construction program. The City of Pelham regularly administers FHWA and State of Alabama funded projects in addition to local dedicated transportation (LPA) to administer transportation projects through the Federal-aid process. The size and range of activities needed to deliver this work are within the scale of the typical capital planning and construction work undertaken by the City’s Public Works Department. Construction will be overseen by the City’s Public Works Department, which manages an annual capital budget of over \$43 million annually, well above the expected \$29 million in construction work estimated to deliver this work. The City routinely hires and works with qualified consultants in order to plan and design their larger capital Project.

### 9.2.1 Inclusion in Statewide Plans

Alabama’s publicly available Grade Crossing Action Plan was produced in 2011 and predates this Project. The 2022 Update is not yet publicly available. Alabama’s State Rail Plan (June 2014) similarly predates the Project. The 2017 Statewide Freight Plan notes grade crossing issues are a safety issue and that some important investments are needed in small cities but does not identify Pelham (p. 5-6).<sup>2</sup>

### 9.2.2 Innovation

While the Project itself utilizes proven design approaches, the methods to construct the bridge are innovative.

<sup>2</sup> 2017 Statewide Freight Plan, p. 5-6. Accessed FINAL\_FreightPlan\_Update\_11-28-17 (state.al.us)

- To expedite construction and potentially save on construction dollars, the City will explore the use of precast bridge deck panels and/or use of high-performance concrete for the bridge construction. Both are commonplace in many markets but are slow to catch on in Alabama for a variety of reasons. This approach is particularly attractive as it minimizes conflict with the busy rail line.
- Due to the Project's proximity to Buck Creek and Peavine Creek, the City will utilize cutting edge construction stormwater controls to minimize impacts to the water quality in the area. Use of active stormwater treatment, bioswales, and infiltration basins will be among the many Best Management Practices (BMP's) considered for use where appropriate during construction.
- The City will propose using Automotive Technology and 3D modeling in order to expedite construction. This technology is becoming commonplace in the construction industry in general but is lagging in application to roadway construction in Alabama.

The Project will utilize financial support from CSX: the railroad is providing five (5) percent of the Project cost.

The grade crossings, crossing #352255T and #639539V, are on an emergency services route and an estimated 4% and 9%, respectively, of their Annual Average Daily Traffic (AADT) consists of trucks and other heavy vehicles.<sup>3</sup> The Project will include a sidewalk and bike lane on the bridge crossing. There are currently no accommodations for bike and pedestrian travelers on



County Road  
52.

**Figure 6:  
Train  
Obstructing  
63953V  
Causes  
Traffic  
Queue  
Obstruction  
on Adjacent  
352255T  
Crossing**

<sup>3</sup> Federal Railroad Administration, U. S. DOT CROSSING INVENTORY FORM, (1) Crossing #352255T, OMB No. 2130-0017, Last Revised 09/30/21 (2) Crossing 639539V, OMB No. 2130-0017, Last Revised 09/23/21

## 9.3 Selection Criteria

This section addresses the NOFO Criteria in the order that they are noted.

### 9.3.1 Safety

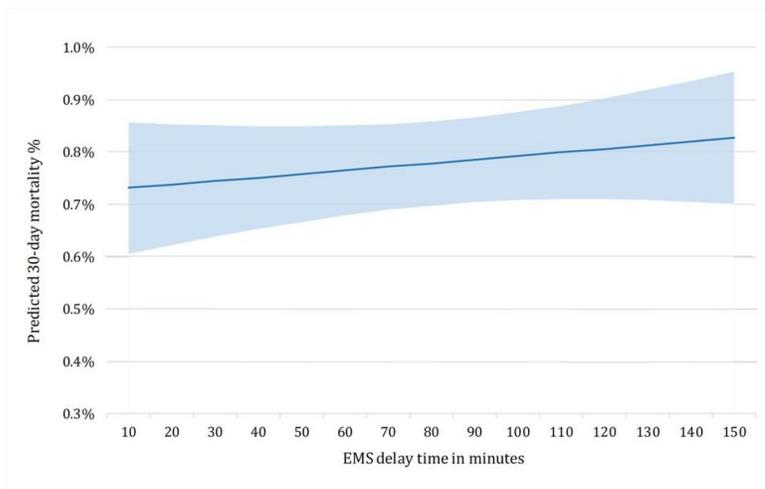
Section 10 on Safety describes the road safety elements and touches on the delays to emergency response. This section provides greater detail on the cost of delayed EMS responses. During critical medical events, emergency medical responders are the first link in the medical service supply chain. A critical element for this supply chain is the speed of response. For example, data and analysis presented in the Journal of the American Heart Association found that “Survival to 30 days after a witnessed out-of-hospital cardiac arrest (OHCA) decreased as ambulance response time increased.”<sup>4</sup> A separate study concluded that predicted 30-day mortality rose with delay in EMS response. Figure 6, which is drawn from the study<sup>5</sup>, illustrates the relationship. In the graph, predicted mortality rises approximately 10 percentage points over a 140-minute range of delay minutes. The approximate slope is an increase of 0.07 percentage points of mortality for every 10 minutes of delay on average.

**Excerpt from Helena Police  
Department Letter of Support**

**“The situation in Pelham and the  
railroad crossing places lives in  
danger on a daily basis by blocking  
a main artery where their police and  
fire department routinely travel to  
provide services.”**

**-Chief of Police, City of Helena**

Adjusted predicted mortality rate with 95% CI (shaded area) associated with EMS delay time.



Ahmad Alrawashdeh et al. Open Heart 2021;8:e001654

openheart

©2021 by British Cardiovascular Society

**Figure 7:  
Delays in  
EMS  
Response  
Time  
Correlate  
with 30-Day  
Mortality**

<sup>4</sup> Johan Holmén, Johan Herlitz, Sven - Erik Ricksten, Anneli Strömsöe, Eva Hagberg, Christer Axelsson and Araz Rawshani. 2020. “Shortening Ambulance Response Time Increases Survival in Out-of-Hospital Cardiac Arrest,” *Journal of the American Heart Association*, v.9, no. 21.

<sup>5</sup> Alrawashdeh A, Nehme Z, Williams B, et al. Impact of emergency medical service delays on time to reperfusion and mortality in STEMI. *Open Heart* 2021;8:e001654. doi:10.1136/openhrt-2021-001654 Accessed

As summarized in Table 2, on average, just under 50 emergency calls have been disrupted annually between 2017 and 2022, according to data from the City and the Pelham Police Department. Moreover, while the number in any given year varies, the trend is gradually rising across the years. The number of delayed calls was at an all-time high in 2021. So far into 2022, 56 emergency calls have been disrupted, a higher value than the full 12-month values in 2017 through 2020. While delays in emergency response times are a concern for all, residents of Census Tract 303.41 that borders County Road 52 are particularly vulnerable—that tract has been designated as Health Disadvantaged as described further in Section 9.3.3. Given rising cargo volumes at the Port of Mobile that translate into greater carload volumes traveling through Pelham, as well as the future inland rail terminal, it is reasonable to expect that the number of delayed emergency calls will rise in the coming years.

**Table 2: Summary of Emergency Calls Delayed by Trains**

Year	All calls			Calls Delayed by Trains	Impacted Calls
	Fire	Police	Total		
2017	175	779	954	38	4%
2018	138	656	794	52	7%
2019	197	538	735	49	7%
2020	203	502	705	31	4%
2021	254	623	877	62	7%
2022	168	688	856	56	7%
		<b>Average</b>	<b>820</b>	<b>48</b>	<b>6%</b>

Source: City of Pelham and Pelham Police Department

### 9.3.2 Equitable Economic Strength and Improving Core Assets

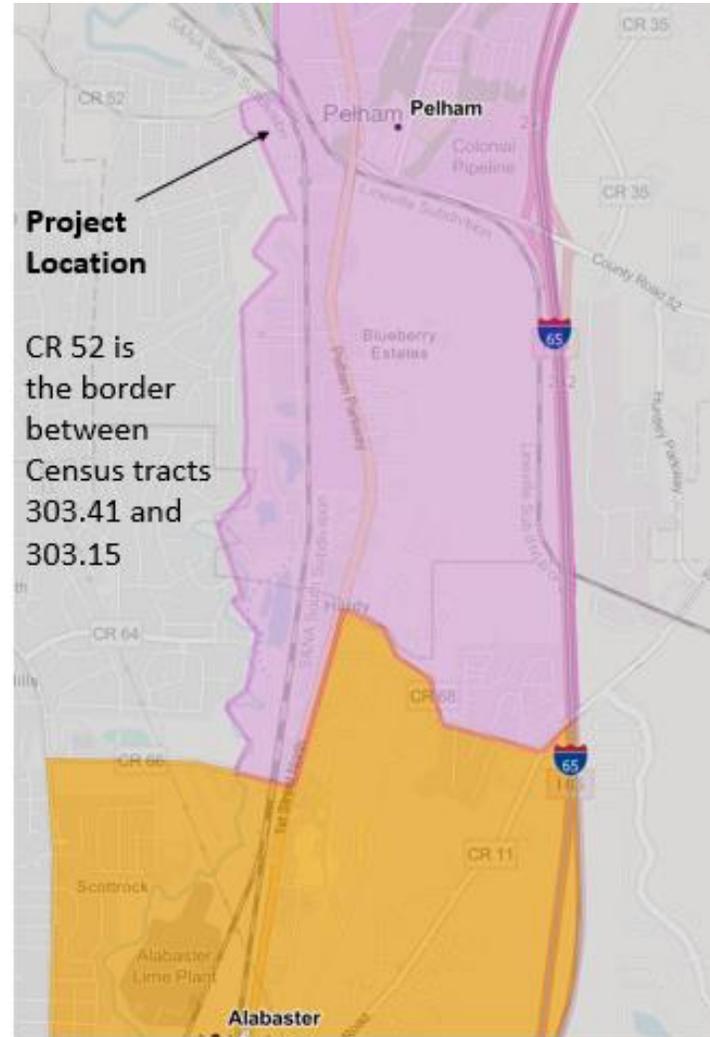
CSX reports that intermodal business is the fastest growing segment of its cargo business. Containers and coal are two important commodities carried on this route that connects the nation to the Port of Mobile.

While nationally, there is less demand for coal and a reduction in shipments, Alabama is one of the most important states in terms of coal mining and rail movements. In addition, Alabama is also very important in terms of auto manufacturing, including electric vehicles and battery production. CSX moves both the vehicles and the components for them. Also, an inland port has been announced by the Port of Mobile to be located in Montgomery and CSX will serve it. Traffic will move in all directions from the inland port, adding volumes to the already busy crossings in Pelham.

Pelham is on a critical freight route leading to the Port of Mobile, where CSX moves bulk commodities to and from a major seaport; there is also a coal facility where coal is loaded to and from rail/ships (McDuffie) in Mobile. The Port of Mobile is playing a more important role nationally due to the supply chain issues associated with West Coast Ports. This route also leads to and from the Gateway at New Orleans, which is one of five places along the Mississippi where rail traffic is interchanged between eastern and western railroads to provide coast to coast delivery by rail.

In terms of benefit to the railroad, this project will enhance safety because any time a crossing can be eliminated, the opportunity for collision is eliminated as well. When there is a crossing collision, trains can be stopped for extended periods of time and can block multiple crossings.

From a cost standpoint, creating an overpass saves the railroads the money associated with maintaining the crossing surfaces between the rails (cities/states pay for road approaches up to that point) and railroads have some level of financial responsibility associated for warning devices (agreements with various states may differ on details). Railroads are responsible for inspecting crossings per FRA rules, so the labor associated with that would be saved as well. See Figure 13.



**Figure 8: The Project is on the Border Between Two Equity Disadvantaged Census Tracts**

### 9.3.3 Equity and Barriers to Opportunity

The Project addresses equity at two spatial levels: one local and one national. See Figure 8.<sup>6</sup>

<sup>6</sup> Mapping tool accessed at <https://usdot.maps.arcgis.com/apps/dashboards/d6f90dfcc8b44525b04c7ce748a3674a>

## Local Equity

At the local level, the Project is on the border of two Census tracts, 303.41 and 303.15, shown in pink in Figure 8. Residents in these tracts face multiple types of disadvantage, according to U.S. DOT’s mapping tool for disadvantaged communities. These are summarized in Table 3. Residents of both tracts face an equity challenge, in addition to two other types of disadvantages that hinder life’s opportunities. Moreover, the southern tract borders the tract with the town of Alabaster, an historically disadvantaged community—one that faces four or more types of disadvantage. The Town of Alabaster has written a letter of support for this Project; an excerpt is provided in the text box on the page above. The Project will directly improve the safety and mobility of disadvantaged community whose residents live close to the Project and likely traverse those crossings on a daily or weekly basis because of their proximity and because County Road 52 is a major east-west connector route.

**Excerpt from City of Alabaster Letter of Support**

The City of Alabaster is an area of Historical Disadvantage.

“We recognize this project will also allow faster response times to Alabaster and the neighboring surrounding cities. This (County Road 52) is a main passage not just from Alabaster but also to Calera, Hoover, and North Shelby County. Our cities and Shelby County work well together and have agreements in place for emergency response backup coverage to benefit all of our citizens. The positive impact to public safety and lives saved by this flyover project will help all of us to better serve each other in that aim.”

-City Administrator

**Table 3: Summary of Project Census Tracts by Disadvantage**

Tract	Types of Disadvantage			
	Health	Equity	Environment	Resilience
303.41	yes	yes	yes	no
303.15	no	yes	yes	yes

## National Equity

As described more fully in Section 9.3.2, the Port of Mobile is a major driver of the freight volumes carried on the rail lines that pass through the Project area at County Road 52 in Pelham. These cargoes support supply chains in Alabama and nationally, as well as traditional auto and electric vehicle manufacturing throughout the southeast and Midwest. Walmart maintains one of its largest import distribution facilities in Mobile near the Port. The efficient intermodal connection between the Port and the railroad benefits consumers nationwide by supporting a reliable and cost competitive transport options for shippers.

While the benefits of the port and rail service benefit the consumers and the economy nationally, the negative impacts of frequent and long trains traversing through town are experienced by a comparative few. The residents of Pelham experience these negatives disproportionately because of their location along the rail line. Moreover, it is not just the frequency of the delays; it is the uncertainty of when trains will arrive as freight trains do not keep to a specific schedule and may stop in crossings for unspecified durations. The Pelham police can update the public on the existence of a crossing when it occurs but often cannot advise drivers of the length of duration. See Figure 3 and Figure 9. The Project would remove these negatives for Pelham residents.



**Figure 9: Drivers Face Uncertain Train Schedules and Blocked Crossings of Unknown Duration**

### 9.3.4 Climate Change and Sustainability

The total reduced annual travel time (hours) as a result of the Project were multiplied by truck and auto emission factors to calculate the reduction in air emissions (metric tons) each year. This was done within GradeDec.NET. The analysis accounts for NO<sub>x</sub>, SO<sub>2</sub>, and CO<sub>2</sub> air emissions. The analysis uses idle emission rates provided by the FRA, which are used by GradeDec.NET for the emissions calculations. Because GradeDec.NET provides the unmonetized reduction in kilograms of emissions for only the first and last year of the analysis period, intermediate values were interpolated. Overall, the Project is expected to save more than 793,000 kg of CO<sub>2</sub>, 1,800 kg of NO<sub>x</sub> and 0.14 kg of SO<sub>x</sub> over the analysis period.

Moreover, as noted in Section 9.3.2, the Project will improve rail reliability in a corridor that supplies batteries and materials for the growing electric vehicle industry in the United States.

As noted in Section 10, the Project is located in an area that is prone to flooding. The expectation is that the risk of flooding events will increase due to climate change as rain events are of more intense duration. The construction of the Project and design of drainage structures to current standards will work to mitigate the flooding and the area will become more resilient to climate change.

### 9.3.5 Transformation of Our Nation’s Transportation Infrastructure

The Port of Mobile is constructing an inland intermodal container transfer facility (ICTF) at Montgomery (located between Pelham and Mobile) that will be served by CSX. The ICTF will serve as a hub and increase rail shipment in all directions, including volumes through Pelham. The elimination of these known hazardous crossings will remove two conflict points that could temper the efficiency of rail freight traveling north from the Port or the ICTF. The investment in Pelham helps to protect the capacity created by the ICTF and mitigate its effects on the residents of Pelham and the surrounding area who will live with the impact of greater rail traffic in their community as a result.

### 9.3.6 Eliminating Crossings and Making Corridor-Wide Improvements

The Project will eliminate two crossings --#352255T and #639539V—that have been the site of recent vehicle and train incidents. (See Section 5).

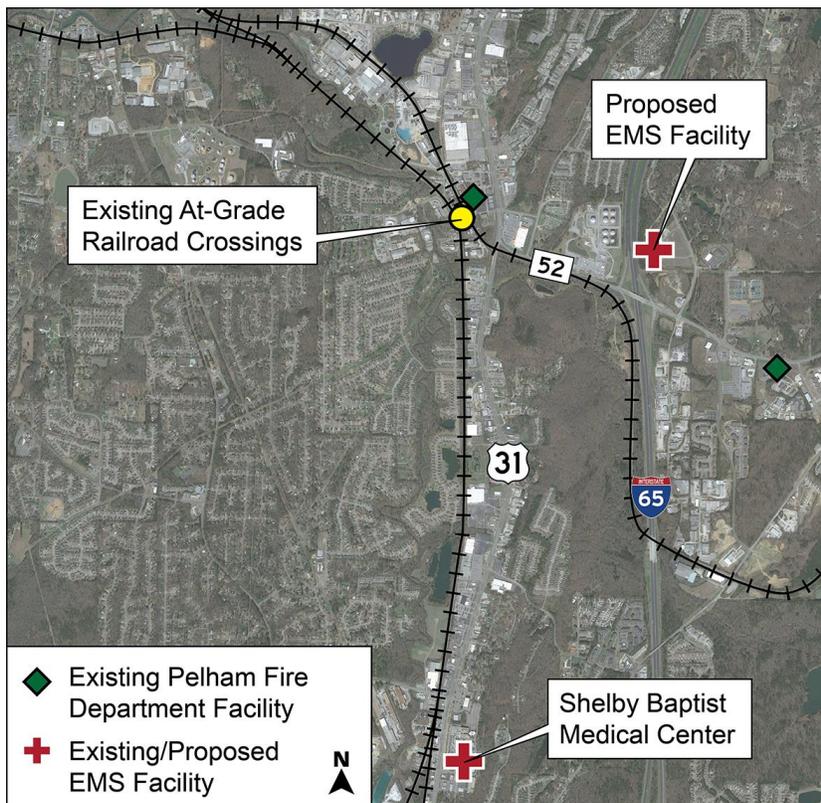
## 10. SAFETY BENEFIT

The safety benefits of the Project come from three improvements: the elimination of vehicular-rail crashes, the reduction in emergency response delays due to trains blocking crossings, and auto crashes avoided in the network as a result of geometric improvements to the roadways. The intersections around the CR-52 crossings experience poor levels of service and delay during morning and afternoon peak periods and suffer from queueing when the crossing is blocked (See Figure 6). Traffic is also impacted on Highway 31 and the ramps to and from Interstate 65 when blockages occur. With the Project, these geometric deficiencies and the associated crashes are eliminated. The Traffic Analysis Memorandum estimates that the Project would result in a 21.6% reduction in traffic crashes, while 100% of crashes at the grade crossings would be eliminated.

There are three types of safety benefits delivered by this Project that benefit the surrounding community and *nearby disadvantaged residents in particular* as described in Section 9. These are:

1. the complete elimination of highway-rail conflicts at these crossings because they will be closed;
2. a reduction in associated roadway crashes elsewhere in the corridor; and
3. an improvement in emergency response times as ambulance, fire, police, and Hazmat responders no longer get delayed at the crossings. On average, about 50 non-HAZMAT calls are delayed by trains annually, though this figure is trending up. See Section 9.3.1.

When a train is blocking the tracks, emergency response services either must wait at the crossing or take a longer detour route (Figure 9). Emergency responders have indicated 6% of emergency calls are affected by delays caused by trains at the grade crossings, potentially delaying response times for the service area population of 24,000. The impact is likely even larger as Pelham has mutual aid agreements with the surrounding communities and unincorporated Shelby County. See for example the City of Alabaster’s Letter of Support and the excerpt from the letter in the text box in Section 9. The presence of a train results in an average delay of 4 minutes, resulting in the increased likelihood of deaths, injuries, and property damage. Overall, the Project is estimated to save two to three lives per year over the analysis period due to the emergency response time improvements.



**Figure 10: Residents West of the Railroad Tracks are Denied Access to Medical Facilities When Railroad Crossings are Blocked**

A major safety benefit of the Project is the establishment of a permanently navigable east-to-west corridor in the area. Emergency responders frequently cannot access hospitals in the area due to blocked crossings and flooding issues. In addition to the existing Shelby Baptist Medical Center, Ascension St. Vincent's is planning to construct a freestanding emergency department in this area. See for example Ascension St.

**Excerpt from Ascension St. Vincent's Letter of Support**

“As Ascension St. Vincent's moves toward an additional presence in Shelby County with the upcoming construction of a freestanding emergency department, we feel that this project, once completed would provide an impactful and necessary improvement in accessibility to the residents and visitors of the area. “

-Ascension St. Vincent's CEO

Vincent's Letter of Support and the excerpt from the Letter in the text box on this page. Large portions of the Project are in FEMA flood zones. When the roadway in these areas flood, responders face additional obstacles in reaching those in peril. See Figure 10<sup>7</sup> for flood zones along Project corridor. The proposed drainage structures or extensions of existing structures will be designed in accordance with ALDOT's Hydraulic Manual. Therefore, future risks of flooding will be greatly minimized. By reducing the potential for flooding and eliminating the frequently blocked crossings, a reliable and dependable east-west route will be established, and emergency response and safety will be greatly improved.



**Figure 11: ADECA Flood Risk Map**

<sup>7</sup>Mapping tool accessed at [https://urldefense.com/v3/\\_\\_https://alabamaflood.com/map\\_\\_;!!ETWISUBM!y67JNS2AjM7Xp4-4xwBwEghZeEWBnxr2PW7CxNqLNp66O7cw2R4YjhY\\_etp9dX3y\\_-3EwTSdwZgLpr9b9k\\_511I!\\$](https://urldefense.com/v3/__https://alabamaflood.com/map__;!!ETWISUBM!y67JNS2AjM7Xp4-4xwBwEghZeEWBnxr2PW7CxNqLNp66O7cw2R4YjhY_etp9dX3y_-3EwTSdwZgLpr9b9k_511I!$)



**Figure 12: Emergency Medical Responders Unable to Travel Through Flood Waters on County Road 52**

As described in more detail in the benefit cost analysis (BCA) memorandum that accompanies this application, the Project team used the GradeDec model and other U.S. DOT approved methodologies to estimate the 20-year stream of safety benefits delivered by this project. The economic value is just under \$15 million when discounted to a net present value at 7%; the human value is lives saved and families protected from the loss of loved ones. The benefits include reduced fatalities and crashes, improved emergency response times, travel time and operational savings for road users, emission reductions, and the Project’s residual value.

**Table 4: Summary of GradeDec Analysis of Safety**

Safety Benefits (\$2020M, discounted at 7%)	
Reduced Crossing Fatalities and Crashes	\$1.6
Reduced Roadway Crashes	\$1.1
Emergency Response Benefit	\$12.1
<b>Total</b>	<b>\$14.8</b>

## 11. DOT STRATEGIC GOALS

U.S. DOT has identified climate change considerations, sustainability, and equity as important strategic goals to be considered in the development of projects. While this project is primarily a safety and mobility project, it does have secondary benefits that support DOT's larger strategy.

First, by eliminating crossings, there is a reduction in the volume of cars that must stop and wait for trains, reducing idling and the associated carbon and emissions. Section 9.3.4 provides additional detail on these savings.

Furthermore, this project will mitigate the potential for flooding in this area and increase resiliency to climate change for the surrounding communities. See Section 9.3.4 for more information on this benefit.

In addition, the crossing improves safety and quality of life for residents of the two census tracts that adjoin the Project location. These tracts are disadvantaged in terms of equity, health, resilience, and environmental outcomes.

Finally, the Project directly addresses the inequity that the residents of Pelham disproportionately feel the negative impacts of frequent and rising freight volumes on a major national intermodal corridor. While the nation benefits, the residents of Pelham deal with the negative impacts on a daily basis.

- As noted in Section 10, the Project team used the GradeDec model and other U.S. DOT approved methodologies to estimate safety benefits delivered by this project. The model also provides estimates of emissions savings and road user's operating cost savings. The details of the analysis are described in the BCA memorandum provided with this application, but a few points are called out here. The summary of the BCA findings is provided in Table 5.
- **First, the road user savings are significant**—over \$35 million over the 20-year analysis period when discounted to a net present value at 7 percent. Many of these road users are disadvantaged, as described in this application.
- Second, the Project delivers more benefits than it costs. Every dollar of cost (capital and operating/maintenance) delivers an estimated \$1.57 dollars in benefits (across all types of benefits). **This Project saves lives and is cost effective.**

**Table 5: Estimate of All Quantified Benefits and Return on Investment**

<b>Pelham Rail Crossing Elimination Grant - (2023-2047)</b>	
	<b>Total</b>
	<b>7% Discount Rate</b>
<b>Costs (2020 \$M)</b>	
Capital Cost	\$34.8
<i>Total Costs</i>	\$34.8
<b>Benefits (2020 \$M)</b>	
<b>Safety Benefits</b>	
Reduced Crossing Fatalities and Crashes	\$1.6
Reduced Roadway Crashes	\$1.1
Emergency Response Benefit	\$12.1
Sub-Total	\$14.8
<b>Economic Impact Benefits</b>	
Road User Travel Time Savings	\$31.7
Truck Operating Cost Savings	\$3.2
Road User Operating Savings	\$0.2
Sub-Total	\$35.1
<b>State of Good Repair Benefits</b>	
Residual Value	\$5.0
Sub-Total	\$5.0
<b>Climate Change, Resiliency, and the Environment Benefits</b>	
Emissions Savings	\$0.1
Sub-Total	\$0.1
Net Operating & Maintenance Costs	-\$0.3
<i>Total Benefits</i>	\$54.7
<b>Outcome</b>	
Net Benefits (2020 \$M)	\$19.9
<b>Benefit-Cost Ratio</b>	<b>1.57</b>

## **12. PROJECT IMPLEMENTATION AND MANAGEMENT**

The City of Pelham or their chosen consultant will facilitate project letting, award, and construction engineering and inspection as follows:

- Bid documents will be prepared to let the project to current ALDOT Specifications. Careful consideration will be given to ensure all requirements for federal funding and Disadvantaged Business Enterprises (DBE) goals are met.
- Appropriate Pre-Bid Meetings and communications will be facilitated with pre-qualified contractors.
- All appropriate State of Alabama Bid Laws shall be followed.
- The project will be staffed with a qualified Project Manager and Inspectors with appropriate certifications.
- All test reports, product certifications, and other required paperwork and record keeping will be maintained for inspection and audit by FHWA at any time.
- Project will be closed out per ALDOT requirements.

Monthly reimbursement will be prepared and processed through FRA.

The City of Pelham is responsible for facilitating the coordination of all activities necessary for implementation of the Project. Upon award of the Project, the City of Pelham will monitor and evaluate the Project's progress through regular meetings scheduled throughout the Project Performance Period. The City of Pelham will:

- Participate in a project kickoff meeting with FRA.
- Hire a qualified consultant to perform required PE and environmental work and complete necessary tasks.
- Let the project to a qualified contractor to complete the necessary construction tasks.
- Hold regularly scheduled Project meetings with FRA.
- Inspect and approve work as it is completed.
- Review and approve invoices as appropriate for completed work.
- Perform Project close-out audit to ensure contractual compliance and issue close-out report.
- Submit to FRA all required Project deliverables and documentation on-time and according to schedule, including periodic receipts and invoices.
- Comply with all FRA Project reporting requirements.

- Notify FRA of changes to this Agreement that require written approval or modification to the Agreement.

## 13. ENVIRONMENTAL READINESS

The City of Pelham with support from their chosen consultant will complete FRA approved environmental clearance documentation for the Project per 23 CFR 771.116. The FRA will determine the appropriate class of action, documentation level, and the Project's environmental impact.

The eastern portion of this Project includes improvements on County Road 52 east of the intersection with Highway 31 to Interstate 65 southbound ramps may be expedited as planning work is already complete. Environmental work in the form of a signed Categorical Exclusion and some preliminary engineering have already been completed for this portion of the Project. Field survey for this portion is also complete and the design has progressed to approximately a 30% design phase. This portion of the Project will facilitate the reconstruction of County Road 52 West and a portion of the proposed improvements along US Highway 31.

The City of Pelham anticipates that the Project will qualify for a Categorical Exclusion (CE) following FRA's Procedures for the Consideration of Environmental Impacts (effective May 26, 1999) (Environmental Procedures). Based on available information from a previous corridor study, critical resources (including wetlands), threatened and endangered species, parks and recreational areas are not present in the anticipated area of potential effect. Minimal noise-sensitive receptors (i.e., residences) are located adjacent to the corridor and were analyzed during the previous corridor study. The analysis determined that there will be no traffic noise impacts to noise-sensitive properties in the project corridor. There are three properties identified to be potentially acquired for the Project that were evaluated for hazardous materials. The three properties were considered low-risk and no remediation cost is anticipated. Additionally, a portion of the Project is located within a current FEMA Special Flood Hazard Area for Buck Creek. However, the Project is not anticipated to affect the FEMA base flood elevations in the area. The City of Pelham will notify and coordinate with the local flood plain administrator prior to the beginning of the Project. The proposed bridge structure crossing Buck Creek will require a pre-construction notification to the USACE. No wetland impacts are anticipated in this area. A Phase I cultural resources survey has been completed for the project corridor. Both visual and subsurface inspections were conducted which included all buildings and bridges within the project study area. One archaeological site was identified in the study area; however, it was identified as not eligible for inclusion in the NRHP. Ten structures were evaluated in the project study area and all buildings assessed were identified as not eligible for listing in the NRHP.

The City of Pelham will complete the FRA CE worksheet, which includes providing the current project description, appropriate project maps, and any other relevant background information.

The City of Pelham will submit the completed CE Worksheet to FRA and will assist the FRA in making a class of action and level of documentation determination. The City of Pelham will evaluate the Project using qualified environmental professionals (pre-qualified by ALDOT or other agencies) to determine the potential impact, including reviewing existing literature, contacting relevant agencies as instructed by FRA, and performing field reconnaissance.

If FRA determines the appropriate class of action is a CE, the City of Pelham will complete any additional studies and documentation for the FRA CE following the Environmental Procedures. The City of Pelham will then document the findings, prepare a cover letter, and submit the final CE worksheet with supporting documentation for FRA review and approval.

Also, as described in Section 9.2, the City has experience delivering similar projects.



**Figure 13: County Road 52 Closed for Extended Period Due to Track Maintenance**