

Trespass Prevention and Pedestrian Safety Enhancements on the Michigan Line

US DEPARTMENT OF TRANSPORTATION

FEDERAL RAILROAD ADMINISTRATION

FY 2020 CONSOLIDATED RAIL INFRASTRUCTURE AND SAFETY IMPROVEMENTS

**SUBMITTED BY: MICHIGAN DEPARTMENT OF
OFFICE OF RAIL**



FY2020 CRISI Application**Michigan Department of Transportation****Trespass Prevention and Pedestrian Safety Enhancements on the Michigan Line Project Narrative****I. Cover Page**

Project Title	Trespass Prevention and Pedestrian Safety Enhancements on the Michigan Line
Applicant	Michigan Department of Transportation (MDOT)
Project Track	3 Final Design/Construction
Was a Federal grant application previously submitted for this project?	No
If yes, state the name of the Federal grant program and title of the project in the previous application.	Federal Grant Program:
	Project Title: Trespass Prevention and Pedestrian Safety Enhancements on the Michigan Line
Is this a Rural Project? What percentage of the project cost is based in a Rural Area?	Yes Percentage of total project cost: 62.07%
Is this a project eligible under 49 U.S.C. 22907(c)(2) that requires the acquisition of rights-of-way, track, or track structure to support the development of new intercity passenger rail service routes?	No
City(ies), State(s) where the project is located	Dearborn, Inkster, Wayne, Canton, Ypsilanti, Ann Arbor, Chelsea, Jackson, Parma, Albion, Marshall, Battle Creek, Augusta, Galesburg, and Kalamazoo. All located in the state of Michigan.
Urbanized Area where the project is located	Metro Detroit/ Ann Arbor/ Battle Creek/ Kalamazoo, Michigan
Population of Urbanized Area	Metro Detroit, MI (3,734,090), Ann Arbor (306,022), Battle Creek (78,393), Kalamazoo, MI (209,703), (2010 US Census)
Is the project currently programmed in the: State rail plan, State Freight Plan, TIP, STIP, MPO Long Range Transportation Plan, State Long Range Transportation Plan?	No

II. Project Summary

The Trespass Prevention and Pedestrian Safety Enhancements on the Michigan Line Project (Project) proposes infrastructure improvements designed to prevent pedestrian trespassing at “hotspot” locations along the Michigan Line. “Hotspots” were identified where train strikes of pedestrians have occurred and where near-misses occur regularly. From 2016 through 2019, 12 pedestrians have been struck by Amtrak trains, and many more “near misses” have been recorded between Dearborn and Kalamazoo, the portion of the Michigan Line (Line) owned by Michigan Department of Transportation (MDOT). The Project will enhance safety through the installation of right-of-way fencing and tree clearing, which will deter trespassing along the MDOT right-of-way. These improvements are proposed where trains travel faster than 90 mph and additional fencing and pedestrian safety enhancements are proposed at select grade crossings in high-foot-traffic areas to safely route pedestrians to cross the tracks. “Hotspot” locations are found in downtown Dearborn, Eastern Michigan University in Ypsilanti, the University of Michigan Hospital in Ann Arbor, Albion College, Augusta, Galesburg, and downtown Kalamazoo. Each site has unique challenges and MDOT is working with Amtrak and local officials to effectively construct the improvements needed to safeguard the public.

III. Project Funding

MDOT respectfully requests \$15,619,365 in CRISI funding from the FRA to match \$14,619,365 million in State and \$1,000,000 in Amtrak funding for the Project. Amtrak’s funding commitment letter is attached in Appendix A. Approximately 62.1% of the total Project budget, equating to \$19,389,208, will fund the improvements in Rural Areas. The total anticipated Project cost, in undiscounted 2020 dollars, and the funding source allocation are shown in Table 1.

Table 1 - Project Cost and Funding Source

Task No.	Task Name/Project Component	Cost	Percentage of Total Cost
1	Detailed Project Work Plan, Budget and Schedule	\$126,370	0.4%
2	Final Design	\$379,111	1.2%
3	Construction	\$30,733,248	98.4%
Total Project Cost		\$31,238,730	100%

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Task No.	Task Name/Project Component	Cost	Percentage of Total Cost
	Federal Funds Received from Previous Grant	\$0	0%
	CRISI Federal Funding Request	\$15,619,365	50%
	Grantee	\$14,619,365	46.8%
	Amtrak	\$1,000,000	3.2%
	Portion of Non-Federal Funding from the Private Sector	\$0	0%
	Portion of Total Project Costs Spent in a Rural Area	\$19,389,208	62.07%
	Pending Federal Funding Requests	\$0	0%

IV. Applicant Eligibility

MDOT owns the railroad and right-of-way where the Project is proposed. As a public agency or publicly chartered authority established by a State, MDOT is eligible for funding under Section C.1.d of the “Federal Register/ Vol. 85, No. 76”.

V. Project Eligibility

The Project is eligible for funding under 49 U.S.C 22907 and “Federal Register/Vol. 85, No. 76” Notice of Funding Opportunity sections C.3.a.v. and C.3.a.vii as follows:

- C.3.a.ii - A Capital Project relating to Intercity Passenger Rail Service
 - The Project includes installation of trespasser deterrent fencing along a passenger rail route
- C.3.a.v – A highway-rail grade crossing improvement project, including installation, repair, or improvement of grade separations, railroad crossing signals, gates, and related technologies
 - The Project includes installing pedestrian gates at two locations
 - McCollum Road in Galesburg, Michigan
 - Dickman Road in Augusta, Michigan

As defined in the Notice of Funding Opportunity, the Project is eligible under Track 3. Track 3 projects consist of projects eligible for Final Design, Construction, and project implementation

and deployment activities. All necessary planning, PE, and NEPA requirements are in the process of being completed for the Project. It is anticipated that the Project is eligible for a categorical exclusion as construction will occur within the railroad right-of-way and no significant environmental impacts to the planned growth or land use of the area are anticipated. Draft Categorical Exclusion Worksheets are available in Appendix B.

VI. Detailed Project Description

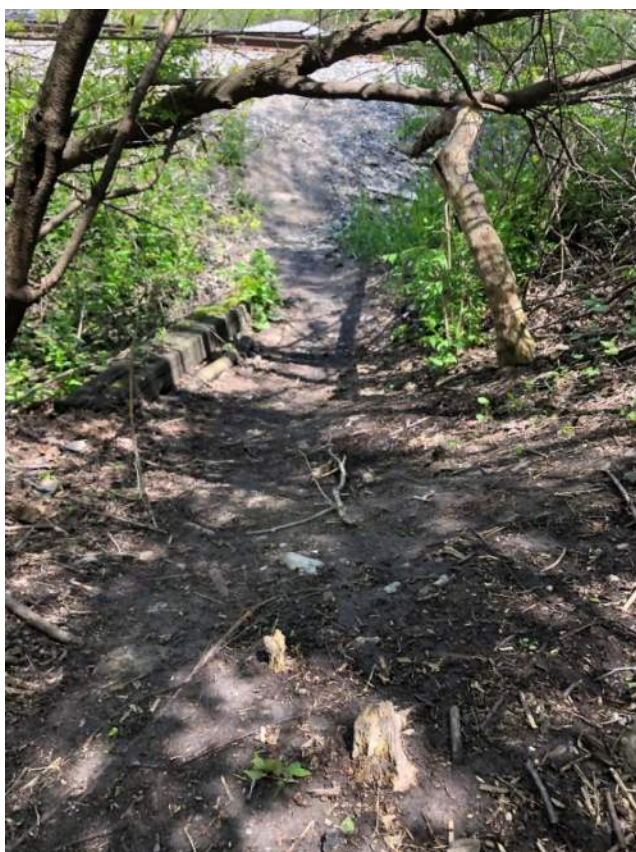
1. Background

Trespassing on the Michigan Line is an ongoing issue which has resulted in multiple fatalities and lengthy delays to Amtrak's intercity passenger rail services when strikes occur. In 2019, the Michigan Line recorded five trespasser strikes by Amtrak trains. Between 2016 and 2019, 12 trespassers have been struck and 30 near-misses have been recorded along the right-of-way. Additionally, there are numerous locations where trespassers are known to walk along and/or across the tracks daily. In response, MDOT and Amtrak have identified trespasser "hotspot" locations needing trespasser deterrents and safety enhancements.

As MDOT prepares to implement higher train speeds in the corridor, the MDOT Office of Rail is taking an active role in communicating to the public the safety risks associated with traveling across and near the railroad right-of-way traversed by high-speed trains. During the Project's planning phase, MDOT met with the community leaders in these "hotspot" locations to gather comments and develop solutions. In many cases, right-of-way fencing is the most efficient solution for deterring trespassing and safely routing pedestrian traffic to at-grade crossings. Where right-of-way fencing is proposed, local input regarding the style of fencing was gathered.

Below are a few examples of specific locations where MDOT is seeking to address unsafe conditions enabling dangerous pedestrian activity. Figure 1 depicts the condition of MDOT's railroad right-of-way in Ann Arbor, MI. Inspections also found paths through the right-of-way, indicating regular trespassing events. Figure 2 below shows an example of one of the paths in Ann Arbor, MI.

**Figure 1- Evidence of Camping and
Trash Dumping Along the Right-of-
Way in Ann Arbor, MI**



***Figure 2 - Worn Trespasser Path
Leading Through the Right-of-
Way in Ann Arbor, MI***

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Intentional fence tampering was observed along the right-of-way, suggesting that increased security is needed. Figure 3 shows a hole cut in the existing chain link fence located in Albion, MI. In addition to trespasser prevention, MDOT would like to enhance safe crossing areas with the use of fencing. Figure 4 shows a pedestrian crossing in Albion which has been nominated for enhanced safety to protect pedestrians from the trains traveling at higher speeds.

**Figure 3 - Fence Hole Cut by
Trespasser in Albion, MI**



***Figure 4 - Pedestrian Crossing
Identified for Enhanced Safety***

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By addressing these challenges, MDOT will decrease trespassing, creating a safer environment for the communities and increasing Amtrak's on time performance.

With the completion of the Project, the number of trespassers will be reduced, decreasing the likelihood of strikes, thus reducing fatalities and delays to Amtrak's Wolverine and Blue Water routes.

2. Users and Beneficiaries of the Project

The Wolverine and Blue Water services provide intercity travelers with a passenger train travel alternative. Approximately 682,956 passengers rode the Wolverine and Blue Water Services in FY2019. From their nearest station, riders can easily access locations along the Michigan Line and destinations throughout the United States through transfers to Amtrak long-distance routes at Chicago Union Station. Additionally, Amtrak provides rural and urban communities located on the Michigan Line with access to Chicago's Midway and O'Hare international airports through a transfer onto the Chicago Transit Authority.

The Project will benefit both the riders of the Michigan Line services and the communities where the safety enhancements are located. The communities of Dearborn, Inkster, Wayne, Canton, Ypsilanti, Ann Arbor, Chelsea, Jackson, Parma, Albion, Marshall, Battle Creek, Augusta, Galesburg, and Kalamazoo benefit from the Project's proposed trespasser prevention improvements and grade crossing enhancements. MDOT has conducted inspections of the trespasser "hotspots" and found that the trespassers are not only entering the railroad right-of-way to access the other side of the property, but also to dump trash or participate in illegal drug use. These communities have expressed their desire to clean up the right-of-way. Letters of support for the Project have been received from Michigan's House Representatives Rashida Tlaib, Haley Stevens, and Debbie Dingell along with Senator Gary Peters, and several institutions along the railroad. Letters of support are included in Appendix C.

Scope of Proposed Project

The Project proposes infrastructure improvements to provide safe railroad crossing areas and prevent trespassing at "hotspots" along the Michigan Line. The Project includes Final Design and Construction for three types of improvements - fencing, grade crossing protection, and roadway improvements.

The design phase will include determination of costs, quantities, locations, and types of fencing and grade crossing improvements. Right-of-way survey is needed in many locations to verify that the proposed construction is on MDOT's property. The right-of-way was established over 100 years ago and property maps from the time are based on the historic location of the track. The track has been shifted and relocated over time making the property lines difficult to locate. The survey efforts will ensure assets are constructed on the State's right-of-way and resolve any

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land-use and property encroachment issues. During final engineering, the design will be refined, and construction materials will be selected. A plan set detailing the installation along with specifications for each of the Project components will be produced. The plans and specifications will be used to construct the project. MDOT will continue to coordinate with local leaders to ensure the fence design and trespasser deterrents meet the needs of the community.

The type of fence proposed must meet the individual needs of each location. The fence height and style will change along with the needs of each area. Shorter fences will be used at public grade crossing areas to maintain sightlines, sturdier fences will be used in areas that are frequently trespassed, and more basic fences can be used in less densely populated areas. Based on initial analysis, MDOT and Amtrak have proposed an Impasse II[®] style fence manufactured by Ameristar at “hotspots” and frequently trespassed areas. The Impasse II[®] fence provides corridor safety and security with the stylish aesthetic sought by the neighboring communities. The fence’s steel design, with the addition of a Gauntlet[™] curved triple-pointed splayed spear tip, makes cutting through or climbing over the fence nearly impossible while minimizing fence maintenance. The fencing will be used in combination with grade crossing protection devices to create a closed corridor in highly populated areas. Figure 5 below depicts the Impasse II[®] style fence.

Figure 5 - Impasse II[®] Style Fence with Gauntlet Top

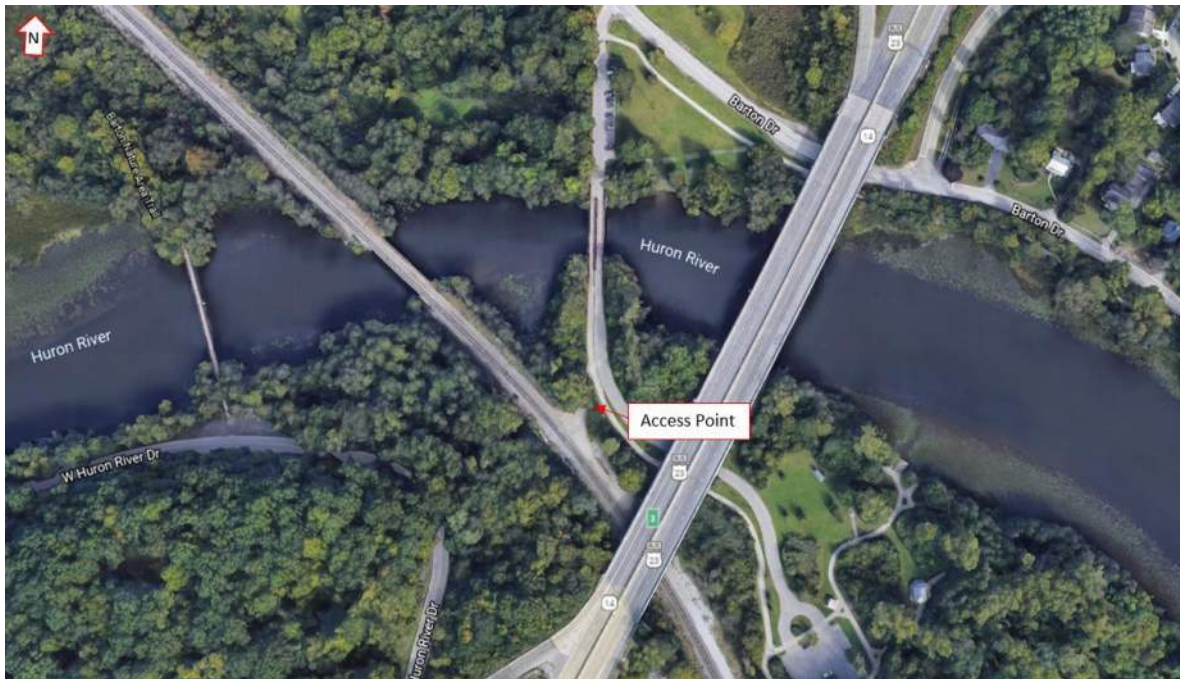


The “hotspots” are described below along with locations needing extra security. Each location proposes unique challenges to be addressed.

Hotspot #1 – Ann Arbor, Michigan

In Ann Arbor, Michigan, a dangerous trend of trespassing on the Michigan Line to jump from a rail bridge into the Huron River has been made popular through the internet. Figure 6 is a map of the bridge showing existing trespasser access points.

Figure 6 - Railroad Bridge Trespassing Ann Arbor, MI



Between 2016 and 2019, there were three near-misses recorded by Amtrak engineers and conductors, all with multiple people on the bridge.

Hotspot #2 – Kalamazoo, Michigan

Kalamazoo, Michigan is another site with a recent spike in trespassing. The tracks divide the city just north of Kalamazoo Avenue. At the intersection with North Edwards Street, trespassers regularly use the railroad property as a route to access the “Ministry with Community” building which was recently constructed to the north of the railroad. The building offers core services of laundry, showers, phone access, fax machines, breakfast, and lunch to community members of Kalamazoo. Figure 7 below is an image from Google Earth’s street view of a trespasser using the right-of-way to travel east towards the North Pitcher Street crossing.

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Figure 7 - Trespasser at North Edwards Street in Kalamazoo, Michigan



From 2016 to 2019, there were three instances of trespassers in the gage of the tracks or illegally climbing onto a train as it was trying to depart. There were also three near-misses in the same timeframe. Figure 8 below shows the proximity of the Ministry with Community building to Amtrak's Kalamazoo station.

Figure 8 - Map of Kalamazoo



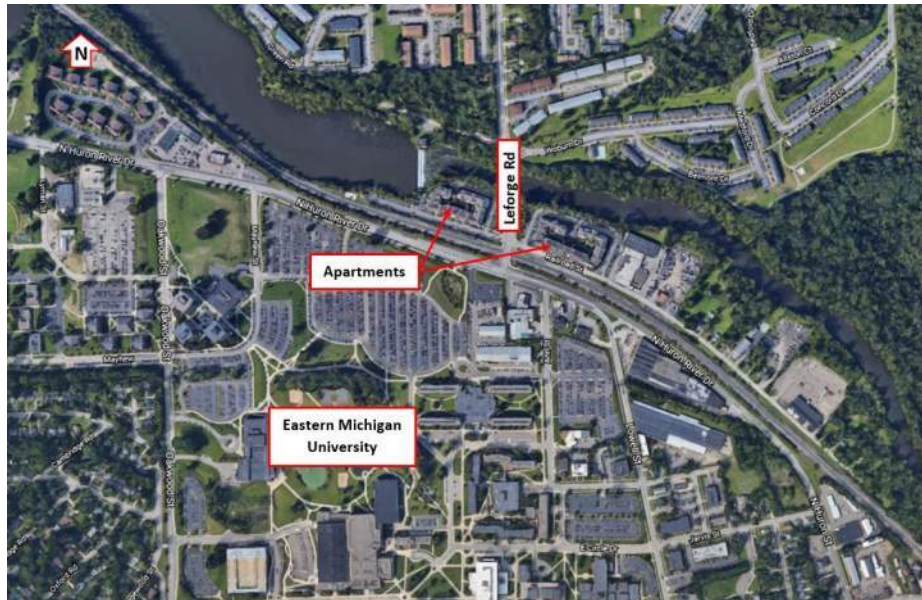
Hotspot #3 – Ypsilanti, Michigan

MDOT's right-of-way is located adjacent to Eastern Michigan University's campus in Ypsilanti, Michigan. The railroad is located to the north of the campus, between the university and several apartment buildings located on the banks of the Huron River. Trespassing occurs in this area as students take a shortcut to and from campus across the railroad rather than the public crossing at

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Leforge Road. The addition of fencing along the right-of-way will create a barrier preventing trespassing. From 2016 through 2019, there were two near-misses and two strikes at this location. Figure 9 displays the trespassed area.

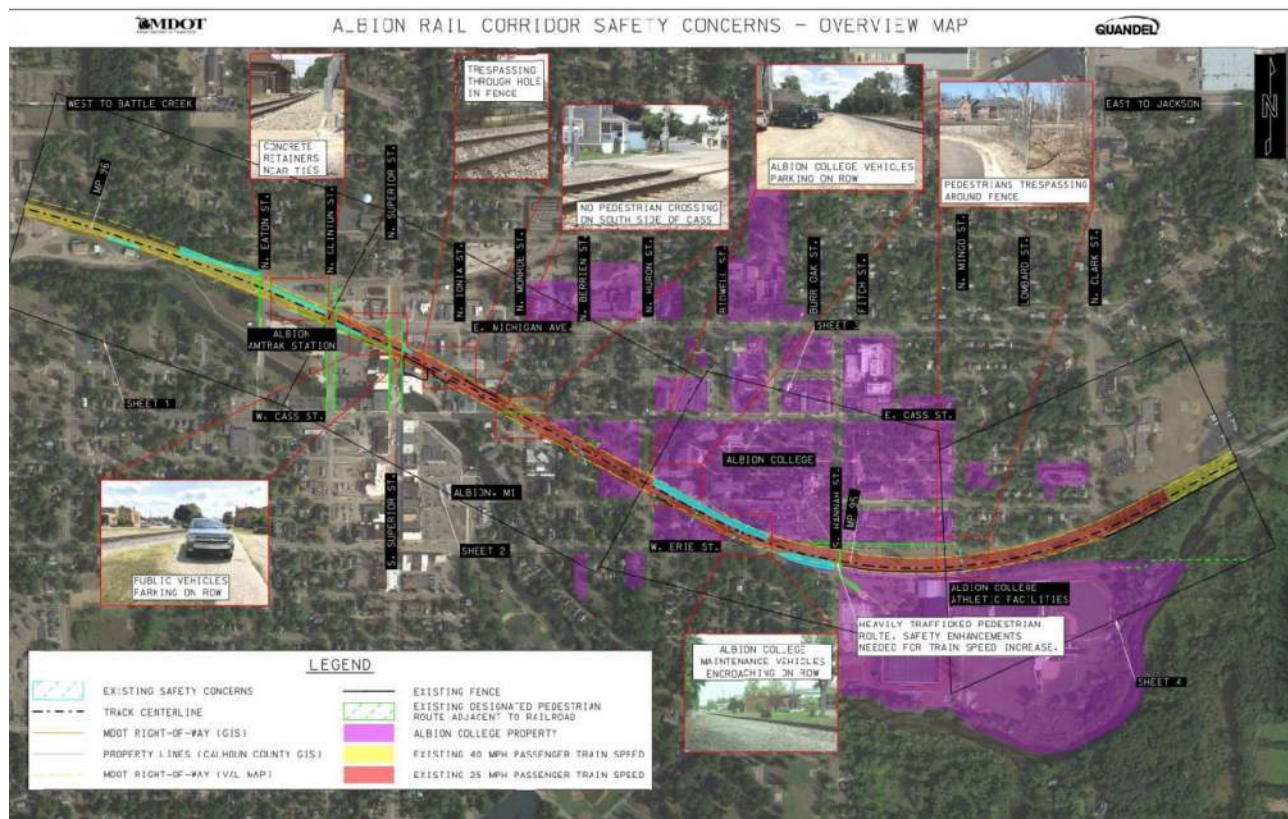
Figure 9 - Map of Ypsilanti



Hotspot #4 – Albion, Michigan

The Michigan Line runs through Albion College's campus and is adjacent to housing, college buildings, and the athletics complex. To improve safety, the Project proposes a highway-rail crossing closure and enhanced warning devices at other crossings, to alert pedestrians of oncoming trains. From 2016 through 2019, there was one strike recorded in Amtrak's engineer and conductor log reports. In 2019, MDOT and Quandel Consultants drafted a report outlining the safety concerns in Albion. A copy of the report is attached in Appendix D. Figure 10 illustrates Albion's trespassing issues.

Figure 10- Albion Trespassing Map



Albion College shared their vision for Cass Avenue to become the main pedestrian corridor, linking the campus to Albion’s downtown. The existing roadway contains patches of sidewalks and unclear crossing areas. To help pedestrians and motorists cross the railroad safely, pavement markings are proposed along with crosswalk markings in addition to railroad crossing symbols. Sidewalks are proposed to be realigned and reconstructed throughout Albion to provide pedestrians a clear route. These improvements align with the community’s vision for the future of the City.

Kalamazoo River Trail Project

The Project includes two crossings of the Kalamazoo River Trail. The trail is predominantly used by cyclists and pedestrians. The trail crossings intersect the railroad at steep angles which limit sight lines down the railroad right-of-way. Due to the limited sight lines, active warning systems such as pedestrian gates, bells, and flashers are proposed to alert cyclists and pedestrians of approaching trains. The trail crossing at McCollum Road in Galesburg is also heavily used by the community. The crossing is on the route from the Galesburg-Augusta Community school to the housing on the other side of the tracks. The crossing safety improvements will provide the children and parents traveling to and from school with a safer railroad crossing. Details of the Kalamazoo River Trail crossings are provided in Appendix E.

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Right-of-way Fencing in all areas where trains travel faster than 90 mph

In 2012, Amtrak received approval to operate at speeds up to 110 MPH between Porter, Indiana and Kalamazoo, Michigan. MDOT and Amtrak are preparing to extend the higher-speed operations east of Kalamazoo once PTC is approved in late 2020. The higher operating speeds decrease total trip times for both the Blue Water and Wolverine services; however, the higher speeds are greater hazards to trespassers. As trains operate at higher speeds, trespassers have less time to react as a train approaches them. MDOT has proposed right-of-way fencing in areas where train speeds reach 90 MPH or higher to prevent trespassers from entering the right-of-way. Reducing the number of trespassers will prevent pedestrian strikes and the associated delays.

Rural Area Benefits

The Project proposes improvements to the rural communities along the Michigan Line. These areas have populations less than 50,000 according to the 2010 census. Most of the Project is proposed between the urbanized communities of southeast, southcentral and southwest Michigan, including Albion College's campus. The Project improves safety in these rural areas by decreasing the chances of pedestrians being struck by trains, securing the right-of-way from sheltering illicit activities and improving the communities existing passenger train service performance.

Performance Reporting

In accordance with Section F.3.c of the Notice of Funding Opportunity, MDOT will collect information and report on the Project's performance. The Project's success will be measured by the reduction in strikes and near-misses at the "hotspot" locations.

A. Grade Crossing Information

The Project spans the Michigan Line between Dearborn, Michigan and Kalamazoo, Michigan. The Project proposes improvements to the crossings listed in Table 2.

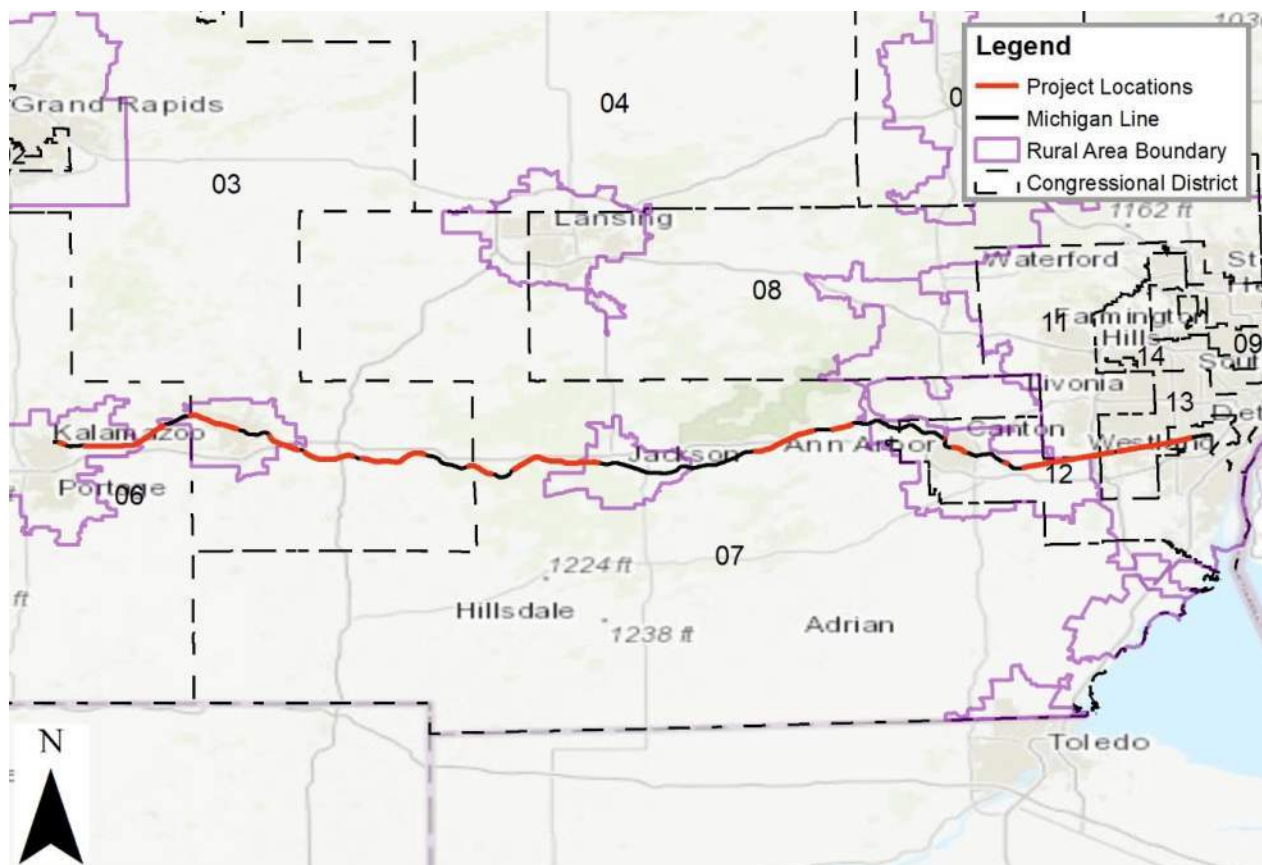
Table 2 - National Grade Crossing Inventory Information

DOT Number	City	County	Roadway	RR Owner	Primary Operator
545418K	Augusta	Kalamazoo	M-96 Dickman Rd	Michigan DOT	Amtrak
545425V	Galesburg	Kalamazoo	McCollum Rd	Michigan DOT	Amtrak
545458H	Kalamazoo	Kalamazoo	Edwards St	Michigan DOT	Amtrak
545335W	Albion	Calhoun	Cass St & Monroe	Michigan DOT	Amtrak
545337K	Albion	Calhoun	Monroe St & Cass	Michigan DOT	Amtrak
545332B	Albion	Calhoun	South Huron St	Michigan DOT	Amtrak
545329T	Albion	Calhoun	Erie St	Michigan DOT	Amtrak
545328L	Albion	Calhoun	Hannah St	Michigan DOT	Amtrak

VII. Project Location

The Project work will occur within MDOT's Michigan Line railroad property. Figure 11 below shows the location of the projects including the congressional districts and rural area boundaries.

Figure 11 - Project Location Map



VIII. Evaluation and Selection Criteria

Project Benefits

A benefit-cost analysis (BCA) was performed for the Project in accordance with the 2020 Benefit-Cost Analysis Guidance and BCA FAQs provided by the USDOT and FRA. The BCA analyzes the initial capital cost to complete the proposed project work as well as 30 years of benefits. Taken in total, the Project provides a net present value of \$79,623,119 in benefits — safety-reduced strikes and travel time savings — over the analysis period, using a seven percent discount rate. Compared to a similarly discounted cost estimate of \$24,456,673, the Benefit-

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Cost Ratio (BCR) for the Project is 3.24. Further detail can be found in the BCA Table and BCA Technical Memorandum found in Attachments 3 and 4.

Effects on System and Service Performance

The Project will benefit the performance of intercity passenger rail services between Chicago and Detroit/Pontiac and between Chicago and Port Huron by enhancing right-of-way security and increasing safety at grade crossings, thus reducing delays caused by trains striking pedestrians or trespassers. The reduced delays increase reliability, which will allow the intercity passenger rail services to better meet the transportation needs of more people.

Effects on Safety, Competitiveness, Reliability, Trip Time, and Resilience.

The Project inherently benefits safety by creating safer crossing areas and limiting trespassers' access to the right-of-way. Delays to Blue Water and Wolverine service trains were examined from 2016 through 2019. Delays due to trespasser strikes averaged 239.2 minutes per occurrence for Wolverine service trains. Additionally, delays from "near-misses" where strikes did not occur, averaged 9.19 minutes per occurrence for Wolverine Service trains and 10.00 minutes per occurrence for Blue Water service trains. Trespassers being reported also led to delays of an average of 6.82 minutes per occurrence for Wolverine service trains. By reducing these delays, the Project will improve the reliability of the train schedule.

From 2016 through 2019, 12 people were struck by Amtrak trains between Dearborn and Kalamazoo. The Project proposes improvements that will address ten of these strikes, thereby reducing future strikes in the corridor. This greatly improves public safety in the communities along the Michigan Line by saving lives by preventing trespassers and channeling pedestrians to safe crossing locations.

Ability to Meet Existing or Anticipated Demand

The existing right-of-way conditions do not limit trespassing and provide safe crossing areas. Regular trespassing on the Michigan Line is a symptom of inadequate protection and the need for safe crossing areas. The Project addresses each of the known "hotspots" and provides enhanced safety to meet the demands of the neighboring communities.

Technical Merit

Appropriateness of Scope to Achieve Outcomes

Given the number of trespassing incidents on the Michigan Line, MDOT has identified trespassing "hotspots." Through this process, MDOT will be directly addressing each "hotspot's" issues and ensure that pedestrians have safe crossing areas and trespassing risks are mitigated.

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Project Readiness

MDOT is in the process of completing designs for select Project locations. A large portion of this project will not require detailed plans but could be contracted with a detailed scope description. MDOT is prepared to address the unique challenges faced in every location and is ready to begin the construction process after the Categorical Exclusion is obtained.

Experience of Key Personnel

MDOT has an experienced staff, with a team of contractors and consultants assisting in the program. Rob Lippert has over 40 years of experience with MDOT in highway design, project management, maintenance, and planning. Rob was hired by the Office of Rail in 2015. Al Johnson is MDOT's Michigan Line Operations Manager and has over 30 years of experience with MDOT. Ryan Weiss, with 10 years of experience in the railroad industry, is the Project Engineer and Jeannine Cleveland will provide Real Estate support.

Amtrak maintains the Michigan Line infrastructure, both state-owned and Amtrak-owned segments. Amtrak is under contract with MDOT for the state-owned portion. Amtrak brings over 30 years of track maintenance and construction experience in Michigan, as well as eight years of FRA Class 6 track maintenance experience.

Project's Business Plan

The project will be funded through MDOT's Office of Rail and Amtrak.

Capacity to Complete Project

MDOT has the legal, financial, and technical capacity to carry out the proposed project.

Financial Management Capacity

Financial statements of the State of Michigan's Comprehensive Annual Financial Report (SOMCAFR) are prepared by the Michigan Department of Management and Budget and are audited by the State Auditor General. Separate Audited Financial Statements of the restricted funds of MDOT AFR can be found at the Michigan Office of the Auditor General website at: <http://audgen.michigan.gov>, and MDOT's website at www.michigan.gov/MDOT.

Audits of the SOMCAFR and MDOT AFR are performed by both the State of Michigan's Auditor General and MDOT's Office of Commission Audits. MDOT's ability to absorb unforeseen cost increases, cost overruns or financial shortfalls is limited to those funds made available to its rail programs per statutory distribution of Michigan's Comprehensive

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Transportation Fund, per PA 51 of 1951. Allocation of funds over and above those already made available to MDOT's rail program is at the discretion of the state legislature.

Legal Capacity

Michigan has the statutory legal authority to build and oversee a rail capital investment through the State Transportation Preservation Act of 1976 “Act 296 of 1976” and “Act 51 of 1951”.

Technical Capacity

MDOT’s Office of Rail consists of a team of experts in railroad management, each with their own area of expertise. This Office is responsible for promoting and developing the infrastructure needed to support intercity passenger rail, commuter rail and rapid rail transit services. This Office works with contractors, provides project oversight, oversees financial aspects of program development and interacts with stakeholders to ensure the success of all rail projects. Staff members in this office are well-versed in all aspects of project management and have experience in working with rail owners and contractors, stakeholders and federal regulatory agencies.

MDOT engineers are highly skilled and thoroughly trained in project management, as evidenced by their track record in applying new technology and innovations to address a full array of rail transportation challenges. MDOT was the first state to interconnect traffic and grade crossing signals to prevent motorists from being trapped on a grade crossing. MDOT was the first DOT to implement a PTC system (Incremental Train Control System), which resulted in FRA approval in 2005 to operate passenger trains at 95 mph and FRA approval in 2009 for train speeds up to 110 mph.

Consistent with Planning Documents

This Project is not listed specifically in any statewide planning documents, such as the State Rail Plan; however, the Michigan Line corridor improvements required to support 10 round trips traveling at up to 110 mph between Dearborn and Kalamazoo is consistent with statewide planning goals. The Project supports the safe operation of these intercity rail services.

Selection Criteria

Share of Project Costs

MDOT will provide a match of 46.8% of the total project cost. Amtrak will contribute \$1,000,000 which accounts for 3.2% of the total project cost.

Economic Vitality

The Project is part of a larger effort to improve rail transportation between Chicago and Detroit. This overall effort contributes to the economic competitiveness of the United States over the

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medium and long-term by improving the national transportation system while creating and preserving jobs.

Travel Time Savings

Delays due to trespasser strikes averaged 239.2 minutes per occurrence for Wolverine service trains. Additionally, delays from “near-misses” where strikes did not occur averaged 9.19 minutes per occurrence for Wolverine Service trains and 10.00 minutes per occurrence for Blue Water service trains. Trespassers being reported also led to delays of an average of 6.82 minutes per occurrence for Wolverine service trains. By reducing these delays, the Project will improve the reliability of the train schedule and save a total of 43,236 hours for riders on both the Blue Water and Wolverine services over the 30-year analysis period. **The travel time savings benefit equates to \$243,905 million at a 7% discount rate.**

Safety-Reduced Strikes

Project implementation is anticipated to reduce fatalities by one per year over the next 30 years, resulting in a cost savings of \$288,000,000. **The safety benefit equates to \$79,379,214 at a 7% discount rate.**

Reduced Emissions

As delays due to trespassing are eliminated, emissions associated with the locomotives idling during delays will also be eliminated. Emissions of CO₂, VOC, NO_x, and PM_{2.5} will be reduced over the 30-year analysis period resulting in a **qualitative environmental benefit.**

Preparing for Future Maintenance Needs

The materials and installation methods proposed by MDOT are intended to provide better longevity than conventional products such as chain-link fence and are modeled as a 30-year life cycle in the BCA. These products will enable MDOT to have more efficient maintenance practices in future years. All newly constructed items will be entered into MDOT’s asset management system and monitored periodically for condition degradation over the life of the asset.

Innovative Project Approaches

According to the Federal Railroad Administrator, Ronald L. Batory, one of the biggest issues in the rail industry today is trespassing on railroad property. Approximately 95% of rail-related deaths in the US between 2009 and 2016 were due to trespassing and grade crossing collisions. Amtrak and MDOT stay up to date with the latest publications on grade crossing warning systems and trespasser prevention. They also continually research new products to help deter

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and detect trespassers. Amtrak and MDOT will continue to investigate innovative approaches during Final Design on this Project.

Transportation Research Record 1793, Paper No. 02-2887 “Effects of Pedestrian Treatment on Risky Pedestrian Behavior” evaluates the behavior of people at five grade crossing treatments. Amtrak and MDOT used the paper’s findings to determine the most effective warning devices to install on the Michigan Line. The research paper helped Amtrak and MDOT improve their understanding of the Project’s effectiveness in preventing trespassing.

MDOT is also currently researching both “Anti-Trespassing Panels” and “LiDAR Grade Crossing Monitoring and Trespass Detection”. These technologies are new to the Michigan Line and could help further reduce Trespassing and allow MDOT and Amtrak to promptly remove trespassers once alerted to their presence.

R.O.U.T.E.S Initiative

The R.O.U.T.E.S initiative seeks to improve safety at grade crossings in rural areas. According to the R.O.U.T.E.S fact sheet, 39% of highway-rail crossing fatalities occur in rural communities. These communities only make up 19% of the US population, making them more dangerous than crossings in urbanized areas.

The Project aligns with the DOT’s R.O.U.T.E.S initiative. Parts of the Project are located in rural areas with a population under 50,000, according to the 2010 U.S. census. The Project proposes improvements these area’s grade crossings to improve public safety.

Accountability for Performance Outcomes

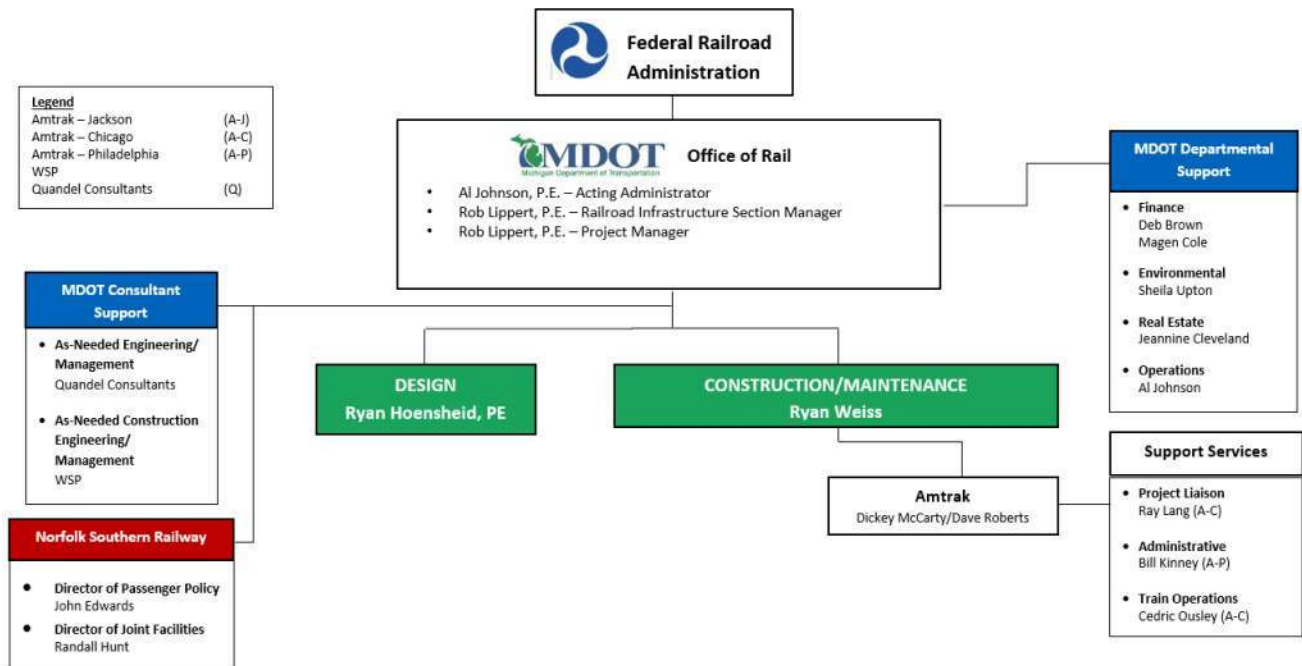
MDOT is a partner to FRA in the development of the Michigan Accelerated Rail Program in this corridor. MDOT has worked cooperatively with FRA staff in the implementation of previous construction grants and remains committed to achieving the performance objectives outlined in the agreements with FRA.

IX. Project Implementation and Management

The Project is a continuation of the Michigan Accelerated Rail Program, managed by MDOT and its partners. The existing project management plan will be followed. This is the same Project Management Plan as that being used on recent SOGR grant award. The management organizational chart for the implementation of the program, including this project is shown in Figure 11.

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Figure 12 - Project Management Structure



Procurement and Contract Management

The Attorney General is the lawyer for the State of Michigan. When public legal matters arise, the Attorney General renders opinions on matters of law, and provides legal counsel for the legislature and for each officer, department, board, and commission of state government. The Attorney General provides legal representation in court actions and assists in the conduct of official hearings held by state agencies.

MDOT complies with state and federal requirements to identify DBE opportunities as part of its DBE program and 49 CFR Part 26. MDOT does not have specific DBE goals for railroad projects; however, MDOT will seek to maximize the ability to use DBE firms and subcontractors for specific work packages.

Change Orders and Extra Work Order Procedures

Cost control and minimizing change orders for the Project will be achieved by carefully forecasting, tracking, identifying, and reporting all Project costs. Project costs will flow through MDOT's prime contractor, through an invoice method.

MDOT will also perform financial Quality Assurance activities through its consultants. Cost control measures will be followed to ensure spending follows the financial plan, which includes a budget and a construction cost estimate, and identifies risks associated with certain project

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elements using contingency costs. The budget will be updated throughout the Project as change orders occur. Project expenditures will be continuously monitored and compared with updated budgeted costs to reveal any variances.

During construction, cost control measures will also be in place for work conducted by third party contractors. MDOT and Amtrak both have standard construction specifications that define the process for accepting payment requests by contractors, change orders and delay claim approvals. MDOT employs contractors to provide construction inspection to ensure quantities installed match contractor invoices.

Risk Management

A Risk Management Plan (RMP) was prepared by MDOT and other project stakeholders for previous work on the program. The RMP identifies, evaluates, and controls activities that may risk the cost, schedule, or Service Outcomes of the project. The plan also addresses contingency identification, evaluation, and control as well as insurance. The RMP will be updated to include this Project.

Project Progress Reporting

Reporting progress to FRA will include:

1. Progress Report - Quarterly (1/1-3/31; 4/1-6/30; 7/1-9/30; 10/1-12/31)
 - a. Each report shall set forth concise statements concerning activities relevant to the Project, and shall include, but not be limited to, the following:
 - i. Relate the state of completion of items in the Statement of Work to expenditures of the relevant budget elements.
 - ii. An account of significant progress (findings, events, trends, etc.) made during the reporting period.
 - iii. A description of any technical and/or cost problem(s) encountered or anticipated that will affect completion of the grant within the time and fiscal constraints as set forth in the Agreement, together with recommended solutions or corrective action plans (with dates) to such problems, or identification of specific action that is required by the FRA, or a statement that no problems were encountered.
 - iv. An outline of work and activities planned for the next reporting period.
 - b. One copy of the report will be sent to the FRA Grant Manager (as defined in the Grant/Cooperative agreement) on or before the thirtieth (30th) calendar day of the month following the end of the quarter being reported.
2. Federal Financial Report - Quarterly

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- a. SF-425 (Federal Financial Report) will be utilized in accordance with the instructions accompanying the form, to report all transactions including Federal cash, Federal expenditures and unobligated balance, recipient share, and program income.
 - b. Copies will be sent to FRA Grant Manager on or before the thirtieth (30th) calendar day of the month following the end of the quarter being reported.
3. Federal Cash Transaction Report - Quarterly
 - a. Unless otherwise directed by FRA, quarterly cash transaction reports will not be provided because there will be no advance payments by FRA for this project.
4. Interim and/or Final Report
 - a. If required, these reports will be provided at intervals specified in the Statement of Work.
 - b. Within 90 days of project completion date or termination by FRA, MDOT to furnish one hard copy and one reproducible master original to the Grant Manager and one hard copy to the FRA Administrative Officer of a Summary Project Report. A final version of this report, detailing the results and benefits of the MDOT's improvement efforts, shall be furnished by the expiration date of the Grant/Cooperative agreement.

X. Planning Readiness

MDOT has adequately planned the Project and is ready for implementation. After MDOT's purchase of the Line in 2012, they have been continually investing in the Line to provide safer, faster and more reliable passenger train service. As owners of the railroad MDOT is aware of the pedestrian fatalities, strikes and near-misses on the Line. These occurrences are counter to MDOT's objective to provide safe, fast and reliable service, so MDOT has strategized ways to reduce or eliminate them. MDOT understands that these incidents are a result of trespassing on the railroad property; to reduce the trespassing MDOT has commissioned the "Albion Safety Concerns Report" (Appendix D); additionally, Amtrak has developed a detailed plan for the Kalamazoo River Trail planning (Appendix E). MDOT has also identified additional trespassing "hotspots" outlined in the "Scope of Proposed Project" part of this document. Through MDOT's planning process and analysis of the investment needed, they will be able to reduce trespassing on the Line with the completion of the Project.

XI. Environmental Readiness

Construction of the Project will occur completely within the railroad right-of-way. It is anticipated that the Project falls under a Categorical Exclusion. MDOT has begun an application for a Categorical Exclusion for the Project. The Draft Categorical Exclusion application is available in Appendix B.