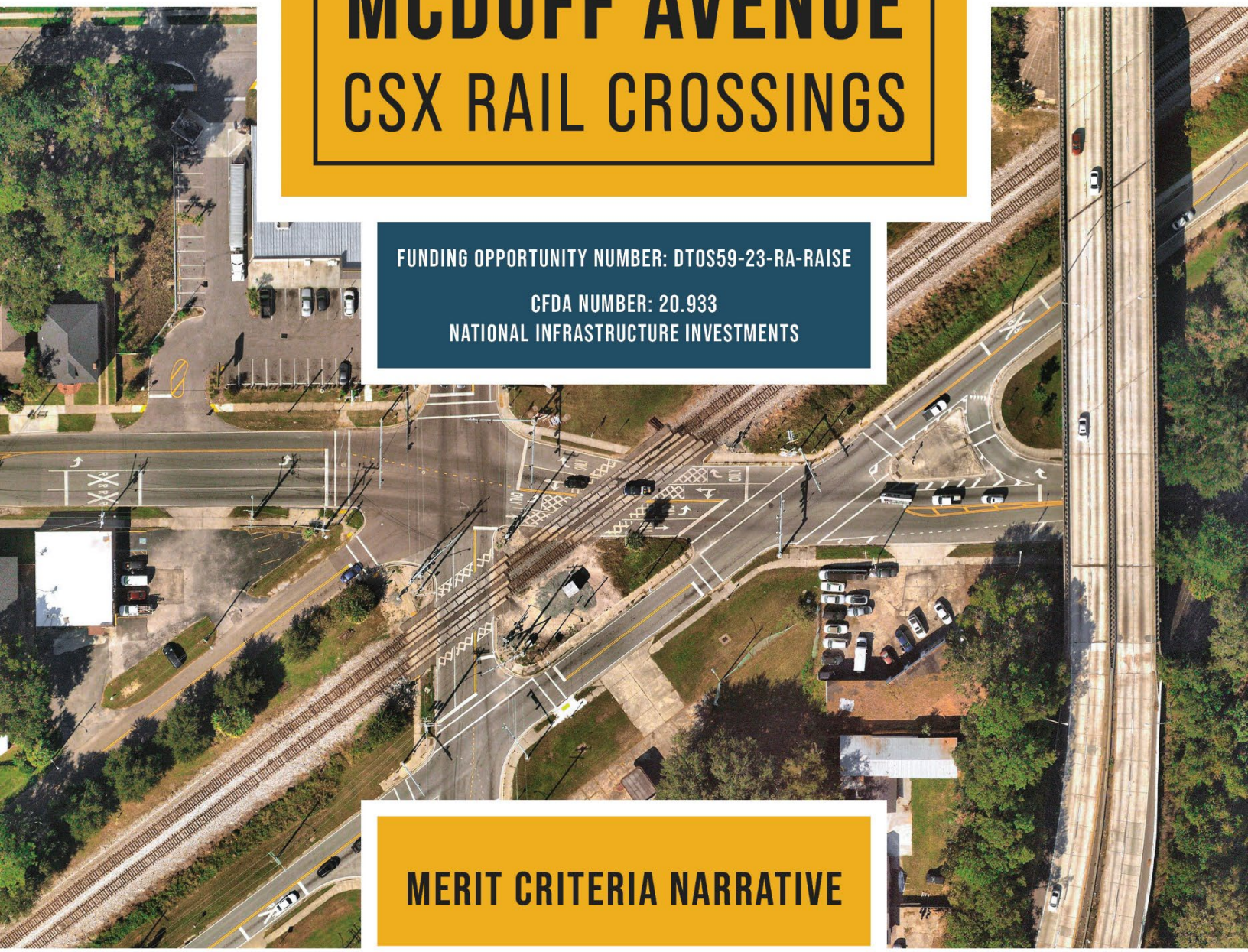
POST ST. & MCDUFF AVENUE CSX RAIL CROSSINGS



FUNDING OPPORTUNITY NUMBER: DTOS59-23-RA-RAISE

CFDA NUMBER: 20.933
NATIONAL INFRASTRUCTURE INVESTMENTS

MERIT CRITERIA NARRATIVE

FEBRUARY 27, 2023

FDOT

SUBMITTED TO

U.S. Department of Transportation
Office of the Secretary

Executive Summary

The Florida Department of Transportation (FDOT) is pursuing a grant with the U.S. Department of Transportation's (USDOT) Fiscal Year 2023 Rebuilding American Infrastructure with Sustainability and Equity (RAISE) program to implement the Post Street Innovative Crossing project. This project will provide cutting edge rail crossing and safety improvements at the Post Street/McDuff Avenue/Old Roosevelt Boulevard (PMO) intersection and the corresponding CSX rail corridor in Jacksonville, Florida. **An estimated 25% of the eligible project costs for this project will be spent in an Area of Persistent Poverty, with 50% of this project geographically located in an Area of Persistent Poverty (Census Tract 25.01).**

The existing intersection configuration at Post Street and McDuff Avenue consists of three traffic signals, two rail crossings, seven approach roadways, seven rail-gated travel lanes, and the rail corridor all within a 270-foot radius. This is depicted on the cover page. Due to the complexity of the design and number of conflict points, community members shared that the intersection is avoided by those in the community and travelers alike, including transit and emergency services, as current users often find themselves in long queues or crashes, sometimes blocking the railway tracks. In 2019, a Jacksonville Transportation Authority (JTA) bus was struck by an Amtrak train while queued on the tracks at this intersection, injuring two highway-rail crossing users.

The Post Street Innovative Crossing project will significantly improve the intersection and benefit users in multiple ways. The proposed design reduces the number of lanes crossing the railway tracks from seven to two, will eliminate three traffic signals, and will provide a free flow single intersection that increases efficiency, safety, and wayfinding for vehicles, cyclists, and pedestrians traveling through the intersection and crossing the CSX rail corridor.

The Post Street Innovative Crossing project will positively impact the environment and improve efficiency and safety for all users, which will allow residents, transit, and emergency services to feel more comfortable using the intersection. Increased use of this vital intersection will improve the mobility, connectivity, and quality of life of area residents and the community. It will also deploy innovative technology and design and bring all assets, including signals, signs, and gates up to current standards. In order to support confident use of the roundabout, crosswalks, and other aspects of the intersection, onsite training will be held, and informational flyers will be mailed by FDOT District 2.

Merit Criteria

Safety

Improving safety for this underserved community, its visitors, and workers commuting through the area is a key goal of the Post Street Innovative Crossing project. Further, this project directly addresses and is consistent with the U.S. Department of Transportation's strategic goal of reducing transportation-related fatalities and serious injuries across the transportation system. The Post Street Innovative Crossing, through reconfiguration within the existing right-of-way, will reduce the number of potential conflicts between all users of the transportation network, including vulnerable roadway users, thus decreasing the opportunity for crashes to occur, specifically crashes resulting in serious injuries or fatalities.

Redesigning the intersection at Post Street and McDuff Avenue will improve safety for all road users, including trains, buses, vehicles, pedestrians, and bicyclists. Over the life span of the intersection, four crashes involving trains occurred at the railroad crossing at Post Street resulting in one injury and one fatality. Fourteen crashes involving trains occurred at the railroad crossing at McDuff Avenue resulting in four injuries and one fatality. These crashes involved nine passenger-carrying trains, eight freight trains, bicyclists, pedestrians, and personal vehicles. Within the time period of the safety analysis performed for this project (2015-2019), three crashes involving trains occurred. The first, involving a bicyclist, occurred on August 19, 2017, and resulted in a bicyclist fatality and one train passenger injury. The second occurred on May 7, 2018, and resulted in no fatalities or injuries. The third crash involving a train occurred on July 1, 2019, and resulted in two injuries to transit users. The 2019 crash involved a Jacksonville Transit Authority (JTA) bus, forced to stop on the crossing due to the intersection design, and consequently hit by an Amtrak train. Of the eighteen crashes involving trains, fifteen involved a vehicle stopped on the crossing and three involved a vehicle or bicyclist moving over the crossing. Additional information on these crashes can be found in Attachment N.

Crash data for the intersection was obtained from the FDOT State Safety Office Geographic Information System (SSOGis) web-based tool. SSOGis provides crash information on various characteristics including the severity of crashes, manners of collision, causes for collision, and date/time information. The crash data was collected for the five years before 2020 (2015- 2019). Over this five-year period the intersection experienced a total of 124 crashes (24.80 crashes/year). A safety analysis was conducted for the project to determine the potential reduction in crashes resulting from the modification to the intersection. The results of that analysis are summarized in Table 1.

Of the 124 crashes over the last five years, 85 crashes involved Property Damage Only (PDO), 39 crashes involved an injury, and no crashes involved a fatality. The actual crash rate for the intersection is 3.746 compared to the statewide average crash rate for a similar intersection of 0.386. **The actual crash rate is almost ten times higher than the statewide average crash rate** indicating that this intersection is a **high crash location**.

TABLE 1 - PREDICTIVE SAFETY ANALYSIS SUMMARY

Total Number of Historical Crashes from 2015 - 2019	**124**
Historical Crash Frequency from 2015 - 2019	**24.80 crashes/year**
Predicted Number of Crashes Reduced Post Project	**11.90 crashes/year**
Predicted Crash Frequency Post Project	**12.90 crashes/year**

Due to the unique design of the proposed roundabout, both a quantitative and qualitative approach were used to complete a predictive safety analysis. Using a Crash Modification Factor (CMF), a quantitative analysis was completed by applying the selected crash reduction to the historical crash frequency. Per the American Association of State Highway and Transportation Officials (AASHTO) Highway Safety Manual (HSM), converting a signalized intersection to a modern roundabout should result in a 48% reduction in all crashes and a 78% reduction in fatal and injury crashes. Based on the CMF, a reduction in crashes from 24.80 per year to 12.90 per year is expected at the Post Street and McDuff Avenue crossings once the project is complete. Table 1 above provides a summary of the predictive safety analysis.

Similar roundabouts' historical crash data were also examined to see how effective this unique roundabout design is at improving safety. In FDOT's District Two, there are two similar roundabouts in the City of Live Oak and the City of Jacksonville in the San Marco Neighborhood. Both of those roundabouts showed a low number of minor injury/PDO crashes (less than 20 crashes at each location) between 2015 to 2019. The historical crash data from these similar roundabouts reinforces the assumption that the proposed design associated with this project should reduce the number of collisions and the number of serious injury and fatal crashes.

FDOT understands this is a unique design, leading to a need for training and education for people to safely use the new intersection. Not only will flyers about project information, timing, and best practices be sent to all residents within 300' of the project, but staff will also be present after construction to teach pedestrians and bicyclists how to safely use the intersection, and a website dedicated to this project will be created. This website will allow for the collection of comments and concerns throughout the project phases.

The proposed design was further proven worthwhile in the benefit-cost analysis (BCA), which indicated the new design will provide benefits that exceed the cost of the project. In addition, the Federal Highway Administration (FHWA) has identified the conversion of signalized intersections to roundabouts as one of their Proven Safety Countermeasures because of the potential to significantly reduce serious injury or fatal crashes by reducing the number of angle and head-on collisions, which account for over 50% of the crashes at this particular intersection. Furthermore, implementing roundabouts at intersections is a proven technique for promoting lower vehicle speeds, reducing conflict points, improving traffic operations, and improving the walking/cycling environment, all of which will improve safety. Road users must make quick decisions when traveling based on visual and audio cues in the environment, and the existing intersection with three signals, two rail crossings, seven approach roadways, and seven rail-gated travel lanes results in user confusion, such as paying attention to the wrong signal, mis-timed decisions, or a user trying to turn at the intersection while the tracks are clear and their light is green and ultimately being unable to turn and becoming stuck on the tracks. The Post Street Innovative Crossing will reduce these human mistakes by creating a steady flow of traffic with reduced conflict points between vehicles, bicyclists, pedestrians, and trains.

Further, the Post Street Innovative Crossing project incorporates actions and activities identified in USDOT's National Roadway Safety Strategy (NRSS) Plan. The project supports four of the five objectives of the NRSS – Safer People, Safer Roads, Safer Speeds, and Post-Crash Care. Under Safer People, this project recognizes the fragility and fallibility of humanity. Development of a unique roundabout with better visibility for vulnerable road users and reduced likelihood that cars will be stopped on the tracks as traffic will flow more consistently. The Post Street Innovative Crossing recognizes the role the numerous conflict points play in endangering vulnerable road users, as well as the concern the current signal layout presents, as it results in drivers thinking they will make a light only to be stuck on the tracks at a red light. This innovative crossing alleviates these issues by creating a steady flow of traffic and reducing the number of conflict points, creating Safer Roadways. Roundabouts are identified by FHWA as a proven safety countermeasure known to reduce vehicle speeds, resulting in safer speeds for travelers and less risk to all road users.

The NRSS estimates that 20% of trauma deaths are preventable with optimal emergency and trauma care. This project will allow traffic flow to move continuously, saving emergency

vehicles time that may normally be spent navigating red lights among busy traffic. Medical emergencies in the surrounding community which are accessed via Post Street or McDuff Avenue, will see quicker responses with the potential for a higher, better level of care. This project also improves the safety of the surrounding areas by creating a more efficient connection for emergency response services to get between the Riverside and Murray Hill communities. For example, responders from the Jacksonville Fire and Rescue Department's Station #10, which is located just south of the Post Street and McDuff Avenue intersection in the Riverside community, would be able to reach the Murray Hill community more efficiently and with fewer impediments due to the improvements of the intersection and reduction of conflict points associated with this project. The roundabout design includes truck aprons to allow large vehicles, such as fire trucks and ambulances, to successfully move through the intersection.

Additionally, the project is located only a mile from the main channel of the St Johns River, the longest river in Florida, and is situated only 20 feet above sea level. The project area is immediately north of evacuation zones A, B, and D, as well as south and west of evacuation zone C. Creation of a smoother traffic flow with better channelization and wayfinding for vulnerable road users will enhance community safety in times of emergency. With the flooding received in the Riverside area during hurricanes Irma (2017) and Ian (2022), and the anticipation of increasing numbers of high intensity hurricanes due to climate change, maintaining traffic flow and enhancing safety for all road users through this project is critical.

Environmental Sustainability

This project will improve all modes of traffic flow and will reduce air and noise pollution and greenhouse gas emissions for residents of Murray Hill, Riverside, and the surrounding communities as shown in the BCA. Presently, the intersection is signal-controlled, and the configuration of entry points results in long wait times and vehicles queuing at signals waiting to cross the intersection. Vehicles idling increase air and noise pollution, and emissions for the surrounding neighborhoods, contributing to poor air quality and noise. The BCA indicates this project will increase traffic flow through the PMO intersection, resulting in an overall reduction in vehicle hours traveled. The total benefit from emission reductions associated with this project is $2.4M (approximately $800K at the total combined discount).

The improvements, including passive pedestrian sensors and Americans with Disabilities Act (ADA) -compliant sidewalks and crosswalks at the PMO intersection will additionally increase the safety of navigating the intersection for all users, which will encourage the use of different kinds of transportation, including bicycles and transit. Safer active transportation and the pending return of transit to the area will encourage residents to make greener transportation choices, especially for nearby destinations or first-mile/last-mile connections to transit. The EPA's Environmental Justice Screening and Mapping Tool (EJScreen) (Figure 1) shows the communities north of Old Roosevelt Boulevard are heavily environmentally impacted by the intensity and nearness of traffic, and the changes this project brings forth will result in fewer vehicles overall traveling through this intersection, relieving the environmental impact on the disadvantaged community to the north.

The proposed project will reconfigure existing infrastructure within existing right-of-way and will promote resiliency in the form of an intersection able to operate without power. In inclement weather, signals often lose power, making normal intersections dangerous and heightening travel

lane conflict in the existing configuration of this complex intersection. By replacing the signals with a roundabout, the intersection will remain fully operational and safe in hazardous conditions.

Finally, this intersection plays a significant role across the region as the railway here has been designated as part of the Strategic Intermodal System (SIS) Rail network and is used by up to a total of 10 Amtrak and CSX trains daily. Reconfiguring the crossings at Post Street and McDuff Avenue while improving efficiency and safety will ultimately result in operational improvements across the entire line and reduce the potential for operational delays. Such improvements and the increase in efficiency for this key section of railway will positively impact the environmental impact of the entire line.

Quality of Life

The project is located within and near disadvantaged communities who need safe, reliable access to transportation options. The project area is in both Census Tracts 21.01 and 25.01. These residents experience housing cost burdens and are considered low-income households who spend more than 30% of their income for housing. Using USDOT's Screening Tool for Equity Analysis of Projects (STEAP), a half-mile buffer around the project area reveals 10% of households *do not* own a car, and 50% of households only own one, meaning many residents likely use active transportation or transit to navigate the area. Census Tract 25.01 is a HUD Qualified Census Tract. Low income and lower higher education graduation rates plague this area. The tract is also identified as disadvantaged based on seven out of eight criteria outlined in the EJScreen: Climate Change, Health, Housing, Legacy Pollution, Transportation, Water and Wastewater, and Workforce Development. Table 2 (page 7) demonstrates how the project will mitigate five of these criteria.

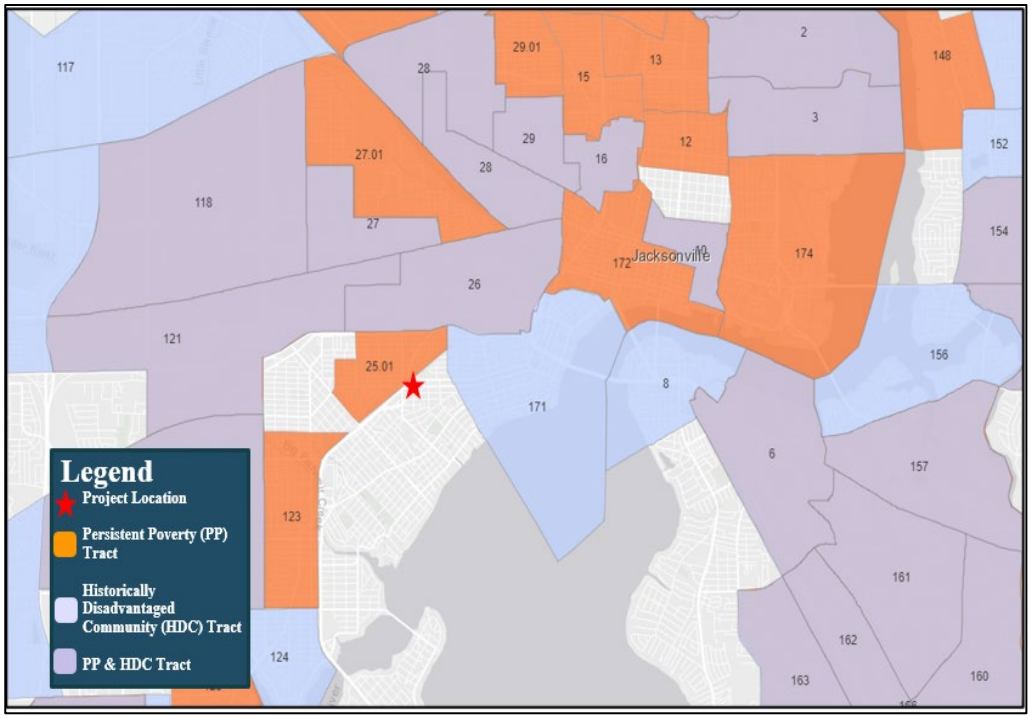


FIGURE 1 - AREAS OF PERSISTENT POVERTY AND HISTORICALLY DISADVANTAGED CENSUS

Census Tract 25.01 is located within 0.5 miles of a designated HUD Qualified Opportunity Zone. 50% of the project is within an Area of Persistent Poverty (AOPP). According EJScreen, Census Tract 25.01 and those north of it experience lower life expectancy and higher occurrences of both heart disease and asthma. North and south of the project area, the communities experience high levels of traffic proximity and moderately high diesel particulate matter. Census Tract 25.01 is also a food desert, meaning the residents have limited access to affordable and nutritious food.

This project will decrease barriers to opportunity and improve the safety of active modes of transportation as well as increasing access to transit. This will allow for a mode shift that will support the residents who do not own a car or share a car, as well as increasing access to affordable transportation.

Figure 1 on page 5 demonstrates that 50% of the proposed project area is located in an Area of Persistent Poverty (AOPP) and that there are numerous census tracts in walking distance from the project that are Historically Disadvantaged Community (HDC) or both an AOPP and an HDC.

Residents will benefit from increased, safer access to nearby parks, including Powers Park north of the CSX line, Willowbranch Park south of the CSX line, Memorial Park to the southeast, and Riverside Park to the east. **Increased recreational opportunities will result in better health for the community.** Residents on both sides of the line will be better connected to retail, grocery stores, and locally grown food made available at farmers markets. There are concentrated commercial areas featuring retail shops and locally owned restaurants along Edgewood Avenue S., King Street, and within Five Points, which is between Riverside Park and Memorial Park. Five Points, in addition to local retail and restaurants, contains a Publix Supermarket. Further, just past Five Points underneath the Fuller Warren Bridge overpass, the Riverside Arts Market (RAM) is held every Saturday. **Many local farmers and gardeners attend the market, enabling the community to participate in a local food system and purchase affordable, healthy food.** RAM, Five Points, and many other unique local institutions regularly attract visitors from other counties and tourists alike, meaning vehicular traffic remains active beyond commuter demand. Attracting more users to this intersection, while increasing the traffic flow and safety of this intersection, as well as the available mode choices, will benefit all road users and the local community.

The proposed improvements combined will enable the surrounding communities to safely access **daily destinations** like convenience stores, grocery stores, jobs, and more through the transportation mode of their choice. The project will mitigate the risk of track queueing due to other vehicles or traffic signals, and the community will experience increased transportation options with the return of transit. The return of transit service to the area will lower barriers to opportunity and increase access to affordable transportation options. The scope of work additionally includes bicycle, pedestrian, and other safety improvements.

The proposed project will reconfigure existing infrastructure within existing right-of-way, and it will promote resiliency in the form of an intersection able to operate without power. In inclement weather, signals often lose power, making normal intersections dangerous and heightening travel lane conflict in the existing configuration of this complex intersection. By replacing the signals with a roundabout, the intersection will remain fully operational and safe in hazardous conditions.

TABLE 2 - MITIGATING DISADVANTAGE

Criteria	Issue	How the Project will Mitigate the Issue
Health	Asthma: 80th percentile Diabetes: 88th percentile Heart Disease: 84th percentile Low Life Expectancy: 96th percentile	▪ Increases active transportation ▪ Reduces emissions due to reduced idling ▪ Potential increase in affordable transportation options for low-income residents
Housing	The share of households making less than 80% of the area median income and spending more than 30% of income on housing is in the 90th percentile. Lack of Green Space is in the 37th percentile	▪ Creates an environment for affordable transportation and active transportation to safely flourish, helping to reduce the burden on low-income households
Legacy Pollution	Those living and working within this area are located close to Risk Management Program facilities who are a major contributor to pollution	▪ JTA may return service to the area after project completion. In 2022, JTA was awarded $15.4M to their bus fleet and facilities to be more sustainable. As these fleets are rolled out, transportation in the area will be more affordable and sustainable
Transportation	Traffic proximity and volume at major roads within 500 meters – in the 96th percentile	▪ Reduces related environmental complications, such as the emissions created by idling vehicles waiting at signals. Traffic will flow more efficiently, reducing negative environmental impacts ▪ Reduces travel time through the intersection by 50 percent improving transit reliability and on-time performance for the McDuff route.
Workforce Development	Those residing in this Census Tract have a low-median income and unemployment is among the highest in the state. Seventeen percent of the population aged 25 and older do not have a high school diploma	▪ Supports long-term jobs in the community ▪ Reduces barriers to opportunity, improving access to local employment options

Mobility and Community Connectivity

Mobility and Community Connectivity are a key goal in this project, which is intended to redesign the Post Street and McDuff Avenue intersection within the existing right-of-way to enhance accessibility and useability for vulnerable road users. Previously, JTA once operated transit in the area, but after a crash, JTA decided to pull service from the area until improvements are made. The project will thus contribute to system-wide connectivity through increasing access to transit and adding safety features to the intersection that support the use of micromobility at the intersection, as well as active transportation. The roundabout will reduce travel lane conflict and increase visibility of vulnerable road users. Additionally, bringing transit back to this area will reduce barriers to opportunity for local citizens who will now be connected to direct, affordable transportation. Per the BCA, **the project will reduce travel time through the intersection by 50 percent improving transit reliability and on-time performance for the McDuff route.**

These improvements combined will enable the surrounding communities to safely access daily destinations like convenience stores, grocery stores, jobs, and more through the transportation mode of their choice. The project will mitigate the risk of getting stuck on the tracks by other vehicles or traffic signals, and the community will experience increased transportation options with the return of transit.

Discussed further in Innovation, key features of this project include universal design features and innovative technology. The Post Street Innovative Crossing will deploy Smart Lighting, which at a pedestrian-scale will increase comfort and safety for vulnerable road users near stops. Additionally, enhancing the lighting provided at night will reduce potential conflict created by shadows that impact the ability of vulnerable road users and drivers to see. The project will also deploy bicycle and pedestrian sensors, which will detect vulnerable road users at intersections and mid-block crossings to warn vehicular traffic of the vulnerable road users with rectangular rapid flashing beacons. These design features enhance equity for this disadvantaged community and vulnerable road users by using passive pedestrian detection which goes beyond the requirements of ADA. As discussed in Environmental Sustainability, this project will improve traffic flow for all modes in the area. The signal-controlled intersections will be removed to reduce long wait times at signals and create an efficient flow of traffic that supports mobility and connectivity within the local communities surrounding the intersection.

There are concentrated commercial areas featuring retail shops and locally owned restaurants that will soon be more accessible to the communities through active transportation with the implementation of this project. Five Points contains a Publix Supermarket and is host to RAM, providing grocery access. **The availability of affordable, healthy food options supports residents in this known food desert.** RAM, Five Points, and many other unique local institutions also regularly attract visitors from other counties and tourists alike, meaning vehicular traffic remains constant over and above the day-to-day traffic created by commuters. Increasing the traffic flow and safety of this intersection, as well as the available mode choices, will benefit all road users and the local community.

Additionally, pedestrian facilities will be enhanced by filling in missing gaps in the sidewalk network and adding additional bicycle designation/signage throughout the intersection. These improvements also allow for safety enhancements such as pedestrian rail gate skirts, increased

gate lengths, and camera detection with audible sound devices which have been shown to reduce pedestrian trespassing violations between 55-78%.

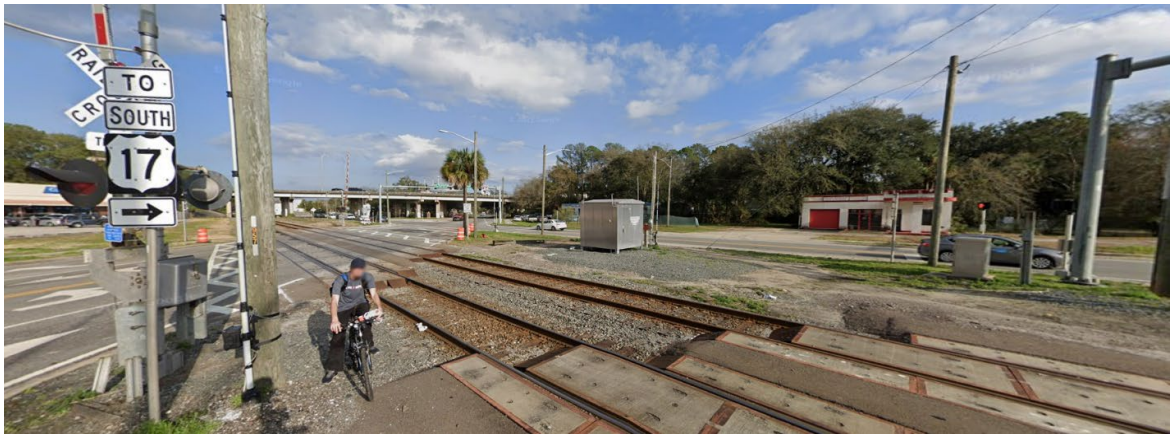


FIGURE 2 - STREET LEVEL VIEW OF CSX TRACKS

The existing conditions are shown in Figure 2. Technology will be used to help manage and operate the roadway, with the safety of the travelers being prioritized. The devices and system being proposed for this work would create safety benefits by allowing operators to confirm and respond to conditions and events in real-time. Systems and devices being proposed for these improvements will be focused on safety for the most vulnerable roadway users. Total crashes are expected to be reduced by 48% with crashes involving fatality or injury reduced by 78%.

Economic Competitiveness and Opportunity

Enhancing economic competitiveness and access to opportunities is a primary motivation of the project. This project improves accessibility to businesses located within the Murray Hill, Riverside, and Five Points communities. Figure 2 above and Figure 3 below demonstrate a street

FIGURE 3 – BUSINESSES AT INTERSECTION WITH REDUCED ACCESS

level view of CSX tracks near the project area. Currently, ingress and egress to these businesses is limited to drivers, pedestrians, and bicyclists. The rail tracks presently provide a division between the area south/southwest of the railroad and the communities to the north. Reconfiguring the intersection will reduce or remove barriers to opportunity created by this design.

The project location lies in close proximity to the CSX headquarters and the Duval Yard, one of CSX's Intermodal Terminals for Jacksonville and one of three Intermodal Terminals in Florida. The Terminal services include Domestic and International intermodal freight. Additionally, CSX Busch Yard is close to the project location. The project will provide increased safety benefits to vehicles, bicyclists, pedestrians, and trains, which will encourage people to visit the area without concern of danger or delay and will increase the number of people walking or biking because vulnerable road users will be more visible and have safe access.

The surrounding area includes services to the community such as fire stations, libraries, parks, places of worship, West Riverside Elementary school, and Robert E. Lee High School. Fire Station #10, located just south of the project site, currently utilizes alternative routes when on emergency calls due to traffic and mobility barriers. Figure 4 shows the fire station 500 feet from the intersection

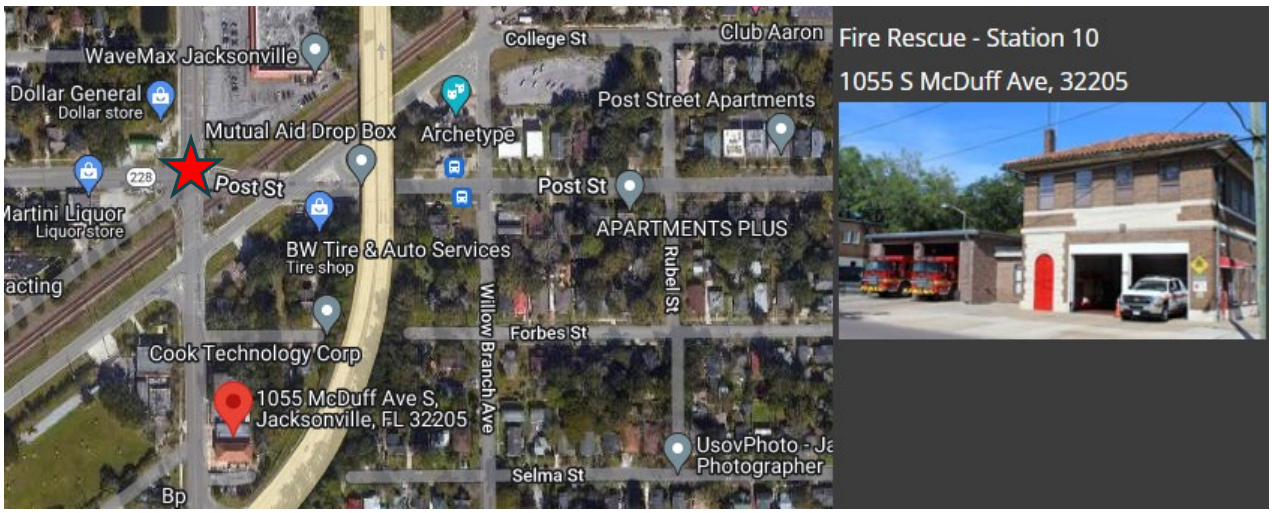


FIGURE 4 – FIRE RESCUE STATION 10

The project is poised to improve economic and connectivity issues. As a multi-year effort, this project will result in long-term job creation of good paying construction jobs. The reconfiguration of the intersection requires design and engineering, permitting, and construction. Consultants and contractors will be hired through a fair, competitive procurement process. FDOT also maintains a Disadvantaged Business Enterprise Plan to create a level playing field of competition and support nondiscrimination. The project will support private and public sector jobs. Further, the investment the project makes into the surrounding communities will reduce physical barriers to job and educational opportunities, resulting in families achieving economic security through gainful employment.

CSX Transportation

CSX is a Class I railroad providing integral freight service to Florida's major urban cities, as well as rail connectivity across the United States. CSX is the largest freight operator in the State of Florida and owns more than 53% of the statewide rail track mileage. CSX is also a leading supplier of rail-based freight transportation in North America with its headquarters in Jacksonville, Florida, just miles from this project.

FIGURE 5 - CSX ASSETS IN JACKSONVILLE

Additionally, three miles to the north of the project is the CSX-owned Jacksonville Terminal Moncrief Yard, which is one of the largest and busiest railyards in the country, further emphasizing the importance of the rail infrastructure in this area on the entire region. Furthermore, the section of railway that crosses through the PMO intersection has been designated as a Strategic Intermodal System (SIS) Rail Network facility by the State of Florida. This designation signifies this section of track as part of Florida's high priority network of transportation facilities important to the State's economy and mobility, which are most significant for interregional, interstate, and international travel.

The SIS is a tool FDOT uses to implement the Florida Transportation Plan (FTP), which is the State's long-range transportation plan. The FTP sets a goal of efficient and reliable mobility for people and freight. Freight terminals, whose purpose is to move goods efficiently throughout the State, have been identified as components of the SIS network that are critical to the economic success of Florida. In Florida there are six SIS designated freight terminals, three of which are in Jacksonville near the project.

Rail Industry Employment is also directly supported with the proximity of major CSX assets, including the dispatcher's office and headquarters, mere miles away. Improving this corridor not only provides direct access to these facilities but makes the corridor more efficient. Figure 5 demonstrates the location of all CSX Assets in Jacksonville in relation to the project location.

According to the BCA, the project will enhance economic competitiveness by reducing travel time and vehicle operating costs through the improved intersection operations. The reduction in travel time will provide $10.4M in benefits, and the reduction in operating costs will provide $8.9M in benefits, both being at a 7% discount.

State of Good Repair

The Post Street Innovative Crossing will first support a state of good repair through the efficient and well-integrated design shown in Figure 6 below. This project reduces the number of lanes crossing the railroad from seven to two. By reducing crossings at this intersection, the project design itself is vastly more efficient than the current design and will reduce future construction and maintenance burdens as indicated in the BCA. Factoring in a salvage value of the components that will be removed, the total benefit for state of good repair associated with this project is $2.1M (approximately $649k at the total combined discount).

FIGURE 6 - PROPOSED INTERSECTION DESIGN

Further, updating other existing equipment at the site such as crossings, gantry arms, signal boxes, and other assets that have met their useful life with more modern and efficient equipment designed to work better and for longer will leave this project in a state of good repair. In fact, many of the components of the project have service lives that extend beyond the analysis period of the BCA. This residual value is applied as a benefit to the construction value of the project. The total residual value benefit of the project was $.9M (approximately $110k at the total combined discount).

This project also addresses a system vulnerability impacting nearby persistent poverty tracts and historically disadvantaged communities. An estimated 25-50% of this project will occur directly in Persistent Poverty Census Tract 25.01 (Murray Hill). Persistent Poverty Tract 123 (Murray Hill/Avondale) and Historically Disadvantaged Community Tract 171 (Riverside) are both within 1 mile of the PMO intersection through which residents of these neighborhoods frequently need to travel. Unfortunately, the existing intersection design has resulted in transit canceling routes due to safety concerns, such as buses and vehicles queuing and getting caught on the tracks. Residents needing transit are forced to do without or find alternate means to travel. Additionally, even emergency services such as Jacksonville Fire and Rescue Department Station

#10, just south of the proposed project location, re-route around the PMO intersection to avoid getting stuck in a queue or behind a crash.

The Post Street Innovative Crossing improves the condition and safety of the existing transportation infrastructure within the existing footprint. Not only are the old crossings, gantry arms, signal boxes, and more being replaced with modern and efficient equipment, but crossings will be reduced, resulting in less maintenance needs and costs. Less crossings and a more efficient design within the existing footprint will also result in drastic safety improvements for pedestrians, vehicles, and trains using the intersection.

Partnership and Collaboration

FDOT is committed to identifying stakeholders and providing multiple opportunities to be involved in the transportation delivery process, regardless of the phase of the project. **Before this design was started, FDOT heard significant and sustained public requests to improve this intersection, leading to this innovative design and project delivery process.** Specific to this project, FDOT understands that this is an unusual intersection configuration. Not only will flyers about project information, timing, and best practices be sent to all residents within 300' of the project, but staff will also be present after construction to teach pedestrians and bicyclists how to safely use the intersection and a website dedicated to this project will be created. This website will allow for the collection of comments and concerns throughout the project phases.

FDOT's community engagement approach is flexible and is updated as the project progresses and will be scaled to match the complexity of the project. **FDOT has an innovative policy that requires all public meetings, hearings, and workshops to be hybrid, using both face-to-face and interactive/virtual components to reach more people and to provide a larger input radius.** All meetings are ADA accessible, and information is located on an ADA accessible website. FDOT recently completed a comprehensive Public Engagement Resource Guide and the Partnering with FDOT: A Resource Guide for Local Governments to foster robust and consistent engagement with communities.

The project is currently programmed in FDOT's State Transportation Improvement Program (STIP) [#2094432], FDOT's Freight Mobility and Trade Plan, and the North Florida Transportation Planning Organization's (NFTPO) Transportation Improvement Program (TIP) [#2094432].

FDOT invited the Federal Rail Administration (FRA) for a site visit at the Post Street and McDuff Avenue rail crossing to and discuss the conceptual design. FRA staff members supported the proposed design, pending fully engineered plans. Additional information is available in the Project Readiness section.

The project aligns with numerous objectives, goals, or implementation actions defined in FDOT's Florida Transportation Plan, Rail System Plan, and Highway-Rail Grade Crossing Safety Action Plan, as well as North Florida TPO's Long Range Transportation Plan.

The Florida Transportation Plan (FTP) envisions transportation systems that enhance Florida's communities; transportation choices that improve accessibility and equity; connected, efficient, and reliable mobility for people and freight; and safety and security for residents, visitors and

businesses, among other goals. This project aligns with these goals by improving the mobility of vulnerable road users and enhancing access to transportation choices that will allow the surrounding low-income community to access jobs, education, health care, and other services safely. Redesigning the intersection will allow for a contextually sensitive and safer design that supports rather than divides the surrounding community. The project further aligns with FDOT's Vision Zero strategy, an implementation action listed in the FTP calling for zero fatalities through a Safe System Approach to transportation planning.

FDOT's Rail System Plan (RSP) also prioritizes safety and security, efficient and reliable mobility, quality places, as well as the environment and conserving energy as four of their goals. The project aligns with these goals. According to the RSP, death and injury incidents in Florida related to rail lines have been increasing since 2008. This project will enhance safety for all roadway users, reducing death and injury incidents occurring in Jacksonville, where such events are already highly concentrated. The RSP includes programming for Highway-Rail Crossing Improvements in both the short-term and long-term Rail Investment Programs.

FDOT updated the State Highway-Rail Grade Crossing Safety Action Plan (SAP) in 2022. It prioritizes safety challenges of driver and pedestrian behavior as well as traffic queuing on tracks. The SAP establishes goals to reduce hazards based on driver/pedestrian behavior, reducing redundant crossings, reducing the number of vehicles stopping on the tracks or in the foul zone, and eliminating incorrect turns onto tracks. By transforming the intersection to a roundabout configuration, queuing on the tracks will be reduced or eliminated as traffic will be able to maintain a continuous flow, travel lane conflicts will be reduced, and vulnerable roads users will experience increased visibility within the new design.

The project also aligns with many objectives of the North Florida TPO's Long Range Transportation Plan (LRTP), including but not limited to enhancing access to jobs, services, and retail for all; enhancing transit accessibility; enhancing bicycle and pedestrian quality of service; reducing emissions from automobiles; reducing crashes for all modes; optimizing the quality of travel; improving the accessibility of mode choices; and optimizing the use of the transportation system.

FDOT shall perform all tasks required for the project through a coordinated process, which will involve affected railroad owners, operators, and funding partners, including:

- Federal Agencies – FRA and FHWA
- Duval County
- City of Jacksonville
- JTA
- CSX
- Amtrak
- Norfolk Southern
- Permitting agencies

As a result of this project, there is private sector participation with the support of the tenant railroads. CSX is a private sector railroad. Amtrak is a federally chartered corporation. Private sector local industries, such as the Orlando Utilities Commission which relies on CSX to bring in their coal trains, are also a benefited user.

All construction-related work is proposed to be carried out by third-party contractors and will conform with the Federal requirements. Construction, engineering, and inspection services including project management are proposed to be administered by private engineering consulting

firms. There are opportunities for the creation of construction-related jobs, which contributes to the economic vitality of the region.

The Florida Department of Transportation will maintain the improvements post-completion.

Innovation

First, the full concept and design of this project is extremely innovative and solves a complex problem in a unique fashion. Implementing a roundabout to accommodate the five entry points of this intersection while maintaining the same footprint, delivered through a resurfacing project, is extremely innovative and forward-thinking.

Beyond the design, the project will rely on the deployment of innovative technology and universal design features to manage and improve operations of the new transportation system, rather than focusing on increasing automotive capacity. These technology deployments will improve the safety of vulnerable road users, improve the city's asset management capabilities, and improve overall reliability. Innovative elements are summarized below:

- Smart Lighting – Provide enhanced lighting at night to improve safety at pedestrian crossings and reduce power consumption.
- Bicycle and Pedestrian Sensors – Automated (passive) pedestrian and bicycle detection at intersections and mid-block crossings to warn vehicular traffic of the vulnerable road users with rectangular rapid flashing beacons.
- Smart and Connected Rail Signals - This deployment will advance the technology by transmitting messages to connected vehicles, roadside units, and vulnerable users such as pedestrians and vehicles per SAE J2735 standards.

The improvement and realignment of this intersection will support the transformation of the nation's rail network, just miles from the headquarters of CSX, one of the largest suppliers of rail-based freight transportation in North America.

- Capacity – This design will reduce travel time by 50% while allowing for safer bicycle and pedestrian use and allowing the opportunity for transit to return to this corridor.
- Supply Chain Resilience – Improving supply chain reliability is a core goal of FDOT. This innovative roundabout design will prevent cars from getting "trapped" on the tracks, allowing trains to move through the corridor more safely and efficiently.
- State of Good Repair – This project reduces the number of lanes crossing the railroad from seven to two. Not only will this bring all of the current crossings, gantry arms, signal boxes, and other assets into a state of good repair, but the decreased gate lengths and reduced number of crossings will extensively reduce maintenance costs and needs.