

EXECUTIVE SUMMARY

The Martin Metropolitan Planning Organization (MPO) initiated this feasibility study to identify, evaluate and plan for potential roadway and non-motorized pedestrian/bicycle grade separations along the Florida East Coast Rail Line (FEC) through Martin County. The study has been performed in phases including:

- **Tier 1:** Perform an initial assessment of all the mainline rail at grade crossings (25) in Martin County and identify 10 roadway candidate crossings for potential grade separation. Review adjacent land uses between crossings and known areas of pedestrian trespassing on the rail corridor to identify 5 candidate locations for non-motorized crossings.
- **Tier 2:** Perform detailed evaluation and rank the roadway and non-motorized candidates for the need and justification to implement grade separations.
- **Tier 3:** Prepare concepts and assess the feasibility and impacts of grade separations at 4 potential crossing locations:
 - Conceptual plans for up to 2 crossings for roadway grade separation, and
 - Conceptual plans for up to 2 crossings for non-motorized uses
- Assess the impacts and cost-benefit of the concepts developed for this study.

The final results include concepts, costs and benefits developed for an Indian Street/Dixie Highway elevated roadway crossing, a Monterey Road/Dixie Highway depressed roadway crossing, a Railroad Avenue to Commerce Boulevard elevated pedestrian/bicycle grade separation and a Downtown Stuart elevated pedestrian/bicycle grade crossing. Each concept is provided below from south to north by roadway and non-motorized category. Note 11x17 sheets are provided in Chapter 4, Figures 18 to 21.

Potential Indian Street / Dixie Highway Elevated Roadway Grade Crossing over the FEC Railroad



Potential Monterey Rd/Dixie Highway Depressed Roadway Grade Crossing over the FEC RR



Potential Railroad Ave. to Commerce Ave. Non-Motorized Grade Crossing over the FEC Railroad



Potential Downtown Stuart Non-Motorized Grade Crossing over FEC Railroad near St. Lucie Ave



Each of the concepts offered some consistent opportunities and challenges where they all provided for access to both sides of the tracks and a safety benefit and some level of community connectivity and all had challenges related to right of way and access.

Indian Street/Dixie Highway Elevated Grade Crossing over the FEC Railroad Opportunities and Challenges

Indian Street is a 4 lane divided County Roadway west of Dixie Highway that tapers down to a 2 lane roadway east of Dixie Highway. The roadway currently operates well at Level of Service (LOS) C conditions and is expected to continue to operate under satisfactory conditions in 2040 at LOS D. The Indian Street/FEC Railroad crossing is provided with sidewalks, there are no bike lanes, it is served by Martin County Public Transit (MCPT) and there are currently 26 school buses per school day that traverse the crossing. The roadway experiences 12 railroad crossing closures a day, with 60 mile per hour trains at maximum speeds and has experienced 17 crashes in the vicinity of the crossing in the last 5 years including 5 non-motorized crashes and 7 serious injuries. None of the crashes included a train. The crossing is high on the Florida Department of Transportation Safety Needs Index ranking as it is the #113th crossing in a system of 3,682 crossings and may experience as many as 54 trains a day in the future with speeds between 70 and 110 mph.

Opportunities – the proposed concept developed for Indian Street includes elevating both Indian Street and Dixie Highway so that all turning movements would be separated from the railroad tracks. Opportunities include safety, a fixed evacuation route and access for emergency services. The proposal maintains the

current design of the intersection meeting community concerns on traffic management on the east side of Dixie Highway. The safety benefit analysis indicates that the proposed concept would reduce crashes by 44% per year, about 3 crashes per year, and the design allows for fixed access from the western communities to the Martin Memorial Medical Center. Note that fixed emergency access, separated from the crossings, to the Medical Center was heard often at outreach meetings as a high priority in reviewing the need for grade separations.

Challenges – the concept presents significant right-of-way challenges as the yellow highlighted areas shown on the concept exhibit represents properties that would lose access to both Indian Street and Dixie Highway and probably result in full property takes. In addition there would be roadway network and access impacts where access to properties on the west side of tracks would be prohibited as well as access to/from Alamo Drive east of Dixie Highway.

The concept cost estimate is \$83.6 Million with a cost/benefit ratio of 2.1.

Monterey Road/Dixie Depressed Highway Grade Crossing under the FEC Railroad Opportunities and Challenges

Monterey Road is owned and maintained by FDOT as State Road 714 and the FEC Railroad is designated as a FDOT Strategic Intermodal System (SIS) railroad that is eligible for SIS funding. Monterey Road is a 4 lane divided roadway both east and west of Dixie Highway. The roadway currently operates under satisfactory conditions at LOS D and is expected to operate below satisfactory levels at LOS E in 2040. The Monterey Road/FEC Railroad crossing has sidewalks, there are no bike lanes, it is served by MCPT and there are currently 15 school buses per school day that traverse the crossing. The roadway experiences 12 railroad crossing closures a day, with 60 mile per hour train maximum speeds and has experienced 88 crashes in the vicinity of the crossing in the last 5 years including 1 non-motorized crash and 24 serious injuries. None of the crashes included a train. The crossing is also high on the Florida Department of Transportation Safety Needs Index ranking as it is the #267th crossing in a system of 3,682 crossings and may experience as many as 54 trains a day in the future with speeds between 70 and 110 mph.

Opportunities – This same crossing has been studied a couple of times by FDOT once in 2001 and again in 2015. The 2001 study identified 4 alternatives including at-grade, elevated grade separations and a tunnel option. The 2015 study indicated that an elevated grade separation was feasible however the post-2001 study extension of the Witham Field Runway would require engineering and design work to meet Federal Aviation Administration (FAA) requirements within the Runway Protection Zone (RPZ). In order to complement the previous studies a new concept was developed for Monterey Road that includes depressing Monterey Road under the FEC crossing and Dixie Highway. The concept provides east/west connectivity on Monterey Road and avoids constructing an elevated facility that may have conflicts with the Witham Field RPZ. Note that 3 Options are also identified on the Monterey Road exhibit. The options are

provided specifically for access to Palm Beach Road and the Martin Medical Health Center from Monterey Road.

- **Option A** – provides access for eastbound Monterey Road emergency services to travel under the railroad tracks and Dixie Highway and then take a U-Turn to head westbound on Monterey Road and use a new slip road onto Palm Beach Road northbound to the Medical Center.
- **Option B** – is similar to Option A under the tracks and Dixie Highway however it provides for a new road on the north side of Monterey Road where emergency services traffic can take a left turn after coming out of the depression back to at grade and travel on a new road to Palm Beach Road..
- **Option C** – would provide for a ramp that would begin at the depth of the depressed roadway and provide a cloverleaf style ramp out of the depression meeting Dixie Highway at grade to traverse the intersection and access Palm Beach Road. This alternative has the added option of providing additional traffic and emergency services access to Witham Field.

The safety benefit analysis indicates that the proposed concept would reduce crashes by 40% per year, almost 12 crashes per year, and the design would allow for fixed access from the western communities to the Martin Memorial Medical Center and potentially the airport.

Note the concept also provides the benefit of calming surface traffic. With Monterey Road through traffic removed, only local traffic will circulate on the conceptual frontage roads shown in the exhibit and the Dixie Highway intersection will experience much less traffic. This provides an opportunity to develop a better pedestrian and bicycle environment on the surface roads.

Challenges – the concept presents right-of-way and commercial property access challenges on the west side of the railroad tracks. It appears that the concept may encroach upon one building and although the frontage roads will allow for right-in right-out access it will prohibit full access to the properties to the north and south. Mitigation for the shopping center on the south will require redesigned access on US 1 south of Dixie Highway.

The concept cost estimate is \$68.5 Million with a cost/benefit ratio of 3.7. Note that the concept will require additional operating and maintenance costs for drainage as it is a depression and Florida's high water table presents issues.

Railroad Ave. to Commerce Ave. Non-Motorized Grade Crossing over the FEC Railroad

A non-motorized pedestrian bicycle crossing concept was developed to connect the Golden Gate Community to the commercial and employment uses on the west side of the FEC corridor. Observations and data collected at the site clearly showed that there are existing paths and users are crossing the tracks on a regular basis. A concept was developed to provide connectivity between the 2 sides of the tracks using both stairs and ramps. Note that the concept identified is portable and could work at a number of

locations between Indian Street and Monterey Road. The location selected however have a canal to the south that stretches down to Indian Street and this provides an opportunity to channel users to the bridge.

Opportunities – providing a bridge at any location brings a safety benefit by providing an option to trespassing on the tracks and also provides a safe route to meet the shopping and employment needs of the community. A camera was placed on Commerce Avenue for one day at the concept location focused on a worn path that leads directly to/from the railroad tracks. On April 1, 2017, 8 pedestrians and 26 bicyclists were observed using the path and tracks. The team also heard that the community prefers that a wall be built to block trespassing onto the railroad tracks. The ramping system on the east side of the tracks meets that desire to a certain extent where the ramping infrastructure will also act as a de facto wall for a segment of the corridor.

Challenges – exist in general just getting people to use non-motorized pedestrian/bicycle bridges. Observations of pedestrians in this area showed the same traits that are experienced in many studies - that persons tend to follow desire lines and cross streets at the nearest opportunity and they are not inclined to walk to a traffic signal or an overpass to go directly across the street. Mitigation of this challenge requires channelization of pedestrians and development of a safe environment. The concept presented here includes both ramps and stairs on each side allowing persons to feel safe having options to exit the overpass and the location provides a certain level of channelization because of the canal to the south.

Note that this concept has right of way issues where it requires reuse of the Railroad Avenue right of way and coordination with a private property owner either for an easement or a right of way purchase. A lane of traffic or a row of parking will have to be repurposed on the east side to accommodate ramps and on the west side of the FEC tracks the property is all privately owned.

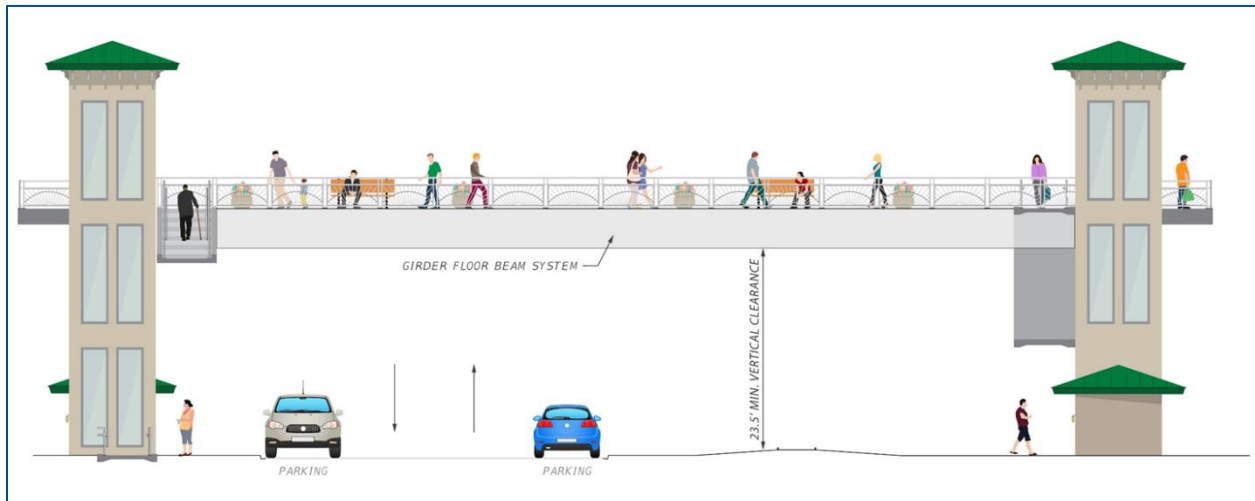
The concept cost estimate is \$3.7 Million with a cost/benefit ratio of 42.9. Note that there were challenges in calculating the safety benefit for the non-motorized locations. There is no history of a train/pedestrian trespassing crash or fatality in Martin County in the last 10 years. Considering that rail activity may increase 5 fold it was not practical to assume the same conditions will exist in the future. Crash data from the South Florida Rail Corridor (TriRail) in northern Palm Beach County was researched and 2 fatal crashes and 1 suicide were recorded occurring in the last 5 years. In order to maintain a conservative analysis it was assumed that 1 fatality every 5 years would occur under the future conditions in Martin County without a pedestrian/bicycle bridge.

Downtown Stuart Non-Motorized Grade Crossing over the FEC Railroad

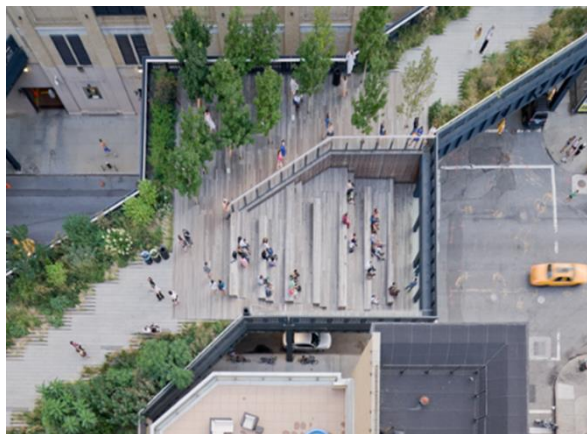
A non-motorized pedestrian bicycle crossing concept was developed to connect the east and west sides of the FEC corridor in Downtown Stuart. The concept was proposed to potentially increase economic activity on both sides of the roadway and to better connect parking on the west side of the downtown to the east side attractions.

Opportunities – exist along the corridor in this area. Cameras were placed at the St. Lucie Avenue/Joan Jefferson Way and the Colorado Avenue crossings for a Thursday, Friday and Saturday from March 30 through April 1, 2017 and a very significant amount of non-motorized activity was observed. More than 300 cyclists and 1,500 pedestrians were observed in that period at Joan Jefferson Way/St. Lucie Avenue crossing the railroad tracks and more than 120 bikes and 2,100 pedestrians at the Colorado Avenue crossing. A concept was developed just south of the Joan Jefferson Way/St. Lucie Avenue roundabout adjacent to the FEC crossing. Similar to the Railroad Avenue to Commerce Avenue connection this proposal could be portable and placed at other locations along the corridor in downtown. This location was selected to take advantage of the public parking and right of way on the west side of Dixie Highway. The concept is proposed to traverse both Dixie Highway and the FEC corridor using elevators on both the east and west sides and the concept includes additional width on the bridge platform to develop more public space. The concept shows a 50 foot wide platform that could serve multiple purposes as well as pedestrian/bicycle and parking connectivity. A sample profile and some pictures of other grade separations that have been made into public places are provided below.

Potential Profile of a Downtown Stuart Non-Motorized Crossing



High Line, New York City Grade Separation



Birmingham, Alabama Multiple Use of Underpass



Challenges – exist with right of way at this location where the utilization of ramps was not feasible and elevators are needed. Ramps on the east side would require the taking of a large portion of the on-street parking and is prohibitive on the west side as it would require significant right of way from multiple properties. The concept includes elevators that will impact 4 parking spaces on the west side and require right of way from the parking lot.

The concept cost estimate is \$4.7 Million with a cost/benefit ratio of 34.0. Note that the same process to calculate the safety benefit was used as with the Railroad Avenue to Commerce Avenue grade separation and also note that the cost estimate does not include the cost of maintaining and operating the elevators.

In summary, this study identified 11 different roadway locations for grade separation along the FEC and 5 locations for potential non-motorized separations that have the potential need and justification for consideration in future planning and programming efforts by the MPO Board. Four (4) locations were selected for concept development for the purposes of analyzing and better understanding the impacts and benefits of implementing grade separations in Martin County. This does not mean that the concepts presented in this report are a priority of the Board or that the other Tier 2 locations should not be further vetted for planning and programming.