

# **DRAFT**

# **AIR QUALITY TECHNICAL MEMORANDUM**

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## **PROJECT DEVELOPMENT AND ENVIRONMENT STUDY**

## **STATE ROAD 60 GRADE SEPARATION OVER CSX RAILROAD**

**Polk County, Florida**

**Financial Project ID: 436559-1-22-01**

Prepared for:



**Florida Department of Transportation**  
District One  
P.O. Box 1249  
Bartow, FL 33831-1249

**October 2016**

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Prepared by:

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**October 2016**

## 1.0 INTRODUCTION

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) study to evaluate costs and impacts of constructing a new overpass to carry State Road (SR) 60 over the CSX railroad (milepost 25.544, crossing #625419N) approximately eleven (11) miles east of Bartow and four (4) miles west of Lake Wales in Polk County, Florida. The project location map (**Figure 1**) illustrates the location and limits of the study. The Design and permitting phase is overlapping with the PD&E phase to facilitate a quicker delivery process.

The PD&E study limits are SR 60 from 3,900 feet (ft) west of CSX railroad crossing #625419N to 2,700 ft east of the CSX railroad crossing #625419N, a distance of 6,600 ft (1.25 miles). The project is located within Section 01, Township 30 South, Range 26 East, and Section 6, Township 30 South, Range 27 East, within the Eloise United States Geological Survey (USGS) 7.5-minute (1:24,000) quad map and the USGS “Fort Pierce” 1 x 2 degree (1:250,000) topographic map.

## 2.0 PURPOSE AND NEED

The purpose of the project is to replace the existing SR 60 at-grade railroad crossing with a grade separation. The need for the project is not based on the need for additional capacity. It is based on improving safety; to provide a grade separation of the railroad crossing to separate vehicle traffic from the train traffic. The project will also reduce travel delays by removing the need to stop traffic for trains. The purpose of the PD&E study is to provide documented environmental and engineering analyses to assist the FDOT in reaching a decision on the location and conceptual design of the new railroad overpass and associated improvements in order to accommodate future traffic demand in a safe and efficient manner. This PD&E study satisfies the FDOT requirements and follows the process outlined in the FDOT Project Development and Environment Manual, Part 1 Chapter 10: State, Local, or Privately Funded Projects.

This PD&E study documents the need for the improvements and presents the procedures utilized to develop and evaluate the overpass concept. Information relating to the engineering, environmental, and social characteristics essential for development of the railroad overpass concept was collected. Design criteria were established and a preliminary alternative was developed. The evaluation of the overpass concept was based on a variety of parameters utilizing a matrix format. This process identifies the Recommended Alternative that minimizes the socio-cultural, economic, natural, and physical impacts while providing the necessary future transportation improvements. The study also solicits input from the community and users of the facility. The design year for the analysis is 2040.

Figure 1: Project Location Map



	<p><b>SR 60 Grade Separation over CSX Railroad</b> Polk County, Florida</p> <p>Financial Project ID: 436559-1-22-01</p> <div data-bbox="1522 1230 1627 1399"><p><b>PROJECT LOCATION MAP</b></p></div>	
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### 3.0 EXISTING AND PROPOSED IMPROVEMENTS

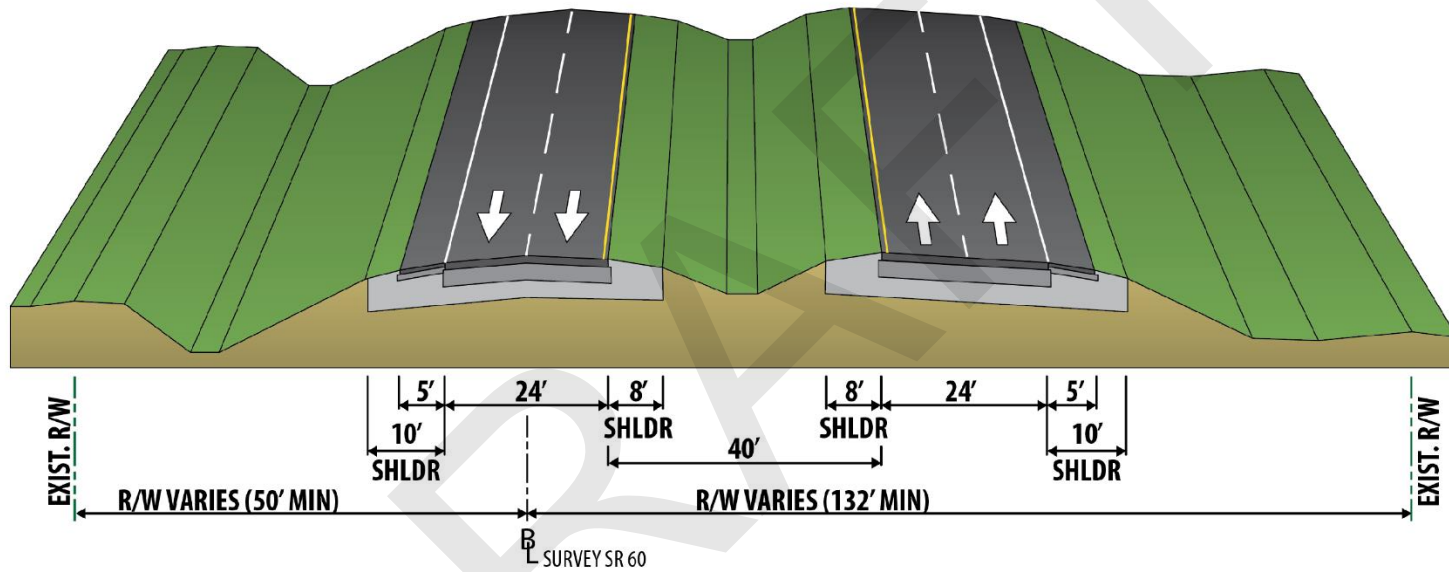
SR 60 is a four-lane divided rural roadway within the study area as shown in **Figure 2**. Two 12-ft lanes, an 8-ft inside shoulder and a 10-ft outside shoulder (5-ft paved) are provided in each direction, separated by a 40-ft depressed, grassed median. SR 60 is carried over the Peace Creek Drainage Canal on two bridges; eastbound (EB) bridge number 160133 and westbound (WB) bridge number 160045 (**Figure 3**). Exclusive right turn lanes are provided at the median openings serving C&J Trucking, Peterson Industries and the former International Paper property. No sidewalks are present. Bicyclists are accommodated on the 5-ft paved outside shoulders. The existing westbound roadway is crowned in the center, whereas the eastbound roadway slopes to the outside. The typical existing controlled access right-of-way (ROW) width varies, typically 182 ft wide; however, some wider areas exist throughout the study area, up to 232 ft wide. In the existing condition, the stormwater runoff from the roadway sheet flows offsite and into roadside ditches to the Peace Creek Drainage Canal.

The project is a 1.25-mile-long segment of SR 60 that includes elevating the SR 60 roadway over the existing CSX railroad at-grade crossing. The roadway will be elevated using permanent retaining walls (i.e. MSE walls). Three new pairs of SR 60 bridge structures are proposed over the existing CSX railroad, over an existing underground petroleum pipeline, over a proposed frontage road, and over the Peace Creek Drainage Canal. The existing eastbound SR 60 bridge over the Peace Creek Drainage Canal will be rehabilitated and reused for frontage road access and the westbound bridge will be removed. Sidewalks, bicycle lanes, and three new frontage roads will be included in the improvements. Two off-site stormwater management facilities (SMFs) are proposed.

The proposed SR 60 typical section is a four-lane divided rural roadway with a 23.5-ft median that varies from 23.5 ft to 40 ft, which includes two 10-ft 9-inch paved inside shoulders and a center barrier wall. Two 12-ft travel lanes, 12-ft of additional pavement for a future lane, and a 10-ft flush outside paved shoulders are provided in each direction. Bicyclists will be accommodated on 7-ft buffered bike lanes within the outside 10-ft paved shoulder in each direction. An 8-ft 3-inch sidewalk, barrier-separated from the shoulder, is also provided in each direction. The travel lanes are on embankment with mechanically stabilized earth (MSE) walls approaching the bridges over the railroad. The proposed design speed for this typical section is 70 mph. A frontage road is required on the south side, west of the railroad tracks, which will utilize the existing eastbound roadway pavement. Another frontage road is required on the north side, east of the railroad tracks, which will utilize new pavement. A driveway is provided on the north side to provide access to adjacent parcels, as shown in the Concept Plans. ROW acquisition will be required to accommodate the driveways. These typical sections require between 267 ft and 432 ft of ROW, with ROW being acquired on both sides of SR 60 (predominantly on the north side).



**Figure 2: Existing SR 60 Mainline Roadway Typical Section**



**SR 60 Grade Separation over CSX Railroad  
Polk County, Florida**

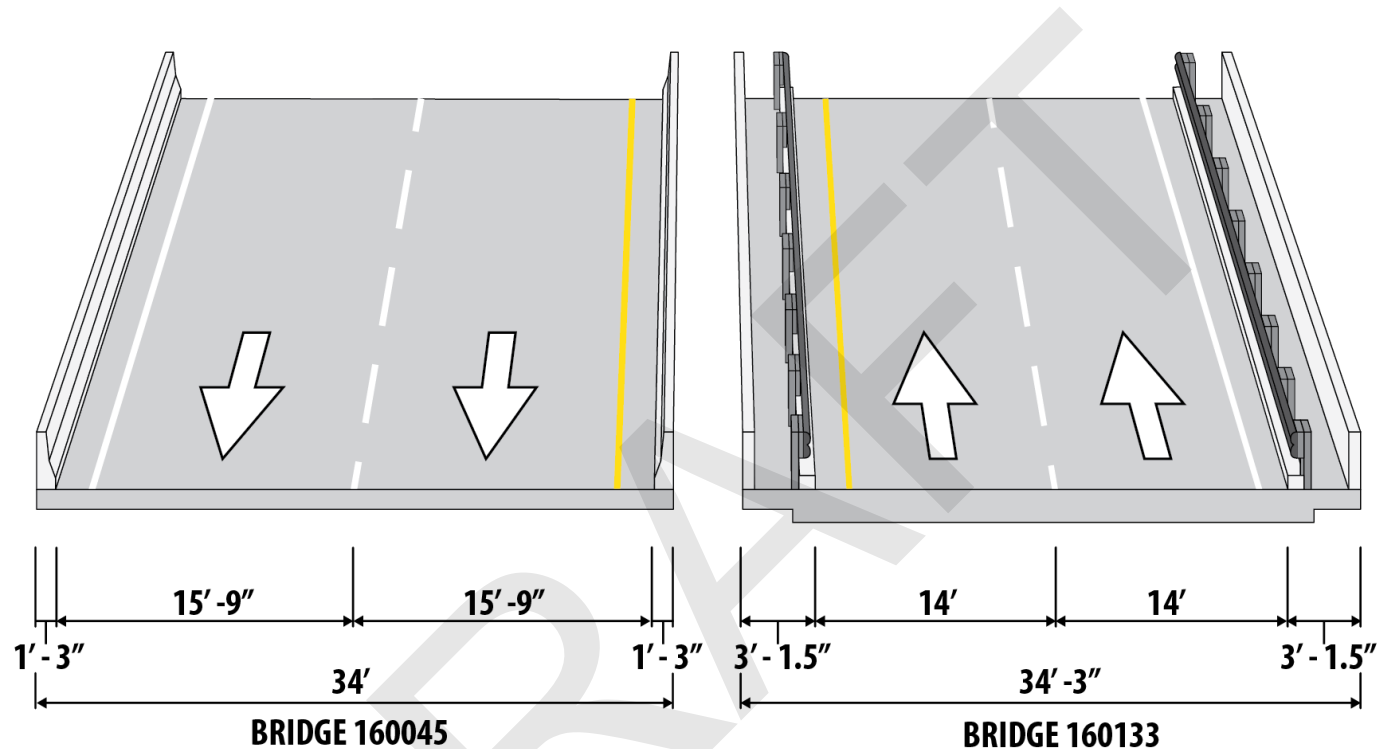
Financial Project ID's: 436559-1-22-01



**Existing Typical Section**



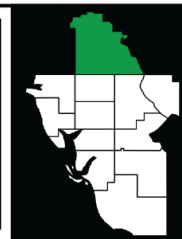
**Figure 3: Existing Roadway Typical Section for the WB and EB bridges over the Peace Creek Drainage Canal**



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**Existing Bridge Typical Section**



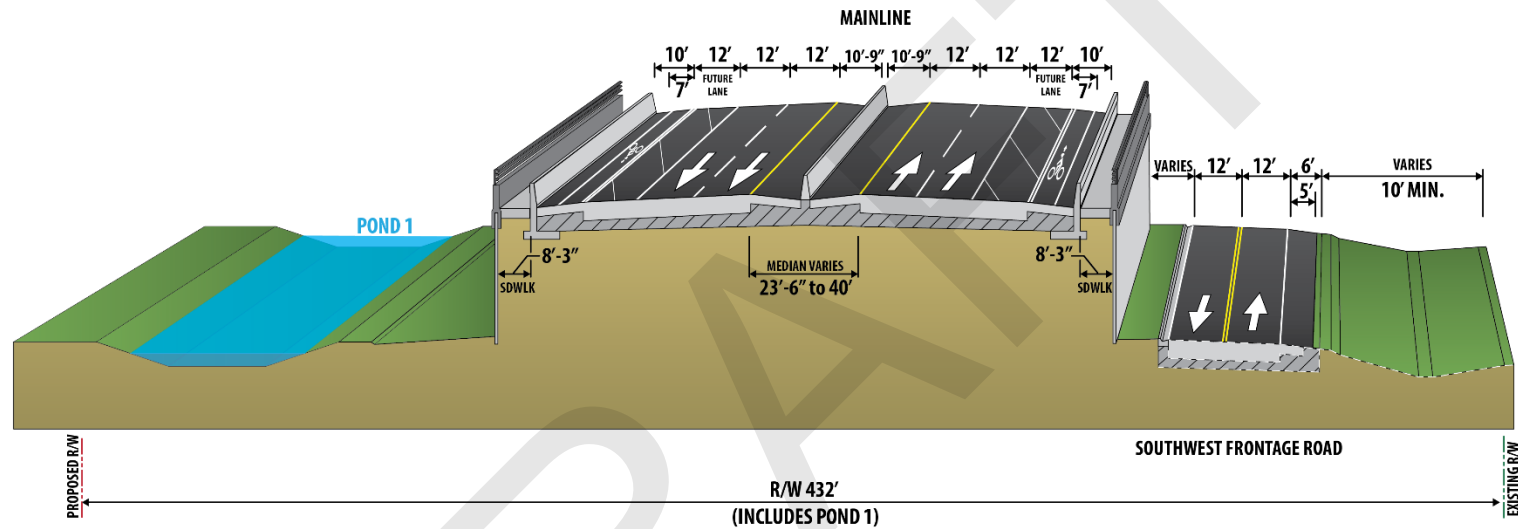
The proposed typical sections for the Recommended Alternative are shown in **Figures 3a-3d**. The proposed improvements will require a total of 6.0 acres of new ROW along the SR 60 mainline.


Two off-site stormwater management facilities (ponds) are needed. Pond 1, on the north side of SR 60 west of the Peace Creek Drainage Canal, will require approximately 2.93 acres of new ROW that will be obtained via a land swap with a private land owner for comparable acreage of land owned by FDOT (a former borrow pit). Pond 3 is approximately 3.79 acres on the north side of SR 60 east of the CSX railroad and will not require ROW acquisition as it is located on a parcel already owned by FDOT. A minor amount (0.03 acre) of drainage easements will be needed for pond inflow/ outfall facilities and maintenance ingress/egress to the ponds. The project will affect eleven (11) parcels, but will not require any business or residential relocations.

Three new pairs of SR 60 bridge structures are proposed over the existing CSX railroad, over an existing underground petroleum pipeline, over a proposed frontage road, and over the Peace Creek Drainage Canal. The existing eastbound SR 60 bridge over the Peace Creek Drainage Canal will be rehabilitated and reused for frontage road access and the westbound bridge will be removed. While the purpose and need for this project is not to add capacity, an ultimate six-lane facility for the bridge structures was evaluated in order to accommodate future widening along SR 60, eliminate the future need to reconstruct the bridges and minimize the potential for multiple ROW acquisitions from the same property owners. A graphic providing an overview of the proposed improvements is provided as **Figure 4**.



**Figure 3a: Proposed Roadway Typical Section West of the Peace Creek Drainage Canal**






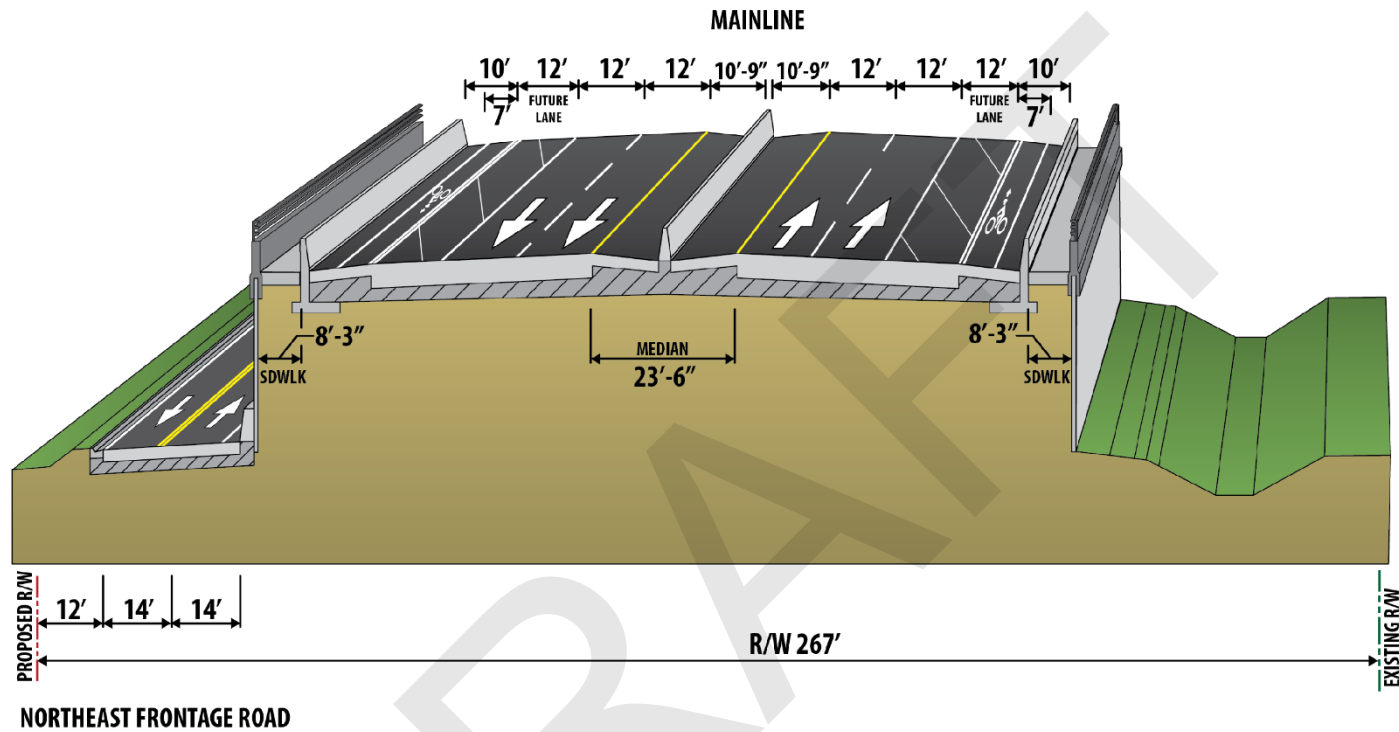
**SR 60 Grade Separation over CSX Railroad**  
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Proposed Typical Section



**Figure 3b: Proposed Roadway Typical Section East of the CSX Railroad**



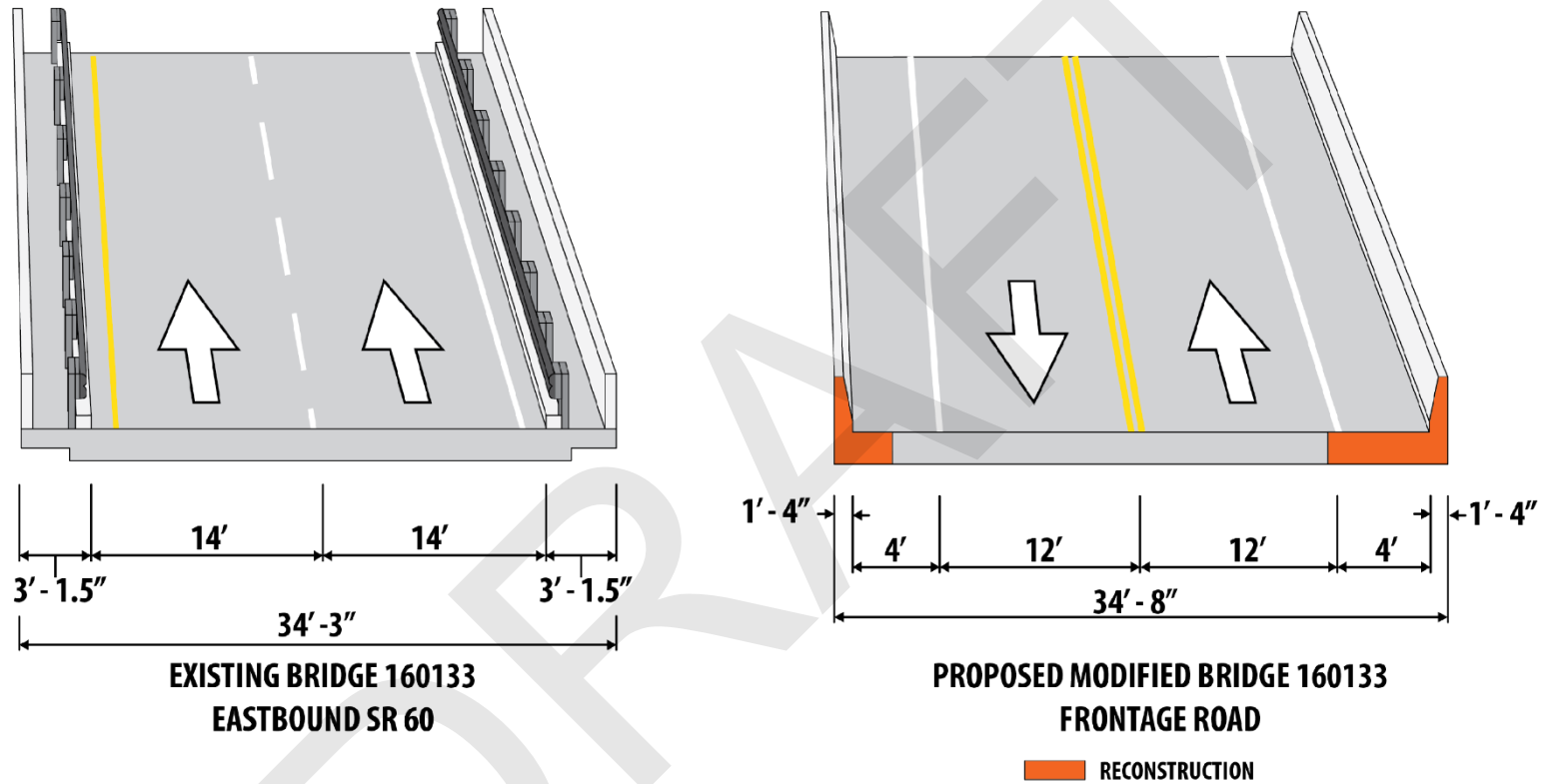
	<p><b>SR 60 Grade Separation over CSX Railroad</b>  <b>Polk County, Florida</b></p>	
<p>Financial Project ID: 436559-1-22-01</p>		<p><b>Proposed Typical Section</b></p>

The diagram illustrates a two-lane road with a center turn lane. The road is shown from a perspective view, with a cross-section at the bottom. The road has a total width of 68' - 2 1/2". The center turn lane is 10' - 4 1/2" wide. The travel lanes are 24' wide. The shoulder is 8' - 2" wide. The diagram also shows the lane markings, including a dashed line for the center turn lane and solid lines for the travel lanes. The cross-section at the bottom shows the road surface, the center turn lane, and the shoulder. The dimensions are given in feet and inches.

Section	Width
Shoulder (SDWLK)	8' - 2"
Travel Lane	24'
Center Turn Lane	10' - 4 1/2"
Travel Lane	24'
Shoulder (SDWLK)	8' - 2"
<b>Total Road Width</b>	<b>68' - 2 1/2"</b>

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Figure 3d: Frontage Road Bridge Typical Section



SR 60 Grade Separation over CSX Railroad  
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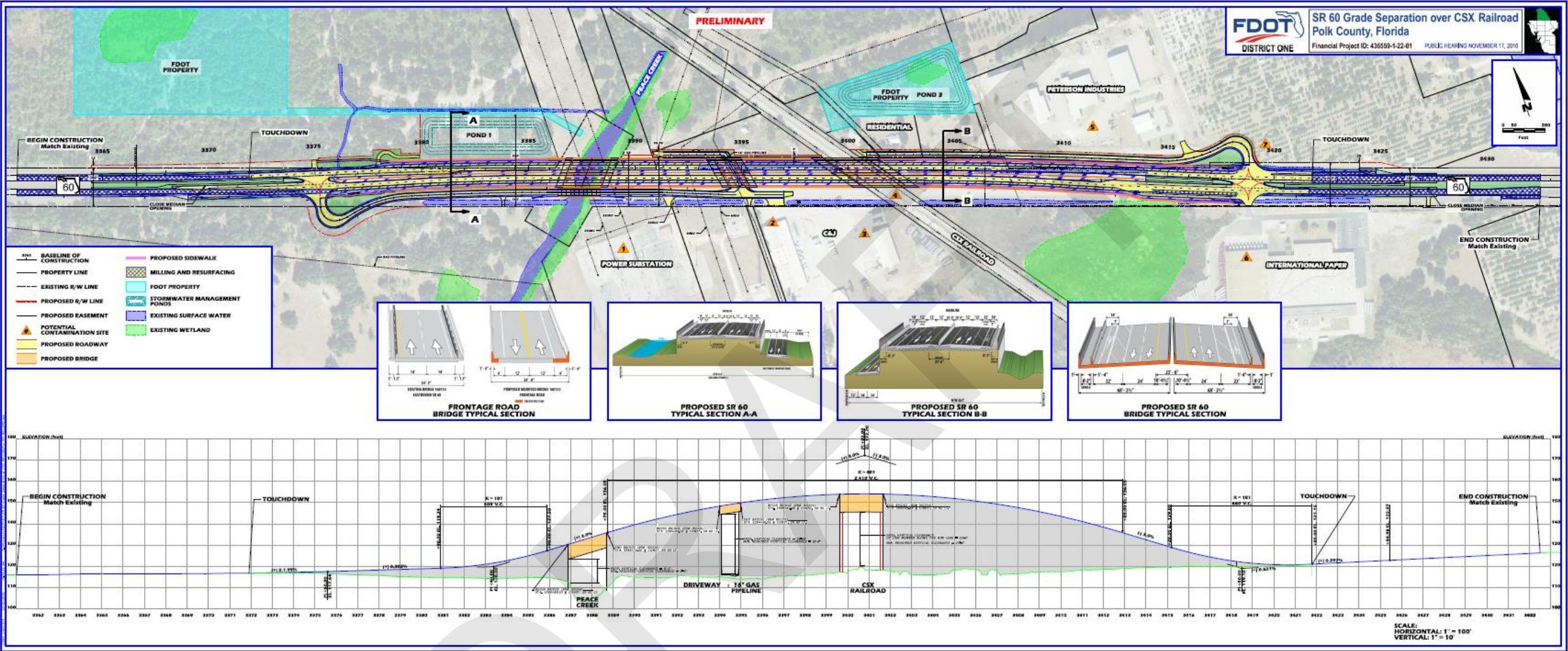
Financial Project ID: 436559-1-22-01

Proposed Bridge Typical Section





Figure 4: Proposed SR 60 at CSX Railroad Improvements (including stormwater ponds)



## 4.0 AIR QUALITY EVALUATION

A preliminary, non-quantitative evaluation of air quality considerations was completed for this project. This evaluation was completed to document that the subject project improvements will not result in significant air quality impacts.

The proposed improvements have been compared against other local proposed improvements, most notably the proposed improvements at the US 27/SR 60 interchange associated with the US 27 PD&E Study from the Polk/Highlands County Line to north of SR 60 (FPID# 419243-1-22-01). The US 27/SR 60 interchange is approximately 3.65 miles due east of the subject grade separation project location. The US 27 PD&E Study's improvements at the US 27/SR 60 interchange are anticipated to include the reconstruction of the existing partial cloverleaf interchange to a Single Point Urban Interchange (SPUI) (see **Figure 5**). This alternative replaces the existing partial cloverleaf interchange with a four-ramp configuration connecting the freeway (SR 60) to the surface road (US 27). This improvement provides additional turn lanes at the ramp terminals intersecting at a single signalized juncture. A two-lane, two-way frontage road was added to the southwest quadrant of the interchange so that all access management issues could be properly addressed. The proposed urban typical section will widen SR 60 from its existing four lanes to six 11-ft lanes, a 22-ft median, 7-ft buffered bicycle lanes, and 5-ft sidewalks.

Motor vehicle emissions are typically highest at intersections where operating speeds are slower and vehicles are delayed at traffic signals. A review of traffic data documented in the US 27 PD&E Study *Project Traffic Report* showed the US 27/SR 60 interchange and associated ramp intersections as having the highest vehicle approach volumes. Therefore, the subject grade separation project is compared against the US 27/SR 60 interchange (based on the local geographic location and significantly higher traffic volume) as a worst-case scenario for air quality.

An air quality analysis, specifically an analysis of carbon monoxide (CO) concentrations, was performed for the US 27 PD&E Study using methodology established in the Florida Department of Transportation (FDOT's) Project Development and Environment (*PD&E Manual*, Part 2, Chapter 16. CO levels were predicted using FDOT's screening model *CO Florida 2012*. The results of this analysis were documented in the US 27 PD&E Study's *Final Air Quality Technical Memorandum* (September 2016) and are not repeated here.





## 5.0 RESULTS

Based on the worst-case results modelled for capacity improvements at the US 27/SR 60 interchange during the US 27 PD&E study, the highest predicted CO concentrations were estimated at 6.4 parts per million (ppm) for a 1-hour averaging time and 3.8 ppm for an 8-hour averaging time. All predicted CO concentrations for the No-Build and Build conditions in the opening year (2020) and design year (2040) are below the National Ambient Air Quality Standards (NAAQS) of 35 ppm for a 1-hour averaging time and the NAAQS of 9 ppm for an 8-hour averaging time. The predicted 1-hour and 8-hour concentrations include a background CO level of 3.3 ppm and 2.0 ppm, respectively. Despite having significantly higher traffic volumes and associated vehicle exhaust emissions, the US 27/SR 60 proposed condition does not result in adverse air quality impacts.

Similarly, the significantly reduced traffic volumes and exhaust emissions in the vicinity of the SR 60 at CSX Railroad grade separation project do not result in significant air quality impacts.

## 6.0 CONCLUSION

Although all phases of this project are State-funded and the environmental class of action is a State Environmental Impact Report (SEIR), as per the FDOT PD&E Manual Part 1, Chapter 10 *State, Local, or Privately-funded Project Delivery*, the level of environmental documentation is anticipated to be comparable to a Type 2 Categorical Exclusion (CE). A CE is a project or category of actions which do not individually or cumulatively have a significant/adverse impact.

With respect to air quality, PD&E Manual Part 2, Chapter 16 *Air Quality* states:

### *16.2.2.1 Categorical Exclusions*

*Projects evaluated as Categorical Exclusions (CEs) are projects that do not involve significant environmental impacts. These types of projects typically have no effect on area-wide air quality levels, but may provide some air quality benefits on a local basis. As such, FHWA has indicated that an air quality analysis is generally not necessary.*

As discussed previously in Section 2.0 of this document, the need for the project is not based on the need for additional capacity. It is based on improving safety; to provide a grade separation of the railroad crossing to separate vehicle traffic from the train traffic. The project will also reduce travel delays by removing the need to stop traffic for trains, which will in turn reduce the concentrated discharge of exhaust emissions from these vehicles. Reducing vehicle exhaust emissions will serve to have a net benefit on air quality.

Construction activities for the project may have short-term air quality for those residents and travelers within the immediate vicinity of the project. The air quality effect will be temporary and will primarily be in the form of emissions from diesel-powered construction equipment and dust from embankment and haul road areas. Air pollution associated with the creation of airborne

particles will be effectively controlled through the use of watering or the application of other controlled materials in accordance with FDOT's *Standard Specifications for Road and Bridge Construction*.

### **State Implementation Plan Conformity**

The project is in an area that has been designated as attainment for all of the NAAQS established by the Clean Air Act and subsequent amendments. Therefore, demonstration of conformity with a State Implementation Plan (SIP) is not required for this project.

### **Green House Gases**

Green House Gasses (GHG) cause a global phenomenon in which heat is trapped in the earth's atmosphere. Because atmospheric concentration of GHGs continues to climb, our planet will continue to experience climate-related phenomena. For example, warmer global temperatures can cause changes in precipitation and sea levels. The burning of fossil fuels and other human activities are adding to the concentration of GHGs in the atmosphere. Many GHGs remain in the atmosphere for time periods ranging from decades to centuries.

To date, no national standards have been established regarding GHGs, nor has United States Environmental Protection Agency (EPA) established criteria or thresholds for ambient GHG emissions pursuant to its authority to establish motor vehicle emission standards for carbon dioxide (CO<sub>2</sub>) under the Clean Air Act. GHGs are different from other air pollutants evaluated in the Federal environmental reviews because their impacts are not localized or regional due to their rapid dispersion into the global atmosphere, which is characteristic of these gases. The affected environment for CO<sub>2</sub> and other GHG emissions is the entire planet. In addition, from a quantitative perspective, global climate change is the cumulative result of numerous and varied emissions sources (in terms of both absolute numbers and types), each of which makes a relatively small addition to global atmospheric GHG concentrations. In contrast to broad scale actions such as actions involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the GHG emissions impacts for a particular transportation project. Furthermore, presently there is no scientific methodology for attributing specific climatological changes to a particular transportation project's emissions.

Under NEPA, detailed environmental analysis should be focused on issues that are significant and meaningful to decision-making (40 CFR 1500.1(b), 1500.2(b), 1500.4(g), and 1501.7). FHWA has concluded, based on the nature of GHG emissions and the exceedingly small potential GHG impacts of the proposed action that the GHG emissions from the proposed action will not result in "reasonably foreseeable significant adverse impacts on the human environment" (40 CFR 1502.22(b)). The GHG emission from the project build alternatives will be insignificant, and will not play a meaningful role in a determination of the environmentally preferable alternative or the selection of the preferred alternative. More detailed information on GHG emissions "is not essential to a reasoned choice among reasonable alternatives" (40 CFR 1502.22(a)) or to making



a decision in the best overall public interest based on a balanced consideration of transportation, economic, social, and environmental needs and impacts (23 CFR 771.105(b)).

This document does not incorporate an analysis of the GHG emissions or climate change effects of each of the alternatives because the potential change in GHG emissions is very small in the context of the affected environment. Because of the insignificance of the GHG impacts, those local impacts will not be meaningful to a decision on the environmentally preferable alternative or to a choice among alternatives. For these reasons, no alternatives-level GHG analysis has been performed for this project.

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