Air Quality Technical Memorandum

SR 9/Interstate 95 from South of SR 869 (SW 10 Street- MP 22.00)
to North of SR 810 (Hillsboro Boulevard- MP 25.10)
Project Development & Environment Study
Broward County, Florida

Financial Management Number: 436964-1-22-01
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Prepared For:
Florida Department of Transportation, District IV

October 2019

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016, and executed by FHWA and FDOT.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

The Florida Department of Transportation (FDOT) District Four is conducting a Project Development and Environment (PD&E) Study, in accordance with the National Environmental Policy Act (NEPA), to assess potential operational and safety improvements along 3.1 miles of Interstate 95 (I-95), from just south of the SW 10th Street interchange [Mile Post (MP) 22.0] to just north of the Hillsboro Boulevard (Blvd) interchange (MP 25.10), in Broward County, Florida.

The project extends along I-95 from just south of SW 10th Street to just north of Hillsboro Boulevard and along both SW 10th Street from just west of Military Trail east to SW Natura Boulevard and along Hillsboro Boulevard from Goolsby Boulevard east to SW Natura Boulevard. The entire project lies within the city of Deerfield Beach. I-95 is part of the Strategic Intermodal System and the National Highway System which is Florida's high priority network of transportation facilities important to the state's economy, mobility and defense.

This study will evaluate the potential modification of the existing merge and diverge ramp areas along I-95 from just south of the SW 10th Street interchange to just north of the Hillsboro Blvd. Interchange. Improvements to the I-95 partial cloverleaf interchanges at SW 10th Street and Hillsboro Boulevard as well as improvements along SW 10th Street and Hillsboro Blvd. will also be considered.

The project study area is shown in **Figure 1-1**.

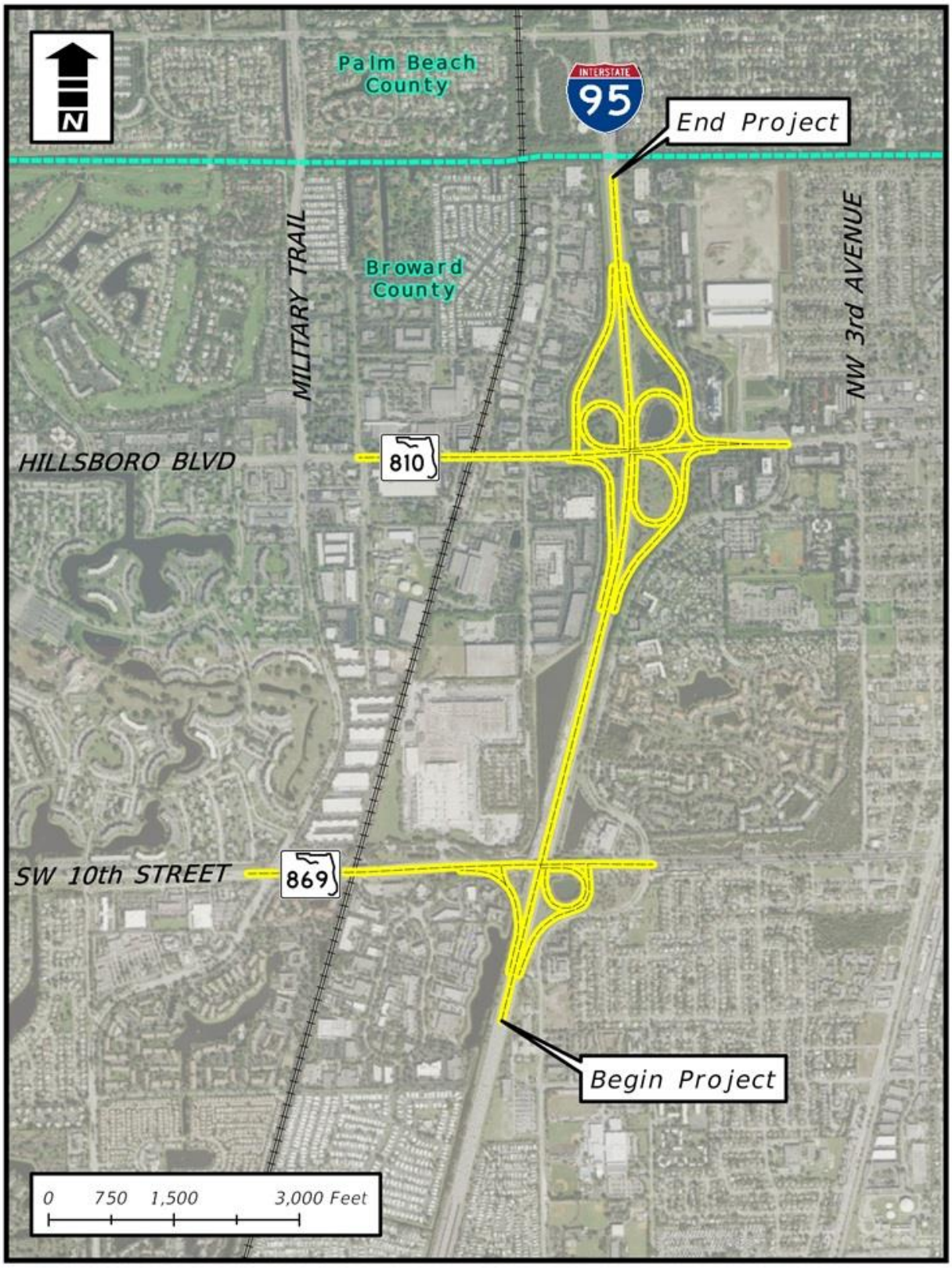

Figure 1 - 1: Project Study Area

1.1 Purpose and Need

The purpose of this project is to eliminate existing operational and safety deficiencies along I-95 between and including the interchanges at SW 10th Street and Hillsboro Boulevard, and on SW 10th Street and Hillsboro Boulevard in the vicinity of I-95. The primary need for the project is based on capacity/operational and safety issues, with secondary considerations for the needs of evacuation and emergency services, transportation demand, system linkage, modal interrelationships, and social demands and economic development.

1.1.1 Capacity/Operational Deficiencies

A need exists to improve traffic operations along I-95 between the SW 10th Street and Hillsboro Boulevard interchanges, especially at existing merge and diverge ramps that are the sources of traffic turbulence and collisions. The mainline directional volumes range from 4,400 to 5,850 vehicles per hour (vph) with ramp volumes from 800 to 1,250 vph at SW 10th Street and 400 to 1,000 vph at Hillsboro Boulevard.

Operational analyses along I-95 indicate that all freeway segments in the study area operate at Level of Service (LOS) D or better except for the following:

- The diverge segment at I-95 southbound (SB) off-ramp to SW 10th Street eastbound (EB) and westbound (WB) during the AM and PM peak periods;
- The I-95 mainline segment between I-95 SB on-ramp from SW 10th Street EB and WB and I-95 SB off-ramp to Sample Road EB and WB during the PM peak period;
- The I-95 mainline between I-95 SB On-Ramp from Palmetto Park Boulevard EB and I-95 SB Off-Ramp to Hillsboro Boulevard EB and WB during the AM peak period;
- The merge at I-95 SB on-ramp from Hillsboro Boulevard WB during AM and PM peak periods; and
- The diverge segment at I-95 northbound (NB) off-ramp to Hillsboro Boulevard EB during the AM peak period.

These conditions are existing concerns and are projected to worsen in the future if no action is taken. Year 2040 traffic projections show the mainline directional volumes ranging from 6,000 to 7,300 vph. Year 2040 peak hour directional volumes on I-95 Express are forecasted to range an additional 1,300 to 2,550 vph within the I-95 corridor. Operational analyses under the "No-Action" option in year 2040 reflects implementation of two major programmed improvements: 1) I-95 Express Phase 3 (and 2) I-95 Ramp Metering. All of the mainline freeway segments in the study area would operate at a deficient LOS (E or F) during one or both peak periods with the exception that the merge segment for I-95 SB On-Ramp from WB Hillsboro Boulevard would operate at LOS D during the PM peak hour.

1.1.2 Safety

A need exists to resolve safety issues within the project limits along I-95 as well as SW 10th Street and Hillsboro Boulevard. Crash analyses for the years 2008 through 2012 reveal that the I-95 segment within the Hillsboro Boulevard interchange area is classified as a high crash segment for four of the five study years. It should also be noted that the existing interchanges are closely located together and have short weave distances. Crash rates along SW 10th Street in the vicinity of I-95 exceed the statewide average for similar facilities for all five study years, but the segment along Hillsboro Boulevard in the vicinity of I-95 does not. Field observations indicate that the number of crashes along the Hillsboro Boulevard project segment may be influenced by queues extending from the railroad crossing into this area.

1.1.3 Evacuation and Emergency Services

The South Florida region has been identified by the National Oceanic and Atmospheric Administration (NOAA) as an area with a high degree of vulnerability to hurricanes and the Florida Division of Emergency Management has designated specific evacuation routes through the region. Both SW 10th Street and Hillsboro Boulevard are designated as emergency evacuation routes from I-95 to SR 5/US-1 and A1A. I-95 is designated as an emergency evacuation route throughout Broward County. A need exists to enhance capacity and traffic circulation along evacuation routes to improve evacuation and enhance emergency response.

1.1.4 Transportation Demand

A need exists to improve capacity and safety while meeting transportation demand and maintaining consistency with other transportation plans and projects, such as the Broward County Interchange Master Plan (IMP) and I-95 Express Lanes Phase III Project. The project is included in the FDOT Work Program with PE is scheduled for fiscal years 2017 and 2018. The Broward County MPO 2035 Long Range Transportation Plan (LRTP) included improvements to all I-95 interchanges in Broward County under Illustrative Roadway Projects. Illustrative projects are those that cannot be included in the cost feasible plan due to financial constraints but could be included in a future approved Transportation Improvement Program.

1.1.5 System Linkage

A need exists to ensure that I-95 continues to meet the minimum requirements of a component of the state's SIS and the National Highway System (NHS), as well as provides access connectivity to other major arterials such as I-595 and Florida's Turnpike SIS and the National Highway System (NHS), as well as provides access and connectivity to other major arterials such as I-595 and Florida's Turnpike.

1.1.6 Modal Interrelationships

There exists a need for capacity improvements along the I-95 project corridor to enhance the mobility of public transit and goods by alleviating current and future congestion along the corridor and on the surrounding freight and transit networks. Reduced congestion will serve to maintain and improve viable access to the major transportation facilities and businesses of the area.

Increased mobility to public transit operations are needed and will benefit as a result of this project. Although no designated Broward County Transit (BCT) Routes are provided within the SW 10th Street interchange area, Hillsboro Boulevard is serviced by BCT Route #48, which provides a connection from SR 7 to Deerfield Beach including a direct connection to the Deerfield Tri-Rail Station located just west of the Hillsboro interchange.

1.1.7 Social Demands and Economic Development

Social and economic demands on the I-95 corridor will continue to increase as population and employment increase. The Broward County MPO 2035 LRTP predicted that the population would grow from 1.7 million in 2005 to 2.3 million by 2035, an increase of 29 percent. Jobs were predicted to increase from 0.7 to 1 million during the same time period, an increase of 37 percent. A need exists for the proposed improvements to support the predicted social and economic travel.

2.0 PROJECT STUDY AREA

The project study area consists of the existing and proposed right-of-way (ROW) limits for the viable Build Alternatives and also includes the No-Action Alternative. The study area is of sufficient size to identify potential direct and indirect effects of the viable Build Alternatives on habitats and wildlife species that may occur within or adjacent to the project corridor. For the purpose of this study, the two viable Build Alternatives discussed for SW 10th Street are the North alignment and Center alignment, which encompass all proposed roadway improvements along I-95, SW 10th Street, and Hillsboro Boulevard. The project footprint is the same for both Alternatives along I-95 and Hillsboro Boulevard. The project footprint varies slightly between the two Build Alternatives along SW 10th Street.

2.1 Environmental Setting

The project is located within a densely developed urban region of northern Broward County. Along the existing I-95 corridor within the project study area, adjacent lands are characterized by residential subdivisions, individual residences, commercial developments, and business and industrial complexes.

2.2 Existing Land Use

The project is located in northern Broward County and traverses the northern region of Deerfield Beach. West of I-95 within the project limits, the dominant land uses are industrial and commercial, including a Publix distribution center and several hotels at the interchanges. Additional land uses west of I-95 include City of Deerfield government offices located west of the CSX railroad and south of Hillsboro Boulevard, and a residential development southwest of SW 10th Street and the railroad. East of I-95 and south of Hillsboro Boulevard, land use is mainly single and multi-family residential with a mixture of commercial development at the interchanges. North of Hillsboro Boulevard, land use is mainly commercial along I-95 and Hillsboro Boulevard. Set behind the commercial development is the former Deerfield Country Club Golf Course.

2.3 Future Land Use

The City of Deerfield Beach Future Land Use Map (adopted December 3, 2013) predicts that land uses within the project area will remain similar except for the conversion of the former Deerfield Country Club Golf Course into an employment center. The anticipated employment center has been branded as the Hillsboro Technology Center.

2.3.1 SW 10th Street Interchange

The City of Deerfield Beach Future Land Use Map shows the area west of the SW 10th Street Interchange as Industrial. The NE quadrant of the interchange is shown as Residential Moderate (10 DU/AC), Commercial and Conservation. The SE quadrant shows as Community Facility, Recreation Open Space, Residential- Medium (15 DU/AC), Residential Moderate (10 DU/AC) and Residential Low (5 DU/AC).

2.3.2 Hillsboro Boulevard Interchange

The City of Deerfield Beach Future Land Use Map shows the NW quadrant of the Hillsboro Boulevard Interchange as Industrial and Commercial while the NE quadrant is shown as Industrial, Commercial, Recreation Commercial, Recreation Open Space and Employment Center. The SE quadrant shows as Commercial, Residential Moderate (10 DU/AC) and Recreation Open Space. The SW quadrant shows as Commercial, Industrial and York Residential Transit Oriented Development.

3.0 EXISTING CONDITIONS

Due to the uniqueness of this project, the analysis and evaluation of the existing conditions were separated into three corridors; I-95 (SR 9), SW 10th Street (SR 869) and Hillsboro Boulevard (SR 810). Data gathering for each of these corridors focused on the areas of roadway, bridge and environmental characteristics. Assessment of the existing conditions began with the collection and review of all data pertaining to the existing facilities which included conducting on-site field inventories, review of existing documents, as well as, review of other pertinent data used for the evaluation of these transportation facilities.

3.1 Functional Classification

The roadway network within the project study area is comprised of interstate expressways, state roads, county roads and local roads that provide access and traffic circulation within residential, commercial and industrial areas.

3.1.1 I-95

Within the limits of the study for access management, I-95 is defined as Limited Access Class 1.2 Freeway in an Existing Urbanized Area with a functional classification as an urban principal arterial interstate. I-95 is an essential part of the SIS and NHS networks. Within the limits of the project, I-95 has six general purpose lanes (three in each direction) and two Express (EP) lanes (one in each direction).

3.1.2 SW 10th Street

SW 10th Street has a functional classification as an urban principal arterial other. SW 10th Street is classified as a six-lane divided State Principal arterial west of I-95 and as a six-lane divided City Minor Arterial east of I-95. In addition, it is on the SHS and SIS systems being classified as a SIS corridor.

3.1.3 Hillsboro Boulevard

Hillsboro Boulevard has a functional classification as an urban principal arterial other. Hillsboro Boulevard is classified as a six-lane divided State Minor Arterial west of I-95 and as a State Principal Arterial east of I-95. In addition, it is on the SHS and SIS systems being classified as a SIS corridor classification as an urban principal arterial from the intersection at Goolsby Boulevard (MP 4.760) to I-95 (MP 5.365) Hillsboro Boulevard since it connects the I- 95 Expressway to South Florida Rail Corridor.

3.2 Access Management

3.2.1 I-95

The access management classification for the I-95 corridor is Class 1.2, Freeway in an existing urbanized area with limited access.

3.2.2 SW 10th Street

Southwest 10th Street is designated as Class 3 for access management.

3.2.3 Hillsboro Boulevard

Hillsboro Boulevard is designated as Class 5 for access management.

3.3 Typical Sections

The following **Table 3-1** depicts the existing typical section characteristics for each corridor.

Table 3 - 1: Existing Typical Section Characteristics

Typical Section Element	Roadway		
	I-95	SW 10th Street	Hillsboro Boulevard
Number of Travel Lanes	8	6	6
Travel Lane Width	12 ft	11-12 ft	11 ft
Parking Lane Width	n/a	n/a	n/a
Curb and Gutter	n/a	Type F	Type F
Inside Shoulders Width	12 ft	n/a	n/a
Outside Shoulders Width (Bike Lane)	12 ft	Varies 4 - 8 ft	Varies 4-6 ft
Median Width	26.5 ft	14 to 17.5 ft	15.5 ft
Sidewalk Width	n/a	Varies 5-6 ft	Varies 6-7 ft
Right-of-Way Width	240 ft – 300 ft	106 ft (+)	106 – 136 ft

3.3.1 I-95

Within the limits of the study, I-95 is an eight-lane divided limited access facility consisting primarily of a two and a half-foot center barrier wall with two twelve-foot paved inside shoulders (one in each direction). The inside lane in each direction is a twelve-foot wide EP lane with a two-foot striped buffer area separating the EP lane from the three twelve-foot general purpose lanes. In each direction, along the outside of the general purpose lanes is a twelve-foot shoulder [ten-foot paved and two-foot unpaved]. In the NB direction, a twelve-foot auxiliary lane exists between the SW 10th Street on-ramp and Hillsboro Boulevard off-ramp. Additionally, in the SB direction a twelve-foot auxiliary lane exists between the Hillsboro Boulevard on-ramp and SW 10th Street off-ramp. The existing roadway segment is depicted in **Figure 3-1** and typical section for this corridor is shown in **Figure 3-2**.

Figure 3 - 1: Existing Roadway Segment – I-95 Corridor

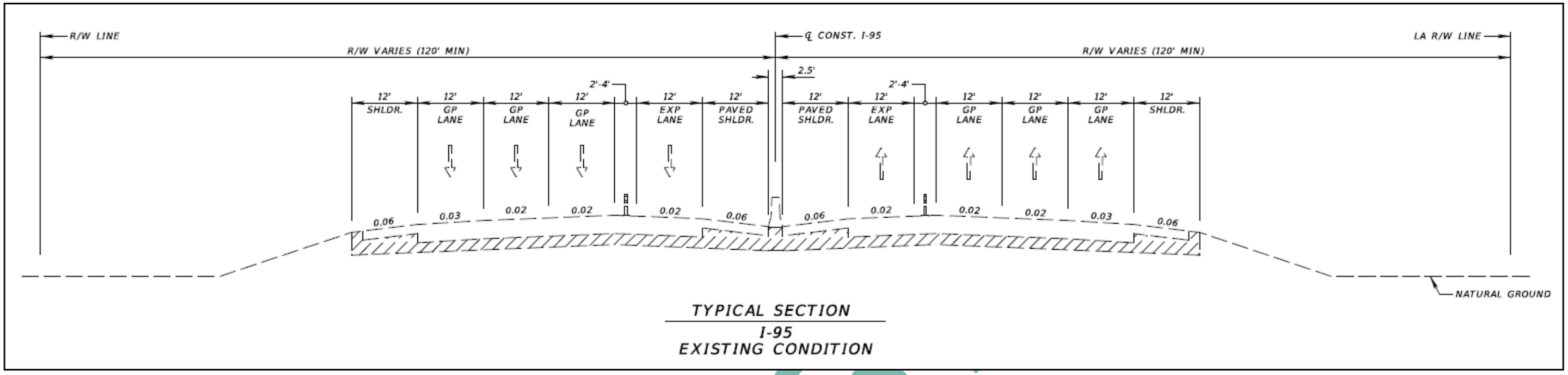

Figure 3 - 2: Existing Typical Section – I-95

3.3.2 SW 10th Street

EB along SW 10th Street from approximately 1000-feet west of the intersection at Military Trail to the intersection there are three twelve-foot lanes, a four to five-foot bike lane, and an eight-foot (four-foot paved and four-foot unpaved) outside shoulder. In the center, there is a raised curb and gutter median that varies in width from 17.5 feet.

WB along SW 10th Street from approximately 1000-feet west of the intersection at Military Trail to the intersection there are two twelve-foot lanes, a four- foot bike lane and four-foot unpaved shoulder.

In each direction, from the intersection at Military Trail to East Newport Center Drive there are three twelve-foot lanes, a four-foot bike lane, two-foot curb and gutter with a five-foot concrete sidewalk running along at the back of curb. In the center of the roadway there is a raised curb and gutter median that varies in width from 14.0 to 17.5 feet. In the WB direction, the outside lane is an auxiliary lane used for right turns and/or acceleration that terminates at the intersection with Military Trail. In the EB direction a fourth (outside) twelve to 14-foot wide lane exists as an auxiliary lane used for right turns and/or acceleration and terminates at the SB on-ramp to I-95.

From East Newport Center Drive to SW Natura Boulevard/FAU Research Park Boulevard there are three eleven-foot lanes in each direction, two-foot curb and gutter with a six- foot concrete sidewalk running along at the back of curb with no bicycle lane or shoulder. EB the third lane (outside) terminates at the NB entrance ramp to I-95 and then remerges west of the NB I-95 off-ramp intersection continuing on to the FAU Research Park Boulevard intersection. WB are three eleven-foot lanes, two-foot curb and gutter with a six-foot concrete sidewalk running along at the back of curb with no bike lane or shoulder present. A fourth WB lane emerges at the SB I-95 off-ramp intersection and terminates at the East Newport Center Drive intersection. In the center of the roadway there is a raised curb and gutter median that varies in width from 14 to 17.5 feet.

The existing roadway segment is depicted in **Figure 3-3** and typical section for this corridor is shown in **Figure 3-4**.

Figure 3 - 3: Existing Roadway Segment – SW 10th Street

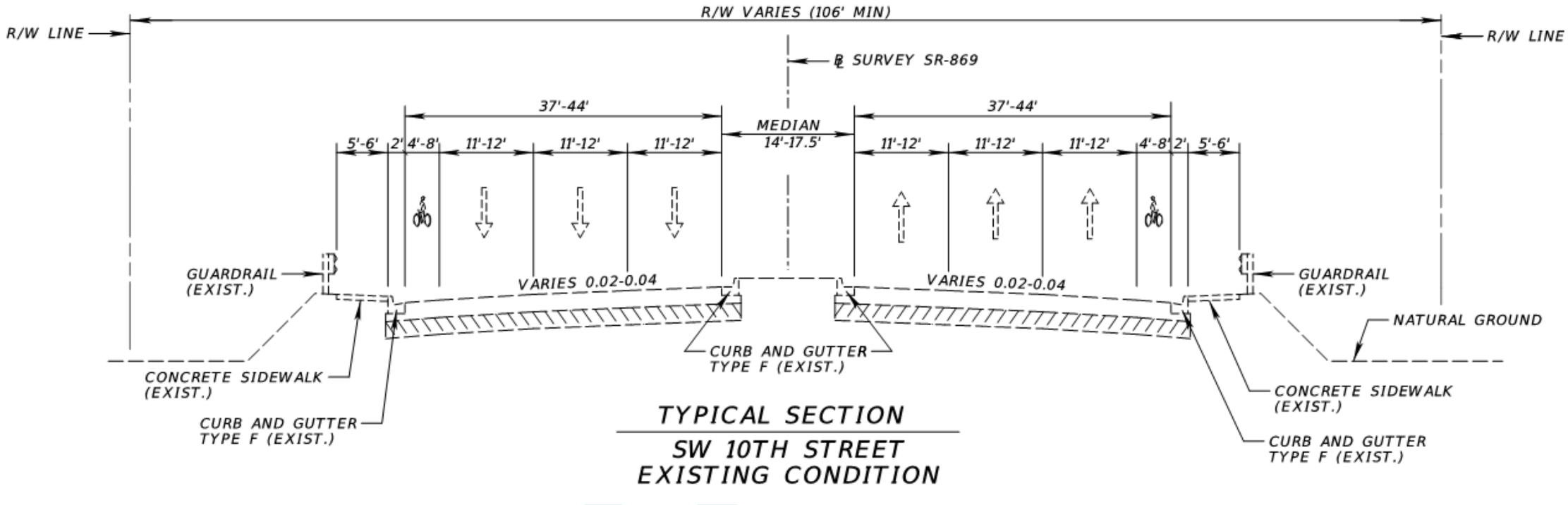

Figure 3 - 4: Existing Typical Section – SW 10th Street

3.3.3 Hillsboro Boulevard

Along Hillsboro Boulevard from east of Military Trail intersection to the intersection with Natura Boulevard/Fairway Drive is an urban arterial typical section having a fifteen and a half-foot raised median, six eleven-foot thru lanes (3 lanes in each direction) and two four-foot bicycle lanes (one in each direction) with Type F curb and gutter on both sides of the roadway. In each direction outside the bicycle lanes is a two-foot curb and gutter with six-foot concrete sidewalk running along at the back of curb. Total right-of-way width varies.

The existing roadway segment is depicted in **Figure 3-5** and typical section for this corridor is shown in **Figure 3-6**.

Figure 3 - 5: Existing Roadway Segment – Hillsboro Boulevard

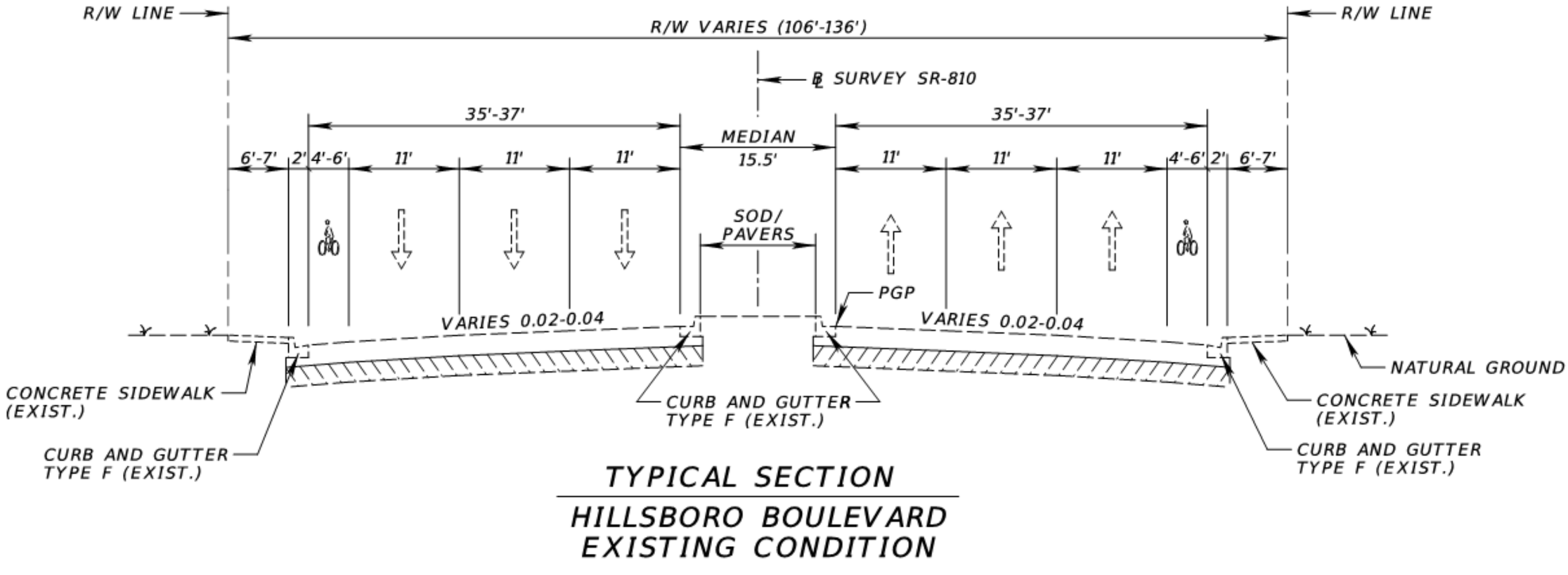

Figure 3 - 6: Existing Typical Section – Hillsboro Boulevard

3.4 Right-of-Way

3.4.1 I-95

The existing right-of-way along I-95 varies with a minimum of 240 feet and varies based on shoulder width and natural ground.

3.4.2 SW 10th Street

The existing right-of-way along SW 10th Street varies with a minimum of 125 feet and varies based on median width, shoulder width and natural ground with a typical width between 180 to 250 feet.

3.4.3 Hillsboro Boulevard

The existing right-of-way along Hillsboro Boulevard varies from 106 to 136 feet and varies based on median width.

Please refer to the Preliminary Engineering Report for additional details of existing roadway conditions and typical sections.

3.5 Pavement Type and Operational Conditions

3.5.1 Pavement Condition

FDOT performs annual surveys of the entire State highway system in support of the Department's Pavement Management Program. The data collected (in terms of crack, ride, and rut measurements) is used to assess the condition and performance of the State's roadway as well as to predict future rehabilitation needs.

3.5.1.1 I-95 Pavement Type and Condition

The existing pavement type along I-95 is asphalt pavement (FC-5). Based on data obtained from the Pavement Condition Survey, I-95 was last resurfaced in 2008. The NB lanes along I-95 have adequate pavement ratings. The SB lanes along I-95 has adequate pavement ratings for Rideability and Rutting. I-95 is currently under construction to add lanes for

I-95 Express within the limits of this study (FM 433108-6, Phase 3B-1) and will be completely resurfaced as part of that project.

3.5.1.2 SW 10th Street Pavement Type and Condition

The existing pavement type along SW 10th Street is asphalt pavement (FC-9.5). Based on data obtained from the Pavement Condition Survey, SW 10th Street was last resurfaced in 2014. Both the EB and WB lanes have adequate pavement ratings.

3.5.1.3 Hillsboro Pavement Type and Condition

The existing pavement type along Hillsboro Boulevard is asphalt pavement (FC-9.5). Within the limits of this study, Hillsboro Boulevard was last resurfaced in 2017 (FM 430602-1). Therefore, both the EB and WB lanes have adequate pavement ratings.

4.0 PROJECT ALTERNATIVES

Alternatives evaluated during the PD&E Study include the No-Action Alternative, the Transportation Systems Management and Operations (TSM&O) Alternative, and the Build Alternatives as described below. Alternatives were developed and evaluated based on the ability to meet the project purpose and needs.

4.1 No-Action Alternative

The No-Action Alternative assumes that no improvements would be implemented within the project corridor. It serves as a baseline for comparison against the Build Alternatives. It will however, include on-going construction projects and all funded or programmed improvements scheduled to be opened to traffic in the analysis years being considered. These improvements must be part of the FDOT's adopted Five-Year Work Program, Broward County MPO, Cost Feasible LRTP, transportation elements of Local Government Comprehensive Plans (LGCP), or developer-funded transportation improvements specified in approved development orders.

The advantage of the No-Action Alternative is that it requires no expenditure of public funds for design, right-of-way acquisition, construction or utility relocation. In addition, there would be no disruptions due to construction, no direct or indirect impacts to the environment and/or the socio-economic characteristics from the project. However, the No-Action Alternative does not address the purpose and need of the project and operational and safety conditions within the project area will become progressively worse as traffic volumes continue to increase.

4.2 Transportation Systems Management and Operations (TSM&O)

Transportation Systems Management and Operations (TSM&O) aims to optimize the performance of existing multimodal infrastructure through implementation of systems and services to preserve capacity and improve the safety and reliability of our transportation system. TSM&O improvements include traffic management and operations solutions such as Information

Technology System (ITS) devices, signal retiming, and adaptive signal control.

However, a TSM&O Alternative will not significantly improve the capacity issues through the corridor by the design year 2040. Long-term improvements are necessary to mitigate the existing traffic conditions and increase capacity to accommodate future travel demand.

4.3 Build Alternatives

Build Alternatives were developed along I-95, SW 10th Street and Hillsboro Boulevard to address the purpose and needs of the project.

4.3.1 Interstate 95

All Build Alternatives considered for I-95 include:

- Two 12-foot wide express lanes (one in each direction)
- Six 12-foot wide general purpose lanes (three in each direction)
- Four-foot wide buffer with tubular markers separating the general purpose lanes from the express lanes
- A 12-foot wide paved inside shoulder
- A 12-foot wide outside shoulder (ten-feet paved and two-feet unpaved)
- A 2.5-foot wide center barrier wall
- Twelve-foot wide auxiliary lanes at selected locations

4.3.1.1 Alternative 1

Alternative 1 provides a 3-lane, physically separated collector-distributor (CD) roadway on the east side of I-95 between SW 10th Street and Hillsboro Boulevard that combines the EB to NB and WB to NB on-ramps. A proposed auxiliary lane on the west side combines the EB to SB and WB to SB on-ramps. Widening is proposed in the median along I-95 to provide one 12 foot express lane in each direction.

4.3.1.2 Alternative 2

Alternative 2 provides a braided ramp for the 3-lane proposed NB CD roadway on the east side of I-95 to separate the traffic destined to I-95 mainline from traffic exiting at Hillsboro Boulevard. A braided ramp is also proposed on the west side of I-95 for the SB CD roadway to separate the traffic destined to I-95 mainline from traffic exiting at SW 10th Street. Widening is proposed in the median along I-95 to provide one 12-ft express lane in each direction.

4.3.2 SW 10th Street

Build Alternatives considered along SW 10th Street provide two connector lanes in each direction with direct connect access ramps to/from the I-95 express lanes. A WB on-ramp and EB off-ramp access to the connector lanes is provided just east of the Military Trail intersection. Improvements at the NB off-ramp terminal to accommodate triple lefts and triple rights as well as relocating the WB to NB entrance ramp from the southeast quadrant of the interchange to the northeast quadrant remain the same for both Build Alternatives.

Three 11-foot lanes with 7-foot buffered bike lanes and 6-foot sidewalks are provided along local SW 10th Street. A roundabout is provided at the intersection of W. and E. Newport Center Drive. Triple rights are provided at the NB and SB legs of the SW 12th Avenue/E. Newport Center Drive intersection. Two alignments were considered for the connector lanes:

- North Alignment (**Figure 4-1**), and
- Center Alignment (**Figure 4-2**).

Both north and center alignment options are basically the same. The north alignment; however, provides direct access to the connector lanes from SW 12th Avenue. Minor right-of-way acquisition is required for the north alignment on the north and south sides of SW 10th Street including six privately-owned and three government-owned parcels. No relocations are required.

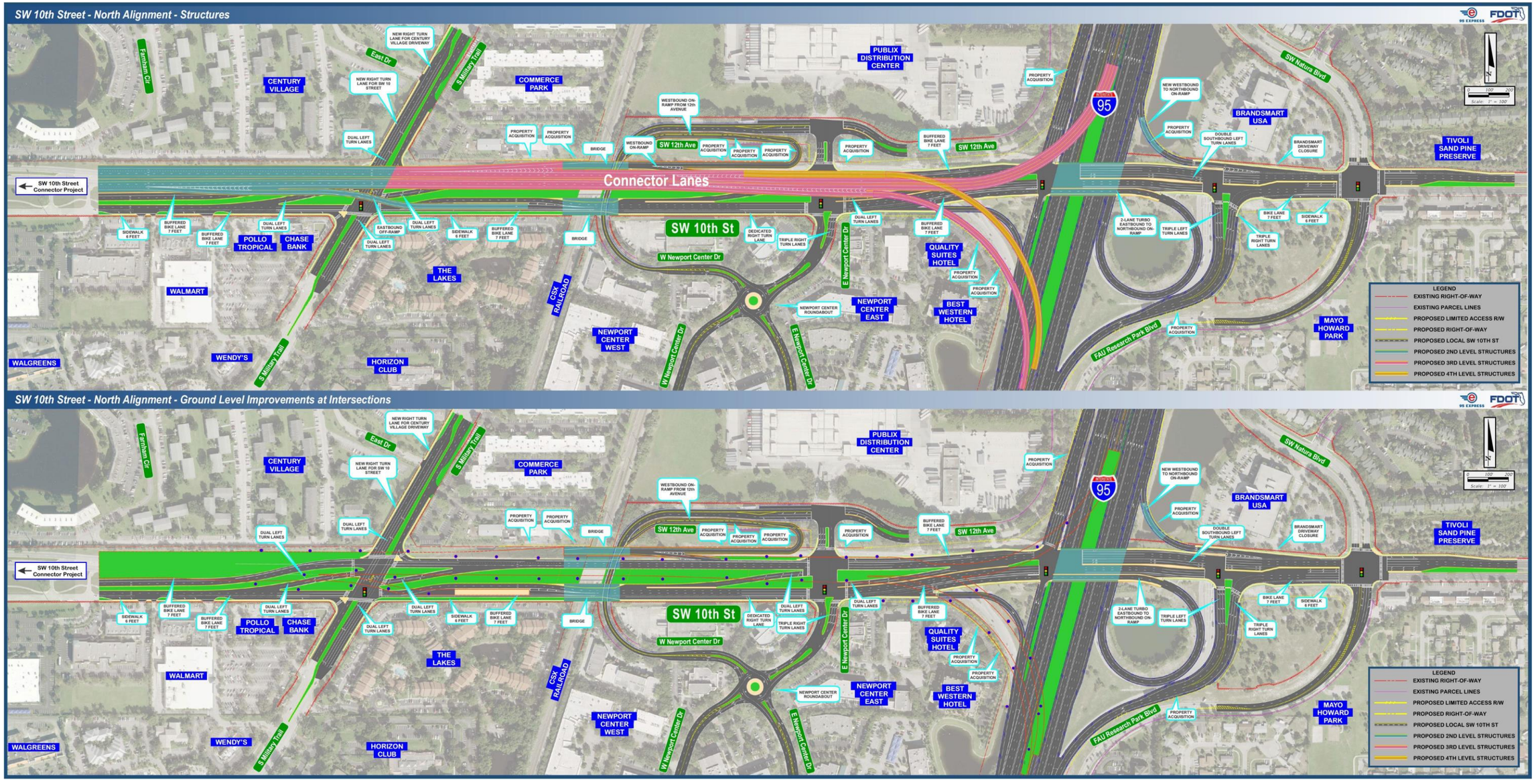

Figure 4 - 1: SW 10th Street North Alignment

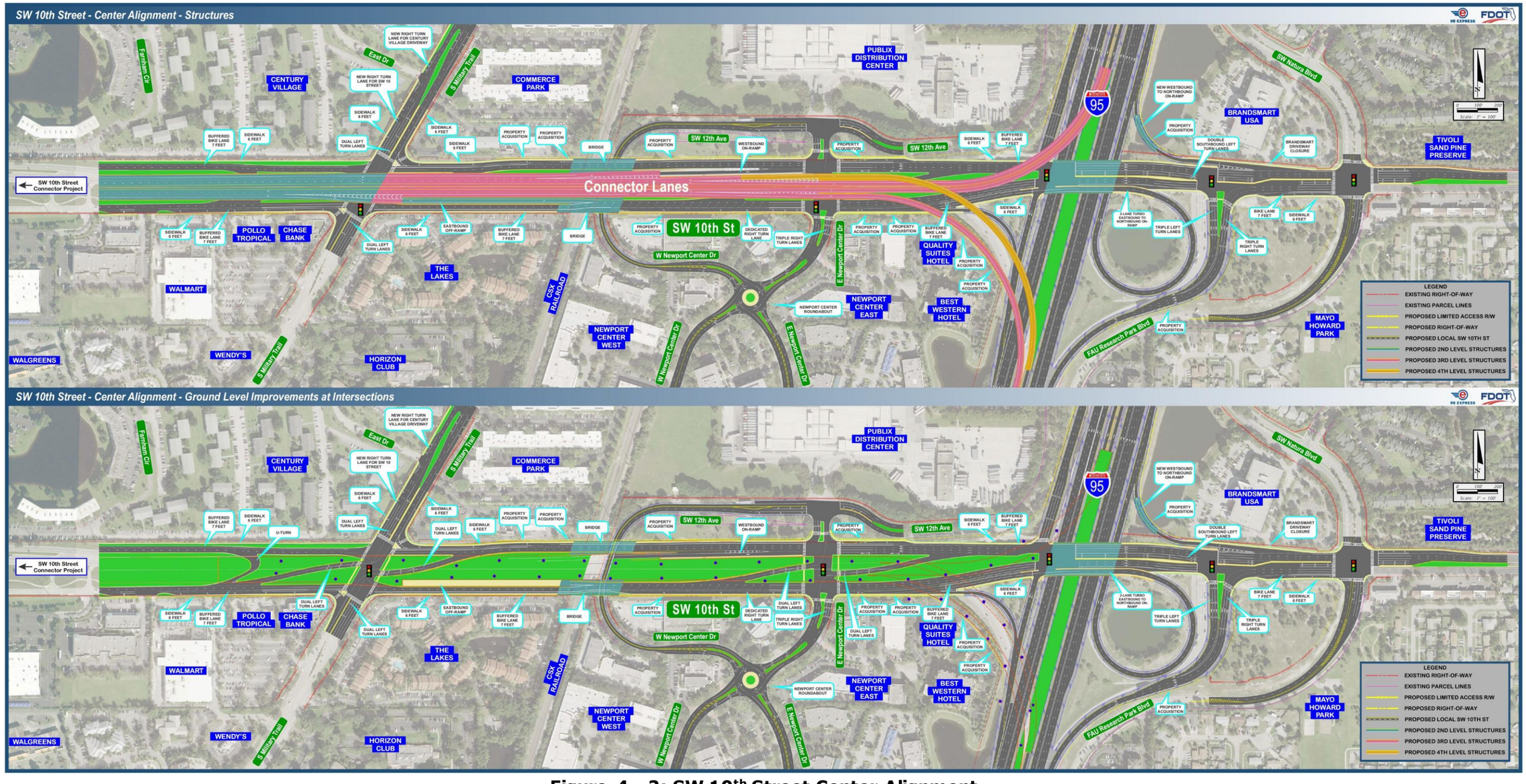

Figure 4 - 2: SW 10th Street Center Alignment

The center alignment Alternative also requires minor right-of-way acquisition on the north side as well as on the south side including 15 privately-owned and nine-government owned parcels. No relocations are required.

4.3.3 Hillsboro Boulevard

Two Build Alternatives were considered along Hillsboro Boulevard. Alternative 1 proposes a depressed section while Alternative 2 proposes an elevated section. Improvements at the I-95 ramp terminals remained the same for both Build Alternatives and include providing a 2-lane NB exit ramp combining both exit ramps into a single ramp with a signal controlled. The NB exit ramp terminal with expanded storage for a triple left and double right turn lanes. Additional improvements include expanding the north leg of Jim Moran Boulevard to allow for SB double left and double right turn lanes, extending the NB to WB left turn lane storage and the EB to SB right turn storage at Natura Boulevard.

4.3.3.1 Alternative 1

Alternative 1 proposes a depressed section from Goolsby Boulevard to SW 12th Avenue with two 11-foot lanes in each direction and a 7.5-foot inside shoulder. An access road is proposed on each side with one 11-foot lane, a 7-foot buffered bike lane and a 6-foot sidewalk. This Alternative was deemed not viable due to impacts to the South Florida Rail line (**Figure 4-3**) and access to adjacent properties.

4.3.3.2 Alternative 2

Alternative 2 proposes an elevated section from Goolsby Boulevard to SW 12th Avenue with two 11-foot lanes in each direction, a 7.5-foot inside shoulder, and a 13-foot median. An access road is proposed on each side with one 11-foot lane, a 7-foot buffered bike lane and a 6-foot sidewalk (**Figure 4-4**). This Alternative was deemed not viable due to the access impacts to adjacent properties and the steep profile grade required to meet existing grade before the I-95 interchange.

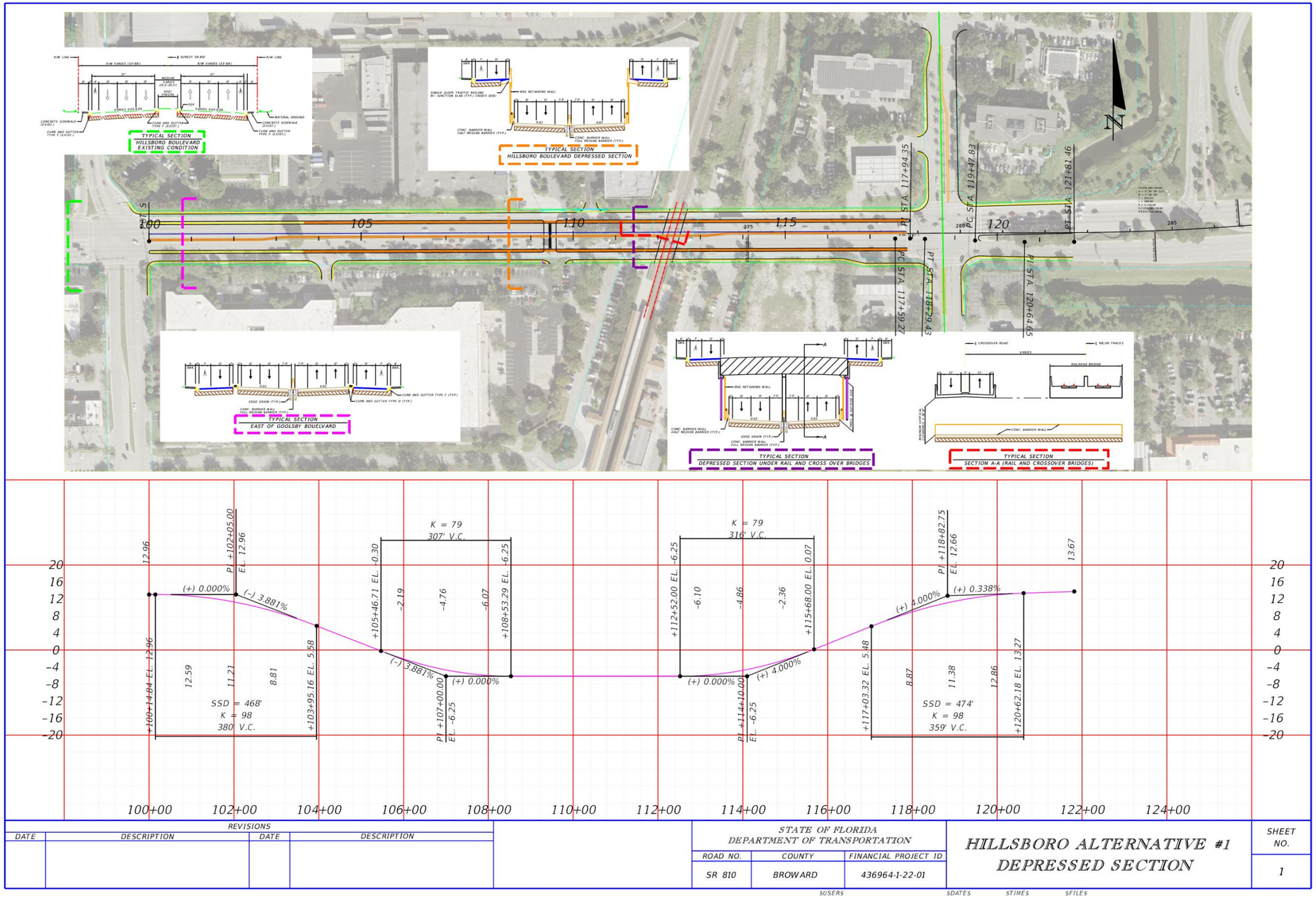

Figure 4 - 3: Hillsboro Boulevard Alternative 1

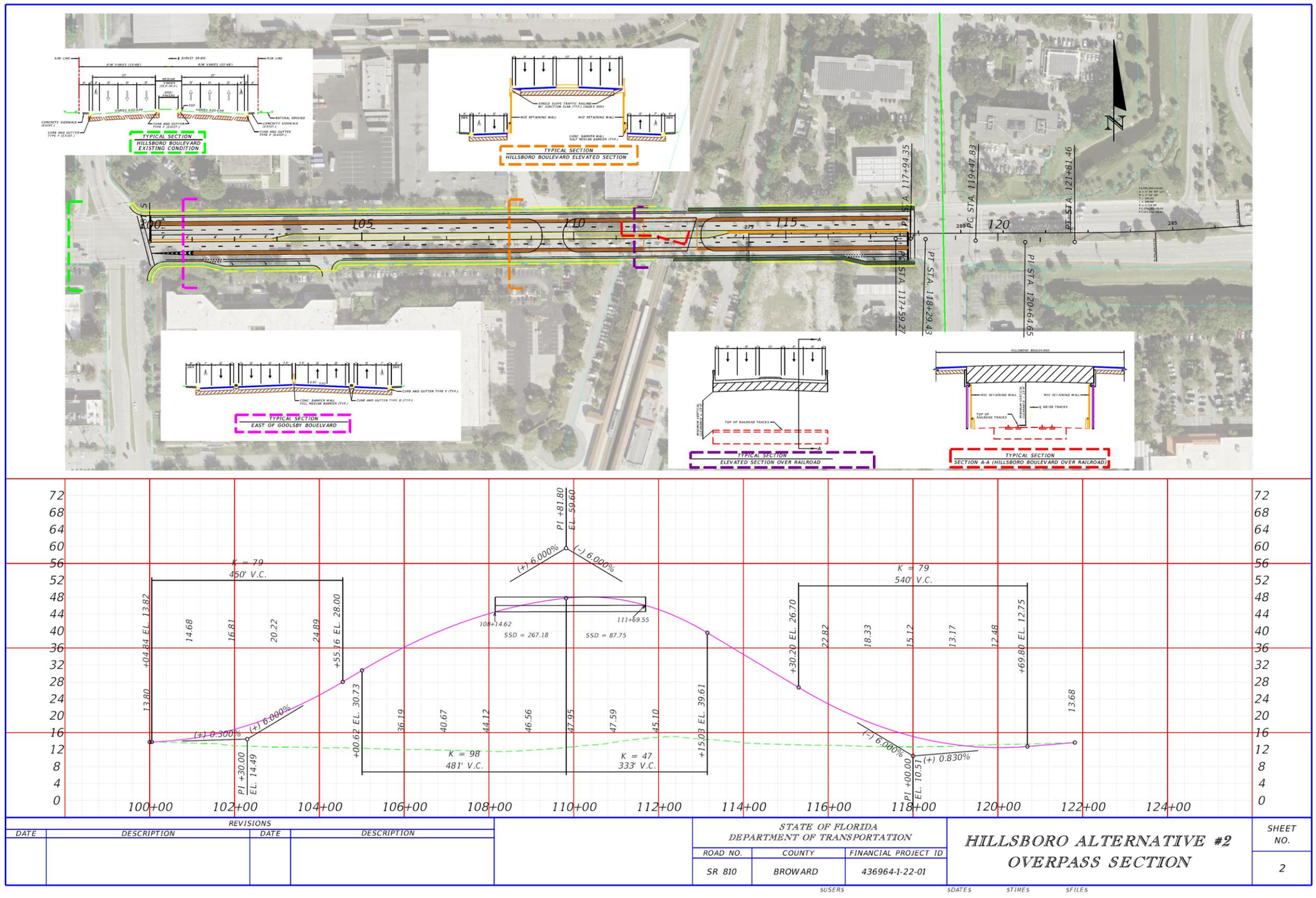

Figure 4 - 4: Hillsboro Boulevard Alternative 2

4.3.4 Bridge Widening (I-95 Northbound Bridge over Hillsboro Boulevard)

The existing I-95 NB bridge over Hillsboro Boulevard (Bridge No. 860194) has a concrete superstructure with pre-stressed American Association of State Highway and Transportation Officials (AASHTO) Type II and Type III beams set on a curved alignment with a slight skew along the substructure of the multi-column intermediate piers and pile end bents. The bridge was constructed originally around 1972 and was widened along the inside with the original outside traffic railing being replaced with FDOT F Shape Traffic Railing (Index No. 14286) around 1990. The bridge is comprised of four simple spans of 41 feet-3 inches, 74 feet-3 inches, 74 feet-3 inches and 41 feet-3 inches for a total overall length of 231 feet-0 inches. The total bridge width is approximately 87 feet-2 inches. The bridge currently carries an HOV lane, three travel lanes, one merge lane, and shoulders on both sides. A FDOT F shape concrete traffic railing barrier borders the bridge on each side. According to the as-built plans, the minimum vertical clearance is approximately 15.40 feet. To accommodate roadway improvements on I-95, Bridge No. 860194 NB lanes will need to be widened to accommodate the additional express lane and one general purpose lane. The engineering analysis performed concluded that the best option for widening the bridge is strengthening two existing beams with insufficient load rating factors or replacing them along with partial reconstruction of the deck.

Please refer to the Preliminary Engineering Report for details of the engineering analysis performed for this bridge.

5.0 AIR QUALITY

Air quality is defined by primary standards which refer to air quality levels required to protect public health within an adequate margin of safety. Secondary standards refer to air quality levels required to safeguard visibility, comfort, animals, and property from poor air quality. The Clean Air Act Amendments of 1990 (CAAA) requires that transportation plans, programs, and projects funded or approved by the Federal Highway Administration (FHWA) be in conformity with the State Implementation Plan, which represents the state's plan to either achieve or maintain the National Ambient Air Quality Standards (NAAQS) for a particular pollutant.

5.1 National Ambient Air Quality Standards

The U.S. Environmental Protection Agency (EPA) established NAAQS for six air pollutants: carbon monoxide (CO), lead, nitrogen dioxide (NO_x), sulfur dioxide (SO_2), ozone (O_3), and particulate matter of 10 microns (PM-10) or less in size. NAAQS require the transportation sector to meet specified standards for PM-10, CO, and O_3 at ground level. Unlike PM-10 and CO, O_3 is not directly emitted, but created by a chemical reaction between nitrogen oxides and volatile organic compounds in the presence of sunlight. Ground-level O_3 is the primary component of smog.

5.1.1 Carbon Monoxide

Carbon monoxide is a colorless, odorless gas that is formed when carbon in fossil fuels is not burned completely. It is a component of motor vehicle exhaust, which contributes approximately 56 percent of carbon monoxide emissions nationally.

5.1.2 Lead

Although lead is a naturally occurring metal, motor vehicles were historically the major source of lead emissions. However, due to a phase out of leaded gasoline in the 1970s, metals processing is currently the major source of lead emissions.

5.1.3 Nitrogen Oxide

Nitrogen oxides are a group of highly reactive gases. One of these gases, nitrogen dioxide, along with particles in the air, is often seen as a reddish brown layer over urban areas. The primary sources of nitrogen oxides are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuel. Motor vehicles emit approximately 49 percent of the national level of nitrogen oxides (*EPA-456/F-98-005, 1998*).

5.1.4 Sulfur Dioxide

Sulfur dioxide belongs to a family of Sulfur Oxide gases. Approximately 65 percent of the sulfur dioxide released in to the air comes from electric utilities. Locomotives, large ships, and some non-road diesel equipment currently burn high sulfur fuel and emit sulfur dioxide. Overall, on-road motor vehicles are not considered a significant source of sulfur dioxide.

5.1.5 Ozone

Ozone is not usually emitted directly into the air. At ground level, ozone is created by a chemical reaction between oxides of nitrogen and volatile organic compounds in the presence of sunlight. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents as well as natural sources emit oxides of nitrogen and volatile organic compounds. While ozone typically occurs at a regional level, no methodology currently exists to determine ozone emissions at the project level.

5.1.6 Particulate Matter

Particulate matter is a term used to describe particles in the air including dust, dirt, soot, smoke, and liquid droplets. Sources that directly emit particulate matter include motor vehicles, construction activities, and unpaved roads. Particles that form in the air from chemical processes involving sunlight and water vapor include fuel combustion in motor vehicles and at power plants, and industrial processes. Particulate matter is of interest because diesel vehicles emit high levels of the pollutant and diesel particulate has been identified as a probable carcinogen (cancer causing substance) by the EPA.

There are two standards for particulate matter – one for "coarse" particles (those 10 microns or less in size – PM10) and one for "fine" particles (those 2.5 microns or less in size – PM2.5). Coarse particles are typically formed by earth-based materials (brake and tire wear) that contribute to particles of this size. Fine particles are a product of combustion. The EPA NAAQS are presented in **Table 5-1**.

Table 5 - 1: National Ambient Air Quality Standards (NAAQS)

Pollutant		Averaging Time	Primary[e]	Secondary[f]
Ozone		8-hour[a]	0.070 ppm[g]	0.070 ppm
Nitrogen Dioxide		1-hour[b]	100 ppb[h]	NA
		Annual Arithmetic Mean	0.053 ppm	0.053 ppm
Particulate Matter	2.5 microns or less in size	24-hour	35 µg/m^3	35 µg/m^3
		Annual Arithmetic Mean[c]	12.0 µg/m^3	15.0 µg/m^3
	10 microns or less in size	24-hour	150 µg/m^3	NA
Sulfur Oxides[d]		1-hour	75 ppb	NA
		3-hour	NA	0.5 ppm
		24-hour	0.14 ppm	NA
		Annual Arithmetic Mean	0.030 ppm	NA
Carbon Monoxide		1-hour[a]	35 ppm	NA
		8-hour[a]	9 ppm	NA
Lead		Calendar Quarter	1.5 µg/m^3	1.5 µg/m^3
		Rolling 3-Month Average	0.15 µg/m^3	0.15 µg/m^3

[a] The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard.
[b] To attain the 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb.
[c] To attain this primary standard, the 3-year average of the annual arithmetic mean concentrations from single or multiple community-oriented monitors must not exceed 12.0 µg/m^3.
[d] To attain the 1-hour standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75ppb.
[e] Primary standards are designed to establish limits to protect public health, including the health of "sensitive" individuals such as asthmatics, children, and the elderly.
[f] Secondary standards set limits to protect public welfare including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.
[g] ppm = parts per million
[h] ppb = parts per billion
NA = Not applicable
ppm = parts per million
ppb = parts per billion
µg/m^3 = microgram per cubic meter

Source: United States Environmental Protection Agency, 2016

5.2 Transportation Conformity

O_3, NO_x, and PM-10 are analyzed at the program level unless specific review of an individual project is requested by appropriate reviewing agencies (these pollutants are not analyzed at the project level since Broward County is currently designated as in attainment for all of the NAAQS under the criteria provided in the CAA). Since CO is a localized pollutant that is emitted directly into the atmosphere by vehicles, it is analyzed for individual roadway projects where substantial changes to the traffic conditions are anticipated.

6.0 PROJECT LEVEL AIR QUALITY SCREENING ANALYSIS

The Recommended Build and No-Action Alternatives of this project were screened for potential air quality impacts at the project level using the FDOT's PC-based screening model (CO Florida 2012, Version 1.01). Traffic-generated air quality impacts are primarily a concern near signalized intersections during peak periods, when numerous vehicles are often stopped and idling during the traffic signal's red phase. The CO Florida 2012 model incorporates emission factors developed from the EPA's Motor Vehicle Emission Simulator (MOVES) version 2010a model and the CAL3QHC2 dispersion model and includes several worst-case assumptions for traffic characteristics, receptor location, meteorology and terrain. The CO Florida 2012 model generates multiple default receptor locations, the numbers of which are dependent upon intersection type. User inputs to the screening model include project alternative; land use type; analysis year; and the volume and speed of peak hour traffic approaching the intersection. Given the local surroundings, an urban land use type was selected, which includes a background CO level of 35 parts per million (PPM) for one-hour periods and 9 PPM for eight-hour periods.

Output from the CO Florida 2012 model includes the estimated one-hour and eight-hour CO level, in PPM, at the default receptor locations and a report stating whether the project passes or fails the screening analysis. A project alternative that passes the CO Florida 2012 model is not expected to result in any violations of the NAAQS for CO and is not likely to have any impact on the air quality of the surrounding area.

The roadway intersection selected for screening is typically the one with the worst-case combination of traffic volumes, low vehicular speeds, and closest receptors. The Recommended Build and No-Action scenarios for the Opening Year (2027) and the Design Year (2040) were evaluated. Based on the traffic study completed for the project, the SR 869/SW 10th Street Military Trail intersection was chosen for both Open Year (2027) and Design Year (2040) traffic conditions for the air qulaity screening. The traffic data input used in the evaluation are provided in **Appendix A**.

7.0 AIR QUALITY SCREENING ANALYSIS RESULTS

The project was reviewed for air quality impacts consistent with the FHWA discussion paper *Appropriate Level of Highway Air Quality Analysis for a CE, EA/FONSI, and EIS.* Estimates of CO were predicted for the default receptors which are located at pre-determined worst-case locations from the edge of the roadway. Based on the results from the CO Florida 2012 screening models, the highest project-related CO one-hour and eight-hour levels are not predicted to meet or exceed the one-hour or eight-hour NAAQS for this pollutant. The one-hour and eight-hour estimates predicted by the CO Florida 2012 models are directly compared to the current one-and eight-hour NAAQS for CO, which are 35 PPM and 9 PPM, respectively.

The CO screening analysis for this project indicates that the worst-case one-hour CO level is 8.7 PPM during the opening year (2027) and 8.4 PPM during the design year (2040). The predicted worst-case eight-hour CO level is estimated to be 5.2 PPM during the opening year (2027) and 5.0 PPM during the design year (2040). The project "passes" the screening model by achieving CO levels well below the one-hour and eight-hour NAAQS CO standards.

Results of the analysis are presented in **Table 7-1**. The outputs from the CO Florida 2012 screening models are provided in **Appendix B**.

Table 7 - 1: Carbon Monoxide (CO) Concentrations for SR 869/SW 10th Street at Military Trail

Receptor	Max One-Hour Carbon Monoxide Level (PPM)		Max Eight-Hour Carbon Monoxide Level (PPM)	
	No-Action/Build	No-Action/Build	No-Action/Build	No-Action/Build
	Opening Year (2027)	Design Year (2040)	Opening Year (2027)	Design Year (2040)
1	8.0	7.7	4.8	4.6
2	8.3	7.9	5.0	4.7
3	8.7	8.4	5.2	5.0
4	7.9	7.6	4.7	4.6
5	7.4	7.0	4.4	4.2
6	7.8	7.7	4.7	4.6
7	8.0	7.9	4.8	4.7
8	8.6	8.3	5.2	5.0
9	7.9	7.6	4.7	4.6
10	7.5	7.0	4.5	4.2
11	8.0	7.7	4.8	4.6
12	8.3	7.9	5.0	4.7
13	8.7	8.3	5.2	5.0
14	7.9	7.6	4.7	4.6
15	7.4	7.0	4.4	4.2
16	7.8	7.7	4.7	4.6
17	8.0	8.0	4.8	4.8
18	8.6	8.3	5.2	5.0
19	7.9	7.7	4.7	4.6
20	7.5	7.0	4.5	4.2

8.0 CONSTRUCTION AIR QUALITY IMPACTS

Construction activities for the proposed action may potentially have short-term air quality impacts within the immediate vicinity of the project. Construction activities may generate temporary increases in air pollutant emissions in the form of dust from earthwork and unpaved roads and smoke from open burning. Such emissions and potential impacts will be minimized by adherence to all applicable state and local regulations and to the latest edition of the FDOT *Standard Specifications for Road and Bridge Construction*.

9.0 GREENHOUSE GASES

No national standards have been established for GHGs. Similarly, the United States Environmental Protection Agency has not established criteria or thresholds for ambient GHG emissions pursuant to its authority to establish motor vehicle emission standards for CO2 under the Clean Air Act. GHGs are different from other air pollutants evaluated in federal environmental reviews because impacts are not localized or regional due to their rapid dispersion into the global atmosphere. Therefore, it is difficult to isolate and understand the GHG emissions impacts for a particular transportation project given there is no scientific methodology for attributing specific climatological changes to that transportation project's emissions.

FDOT concluded, based on the nature of GHG emissions and the exceedingly small potential for GHG impacts from the proposed project, that the GHG emissions from the proposed action will not play a meaningful role in a determination of an environmentally preferable alternative or the selection of the preferred alternative.

No alternatives-level GHG analysis has been performed for this project since GHG emissions is very small in the context of the affected environment. (PD&E Manual Part 2, Chapter 19, Figure 19-4).

10.0 AGENCY COORDINATION

Agency coordination to obtain air quality related information occurred through the Efficient Transportation Decision Making (ETDM) Planning and Programming Screens (ETDM #14244) and the Advance Notification (AN) process. The ETDM review occurred between September 9, 2015, and July 11, 2016, and the most recent ETDM Programming Screen Summary Report was published on July 11, 2016. The U.S. Environmental Protection Agency reviewed the project and listed a degree of effect of 'Minimal' for air quality for all Build Alternatives. The summary degree of effect for air quality for all Build Alternatives was also listed as 'Minimal' in the ETDM Programming Screen Summary Report. A copy of the applicable pages of the ETDM Programming Screen Summary Report is included in **Appendix C**.

11.0 SUMMARY

The South Florida region is currently in attainment for all of the pollutants for which NAAQS have been developed. Broward County is currently designated as in attainment for all of the NAAQS under the criteria provided in the CAA. Therefore, the project is located in an area which is designated as attainment under the criteria provided in the CAA; the CAA conformity requirements do not apply to the project.

Based on the air quality analysis conducted for this project, air quality impacts are not expected to occur as a result of this project.

Appendix A

Traffic Data for Air Quality Analysis

OPEN YEAR 2027
No-Build/Build Traffic Volumes

Date: December 6, 2018
Prepared By: AECOM
Financial Management Number: 436964-2-22-01
Project Description: PD&E Study for SR 9/I-95 from south of SW 10th Street to north of Hillsboro Boulevard
Land Use: Urban

No Build Traffic Volumes - AM Peak Hour

Intersection	Opening Year 2027																Total
	Eastbound				Westbound				Northbound				Southbound				
	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	
SR 869/SW 10th Street & Military Trail	315	2,220	100	2,635	305	1,395	300	2,000	185	800	580	1,565	440	550	285	1,275	7,475
SR 869/SW 10th Street & E. Newport Center Drive	280	2,465	495	3,240	360	1,870	330	2,560	50	10	95	155	35	10	80	125	6,080
SR 869/SW 10th Street & I-95 SB Ramp Terminal	0	1,960	635	2,595	585	2,560	0	3,145	0	0	0	0	0	1,220	0	1,220	6,960
SR 869/SW 10th Street & I-95 NB Ramp Terminal	0	1,090	1,190	2,280	270	1,635	0	1,905	0	1,460	0	1,460	0	0	0	0	5,645
SR 869/SW 10th Street & FAU Research Park Blvd	190	1,070	250	1,510	95	1,425	80	1,600	200	130	120	450	220	150	280	650	4,210

No Build Traffic Volumes - PM Peak Hour

Intersection	Opening Year 2027																Total
	Eastbound				Westbound				Northbound				Southbound				
	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	
SR 869/SW 10th Street & Military Trail	345	1,700	190	2,235	385	2,205	460	3,050	140	605	305	1,050	225	825	455	1,505	7,840
SR 869/SW 10th Street & E. Newport Center Drive	70	2,095	65	2,230	100	2,390	80	2,570	315	10	385	710	90	5	345	440	5,950
SR 869/SW 10th Street & I-95 SB Ramp Terminal	0	1,925	645	2,570	575	2,570	0	3,145	0	0	0	0	0	1,220	0	1,220	6,935
SR 869/SW 10th Street & I-95 NB Ramp Terminal	0	1,285	860	2,145	300	1,435	0	1,735	0	1,160	0	1,160	0	0	0	0	5,040
SR 869/SW 10th Street & FAU Research Park Blvd	255	1,430	220	1,905	190	1,150	110	1,450	245	90	110	445	220	225	340	785	4,585

Build Traffic Volumes - AM Peak Hour

Intersection	Opening Year 2027																Total
	Eastbound				Westbound				Northbound				Southbound				
	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	
SR 869/SW 10th Street & Military Trail	320	1,905	150	2,375	315	960	430	1,705	195	600	600	1,395	445	450	315	1,210	6,685
SR 869/SW 10th Street & E. Newport Center Drive	295	2,160	495	2,950	390	1,565	370	2,325	55	10	100	165	40	10	85	135	5,575
SR 869/SW 10th Street & I-95 SB Ramp Terminal	0	1,675	625	2,300	585	2,325	0	2,910	0	0	0	0	0	1,210	0	1,210	6,420
SR 869/SW 10th Street & I-95 NB Ramp Terminal	0	1,325	650	1,975	270	1,500	0	1,770	0	920	0	920	0	0	0	0	4,665
SR 869/SW 10th Street & FAU Research Park Blvd	190	1,330	225	1,745	105	1,270	85	1,460	215	125	130	470	225	150	285	660	4,335

Build Traffic Volumes - PM Peak Hour

Intersection	Opening Year 2027																Total
	Eastbound				Westbound				Northbound				Southbound				
	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	
SR 869/SW 10th Street & Military Trail	320	1,330	160	1,810	485	1,900	470	2,855	170	505	315	990	265	625	485	1,375	7,030
SR 869/SW 10th Street & E. Newport Center Drive	65	1,785	60	1,910	100	2,185	80	2,365	320	10	390	720	95	5	350	450	5,445
SR 869/SW 10th Street & I-95 SB Ramp Terminal	0	1,505	765	2,270	575	2,365	0	2,940	0	0	0	0	0	1,340	0	1,340	6,550
SR 869/SW 10th Street & I-95 NB Ramp Terminal	0	1,085	640	1,725	300	1,820	0	2,120	0	940	0	940	0	0	0	0	4,785
SR 869/SW 10th Street & FAU Research Park Blvd	255	1,230	220	1,705	190	1,535	110	1,835	245	90	110	445	220	225	340	785	4,770

NOTE:
Traffic data should be provided for the intersection that is forecasted to have the highest total approach traffic volume. Notably, this intersection may not be the same for the Open Year (2020) and Design Year (2040). The Build and No-Build alternatives for this project assumed similar traffic demand and have identical traffic volume information. The number of lanes should be the number of intersection approach through lanes. The traffic volumes should be representative of vehicles per hour (vph) and vehicle speeds should be representative of posted speeds if intersection cruise approach speeds are unknown. This traffic data sheet was prepared to assist in obtaining appropriate traffic data for the FDOT CO Florida 2012 Intersection Screening Model.

DESIGN YEAR 2040
No-Build/Build Traffic Volumes

Date: December 6, 2018
Prepared By: AECOM
Financial Management Number: 436964-2-22-01
Project Description: PD&E Study for SR 9/I-95 from south of SW 10th Street to north of Hillsboro Boulevard
Land Use: Urban

No Build Traffic Volumes - AM Peak Hour

Intersection	Design Year 2040																Total
	Eastbound				Westbound				Northbound				Southbound				
	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	
SR 869/SW 10th Street & Military Trail	335	2,390	160	2,885	335	1,560	345	2,240	190	855	645	1,690	480	605	290	1,375	8,190
SR 869/SW 10th Street & E. Newport Center Drive	305	2,705	505	3,515	405	2,100	340	2,845	55	10	105	170	40	10	85	135	6,665
SR 869/SW 10th Street & I-95 SB Ramp Terminal	0	2,135	715	2,850	835	2,845	0	3,680	0	0	0	0	0	1,550	0	1,550	8,080
SR 869/SW 10th Street & I-95 NB Ramp Terminal	0	1,195	1,370	2,565	290	1,840	0	2,130	0	1,660	0	1,660	0	0	0	0	6,355
SR 869/SW 10th Street & FAU Research Park Blvd	250	1,135	280	1,665	155	1,550	85	1,790	220	150	150	520	230	185	360	775	4,750

No Build Traffic Volumes - PM Peak Hour

Intersection	Design Year 2040																Total
	Eastbound				Westbound				Northbound				Southbound				
	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	
SR 869/SW 10th Street & Military Trail	365	1,770	195	2,330	435	2,365	510	3,310	205	660	360	1,225	250	890	495	1,635	8,500
SR 869/SW 10th Street & E. Newport Center Drive	75	2,235	70	2,380	140	2,590	115	2,845	350	10	440	800	110	5	370	485	6,510
SR 869/SW 10th Street & I-95 SB Ramp Terminal	0	2,065	720	2,785	840	2,845	0	3,685	0	0	0	0	0	1,560	0	1,560	8,030
SR 869/SW 10th Street & I-95 NB Ramp Terminal	0	1,375	1,000	2,375	320	1,585	0	1,905	0	1,320	0	1,320	0	0	0	0	5,600
SR 869/SW 10th Street & FAU Research Park Blvd	245	1,575	235	2,055	220	1,240	115	1,575	280	135	125	540	240	285	385	910	5,080

Build Traffic Volumes - AM Peak Hour

Intersection	Design Year 2040																Total
	Eastbound				Westbound				Northbound				Southbound				
	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	
SR 869/SW 10th Street & Military Trail	300	215	145	660	340	1,245	500	2,085	170	670	680	1,520	490	530	310	1,330	5,595
SR 869/SW 10th Street & E. Newport Center Drive	365	2,060	550	2,975	445	2,305	435	3,185	0	0	165	165	0	0	150	150	6,475
SR 869/SW 10th Street & I-95 SB Ramp Terminal	0	1,580	645	2,225	0	2,455	0	2,455	0	0	0	0	0	1,420	0	1,420	6,100
SR 869/SW 10th Street & I-95 NB Ramp Terminal	0	1,210	780	1,990	0	1,890	0	1,890	0	780	0	780	0	0	0	0	4,660
SR 869/SW 10th Street & FAU Research Park Blvd	255	1,110	315	1,680	210	1,440	95	1,745	350	195	180	725	245	200	390	835	4,985

Build Traffic Volumes - PM Peak Hour

Intersection	Design Year 2040																Total
	Eastbound				Westbound				Northbound				Southbound				
	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	Left	Thru	Right	Approach	
SR 869/SW 10th Street & Military Trail	330	340	185	855	495	990	540	2,025	285	585	390	1,260	440	830	615	1,885	6,025
SR 869/SW 10th Street & E. Newport Center Drive	95	2,320	85	2,500	125	2,165	120	2,410	0	0	620	620	0	0	790	790	6,320
SR 869/SW 10th Street & I-95 SB Ramp Terminal	0	1,990	950	2,940	0	2,410	0	2,410	0	0	0	0	0	1,720	0	1,720	7,070
SR 869/SW 10th Street & I-95 NB Ramp Terminal	0	1,190	1,100	2,290	0	1,670	0	1,670	0	1,100	0	1,100	0	0	0	0	5,060
SR 869/SW 10th Street & FAU Research Park Blvd	295	1,290	285	1,870	345	1,280	135	1,760	305	185	225	715	275	310	405	990	5,335

NOTE:
Traffic data should be provided for the intersection that is forecasted to have the highest total approach traffic volume. Notably, this intersection may not be the same for the Open Year (2020) and Design Year (2040). The Build and No-Build alternatives for this project assumed similar traffic demand and have identical traffic volume information. The number of lanes should be the number of intersection approach through lanes. The traffic volumes should be representative of vehicles per hour (vph) and vehicle speeds should be representative of posted speeds if intersection cruise approach speeds are unknown. This traffic data sheet was prepared to assist in obtaining appropriate traffic data for the FDOT CO Florida 2012 Intersection Screening Model.

Appendix B

Air Quality Analysis Screening Results

CO Florida 2012 - Results
Thursday, December 6, 2018

Project Description

Project Title	SR9/I-95 at SW 10th St PD&E Study
Facility Name	SR 869/SW 10th St at Military Trail
User's Name	AECOM
Run Name	Open Year (2027) No Build
FDOT District	4
Year	2027
Intersection Type	6 X 4
Speed	Arterial 40 mph
Approach Traffic	Arterial 3050 vph

Environmental Data

Temperature	53.9 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results

(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	8.0	4.8
2	8.3	5.0
3	8.7	5.2
4	7.9	4.7
5	7.4	4.4
6	7.8	4.7
7	8.0	4.8
8	8.6	5.2
9	7.9	4.7
10	7.5	4.5
11	8.0	4.8
12	8.3	5.0
13	8.7	5.2
14	7.9	4.7
15	7.4	4.4
16	7.8	4.7
17	8.0	4.8
18	8.6	5.2
19	7.9	4.7
20	7.5	4.5

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Thursday, December 6, 2018

Project Description

Project Title	SR9/I-95 at SW 10th St PD&E Study
Facility Name	SR 869/SW 10th St at Military Trail
User's Name	AECOM
Run Name	Open Year (2040) No Build
FDOT District	4
Year	2040
Intersection Type	4 X 4
Speed	Arterial 40 mph
Approach Traffic	Arterial 3310 vph

Environmental Data

Temperature	53.9 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.7	4.6
2	7.9	4.7
3	8.4	5.0
4	7.6	4.6
5	7.0	4.2
6	7.7	4.6
7	7.9	4.7
8	8.3	5.0
9	7.6	4.6
10	7.0	4.2
11	7.7	4.6
12	7.9	4.7
13	8.3	5.0
14	7.6	4.6
15	7.0	4.2
16	7.7	4.6
17	8.0	4.8
18	8.3	5.0
19	7.7	4.6
20	7.0	4.2

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

Appendix C

ETDM Screening Summary Report

Florida Department of Transportation

RICK SCOTT
GOVERNOR

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Tallahassee, FL 32399-0450

JIM BOXOLD
SECRETARY

ETDM Summary Report

Project #14244 - I-95 from SW 10th St to Hillsboro Blvd

Final Programming Screen - Published on 07/11/2016

Generated by Anson Sonnett (on behalf of FDOT District 4)

Printed on: 7/11/2016

Table of Contents

Introduction to Programming Screen Summary Report

The Programming Screen Summary Report shown below is a read-only version of information contained in the Programming Screen Summary Report generated by the ETDM Coordinator for the selected project after completion of the ETAT Programming Screen review. The purpose of the Programming Screen Summary Report is to summarize the results of the ETAT Programming Screen review of the project; provide details concerning agency comments about potential effects to natural, cultural, and community resources; and provide additional documentation of activities related to the Programming Phase for the project. Available information for a Programming Screen Summary Report includes:

- Screening Summary Report chart
- Project Description information (including a summary description of the project, a summary of public comments on the project, and community-desired features identified during public involvement activities)
- Purpose and Need information (including the Purpose and Need Statement and the results of agency reviews of the project Purpose and Need)
- Alternative-specific information, consisting of descriptions of each alternative and associated road segments; an overview of ETAT Programming Screen reviews for each alternative; and agency comments concerning potential effects and degree of effect, by issue, to natural, cultural, and community resources.
- Project Scope information, consisting of general project recommendations resulting from the ETAT Programming Screen review, permits, and technical studies required (if any)
- Class of Action determined for the project
- Dispute Resolution Activity Log (if any)

The legend for the Degree of Effect chart is provided in an appendix to the report.

For complete documentation of the project record, also see the GIS Analysis Results Report published on the same date as the Programming Screen Summary Report.

#14244 I-95 from SW 10th St to Hillsboro Blvd

District: District 4
County: Broward
Planning Organization: FDOT District 4
Plan ID: Not Available
Federal Involvement: FHWA Funding Other Federal Permit

Phase: Programming Screen
From:
To:
Financial Management No.: 436964-1-22-01

Contact Information: Shandra Davis-Sanders (954) 677-7896 shandra.davis@dot.state.fl.us
Snapshot Data From: Programming Screen Summary Report Re-published on 07/11/2016 by Anson Sonnett
Issues and Categories are reflective of what was in place at the time of the screening event.

	Social and Economic							Cultural			Natural					Physical					
	Land Use Changes	Social	Relocation Potential	Farmlands	Aesthetic Effects	Economic	Mobility	Section 4(f) Potential	Historic and Archaeological Sites	Recreation Areas	Wetlands	Water Quality and Quantity	Floodplains	Wildlife and Habitat	Coastal and Marine	Noise	Air Quality	Contamination	Infrastructure	Navigation	Special Designations
Alternative #1 *Re-Published: 07/11/2016 Reviewed from 09/09/2015 to 10/24/2015)*	2	3	0	0	2	1	1	2	3	2	3	3	3	2	0	2	2	3	2	N/A	3

Wildlife and Habitat	0 None	FL Department of Agriculture and Consumer Services	10/09/2015
Wildlife and Habitat	2 Minimal	US Fish and Wildlife Service	09/11/2015
Coastal and Marine	0 None	Federal Highway Administration	10/22/2015
Coastal and Marine	0 None	South Florida Water Management District	10/16/2015
Coastal and Marine	0 None	National Marine Fisheries Service	09/15/2015
Physical			
Noise	2 Minimal	Federal Highway Administration	10/22/2015
Air Quality	2 Minimal	US Environmental Protection Agency	10/23/2015
Air Quality	2 Minimal	Federal Highway Administration	10/22/2015
Contamination	3 Moderate	US Environmental Protection Agency	10/23/2015
Contamination	3 Moderate	Federal Highway Administration	10/22/2015
Contamination	3 Moderate	South Florida Water Management District	10/16/2015
Contamination	3 Moderate	FL Department of Environmental Protection	10/14/2015
Infrastructure	2 Minimal	Federal Highway Administration	10/22/2015
Navigation	N/A N/A / No Involvement	Federal Highway Administration	10/22/2015
Navigation	N/A N/A / No Involvement	US Army Corps of Engineers	10/09/2015
Special Designations			
Special Designations	3 Moderate	US Environmental Protection Agency	10/23/2015
Special Designations	0 None	Federal Highway Administration	10/22/2015
Special Designations	0 None	South Florida Water Management District	10/16/2015

ETAT Reviews and Coordinator Summary: Social and Economic

Land Use Changes

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 12/09/2015 by FDOT District 4

Comments:

This project will be completed within existing right-of-way. It is compatible with the existing and future land use patterns of the area and not anticipated to affect the land use patterns in the project area. FDEO indicated that the project is compatible with the community's development goals and marginally compatible with the local government comprehensive plan. FDEO assigned a degree of effect of None. FHWA assigned a degree of effect of Minimal and stated that minimal to no land use effects are expected. A Summary Degree of Effect of ***Minimal*** has been assigned to the Land Use Changes issue.

Public outreach will be conducted during the PD&E Stage in coordination with the Broward County MPO and the City of Deerfield to solicit feedback on potential adverse effects as a result of the project.

Degree of Effect: 0 *None* assigned 10/23/2015 by Matt Preston, FL Department of Economic Opportunity

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:

The local government's comprehensive plan: City of Deerfield Beach Comprehensive Plan, January 28, 2014.

Air Quality

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 12/09/2015 by FDOT District 4

Comments:
The proposed project corridor is located within the Southeast Florida Airshed, which is a USEPA-designated Air Quality Maintenance Attainment Area for all of the National Ambient Air Quality Standards under the criteria provided in the Clean Air Act. However, as a former ozone nonattainment area, the project is subject to the maintenance plan approved by USEPA as a revision to Florida's State Implementation Plan (75 FR 29671, May 27, 2010). Therefore, if federal funds are used for the proposed improvements then a transportation conformity demonstration will be necessary to show that estimated pollutant/precursor emissions associated with the project are within the emissions limits specified in the SIP.
USEPA and FHWA rated air quality issue as Minimal due to impacts during construction, but no permanent effects to air quality are anticipated. Minor air quality enhancement can be expected because the improvements are likely to reduce idling traffic conditions.
A Summary DOE of ***Minimal*** has been assigned to the Air Quality issue.

An Air Quality Technical Memorandum will be prepared as a support document to the PD&E Study in accordance with Part 2, Chapter 16 of the FDOT PD&E Manual.

Degree of Effect: 2 *Minimal* assigned 10/23/2015 by Kim Gates, US Environmental Protection Agency

Coordination Document: PD&E Support Document As Per PD&E Manual
Coordination Document Comments:
Air Quality Technical Memorandum (PD&E Manual, Part 2, Chapter 16, Section 16-3)

Direct Effects

Identified Resources and Level of Importance:
The project area is in attainment with the Clean Air Act's National Ambient Air Quality Standards (NAAQS). However, as a former ozone nonattainment area, the project is subject to the maintenance plan approved by USEPA as a revision to Florida's State Implementation Plan (75 FR 29671, May 27, 2010). As noted in Part 2, Chapter 16 of FDOT's PD&E Manual, current information on the NAAQS compliance status of areas in Florida is available in USEPA's "Green Book" (http://www.epa.gov/oar/oaqps/greenbk/).

Comments on Effects to Resources:
FDOT's PD&E Manual further states that USEPA promulgated transportation conformity regulations in 1993 to implement NAAQS requirements. These regulations (40 CFR Part 93) apply to transportation (highway) plans, programs, and projects within nonattainment or maintenance areas that are developed, funded, or approved under U.S.C. Title 23 or the Federal Transit Act.

Therefore, if federal funds are used for the proposed improvements to the I-95 partial cloverleaf interchanges at SW 10th Street and Hillsboro Boulevard and along I-95 from just south of the SW 10th Street interchange to just north of the Hillsboro Boulevard interchange (a distance of approximately 1.8 miles not including the length of the ramps), then a transportation conformity demonstration will be necessary to show that estimated pollutant/precursor emissions associated with the project are within the emissions limits specified in the SIP.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Degree of Effect: 2 *Minimal* assigned 10/22/2015 by Luis D Lopez, Federal Highway Administration

Coordination Document: PD&E Support Document As Per PD&E Manual

Direct Effects
Identified Resources and Level of Importance:
Clean Air Act requirements doesn't apply to this project.

Comments on Effects to Resources:
Not additional comments.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Contamination

Project Effects

Coordinator Summary Degree of Effect: 3 *Moderate* assigned 12/09/2015 by FDOT District 4

Comments:
A review of Geographic Information System data revealed the presence of dry cleaning sites, hazardous waste facilities, petroleum contamination monitoring sites, storage tank contamination monitoring sites, and Resource Conservation and Recovery Act regulated facilities within a quarter mile of the project, and two solid waste, CERCLA, and/or superfund sites within one mile of the project.

Due to the potential presence or documented presence of contamination associated with these sites and a Moderate degree of effect being assigned by SFWMD, USEPA, FDEP, and FHWA, a Summary DOE of ***Moderate*** has been assigned to the contamination issue.

A CSER will be prepared in accordance with Part 2, Chapter 22 of the FDOT PD&E Manual, including site specific surveys to assess existing or historical contamination sources and their proximity to construction activities. Contamination (including any required permits) will be evaluated during project development in accordance with federal, state and local laws and regulations. SFWMD noted that if dewatering is necessary, a water use permit may be required. A general permit under rule 40E-2.061(2), FAC may be applicable.

Degree of Effect: 3 *Moderate* assigned 10/23/2015 by Kim Gates, US Environmental Protection Agency

Coordination Document: PD&E Support Document As Per PD&E Manual
Coordination Document Comments:
Contamination Screening Evaluation Report (PD&E Manual, Part 2, Chapter 22)

Direct Effects
Identified Resources and Level of Importance:
USEPA notes that more than 90 potentially contaminated facilities and sites are present within a quarter-mile of the project corridor, and two solid waste, RCRA, and/or CERCLA sites were identified within one mile of the project corridor.

Comments on Effects to Resources:
USEPA supports the contamination assessment process described in FDOT's PD&E Manual (Part 2, Chapter 22). Each property within the project corridor (including the buffer areas) needs to be evaluated for the presence of potential contamination within the right-of-way or contamination that may have migrated onto or under the right-of-way.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
USEPA recommends avoidance of, or minimized impacts to, these facilities/sites to the extent practicable.

Project Scope

General Project Recommendations

There are no general project recommendations identified for this project in the EST.

Anticipated Permits

Permit	Type	Conditions	Assigned By	Date
Environmental Resource Permit	Water		FDOT District 4	12/10/15
Regional General Use Permit	USACE		FDOT District 4	12/10/15

Anticipated Technical Studies

Technical Study Name	Type	Conditions	Assigned By	Date
Public Involvement Plan	ENVIRONMENTAL		FDOT District 4	12/10/2015
Noise Study Report	ENVIRONMENTAL		FDOT District 4	12/10/2015
Contamination Screening Evaluation Report	ENVIRONMENTAL		FDOT District 4	12/10/2015
Air Quality Technical Memorandum	Other		FDOT District 4	12/10/2015
Wetlands Technical Memorandum	ENVIRONMENTAL		FDOT District 4	12/10/2015
Preliminary Engineering Report	ENGINEERING		FDOT District 4	12/10/2015
Water Quality Impact Evaluation (WQIE)	ENVIRONMENTAL		FDOT District 4	12/10/2015
Cultural Resource Assessment Survey	ENVIRONMENTAL		FDOT District 4	12/10/2015

Class of Action

Class of Action Determination

Class of Action	Other Actions	Lead Agency	Cooperating Agencies	Participating Agencies
Type 2 Categorical Exclusion	Endangered Species Assessment Consultation	Federal Highway Administration	No Cooperating Agencies have been identified.	No Participating Agencies have been identified.

Class of Action Signatures

Name	Agency	Review Status	Date	ETDM Role
Anson Sonnett	FDOT District 4	ACCEPTED	06/15/2016	FDOT ETDM Coordinator
Luis D Lopez	Federal Highway Administration	ACCEPTED	07/11/2016	Lead Agency ETAT Member

Dispute Resolution Activity Log

There are no dispute actions identified for this project in the EST.

The project is not anticipated to affect existing flood heights or floodplain limits. It is anticipated that the effect on floodplains will be Minimal.

Wildlife and Habitat

Project Level

Comments:

Core Foraging Areas (CFA) of two active wood stork nests and the US Fish and Wildlife Service (FWS) designated consultation area for snail kites overlap the project area. No areas of designated Critical Habitat are present. The proposed project corridor will utilize existing ROW; therefore, minimal involvement regarding wildlife and habitat resources is anticipated due to the limited amount of suitable habitat along the project corridor. It is anticipated that the effect to wildlife and habitat will be Minimal.

Coastal and Marine

Project Level

Comments:

The proposed project corridor is not located within a Coastal Barrier Resource Area, and Essential Fish Habitat is not located within the project limits. Consequently, it is anticipated that the effect to coastal and marine will be None.

Physical

Noise

Project Level

Comments:

Residential, commercial/retail, public, institutional and industrial properties were identified in the immediate vicinity of the project corridor. Residential land uses are located east of I-95 to the south of Hillsboro Boulevard. Natura Boulevard is in between the project and residential areas. The EST identified one constructed noise wall at I-95 north at Hillsboro Boulevard and two recommended noise walls located near SW 10th Street and Military Trail. While temporary construction noise impacts may have short-term effects on adjacent properties, overall noise and vibration-related impacts as a result of the project are anticipated to be Minimal. A Noise Study Report will be prepared to determine potential noise effects.

Air Quality

Project Level

Comments:

The proposed project corridor is located within the Southeast Florida Airshed, which is a US Environmental Protection Agency designated Air Quality Maintenance Attainment Area for all of the National Ambient Air Quality Standards under the criteria provided in the Clean Air Act. Therefore, the Clean Air conformity requirements do not apply to this project at this time. However, an Air Quality Technical Memorandum will be prepared as a support document to the PD&E Study. Air quality effects from the proposed project are anticipated to be Minimal.

Contamination