NOISE STUDY REPORT

I-95 /Ellis Road Interchange and
Ellis Road from I-95 to Wickham Road (CR 509)
Project Development & Environment Study

Brevard County, Florida

Financial ID No. 426905-1-22-01
Federal Aid No. SFT1 251 R

Prepared For:

The Florida Department of Transportation, District 5

Prepared By:

RS&H
IMPROVING YOUR WORLD

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PROJECT DEVELOPMENT SUMMARY REPORT
Ellis Road
Brevard County, Florida

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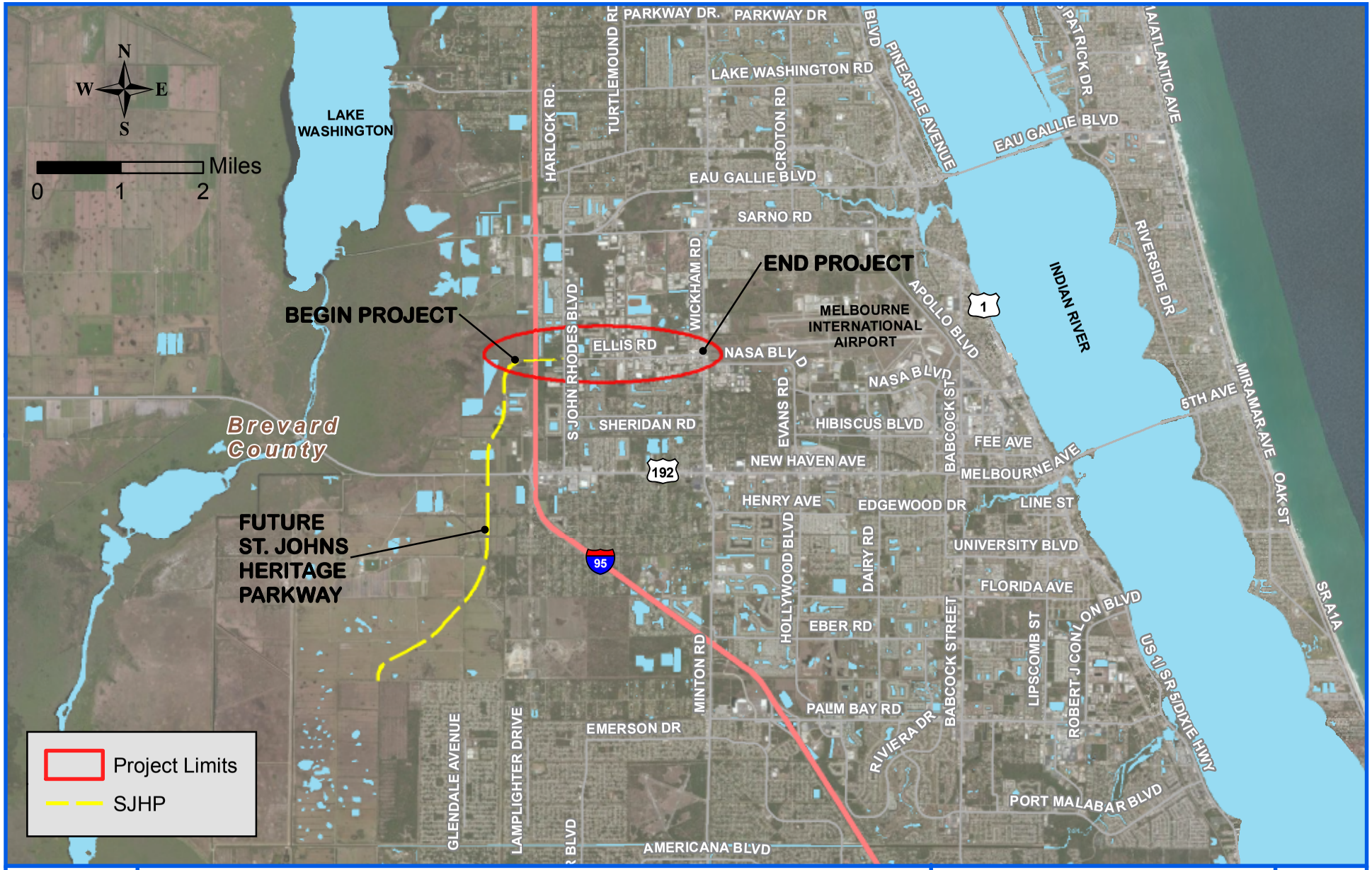
1.0 Executive Summary

Florida's Strategic Intermodal System (SIS) was designated by the Florida Legislature to efficiently serve the mobility needs of Florida's citizens, businesses, and visitors and help Florida become a worldwide economic leader, enhance economic prosperity and competitiveness, enrich quality of life, and reflect responsible environmental stewardship.

In Brevard County, Melbourne International Airport is an important transportation mode hub but also a major employment area for Melbourne and Palm Bay. Currently, the Melbourne International Airport and the Greyhound Bus Terminal are emerging SIS hubs. While the western limits of the airport are located only a couple of miles from the interstate, access to I-95 is provided by way of Eau Gallie Boulevard (SR 518) and New Haven Avenue (US 192), both of which are existing SIS connectors.

The proximity of I-95 to Melbourne International Airport is a primary stimulus for the study of an Ellis Road interchange and the upgrading of Ellis Road to a divided, four-lane facility.

This Project Development and Environment Study (PD&E) examines a direct, multi-lane Strategic Intermodal System connection from I-95 to Melbourne International Airport and Greyhound Bus Terminal. The improved Ellis Road will tie into St. Johns Heritage Parkway, a new four-lane arterial planned by Brevard County that begins at Malabar Road and ends at John Rodes Boulevard. A new interchange connecting Melbourne International Airport directly to I-95 will relieve Eau Gallie Boulevard / Sarno Road and US 192 as the only SIS Connectors. The improvements to and the extension of Ellis Road will provide a direct connection between the interstate and the airport as well as mitigate capacity deficiencies at the existing I-95 interchanges at US 192 and Eau Gallie Boulevard / Sarno Road. Upon the improvements, Ellis Road will be designated as a "SIS Connector" for the Melbourne International Airport. Figure 1.1 displays the general location of the project.



I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

PROJECT LOCATION MAP

FIGURE NO. 1.1

As part of the I-95 at Ellis Road PD&E Study, a traffic noise study was conducted in accordance with FDOT's PD&E Manual, Chapter 17, Noise (May 24, 2011) and Title 23 CFR (Code of Federal Regulations) Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise (July 13, 2010). The primary objectives of this noise study were to: 1) describe the existing site conditions including noise sensitive land uses within the project study area, 2) document the methodology used to conduct the noise assessment, 3) assess the significance of traffic noise levels on noise sensitive sites for both the No Build and Build Alternatives, and 4) evaluate abatement measures for those noise sensitive sites that approach or exceed FDOT's and Federal Highway Administration's (FHWA) Noise Abatement Criteria (NAC) with the Build Alternative. Other objectives of this study include consideration of construction noise and vibration impacts and the development of noise level isopleths, which can be used in the future by Brevard County and the City of Melbourne to identify compatible land uses. The methods and results of the noise study performed for this PD&E Study are summarized in this report. The information within this report is also intended to provide the technical support for the findings presented in the Project Development Summary Report.

2.0 Project Description

Existing Ellis Road is a two-lane roadway beginning at John Rodes Boulevard and ending at Wickham Road, where it ties into a recently constructed extension of NASA Boulevard. The posted speed limit is 35 miles per hour (mph). The existing right-of-way width varies from approximately 70' to 100'. I-95 is a six-lane freeway with a posted speed limit of 70 mph.

A number of project alternatives were developed as part of the PD&E Study process to help determine which would best minimize impacts and serve the project's goals and objectives described in Section 1.0. Details of the various alternatives considered are described in the Project Development Summary Report. The following sections describe the No-Build Alternative (Section 2.1) and the Build Alternatives considered (Sections 2.2 and 2.3), and the Preferred Build Alternative (Section 2.4).

2.1 No-Build Alternative

The No Build Alternative retains the existing roadway network. Under this scenario, existing Ellis Road would not be improved. The No-Build Alternative has certain advantages and disadvantages. The advantages of the No-Build Alternative include:

- No new design, utility, right of way, or construction costs, saving taxpayer dollars;
- No inconveniences to the motoring public during construction;
- No business or residential damages or displacements;
- No environmental degradation.

The disadvantages of the No Build Alternative include:

- No traffic relief for Eau Gallie Boulevard and New Haven Avenue;
- No direct route from I-95 to Melbourne International Airport;
- No access to I-95 for St. Johns Heritage Parkway at Ellis Road;

- Future failing level of service on the roadway network, particularly at the Eau Gallie Boulevard and New Haven Avenue interchanges;
- Increased congestion and potential crashes on the existing two-lane section;
- No treatment of stormwater runoff.

2.2 Transportation System Management

Transportation System Management (TSM) activities include improvements such as separate turn lanes, traffic signal timing optimization, and pavement marking improvements to enhance traffic safety and mobility. Projected traffic volumes on Ellis Road support the justification of additional lanes on the mainline. The implementation of TSM strategies will aid in local intersection safety and will be utilized in the proposed concepts. However, TSM improvements to Ellis Road do not sufficiently address the capacity problems or improve overall network efficiency such as, more direct access to Melbourne International Airport. The TSM alternative is not considered a viable option and no further evaluation of the TSM alternative is conducted in this study.

2.3 Build Alternatives – I-95 at Ellis Road

The concept of developing a new interchange along I-95 between the existing US 192 and Eau Gallie Boulevard interchanges has been considered in previous studies. An Interchange Feasibility Study was conducted as part of the PD&E Study completed by the Florida Department of Transportation (FDOT) in December 2003 for a future Palm Bay Parkway (subsequently renamed as the St. Johns Heritage Parkway) from SR 514 (Malabar Road) to the intersection of John Rodes Boulevard and Ellis Road east of I-95. The primary purpose of this PD&E Study was to identify the purpose and need and develop alternatives for the future Parkway alignment to be located principally west of I-95. The Interchange Feasibility Study was conducted to evaluate the potential need for new interchange access in the vicinity of I-95 and the proposed Palm Bay Parkway corridor.

Subsequent to the Palm Bay Parkway PD&E Study and Interchange Feasibility Study, the Melbourne International Airport Authority prepared an Interchange Justification Report.

The Melbourne International Airport is classified as an "Emerging SIS" hub and serves an important regional role for access to Port Canaveral and neighboring urban developments. The new interchange, and improvements along Ellis Road, will enhance accessibility to the Melbourne International Airport and reduce traffic loads on adjacent roadway facilities (US 192 and Eau Gallie Boulevard) as well as existing interchanges on I-95.

The location of the proposed new interchange evaluated in the IJR was consistent with the Interchange Feasibility Study conducted during the Palm Bay Parkway PD&E Study. The roadway alignment considered in the IJR closely followed the location of the preferred Palm Bay Parkway previously approved by FHWA in December 2003. The IJR was subsequently approved by FHWA in April 2009.

2.3.1 Ellis Road Alternative Alignments: West of I-95 to John Rodes Boulevard

The St. Johns Heritage Parkway typical section consists of four through lanes, a 30' median (22' between edges of curb and gutter with 4' inside shoulder on each side) and 5' paved shoulders on the outside. The design speed is 50 mph. Section 2.4 of this report explains the Ellis Road typical sections in detail. However, the consensus by the Department is to utilize the 50 mph design speed through the interchange area. As described in Section 2.4, the 50 mph Ellis Road typical section shares similar characteristics to the St. Johns Heritage Parkway typical section, except that the outer 5' paved shoulder is replaced with a 6.5' paved shoulder and curb and gutter. A grass strip of 8.25' has been provided between the back of curb and the inside edge of sidewalk. St. Johns Heritage Parkway utilizes an 8' sidewalk on both sides of the roadway. This configuration has also been carried through the interchange to John Rodes Boulevard.

Based on this typical section through the interchange area, two alignment alternatives were considered across I-95. The primary constraints within the interchange area are:

- Proximity of Lamplighter Village;
- Brevard County conservation easement in northwest quadrant;
- Existing borrow pit;
- Existing M-1 Canal;

- Existing retention pond on the east side (constructed as part of I-95 widening);
- Existing wetlands in southeast and southwest quadrants; and,
- Existing 300' utility easements containing electrical transmission and distribution as well as 8" and 26" gas pipelines.

Just west of the study area, St. Johns Heritage Parkway has a north-south orientation located approximately 2,000' west of I-95. This alignment curves from northward to eastward via an approximate 1,430' radius as it approaches its eastern terminus at John Rodes Boulevard. The official beginning of all the Ellis Road PD&E Study alignment alternatives is the western limit of the limited access right-of-way for the western ramp intersection.

Alternative 1 is consistent with the alignment contained in Brevard County's 90% final design plans for St. Johns Heritage Parkway. Alternative 2 is located approximately 80' south of Alternative 1 at the center of I-95. The next sections describe these two alignments in detail.

2.3.1.1 Alternative 1 - Retaining Wall Option

The primary controlling geographical feature for developing an east-west alignment across I-95 is the southern property line of Lamplighter Village. This line, which is also coincident with a section line, is located approximately 118' south of the existing edge of pavement of Waveside Drive, the internal loop road within Lamplighter Village. The south side of Waveside Drive contains an outdoor pavilion and maintenance area. A strip of

Lamplighter Village Property Line

trees separates the privacy fence behind the pavilion from the southern property line. Just south of the property line, a ditch with a bottom width of 7' and depth of approximately 2' conveys surface water south of Wayside Drive into the east-side ditch along I-95.

The intent of Alternative 1 is to accommodate the existing ditch and provide space on the south side of the ditch for future maintenance. The centerline of Alternative 1 is located approximately 108' south of the Lamplighter Village property line. This configuration allows a mechanically stabilized earth (MSE) wall to be located a sufficient distance from the top of ditch back-slope to allow space for maintenance vehicles. Approximately 22' has been provided for future maintenance between the base of the retaining wall and ditch.

Due to the location of the loop ramp in the southeast quadrant, the eastern ramp intersection with Ellis Road is located roughly in the same location as the M-1 Canal. Enclosing the M-1 Canal beneath Ellis Road and the northbound exit ramp is not desirable because approximately 800' of enclosure would be required. As a result, the M-1 Canal is proposed to be shifted to the east along the northbound exit ramp. This canal relocation, which is common to both alignment alternatives, will also impact the existing borrow pit.

2.3.1.2 Alternative 2 – Fill Section

As with Alternative 1, Alternative 2 seeks to avoid right-of-way impacts to the Lamplighter Village parcel to the north. In lieu of an MSE wall, Alternative 2 utilizes a 50 mph high speed urban typical section with 1:3 slopes beginning at the back of the sidewalk. With this typical section, the clear zone requirement of 24' is achieved at a distance of 2' behind the proposed sidewalk. The 1:3 slope is therefore allowable and has no effect on the distance to meet the clear zone requirement.

Alternative 2 has been set to allow for a 1:3 fore-slope on the north side of the Ellis Road extension as well as a ditch at the base of the slope without impacting the Lamplighter Village parcel. Unlike Alternative 1, the angle across I-95 has been skewed to approximately 87.5 degrees to allow for an easier transition to a future St. Johns Heritage Parkway alignment to the west and proposed Ellis Road alignments to the east. Compared to the east-west orientation of existing Ellis Road, the Alternative 2 crossing of I-95 is over

150' south. A transition to a future Ellis Road alignment requires a series of reverse curves. The slight skew angle at I-95 mitigates these alignment shifts that are needed to align with a reconstructed Ellis Road.

After the FHWA's approval of the 2003 EA/FONSI and subsequent 2010 approval of a southerly alignment shift of the I-95 crossing, Brevard County independently advanced the final design and right-of-way acquisition for its portion of St. Johns Heritage Parkway. With the inclusion of an FHWA-approved interchange, this alignment is being re-examined as part of this PD&E Study. As indicated in Section 2.3.1, Brevard County has final design plans at 90% completion reflecting the Alternative 1 alignment. A selection of Alternative 2 as the preferred alignment in this vicinity would require a rework of these 90% design plans and permit application beginning at the PT of the 1,400' radius curve to the west and continuing to John Rodes Boulevard, a distance of approximately 4,700'. The bridge plans over I-95 would also require modification. This proposed interchange and the extension of Ellis Road are anticipated to be eligible for federal and state funding once Location Design Concept Approval for this Study has been attained from the FHWA.

2.3.2 Ramp Alignment Alternatives in Northwest and Southwest Quadrants

A series of four utility easements, with a combined width of appoximately 300', are located adjacent to the limited-access right-of-way along the west side of I-95. Beginning at the I-95 limited-access right-of-way, the following easements and utilities conflict with the west-side ramps:

Existing Utilities Along I-95

- 30' easement / 8" Florida Gas Transmission gas main;
- 110' easement / Florida Power & Light Transmission;
- 100' easement / Florida Power & Light Distribution; and,
- 50' easement / 26" Florida Gas Transmission (FGT) gas main.

Based on examination of the interchanges to the north and south (US 192 and Eau Gallie Boulevard), the existing transmission and distribution towers were accommodated within the west-side infield of the interchange. Accommodation of the existing gas mains, particularly the 26" gas transmission line, is a larger challenge. Previous roadway projects affecting large gas transmission lines have resulted in lawsuits by the utility. On a recent interstate project in District 4, the consensus between FDOT and FGT was to place a roadway adjacent to the gas easement such that the MSE wall supporting the roadway was a specified distance outside of the utility easement. For the purposes of this study, any MSE wall along the easement for the 26" gas main should be 15' between the edge of the easement and base of retaining wall. This configuration will allow maintenance access at the base of the retaining wall without encroaching into the FGT easement. Based on the two alignment alternatives described in Section 2.3.2, several ramp alternatives were examined for the ramps on the west side of I-95:

- "MSE Wall" ramp alignment requiring MSE wall between the east side of the ramps and the mainline;
- Alternative A (Tight) ramp alignment placing ramps within the utility easements but avoiding the poles;
- Alternative B (Wide) ramp alignment with the tangent portion of the ramp supported on MSE wall and 15' outside of the outermost FGT easement; and,
- Alternative C (Parclo) ramp configuration placing all ramps south of Ellis Road over I-95.

Each of the four ramp configurations are analyzed with both the Alternative 1 and 2 alignments of Ellis Road over I-95.

The ramp configuration requiring MSE walls have significant impacts to the 8" gas main. The small infield areas are not conducive to accommodating drainage. For these reasons, the MSE wall ramp alignments are dropped from further analysis. No wetland impacts are quantified for this ramp configuration.

To assess the relative cost of the utility impacts, a cost analysis was performed assuming that the gas mains were accommodated by crossing of an arch or bridge. The cost of

conservation easement and wetland impacts were also tabulated. As seen in Table 4.3.3 of the Project Development Summary Report (PDSR), the Parclo ramp configuration based on alignment Alternative 2 is the least costly overall at $2.4 million when considering utility and mitigation costs. The second least costly is the Tight ramp configuration based on Alternative 2 at $3.0 million. The Wide ramp configuration was ultimately discounted due to the high cost of mitigating for the conservation easement impacts.

The District has decided not to pursue consideration of the Parclo interchange geometry since the IJR did not consider this configuration and because of possible re-design of the 90% St. Johns Heritage Parkway plans.

2.4 Build Alternatives – Ellis Road

A total of nine build alternatives are examined as part of this PD&E study. A number of specific project issues govern the selection of the typical section and alignment. These issues include:

Community / Environmental Issues

- Travel time through the corridor;
- Connection to St. Johns Heritage Parkway and NASA Boulevard;
- Residential impacts; and,
- Business impacts.

Engineering Issues

- Canal configuration;
- Utility relocations;
- Stormwater treatment system; and,
- Access management.

All of the Build alternatives assume that the existing pavement will be removed and the roadway re-profiled.

Regarding pedestrian and bicycle accommodations, the existing roadway provides no sidewalk or bicycle facilities other than an intermittent paved shoulder which is sometimes only on one side of the roadway. All of the Build alternatives examined include 5' sidewalks and accommodations for bicycles via bicycle lanes or paved shoulders.

To determine the optimal typical section and roadway alignment, three preliminary typical sections were considered. The three typical sections were an urban typical, a high speed urban typical, and a high speed urban typical with frontage roads. Horizontal geometry based on these three typical sections is evaluated based on the following themes:

- Hold north right of way line;
- Hold south right of way line; and,
- Best Fit based on right of way impacts.

Of the nine alternatives, six are carried forward in this report for a detailed analysis of wetland impacts. The high speed urban typical with frontage roads is dropped from further consideration based on the traffic analysis.

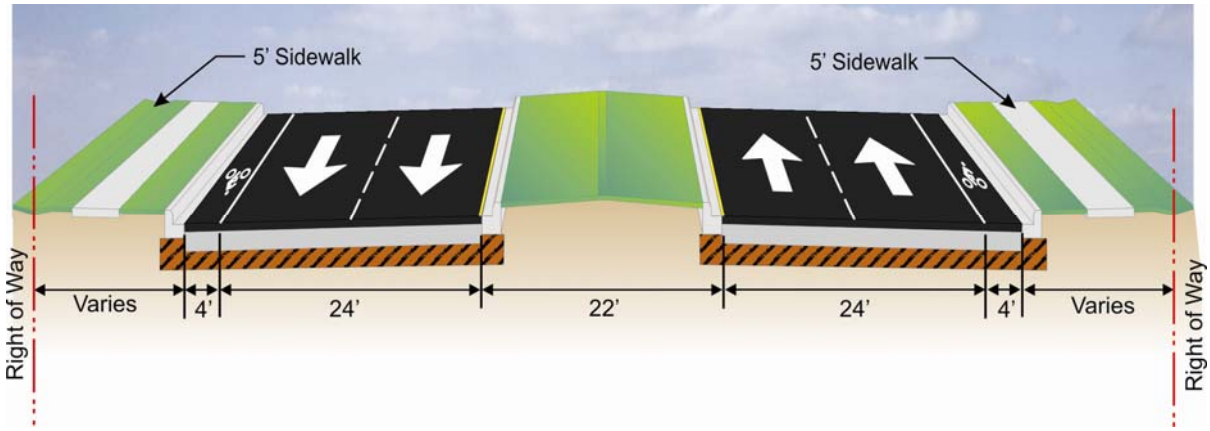
Sections 2.4.1 to 2.4.2 describe the two typical sections and alignment configurations carried forward. Appendix B contains 1"=100' scale concept plan sheets for each of these alternatives.

2.4.1 Standard Urban 45 mph

Figure 2.4.1 displays the urban 45 mph typical section analyzed in this PD&E Study. The typical section is based on the standard FDOT urban typical section shown on Exhibit Typ-5 in the 2011 *Plans Preparation Manual (Volume II)*. The typical section features four lanes separated by a 22' grass median flanked by curb and gutter on both sides. Beyond the edge of the traveled way is a 4'-wide bicycle lane, curb and gutter, and a 5'-wide sidewalk separated from the back of curb by 3' of sod. Two feet of turf is located behind the sidewalk to match to the adjacent existing ground. The minimum right-of-way width required for this typical section is 102'. Additional right-of-way will be needed for the canal and ditch

sections and for slopes to tie into existing ground. Chapter 4 of the PDSR contains a detailed discussion of the various canal configurations examined.

Figure 2.4.1 - Urban Typical Section



Appendix A of the PDSR displays the concept plan sheets for the Urban Hold North R/W, Urban Hold South R/W, and Urban Best Fit alternatives. The following is a segment-by-segment comparison of the alternatives based on the standard urban typical section.

I-95 to John Rodes Boulevard

Currently, no roadway exists in this segment. There is a 60' right-of-way section for the L-15 Canal between the M-1 Canal and John Rodes Boulevard. There is no development in this segment to determine the horizontal location of the roadway. All three alignments will use normal crown reverse curves with radii of 7,000' to transition from the common location of the interchange to each alternatives location at Ellis Road.

John Rodes Boulevard to East Drive

Existing right-of-way in this segment is 100' wide, with the exception of a 73' wide section that traverses east of Stan Drive for a distance of approximately 1,150'. This segment is the least densely-developed segment on Ellis Road with more land undeveloped than developed. This segment includes eleven buildings that could be possibly impacted; seven buildings on the north side of the road and four on the south side of the road. The summary of the building uses on the north side of the road are as follows:

- One is currently vacant;

- One is Wuestoff Health Systems;
- Two are Coastal Mechanical Services; and,
- Three are warehouse-type facilities with multiple tenants.

The summary of the building uses on the south side of the road are as follows:

- One is USSI;
- Two are warehouse type facilities with multiple tenants; and,
- One is Champion Environmental Soils.

Another consideration is a proposed site plan for additional warehouse facilities on the south east corner of Ellis Road and John Rodes Boulevard. The Hold North R/W alternative physically impacts every building on the south except USSI. However, the driveway and parking in front of USSI is impacted, as are the retention ponds for Florida Power and Light.

The Hold South R/W alternative physically impacts every building on the north except one of the warehouse structures. The warehouse building that was not physically impacted is oriented parallel to the roadway, with the front of the units facing the roadway and garage doors in the rear. This alignment impacts all customer parking located in the front of the businesses.

The Best Fit alternative was adjusted after a field meeting with FDOT Right-of-way personnel on February 8th, 2011. The USSI structure and Champion Environmental Soils structure are both considered high risk acquisitions, according to the Department Right-of-way personnel. Due to concerns about major impacts to these businesses, the Best Fit alignment holds the south right-of-way line up to Champion Environmental Soils before transitioning south with a 9,000' radius curve toward the undeveloped parcel to the south. The impacts of the Best Fit alternative are as follows:

- Currently vacant building (north side of roadway);
- Wuestoff Health Systems building (north side of roadway);

- Two warehouse-type structures with multiple tenants (north side of roadway);
- Parking of a warehouse-type facility with multiple tenants (north side of roadway) ;
- The western Coastal Mechanical Service structure (north side of roadway).

East Drive to Technology Drive (East)

Existing right-of-way is approximately 100' throughout this segment. Proposed right-of-way is reduced when the canal section ends just west of Technology Drive (east). This proposed right-of-way reduction occurs on the north side of the road. Although there are more structures in this segment, they are farther away from the roadway.

Hold North R/W has physical impacts to six structures. Of those structures on the south not impacted, all have parking impacts with the exception of Florida Power and Light; four have impacts to the retention ponds. There is also a small right-of-way acquisition on the north side of two parcels in the vicinity of the L-11 Canal, where there is a deflection in the corridor.

Hold South R/W impacts five out of the six structures on the north side of the road. Four are impacts to structures, and the Downtown Produce Market has impact to parking. According to FDOT right-of-way personnel, the 35 parking spaces impacted from Downtown Produce Market would be a major impact due to the size of the business and the resultant lack of space on the parcel to remedy the loss of parking.

The Best Fit alternative shifts to hold the north right-of-way with an 8,400' radius. Just west of Technology Drive (East), the canal section ends, thereby reducing the right-of-way on the north side by 56.5'. In the vicinity of Ferguson Water Works, the alignment begins to transition north to the open field east of Ferguson Water Works with an 8,400' radius curve. The impacts of the best fit alternative are as follows:

- Florida Power and Light retention pond;
- Structural Composites Inc.;
- Retention pond and parking impact to Medicorp (approximately 20 spaces);
- Four warehouse type structures;

- Parking and circulation impact to two warehouse type structures; and,
- Two additional retention ponds.

Technology Drive (East) to Lake Ibis Drive

The right-of-way width in this segment is 80', with the exception of the western 310' of the segment, which has a right-of-way width of 100'. This segment has the only residential area on Ellis Road. There are 18 single family dwellings on the north side of the road. Buildings with multiple garages that serve individual businesses are located on the south side, across from the residential units.

Hold North R/W physically impacts seven garage unit structures and impacts parking of three structures. Although there is right-of-way take from the residential units on the north, none are physically impacted. The reason for the impact to the northern parcels is due to the alignment tying into the existing road just west of Lake Ibis Drive.

Hold South R/W physically impacts Secureway Self Storage on the north side and Mark's Body Shop on the south side. Although the residential units are not physically impacted, several of them are within five feet of the proposed right-of-way. Like the Hold North R/W alternative, some parcels on both sides of the road are impacted due to the alignment tying into existing just west of Lake Ibis Drive.

The Best Fit alternative has the same major impacts as the hold south right-of-way in this segment. An 8,000' radius curve moves the alignment north away from the structures on the south. In the vicinity of Shinn Ave, a gradual 14,000' radius curve brings the road in line with the existing alignment so that it can match into existing just west of Lake Ibis Drive. The impacts of the best fit alternative are as follows:

- Secureway Self Storage;
- Mark's Body Shop;
- Five residential units;
- Within 20' of seven additional residential units; and,
- Parking impact to Buckman's Auto Body.

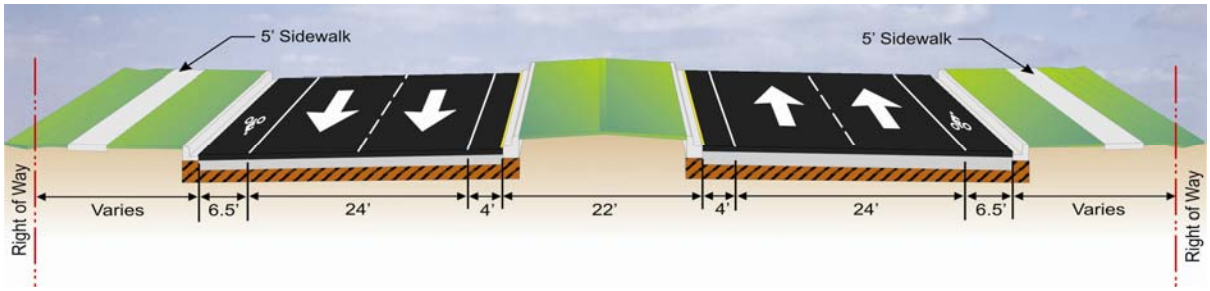
Lake Ibis Drive to Wickham Road

In this segment, the existing right-of-way width varies from 93 to 97 feet. Most of the structures are multiple garage-warehouse type structures. At Lake Ibis Drive, the proposed roadway immediately begins to transition into the existing recently-constructed improvements from the NASA Boulevard project. All three alignments impact parking to Walkers Ellis Road Auto Repair to the north and parking of a vacant warehouse type structure to the south. The Best Fit alignment terminates approximately 270' east of Lake Ibis Drive, impacting one parking space of Dependable Air Supply and creating minor impacts to Goodman AC/Heat and Dal-Tile.

2.4.2 SIS High Speed (50 mph) Urban

Figure 2.4.2 displays the SIS high speed urban typical section analyzed in this PD&E Study. The typical section is based on the standard FDOT typical section shown on Exhibit Typ-13 in the 2011 Plans Preparation Manual (Volume II). This typical section also meets the required design speed of 50 mph for an SIS facility. As with the urban typical section, the SIS high speed urban typical section features four lanes separated by a 30' median, which is comprised of 18' of grass, curb and gutter and 8 total feet of inside shoulder. The inside yellow edge of pavement marking is offset by 4' from the edge of the curb and gutter, thereby meeting the clear zone requirements between the inside travel lanes. Beyond the edge of the travel lanes is a 6.5'-wide bicycle lane, curb and gutter, and a 5'-wide sidewalk separated from the back of curb by 8.25' of sod. The tie-down slope of the typical section begins 2' behind the proposed sidewalk. The minimum right-of-way width required for this typical section is 136'. Additional right-of-way will be needed for the canal and ditch sections and for slopes to tie into existing ground. Chapter 4 of the PDSR contains a detailed discussion of the various canal configurations examined.

Figure 2.4.2 – SIS High Speed (50 mph) Urban Typical Section



Appendix A of the PDSR displays the concept plan sheets for the SIS high speed urban Hold North R/W, Hold South R/W, and Best Fit alternatives. The following is a segment-by-segment comparison of the alternatives based on the SIS high speed urban typical section.

I-95 to John Rodes Boulevard

As previously mentioned, this segment has a 60' right-of-way section for the L-15 Canal between the M-1 Canal and John Rodes Boulevard with no development in this segment. All three alignments will use normal crown curves with radii of 8,400' to transition from the common location of the interchange to each alternatives location at Ellis Road.

John Rodes Boulevard to East Drive

The SIS Hold North R/W impacts every structure along the south side of the road. SIS Hold South R/W impacts every structure along the north side of the road. The SIS Best Fit alternative avoids the same structures as the Standard Urban Best Fit alternative for the reasons discussed previously. As with the Urban Best Fit alternative, the SIS Best Fit holds the south right-of-way line up to Champion Environmental Soils before transitioning to the undeveloped parcel to the south using an 8,400' radius curve. The impacts of the best fit alternative are as follows:

- Currently vacant structure;
- Wuestoff Health Systems;
- Three warehouse type structures;

- Western Coastal Mechanical Services structure; and,
- Florida Power and Light retention pond.

East Drive to Technology Drive (East)

SIS Hold North R/W has impacts to nine structures. The three structures that are not impacted have parking impacts. SIS Hold South R/W impacts four structures as well as 52 parking spots from the Downtown Produce Market.

The SIS Best Fit alternative is shifted south to minimize any impact to the Downtown Produce Market and transitions to the undeveloped land to the north using a 9,200' radius curve. Just west of Technology Drive (East), the canal section ends, thereby reducing the right-of-way on the north side by 64.5'. The impacts of the Best Fit alternative are as follows:

- Structural Composites Inc.;
- Four warehouse type structures;
- Ferguson Water Works; and,
- Roughly 40 Medicomp parking spots.

Technology Drive (East) to Lake Ibis Drive

Hold North R/W impacts seven multiple garage type structures. Parking and circulation for three structures are impacted. There are some minor to moderate right-of-way impacts to the residential units on the north side.

Hold South R/W impacts Secureway Self Storage and ten residential units on the north side and Mark's Body Shop on the south side. There are moderate to major right-of-way impacts to the remaining eight residential units. There are also minor right-of-way impacts to four parcels on the south side of the road.

The Best Fit alternative is shifted north via an 8,400' curve in order to avoid the structures on the south side of the roadway. The alignment utilizes a 13,000' radius curve to

gradually transition the alignment to the center of the right-of-way to match into existing pavement. The impacts of the Best Fit alternative are as follows:

- Secureway Self Storage;
- Physical impact to eleven of the residential units;
- Mark's Body Shop;
- Moderate to Major impacts to the 4 remaining residential units;
- Parking impact to Buckman's Auto Body; and,
- Minor parcel impacts to three south parcels.

The left turn lanes into Shinn Avenue and Lake Ibis Drive both provide approximately 192' of total deceleration distance, which is less than the 230' required in Index 301.

Lake Ibis Drive to Wickham Road

From Lake Ibis Drive to Wickham Road, the proposed roadway immediately begins to transition into existing, recently-constructed pavement. All three alignments impact parking to Walkers Ellis Road Auto Repair to the north and parking of a vacant warehouse-type structure to the south. The Best Fit alignment terminates approximately 230' west of Lake Ibis Drive with minor impacts to Dependable Air Supply and Goodman AC/Heat.

2.4.3 Preferred Alternative

The following is a description of the preferred horizontal alignment beginning just west of I-95 and extending to just west of Wickham Road. The Preferred Alternative is a combination of Alternative 2 through the interchange area and the Standard 45 mph Urban Best Fit Alternative. Concept plan sheets of the Preferred Alternative are located in Appendix B.

The preferred alignment begins at the approximate profile touchdown point located approximately 1,350' west of the I-95 centerline. Through the interchange area, the Preferred Alternative utilizes alignment Alternative 2 in conjunction with the western ramp configuration recommended by the Value Engineering Study. The Preferred Alternative avoids impacts to the conservation easement in the northwest quadrant and

eliminates the need for a retaining wall on the north side of Ellis Road in the vicinity of Lamplighter Village. By avoiding the conservation easement, this alignment demonstrates avoidance and minimization of environmental issues and will lessen the complexity of the permitting process and mitigation in future final design phases. An added benefit is that this alignment is farther away from Lamplighter Village compared to Alternative 1. Both the owner and manager of Lamplighter Village, as well as a number of residents, expressed their desire for Alternative 2 at the informational meeting held on March 24, 2011 in Lamplighter Village.

The west-side ramps are aligned so that the main portion of the ramp is parallel to the existing limited access right-of-way line. This configuration was recommended by the Value Engineering Study. The ramps were positioned such that a distance of 12' occurs between the limited access right-of-way. The bridge over I-95 consists of four through lanes, a westbound left-turn lane, dual 8' shoulders, parapet walls, and an 8' envelope for pedestrians and bicyclists.

East of the structure, the alignment begins to transition northward via an 8,400' radius (normal crown) curve on a fill section. A crossing over the M-1 Canal occurs immediately east of the eastern ramp intersection. While the size of the crossing has not been determined as part of this PD&E study, the preliminary recommendation is to utilize a single span or arch configuration in order to minimize the constraints within the channel, as Lamplighter Village has a history of upstream flooding. The L-15 Canal requires relocation and is shown as flaring northward in order to accommodate the increase in roadway fill as the roadway is raised to meet the structure over I-95..

At the John Rodes Boulevard intersection, the typical section changes from a high speed urban (50 mph) section west of John Rodes Boulevard to a standard 45 mph urban section east of John Rodes Boulevard. Across the intersection, the 30' median is reduced to 22', and the 6.5' outside shoulder is reduced to a 4' bicycle lane.

East of John Rodes Boulevard, the alignment continues to curve via a normal crown radius such that the right-of-way impacts are on the north side of Ellis Road. Between John Rodes Boulevard and Stan Drive, the south right-of-way is utilized as the constraint in positioning

the alignment. A total right-of-way width of 190.5' is required to accommodate the standard urban 45 mph typical section and canal relocation. This configuration has significant right-of-way impacts to Explorer Elementary and Middle Charter School, Wuestoff Health Systems, Empire Electric, and Affordable Signs, all located along the north side of Ellis Road. These properties are likely displacements or relocations.

Roughly halfway between John Rodes Boulevard and Stan Drive, the Preferred Alternative is further transitioned to the south side of existing Ellis Road and continues roughly parallel to the existing roadway. Within this segment, the right-of-way impacts are primarily on the south side of the roadway.

Through the roadway transition between West Drive and East Drive, the Preferred Alternative significantly impacts the CMS business on the north side of the roadway. The adjacent CMS Coastal Mechanical Services to the east experiences a partial acquisition, which does not directly impact the existing building or parking. The ECAS business experiences a partial acquisition, but parking impacts are avoided. East of this parcel, impacts to several parcels are avoided, including Downtown Produce Market. Along the south side of the roadway between East Drive and Distribution Drive (east), the Preferred Alternative impacts the existing retention ponds and landscaping for Florida Power and Light, the existing parking for Structural Composites, and existing parking and landscaping for Medicomp.

Between Distribution Drive (east) and Technology Drive (east), the Preferred Alternative experiences a series of normal crown reverse curve, which transition the alignment from the south side of the roadway to the north side. Through this transition, commercial displacements on the south side of the roadway include a vacant building, Habitat for Humanity, American Door and Millwork, and Laundry Delivered.com. Partial right-of-way impacts on the south side include Brooks Enterprise, Hills Inc., and Tempstor Heating and Cooling. Partial impacts on the north side include Classic Floors and Ferguson Water Works. Just west of Technology Drive (east), the L-15 Canal ends, and the typical section includes a 1:4 slope that matches into the existing ground behind the back of proposed

sidewalk. The termination of the canal reduces the right-of-way width from 190.5' to 134', a reduction of 56.5'.

East of Technology Drive (east) the impacts are primarily located on the north side of the roadway, thereby impacting all 19 residential properties. The residences on 9 of these properties are located 10' or less from the proposed right-of-way. A total of 18 residential relocations are assumed for the Preferred Alternative.

Between Shinn Avenue and Wickham Road, the Preferred Alternative matches into the recently constructed four lane section completed as part of the NASA Boulevard realignment. Partial business impacts on the south side of the roadway include Hott Cars Auto Service Center, Buckman's Auto Body, Mark's Body Shop, a vacant building, and Dependable Air Supply. On the north side, Walker's Ellis Road Auto Repair and Goodman A/C Heat are partially impacted by the transitioning typical section.

An eastbound right-turn lane is proposed at the Wickham Road intersection in order to optimize the level of service of the intersection.

3.0 Methodology

This study was conducted based on the methodology described in the FDOT's PD&E Manual, Chapter 17, Noise (May 24, 2011) and in accordance with Title 23 CFR (Code of Federal Regulations) Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise (July 13, 2010). The noise study involved the following procedures:

- Identification of Noise Sensitive Receptor Sites (see Section 4.1);
- Field Measurement of Noise Levels and Noise Model Validation (see Section 4.2);
- Prediction of Existing and Future Noise Levels (see Section 4.3);
- Assessment of Traffic Noise Impacts (see Section 4.4); and
- Consideration of Noise Barriers as a Noise Abatement Measure (see Section 5.0).

The traffic noise model, including the modeling approach, the noise metrics, and the traffic data used in this study are described in the following sections.

3.1 Traffic Noise Modeling

FHWA's Traffic Noise Model (TNM) Version 2.5 (February 2004) was used to predict existing and future traffic noise levels and to analyze the effectiveness of noise barriers. TNM 2.5 was used because it is FHWA's latest approved noise model. This model estimates the acoustic intensity at noise sensitive receptor sites from a series of roadway segments (the source). Model-predicted noise levels are influenced by several factors, such as vehicle speed and distribution of vehicle types. Noise levels are also affected by characteristics of the source-to-receptor site path, including the effects of intervening barriers, structures (houses, trees, etc.), ground surface type (hard or soft), and topography. For single family residences, traffic noise levels were predicted at the edge of the dwelling unit closest to the travel lane. The first floor receptor sites were modeled 5 feet above the ground elevation.

3.2 Noise Metric

Noise levels documented in this report represent the hourly equivalent sound level [Leq(h)]. Leq(h) is the steady-state sound level, which contains the same amount of acoustic energy as the actual time-varying sound level over a 1-hour period. Leq(h) is measured in A-weighted decibels [dB(A)], which closely approximate the human frequency response. Sound levels of typical noise sources and environments are provided in Table 3.2.1 as a frame of reference.

Table 3.2.1 - Sound Levels of Typical Noise Sources and Environments

COMMON OUTDOOR ACTIVITIES	NOISE LEVEL dB(A)	COMMON INDOOR ACTIVITIES
	---110---	Rock Band
Jet Fly-over at 1000 ft		
	---100---	
Gas Lawn Mower at 3 ft		
	---90---	
Diesel Truck at 50 ft, at 50 mph		Food Blender at 1 m (3 ft)
	---80---	Garbage Disposal at 1 m (3 ft)
Noise Urban Area (Daytime)		
Gas Lawn Mower at 100 ft	**---70---**	Vacuum Cleaner at 10 ft
Commercial Area		Normal Speech at 3 ft
Heavy Traffic at 300 ft	**---60---**	
		Large Business Office
Quiet Urban Daytime	**---50---**	Dishwasher Next Room
Quiet Urban Nighttime	**---40---**	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		Library
	---30---	Bedroom at Night, Concert Hall (Background)
Quiet Rural Nighttime		
	---20---	
	---10---	
		Lowest Threshold of Human Hearing
Lowest Threshold of Human Hearing	**---0---**	

Source: California Dept. of Transportation Technical Noise Supplement, Oct. 1998, Page 18.

3.3 Traffic Data

The traffic data used in the noise analysis is from the Ellis Road PD&E Study Final Design Traffic Technical Memorandum and the Level of Service (LOS) "C" volumes contained in the FDOT's 2010 Quality/Level of Service Handbook. The relevant traffic parameters for this segment of I-95 and Ellis Road are summarized in Table 3.3.1. The peak hour traffic volumes for the existing and the future design year conditions and the LOS "C" volumes are presented in Table 3.3.2. Table 3.3.2 also summarizes the traffic data used in the prediction of traffic noise levels by vehicle type (cars, medium trucks, and heavy trucks) for the Existing Conditions, the No Build Alternative, and the Build Alternative. The traffic volumes used to predict noise levels included the least of either: 1) the traffic capacity of the roadway at LOS "C" or 2) the projected traffic demand of the roadway. These traffic volumes can be expected to produce the noisiest traffic conditions likely to occur during the design year.

Table 3.3.1 - General Traffic Parameters

Traffic Parameters	I-95	Ellis Road
Peak Hour Factor (K)	10.00 %	10.3 %
Directional Split (D)	56.0 %	56.0 %
Daily Truck Factor (T_{24})	16.98 %	8.5 %
Peak Hour Truck Factor	9.0 %	4.0 %
Peak Hour Percent Medium Trucks	2.25 %	2.2 %
Peak Hour Percent Heavy Trucks	6.75 %	1.8%

Table 3.3.2
Traffic Data for Noise Modeling (Sheet 1 of 2)

Roadway/ Roadway Segment	Direction	Number of Lanes	Predicted Peak Hour Demand Volume		Level of Service "C" Volume*	Volume Used In TNM	Cars	Medium Trucks	Heavy Trucks	Speed (Miles per Hour)
			(AM)	(PM)						
I-95 Mainline - Existing Conditions										
North and South of Ellis Road	Northbound	3	2,841	2,192	4,580	2,841	2,585	64	192	70
	Southbound	3	1,827	2,801	4,580	2,801	2,549	63	189	
Ellis Road - Existing Conditions										
John Rodes Boulevard to Stan Drive	Eastbound	1	496	168	820	496	476	11	9	35
	Westbound	1	132	376	820	376	361	8	7	
Stan Drive to West Drive	Eastbound	1	477	192	820	477	458	10	9	35
	Westbound	1	162	364	820	364	349	8	7	
West Drive to East Drive	Eastbound	1	458	239	820	458	440	10	8	35
	Westbound	1	190	345	820	345	331	8	6	
East Drive to Greenboro Drive	Eastbound	1	521	410	820	521	500	11	9	35
	Westbound	1	341	472	820	472	453	10	8	
Greenboro Drive to Distribution Drive West	Eastbound	1	528	341	820	528	507	12	10	35
	Westbound	1	275	470	820	470	451	10	8	
Distribution Drive West to Distribution Drive East	Eastbound	1	428	361	820	428	411	9	8	35
	Westbound	1	286	372	820	372	357	8	7	
Distribution Drive East to Technology Drive	Northbound	1	408	411	820	411	395	9	7	35
	Southbound	1	310	363	820	363	348	8	7	
Technology Drive to Shinn Avenue	Eastbound	1	426	536	820	536	515	12	10	35
	Westbound	1	406	354	820	406	390	9	7	
Shinn Avenue to Lake Ibis Drive	Eastbound	1	429	526	820	526	505	12	9	35
	Westbound	1	419	353	820	419	402	9	8	
Lake Ibis Drive to Wickham Road	Eastbound	1	364	427	820	427	410	9	8	35
	Westbound	1	371	319	820	371	356	8	7	
I-95 Mainline - No Build Conditions										
North and South of Ellis Road	Northbound	3	2,841	2,192	4,580	2,841	2,585	64	192	70
	Southbound	3	1,827	2,801	4,580	2,801	2,549	63	189	
Ellis Road - No Build Conditions										
St. Johns Heritage Parkway to John Roades Boulevard	Eastbound	2	700	530	1,890	700	672	15	13	45
	Westbound	2	530	700	1,890	700	672	15	13	
John Rodes Boulevard to Stan Drive	Eastbound	1	1,080	815	820	820	787	18	15	35
	Westbound	1	790	1,095	820	820	787	18	15	
Stan Drive to West Drive	Eastbound	1	1,060	840	820	820	787	18	15	35
	Westbound	1	820	1,080	820	820	787	18	15	
West Drive to East Drive	Eastbound	1	955	785	820	820	787	18	15	35
	Westbound	1	760	980	820	820	787	18	15	
East Drive to Greenboro Drive	Eastbound	1	1,280	1,100	820	820	787	18	15	35
	Westbound	1	1,055	1,380	820	820	787	18	15	
Greenboro Drive to Distribution Drive West	Eastbound	1	1,280	1,100	820	820	787	18	15	35
	Westbound	1	1,055	1,380	820	820	787	18	15	
Distribution Drive West to Distribution Drive East	Eastbound	1	1,190	990	820	820	787	18	15	35
	Westbound	1	945	1,290	820	820	787	18	15	
Distribution Drive East to Technology Drive	Northbound	1	1,075	1,055	820	820	787	18	15	35
	Southbound	1	970	1,175	820	820	787	18	15	
Technology Drive to Shinn Avenue	Eastbound	1	1,090	1,180	820	820	787	18	15	35
	Westbound	1	1,070	1,170	820	820	787	18	15	
Shinn Avenue to Lake Ibis Drive	Eastbound	1	1,095	1,170	820	820	787	18	15	35
	Westbound	1	1,080	1,175	820	820	787	18	15	
Lake Ibis Drive to Wickham Road	Eastbound	1	985	1,050	820	820	787	18	15	35
	Westbound	1	940	1,065	820	820	787	18	15	

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* LOS "C" volumes were obtained from the 2010 FDOT's Quality/Level of Service Handbook; Ramp LOS "C" volumes approximated based on multilane highways with similar capacities as defined in HCM Exhibit 21-2.

Percent Trucks:
Design Hour Truck Distributions: I-95 - Medium Trucks = 2.25%, Heavy Trucks = 6.75%; Ellis Road - Medium Trucks = 2.2%, Heavy Trucks = 1.8%

Table 3.3.2
Traffic Data for Noise Modeling (Sheet 2 of 2)

Roadway/ Roadway Segment	Direction	Number of Lanes	Predicted Peak Hour Demand Volume		Level of Service "C" Volume*	Volume Used In TNM	Cars	Medium Trucks	Heavy Trucks	Speed (Miles per Hour)
			(AM)	(PM)						
I-95 Mainline - Build Alternative Design Year 2034										
South of Ellis Road	Northbound	3	6,100	4,870	4,580	4,580	4,168	103	309	70
	Southbound	3	4,870	6,100	4,580	4,580	4,168	103	309	
Between Ellis Road Ramps	Northbound	3	5,490	4,230	4,580	4,580	4,168	103	309	70
	Southbound	3	4,230	5,490	4,580	4,580	4,168	103	309	
North of Ellis Road	Northbound	3	6,170	4,900	4,580	4,580	4,168	103	309	70
	Southbound	3	4,900	6,170	4,580	4,580	4,168	103	309	
I-95 Ramps - Build Alternative Design Year 2034										
I-95/Ellis Road Interchange Northbound	Off Ramp	1	610	640	1,340	640	614	14	12	35
	On Ramp	1	680	670	1,340	680	653	15	12	50
I-95/Ellis Road Interchange Southbound	Off Ramp	1	670	680	1,340	680	653	15	12	35
	On Ramp	1	640	610	1,340	640	614	14	12	50
Ellis Road -Build Alternative Design Year 2034										
St. Johns Heritage Parkway to Ellis Road Interchange Southbound Ramps	Eastbound	2	1,190	920	1,890	1,190	1,142	26	21	45
	Westbound	2	920	1,190	1,890	1,190	1,142	26	21	
Ellis Road Interchange Southbound Ramps to Northbound Ramps	Eastbound	2	1,120	860	1,890	1,120	1,075	25	20	45
	Westbound	2	820	1,060	1,890	1,060	1,018	23	19	
Ellis Road Interchange Northbound Ramps to John Rodes Boulevard	Eastbound	2	990	760	1,890	990	950	22	18	45
	Westbound	2	760	990	1,890	990	950	22	18	
John Rodes Boulevard to American Paint Driveway	Eastbound	2	1,150	885	1,890	1,150	1,104	25	21	45
	Westbound	2	885	1,150	1,890	1,150	1,104	25	21	
American Paint Driveway to Empire Electric Driveway	Eastbound	2	1,145	920	1,890	1,145	1,099	25	21	45
	Westbound	2	905	1,170	1,890	1,170	1,123	26	21	
Empire Electric Driveway to Stan Drive	Eastbound	2	1,135	910	1,890	1,135	1,090	25	20	45
	Westbound	2	900	1,150	1,890	1,150	1,104	25	21	
Stan Drive to West Drive	Eastbound	2	1,160	985	1,890	1,160	1,114	26	21	45
	Westbound	2	970	1,190	1,890	1,190	1,142	26	21	
West Drive to East Drive	Eastbound	2	1,165	990	1,890	1,165	1,118	26	21	45
	Westbound	2	1,030	1,130	1,890	1,130	1,085	25	20	
East Drive to Greenboro Drive	Eastbound	2	1,475	1,420	1,890	1,475	1,416	32	27	45
	Westbound	2	1,360	1,550	1,890	1,550	1,488	34	28	
Greenboro Drive to Distribution Drive West	Eastbound	2	1,495	1,400	1,890	1,495	1,435	33	27	45
	Westbound	2	1,360	1,550	1,890	1,550	1,488	34	28	
Distribution Drive West to Distribution Drive East	Eastbound	2	1,395	1,480	1,890	1,480	1,421	33	27	45
	Westbound	2	1,370	1,510	1,890	1,510	1,450	33	27	
Distribution Drive East to Technology Drive	Northbound	2	1,115	1,180	1,890	1,180	1,133	26	21	45
	Southbound	2	1,141	1,150	1,890	1,150	1,104	25	21	
Technology Drive to Shinn Avenue	Eastbound	2	1,130	1,320	1,890	1,320	1,267	29	24	45
	Westbound	2	1,225	1,225	1,890	1,225	1,176	27	22	
Shinn Avenue to Lake Ibis Drive	Eastbound	2	1,200	1,385	1,890	1,385	1,330	30	25	45
	Westbound	2	1,300	1,220	1,890	1,300	1,248	29	23	
Lake Ibis Drive to Wickham Road	Eastbound	2	1,005	1,175	1,890	1,175	1,128	26	21	45
	Westbound	2	1,060	1,020	1,890	1,060	1,018	23	19	

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* LOS "C" volumes were obtained from the 2010 FDOT's Quality/Level of Service Handbook; Ramp LOS "C" volumes approximated based on multilane highways with similar capacities as defined in HCM Exhibit 21-2.

Percent Trucks:
I-95 (Design Hour) Truck Distributions: Medium Trucks = 1.20%, Heavy Trucks = 0.80%

4.0 Traffic Noise Analysis

The assessment of traffic noise impacts is summarized in this section. Section 4.1 describes the noise sensitive receptor sites in the study area potentially affected by the proposed improvements. Section 4.2 describes the noise level measurements and the validation of the noise model. Section 4.3 describes the predicted noise levels for the existing and future conditions. Section 4.4 describes the traffic noise impacts associated with the Build Alternative.

4.1 Noise Sensitive Receptor Sites

The FHWA has established noise abatement criteria for 7 land use activity categories. The NAC levels are presented in Table 4.1.1. Noise abatement measures must be considered when predicted noise levels approach or exceed the NAC levels or when a substantial noise increase occurs. A substantial noise increase occurs when the existing noise level is predicted to be exceeded by 15 dB(A) or more as a result of the transportation improvement project. The FDOT defines "approach" as within 1.0 dB(A) of the FHWA criteria.

The land uses within the study limits described below were evaluated to identify the noise sensitive receptor sites that may be impacted by traffic noise associated with the proposed improvements. Noise sensitive receptor sites represent any property where frequent exterior human use occurs. This includes residential land use (Noise Abatement Criteria Activity Category B); a variety of nonresidential land uses not specifically covered in Category A or B including parks and recreational areas, medical facilities, schools, and places of worship (Category C); and commercial/developed properties with exterior areas of use (Category E). Noise sensitive sites also include interior use areas where no exterior activities occur for facilities such as auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, recording studios, schools, and television studios (Category D). Categories F and G do not have noise abatement criteria levels. Category F includes land uses such as industrial and retail facilities that are not considered noise sensitive. Category G includes undeveloped lands.

Table 4.1.1 - Noise Abatement Criteria [Hourly A-Weighted Sound Level-decibels (dB(A))]

Activity Category	Activity Leq(h)[1]		Evaluation Location	Description of Activity Category
	FHWA	FDOT		
A	57	56	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[2]	67	66	Exterior	Residential
C[2]	67	66	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	51	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[2]	72	71	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	–	–	–	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	–	–	–	Undeveloped lands that are not permitted.

(Based on Table 1 of 23 CFR Part 772)

[1] The Leq(h) Activity Criteria values are for impact determination only, and are not a design standard for noise abatement measures.

[2] Includes undeveloped lands permitted for this activity category.

Note: FDOT defines that a substantial noise increase occurs when the existing noise level is predicted to be exceeded by 15 decibels or more as a result of the transportation improvement project. When this occurs, the requirement for abatement consideration will be followed.

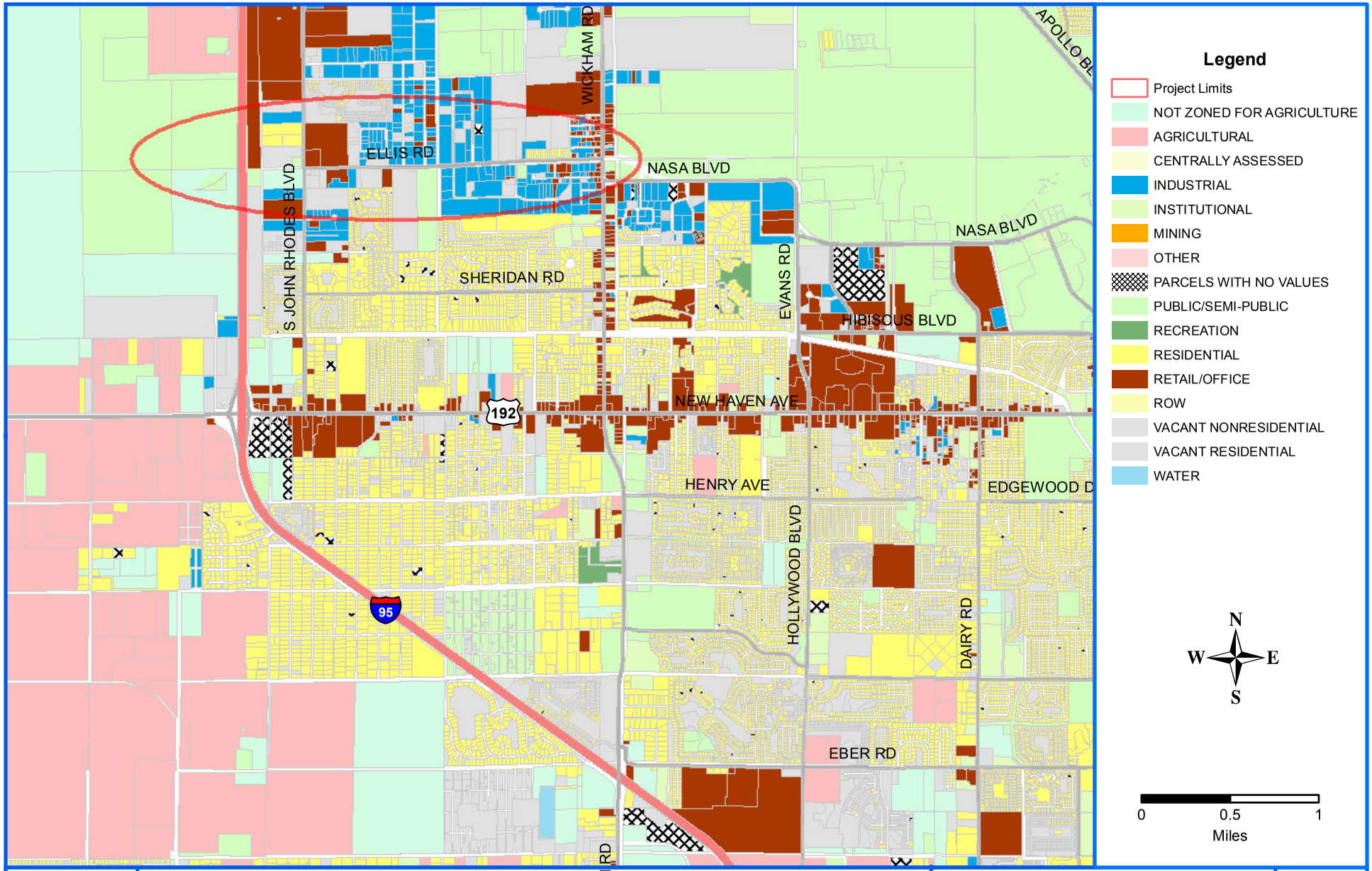
Existing land uses along the project corridor are depicted in Figure 4.1 and are labeled on the Concept Plans of the Build Alternative in Appendix B (Sheets B1 and B2 and Sheets B11 through B17). West of the I-95 corridor, the existing land use is undeveloped. The community of Lamplighter Village is located along the east side of I-95 and north of Ellis Road. South of Ellis Road adjacent to I-95 is currently vacant or undeveloped land. A tower located on the northwest corner of Ellis Road and John Rodes Boulevard contains navigation equipment for the MIA. Also, on the northeast corner of Ellis Road and John Rodes Boulevard, a vacant building previous included a school (i.e., Explorer Elementary & Middle Charter School). From John Rodes Boulevard to Wickham Road, the land use gradually changes from primarily undeveloped vacant land to dense commercial and light industrial development. Businesses along Ellis Road consist of commercial offices, warehouses, service centers, retail stores, and automobile repair facilities. A review of real estate records from the Brevard County Property Appraiser's Office found that Ellis Road has been historically used for industrial/commercial business. Eighteen single family residences are located on the north side of Ellis Road between Technology Drive and Lake Ibis Drive near the eastern terminus of the project.

The noise sensitive sites identified along the project corridor include:

- Single family residences in two residential areas (Activity Category B);
    - Lamplighter Village (South End)
    - 18 Single Family Homes which were identified as potential relocations with the Preferred Build Alternative

The other developed lands along the project corridor (e.g., warehouses, service centers, and auto repair facilities) are not considered noise sensitive (i.e., Activity Category F).

To facilitate the analysis of traffic noise impacts to the residential areas, eight representative receptor sites were used. Representative sites were chosen based on noise sensitivity, roadway proximity, anticipated impacts from the proposed project, and homogeneity (i.e., representative of other similar areas in the project study area).



I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

EXISTING LAND USE

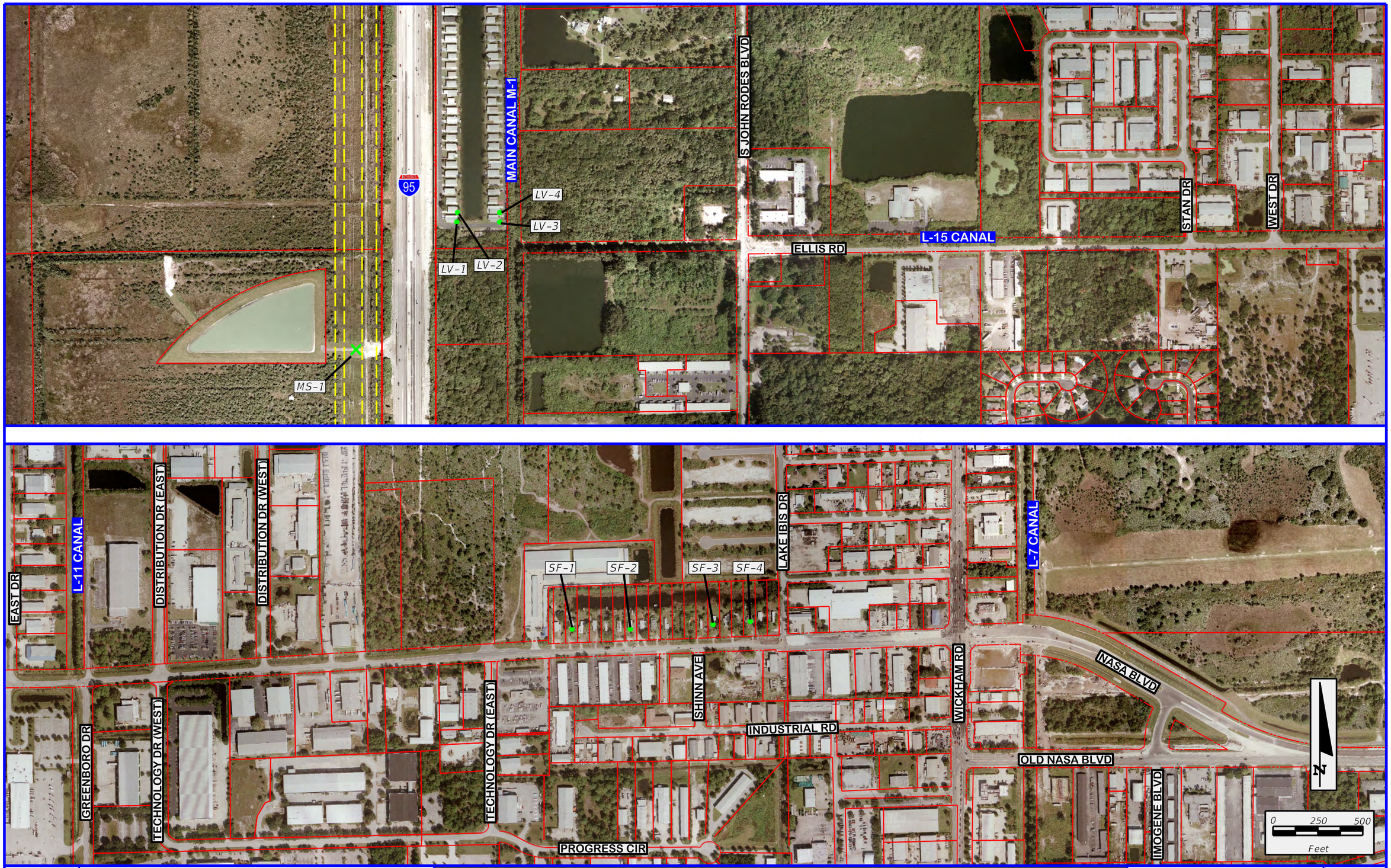
FIGURE NO.
4.1

Table 4.4.1 (see Section 4.4) lists the representative noise receptor sites by area, approximate location (Station Number), number of noise sensitive sites represented, and their approximate distance to the nearest existing and proposed travel lane. Figure 4.2 the general location of each of the representative receptor sites. Alpha numeric labels were used to identify each of the representative receptor sites. The eight representative receptor sites represent 22 residences that are potentially affected by traffic noise from the proposed improvements.

4.2 Field Measurements of Noise Levels and Model Verification

Noise measurements were taken at a representative site to verify that TNM-predicted existing levels are representative of actual levels along I-95. The monitoring site is described in Table 4.2.1 and the location is shown in Figure 4.2.

The noise level monitoring was completed using Larson-Davis Model 870 sound-level analyzers, in accordance with the methodology established by the FHWA and documented in Report No. DP-96-046, Measurement of Highway-Related Noise: Final Report, May 1996. The A-weighted frequency scale was used and the sound meter was calibrated to 114 dB(A) using a Larson-Davis Model CA250 sound-level calibrator. Monitoring was conducted for 4 10-minute intervals with the microphone approximately 5 feet above the land surface. Community noises and traffic information, such as number of passenger cars and trucks and average speeds, were also collected at the time of noise monitoring. A K15-K Doppler Radar Gun was used to obtain average operating speeds for cars, medium trucks, and heavy trucks. Since all noise levels in this report are based on a 1-hour period, the field-recorded traffic volumes were adjusted upward to reflect hourly volumes. The data collected was then used as input to TNM. The dates, times, traffic data, and the measured and TNM-predicted noise levels are presented in Table 4.2.1.



STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

RECEPTOR SITE LOCATION
MONITORING SITE LOCATION
EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE

NOISE ANALYSIS LOCATION MAP

FIGURE NO. **4.2**

Table 4.2.1 Noise Monitoring Data and TNM Verification Results

General Information						SR 836 (Travel Lanes)	Cars		Medium Trucks		Heavy Trucks		Buses		Motorcycles		Monitored Leq (h) dB(A)	TNM Predicted Leq (h) dB(A)	TNM Difference Leq (h) dB(A)	Model Within +/- 3 dB(A) of Monitored Leq (h)?
Location	Date	Monitor Site Number	Monitoring Location	Begin Time	End Time		Vehicles per Hour	Speed (mph)	Vehicles per Hour	Speed (mph)	Vehicles per Hour	Speed (mph)	Vehicles per Hour	Speed (mph)	Vehicles per Hour	Speed (mph)				
West of I-95 South of Ellis Road	9/27/2012	MS-1	230 Feet West of I-95 Edge of Travel Lane (Station 1161+00)	4:28 PM	4:38 PM	Northbound	1,962	70.5	18	64.3	174	69.7	6	70.5	6	70.5	65.5	66.9	1.4	Yes
						Southbound	2,346	72.6	18	74.5	120	68.2	0	---	12	72.6				
				4:41 PM	4:51 PM	Northbound	2,100	72.1	24	71.0	138	67.8	6	69.0	0	---	66.5	67.8	1.3	Yes
						Southbound	2,868	70.2	36	68.7	102	70.2	6	70.2	12	70.2				
				5:10 PM	5:20 PM	Northbound	2,370	70.4	6	64.0	168	64.8	6	72.0	12	70.4	65.8	66.9	1.1	Yes
						Southbound	3,414	70.5	18	69.4	150	68.8	12	69.5	24	68.0				

X:\Noise_Studies\Melbourne Airport\Noise Study Report\Tables\[EllisRd_NoiseMonitoring_09-27-2012.xls]NSR

Average Difference Between TNM 2.5 Predicted Levels and Monitored Levels	1.3

To verify the computer noise model, the TNM-predicted noise levels were compared to measured noise levels. When measured noise levels are within +/- 3.0 dB(A) of the computer-predicted levels, the model is considered verified. All of the measured noise levels were within +/- 3.0 dB(A) of the TNM-predicted levels (see Table 4.2.1). Because the TNM-predicted noise levels are within +/- 3.0 dB(A) of the measured noise levels, the model has been verified and is considered acceptable for predicting existing and future traffic noise levels. The average difference between TNM-predicted levels and the monitored levels was 1.3 dB(A).

4.3 Predicted Noise Levels

Table 4.4.1 (see Section 4.4) summarizes the predicted noise levels for the existing conditions and the future design year (2034) conditions for the No-Build and Build Alternatives at the eight representative noise receptor sites. The predicted noise levels for the existing conditions range from 57.0 dB(A) (Site SF-1 which is along Ellis Road) to 63.5 dB(A) (Site LV-1 which is adjacent to I-95). The predicted noise levels for the No Build Alternative range from 59.2 dB(A) (Site SF-4) to 69.1 dB(A) (Site SF-2). On the average, noise levels for the No Build Alternative are 2.0 dB(A) higher than existing conditions which is attributed to future increases in traffic volumes.

The predicted design year (2034) noise levels for the Build Alternative range from 60.7 dB(A) (Site LV-4) to 69.1 dB(A) (Site SF-2). On the average, noise levels for the Build Alternative are 5.9 dB(A) higher than existing conditions which is attributed to future increases in traffic volumes and to the new travel lanes which will bring traffic closer to these noise sensitive receptor sites. With the Build Alternative, design year noise levels will approach or exceed the NAC at 13 residences all along Ellis Road (Receptor Sites SF-1, SF-2, and SF-3).

4.4 Noise Impact Analysis

Predicted design year 2034 noise levels for the Build Alternative were compared to the NAC and to existing conditions predicted levels to assess potential noise impacts associated with the

Table 4.4.1 Location and Description of Representative Noise Sensitive Receptor Sites and TNM Predicted Levels

Noise Sensitive Site/Area	General Location (Station Range)	Representative Noise Receptor Site Designation	Station Number	Representative Noise Receptor Sites		Noise Abatement Criteria dB(A)	Distance from the Nearest Existing Ellis Road Travel Lane (Feet)	Distance from the Nearest Proposed Ellis Road Travel Lane (Feet)	TNM Predicted Noise Levels dB(A)			Difference Between Existing and Build Alternative dB(A)	Noise Abatement Criteria Status for Build Alternative
				Number of Sites Represented	Description (Noise Abatement Activity Category)				Existing	No Build (Design Year 2034)	Build Alternative (Design Year 2034)		
Lamplighter Village	East of I-95 and North of Ellis Road	LV-1	84+25	1	First Row Single Family Residence (B)	66.0	1,568	290	63.5	64.8	65.6	2.1	Below NAC [i.e., <66.0 dB(A)]
		LV-2	84+25	1	First Row Single Family Residence (B)	66.0	1,595	340	60.2	62.3	62.8	2.6	Below NAC [i.e., <66.0 dB(A)]
		LV-3	86+75	1	First Row Single Family Residence (B)	66.0	1,340	275	60.3	61.1	62.0	1.7	Below NAC [i.e., <66.0 dB(A)]
		LV-4	86+75	1	First Row Single Family Residence (B)	66.0	1,345	325	57.9	60.3	60.7	2.8	Below NAC [i.e., <66.0 dB(A)]
Single Family Residential Area	North of Ellis Road between Technology Drive East and Lake Ibis Drive	SF-1	167+75	2	First Row Single Family Residence (B)	66.0	110	58	57.0	59.4	66.9	9.9	Exceeds NAC [i.e., >66.0 dB(A)]; Potential Relocation
		SF-2	171+00	8	First Row Single Family Residence (B)	66.0	98	40	57.8	60.2	69.1	11.3	Exceeds NAC [i.e., >66.0 dB(A)]: Potential Relocation
		SF-3	175+60	3	First Row Single Family Residence (B)	66.0	96	56	58.2	61.0	67.1	8.9	Exceeds NAC [i.e., >66.0 dB(A)]; Potential Relocation
		SF-4	177+75	5	First Row Single Family Residence (B)	66.0	100	76	57.1	59.2	65.0	7.9	Below NAC [i.e., <66.0 dB(A)]; Potential Relocation

X:\Noise_Studies\Melbourne Airport\Noise Study Report\Tables\[Noise Levels Tables Ellis Rd 9-12-2012.xlsx]Table 4.3 NS Sites & PNLs

Notes:

Yellow Highlighted Cells Represent Noise Sensitive Receptor Sites Impacted by the Preferred Build Alternative [i.e., approach [i.e., within 1 dB(A)] or exceed the Noise Abatement Criteria].

proposed project (see Table 4.4.1). With the Preferred Build Alternative, design year traffic noise levels will approach or exceed the NAC at three noise sensitive receptor sites representing 13 single family residences (Sites SF-1, SF-2, and SF-3). Consideration of noise abatement measures for the sites that approach or exceed the NAC is presented in Section 5.0. Although a number of sites approach or exceed the NAC, the proposed improvements do not result in any substantial noise increases [i.e., greater than 15 dB(A)].

Design year traffic noise levels for the other five representative receptor sites do not approach or exceed the NAC nor does a substantial increase in noise levels [i.e., 15 dB(A)] occur. An existing 22-foot-tall ground mounted barrier along the east side of I-95 the length of Lamplighter Village helped minimize the potential for traffic noise impacts to this community. Because no noise sensitive sites within these areas are impacted by the project, consideration of noise abatement measures is not warranted at these locations.

5.0 Noise Barrier Analysis

In accordance with 23 CFR Part 772, when traffic noise associated with a proposed project is predicted to approach or exceed the NAC at a noise sensitive site, noise abatement in the form of a noise barrier must be considered and evaluated for feasibility and reasonableness. As described in Section 4.3.2, predicted design year traffic noise levels for the Build Alternative will approach or exceed the NAC at three noise sensitive receptor sites (SF-1, SF-2, and SF-3) representing 13 single family residences. These 13 residences have been identified as potential relocations associated with the Build Alternative. To account for the possibility that these residences will not be relocated, the feasibility and reasonableness of noise barriers were considered for these 13 impacted sites.

A wide range of factors are used to evaluate the feasibility and reasonableness of noise abatement measures. Feasibility deals with engineering considerations including the ability to construct a noise barrier using standard construction methods and techniques and with the ability to provide a reduction of at least 5 dB(A) to the impacted receptor sites. For example, given the topography of a particular location, can the minimum noise reduction [i.e., 5 dB(A)] be achieved given certain access, drainage, utility, safety, or maintenance requirements? In addition, for a noise barrier to be considered acoustically feasible, at least two impacted receptor sites must achieve a 5 dB(A) reduction or greater.

Reasonableness implies that common sense and good judgment were applied in a decision related to noise abatement. Reasonableness includes the consideration of the cost of abatement, the amount of noise abatement benefit, and the consideration of the viewpoints of the impacted and benefited property owners and residents. To be deemed reasonable, the noise barrier or other noise abatement measure needs to be below FDOT's reasonable cost criteria which is described below and must attain FDOT's noise reduction design goal of 7 dB(A) at one or more impacted receptor sites.

Determining the feasibility and reasonableness of noise barriers at specified locations includes several steps. Initially, a feasibility assessment is conducted to determine if any site conditions would preclude construction of a noise barrier at a specific location or limit

the length of a noise barrier, making it ineffective. This assessment includes evaluation of the ingress and egress to properties (i.e., if a wall is constructed, can the property owner access their property?) and safety consideration associated with sight distance (i.e., would the length of the barrier be affected by the minimum sight distance requirements?). If a noise barrier is not found technically feasible, the reasonableness analysis is not conducted for that location. In addition, for nonresidential areas without site constraints, the property owner is contacted to determine if they want or support abatement as part of the feasibility assessment. If not supported, the barrier is not considered feasible and no further analysis is conducted. If supported by the owner, further analysis is conducted to determine the reasonableness of providing a noise barrier at a specific location.

For residential areas where barriers are considered feasible (i.e., without site constraints), further analysis is also conducted to determine if the cost of providing noise abatement would be considered cost reasonable based on FDOT's criteria of $42,000 per benefited receptor site. The further analysis includes developing various conceptual barrier designs to determine the most effective location with an optimum length to achieve the desirable reduction while minimizing cost.

The initial feasibility assessment of site conditions indicates construction of a long continuous barrier is not possible at the three impacted noise sensitive receptor sites (SF-1, SF-2, and SF-3) due to access driveways. Access driveways to each of these residences must be maintained. Therefore, site conditions prevent the construction of a long continuous barrier at this location. Noise barriers reduce noise by blocking the sound path between a roadway and a noise sensitive area. To be effective, noise barriers must be long, continuous (i.e., with no intermittent openings), and have sufficient height to block the path between the noise source and the receptor site. FHWA's Analysis and Abatement Guidance (January 2011) indicates the ends of the noise barriers should, in general, extend in each direction four times as far as the distance from the receptor site to the barrier. Since noise barriers would not be able to block the sound path between Ellis Road and these residences, they were not considered feasible as a noise abatement measure and were eliminated from further consideration at this location. Based on the noise analyses to date, there appears to be no apparent solutions available to mitigate noise impacts at these 13 residences. If these

13 residences are not relocated, the impacts are an unavoidable consequence associated with the Build Alternative. Because of the relatively low number of impacted sites, the traffic noise impacts associated with the project improvements are considered minimal.

6.0 Construction Noise and Vibration

During construction of the project, there is the potential for noise impacts to be substantially greater than those resulting from normal traffic operations because heavy equipment is typically used to build roadways. In addition, construction activities may result in vibration impacts. Therefore, early identification of potential noise/vibration sensitive sites along the project corridor is important in minimizing noise and vibration impacts. The project area does include residential, institutional, and commercial areas that may be affected by noise and vibration associated with construction activities. Construction noise and vibration impacts to these sites will be minimized by adherence to the controls listed in the latest edition of the FDOT's Standard Specifications for Road and Bridge Construction.

7.0 Coordination with Local Officials

Coordination with local agencies and officials has been accomplished during the development of this project. In addition, local and community officials have had the opportunity to comment on the proposed project at the public meetings.

To aid in promoting land use compatibility, a copy of the Noise Study Report, which provides information that can be used to protect future land development from becoming incompatible with anticipated traffic noise levels, will be provided to Brevard County and the City of Melbourne. In addition, generalized future noise impact contours for the properties in the immediate vicinity of the project have been developed for Noise Abatement Activity Categories E, B/C and A (i.e., sensitive commercial, residential and other sensitive land uses, and highly sensitive land uses, respectively). These contours represent the approximate distance from the edge of the nearest proposed travel lane of Ellis Road and I-95 to the limits of the area predicted to approach (i.e., within 1 dBA) or exceed the NAC in the design year 2034. The contours do not consider any shielding of noise provided by structures between the receiver and the proposed travel lanes. Within the project corridor, the distance between the proposed edge of the outside travel lane and the contour at various locations are presented in Table 7.1. To minimize the potential for incompatible land use, noise sensitive land uses should be located beyond this distance.

Table 7.1 Design Year (2034) Noise Impact Contour Distances

Location	Distance from Proposed Nearest Travel Lane to Noise Contour Line (Feet)		
	71 dB(A) - Activity Category E	66 dB(A) - Activity Categories B/C	56 dB(A) - Activity Category A
I-95 South of Ellis Road	297	498	1,245
Ellis Road East of I-95	25	65	250

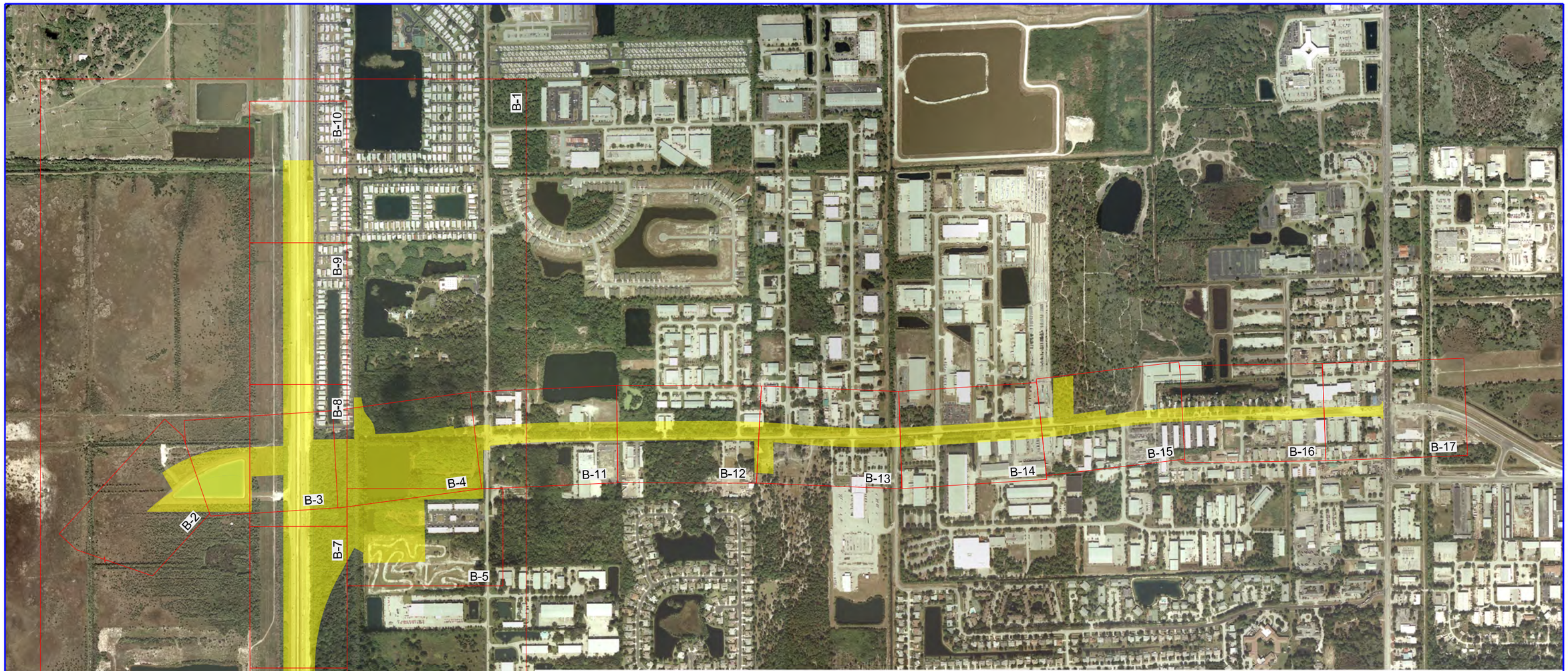
Appendix B from PDSR

Preferred Alternative Concept Plans

I-95 AT ELLIS ROAD
PD&E STUDY

APPENDIX B

PREFERRED ALTERNATIVE



ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY
INDEX OF SHEETS

SHEET NUMBER	SHEET DESCRIPTION
i	APPENDIX B INDEX OF SHEETS
B-1 - B-10	INTERCHANGE - ELLIS ROAD / I-95 - (PREFERRED ALTERNATIVE)
B-11 - B-17	STANDARD 45 mph URBAN BEST FIT - (PREFERRED ALTERNATIVE)

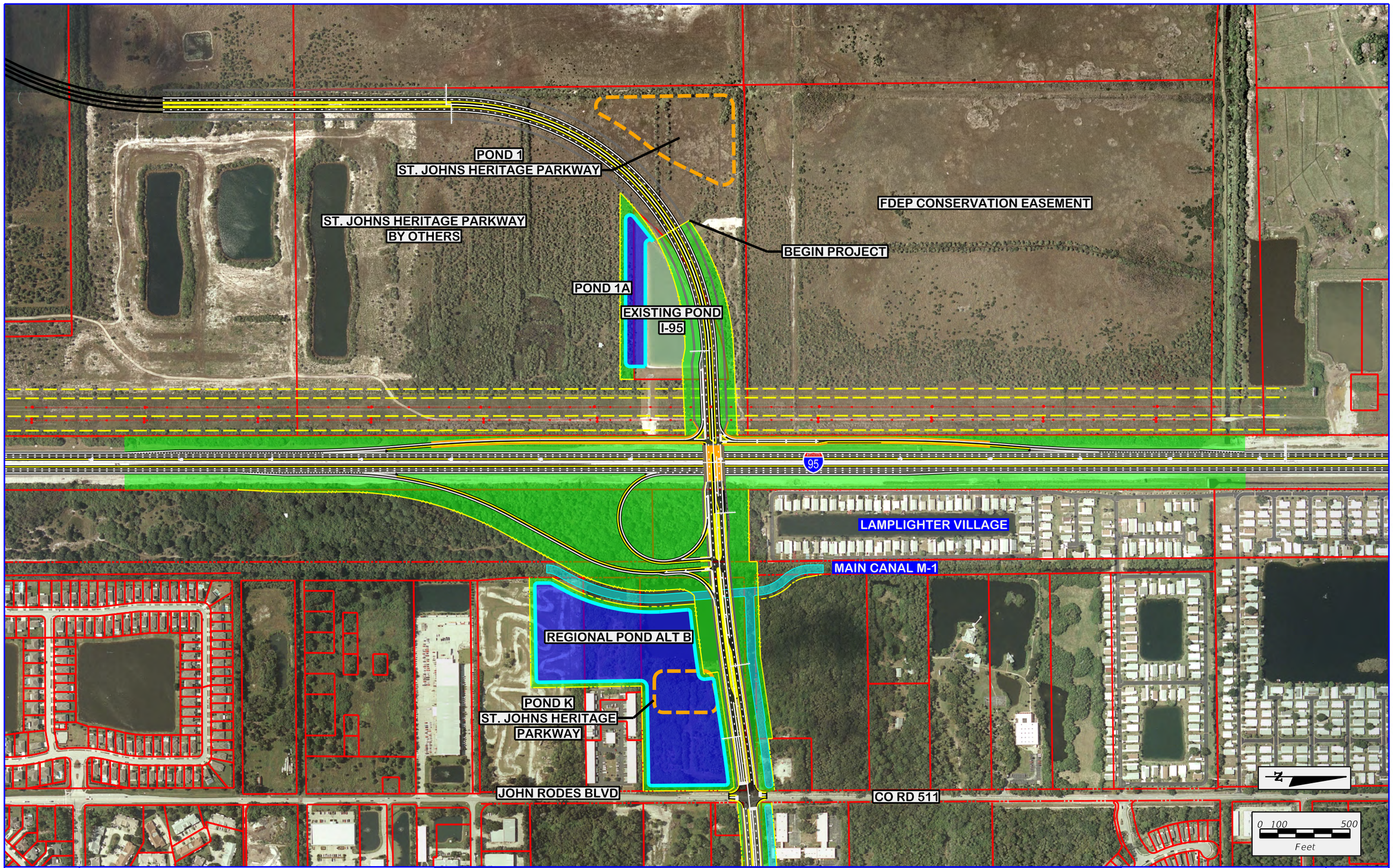
N

0 250 1000
Feet

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	ELLIS ROAD PROJECT DEVELOPMENT AND ENVIRONMENT STUDY		APPENDIX B INDEX OF SHEETS SHEET NO. *i*

I-95 AT ELLIS ROAD
PD&E STUDY

INTERCHANGE CONCEPT
PREFERRED ALTERNATIVE



I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B
PREFERRED ALTERNATIVE

SHEET NO.
B-1

POND 1
ST. JOHNS HERITAGE PARKWAY

BEGIN PROJECT

60

65

76

MATCHLINE STA 71+00

POND 1A
EXPANSION

ST. JOHNS HERITAGE PARKWAY
BY OTHERS

0 20 100
Feet

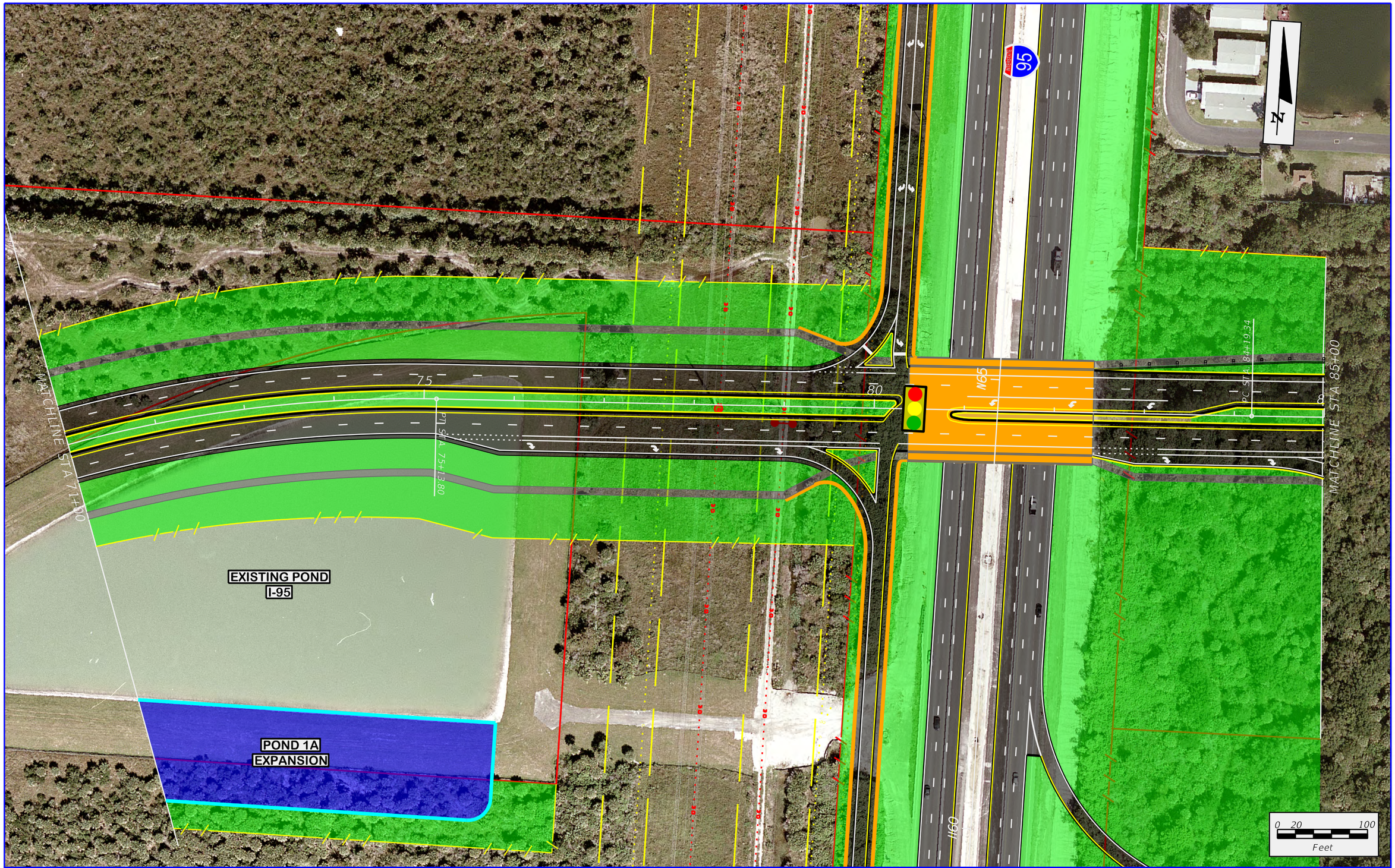
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B
PREFERRED ALTERNATIVE

SHEET NO.
B-2



STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

EXISTING R/W	PROPOSED R/W	CONCRETE MEDIAN
EXISTING L/A	PROPOSED L/A	CANAL
EXISTING EASEMENT	SIDEWALK	RETAINING WALL
PROPERTY LINE	GRASSED AREA	

APPENDIX B
PREFERRED ALTERNATIVE

SHEET NO.
B-3

MAIN CANAL M-1

MATCHLINE STA 85+00

90

95

PI STA 92+75.58

MATCHLINE STA 96+67.62

MATCHLINE STA 97+00

POND K

ST. JOHNS HERITAGE PARKWAY

REGIONAL POND ALT B

N

0 20 100

Feet

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

I-95 AT ELLIS ROAD

PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B

PREFERRED ALTERNATIVE

SHEET NO.

B-4

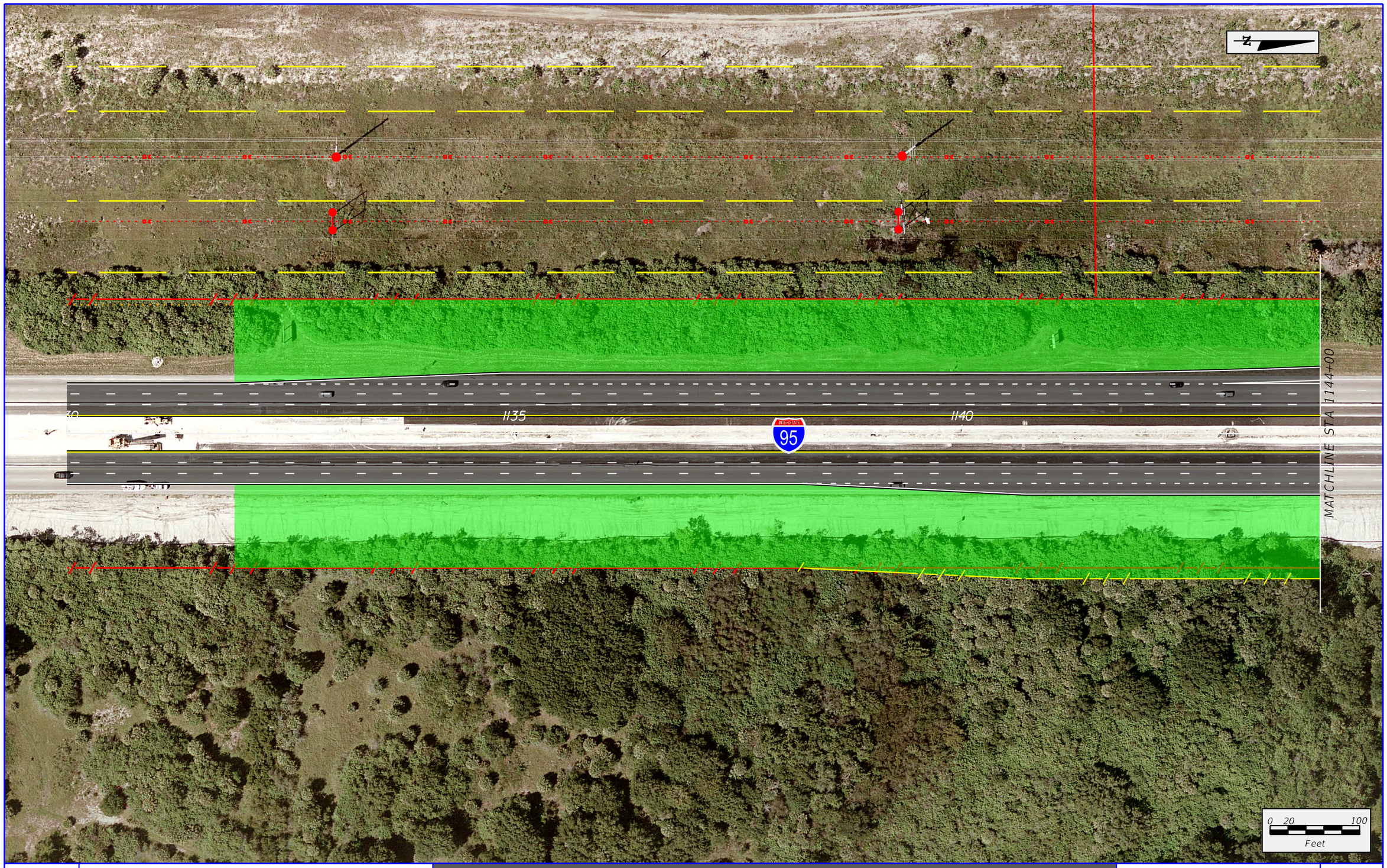
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

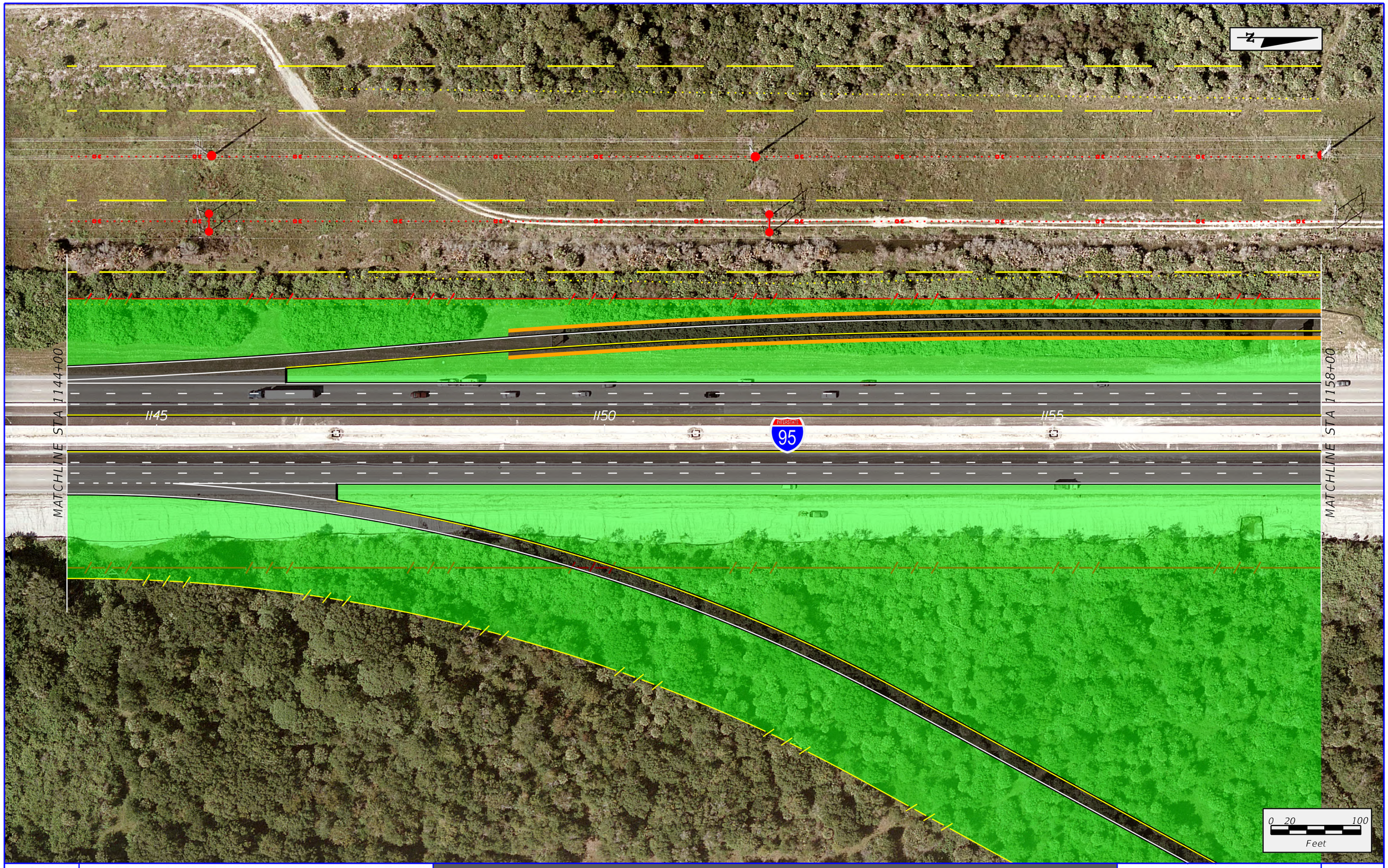
EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B
PREFERRED ALTERNATIVE

SHEET NO.
B-5



STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I-95 AT ELLIS ROAD PROJECT DEVELOPMENT AND ENVIRONMENT STUDY	EXISTING R/W EXISTING L/A EXISTING EASEMENT PROPERTY LINE	PROPOSED R/W PROPOSED L/A SIDEWALK GRASSED AREA	CONCRETE MEDIAN CANAL RETAINING WALL	APPENDIX B PREFERRED ALTERNATIVE	SHEET NO. B-6



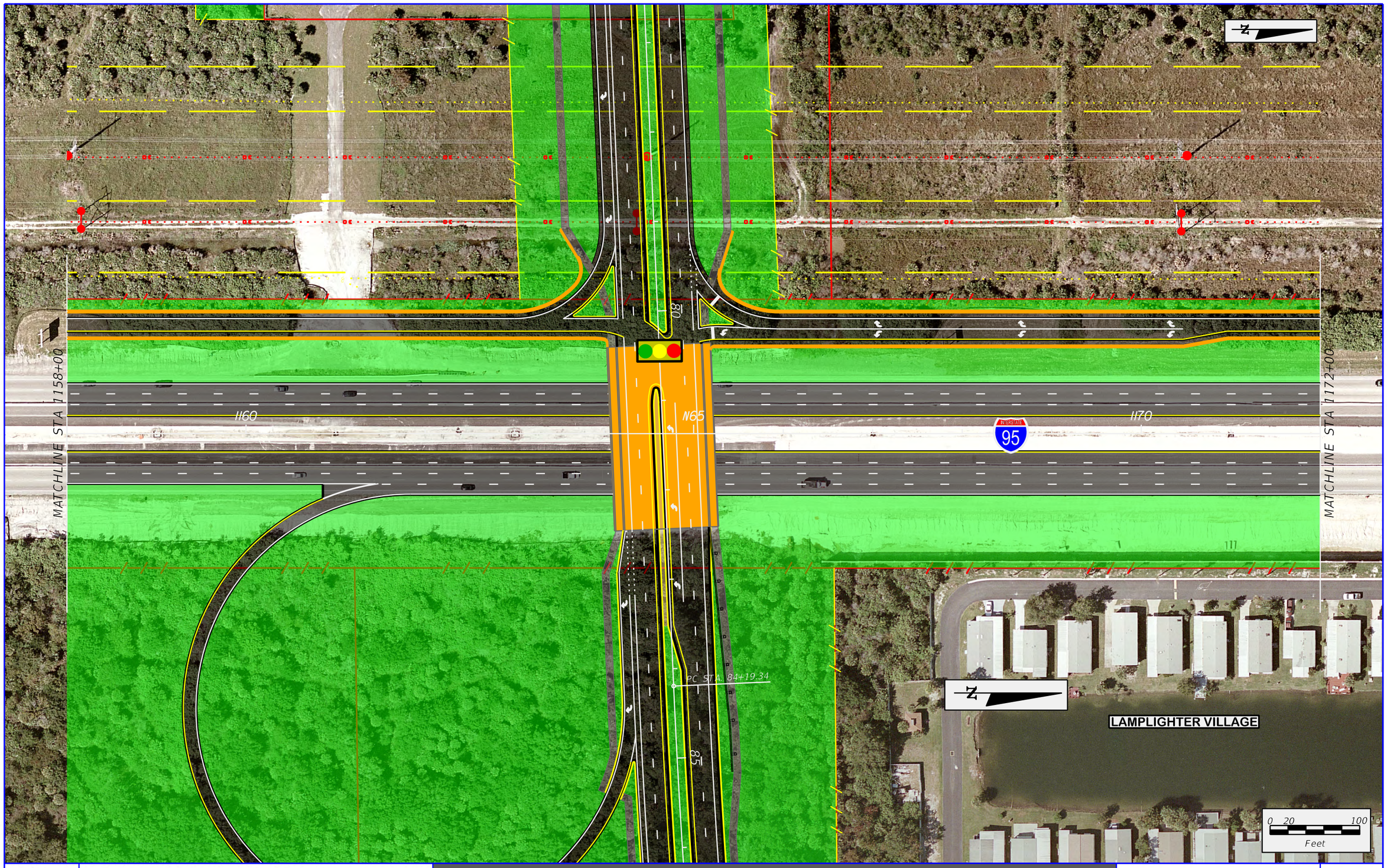
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B
PREFERRED ALTERNATIVE

SHEET NO.
B-7



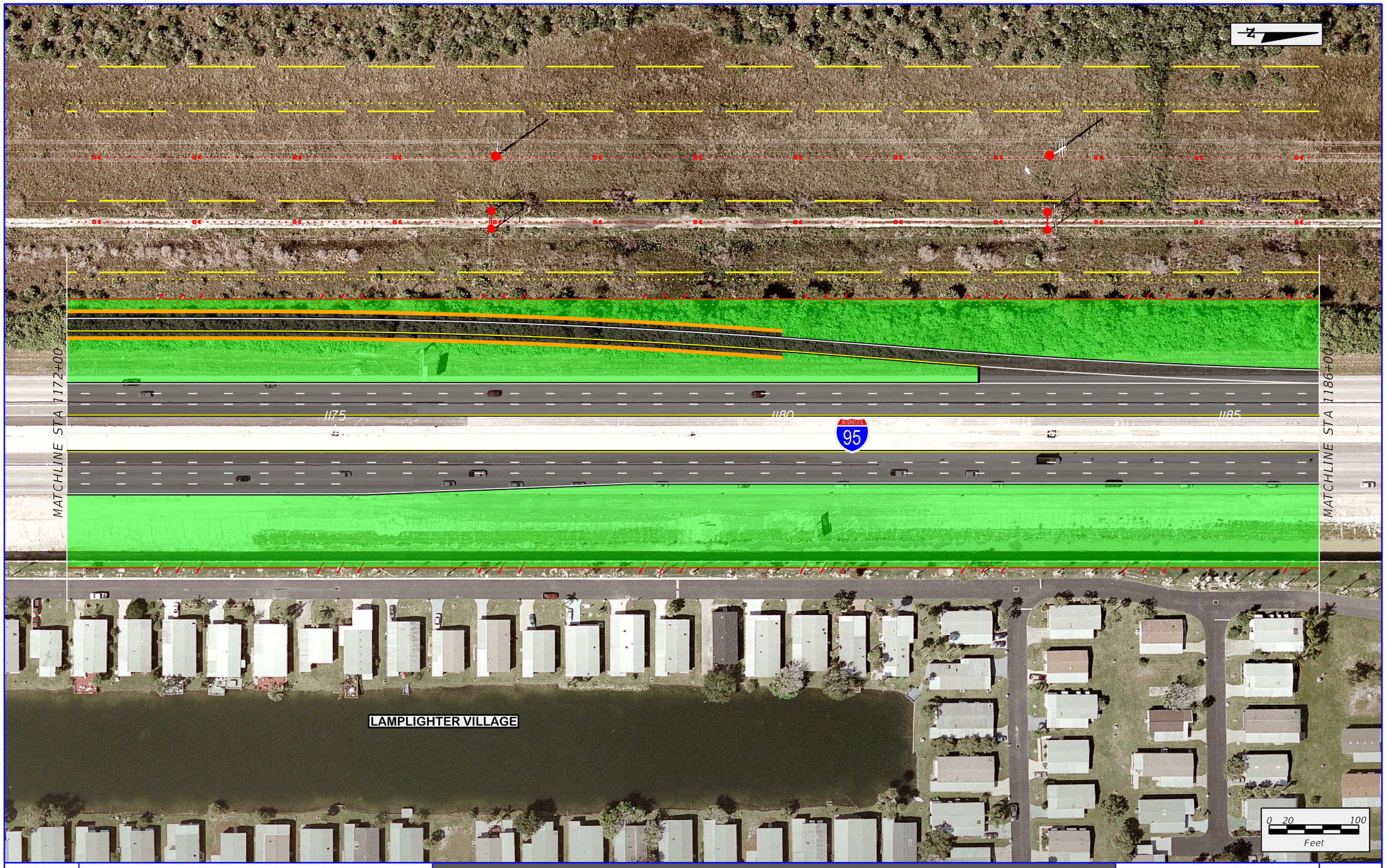
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B
PREFERRED ALTERNATIVE

SHEET NO.
B-8



I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B
PREFERRED ALTERNATIVE

SHEET NO.
B-9

MATCHLINE STA 1186+00

LAMPLIGHTER VILLAGE

I-95

0 20 100
Feet

EXISTING R/W	PROPOSED R/W	CONCRETE MEDIAN	
EXISTING L/A	PROPOSED L/A	CANAL	
EXISTING EASEMENT	SIDEWALK	RETAINING WALL	
PROPERTY LINE	GRASSED AREA		

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

APPENDIX B
PREFERRED ALTERNATIVE

SHEET NO.
B-10

I-95 AT ELLIS ROAD
PD&E STUDY

STANDARD URBAN (45 mph)

PREFERRED ALTERNATIVE

DESTINY CHILD ACADEMY

EXPLORER ELEMENTARY & MIDDLE CHARTER

JOHN RODES BLVD

WUESTOFF HEALTH SYSTEMS

RELOCATED L-15 CANAL

N

105

100

110

MATCHLINE STA 99+00

PI STA 107+8624

MATCHLINE STA 113+00

USSI

AMERICAN PRINT WORKS

0 20 100
Feet

I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B
PREFERRED ALTERNATIVE

SHEET NO.
B-11

EMPIRE ELECTRIC

AFFORDABLE SIGNS

RELOCATED L-15 CANAL

STAN DR

MALABAR PRODUCTS

MATCHLINE STA 113+00

PT STA 113+31.53

115

120

125

PT STA 121+76.82

MATCHLINE STA 127+00

MELBOURNE MOTORSPORTS

SPACECOAST PLUMBING

A&L AUTOCARE

CHAMPION ENV SOILS

N

0 20 100

Feet

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

I-95 AT ELLIS ROAD

PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

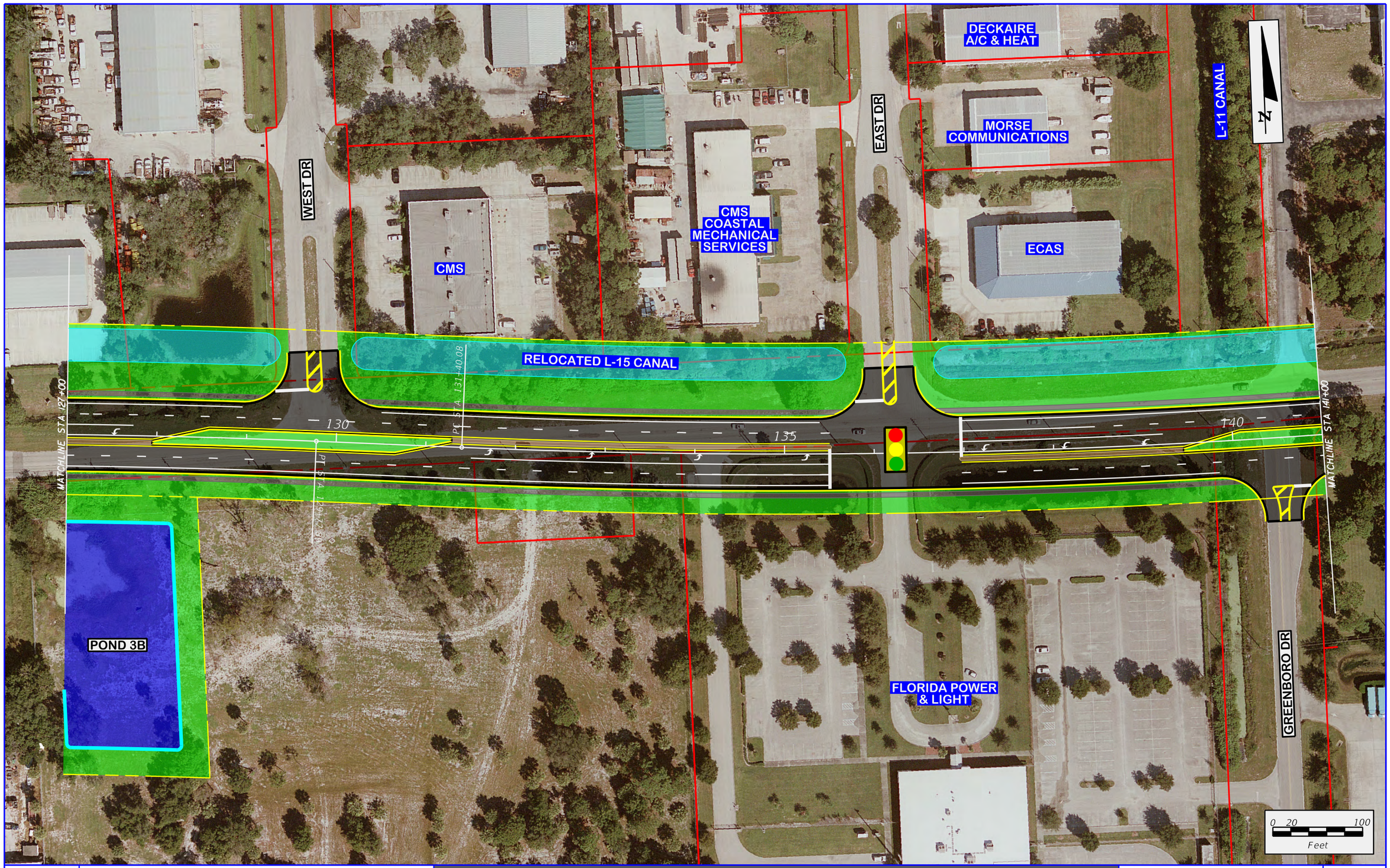
EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B

PREFERRED ALTERNATIVE

SHEET NO.

B-12

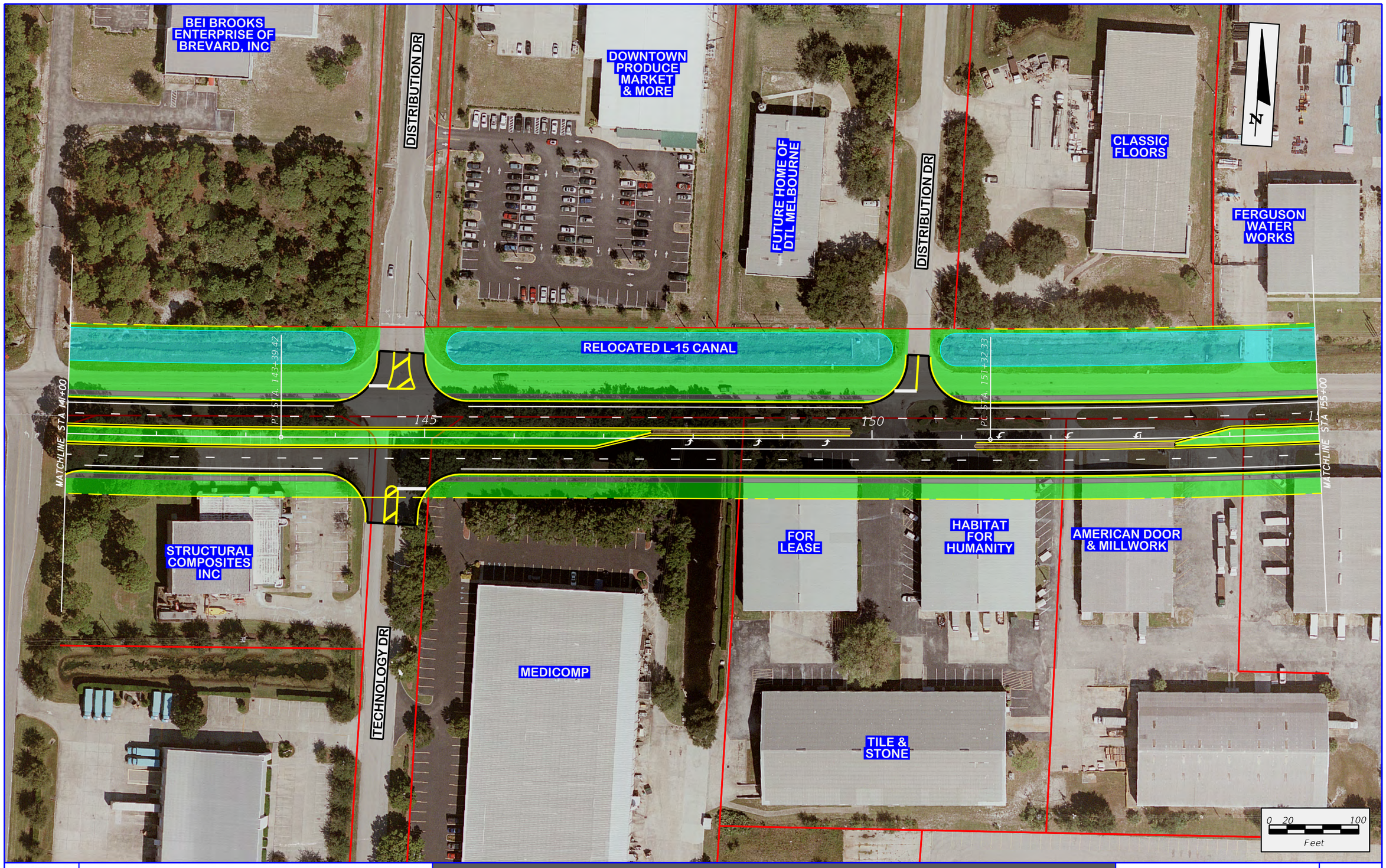


I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B
PREFERRED ALTERNATIVE

SHEET NO.
B-13



STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B
PREFERRED ALTERNATIVE

SHEET NO.
B-14

POND 4A

FERGUSON WATER WORKS

RELOCATED L-15 CANAL

SECUREWAY SELF STORAGE

N

MATCHLINE STA 155+00

PT STA 159+54.60

160

PT STA 160+55.68

165

MATCHLINE STA 169+00

LAUNDRY DELIVERED.COM

BROOKS ENTPR

EXPERT TILE (VACANT)

HILLS INC

TEMPSTOR HEATING & COOLING

TECHNOLOGY DR

AT&T

CLEVE CRAFT COMPLEX

0 20 100

Feet

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

I-95 AT ELLIS ROAD

PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B

PREFERRED ALTERNATIVE

SHEET NO.

B-15

N

LAKE IBIS DR

DALTILE

WALKERS ELLIS ROAD AUTO REPAIR

GOODMAN A/C HEAT

MATCHLINE STA 169+00

170

175

PC STA. 175+48.17

PT STA. 176+84

T80

PT STA. 182+24.13

MATCHLINE STA 185+00

CLEVE CRAFT COMPLEX

J.W. AUSTIN INDUSTRIES

HOTT CARS AUTO SERVICE CENTER

SHINN AVE

BUCKMAN'S AUTO BODY

MARK'S BODY SHOP

VACANT

DEPENDABLE AIR SUPPLY

0 20 100

Feet

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

I-95 AT ELLIS ROAD

PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B

PREFERRED ALTERNATIVE

SHEET NO.

B-16

I-95 AT ELLIS ROAD
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

EXISTING R/W
EXISTING L/A
EXISTING EASEMENT
PROPERTY LINE
PROPOSED R/W
PROPOSED L/A
SIDEWALK
GRASSED AREA
CONCRETE MEDIAN
CANAL
RETAINING WALL

APPENDIX B
PREFERRED ALTERNATIVE

SHEET NO.
B-17