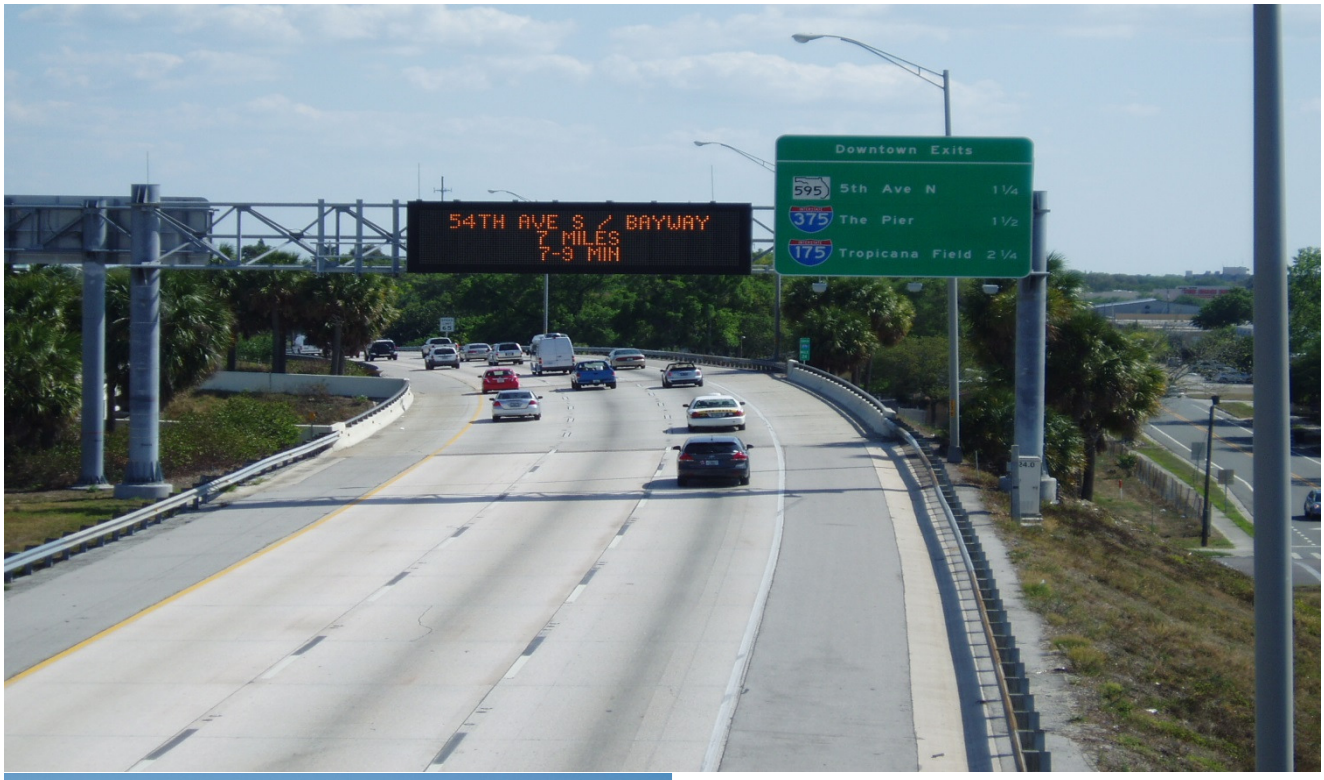

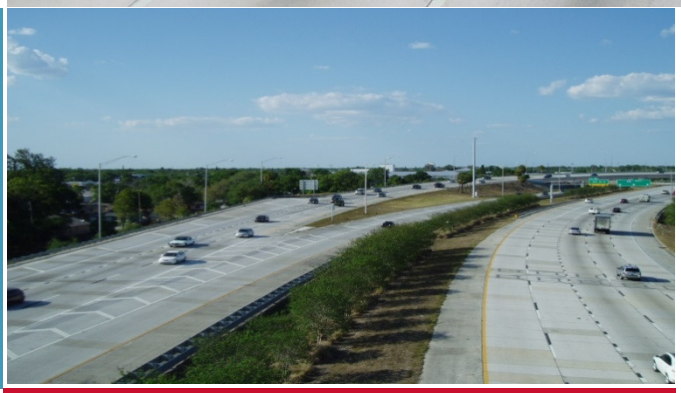

PROJECT DEVELOPMENT & ENVIRONMENT (PD&E) STUDY

Work Program Item Segment No: 424501-1

Final Alternative Stormwater Management Facility Technical Memorandum

Project Development and Environment (PD&E) Study

I-275/SR 93
From South of 54th Avenue South
to North of 4th Street North

Pinellas County, Florida

April 2016

FDOT

Executive Summary

The Florida Department of Transportation (FDOT), District Seven, conducted a Project Development and Environment (PD&E) Study to evaluate the need for capacity and operational improvements along 16.3 miles of Interstate 275 (I-275) (State Road (SR) 93) from south of 54th Avenue South to north of 4th Street North in Pinellas County, Florida.

The objective of this PD&E Study was to assist the FDOT and the Federal Highway Administration (FHWA) in reaching a decision on the type, location, and conceptual design of the necessary improvements for I-275 to safely and efficiently accommodate future travel demand. This study documented the need for the improvements as well as the procedures utilized to develop and evaluate various improvements including elements such as proposed typical sections, special designation of travel lanes, preliminary horizontal alignments, and interchange enhancement alternatives. The anticipated social, physical, and natural environmental effects and costs of these improvements were identified. The alternatives were evaluated and compared based on a variety of parameters utilizing a matrix format. This process identified the alternative that best balanced the benefits (such as improved traffic operations and safety) with the impacts (such as environmental effects and construction costs).

The PD&E Study satisfies all applicable federal and state requirements, including the National Environmental Policy Act (NEPA), in order for this project to qualify for federal-aid funding of subsequent development phases (design, right of way acquisition, and construction). The project was evaluated through the FDOT's Efficient Transportation Decision Making (ETDM) process. This project is designated as ETDM Project #12556. An ETDM Final Programming Screen Summary Report was published on July 26, 2013, containing comments from the Environmental Technical Advisory Team (ETAT) on the project's effects on various natural, physical, and social resources. Based on the ETAT comments, the FHWA determined that this project qualifies as a Type 2 Categorical Exclusion.

This Alternative Stormwater Management Facility (SMF) Technical Memorandum has been prepared as part of the PD&E Study to document stormwater treatment and attenuation requirements for the proposed improvements. This memorandum identifies approximate SMF site requirements per basin. The SMFs were sized for a conceptual ultimate condition typical section for the recommended alternative improvements identified by the PD&E study. This report provides pond site alternatives that are hydraulically feasible and environmentally permittable based on the best available information. For this study, environmental impacts associated with ponds, including wetland impacts, cultural resources impacts, contamination, upland habitat and protected species was limited to consideration of geographic information systems (GIS) delineation of the National Wetlands Inventory (NWI) wetlands for avoidance of wetlands. Right-of-way costs were estimated by the FDOT Right-of-Way Department, but were not included in this Memorandum. A more detailed pond siting evaluation will be conducted during the design phase of this project.

The stormwater management systems will utilize ponds to meet permitting requirements. From the Begin Project to just north of the Roosevelt Boulevard Interchange (Basins 1-21, R1-R5, M0 and M1), treatment, attenuation and recovery of the required volumes will be accomplished through wet detention. From north of the Roosevelt Boulevard Interchange to the End Project (Basins M1-M9, G2, H1 and B1), treatment and recovery of the required volumes will be accomplished through dry retention (attenuation is not required since the outfall is tidal).

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1.0 Introduction

1.1 Project Description

The Interstate 275 (I-275) (State Road (SR) 93) project corridor extends from south of 54th Avenue South to north of 4th Street North in Pinellas County, Florida, a distance of approximately 16.3 miles. The study map is shown on **Figure 1-1** on the following page. To effectively describe and evaluate the unique transportation characteristics of the project, the study corridor was divided into three segments as listed below, and graphically displayed on **Figure 1-1**:

- Segment A: From south of 54th Avenue South to I-175, a distance of 4.6 miles;
- Segment B: From I-175 to south of Gandy Boulevard, a distance of 6.0 miles; and
- Segment C: From south of Gandy Boulevard to north of 4th Street North, a distance of 5.7 miles.

The study corridor is contained within the townships, ranges, and sections listed in **Table 1-1** (United States Geological Survey [USGS] Pass-A-Grille Beach, Fla. 1956; St. Petersburg, Fla. 1956; Safety Harbor, Fla. 1956).

Table 1-1. Township, Range, and Section Coordinates

Township	Range	Sections
32 South	16 East	2, 3, 10, and 11
31 South	16 East	1, 2, 11, 12, 13, 24, 26, 27, 34, and 35
30 South	16 East	6, 12, 13, 14, 23 through 26, 35, and 36

With respect to the Project Development and Environment (PD&E) Study section of I-275 within Segments A and B, only lane continuity improvements were evaluated. Segment C is the focus of express lane improvements.

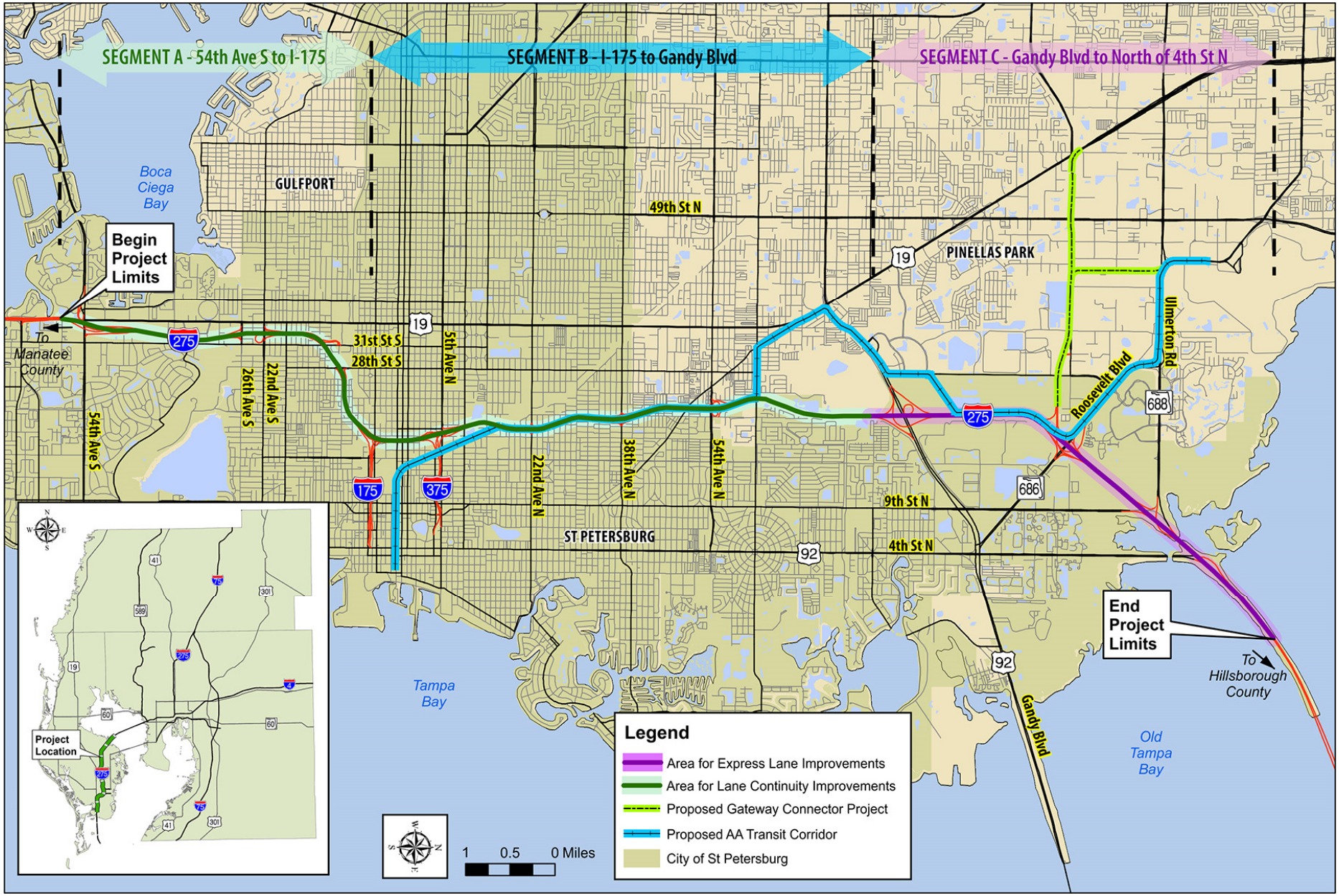


Figure 1-1. Project Location Map

1.2 Project Background

The Florida Department of Transportation (FDOT) conducted this PD&E Study to evaluate the need for capacity and operational improvements along I-275 from 54th Avenue South to north of 4th Street North in Pinellas County, a distance of approximately 16.3 miles. The objective of this PD&E Study was to provide documented environmental and engineering analyses to assist the FDOT and the Federal Highway Administration (FHWA) in reaching a decision on the type, conceptual design and location of the necessary improvements within the I-275 PD&E Study limits.

Several multimodal transportation planning studies for the I-275 PD&E Study Corridor within Pinellas County have been completed while others are presently underway. The findings from these studies are assisting the FDOT in identifying transportation improvements needed to adequately meet local and regional travel demands, as well as to support the development of the PD&E Study's Preferred Alternative. The following sections describe the relevant multimodal planning studies prepared for the I-275 corridor in Pinellas County.

1.2.1 Tampa Bay Express (TBX) Master Plan

FDOT District Seven developed the TBX Master Plan that indicates on which interstate facilities, and specific freeway segments of these facilities, it would be cost feasible to implement express lanes. This Plan ensures that the impacts of implementing express lanes on the Tampa Bay interstate system would be evaluated on a system-wide basis in lieu of treating each corridor as its own stand-alone project. The I-275 PD&E Study incorporates the TBX Master Plan improvements proposed for the I-275 study corridor as part of the Preferred Alternative along with the lane continuity improvements which would occur generally between 54th Avenue South to south of Gandy Boulevard.

Realizing a potential shortfall in funding for implementation of the Plan's ultimate capacity improvements planned for the Tampa Bay Region, the FDOT underwent an evaluation to identify a series of lower cost express lane projects that can be funded in the FDOT's Five-Year Work Program. These initial projects could be built within a five-year or less time period and then later be incorporated into the Master Plan projects at minimal additional costs. The shorter-term, lower-cost improvements are considered the "Starter Projects."

Further information regarding the development of the Master Plan and its proposed projects are documented in the TBX Master Plan document.

1.2.2 Pinellas Alternative Analysis (AA)

In addition to addressing highway capacity deficiencies, this PD&E Study also considered multimodal accommodations envisioned for the I-275 study corridor and its regional connections to the rest of Tampa Bay. The Tampa Bay Area Regional Transportation Authority (TBARTA) adopted a Transportation Master Plan for Citrus, Hernando, Hillsborough, Manatee, Pasco, Pinellas, and Sarasota Counties in May 2009. While considering all modes of transportation, the TBARTA Master Plan focused on providing the framework for an integrated transit system to serve all parts of the region. In 2009, the Hillsborough, Pinellas, Pasco, and Hernando County Metropolitan Planning Organizations (MPOs) and Citrus County all adopted the TBARTA Mid Term (2035) Networks in

their 2035 Needs plans and included several key elements of the Master Plan in their 203540 Cost Affordable Long Range Transportation Plans (LRTPs).

As a first step in moving toward implementation of this Plan, the Hillsborough Area Regional Transit Authority (HART) had undertaken an AA for a light rail transit corridor running from the University of South Florida, through downtown Tampa, to the Westshore area. This HART analysis included a service connection to a proposed High Speed Rail station in downtown Tampa. A second AA has been completed by the FDOT, TBARTA, the Pinellas County MPO and the Pinellas Suncoast Transit Authority (PSTA) for a premium transit corridor from downtown St. Petersburg, through the Pinellas Gateway area, to downtown Clearwater. In addition, the FDOT, local transit agencies, and MPOs have planned several Regional Transit Corridor Evaluations for other elements of the TBARTA Master Plan.

The 2012 Pinellas AA evaluated transit options connecting major residential, employment and activity centers in Pinellas County to Hillsborough County via the Howard Frankland Bridge corridor. The study identified a 24-mile light rail Locally Preferred Alternative (LPA) for its ability to offer transportation options that are safe, sustainable, affordable, and efficient. Significant countywide local bus enhancements were recommended to support the LPA, nearly doubling the existing local bus service with portions being implemented before the light rail.

A key element of the TBARTA Master Plan is to provide a transit linkage across Upper Tampa Bay linking Hillsborough and Pinellas Counties. Specifically, both the TBARTA Master Plan and the MPO LRTPs call for the linkage to be provided across the Howard Frankland Bridge (I-275/SR 93) corridor. This linkage would run from Hillsborough County's proposed Westshore Regional Multimodal Center (service connection to the proposed High Speed Rail Station in downtown Tampa) to Pinellas County's proposed Gateway Station. These stations would not serve as termini, but would allow uninterrupted transit movements from the St. Petersburg and Clearwater areas across the Howard Frankland Bridge to and through Tampa's Central Business District (CBD) and vice versa. However, for this linkage to be possible, the Howard Frankland Bridge corridor must be able to accommodate the appropriate transit provisions. The FDOT plans to replace the northbound Howard Frankland Bridge in the future since it is approaching the end of its useful service life. Therefore, the I-275 PD&E Study will provide recommended improvements that provide the transit accommodations envisioned by TBARTA and the needed highway improvements consistent with the planned northbound bridge replacement.

1.2.3 Lane Continuity Study

Completed in October 2008, the I-275 Lane Continuity Study evaluated operational improvements on I-275 from the Sunshine Skyway Bridge North Toll Plaza to Gandy Boulevard in Pinellas County. The study documented existing and future operational and safety conditions within the corridor for the purposes of recommending possible improvements to alleviate identified deficiencies. The study addressed both short-term traffic operational type improvements and longer-term major geometric improvements. As a long range improvement, the study recommended providing lane improvements to achieve one additional continuous lane on I-275 in each direction from 54th Avenue South to Gandy Boulevard.

The I-275 Pinellas PD&E Study incorporated and updated the Lane Continuity Study recommendations. Currently, I-275 from south of 54th Avenue South to 4th Street North has one continuous lane in the northbound direction and no continuous lanes in the southbound direction.

According to the previous Lane Continuity Study recommendations, proposed lane additions to I-275 are anticipated to provide three continuous lanes in the northbound direction and two continuous lanes in the southbound direction between 54th Avenue South and 4th Street North. These new lane connections will improve the safety for motorists traveling the I-275 corridor by substantially reducing the number of lane changes for both directions of travel. The study also recommended modifications to certain interchanges within the study limits, allowing for a more refined analysis of those locations.

1.2.4 National Environmental Policy Act (NEPA) Process

The proposed project has been evaluated through the FDOT's Efficient Transportation Decision Making (ETDM) process. Agency coordination for this project has been initiated as part of ETDM Project Number 12556. The FDOT received Location Design and Concept Acceptance (LDCA) from FHWA on July 15, 2016 for lane continuity improvements along I-275 from 54th Avenue South to south of Gandy Boulevard and express lane improvements related to the TBX Master Plan project along I-275 from south of Gandy Boulevard to north of 4th Street North.

1.3 Existing Conditions

I-275 is a limited access urban interstate highway facility that runs in a north and south direction through Pinellas County. The posted speed limit is 65 miles per hour (mph). Within the project limits, I-275 is comprised of a four-lane divided typical section with auxiliary lanes from south of 54th Avenue South to I-375. From I-375 to north of 4th Street North, I-275 is comprised of a six-lane divided typical section with auxiliary lanes.

The existing roadway typical sections, as shown on **Figure 1-2(a-f)**, are described as follows:

- Segment A (from south of 54th Avenue South to I-175): consists of four 12-foot general purpose travel lanes, two 12-foot auxiliary travel lanes, 12-foot inside and outside shoulders (10-foot paved) and generally open drainage with a median width that varies from 64 to 212 feet;
- Segment B (from I-175 to south of Gandy Boulevard): consists of six 12-foot general purpose travel lanes, two or four 12-foot auxiliary travel lanes, 12-foot inside and outside shoulders (10-foot paved) and generally open drainage with a median width that varies from 64 to 204 feet; and
- Segment C (from south of Gandy Boulevard to north of 4th Street North): There are four separate typical sections within Segment C (labeled separately as C1-C4).
    - C-1 (from south of Gandy Boulevard to Roosevelt Boulevard) consists of six 12-foot general purpose travel lanes, two or four 12-foot auxiliary travel lanes, 12-foot inside and outside shoulders (10-foot paved) and generally open drainage with a median width that varies from 64 to 204 feet;
    - C-2 (from Roosevelt Boulevard to south of 9th Street North): consists of six 12-foot general purpose travel lanes, zero to four 12-foot auxiliary travel lanes, 12-foot inside and outside shoulders (10-foot paved) and generally open drainage with a median width of 40 feet;
    - C-3 (from south of 9th Street North to north of 4th Street North): consists of six 12-foot general purpose travel lanes, two to four 12-foot auxiliary travel lanes, 12-foot inside and outside shoulders (10-foot paved) with a 26-foot wide concrete median containing a two-foot traffic barrier used to separate northbound and southbound traffic on I-275;

- C-4 (from north of 4th Street North to 1.0 mile south of the Howard Frankland Bridge): the I-275 causeway consists of six 12-foot general purpose travel lanes, two 12-foot auxiliary lanes, 10-foot paved inside and outside shoulders, and a 22-foot median. The face of the outside barrier mounted on the sea walls is approximately 40 feet from the travel lanes.

No dedicated transit facilities, frontage roads or high-occupancy vehicle (HOV) lanes are currently provided within any of the I-275 mainline Segments. I-275 includes 15 interchanges within the project limits:

1. 54th Avenue South;
2. 26th Avenue South;
3. 22nd Avenue South;
4. 31st Street South;
5. 28th Street South;
6. I-175;
7. I-375;
8. 5th Avenue North;
9. 22nd Avenue North;
10. 38th Avenue North;
11. 54th Avenue North;
12. Gandy Boulevard;
13. Roosevelt Boulevard /118th Avenue
14. Ulmerton Road/9th Street North; and
15. 4th Street North.

Figure 1-2. Existing Typical Sections

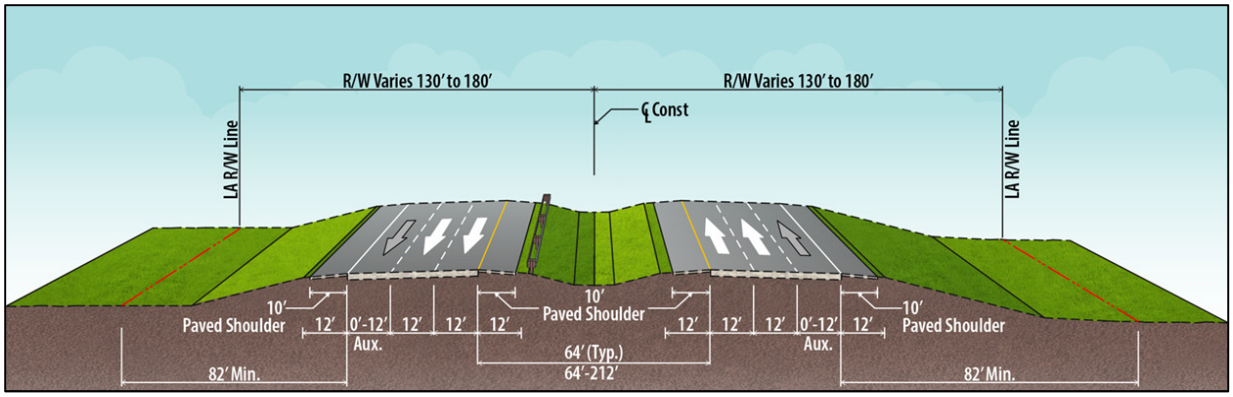


Figure 1-2a. Existing I-275 Mainline Typical Section from south of 54th Avenue South to I-175 (Segment A)

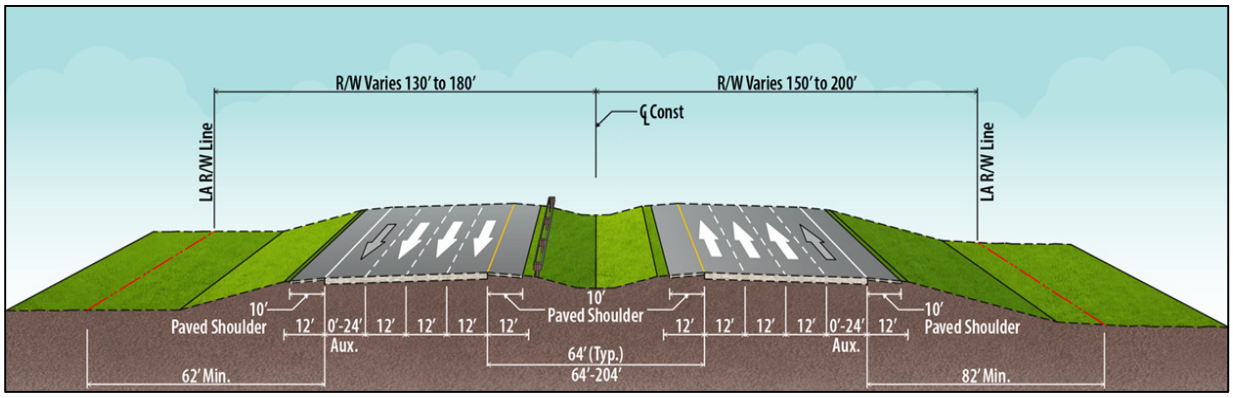


Figure 1-2b. Existing I-275 Mainline Typical Section from I-175 to south of Gandy Boulevard (Segments B)

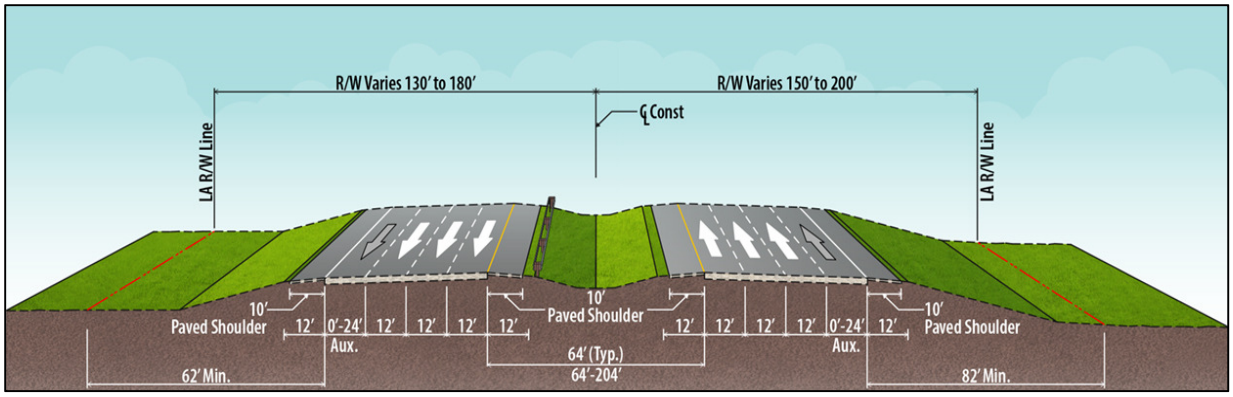


Figure 1-2c. Existing I-275 Mainline Typical Section from south of Gandy Boulevard to Roosevelt Boulevard (Segment C-1)

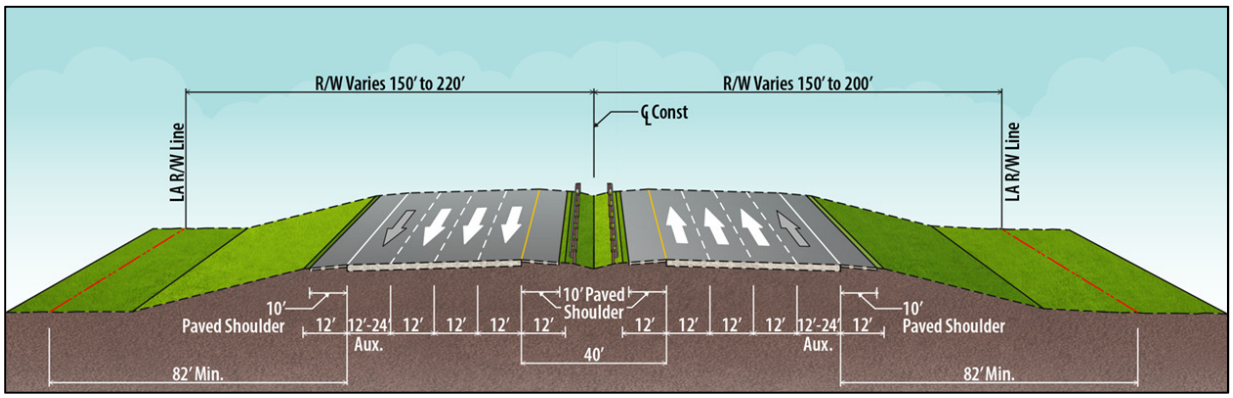


Figure 1-2d. Existing I-275 Mainline Typical Section from Roosevelt Boulevard to south of 9th Street North (Segment C-2)

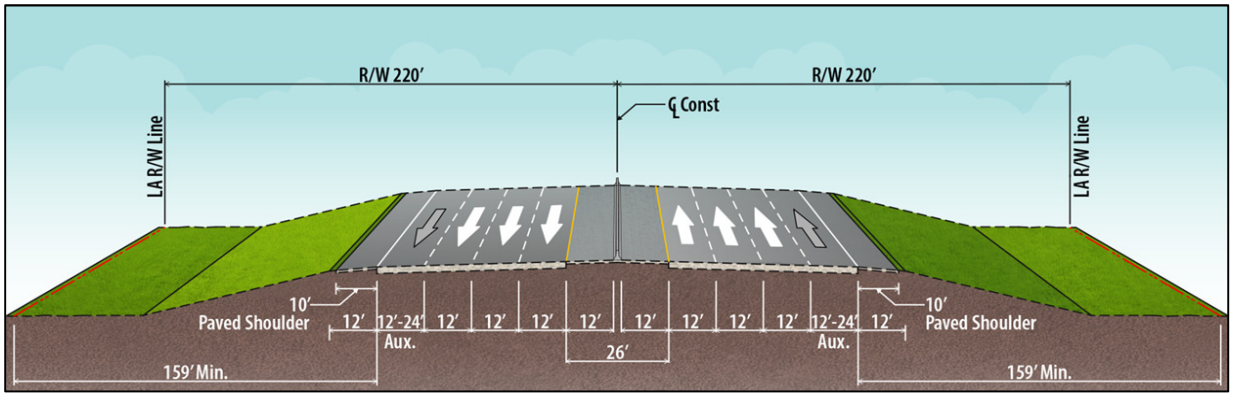


Figure 1-2e. Existing I-275 Mainline Typical Section from south of 9th Street North to south of 4th Street North (Segment C-3)

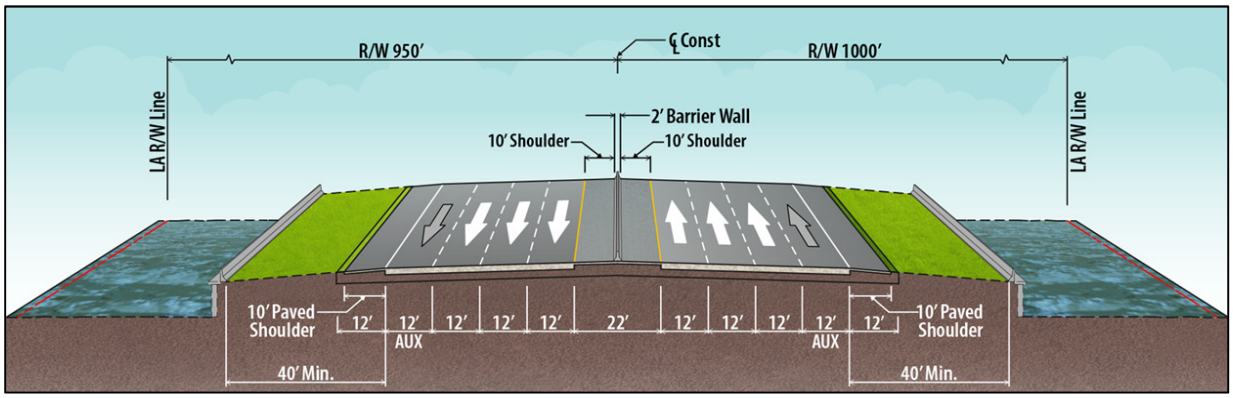


Figure 1-2f. Existing I-275 Mainline Typical Section from south of 4th Street North to 1.0 mile south of Howard Frankland Bridge (Segment C-4)

1.4 Project Purpose and Need

The purpose of this project is to provide for operational and safety improvements that maximize capacity within the I-275 corridor, improve lane continuity and connect I-275 within Pinellas County to the future network of express lanes planned for the Tampa Bay Region. Improvements are needed within the I-275 corridor to help alleviate existing traffic congestion, enhance safety and better accommodate future travel demands associated with projected growth in employment and population. The addition of special use/express lanes is included in the FDOT's Approved SIS Highway Component 2040 Cost Feasible Plan.

In 2012, Annual Average Daily Traffic (AADT) volumes on I-275 ranged from a low of 82,000 vehicles per day north of 54th Avenue South to a high of 142,500 vehicles per day north of 4th Street North. Under these existing traffic loadings, several sections along the I-275 mainline operate deficiently (Level of Service – LOS E) during both the morning and afternoon peak travel periods and does not meet the minimum LOS standard D for SIS highway facilities. Without improvements, the operating conditions along I-275 will continue to deteriorate, resulting in unacceptable levels of service throughout the entire study corridor.

The following information supports the proposed project's purpose and need:

Safety/Crash Rate Issues

Crash data from the Florida Department of Highway Safety and Motor Vehicles indicated there were 2,082 crashes recorded in the project limits during the five year period of 2009 through 2013. There were a total of 976 injuries and 18 fatalities. The crash rates were higher than the average statewide crash rate for urban interstates within the vicinity of certain interchanges within the project limits, and along mainline sections between 22nd Avenue and 54th Avenue North.

Safety within the project limits will be enhanced due to maximizing capacity that will be provided by the proposed lane continuity improvements on I-275. The lane continuity improvements will reduce driving decisions related to lane changes, thereby decreasing potential conflicts among vehicles.

Lane Continuity Issues

Currently, I-275 from south of 54th Avenue South to 4th Street North has one continuous lane in the northbound direction and no continuous lanes in the southbound direction. The proposed intermittent

widening and restriping of existing lanes within I-275 Segments A and B comprise the lane continuity improvements that will form two continuous lanes on I-275 in each direction between 54th Avenue South and 4th Street North; thereby improving the safety of motorists by reducing driving decisions which relate to lane changes and the incidence of associated crashes.

Managed/Special Use Lanes Intent

I-275 Segment C is a component of the Tampa Bay Express (TBX) toll lanes. As part of the TBX Master Plan, one tolled lane is to be added to I-275 in each direction from Gandy Boulevard to 118th Avenue North. From 118th Avenue North to north of 4th Street North, two tolled lanes will be provided in each direction on I-275. Access will be provided between the tolled and non-tolled lanes near Gandy Boulevard, at 118th Avenue North, and between 4th Street North and the Howard Frankland Bridge.

Proposed Improvements

The proposed action involves the provision of capacity and operational improvements along 16.3 miles of I-275 from south of 54th Avenue South to north of 4th Street North in Pinellas County, Florida. This evaluation considers the operational and highway safety benefits of implementing capacity improvements and compares them to the cost savings and minimization of adverse impacts associated with a No Build Alternative. The No Build and Build Alternatives are evaluated and compared based on a variety of parameters utilizing a matrix format. This process identifies the alternative that best balances the benefits (such as improved traffic operations and safety) with the impacts (such as environmental effects and construction costs). In addition to capacity and operational improvements, the proposed action also considers the multimodal transportation needs of the I-275 project corridor, specifically incorporation of a multimodal envelope as part of the proposed improvements in order to be consistent with the Locally Preferred Alternative (LPA) of the Pinellas Alternatives Analysis (AA).

The Preferred Build Alternative consists of providing lane continuity improvements within Segments A and B (from south of 54th Avenue South to south of Gandy Boulevard), and express lane improvements in Segment C (from south of Gandy Boulevard to north of 4th Street North). The lane continuity improvements consists of intermittent widening and restriping of existing lanes on I-275 to form two continuous lanes in each direction. In Segment B, a 40-foot (ft) multimodal transportation envelope within the I-275 median is preserved for the future implementation of light rail transit use envisioned as part of the Federal Transit Administration (FTA) approved Pinellas AA. The express lanes proposed in Segment C are part of the Tampa Bay Express (TBX) Master Plan, which consists of an integrated system of express lanes identified for the Tampa Bay Region.

The I-275 interchange modifications proposed within the project segments are as follows, these future interchange improvements will be further analyzed in appropriate interchange analysis documents:

Segment A

- 31st Street South – moving SB on ramp from a left hand merge to a right hand merge

Segment B

- 5th Avenue North – SB off ramp contains a new auxiliary lane (connected with 22nd Avenue North)

- 22nd Avenue North – SB on ramp contains a new auxiliary lane with connection to 5th Avenue North
- 38th Avenue North – Additional lane on NB off ramp (from 1 to 2).

Segment C

- 118th Avenue – new GUL and SUL ramps
- Roosevelt Boulevard – new GUL NB on ramp
- MLK Boulevard – NB on ramp widening
- Ulmerton Boulevard – NB on ramp widening
- 4th Street North – NB on ramp and SB off-ramp widening

The proposed express lane improvements initially considers (prior to the design year 2040) one express lane (EL) in each direction of I-275 from south of Gandy Boulevard to north of 4th Street North. This near-term express lanes project is known as the Starter Project. The longer-term Master Plan Project shall provide for one EL in each direction of I-275 from south of Gandy Boulevard to 118th Avenue North/Roosevelt Boulevard and two ELs in each direction of I-275 from 118th Avenue North/Roosevelt Boulevard to north of 4th Street North. The separately prepared Final Preliminary Engineering Report (PER) documents the engineering and environmental analyses conducted to assess the environmental and sociocultural effects of implementing the No Build and Build Alternatives.

1.5 Report Purpose

This Alternative Stormwater Management Facility (SMF) Technical Memorandum has been prepared as part of the PD&E Study to document stormwater treatment and attenuation requirements for the proposed improvements. This Memorandum identifies approximate SMF size requirements per basin. The SMFs were sized for a conceptual ultimate condition typical section for the Preferred Alternative improvements identified by the PD&E study. This report provides pond size alternatives that are hydraulically feasible and environmentally permittable based on the best available information. For this study, environmental impacts associated with ponds, including wetland impacts, cultural resources impacts, contamination, upland habitat and protected species was limited to consideration of geographic information systems (GIS) delineation of the National Wetlands Inventory (NWI) wetlands for avoidance of wetlands. Right-of-way costs were estimated by the District Right-of-Way Department, but the costs are not included in this Memorandum. A more detailed pond siting evaluation will be conducted during the design phase of this project.

The stormwater management systems will utilize ponds to meet permitting requirements. From the Begin Project to just north of the Roosevelt Boulevard Interchange (Basins 1-21, R1-R5, M0 and M1), treatment, attenuation and recovery of the required volumes will be accomplished through wet detention. From north of the Roosevelt Boulevard Interchange to the End Project (Basins M1-M9, G2, H1 and B1), treatment and recovery of the required volumes will be accomplished through dry retention (attenuation is not required since the outfall is tidal).

2.0 Improvement Alternatives

This DTTM was prepared as part of the PD&E Study to document the existing travel conditions along I-275, present traffic forecasts of the opening year (2020), interim year (2030) and design year (2040) travel demand along I-275 and the crossing corridors, and summarize level of service evaluations of improvement alternatives for the I-275 mainline. The DTTM concluded that the proposed improvements should consist of providing lane continuity improvements only in Segment A (from south of 54th Avenue South to I-175), lane continuity improvements which are compatible with potential multimodal improvements in Segment B (from I-175 to south of Gandy Boulevard) and adding express lanes (ELs) to the existing general use lanes (GULs) in each direction of the I-275 mainline to form express lanes in study Segment C (from south of Gandy Boulevard to north of 4th Street North). For the express lane section, two ELs would be provided in each direction of the I-275 mainline to accommodate traffic volumes forecasted in the design year (2040) under the Master Plan scenario. Alternatively, one EL would be provided in each direction of the I-275 mainline under the Starter Project scenario, in order to cost effectively provide mobility options and preserve acceptable levels of service for the regional travelers prior to the design year.

2.1 No-Build Alternative

The No Build Alternative assumes that, with the exception of the improvements that are already planned and funded, the existing conditions would remain for I-275 within the project limits and only routine maintenance activities would occur until the design year 2040. The advantages to the No Build Alternative include no new costs for design and construction, no effects to existing land uses and natural resources and no disruption to the public during construction. However, the No Build Alternative would not address the project's purpose and need and would result in increased congestion and user costs. The traffic analyses for this alternative indicates that by the year 2040 a significant portion of the I-275 mainline, merge/diverge areas and ramp termini intersections would operate below acceptable levels of service.

2.2 Mainline Build Alternatives

For the I-275 mainline, two build alternatives were developed and evaluated based on alternate typical sections. In Segments A and B, the build alternative consists of lane continuity improvements, while in Segment C express lanes are considered as the build alternative. The proposed lane continuity improvements in Segments A and B provide for intermittent widening and restriping of existing lanes on I-275 to form two continuous lanes in each direction. In Segment B, a 40-foot multimodal envelope is preserved for the future implementation of light rail transit within the I-275 median as part of the Federal Transit Administration (FTA) approved Pinellas AA.

As part of the Master Plan improvements in Segment C, a single express lane is to be added in the northbound direction of mainline I-275 north of Gandy Boulevard. A second express lane is added to the northbound I-275 mainline as a direct connection from the 118th Avenue North corridor. Only one access point, located between 4th Street North and the Howard Frankland Bridge, is provided for travel between ELs and GULs. In the southbound direction, two ELs on the I-275 mainline will originate from points north/east of the Howard Frankland Bridge, with one of the ELs terminating as

a direct connection to the 118th Avenue North corridor, and the second southbound I-275 mainline EL will transition back into the GULs south of Gandy Boulevard. Similar to the northbound direction, only one access point is to be located between the Howard Frankland Bridge and 4th Street North. The express lane typical section in Segment C generally consists of six GULs (three lanes in each direction) and four ELs (two in each direction). A marked four-foot buffer containing traffic delineators (i.e., vertical PVC flexible posts) separate the ELs and the GULs.

The Starter Project improvements in Segment C consist of re-designating the existing auxiliary lanes on mainline I-275 to form a single express lane in each direction from south of the Roosevelt Boulevard corridor to the Howard Frankland Bridge. Access to the EL from the GULs is provided at three locations along the northbound I-275 mainline: 1) between Gandy Boulevard and Roosevelt Boulevard, 2) a direct connection from the 118th Avenue North corridor, and 3) between 4th Street North and the Howard Frankland Bridge. In the southbound direction of mainline I-275, the single express lane originating from points north/east of the Howard Frankland Bridge will terminate south of Gandy Boulevard. Access from the EL to the GULs is provided at three locations along the southbound I-275 mainline: 1) between the Howard Frankland Bridge and 4th Street North, 2) a direction connection to the 118th Avenue North corridor, and 3) between Gandy Boulevard and 54th Avenue North.

The widening of I-275, under both lane continuity and Starter and Master Plan express lane mainline alternatives, can be constructed within the existing right of way. Additional right of way may be required, however, for stormwater management facilities and floodplain compensation sites.

A detailed description of each mainline alternative is provided in the following pages, and a graphical depiction of the conceptual design layout of the proposed build alternative is provided in **Appendix A**.

2.2.1 Mainline Build Alternative – Segment A

Mainline Build Alternative – Segment A, proposed lane continuity improvements mainly consists of providing intermittent widening that varies between 0 and 12 ft and restriping of the existing four-lane typical section with auxiliary lanes. The proposed I-275 mainline build alternative typical section in Segment A is shown on **Figure 2-1**. As seen in this graphic, widening of I-275 is only proposed to the outside in the southbound direction.

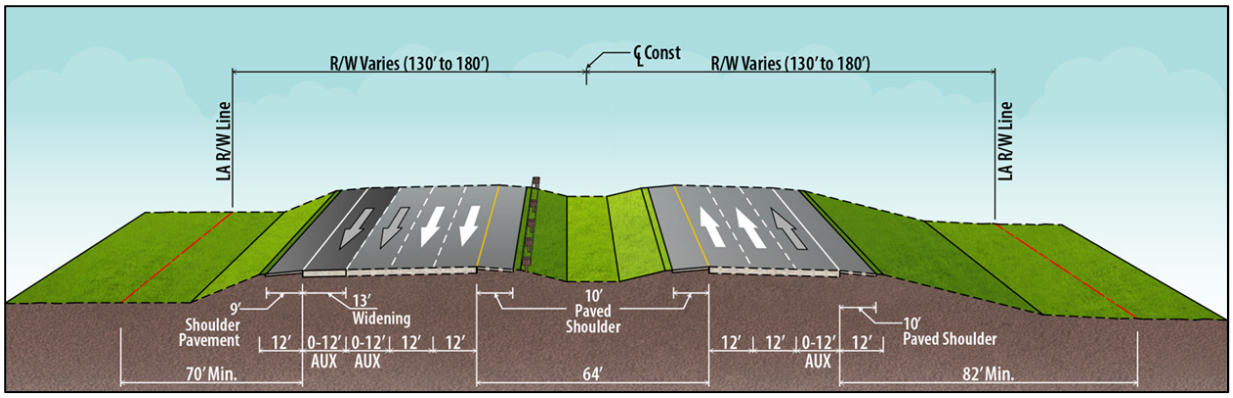


Figure 2-1. I-275 Mainline Build Alternative Typical Section from south of 54th Avenue I-175 (Segment A)

2.2.2 Mainline Build Alternative – Segment B

Mainline Build Alternative – Segment B, proposed lane continuity improvements mainly consists of providing intermittent widening that varies between 0 and 24 ft and restriping of the existing six-lane typical section with auxiliary lanes. As previously mentioned in Section 2.2, lane continuity improvements and accommodations for future light rail transit within the I-275 median as planned in the Pinellas Alternatives Analysis are provided. The proposed I-275 mainline build alternative typical section in Segment B is shown on **Figure 2-2**.

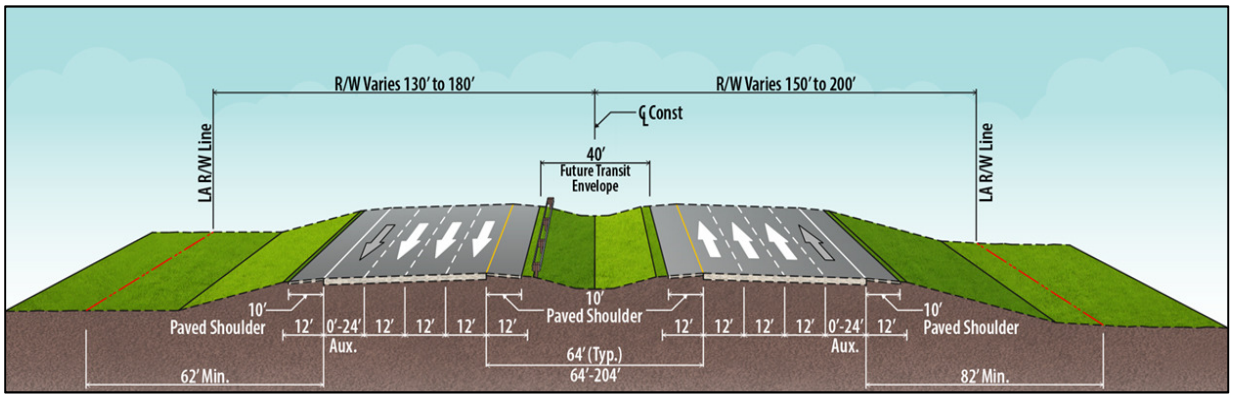


Figure 2-2. I-275 Mainline Build Alternative Typical Section from I-175 to south of Gandy Boulevard (Segment B)

2.2.3 Mainline Build Alternative – Segment C

Mainline Build Alternative – Segment C, proposed widening of I-275 consists of the addition of express lanes to form the Master Plan and Starter projects. The proposed I-275 mainline build alternative typical sections in Segment C are shown **Figure 2-3(a-d)** and **Figure 2-4(a-d)** for the Master and Starter projects, respectively.

2.2.3.1 Proposed Master Plan Improvements

The Master Plan proposes to widen the existing I-275 mainline towards the median in order to accommodate one EL in each direction from south of Gandy Boulevard to 118th Avenue North (see **Figure 2-3a** for a graphical depiction of the proposed typical section). The proposed ELs are to be separated from the GULS by a four-foot painted buffer that is to contain traffic delineators. Direct connections from the 118th Avenue North/Gateway corridor to I-275 are provided via new flyover ramps that enter and exit I-275 from the median. **Figure 2-3b** illustrates the use of Mechanically Stabilized Earth (MSE) wall to transition 118th Avenue North flyover ramps to the at-grade I-275 mainline. From 118th Avenue North to 1.0 mile south of the Howard Frankland Bridge, two express lanes are provided in each direction of travel along I-275 (see **Figure 2-3c** and **Figure 2-3d**). In order to accommodate the proposed express lanes, the existing I-275 causeway extending into Tampa Bay will need to be widened and the existing sea wall replaced.

Figure 2-3. I-275 Mainline Build Alternative Typical Sections – Master Plan Project

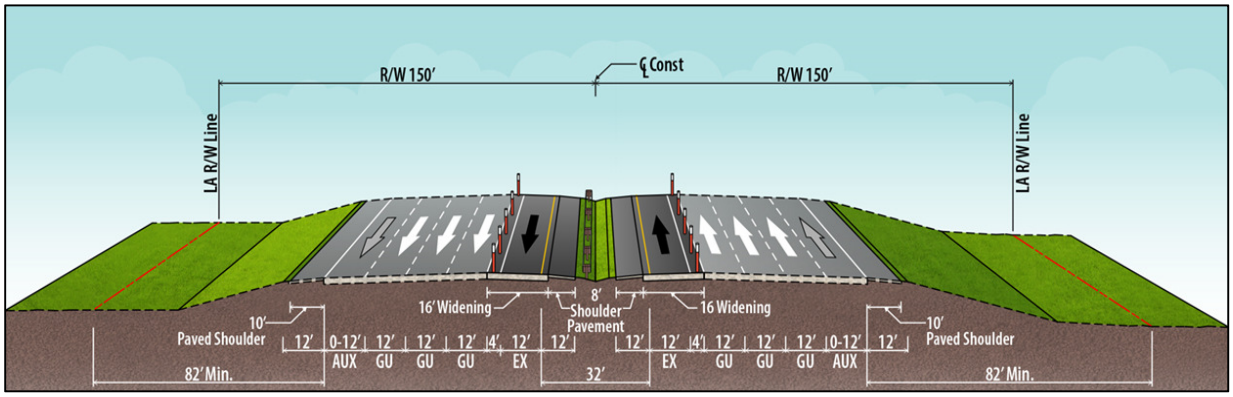


Figure 2-3a. I-275 Mainline Master Plan Build Alternative Typical Section from south of Gandy Boulevard to Roosevelt Boulevard (Segment C-MP1)

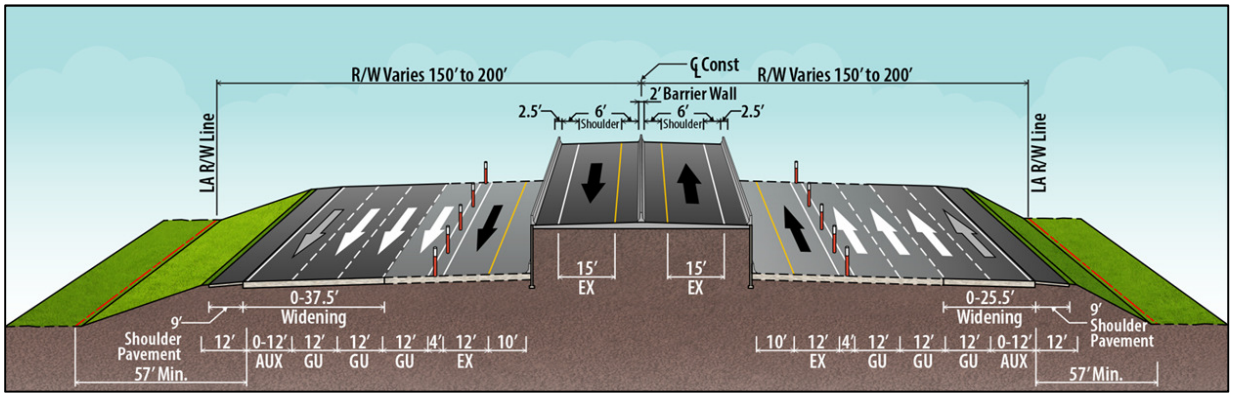


Figure 2-3b. I-275 Mainline Master Plan Build Alternative Typical Section from Roosevelt Boulevard to south of 9th Street North (Segment C-MP2)

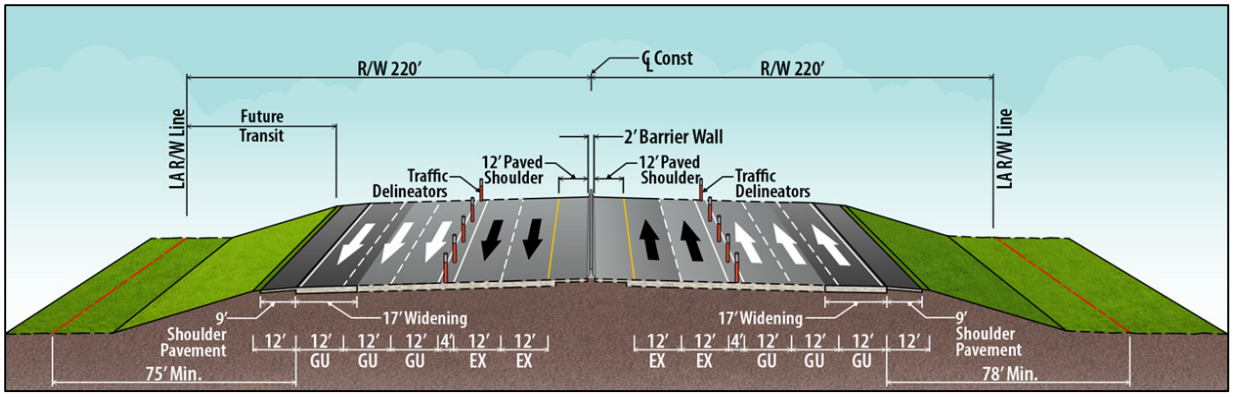


Figure 2-3c. I-275 Mainline Master Plan Build Alternative Typical Section from south of 9th Street North to north of 4th Street North (Segment C-MP3)

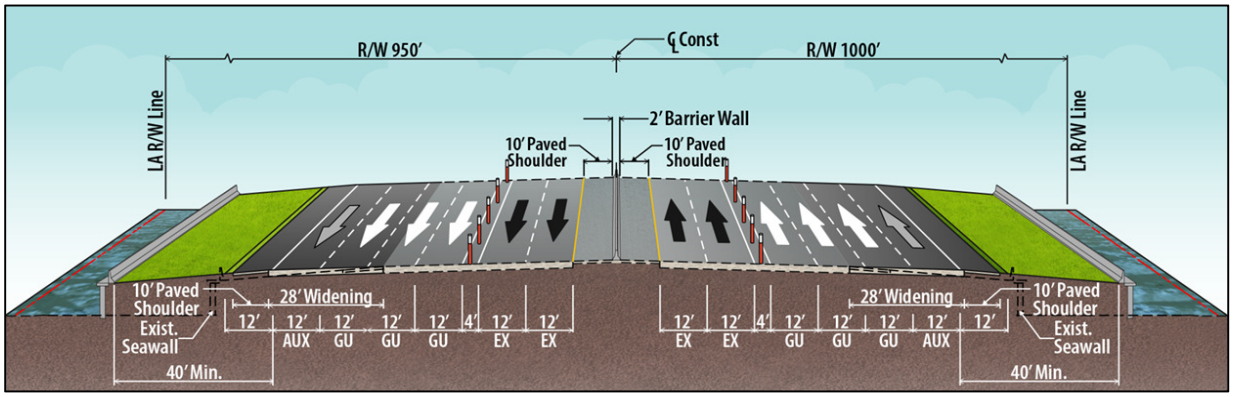


Figure 2-3d. I-275 Mainline Master Plan Build Alternative Typical Section from north of 4th Street North to 1.0 mile south of the Howard Frankland Bridge (Segment C-MP4)

2.2.3.2 Proposed Starter Project Improvements

The Starter Project improvements are similar to those of the Master Plan, with the exception that instead of two express lanes proposed in each direction of I-275 under the Master Plan Project, only one lane is provided in each direction of I-275. The southern termini of the Starter Project express lane improvements consist of a lane addition north of Gandy Boulevard, and in the southbound direction the proposed inside (i.e., towards the median) express lane transitions back into the existing southbound I-275 typical section south of Gandy Boulevard.

The Starter Plan proposes to widen the existing I-275 mainline towards the median in order to accommodate one EL in each direction from south of Gandy Boulevard to 118th Avenue North (see **Figure 2-4a** for a graphical depiction of the proposed typical section). As illustrated on **Figure 2-4b**, an MSE wall is utilized in the design of the direct connection to transition 118th Avenue flyover ramps into the at-grade I-275 mainline just south of 9th Street North. The remaining limits of the Starter Project, from north of 9th Street to 1.0 mile south of the Howard Frankland Bridge, involve outside widening and re-designating the existing auxiliary lane on I-275 to form an express lane to the inside. As shown on **Figure 2-4c** and **Figure 2-4d**, no additional travel lanes above-and-beyond the number of existing travel lanes are added under the Starter Project north of 9th Street North.

Figure 2-4. I-275 Mainline Build Alternative Typical Sections – Starter Project

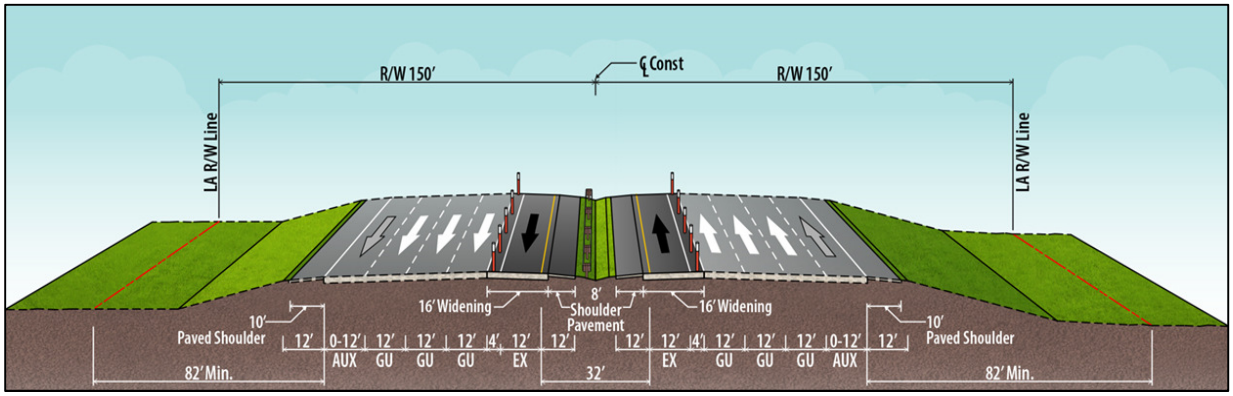


Figure 2-4a. I-275 Mainline Starter Project Build Alternative Typical Section from south of Gandy Boulevard to Roosevelt Boulevard (Segment C-SP1)

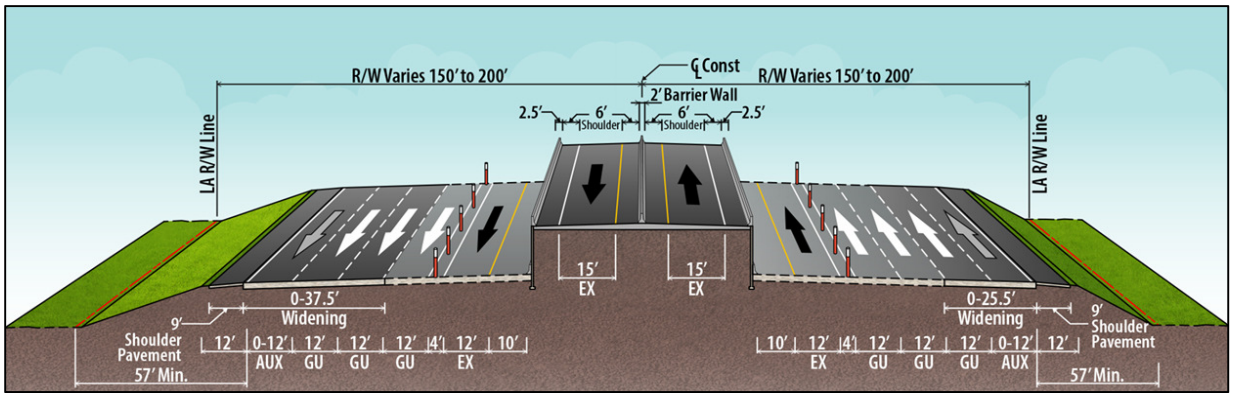


Figure 2-4b. I-275 Mainline Starter Project Build Alternative Typical Section from Roosevelt Boulevard to south of 9th Street North (Segment C-SP2)

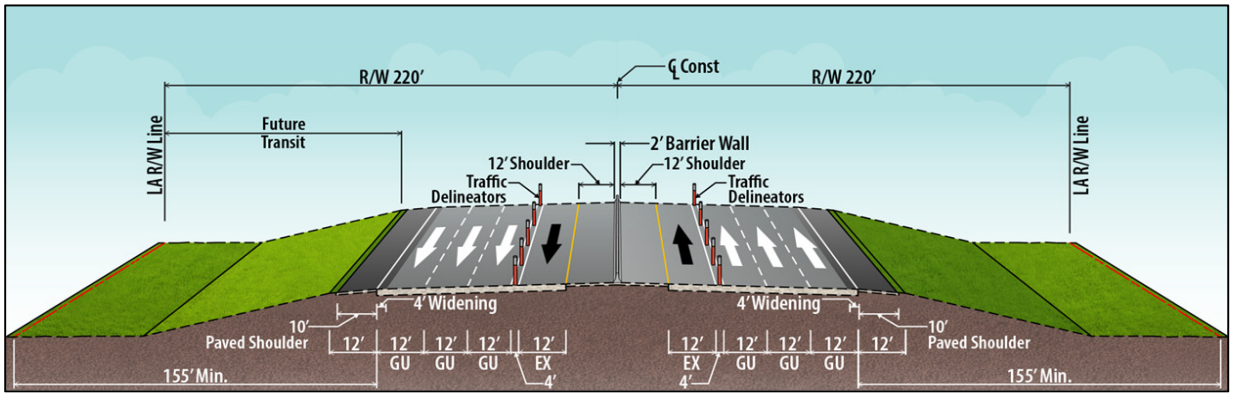


Figure 2-4c. I-275 Mainline Starter Project Build Alternative Typical Section from south of 9th Street North to north of 4th Street North (Segment C-SP3)

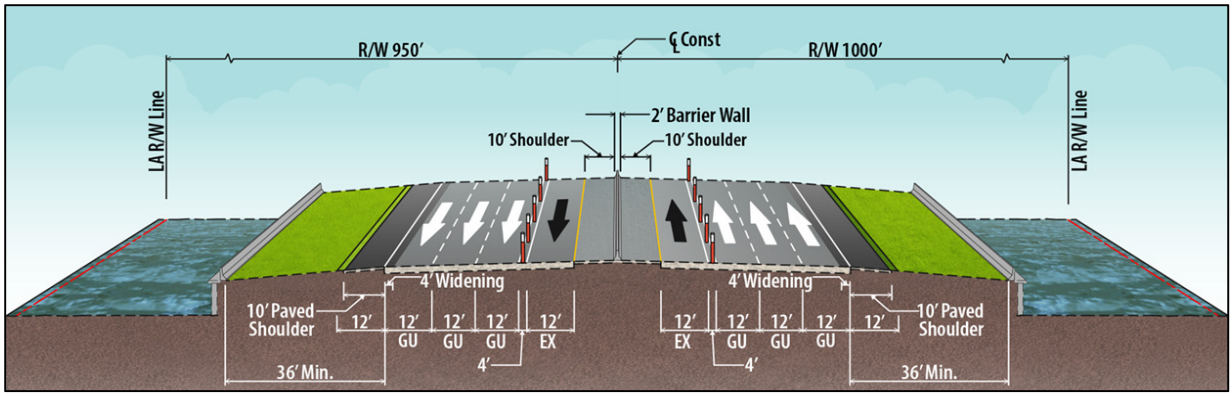


Figure 2-4d. I-275 Mainline Starter Project Build Alternative Typical Section from north of 4th Street North to 1.0 mile south of the Howard Frankland Bridge (Segment C-SP4)

3.0 Stormwater Management

3.1 Pinellas County Watersheds

The project crosses the following Pinellas County Watersheds, from south to north:

Frenchman's Creek Watershed (#48 on Figure in Appendix B)

Frenchman's Creek watershed is located in southern Pinellas County and lies entirely within the City of St. Petersburg. The basin contains approximately 2,400 acres of land, most of which is designated on the Future Land Use Map as residential urban, residential low and medium, commercial general, residential/office general, residential/office/retail, recreation/open space, preservation, and public/semi-public. Minor outfalls can be found throughout the basin, none draining more than one square mile. The terrain is gently sloping toward Boca Ciega Bay on the west basin shore.

34th Street Watershed (#45 on Figure in Appendix B)

34th Street watershed is located in southern Pinellas County and lies entirely within the City of St. Petersburg. The basin contains 1,630 acres, most of which are designated on the Future Land Use Map as residential urban, including a complete urban mix of residential medium and high, commercial general, residential/ office general, residential/office/retail, industrial general, recreation/open space, and public/ semi-public. Development of the watershed is practically complete at 94 percent; therefore, overall soil permeability characteristics cannot be determined. Most of the terrain is steep sloping from north to south. The major outfall is about 3.1 miles in length and outlets into Clam Bayou. The major outfall system is enclosed in box culverts in dedicated street rights-of-way for most of its length. The upper limit was set at 9th Avenue North, in an upstream area of 228 acres. The box culverts are estimated to have sufficient capacity for a 25-year flow.

Booker Creek Watershed (#40 on Figure in Appendix B)

Booker Creek watershed is located in southeast Pinellas County and lies entirely within the City of St. Petersburg. Of the 3,100 acres in the basin, most of the land is designated on the Future Land Use Map as residential urban but also includes a complete urban mix of residential low medium, medium and high, commercial general, residential/office general, residential /office/retail, industrial limited and general, recreation/open space, and public/semi-public. The major outfall is approximately 4.5 miles in length and outlets into Bayboro Harbor. Because of the development, an accurate estimate of the basin permeability cannot be determined. Several storage areas are either existing or under construction along the outfall channel. The basin terrain is gently sloping at its upper end and steep sloping at its lower end.

Joe's Creek Watershed (#35 on Figure in Appendix B)

Joe's Creek watershed is located in south central Pinellas County and includes parts of the Cities of Pinellas Park and St. Petersburg, and all of Kenneth City. The basin contains approximately 9,500 acres of land, much of which is designated on the Future Land Use Map as residential low and residential urban, including a complete urban mix of residential low medium, medium and high,

commercial general, mixed use, industrial, recreation/open space, preservation and public/semi-public. Most of the undeveloped area is located in the low lying northwest corner of the basin where the major outfall empties into Cross Bayou Canal. The major outfall and its tributaries generally flow east to west, and total 11.2 miles in length. Most of the soil has a medium permeability rating, and many small (1 to 3 acres) natural water storage areas are located throughout subdivisions in the basin. Terrain is gently sloping in the east, steep sloping in the middle, and practically flat in the west basin area.

The freshwater segment of Joe's Creek (Waterbody Identification (WBID) 1668A) in Pinellas County is listed as an impaired water for dissolved oxygen, nutrients, and Biochemical Oxygen Demand (BOD). A Total Maximum Daily Load (TMDL) for the freshwater segment was prepared by the U.S. Environmental Protection Agency (EPA) and released in September 2007. The TMDL indicates a target pollutant load reduction of 49% for total phosphorus and 49% for total nitrogen.

Basins 14, 15 and 16 discharge to Joe's Creek and will be required to meet pre/post pollutant loading. The wet detention ponds in these basins will provide water quality treatment benefits but will not be sufficient to meet TMDL requirements alone. A 1.0-acre dry retention pretreatment area will be required to supplement the wet detention ponds to meet the required nutrient removal efficiencies. The dry retention area will be located in the median of Basin 15, in series with the downstream wet pond. This dry pretreatment area should meet the required nutrient removal efficiencies for all three basins.

Sawgrass Lake Watershed (#30 on Figure in Appendix B)

Sawgrass Lake watershed is located in east central Pinellas County, and parts of the Cities of Pinellas Park and St. Petersburg. The central northern portion of the basin consists of Sawgrass Lake Park (390 acres) and mostly undeveloped vacant land. Sawgrass Lake has a total surface area of 20 acres and has very little developed area along its shoreline. The herbaceous wetland around the lake provides valuable habitat for many bird and reptile species. Much of the 5,800 acre drainage area is designated on the Future Land Use Map as residential urban, including a complete urban mix of residential low, low medium, medium and high, commercial general, residential/ office/retail, industrial limited, recreation/open space, preservation and public/semi-public. The major outfall and its three tributaries total 7.6 miles in length, and outlet into Old Tampa Bay. Soil in the west half of the basin has a medium permeability rating. Terrain is fairly steep in the southern basin area, and gently sloping to flat in the remainder. Most of the eastern half of the basin is flood prone. Drainage from Sawgrass Lake flows into Riviera Bay through the Turner Creek ditch. A water control structure located on Sawgrass Park's eastern boundary controls the flow of drainage that is released into Turner Creek.

Roosevelt Watershed (#23 on Figure in Appendix B)

Roosevelt watershed is located in east central Pinellas County and contains parts of the Cities of Pinellas Park and St. Petersburg. Most of the basin's 8,000 acres is designated on the Future Land Use Map as industrial limited and transportation /utility, with lesser amounts of residential urban, low medium and medium, residential/office general, commercial recreation, recreation/open space and preservation. Three separate major outfalls, totaling 9.5 miles in length, drain 5,000 acres of the watershed and outlet into Old Tampa Bay. Soil in the basin generally has a medium permeability rating. The terrain is flat with many natural water storage areas located throughout the basin. Due to its low elevation, most of the northeast area is flood prone. Also, extensive highway construction,

gravel quarrying and landfill operations have occupied a good portion of the land. Adequate culvert capacity has been provided at most of the major highways which cross the basin.

A portion of the Roosevelt Watershed (WBID 1624) is listed as impaired for dissolved oxygen. Basins M, M0, M1, M2, M3, G2 and H1 discharge to this WBID. All of these basins currently utilize existing permitted dry facilities and presumptive water quality requirements will control the design.

3.2 Project Drainage Basins

For this project, forty-two (42) roadway drainage basins were delineated based on a review of as-built plans, existing permits and available LIDAR data (contours). Each basin requiring stormwater management has one (1) pond site alternative. Design criteria from the Southwest Florida Water Management District (SWFWMD) and the FDOT were used to determine the size of the stormwater management facilities. The required treatment and attenuation volumes were calculated and areas for the proposed pond site alternatives were established based on these volumes. Short basin descriptions are given below:

Basin 1

Basin 1 begins at Sta. 72+34 and extends to just north of 54th Avenue South (Sta. 100+00). The drainage area consists of the roadway right-of-way between these stations, as well as the interchange with 54th Avenue South. The total basin area is 54.06 acres, with the existing impervious area equal to 25.52 acres. The basin drains west into Frenchman's Creek, either directly or through roadside swales. Frenchman's Creek outfalls into Boca Ciega Bay. No new impervious area is proposed within this basin; therefore, a stormwater management facility is not required.

Basin 2

Basin 2 begins just north of 54th Avenue South (Sta. 100+00) and extends to 38th Avenue South (Sta. 146+40). The drainage area consists of the roadway right-of-way between these stations. The total basin area is 48.58 acres, with the existing impervious area equal to 16.77 acres. The estimated low edge of pavement (LEOP) elevation is 20.76 ft NGVD. The proposed improvements will generate approximately 0.92 acres of new impervious area. A wet detention pond will be utilized to provide the required treatment and attenuation volumes below approximately elevation 15 ft NGVD. The basin drains to a cross drain at Sta. 114+15 and ultimately flows west into a canal which outfalls into Boca Ciega Bay.

Basin 3

Basin 3 begins at 38th Avenue South (Sta. 146+40) and ends at Sta. 155+00. The drainage area consists of the roadway right-of-way between these stations. The total basin area is 6.67 acres, with the existing impervious area equal to 2.52 acres. The estimated LEOP elevation is 27.16 ft NGVD. The proposed improvements will generate approximately 0.23 acres of new impervious area. FDOT owns a 1.0-acre parcel on the west side of I-275. A wet detention pond will be utilized on this parcel to provide the required treatment and attenuation volumes below approximately elevation 19 ft NGVD. The basin drains to a storm drain system at Sta. 153+16

that flows west along 38th Avenue South and ultimately discharges into a canal which outfalls into Boca Ciega Bay.

Basin 4

Basin 4 begins at Sta. 155+00 and extends to 18th Avenue South (Sta. 213+14). The drainage area consists of the roadway right-of-way between these stations, as well as the 26th Avenue South Interchange and the 22nd Avenue South Interchange. The total basin area is 59.16 acres, with the existing impervious area equal to 25.48 acres. The estimated LEOP elevation is 19.16 ft NGVD. The proposed improvements will generate approximately 0.33 acres of new impervious area. FDOT owns a 1.45-acre parcel on the west side of I-275. A wet detention pond will be utilized on this parcel to provide the required treatment and attenuation volumes below approximately elevation 18.16 ft NGVD. The basin drains to a cross drain at Sta. 182+16 that flows west into Clam Bayou which ultimately outfalls into Boca Ciega Bay.

Basin 5

Basin 5 begins at 18th Avenue South (Sta. 213+14) and extends to Sta. 299+55. The drainage area consists of the roadway right-of-way between these stations. The total basin area is 9.05 acres, with the existing impervious area equal to 4.57 acres. The estimated LEOP elevation is 56.66 ft NGVD. The basin drains to a storm drain system at Sta. 217+98. No new impervious area is proposed within this basin; therefore, a stormwater management facility is not required.

Basin 6

Basin 6 begins at Sta. 299+55 and extends to Sta. 245+00 (Station Equation: 325+01.31 BK = 224+13.52 AH). The drainage area consists of the roadway right-of-way between these stations, as well as the 31st Street South Interchange 28th Street South Interchange. The total basin area is 51.64 acres, with the existing impervious area equal to 21.20 acres. The estimated LEOP elevation is 47.16 ft NGVD. The proposed improvements will generate approximately 0.65 acres of new impervious area. A wet detention pond within the existing right-of-way will be utilized to provide the required treatment and attenuation volumes below approximately elevation 45.00 ft NGVD. The basin drains to an existing storm drain system that discharges west into Clam Bayou which ultimately outfalls into Boca Ciega Bay.

Basin 7

Basin 7 begins at Sta. 245+00 and extends to the I-175 interchange (Sta. 280+00). The drainage area consists of the I-275 roadway right-of-way between Sta. 245+00 to Sta. 260+00 (NB) and between Sta. 245+00 to Sta. 280+00 (SB), as well as a portion of I-175 WB. The total basin area is 26.67 acres, with the existing impervious area equal to 10.25 acres. The estimated LEOP elevation is 63.06 ft NGVD. The proposed improvements will generate approximately 0.63 acres of new impervious area. A wet detention pond will be utilized to provide the required treatment and attenuation volumes below approximately elevation 51 ft NGVD. The basin drains to a storm drain system at Sta. 271+96 that flows north along 20th Street South and eventually into Booker Creek.

Basin 8

Basin 8 begins at Sta. 60+00 (NB) and extends east along I-175 to 16th Street South (Sta. 84+25). The drainage area consists of the I-275 and I-175 roadway right-of-way between these stations. The total basin area is 16.61 acres, with the existing impervious area equal to 5.65 acres. The estimated LEOP elevation is 63.06 ft NGVD. The basin drains to the Booker Creek box culvert under I-175, east of Tropicana Field, which ultimately outfalls into Bayboro Harbor. No new impervious area is proposed within this basin; therefore, a stormwater management facility is not required.

Basin 9

Basin 9 begins at Sta. 280+00 and extends to Burlington Avenue North (Sta. 303+80). The drainage area consists of the roadway right-of-way between these stations, as well the northern portion of the I-175 Interchange. The total basin area is 13.51 acres, with the existing impervious area equal to 8.73 acres. The estimated LEOP elevation is 68.26 ft NGVD. The proposed improvements will generate approximately 0.21 acres of new impervious area. A wet detention pond within the existing right-of-way will be utilized to provide the required treatment and attenuation volumes below approximately elevation 41 ft NGVD. The basin drains to a storm drain system at Sta. 300+80 that flows east along 2nd Avenue North and ultimately discharges into Booker Creek. Booker Creek flows south into Bayboro Harbor.

Basin 10

Basin 10 begins at Burlington Avenue North (Sta. 303+80) and ends at 5th Avenue North (Sta. 316+50). The drainage area consists of the roadway right-of-way between these stations, as well the majority of the I-375 Interchange and a portion of 5th Avenue North. The total basin area is 30.12 acres, with the existing impervious area equal to 12.58 acres. The estimated LEOP elevation is 62.66 ft NGVD. The proposed improvements will generate approximately 0.31 acres of new impervious area. A wet detention pond within the existing right-of-way will be utilized to provide the required treatment and attenuation volumes below approximately elevation 42 ft NGVD. The basin drains to Booker Creek at Sta. 306+78 and ultimately outfalls into Bayboro Harbor.

Basin 11

Basin 11 begins at 5th Avenue North (Sta. 316+50) and extends to north of 13th Avenue North (Sta. 346+85). The drainage area consists of the roadway right-of-way between these stations, as well the northernmost portion of the I-375 Interchange. The total basin area is 27.28 acres, with the existing impervious area equal to 13.61 acres. The estimated LEOP elevation is 60.66 ft NGVD. The proposed improvements will generate approximately 0.55 acres of new impervious area. A wet detention pond within the existing right-of-way will be utilized to provide the required treatment and attenuation volumes below approximately elevation 42 ft NGVD. The basin drains to an existing 10’x9’ concrete box culvert on the east side of I-275 and ultimately discharges into Booker Creek. Booker Creek flows south into Bayboro Harbor.

Basin 12

Basin 12 begins north of 13th Avenue North (Sta. 346+85) and extends to Sta. 391+88. The drainage area consists of the roadway right-of-way between these stations, including the 22nd Avenue North Interchange. The total basin area is 41.34 acres, with the existing impervious area equal to 18.41 acres. The estimated LEOP elevation is 57.66 ft NGVD. The proposed improvements will generate approximately 0.55 acres of new impervious area. A wet detention pond will be utilized to provide the required treatment and attenuation volumes below approximately elevation 56.66 ft NGVD. The basin drains to an existing concrete box culvert on the west side of I-275 at Sta. 351+00 and ultimately discharges into Booker Creek. Booker Creek flows south into Bayboro Harbor.

Basin 13

Basin 13 begins at Sta. 391+88 and extends to 30th Avenue North (Sta. 400+00). The drainage area consists of the roadway right-of-way between these stations. The total basin area is 5.62 acres, with the existing impervious area equal to 2.36 acres. The estimated LEOP elevation is 67.16 ft NGVD. The proposed improvements will generate approximately 0.16 acres of new impervious area. A wet detention pond will be utilized to provide the required treatment and attenuation volumes below approximately elevation 59 ft NGVD. The basin drains to an existing storm drain system on the west side of I-275 at Sta. 395+15. The existing storm drain flows west along 28th Avenue North and ultimately discharges into Booker Creek. Booker Creek flows south into Bayboro Harbor.

Basin 14

Basin 14 begins at 30th Avenue North (Sta. 400+00) and extends to just south of 38th Avenue North (Sta. 425+25). The drainage area consists of the roadway right-of-way between these stations and includes the southern ramps for the 38th Avenue North Interchange. The total basin area is 23.94 acres, with the existing impervious area equal to 8.61 acres. The estimated LEOP elevation is 58.86 ft NGVD. The proposed improvements will generate approximately 0.55 acres of new impervious area. A wet detention pond within the existing right-of-way will be utilized to provide the required treatment and attenuation volumes below approximately elevation 57 ft NGVD. The basin drains to an existing storm drain system on the west side of I-275 at Sta. 423+88, discharges to the 25th Street N Outfall and ultimately into Joe's Creek. Joe's Creek flows west into Cross Bayou. This basin discharges to an impaired water body, Joe's Creek. Please refer to **Section 3.1** for a detailed discussion and **Appendix D** for calculations.

Basin 15

Basin 15 begins just south of 38th Avenue North (Sta. 425+25) and ends at Sta. 446+00. The drainage area consists of the roadway right-of-way between these stations and includes the 38th Avenue North Interchange. The total basin area is 23.74 acres, with the existing impervious area equal to 10.20 acres. The estimated LEOP elevation is 49.56 ft NGVD. The proposed improvements will generate approximately 0.09 acres of new impervious area. A wet detention pond within the existing right-of-way will be utilized to provide the required treatment and attenuation volumes below approximately elevation 48.56 ft NGVD. The basin drains to an

existing storm drain system at Sta. 440+00 that flows west, ultimately into Joe's Creek. Joe's Creek flows west into Cross Bayou. This basin discharges to an impaired water body, Joe's Creek. Please refer to **Section 3.1** for a detailed discussion and **Appendix D** for calculations.

Basin 16

Basin 16 begins at Sta. 446+00 and ends south of 54th Avenue North at Sta. 473+50. The drainage area consists of the roadway right-of-way between these stations. The total basin area is 19.91 acres, with the existing impervious area equal to 9.84 acres. The estimated LEOP elevation is 50.56 ft NGVD. The basin drains to an existing storm drain system at Sta. 453+25 that flows west, ultimately into Joe's Creek. Joe's Creek flows west into Cross Bayou. This basin discharges to an impaired water body, Joe's Creek. Please refer to **Section 3.1** for a detailed discussion and **Appendix D** for calculations. No new impervious area is proposed within this basin; therefore, a stormwater management facility is not required.

Basin 17

Basin 17 begins at south of 54th Avenue North at Sta. 473+50 and extends to Sta. 328+00 (Station Equation: 499+99.72 = 324+97.73). The drainage area consists of the roadway right-of-way between these stations and includes the 54th Avenue North Interchange. The total basin area is 36.75 acres, with the existing impervious area equal to 14.75 acres. The estimated LEOP elevation is 25.25 ft NGVD. The proposed improvements will generate approximately 0.11 acres of new impervious area. A wet detention pond within the existing right-of-way will be utilized to provide the required treatment and attenuation volumes below approximately elevation 23 ft NGVD. The basin outfalls to an existing ditch on the east side of I-275 at Sta. 325+16. This existing ditch flows north within the I-275 right-of-way, ultimately discharging into the Turner Creek ditch which flows east into Riviera Bay.

Basin 18

Basin 18 begins at Sta. 328+00 and extends to the Gandy Boulevard Interchange at Sta. 421+17 (Sta. 440+00 for I-275 NB). The drainage area consists of the roadway right-of-way between these stations and includes the southwest, southeast and northeast quadrants of the Gandy Boulevard Interchange. The total basin area is 130.02 acres, with the existing impervious area equal to 41.50 acres. The estimated LEOP elevation is 11.59 ft NGVD. The proposed improvements will generate approximately 3.80 acres of new impervious area. A wet detention pond will be utilized to provide the required treatment and attenuation volumes below approximately elevation 5 ft NGVD. The basin outfalls to a double box culvert at Sta. 386+65 that discharges into the Turner Creek ditch which flows east into Riviera Bay.

Basin 19

Basin 19 begins at Sta. 421+17 and extends to just north of the Gandy Boulevard Interchange at Sta. 440+00. The drainage area consists of the roadway right-of-way between these stations and includes the northwest quadrant of the Gandy Boulevard Interchange. The total basin area is 72.96 acres, with the existing impervious area equal to 22.09 acres. The estimated LEOP elevation is 12.84 ft NGVD. The proposed improvements will generate approximately 0.70 acres

of new impervious area. A wet detention pond within the existing right-of-way will be utilized to provide the required treatment and attenuation volumes below approximately elevation 11.84 ft NGVD. The basin outfalls to ditch west of the interchange via a double 24" pipe under Ramp C. This ditch flows southwest to a concrete box culvert under Gandy Boulevard and into Sawgrass Lake. Sawgrass Lake flows into Riviera Bay through the Turner Creek ditch. A water control structure located on Sawgrass Park's eastern boundary controls the flow of drainage that is released into Turner Creek.

Basin 20

Basin 20 begins just north of the Gandy Boulevard Interchange at Sta. 440+00 and ends at Sta. 491+50 (SB) and Sta. 477+00 (NB), south of the Roosevelt Boulevard Interchange. The drainage area consists of the roadway right-of-way between these stations. The total basin area is 30.49 acres, with the existing impervious area equal to 14.76 acres. The estimated LEOP elevation is 11.79 ft NGVD. The proposed improvements will generate approximately 1.76 acres of new impervious area. A wet detention pond will be utilized to provide the required treatment and attenuation volumes below approximately elevation 10.79 ft NGVD. The basin outfalls to a double box culvert at Sta. 466+70 that discharges into the 102nd Avenue ditch which flows east to 16th Street North and then flows north into Roosevelt Creek Tributary 2 and ultimately into Tampa Bay.

Basin R1

Basin R1 begins south of the Roosevelt Boulevard Interchange at Sta. 491+50 (SB) and Sta. 477+00 (NB) and ends at Sta. 510+50 (SB) and Sta. 515+00 (NB). The drainage area consists of the roadway right-of-way between these stations, as well as the southwestern quadrant of the Roosevelt Boulevard Interchange, and a significant portion of 118th Avenue/SR 686. The total basin area is 78.57 acres, with the existing impervious area equal to 20.44 acres. The estimated LEOP elevation is 11.24 ft NGVD. The proposed improvements will generate approximately 2.81 acres of new impervious area. Currently, this basin drains to an existing pond, referred to as "South Pond", located in the southwest quadrant of the Roosevelt Boulevard Interchange. South Pond is a regional stormwater management facility which treats and attenuates surrounding private properties, as well as FDOT right-of-way, and is comprised of two stormwater management facilities connected via a 54" equalizer pipe under 118th Avenue/SR 686. This existing pond will need to be expanded by approximately 1.0 acre. The South Pond discharges north into Roosevelt Creek Tributary 1. The tributary runs eastward under Roosevelt Boulevard, I-275 and 9th Street North prior to the final outfall, Old Tampa Bay.

Basin R2

Basin R2 begins south of the Roosevelt Boulevard Interchange at Sta. 510+50 (SB) and extends west along Roosevelt Boulevard. The drainage area consists of the SB off-ramp to Roosevelt Boulevard, as well as a portion of westbound Roosevelt Boulevard extending to the cross drain at Tributary 2 under Roosevelt Boulevard. The total basin area is 9.99 acres, with the existing impervious area equal to 3.32 acres. The estimated LEOP elevation is 11.79 ft NGVD. Currently, this basin drains to an existing concrete box culvert approximately 3,100 feet

southeast of the interchange that carries Roosevelt Creek Tributary 2 under Roosevelt Boulevard. The tributary flows north ultimately into Old Tampa Bay. No new impervious area is proposed within this basin; therefore, a stormwater management facility is not required.

Basin R3

Basin R3 begins south of the Roosevelt Boulevard Interchange at Sta. 510+50 and ends at Roosevelt Boulevard (Sta. 523+00). The drainage area consists of the southbound roadway right-of-way between these stations, as well as the portions of the flyover ramps within the Roosevelt Boulevard Interchange. The total basin area is 13.04 acres, with the existing impervious area equal to 6.73 acres. The estimated LEOP elevation is 12.36 ft NGVD. The proposed improvements will generate approximately 1.36 acres of new impervious area. Currently, this basin drains to an existing pond, referred to as “FDOT Pond 2”, located in the southeast quadrant of the Roosevelt Boulevard Interchange. Calculations show that the existing pond can handle the additional treatment and attenuation requirements. FDOT Pond 2 discharges to an existing ditch along the I-275 NB off-ramp to Roosevelt Boulevard that flows to an existing concrete box culvert approximately 3,100 feet southeast of the interchange that carries Roosevelt Creek Tributary 1 under Roosevelt Boulevard. The tributary flows north ultimately into Old Tampa Bay.

Basin R4

Basin R4 begins at Sta. 518+50 and ends at Roosevelt Boulevard (Sta. 523+00). The drainage area consists of the northbound roadway right-of-way between these stations, as well as a portion of the 118th Avenue Flyover (Ramp D) within the Roosevelt Boulevard Interchange. The total basin area is 3.92 acres, with the existing impervious area equal to 1.85 acres. The estimated LEOP elevation is 26.66 ft NGVD. The proposed improvements will generate approximately 0.16 acres of new impervious area. Currently, this basin drains to an existing pond, referred to as “FDOT Pond 1”, located in the southwest quadrant of the Roosevelt Boulevard Interchange. Calculations show that the existing pond can handle the additional treatment and attenuation requirements. FDOT Pond 1 discharges to a storm drain system that flows to north and outfalls into Roosevelt Creek Tributary 1 in the northwest quadrant of the Roosevelt Boulevard Interchange. The tributary flows north ultimately into Old Tampa Bay.

Basin R5

Basin R5 consists of a portion of the 118th Avenue Flyover (Ramp D) within the Roosevelt Boulevard Interchange. The total basin area is 2.10 acres, with the existing impervious area equal to 1.05 acres. The estimated LEOP elevation is 26.66 ft NGVD. The proposed improvements will generate approximately 0.39 acres of new impervious area for the widening of Ramp D and the new Flyover Ramp. Currently, this basin drains to an existing pond, referred to as “FDOT Pond 3”, located in the westernmost portion of the southwest quadrant of the Roosevelt Boulevard Interchange. Calculations show that the existing pond can handle the additional treatment and attenuation requirements with a minor modification to the existing control structure. FDOT Pond 3 discharges to a storm drain system that flows north and outfalls

into the existing ditch along the Roosevelt Boulevard to I-275 NB on-ramp. This ditch flows north to Roosevelt Creek Tributary 1, ultimately into Old Tampa Bay.

Basin 21

Basin 21 begins at Roosevelt Boulevard (Sta. 523+00) and extends to just north of the Roosevelt Boulevard Interchange at Sta. 538+00 (SB) and Sta. 541 (NB). The drainage area consists of the roadway right-of-way between these stations and includes the northern portion of the Roosevelt Boulevard Interchange. The total basin area is 17.70 acres, with the existing impervious area equal to 7.85 acres. The estimated LEOP elevation is 9.39 ft NGVD. The proposed improvements will generate approximately 3.12 acres of new impervious area. In addition, Basin 21 will provide compensatory treatment for 5.40 acres of new impervious area that cannot be treated in Basin 22. A wet detention pond within the northwest quadrant of the interchange will be utilized to provide the required treatment and attenuation volumes below approximately elevation 9 ft NGVD. The pond will discharge to the existing ditch along the SB I-275 off-ramp to Roosevelt Boulevard. This ditch flows east to Roosevelt Creek Tributary 1. The tributary flows north ultimately into Old Tampa Bay.

Basin M0

Basin M0 begins just north of the Roosevelt Boulevard Interchange at Sta. 541+00 and ends at Sta. 557+00. The drainage area consists of the northbound roadway right-of-way and median between these stations. The total basin area is 5.66 acres, with the existing impervious area equal to 3.13 acres. The estimated LEOP elevation is 7.16 ft NGVD. The proposed improvements will generate approximately 1.63 acres of new impervious area. The basin currently drains to an existing linear wet detention pond along the east side of I-275. The existing pond volume will be filled by the roadway widening; however, a new wet detention pond can be constructed within the existing right-of-way from Sta. 550+00 to Sta. 557+00 to provide the required treatment volume. Attenuation is not required since the outfall is tidal. The pond will discharge directly to Roosevelt Creek Tributary 1 which flows east into Old Tampa Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin M

Basin M begins just north of the Roosevelt Boulevard Interchange at Sta. 538+00 and ends at Sta. 556+50. The drainage area consists of the southbound roadway right-of-way between these stations. The total basin area is 5.03 acres, with the existing impervious area equal to 2.79 acres. The estimated LEOP elevation is 7.16 ft NGVD. The proposed improvements will generate approximately 1.29 acres of new impervious area. The basin currently drains to an existing linear wet detention pond along the west side of I-275. The existing pond volume will be filled by the roadway widening; however, a new wet detention pond can be constructed within the existing right-of-way from Sta. 550+00 to Sta. 556+50 to provide the required treatment volume. Attenuation is not required since the outfall is tidal. The pond will discharge directly to Roosevelt Creek Tributary 1 which flows east into Old Tampa Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin M1

Basin M1 begins just north of the Roosevelt Creek Tributary 1 at Sta. 559+00 and ends at Sta. 586+83. The drainage area consists of the northbound roadway right-of-way and between these stations and a portion of southbound 9th Street North. The total basin area is 10.35 acres, with the existing impervious area equal to 4.45 acres. The estimated LEOP elevation is 6.16 ft NGVD. The proposed improvements will generate approximately 0.80 acres of new impervious area. The basin currently drains to an existing linear dry retention swale along the east side of I-275. A portion of the existing pond volume will be filled by the roadway widening; however, the swale can be shifted east and can be expanded within the existing right-of-way from Sta. 573+00 to Sta. 580+00 to restore the permitted treatment volume and provide the additional treatment volume required for the new impervious area. Attenuation is not required since the outfall is tidal. The pond will discharge directly to Roosevelt Creek Tributary 1 which flows east into Old Tampa Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin M2

Basin M2 begins just north of the Roosevelt Creek Tributary 1 at Sta. 557+50 and extends to the Ulmerton Road/9th Street North Interchange at Sta. 583+00. The drainage area consists of the southbound roadway right-of-way and between these stations and the southwest portion of a portion of the Ulmerton Road/9th Street North Interchange. The total basin area is 19.46 acres, with the existing impervious area equal to 6.95 acres. The estimated LEOP elevation is 6.16 ft NGVD. The proposed improvements will generate approximately 1.35 acres of new impervious area. The basin currently drains to an existing linear dry retention swale along the west side of I-275. A portion of the existing pond volume will be filled by the roadway widening; however, the remaining swale will be sufficient to provide the permitted treatment volume plus the additional treatment volume required for the new impervious area. Attenuation is not required since the outfall is tidal. The pond will discharge directly to Roosevelt Creek Tributary 1 which flows east into Old Tampa Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin G2

Basin G2 begins at Sta. 586+00 and ends at Sta. 590+20. The drainage area consists of the roadway right-of-way and between these stations and a portion of northbound 9th Street North on-ramp to I-275 NB. The total basin area is 2.83 acres, with the existing impervious area equal to 1.87 acres. The estimated LEOP elevation is 6.01 ft NGVD. The proposed improvements will generate approximately 0.35 acres of new impervious area. The basin currently drains to an existing linear dry retention swale along the west side of the northbound 9th Street North on-ramp to I-275 NB. A portion of the existing pond volume will be filled by the roadway widening; however, the swale can be shifted east within the existing right-of-way from Sta. 583+00 to Sta. 587+00 to restore the permitted treatment volume and provide the additional treatment volume required for the new impervious area. Attenuation is not required since the outfall is tidal. The pond will discharge directly to Roosevelt Creek Tributary 1 which flows east into Old Tampa

Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin M3

Basin M3 begins at Sta. 590+20 and extends to Big Island Gap at Sta. 608+00 (SB) and to Sta. 594+00 (NB). The drainage area consists of the roadway right-of-way and between these stations, as well as the northeast quadrant of the Ulmerton Road/9th Street North Interchange. The total basin area is 12.76 acres, with the existing impervious area equal to 4.76 acres. The estimated LEOP elevation is 5.90 ft NGVD. The proposed improvements will generate approximately 0.75 acres of new impervious area. The basin currently drains to an existing dry retention pond in the northeast quadrant of the Ulmerton Road/9th Street North Interchange. A portion of the existing pond volume will be filled by the roadway widening; however, the remaining pond will be sufficient to provide the permitted treatment volume plus the additional treatment volume required for the new impervious area. Attenuation is not required since the outfall is tidal. The pond discharges through a control structure to a storm drain system that flows south to a 36" cross drain at Sta. 590+00 and ultimately outfalls to Old Tampa Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin H1

Basin H1 begins at Sta. 594+00 and extends to Big Island Gap at Sta. 608+00. The drainage area consists of the northbound roadway right-of-way and between these stations, as well as the eastbound Ulmerton Road on-ramp to I-275 NB. The total basin area is 6.33 acres, with the existing impervious area equal to 4.03 acres. The estimated LEOP elevation is 6.16 ft NGVD. The proposed improvements will generate approximately 0.49 acres of new impervious area. The basin currently drains to an existing dry retention pond in the infield area bounded by I-275 NB and the eastbound Ulmerton Road on-ramp to I-275 NB. A portion of the existing pond volume will be filled by the roadway widening; however, the remaining pond will be sufficient to provide the permitted treatment volume plus the additional treatment volume required for the new impervious area. Attenuation is not required since the outfall is tidal. The pond discharges through a control structure to a storm drain system that flows south to a 36" cross drain at Sta. 590+00 and ultimately outfalls to Old Tampa Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin M4

Basin M4 begins at Big Island Gap (Sta. 608+00) and extends to the 4th Street North Flyover at Sta. 625+00. The drainage area consists of the southbound roadway right-of-way and between these stations. The total basin area is 5.20 acres, with the existing impervious area equal to 3.73 acres. The estimated LEOP elevation is 7.16 ft NGVD. The proposed improvements will generate approximately 0.42 acres of new impervious area. The basin currently drains to an existing linear dry retention pond along the west side of I-275. The existing pond volume will be filled by the roadway widening; however, the swale can be shifted west and expanded within the existing right-of-way to restore the permitted treatment volume and provide the additional

treatment volume required for the new impervious area. Attenuation is not required since the outfall is tidal. The pond discharges over a weir control structure to Old Tampa Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin M5

Basin M5 begins at Big Island Gap (Sta. 608+00) and extends to the 4th Street North Flyover at Sta. 623+68. The drainage area consists of the northbound roadway right-of-way and between these stations. The total basin area is 4.51 acres, with the existing impervious area equal to 3.11 acres. The estimated LEOP elevation is 7.16 ft NGVD. The proposed improvements will generate approximately 0.53 acres of new impervious area. The basin currently drains to an existing linear dry retention pond along the east side of I-275. The existing pond volume will be filled by the roadway widening; however, the swale can be shifted east and expanded within the existing right-of-way to restore the permitted treatment volume and provide the additional treatment volume required for the new impervious area. Attenuation is not required since the outfall is tidal. The pond discharges over a weir control structure to Old Tampa Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin M6

Basin M6 begins at the 4th Street North Flyover (Sta. 625+00) and ends at Sta. 633+80. The drainage area consists of the southbound roadway right-of-way between these stations. The total basin area is 2.07 acres, with the existing impervious area equal to 1.74 acres. The estimated LEOP elevation is 7.16 ft NGVD. The proposed improvements will generate approximately 0.37 acres of new impervious area. The basin currently drains to an existing linear dry retention pond along the west side of I-275. The existing pond volume will be filled by the roadway widening; however, the swale can be shifted west within the existing right-of-way to restore the permitted treatment volume and provide the additional treatment volume required for the new impervious area. Attenuation is not required since the outfall is tidal. The pond discharges over a weir control structure into an existing linear dry retention pond in Basin M8. This linear pond then discharges over second weir control structure and flows through a 42” cross drain under the I-275 SB off-ramp to 4th Street North and into Old Tampa Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin M7

Basin M7 begins at the 4th Street North Flyover (Sta. 623+68) and ends at Sta. 630+00. The drainage area consists of the northbound roadway right-of-way between these stations. The total basin area is 1.81 acres, with the existing impervious area equal to 1.23 acres. The estimated LEOP elevation is 7.16 ft NGVD. The proposed improvements will generate approximately 0.25 acres of new impervious area. The basin currently drains to an existing linear dry retention pond along the east side of I-275. The existing pond volume will be filled by the roadway widening; however, the swale can be shifted east and expanded within the existing infield area to restore the permitted treatment volume and provide the additional treatment volume required for the new impervious area. Attenuation is not required since the outfall is

tidal. The pond discharges over a weir control structure into the infield area on the west side of the 4th Street North Interchange. Flow continues west through a 24" cross drain under the 4th Street North on-ramp to I-275 NB and into Old Tampa Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin B1

Basin B1 begins at Sta. 630+00 and ends at Sta. 635+55. The drainage area consists of the northbound roadway right-of-way between these stations, as well as a portion of the 4th Street North on-ramp to I-275 NB. The total basin area is 2.83 acres, with the existing impervious area equal to 1.46 acres. The estimated LEOP elevation is 7.86 ft NGVD. The proposed improvements will generate approximately 0.19 acres of new impervious area. The basin currently drains to an existing linear dry retention pond along the west side of the 4th Street North on-ramp to I-275 NB. A portion of the existing pond volume will be filled by the roadway widening; however, the swale can be shifted west within the existing right-of-way between Sta. 629+00 and Sta. 635+55 to restore the permitted treatment volume and provide the additional treatment volume required for the new impervious area. Attenuation is not required since the outfall is tidal. The pond discharges over a weir control structure into an existing linear dry retention pond. This linear pond then discharges over a DBI control structure and flows through a 24" cross drain into Old Tampa Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin M8

Basin M8 begins at the 4th Street North Flyover Sta. 633+80 and ends at Sta. 647+00. The drainage area consists of the southbound roadway right-of-way between these stations. The total basin area is 2.93 acres, with the existing impervious area equal to 1.83 acres. The estimated LEOP elevation is 8.66 ft NGVD. The proposed improvements will generate approximately 0.73 acres of new impervious area. The basin currently drains to an existing linear dry retention pond along the west side of I-275. The existing pond volume will be filled by the roadway widening; however, the swale can be shifted west within the existing infield area to restore the permitted treatment volume and provide the additional treatment volume required for the new impervious area. Attenuation is not required since the outfall is tidal. The linear pond discharges over weir control structure and flows through a 42" cross drain under the I-275 SB off-ramp to 4th Street North and into Old Tampa Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin M9

Basin M9 begins at Sta. 635+55 and ends at Sta. 645+84. The drainage area consists of the northbound roadway right-of-way between these stations. The total basin area is 2.92 acres, with the existing impervious area equal to 1.64 acres. The estimated LEOP elevation is 8.96 ft NGVD. The proposed improvements will generate approximately 0.31 acres of new impervious area. The basin currently drains to an existing linear dry retention pond along the east side of I-275. The existing pond volume will be filled by the roadway widening; however, the swale can be shifted east and expanded within the existing right-of-way to restore the permitted treatment

volume and provide the additional treatment volume required for the new impervious area. Attenuation is not required since the outfall is tidal. The pond discharges over a weir control structure into the existing linear dry retention pond for Basin B1. This linear pond then discharges over a DBI control structure and flows through a 24" cross drain into Old Tampa Bay. Old Tampa Bay is an Outstanding Florida Water; therefore, 50% additional treatment volume is required.

Basin 22

Basin 22 begins at Sta. 647+00 (SB) and Sta. 645+84 (NB) and extends to the end of the PD&E Study limits at Sta. 691+63. The drainage area consists of the roadway right-of-way between these stations. The total basin area is 20.91 acres, with the existing impervious area equal to 14.61 acres. The proposed improvements will generate approximately 5.40 acres of new impervious area. The basin currently drains directly into Old Tampa Bay via overland flow. There are no areas available for stormwater management within the basin; therefore, compensatory treatment will be provided in Basin 21. Attenuation is not required since the outfall is tidal.

3.3 Floodplain Compensation

Floodplain impacts have been discussed and quantified under a separate document, the *Final Location Hydraulics Memorandum*. Approximately 3.26 acre-feet of floodplain impacts are estimated to occur just south of the Gandy Boulevard Interchange (Sawgrass Lake Area). All of the impacts are within Basin 18 and floodplain compensation will be provided within the infield areas of the Gandy Boulevard Interchange.

3.4 Supporting Documentation

A summary of attenuation requirements is shown in **Table 3-1**. Approximate SMF area requirements are listed in **Table 3-2**.

Appendix A contains a graphical depiction of the conceptual design layout of the proposed Build Alternative.

Appendix B contains locations of the watersheds within Pinellas County, as well as pertinent correspondence.

Conceptual Drainage Maps are provided in **Appendix C**. Beginning at the Roosevelt Boulevard Interchange, basins have been shaded for clarity. These basins were delineated based on information obtained from existing SWFWMD permits.

Stormwater management calculations are provided in **Appendix D**. The calculations included in **Appendix D** are strictly a volumetric analysis for the purposes of this Memorandum. The pond sizes will be optimized through a routing analysis in the design phase.

Table 3-1. Summary of Attenuation Requirements

Basin	Attenuation Required?	Restriction (if attenuation is required)
1	No	
2	Yes	Cross Drain under 34th St S
3	Yes	Storm Drain System
4	Yes	Cross Drain under 34th St S
5	No	
6	Yes	Storm Drain System
7	Yes	Storm Drain System
8	No	
9	Yes	Storm Drain System
10	Yes	Bridge Culvert under Burlington Avenue
11	Yes	Bridge Culvert under Burlington Avenue
12	Yes	Bridge Culvert under Burlington Avenue
13	Yes	Storm Drain System
14	Yes	Storm Drain System
15	Yes	Storm Drain System
16	No	
17	Yes	Cross Drain under 62nd Ave N
18	Yes	16th St N Bridge over Turner Creek ditch
19	Yes	Box Culvert under Gandy Blvd
20	Yes	Bridge Culvert under 16th St N
R1	Yes	Box Culvert under Roosevelt Blvd (NW of I-275)
R2	No	
R3	Yes	Box Culvert under Roosevelt Blvd (SE of I-275)
R4	Yes	Storm Drain System
R5	Yes	Storm Drain System
21	Yes	Cross Drain under Ramp P
M0	No	
M	No	
M1	No	
M2	No	
G2	No	
M3	No	
H1	No	
M4	No	
M5	No	
M6	No	

Table 3-1. (Continued) Summary of Attenuation Requirements

Basin	Attenuation Required?	Restriction (if attenuation is required)
M7	No	
B1	No	
M8	No	
M9	No	
22	No	

Table 3-2. Stormwater Management Facility Sizing Matrix

Basin	Begin Station	End Station	Basin Length	Basin Area	Exist. Imp. Area	New Imp. Area	Required Treatment & Attenuation Volumes	SMF Size	R/W Needed	Exist. Ground EL	Low EOP EL	Depth to SHGWT	Basin Soil Type(s)	Hydrologic Group	Outfall Station	Outfall Description	Est. Tailwater EL	Comments
			(ft)	(ac)	(ac)	(ac)	(ac-ft)	(ac)	(ac)	(ft)	(ft)	(ft)					(ft)	
1	72+34	100+00	2,766	54.06	25.52	0.00	-	-	0.0	8.50	8.76	2	Matlatcha, St Augustine, Urban	C	72+34	Frenchman's Creek	6.0	Multiple subbasins due to interchange ramps; No additional R/W anticipated
2	100+00	146+40	4,640	48.58	16.77	0.92	0.26	0.6	0.6	14.00	20.76	1	Adamsville, Immokalee, Matlatcha	B/D	114+15	Frenchman's Creek	5.6	Additional R/W required outside of FDOT owned R/W
3	146+40	155+00	860	6.67	2.52	0.23	0.06	0.4	0.0	18.00	27.16	1	Immokalee	B/D	153+16	Boca Ciega Bay	14.0	FDOT Parcel west of I-275; No additional R/W anticipated
4	155+00	213+14	5,814	59.16	25.48	0.33	0.09	0.4	0.0	18.00	19.16	1	Astatula, Immokalee, Matlatcha	B/D	182+16	Clam Bayou	5.3	FDOT Parcel west of I-275; No additional R/W anticipated
5	213+14	299+55	1,132	9.05	4.57	0.00	-	-	0.0	40.00	56.66	2	Astatula, Myakka	A	217+98	Clam Bayou	35.0	Flows southwest to ditch; Station Equation; No additional R/W anticipated
6	299+55	245+00	4,633	51.64	21.20	0.65	0.19	0.5	0.0	44.00	47.16	1	Myakka, Urban	B/D	308+45	Clam Bayou	38.6	New Ramp Crosses Ex. Pond; No additional R/W anticipated
7	245+00	280+00	3,500	26.67	10.25	0.63	0.18	0.5	0.5	50.00	63.06	1	Myakka, Urban	B/D	271+96	Booker Creek	42.0	20th St S SS; Additional R/W required outside of FDOT owned R/W
8	60+00	84+25	2,425	16.61	5.65	0.00	-	-	0.0	50.00	63.06	1	Myakka, Urban	B/D	120+72	Booker Creek	17.4	CBC under I-175 east of Tropicana Field; No additional R/W anticipated
9	280+00	303+80	2,380	13.51	8.73	0.21	0.06	0.3	0.0	40.00	68.26	1	Astatula, Urban	D	300+80	Booker Creek	38.0	Entire Basin is Elevated Roadway; 2nd Avenue SS; No additional R/W anticipated
10	303+80	316+50	1,270	30.12	12.58	0.31	0.05	0.3	0.0	42.00	62.66	2	Astatula, Urban	A	306+78	Booker Creek	38.0	Multiple discharge points to CBC/Booker Creek; No additional R/W anticipated
11	316+50	346+85	3,035	27.28	13.61	0.55	0.20	0.5	0.0	42.00	60.66	2	Astatula, Matlatcha, St Augustine	C	318+50	Booker Creek	38.0	Multiple discharge points to CBC/Booker Creek; No additional R/W anticipated
12	346+85	391+88	4,503	41.34	18.41	0.55	0.20	0.8	0.8	58.00	57.66	2	Matlatcha, St Augustine, Urban	B/D	351+00	Booker Creek	39.0	SS also collects runoff from 22nd Ave N; Additional R/W required outside of FDOT owned R/W
13	391+88	400+00	812	5.62	2.36	0.16	0.04	0.3	0.3	58.00	67.16	1	Myakka	B/D	395+15	Booker Creek	52.1	SS flows W along 28th Ave N; Additional R/W required outside of FDOT owned R/W
14	400+00	425+25	2,525	23.94	8.61	0.55	0.16	0.5	0.0	56.00	58.86	1	Myakka	B/D	423+88	Joe's Creek	44.6	Construct pond within R/W; 25th Street Outfall; No additional R/W anticipated
15	425+25	446+00	2,075	23.74	10.20	0.09	0.03	0.3	0.0	48.00	49.56	1	Myakka	B/D	440+00	Joe's Creek	42.0	Construct pond within R/W; No additional R/W anticipated
16	446+00	473+50	2,750	19.91	9.84	0.00	-	-	0.0	48.00	50.56	1	Myakka, Matlatcha, St Augustine	B/D	453+25	Joe's Creek	40.9	Significant offsite flows; No additional R/W anticipated
17	473+50	328+00	2,952	36.75	14.75	0.11	0.09	0.3	0.0	23.00	25.25	2	Astatula, Myakka, Felda	A	325+16	Riviera Bay	15.2	Const. pond within R/W; 499+99.72 = 324+97.73; No additional R/W anticipated
18	328+00	421+17	9,317	130.02	41.50	3.80	1.11	1.4	1.4	4.00	11.59	1	Felda, Myakka, Immokalee	B/D	386+65	Riviera Bay	3.0	Tailwater based on SHGWT, Crown of CBC at 7.0'; Additional R/W required outside of FDOT owned R/W
19	421+17	440+00	1,883	72.96	22.09	0.70	0.23	0.8	0.0	12.00	12.84	1	Pineda, Matlatcha, St Augustine	B/D	N/A	Riviera Bay	7.2	2-24" under Ramp C; No additional R/W anticipated
20	440+00	491+50	5,150	30.49	14.76	1.76	0.51	0.9	0.9	10.00	11.79	1	Pineda, Felda	B/D	466+70	Roosevelt Tributary 2	7.4	CBC to 102nd Ave ditch; Additional R/W required outside of FDOT owned R/W
R1	491+50	515+00	2,350	78.57	20.44	2.81	0.95	1.0	0.0	3.00	11.24	1	Pineda, Felda, Immokalee	B/D	502+30	Roosevelt Tributary 1	2.5	LP on 118th Ave N; Expand South Pond (Pond 2); No additional R/W anticipated
R2	510+50	522+75	-	9.99	3.32	0.00	0.00	0.0	0.0	8.00	11.79	1	Pineda, Felda	B/D	N/A	Roosevelt Tributary 2	1.3	Flows southeast along Roosevelt to CBC; No additional R/W anticipated

Table 3-2. (Continued) Stormwater Management Facility Sizing Matrix

Basin	Begin Station	End Station	Basin Length	Basin Area	Exist. Imp. Area	New Imp. Area	Required Treatment & Attenuation Volumes	SMF Size	R/W Needed	Exist. Ground EL	Low EOP EL	Depth to SHGWT	Basin Soil Type(s)	Hydrologic Group	Outfall Station	Outfall Description	Est. Tailwater EL	Comments
			(ft)	(ac)	(ac)	(ac)	(ac-ft)	(ac)	(ac)	(ft)	(ft)	(ft)					(ft)	
R3	510+50	523+00	1,250	13.04	6.73	1.36	0.86	2.9	0.0	5.25	12.36	1	Pineda	B/D	510+50	Roosevelt Tributary 1	5.7	Use Exist. FDOT Pond 2 in Interchange; No additional R/W anticipated
R4	518+50	523+00	450	3.92	1.85	0.16	0.19	1.0	0.0	5.25	26.66	1	Pineda	B/D	518+50	Roosevelt Tributary 1	4.2	Use Exist. FDOT Pond 1 in Interchange; No additional R/W anticipated
R5	-	-	-	2.10	1.05	0.39	0.17	0.9	0.0	5.25	26.66	1	Pineda, Felda	B/D	N/A	Roosevelt Tributary 1	5.2	Use Exist. FDOT Pond 3 in Interchange; raise weir; No additional R/W anticipated
21	522+88	541+00	1,812	17.70	7.85	3.12	2.35	1.4	0.0	8.00	9.39	1	Pineda	B/D	532+30	Roosevelt Tributary 1	4.5	New pond in NE Interchange infield; No additional R/W anticipated
M0	541+00	557+00	1,600	5.66	3.13	1.63	0.20	1.2	0.0	1.80	7.16	1	Pineda, Felda, Immokalee	B/D	557+00	Roosevelt Tributary 1	1.5	Reconstruct pond within exist.R/W; No additional R/W anticipated
M	538+00	556+50	1,850	5.03	2.79	1.29	0.16	1.1	0.0	1.80	7.16	1	Pineda, Immokalee, Matlatcha	B/D	556+50	Roosevelt Tributary 1	1.5	Reconstruct pond within exist.R/W; No additional R/W anticipated
M1	559+00	586+83	2,783	10.35	4.45	0.80	0.05	3.7	0.0	3.30	6.16	2	Matlatcha, St Augustine, Urban	C	559+10	Roosevelt Tributary 1	1.5	Use Swale M-1 within exist. R/W; No additional R/W anticipated
M2	557+50	583+00	2,550	19.46	6.95	1.35	0.08	7.0	0.0	3.30	6.16	2	Matlatcha, St Augustine, Urban	C	557+40	Roosevelt Tributary 1	1.5	Use Swale M-2 within exist. R/W; No additional R/W anticipated
G2	586+00	590+20	420	2.83	1.87	0.35	0.02	0.5	0.0	3.30	6.01	2	Matlatcha, St Augustine, Urban	C	N/A	Roosevelt Tributary 1	1.5	Use Swale G-2 within exist. R/W; No additional R/W anticipated
M3	590+20	608+00	1,780	12.76	4.76	0.75	0.05	5.0	0.0	5.00	5.90	2	Matlatcha, St Augustine, Urban	C	590+47	Old Tampa Bay	1.5	Use Swale M-3 within exist. R/W; No additional R/W anticipated
H1	594+00	608+00	1,400	6.33	4.03	0.49	0.03	1.4	0.0	15.00	6.16	2	Matlatcha, St Augustine, Urban	C	597+38	Old Tampa Bay	1.5	Use Swale H-1 within exist. R/W; No additional R/W anticipated
M4	608+00	625+00	1,700	5.20	3.73	0.42	0.03	0.7	0.0	3.50	7.16	2	Matlatcha, St Augustine, Urban	C	617+91	Old Tampa Bay	1.5	Reconstruct pond within exist.R/W; No additional R/W anticipated
M5	608+00	623+68	1,568	4.51	3.11	0.53	0.03	0.7	0.0	3.60	7.16	2	Matlatcha, St Augustine, Urban	C	617+91	Old Tampa Bay	1.5	Reconstruct pond within exist.R/W; No additional R/W anticipated
M6	625+00	633+80	880	2.07	1.74	0.37	0.02	0.5	0.0	3.80	7.16	2	Matlatcha, St Augustine, Urban	C	633+85	Old Tampa Bay	1.5	Weir to Basin M8 linear wet pond; No additional R/W anticipated
M7	623+68	630+00	632	1.81	1.23	0.25	0.02	0.4	0.0	3.50	7.16	2	Matlatcha, St Augustine, Urban	C	624+00	Old Tampa Bay	1.5	Weir to infield pond to culvert; No additional R/W anticipated
B1	630+00	635+55	555	2.83	1.46	0.19	0.01	0.4	0.0	3.60	7.86	2	Matlatcha, St Augustine, Urban	C	624+40	Old Tampa Bay	1.5	No additional R/W anticipated
M8	633+80	647+00	1,320	2.93	1.83	0.73	0.05	0.6	0.0	3.80	8.66	2	Matlatcha, St Augustine, Urban	C	636+00	Old Tampa Bay	1.5	Weir to infield pond to culvert; No additional R/W anticipated
M9	635+55	645+84	1,029	2.92	1.64	0.31	0.02	0.6	0.0	3.60	8.96	2	Matlatcha, St Augustine, Urban	C	635+55	Old Tampa Bay	1.5	Weir to Basin B1 linear wet pond; No additional R/W anticipated
22	645+84	691+63	4,579	20.91	14.61	5.40	0.45	0.0	0.0	3.00	7.16	2	Matlatcha, St Augustine, Urban	C	N/A	Old Tampa Bay	1.5	Compensatory treatment in Basin 21; No additional R/W anticipated

All FPC and most of the SMF needs can be provided within the existing FDOT owned R/W. Only six drainage basins would require SMF sites that are anticipated to be located outside the existing FDOT owned R/W.

Appendices

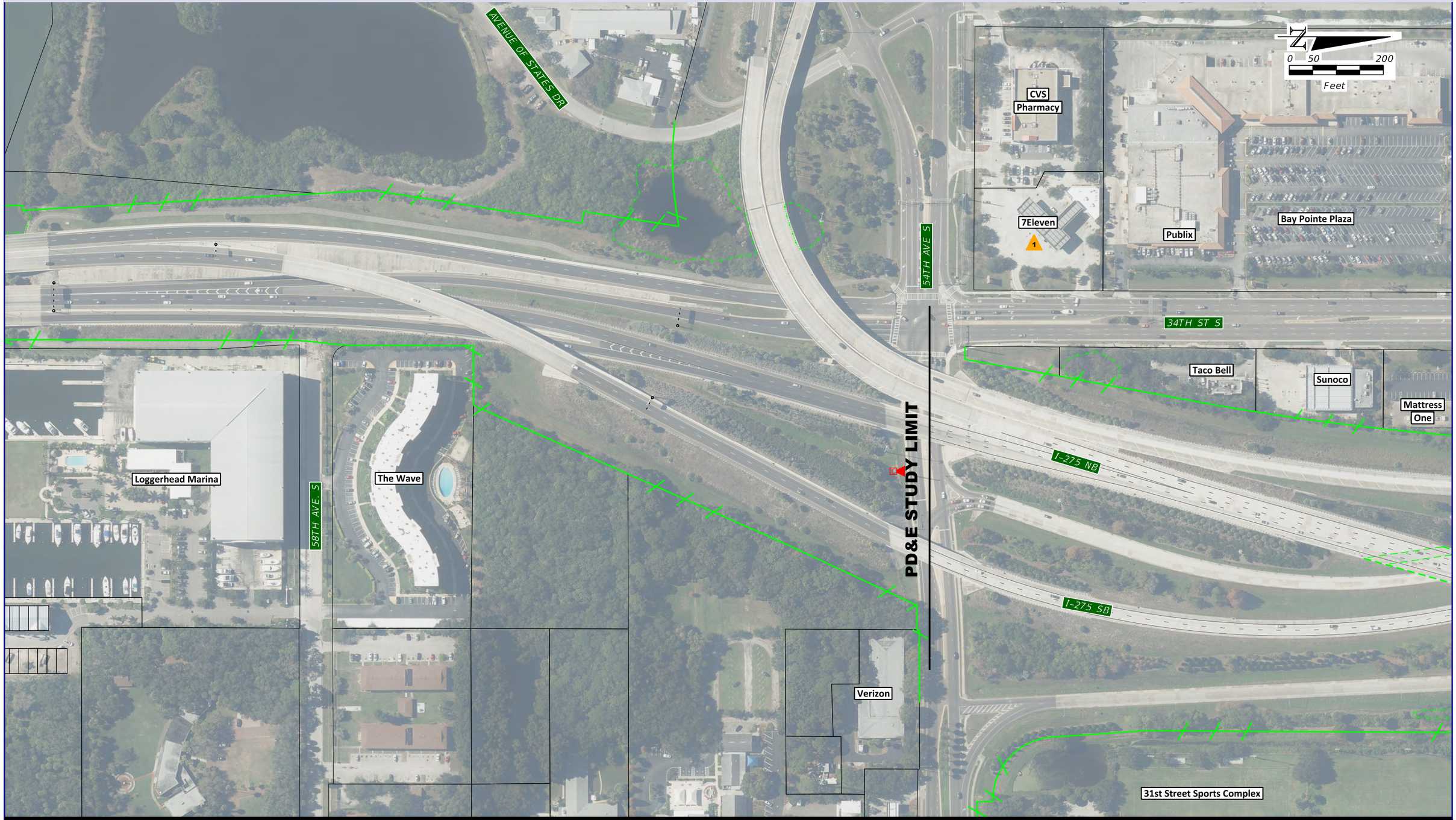
Appendix A.
Conceptual Design Plans

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- PAVEMENT WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

SHEET NO. 1

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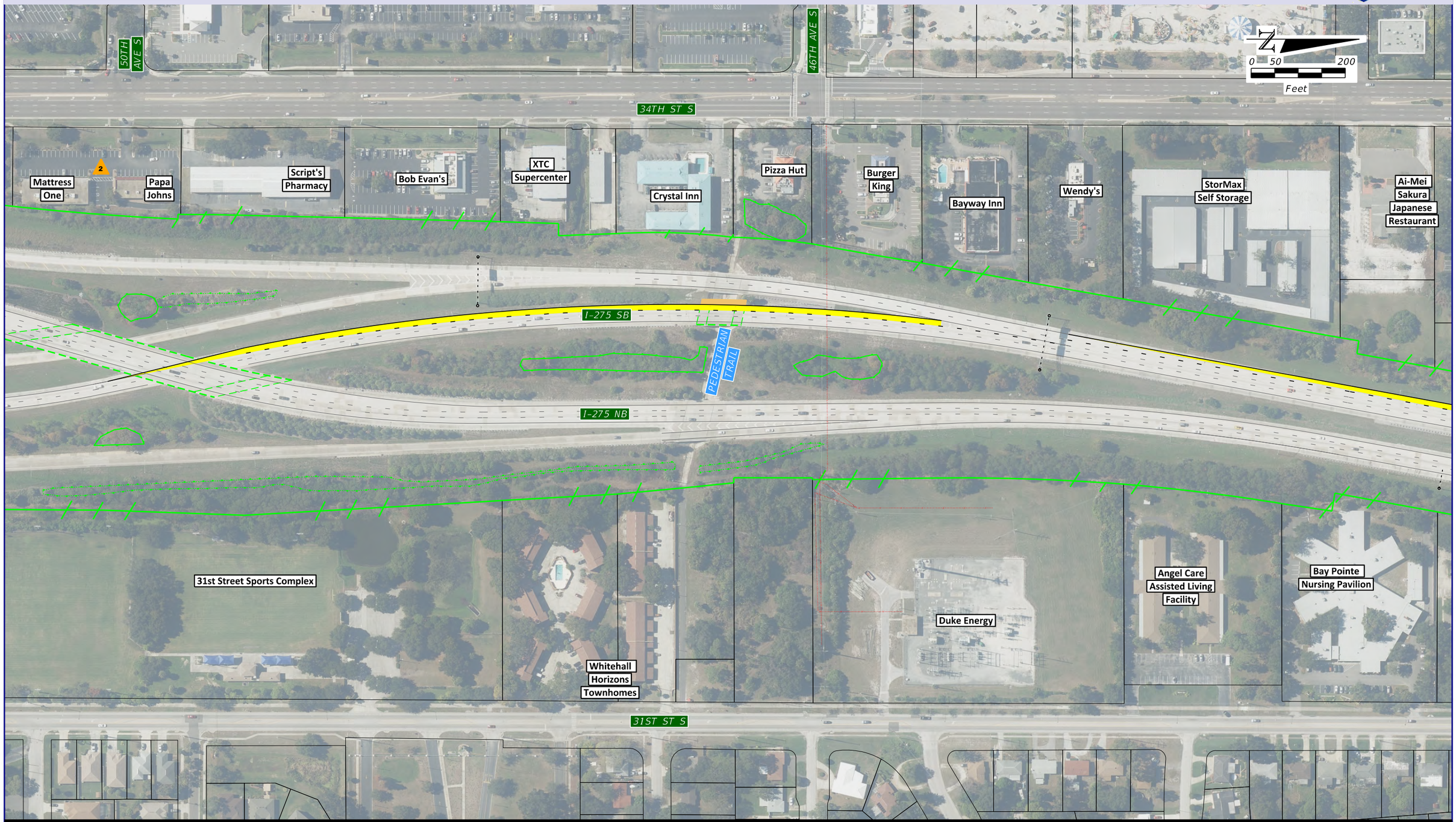
I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

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- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
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- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

SHEET NO. 2

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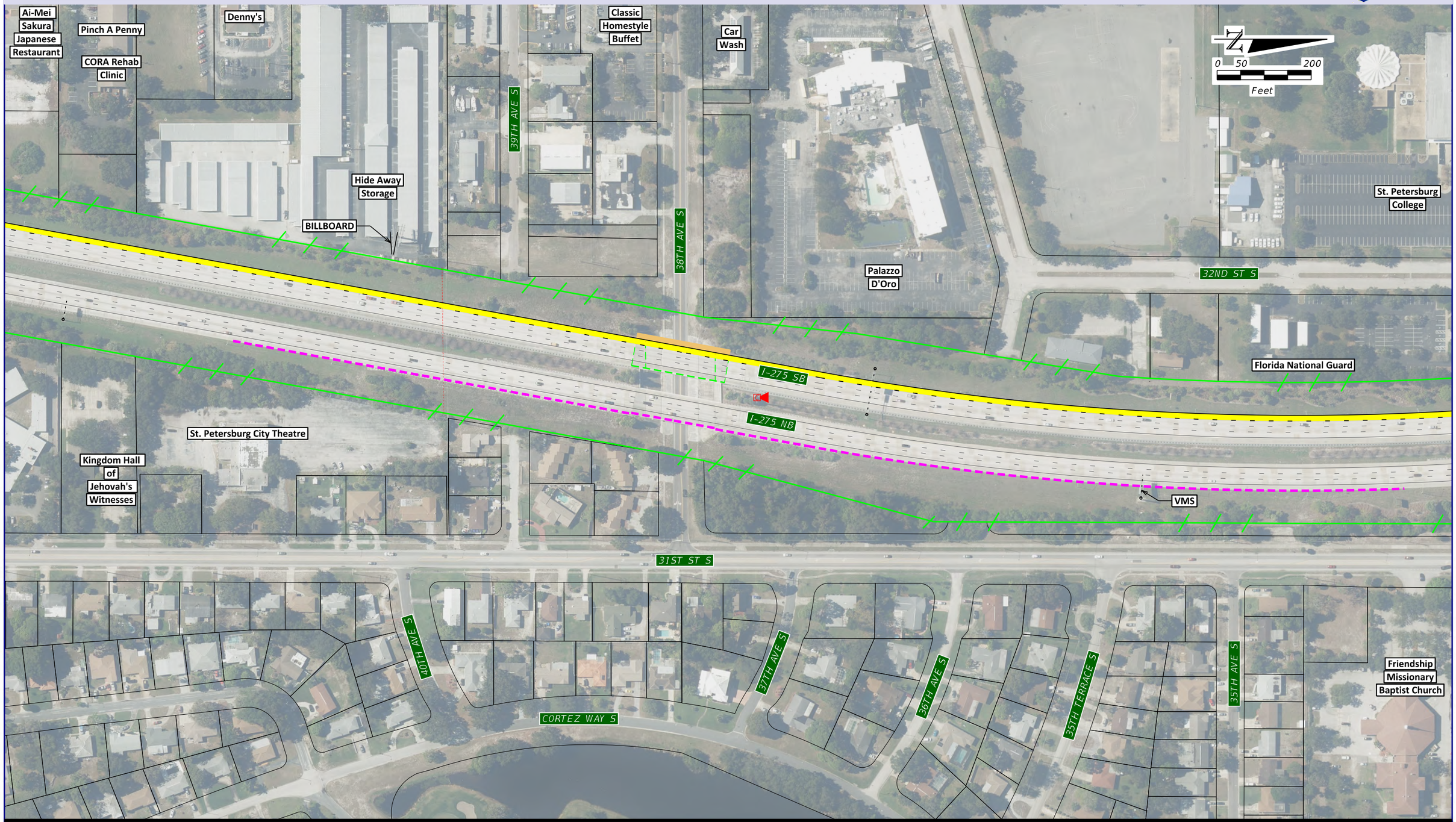
I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

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- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

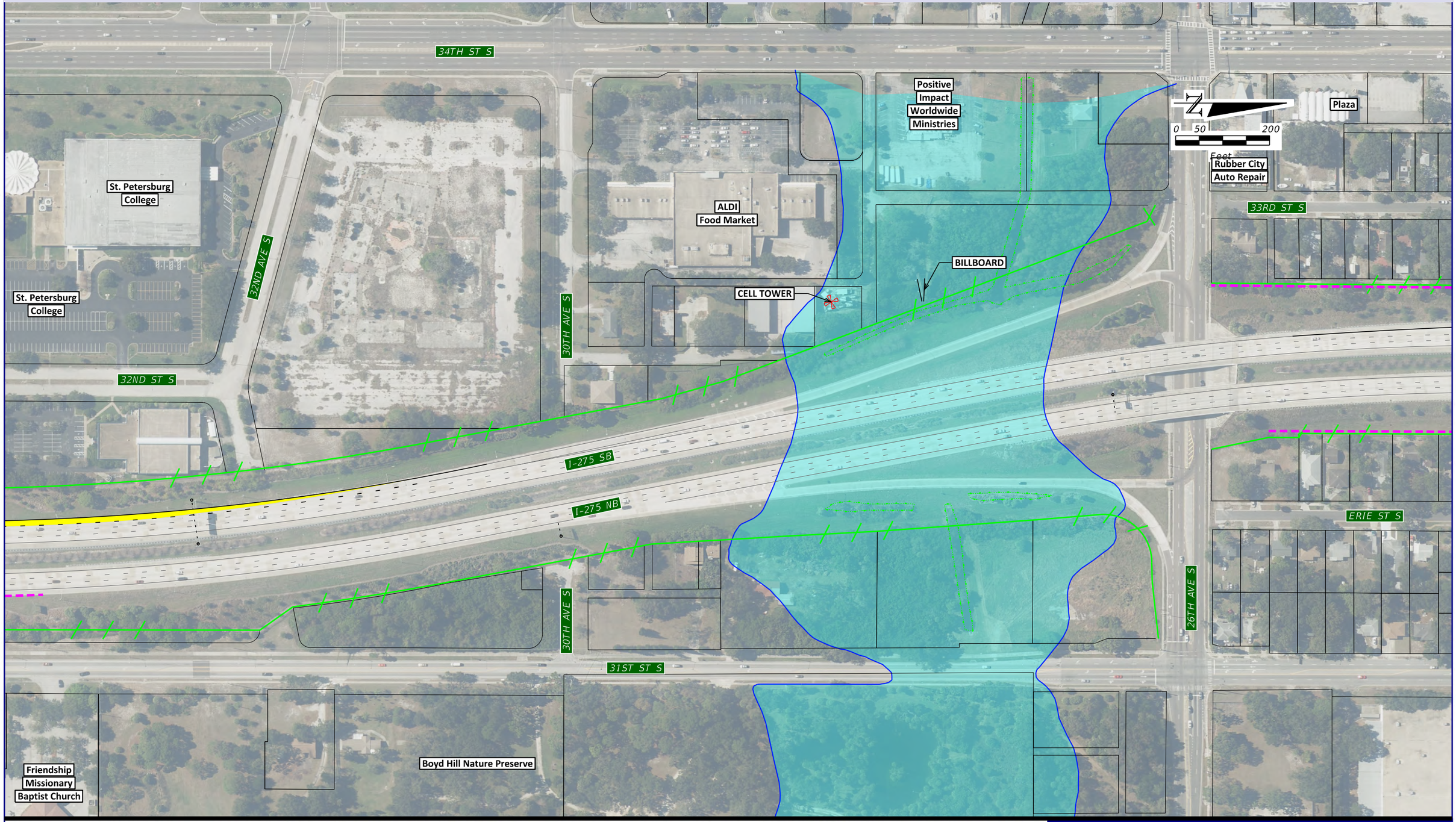
SHEET NO. 3

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

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- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
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- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

SHEET NO. 4

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275

0 50 200
Feet

34TH ST S

Plaza
KFC
31st Street Neighborhood
Liberty Tax
Brake World
Twin Brooks Commons
Alma Ingram
Classic Auto Care
Pet Pal Veterinary Clinic
Shell
Chevron
Elvis Towing & Trasport
Rental Hall

22ND AVE S
18TH AVE S
QUEENSBORO AVE S
17TH AVE S

33RD ST S

BILLBOARD

VMS

I-275 SB

I-275 NB

ERIE ST S

22ND AVE S
21ST AVE S
20TH AVE S
19TH AVE S
18TH AVE S

31ST ST S

LEGEND:

- PAVEMENT WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

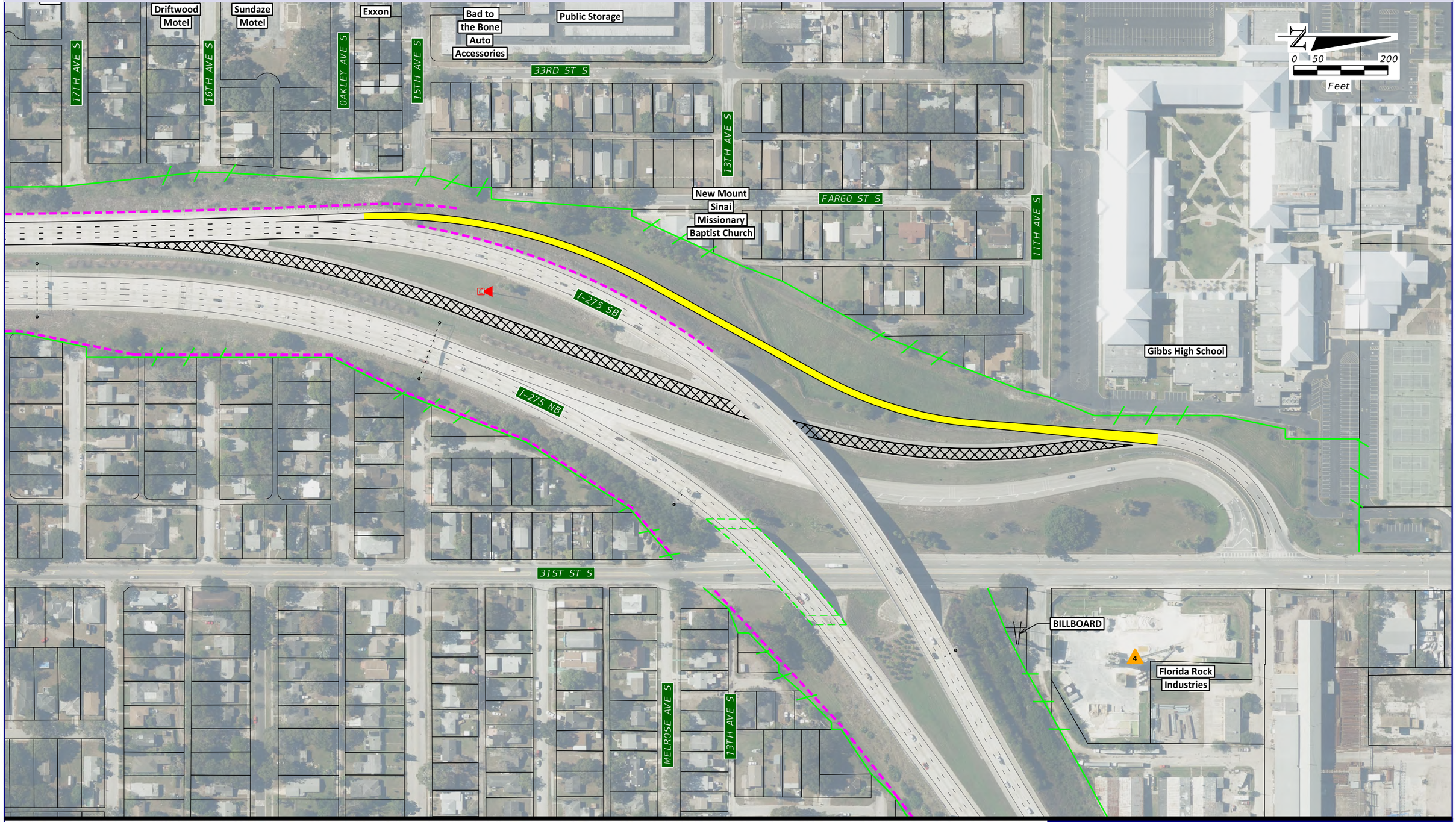
SHEET NO. 5

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

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- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

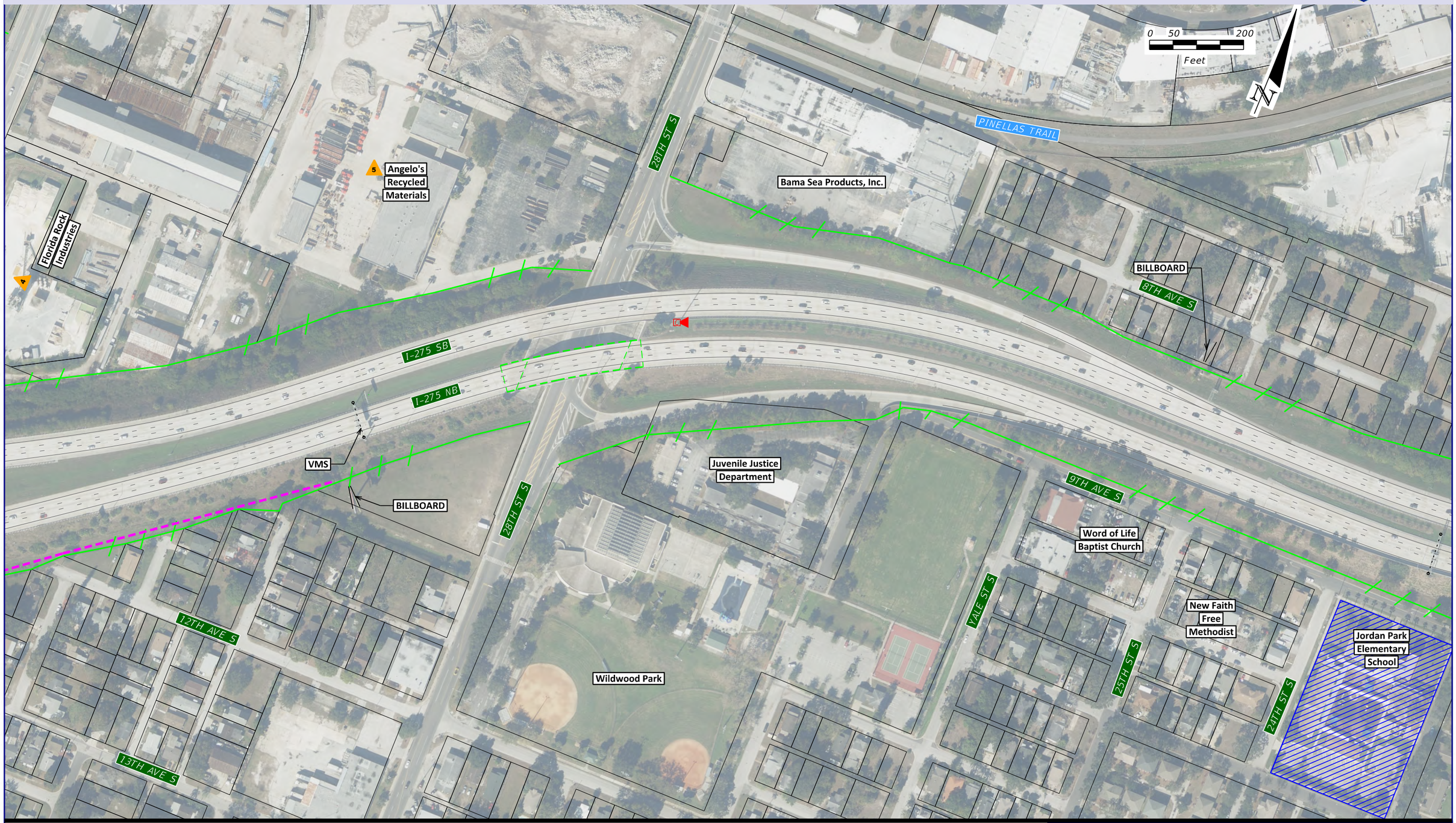
SHEET NO. 6

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

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- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

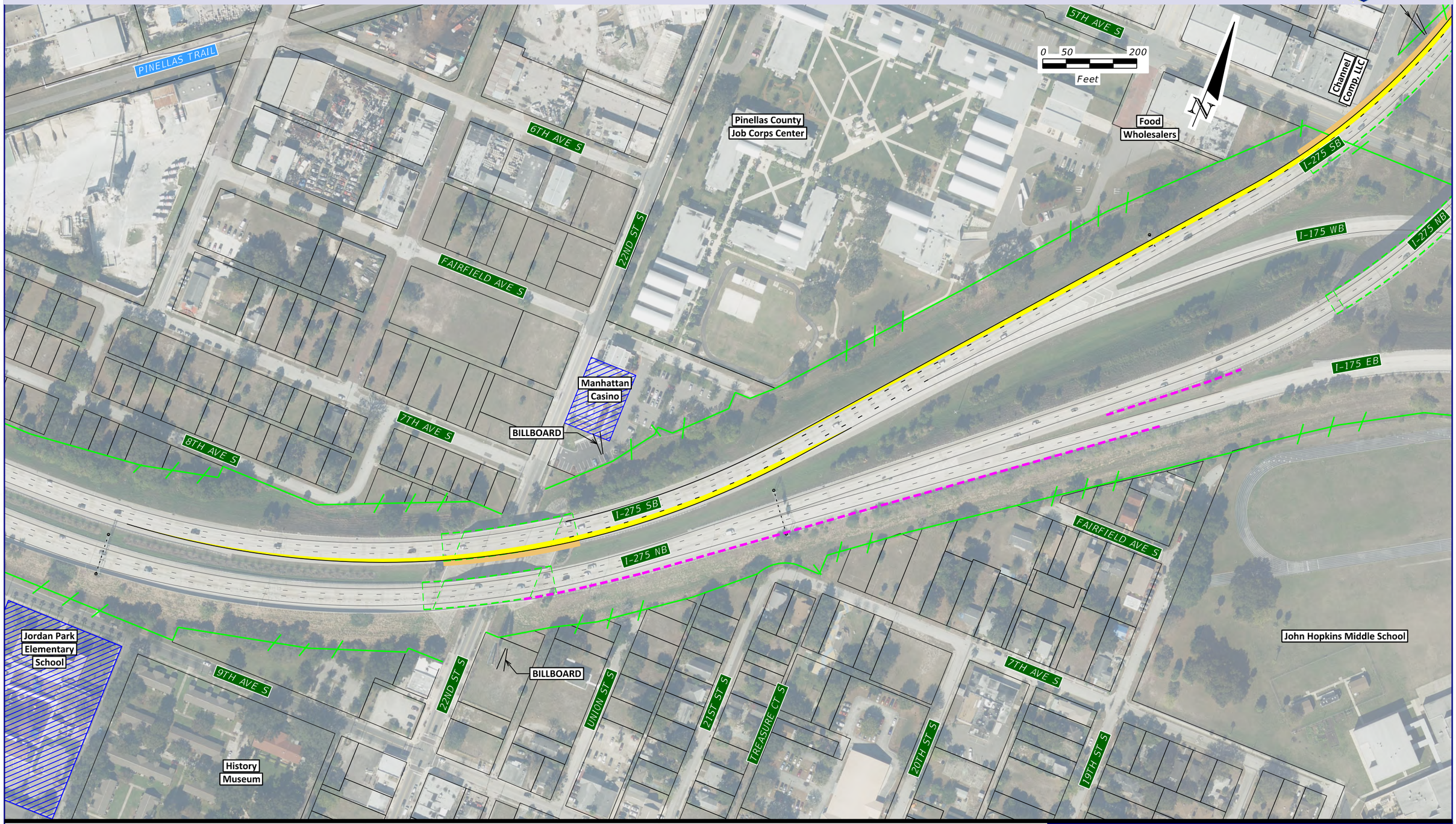
SHEET NO. 7

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



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- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

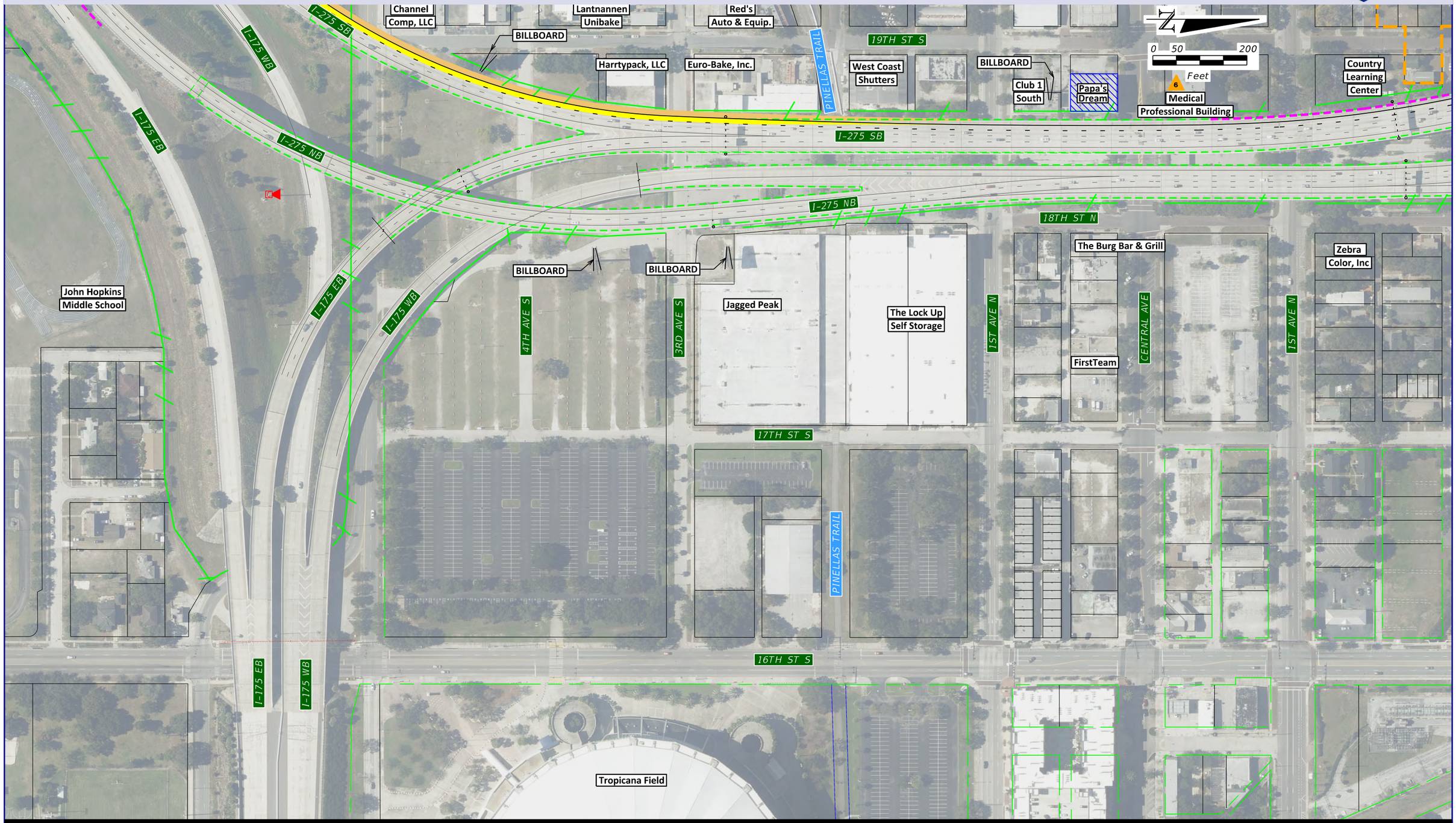
SHEET NO. 8

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

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- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

SHEET NO. 9

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275

0 50 200 Feet

20TH ST N

Kenwood Dog Park

Kenwood Historic District

BURLINGTON AVE N

2ND AVE N

19TH ST S

I-275 SB

I-275 NB

Country Learning Center

Fleet Management

Turning Point

18TH ST N

Zebra Color, Inc

2ND AVE N

BURLINGTON AVE N

I-375 WB

I-375 EB

5TH AVE N

CSX RAILROAD

17TH ST S

St. Petersburg Water Resources

CSX RAILROAD

LEGEND:

- PAVEMENT WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

SHEET NO. 10

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275

Edward White Hospital
Simply Delicious
9TH AVE N
Booker Creek Park
13TH AVE N
Scherer Construction West
Gold Seal
0 50 200
Feet
Emar Grinding
WDE Windows, Doors, Etc
I-275 SB
I-275 NB
BILLBOARD
CSX RAILROAD
St. Petersburg Window Sales
Carroll's Building Materials
Recycling Corporation
7
8
TECO People's Gas
BILLBOARD
9TH AVE N
13TH AVE N
CSX RAILROAD
61 Sail Sports Technologies
General Mold Co.
North Sails
Slipaway Ceramics
20TH ST N
BILLBOARD
Orange Blossom Catering
Therapeutic Recreation
Bag Master
19TH ST N
Town Mini Storage
CSX RAILROAD
18TH ST N
Woodlawn Park
Woodlawn Park

LEGEND:

- PAVEMENT WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

SHEET NO. 11

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275

Home Depot
CSX RAILROAD
U-Stor
22ND ST N
CELL TOWER
Kenny's Landscape Services
22ND AVE N
23RD AVE N
24TH AVE N
25TH AVE N
26TH AVE N
Former Norwood Secondary School
0 50 200
Feet
I-275 SB
I-275 NB
19TH ST N
Woodlawn Park
17TH AVE N
18TH AVE N
20TH AVE N
21ST AVE N

LEGEND:

- PAVEMENT WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

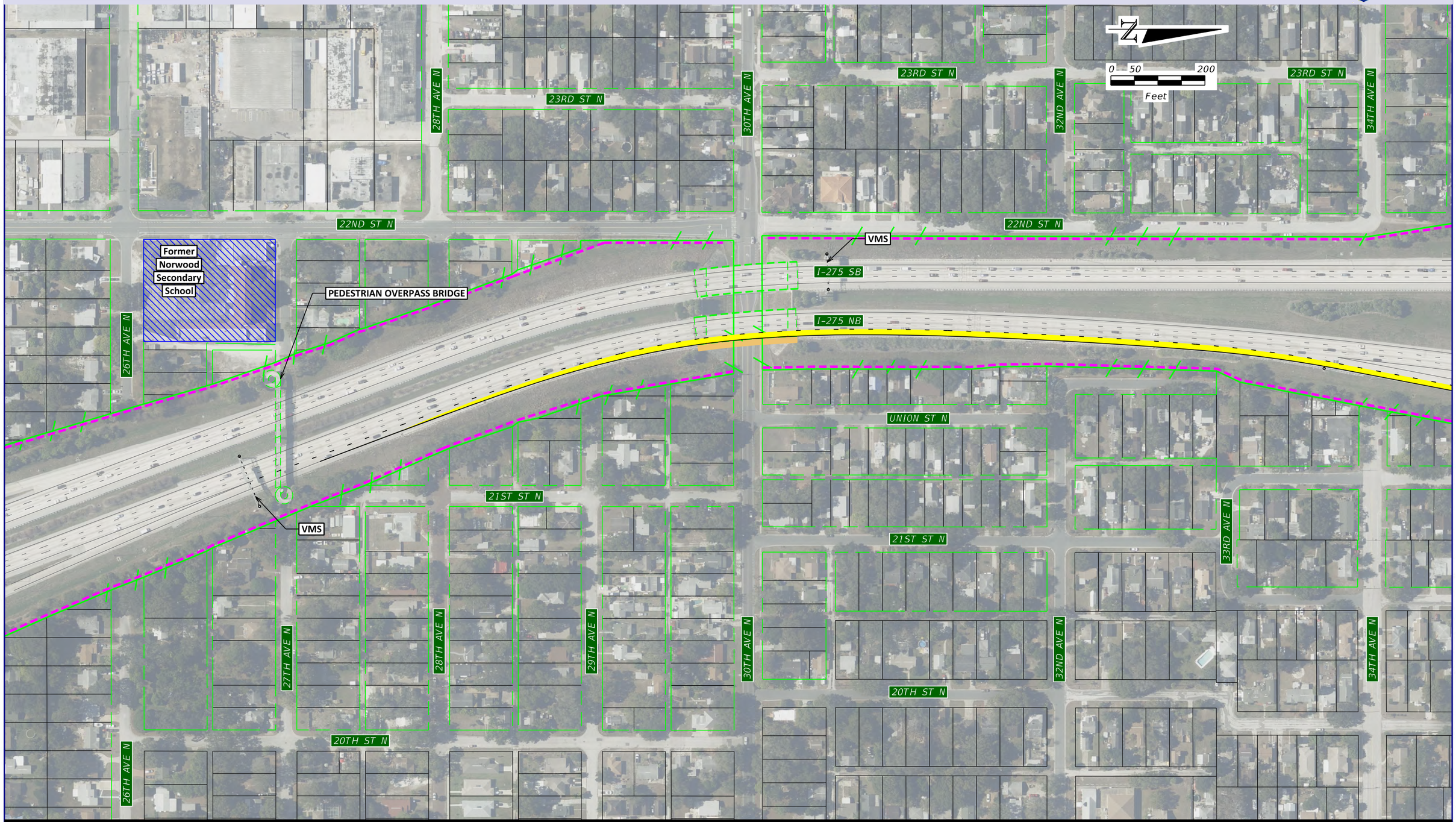
SHEET NO. 12

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

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- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

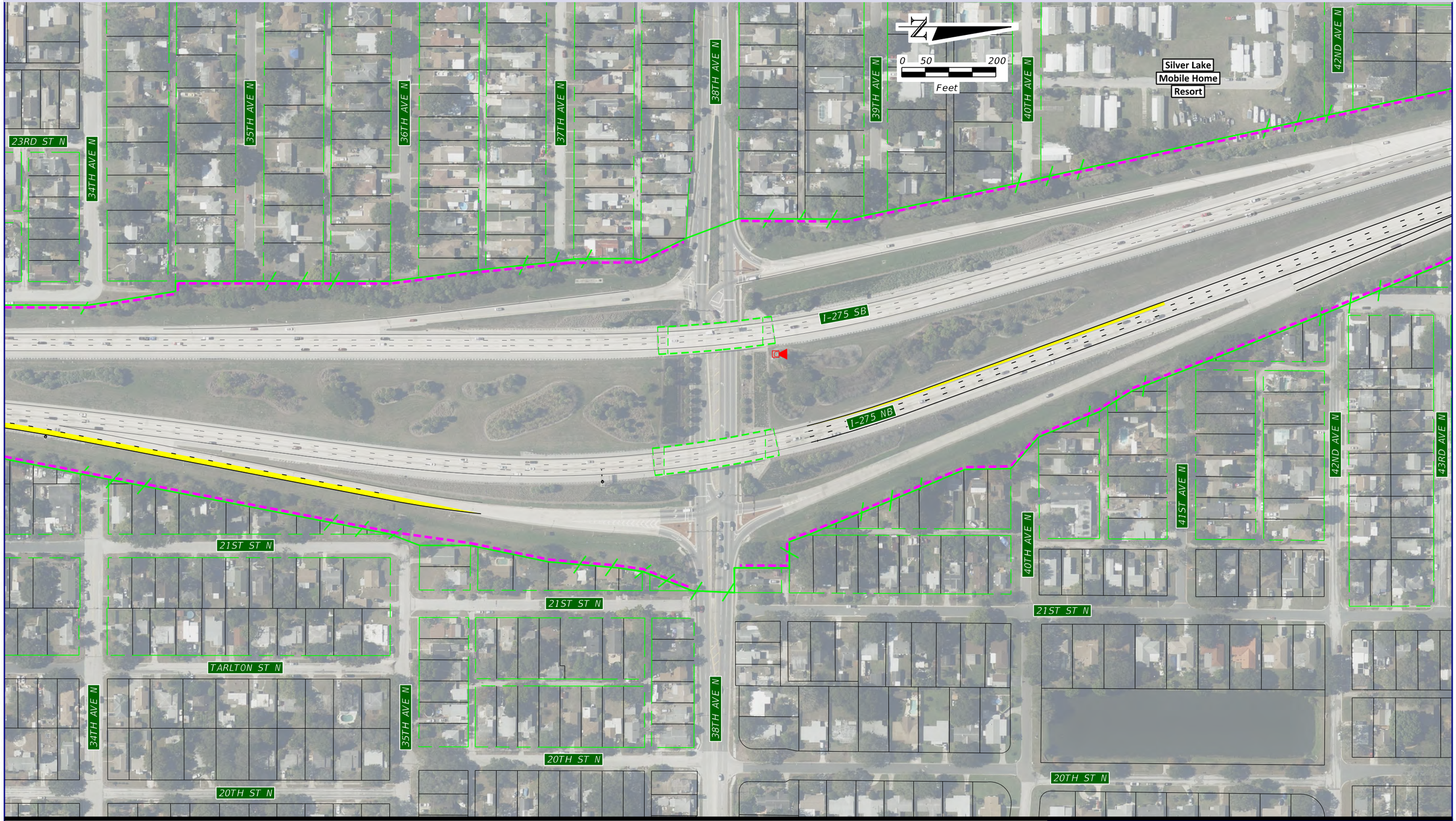
SHEET NO. 13

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

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- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

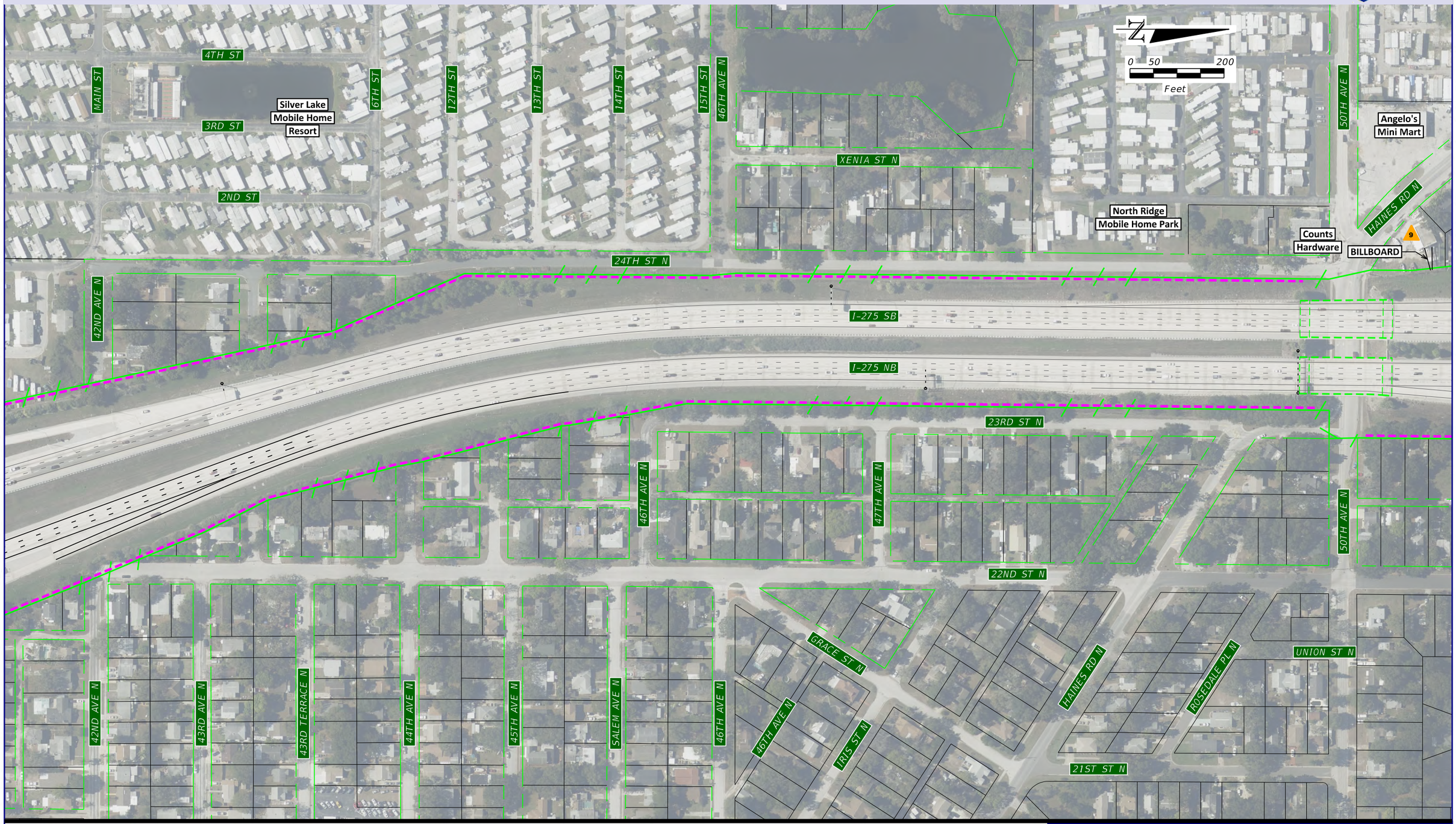
SHEET NO. 14

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- PAVEMENT WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
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- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

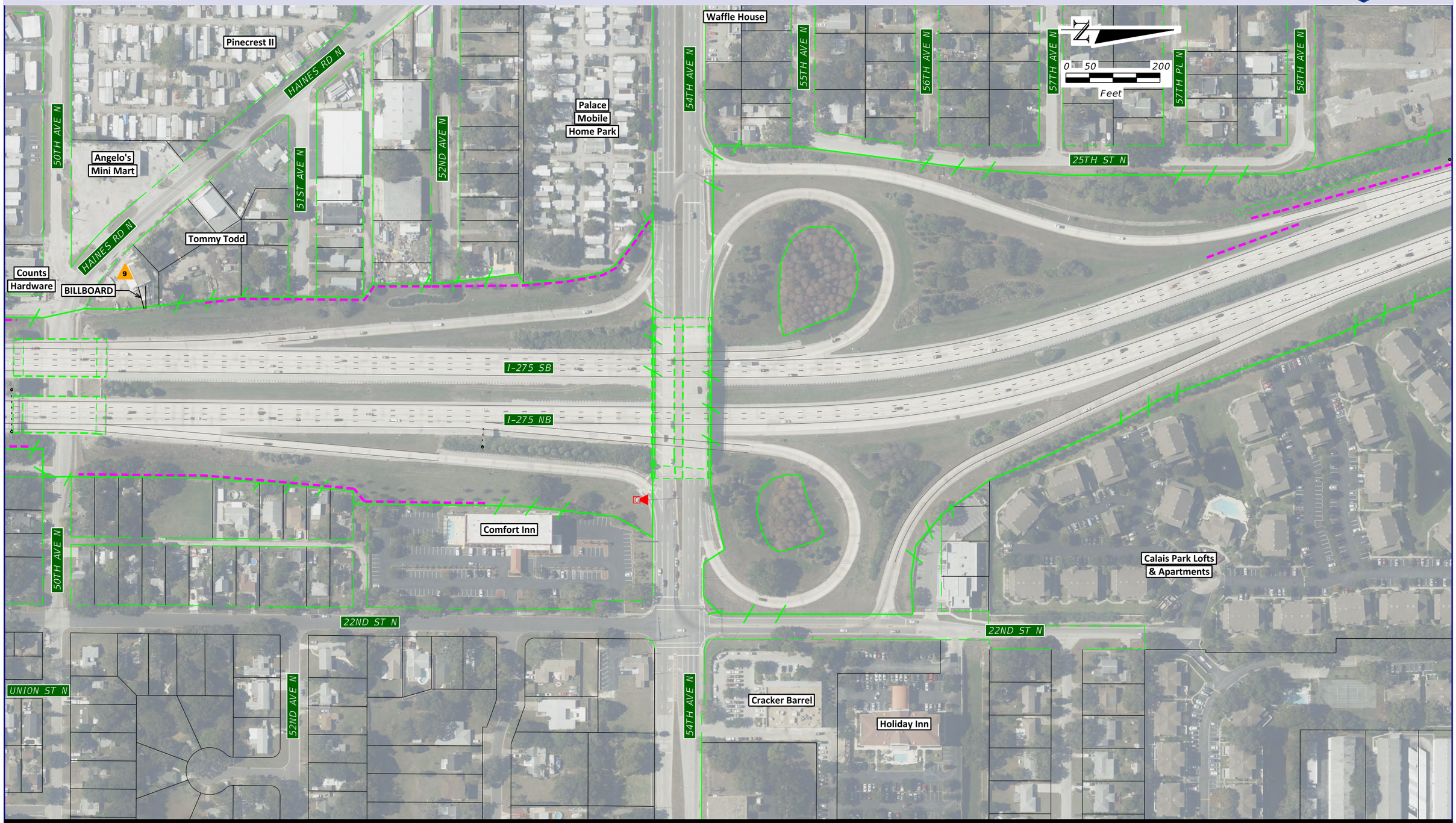
SHEET NO. 15

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- PAVEMENT WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
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Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

SHEET NO. 16

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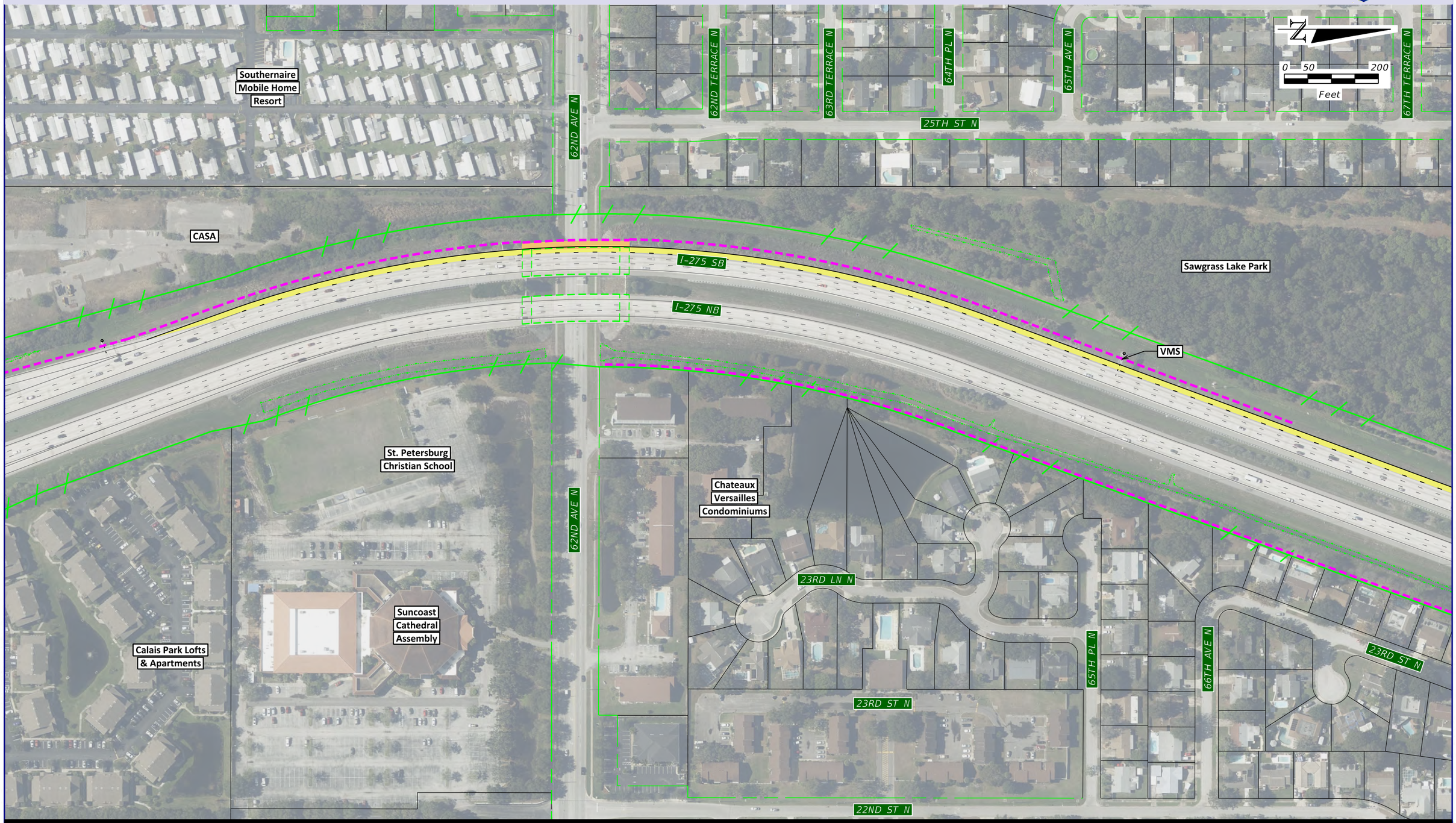
I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- PAVEMENT WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

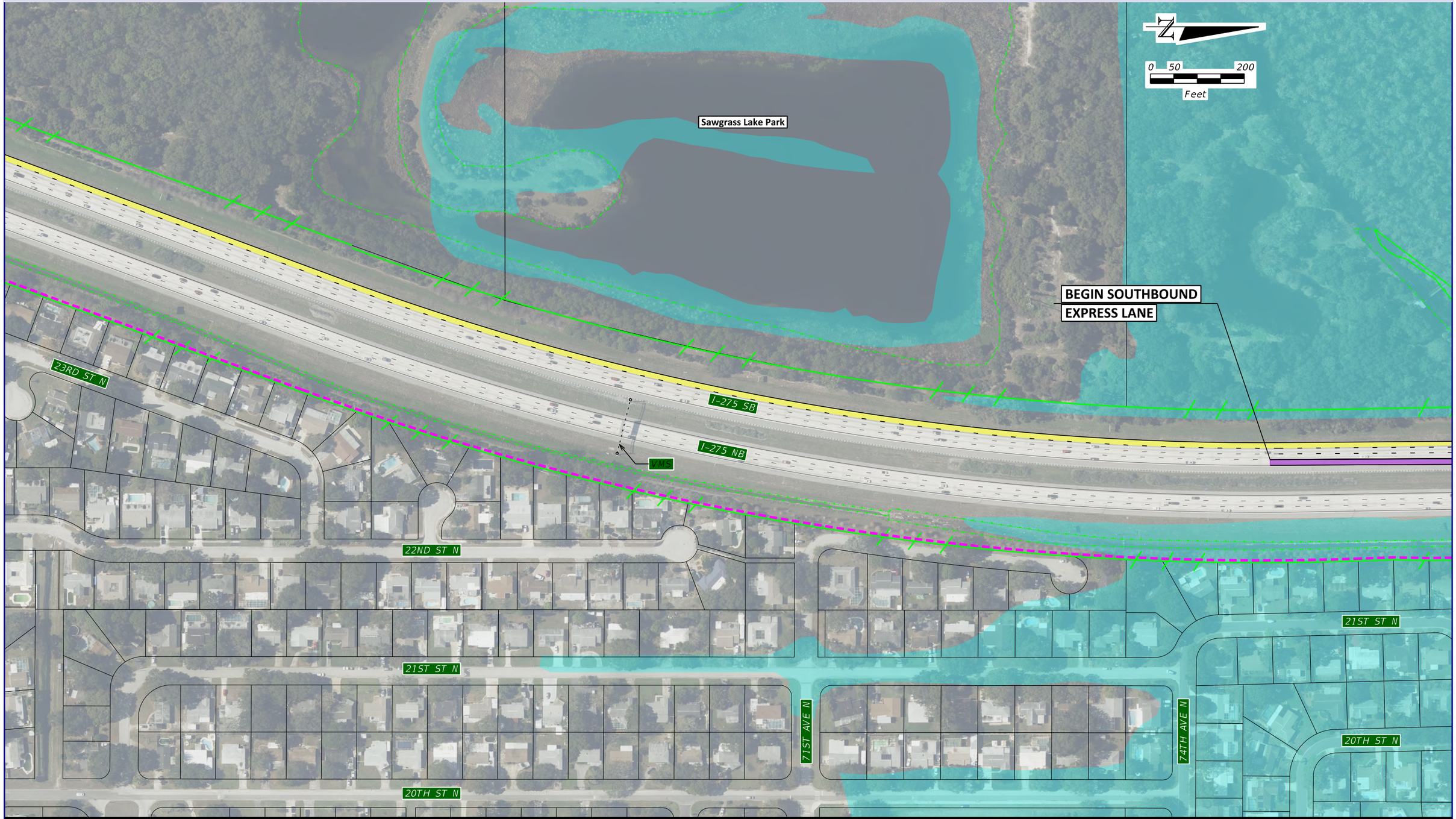
SHEET NO. 17

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- PAVEMENT WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTAMINATION
- OVERHEAD SIGN STRUCTURE
- NOISE WALL
- ITS CAMERA
- KENWOOD HISTORIC DISTRICT

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
LANE CONTINUITY

SHEET NO. 18

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275

LEGEND:

- CONTINUITY WIDENING
- MASTER WIDENING
- STARTER WIDENING
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA

EX = EXPRESS TOLL LANES
GU = GENERAL USE LANES
AUX = AUXILIARY LANES
Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS MASTER PLAN

SHEET NO. 19

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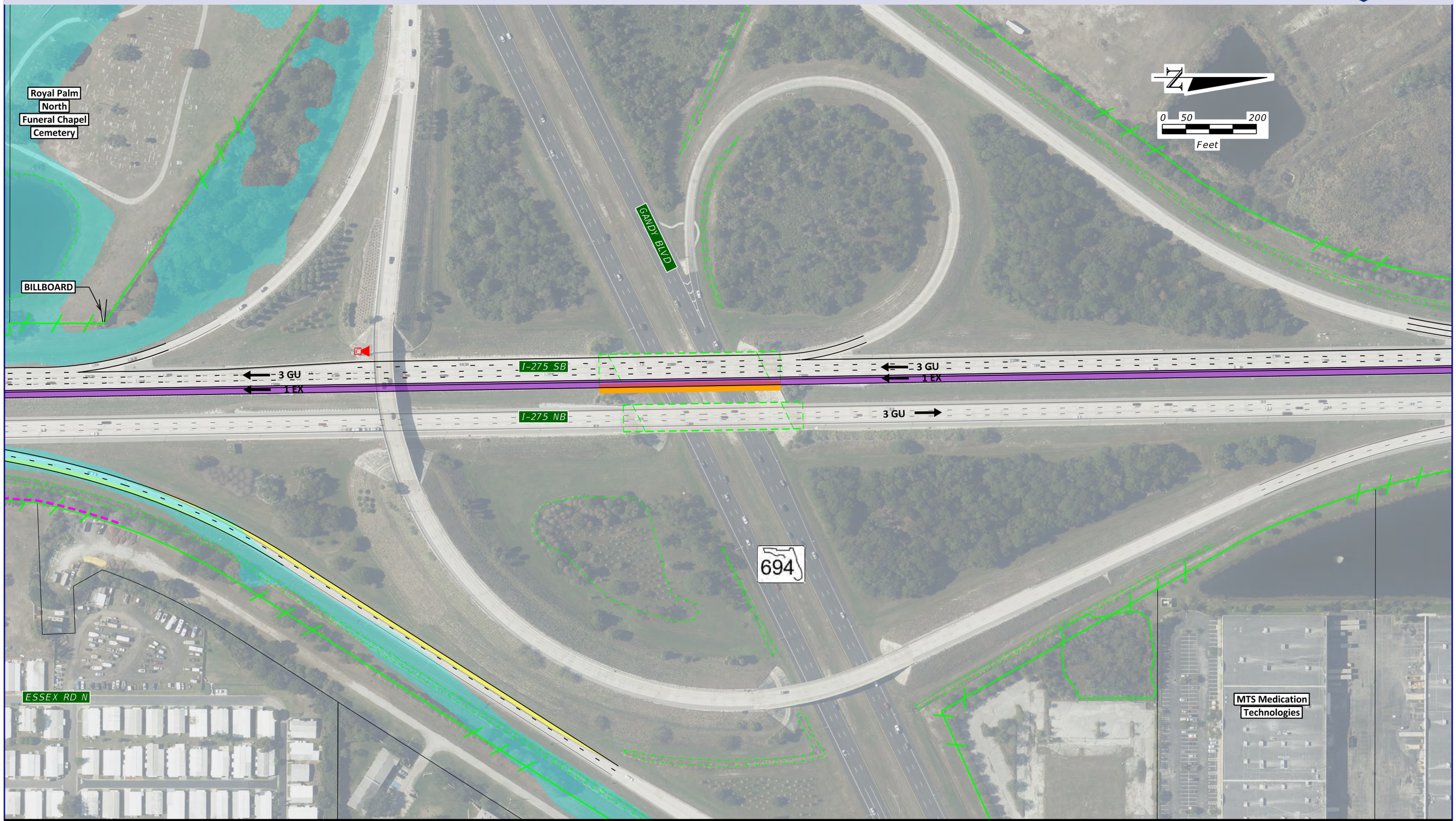
I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- CONTINUITY WIDENING
- MASTER WIDENING
- STARTER WIDENING
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA

EX = EXPRESS TOLL LANES
GU = GENERAL USE LANES
AUX = AUXILIARY LANES

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS MASTER PLAN

SHEET NO. 20

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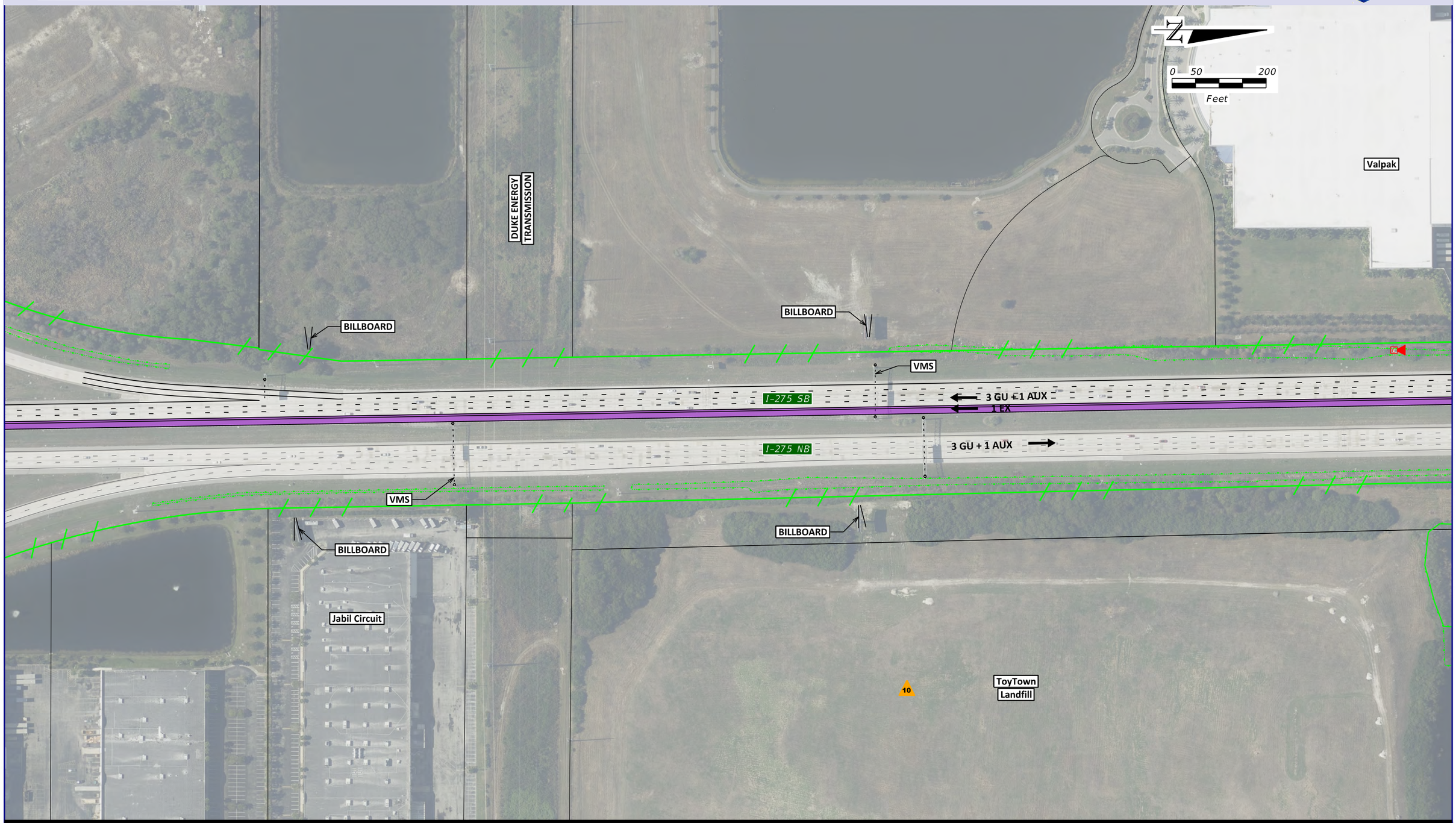
I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- CONTINUITY WIDENING
- MASTER WIDENING
- STARTER WIDENING
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA

EX = EXPRESS TOLL LANES
GU = GENERAL USE LANES
AUX = AUXILIARY LANES
Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS MASTER PLAN

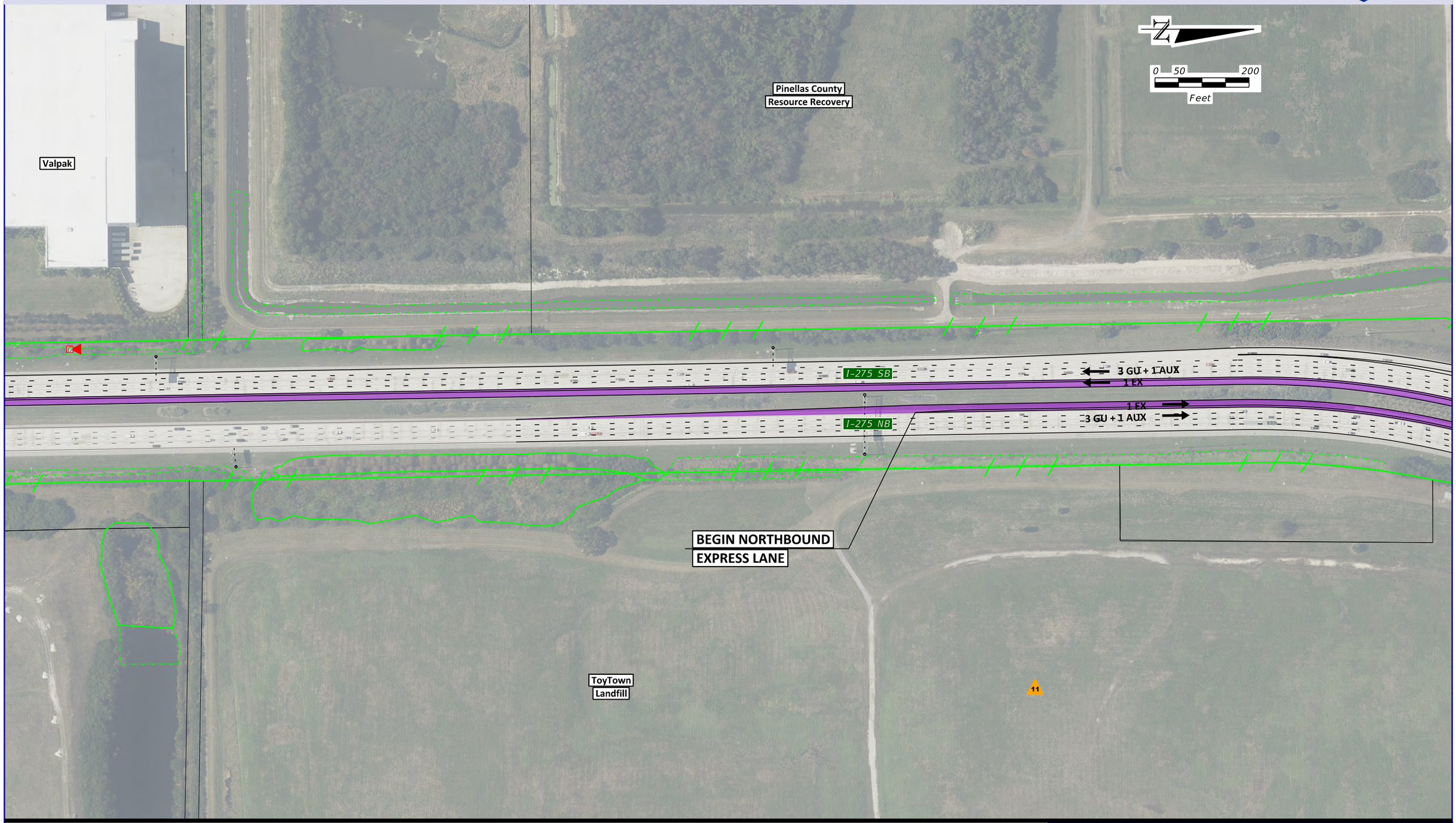
SHEET NO. 21

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- CONTINUITY WIDENING
- MASTER WIDENING
- STARTER WIDENING
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA

EX = EXPRESS TOLL LANES
GU = GENERAL USE LANES
AUX = AUXILIARY LANES
Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS MASTER PLAN

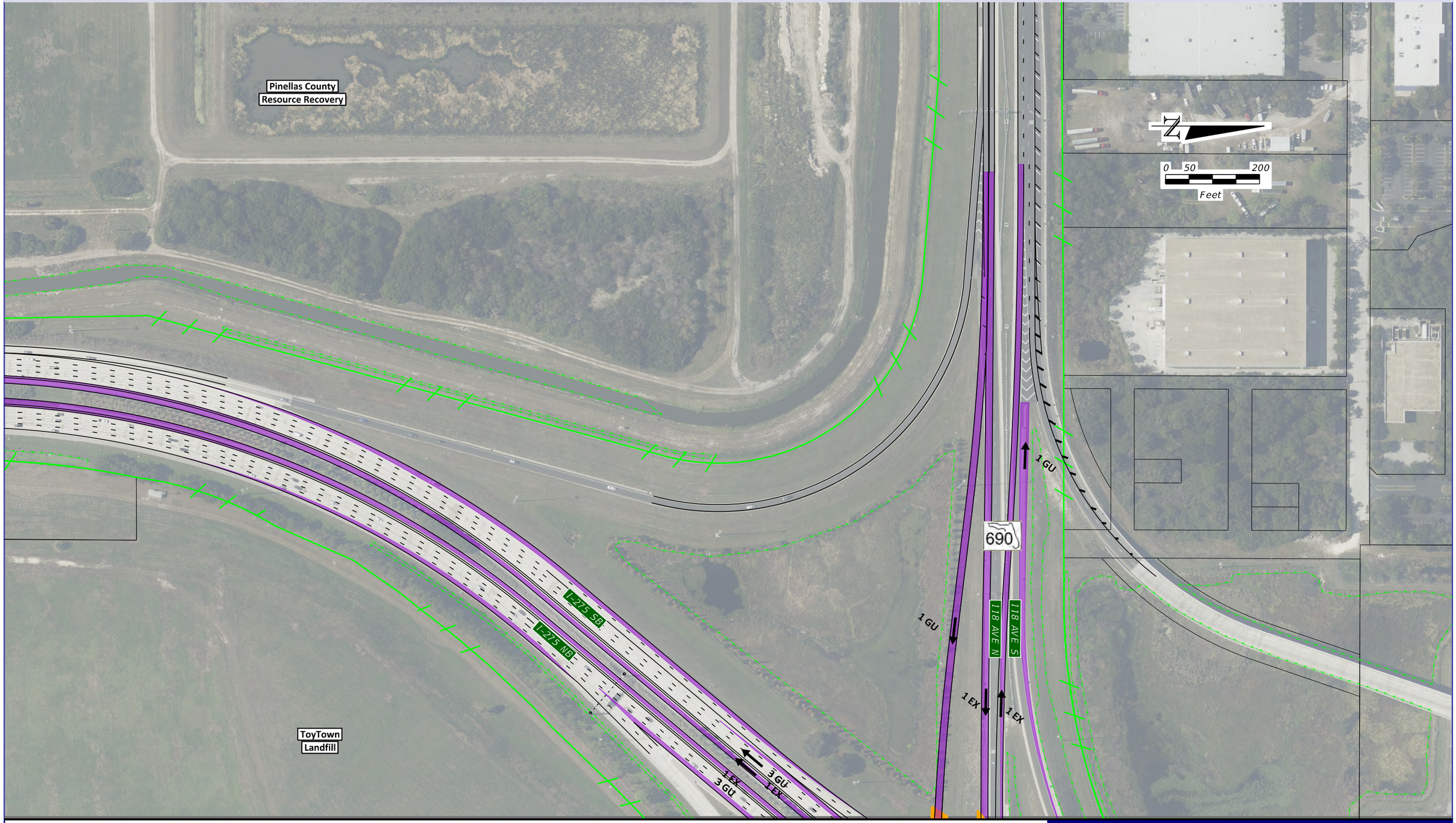
SHEET NO. 22

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- CONTINUITY WIDENING
- MASTER WIDENING
- STARTER WIDENING
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA

EX = EXPRESS TOLL LANES
GU = GENERAL USE LANES
AUX = AUXILIARY LANES
Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS MASTER PLAN

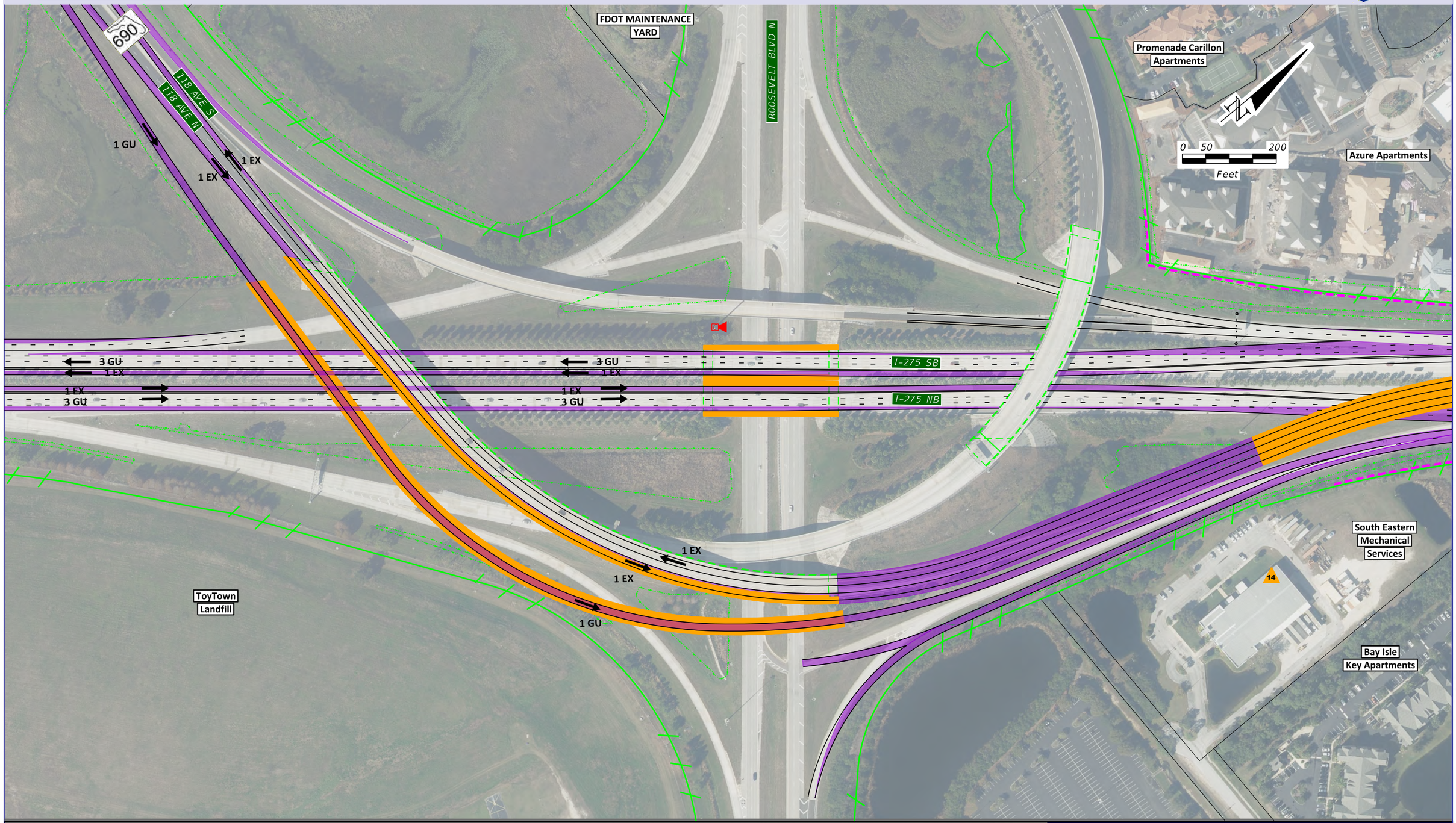
SHEET NO. 23

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- CONTINUITY WIDENING
- MASTER WIDENING
- STARTER WIDENING
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA

EX = EXPRESS TOLL LANES
GU = GENERAL USE LANES
AUX = AUXILIARY LANES

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS MASTER PLAN

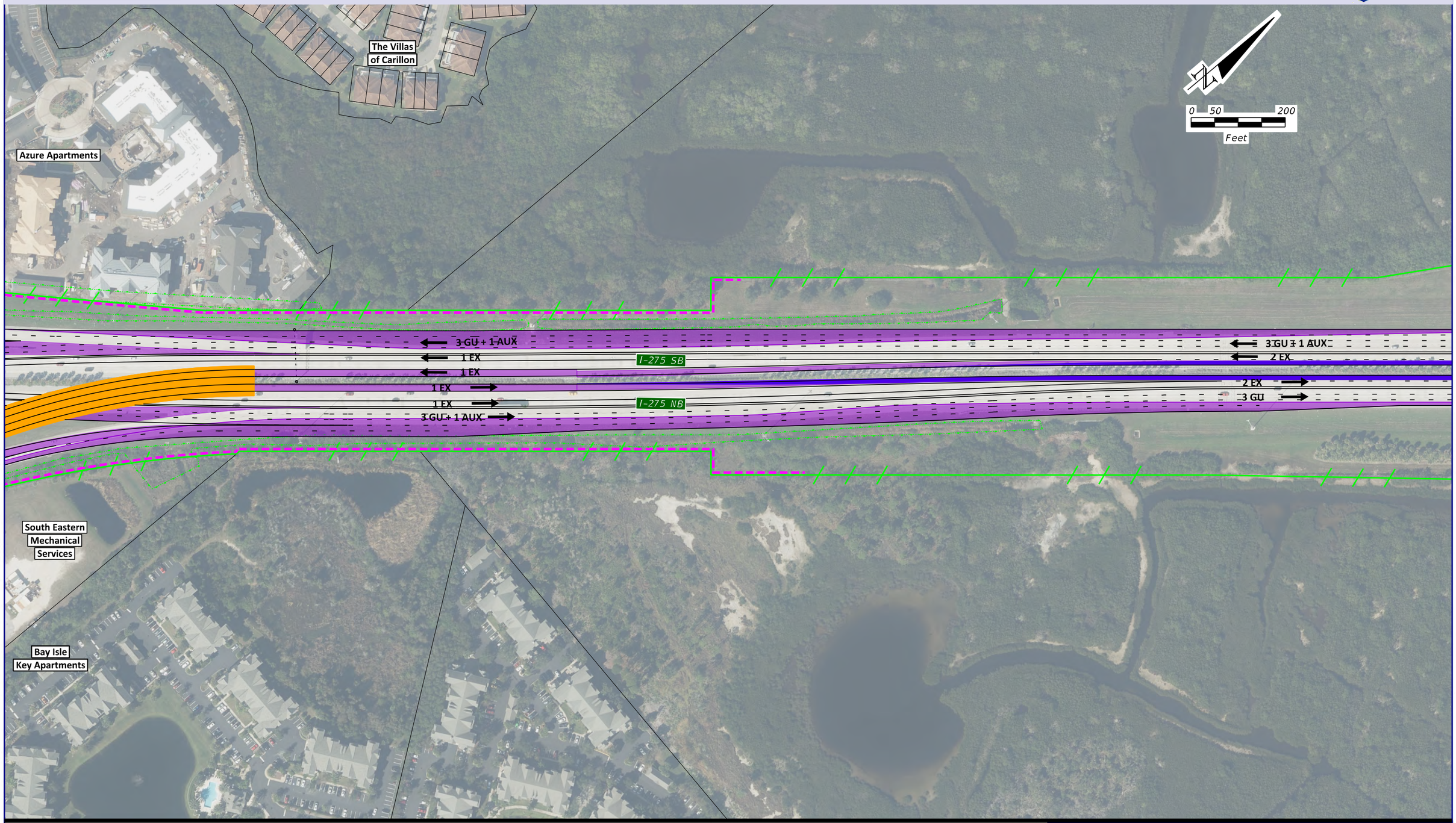
SHEET NO. 24

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- CONTINUITY WIDENING
- MASTER WIDENING
- STARTER WIDENING
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA

EX = EXPRESS TOLL LANES
GU = GENERAL USE LANES
AUX = AUXILIARY LANES

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS MASTER PLAN

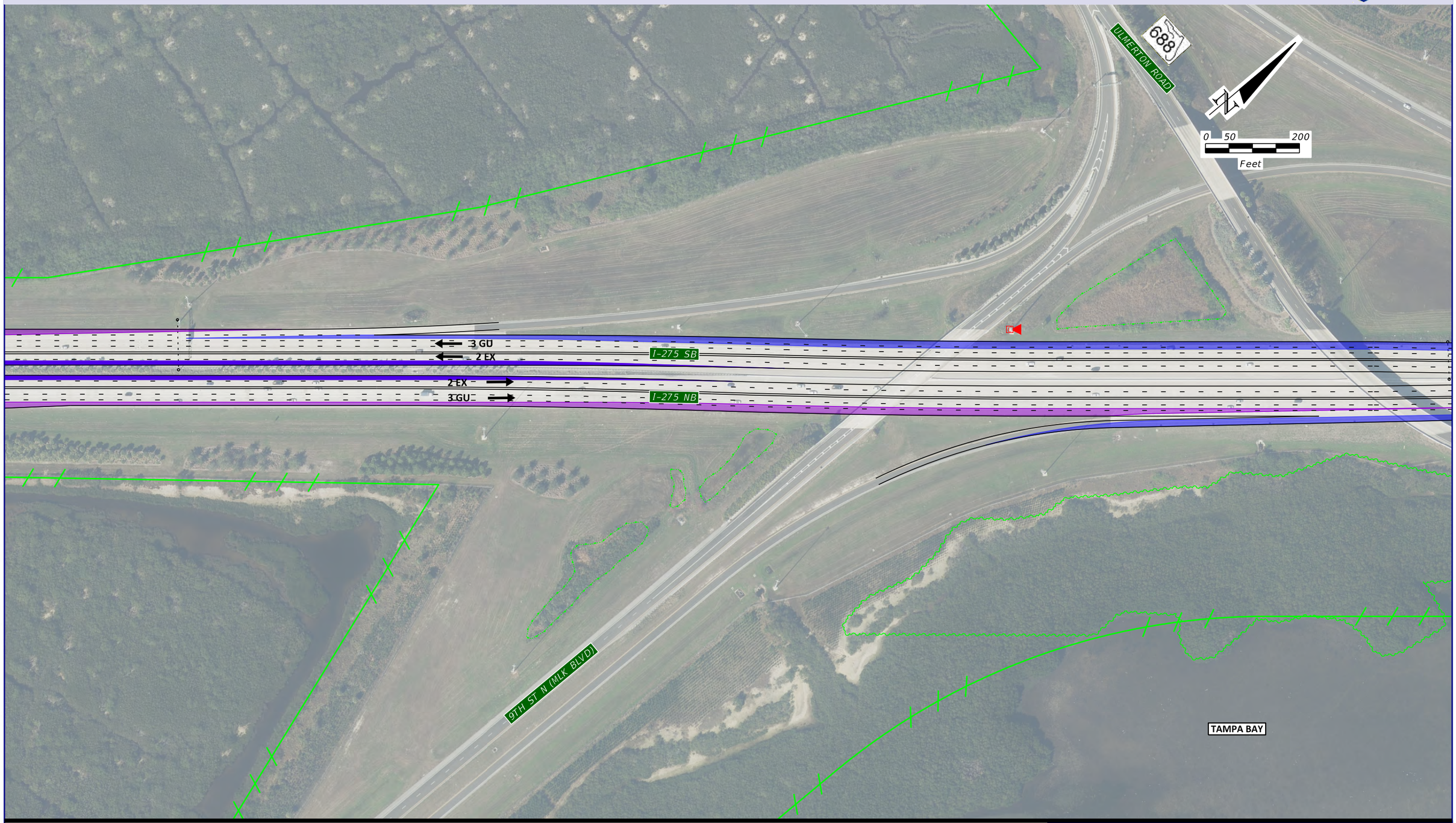
SHEET NO. 25

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- CONTINUITY WIDENING
- MASTER WIDENING
- STARTER WIDENING
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA

EX = EXPRESS TOLL LANES
GU = GENERAL USE LANES
AUX = AUXILIARY LANES
Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS MASTER PLAN

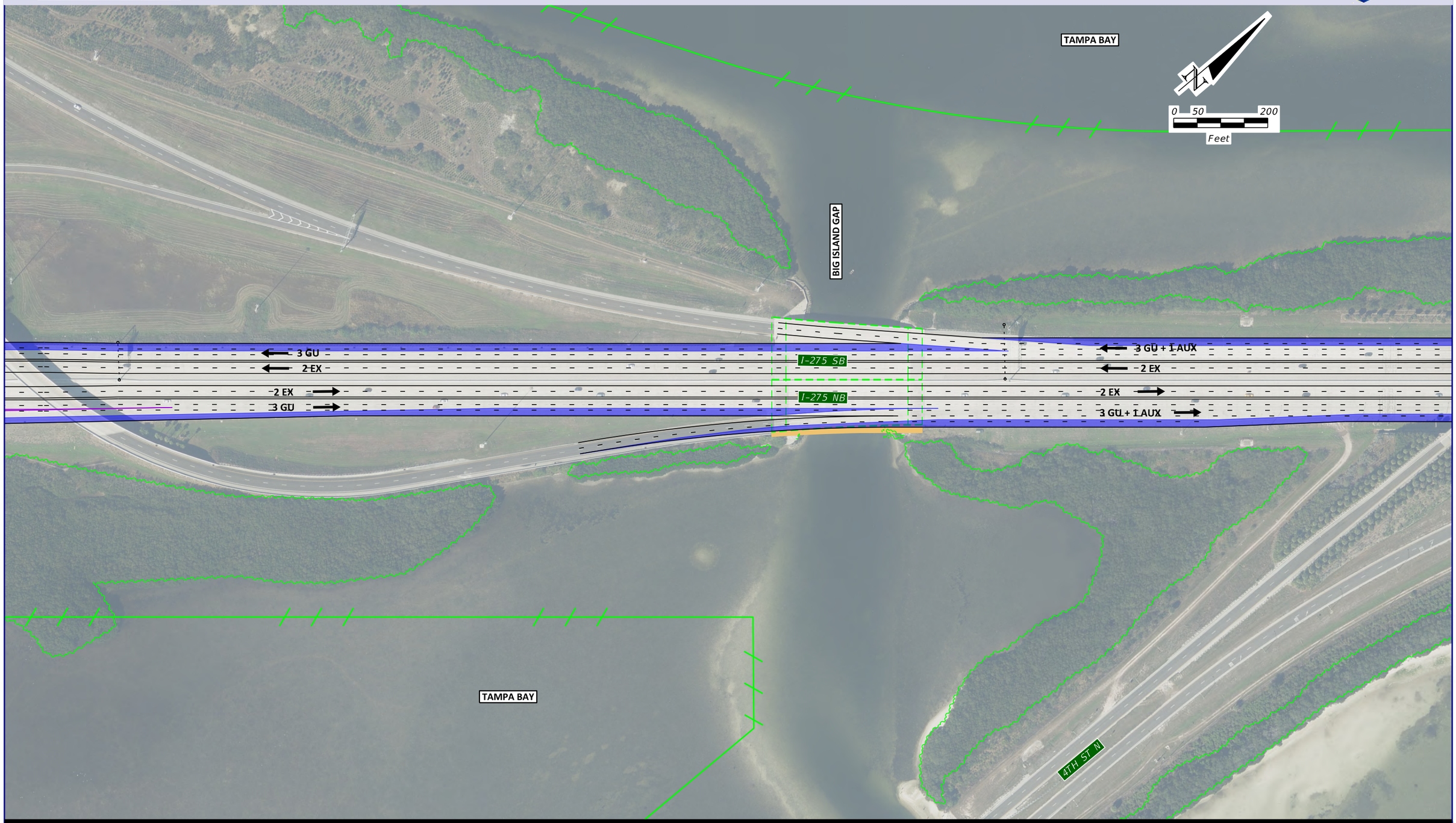
SHEET NO. 26

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- CONTINUITY WIDENING
- MASTER WIDENING
- STARTER WIDENING
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA

EX = EXPRESS TOLL LANES
GU = GENERAL USE LANES
AUX = AUXILIARY LANES
Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS MASTER PLAN

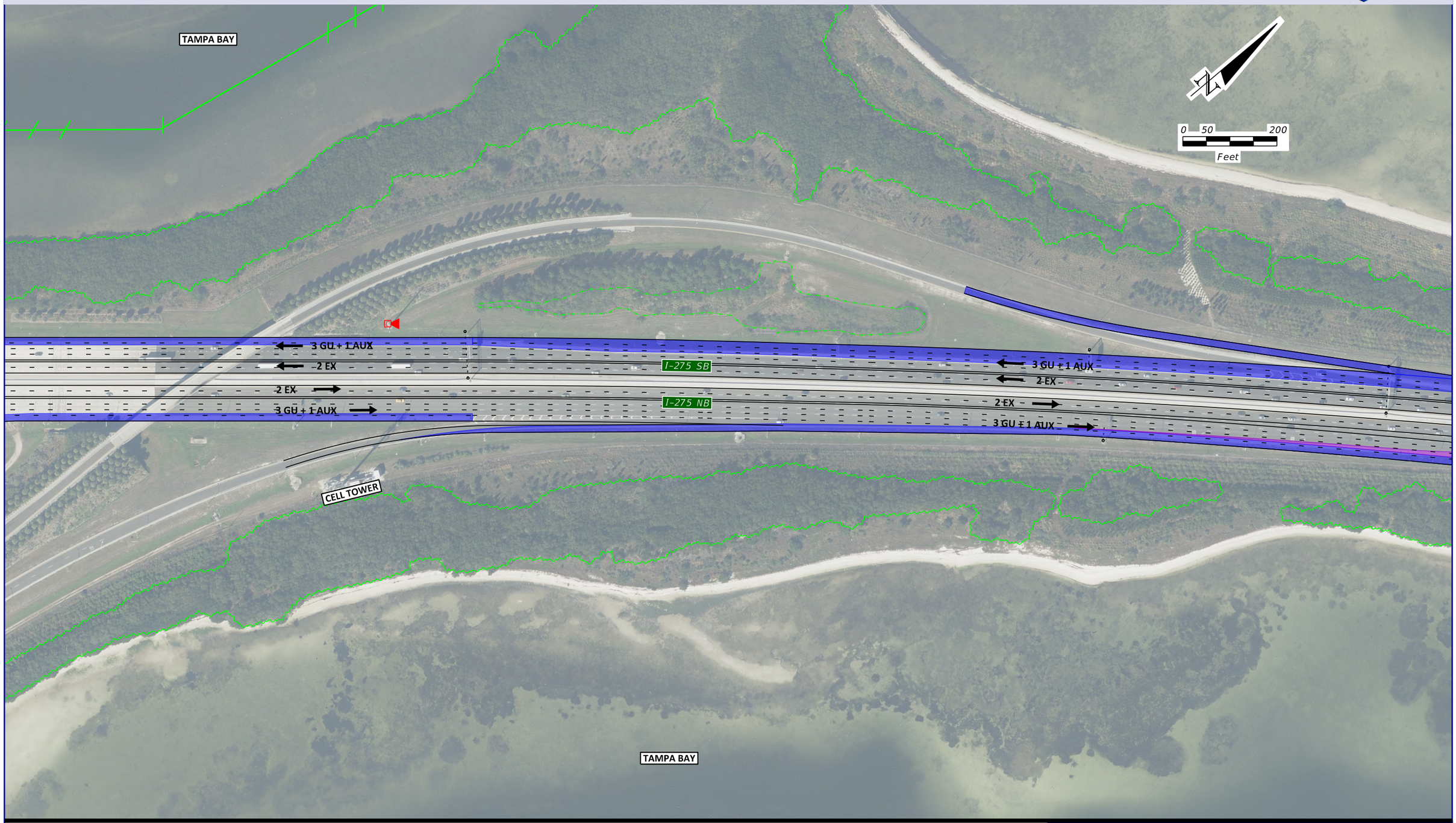
SHEET NO. 27

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- CONTINUITY WIDENING
- MASTER WIDENING
- STARTER WIDENING
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA

EX = EXPRESS TOLL LANES
GU = GENERAL USE LANES
AUX = AUXILIARY LANES

Aerial Photos Dec. '13 - Feb. '14

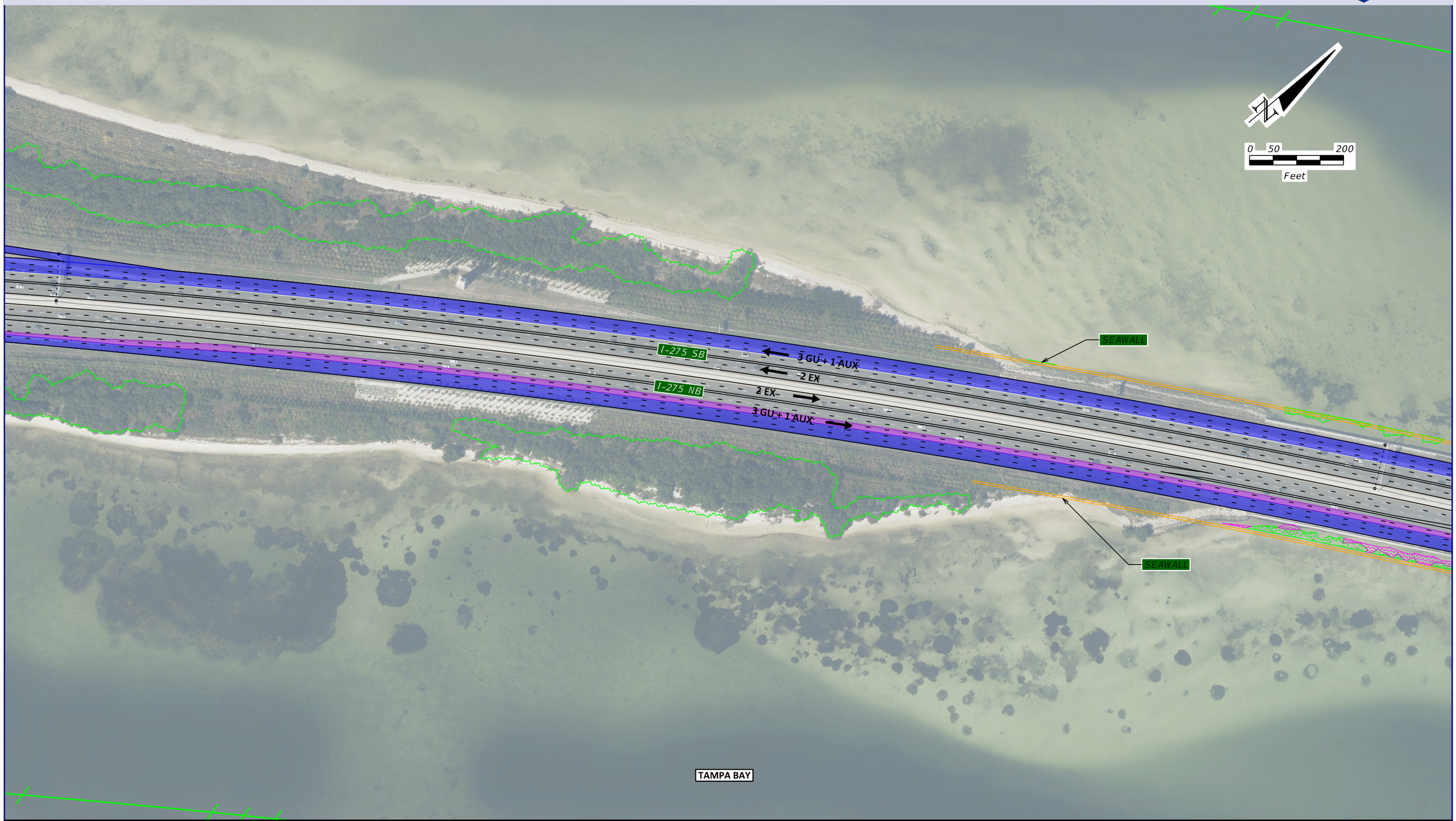
CONCEPT PLANS
EXPRESS MASTER PLAN

SHEET NO. 28

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- CONTINUITY WIDENING
- MASTER WIDENING
- STARTER WIDENING
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA

EX = EXPRESS TOLL LANES
GU = GENERAL USE LANES
AUX = AUXILIARY LANES
Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS MASTER PLAN

SHEET NO. 29

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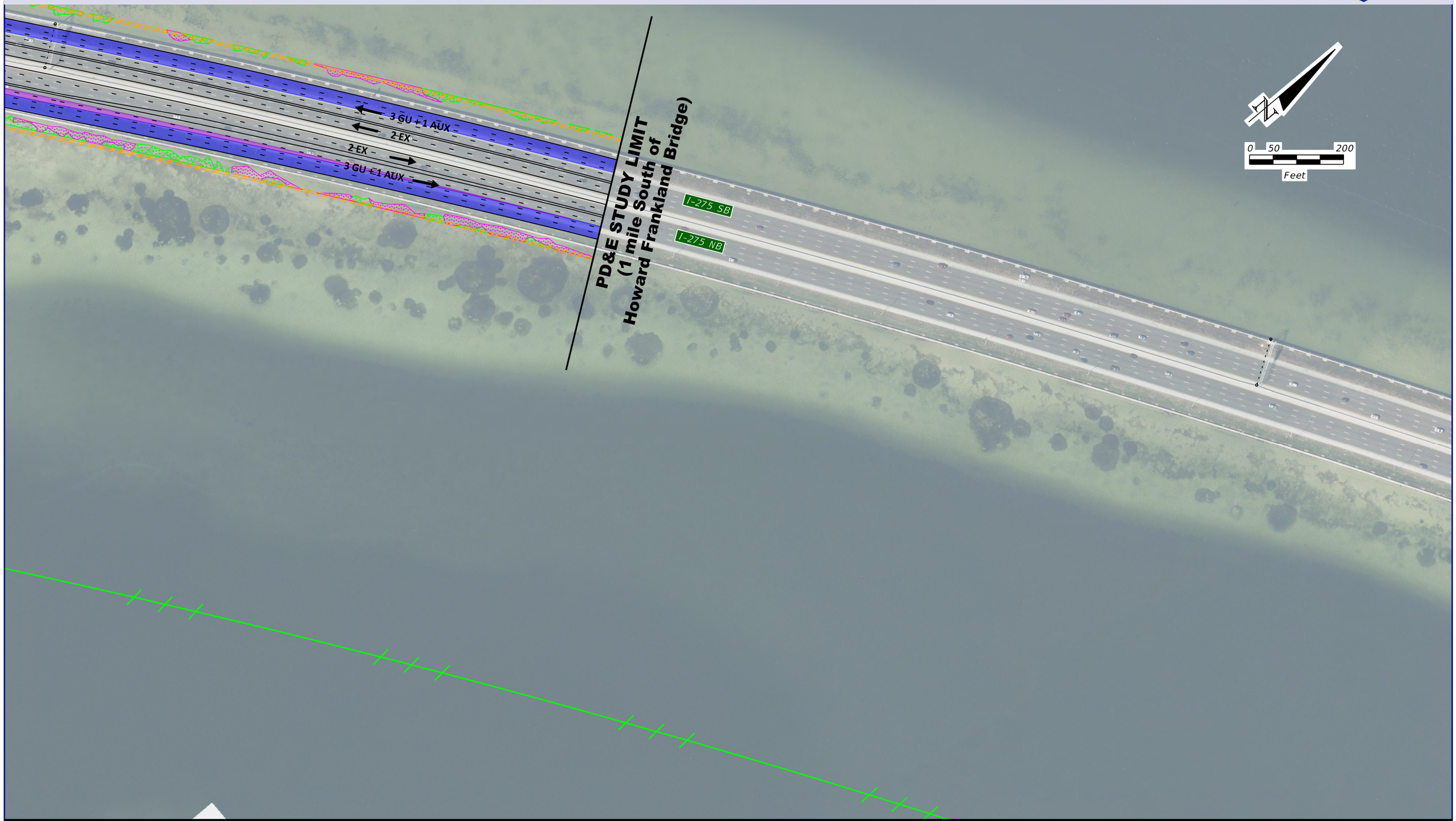
I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- CONTINUITY WIDENING
- MASTER WIDENING
- STARTER WIDENING
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- HISTORIC SITE
- WETLANDS
- SURFACE WATER
- MANGROVES
- RIGHT OF WAY
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA

EX = EXPRESS TOLL LANES
GU = GENERAL USE LANES
AUX = AUXILIARY LANES

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS MASTER PLAN

SHEET NO. 30

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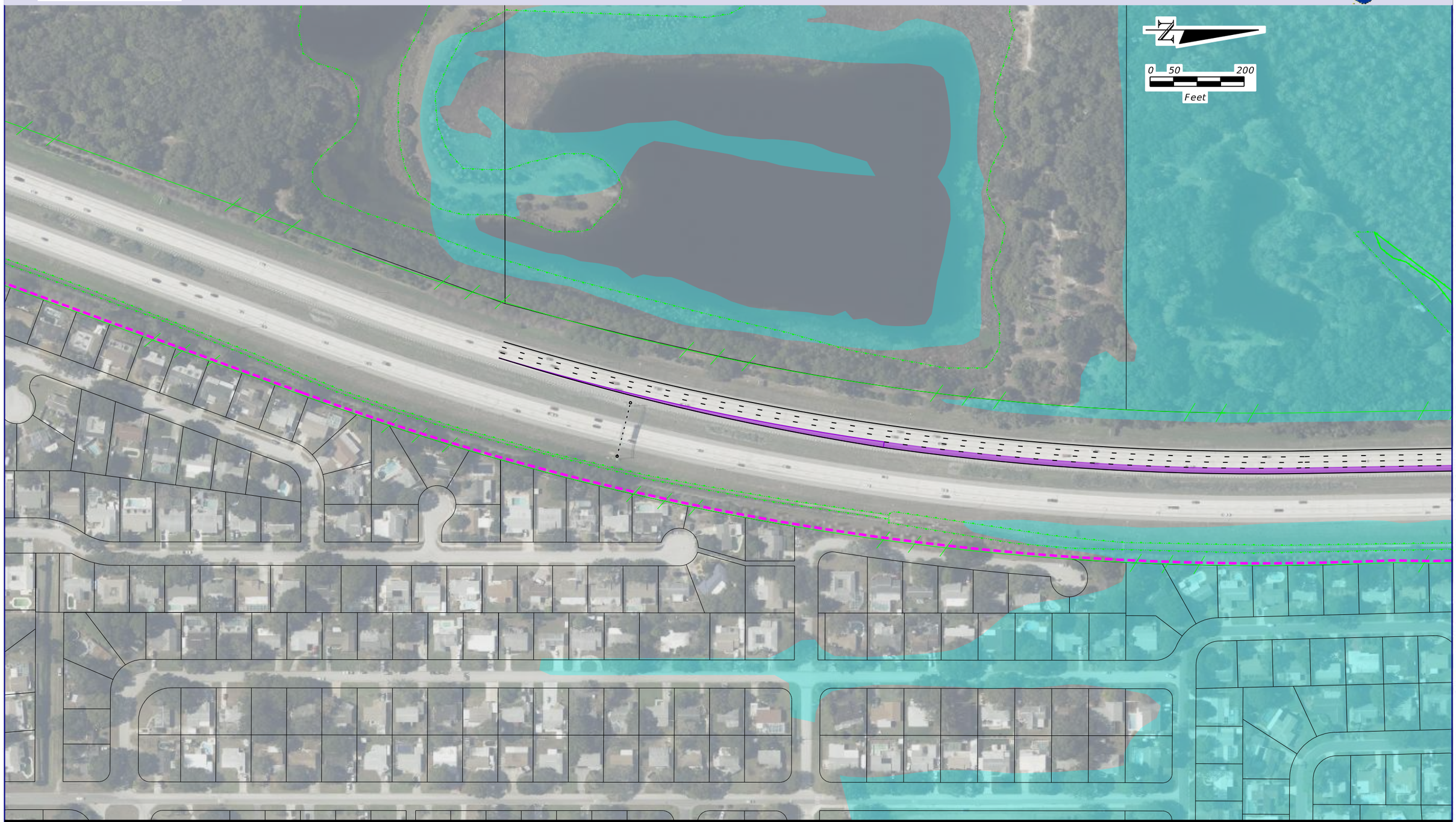
I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- STARTER WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- RIGHT OF WAY
- WETLANDS
- SURFACE WATER
- MANGROVES
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA
- NOISE WALL

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS STARTER PLAN

SHEET NO.

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275

LEGEND:

- STARTER WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- RIGHT OF WAY
- WETLANDS
- SURFACE WATER
- MANGROVES
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA
- NOISE WALL

Aerial Photos Dec. '13 - Feb. '14

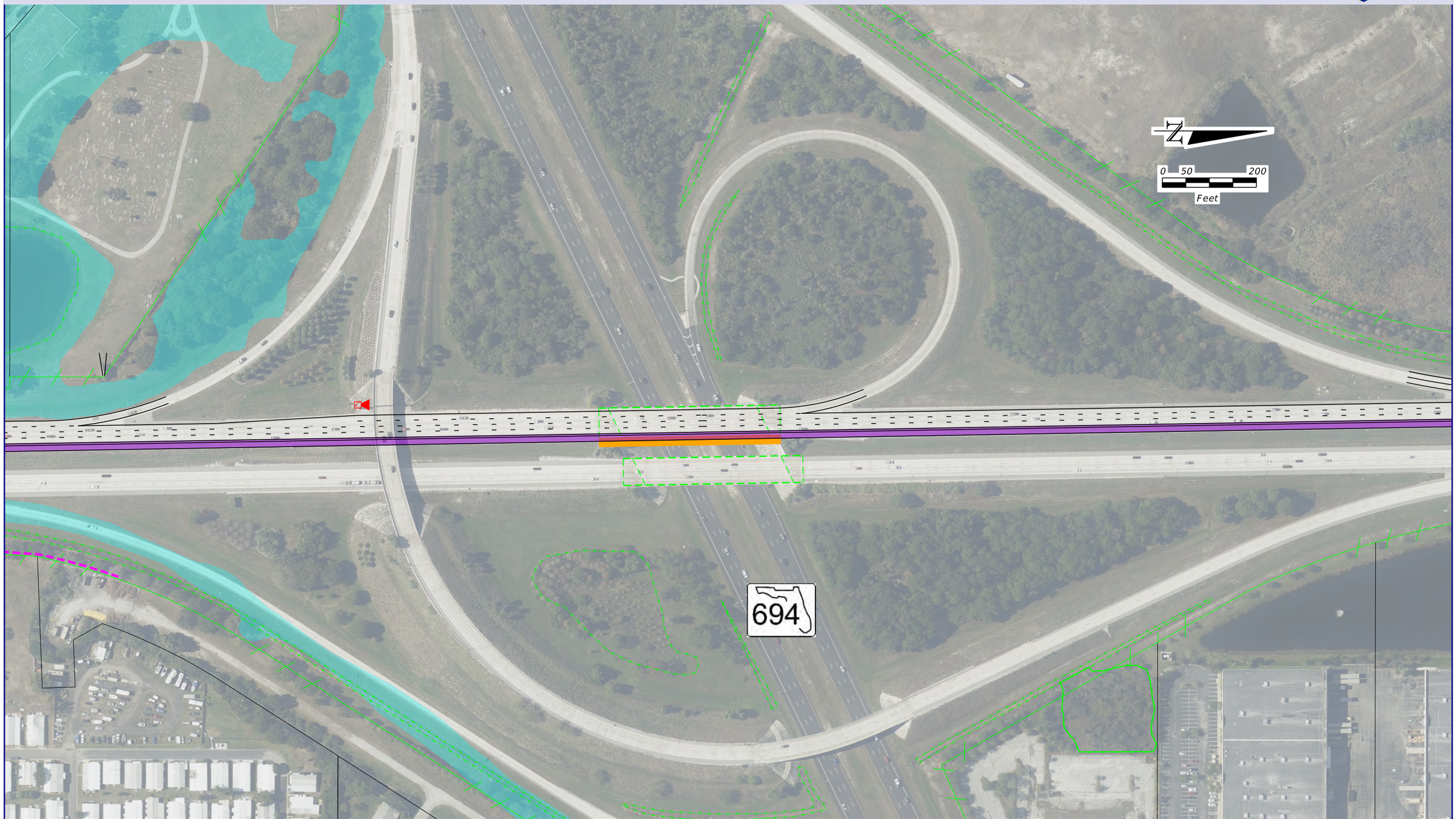
CONCEPT PLANS
EXPRESS STARTER PLAN

SHEET NO.

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- STARTER WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- RIGHT OF WAY
- WETLANDS
- SURFACE WATER
- MANGROVES
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA
- NOISE WALL

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS STARTER PLAN

SHEET NO. 33

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

TAMPA BAY EXPRESS

INTERSTATE 275

0 50 200
Feet

LEGEND:

- STARTER WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- RIGHT OF WAY
- WETLANDS
- SURFACE WATER
- MANGROVES
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA
- NOISE WALL

Aerial Photos Dec. '13 - Feb. '14

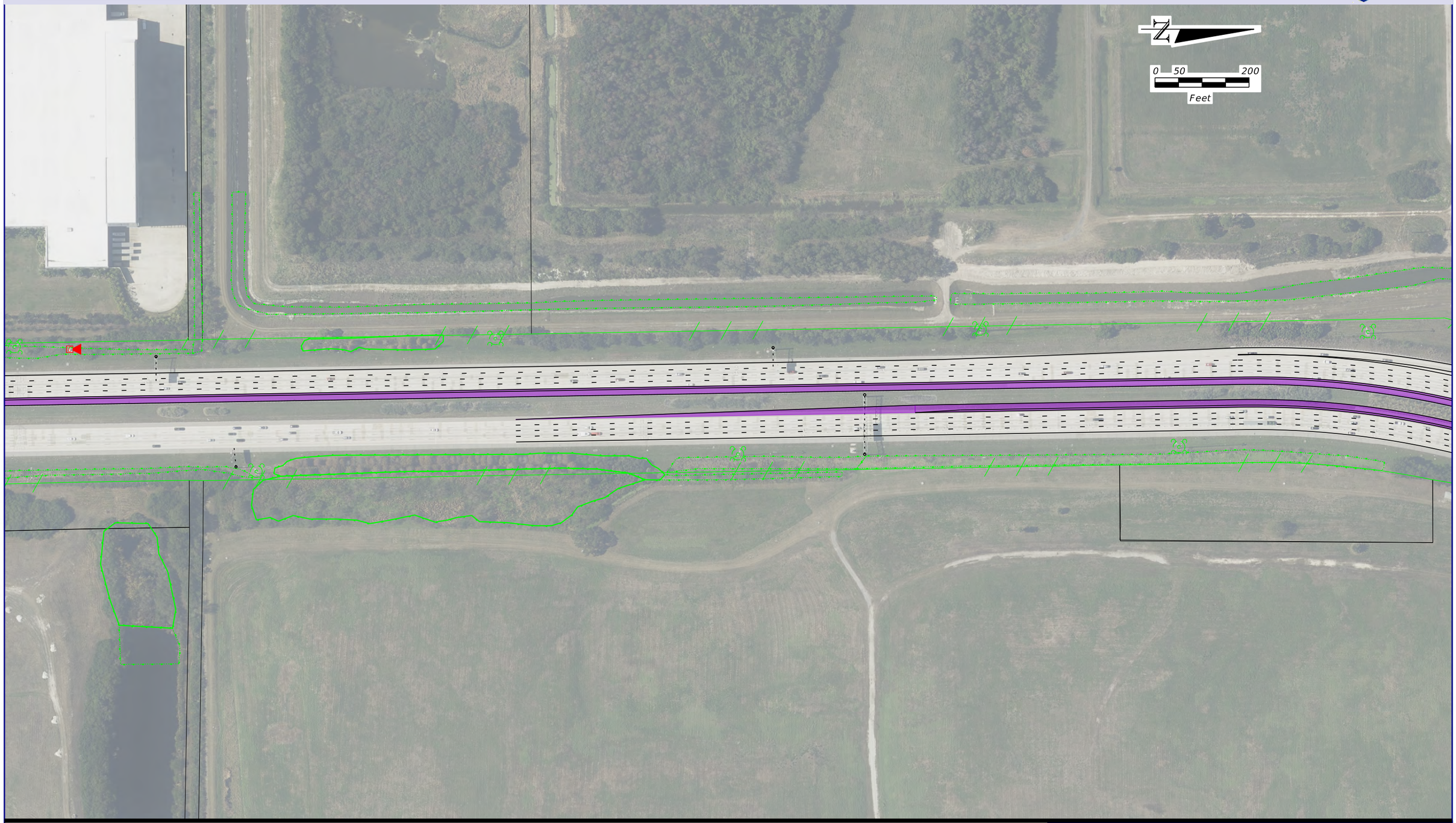
CONCEPT PLANS
EXPRESS STARTER PLAN

SHEET NO. 34

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- STARTER WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- RIGHT OF WAY
- WETLANDS
- SURFACE WATER
- MANGROVES
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA
- NOISE WALL

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS STARTER PLAN

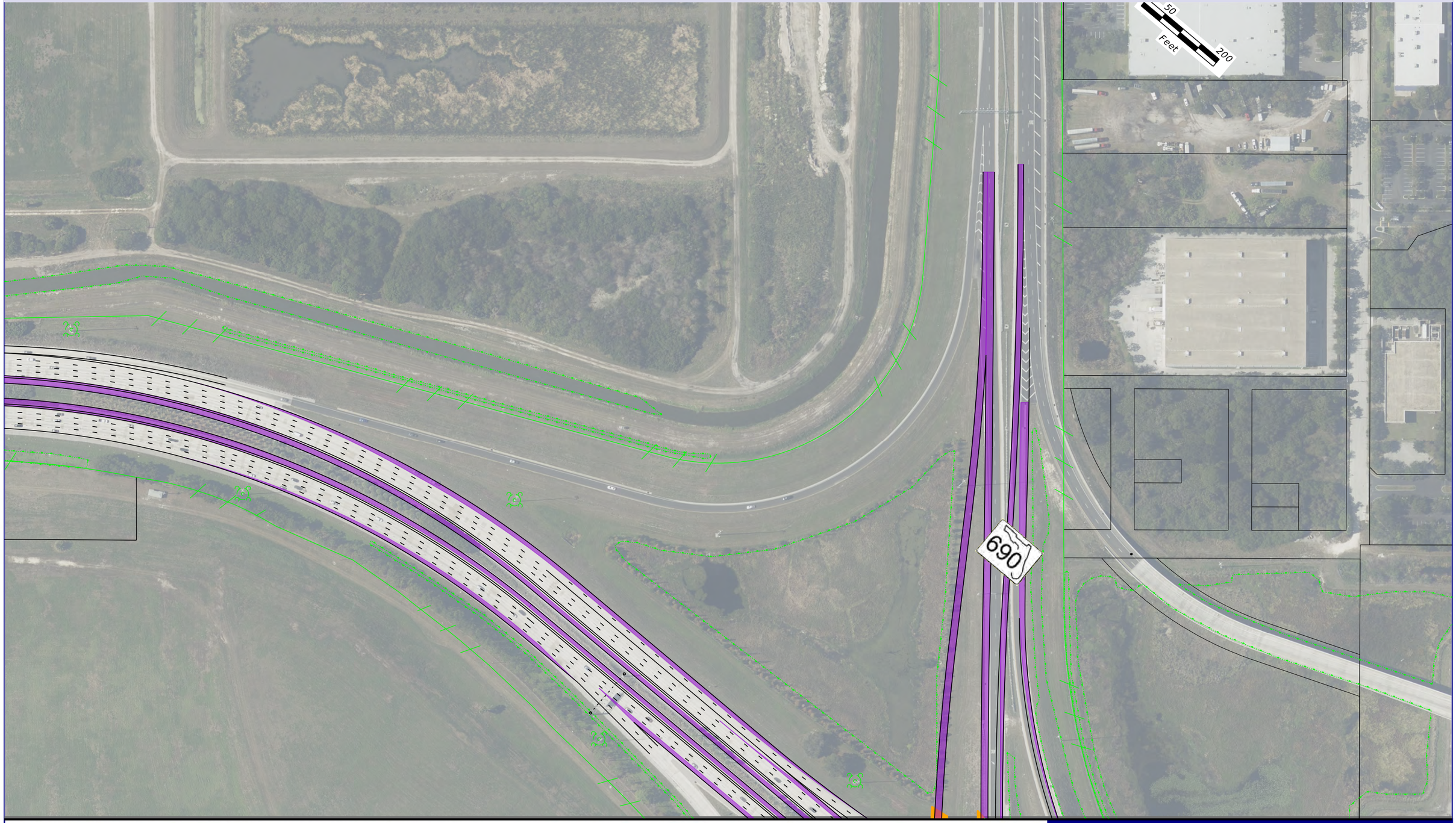
SHEET NO. 35

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- STARTER WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- RIGHT OF WAY
- WETLANDS
- SURFACE WATER
- MANGROVES
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA
- NOISE WALL

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS STARTER PLAN

SHEET NO. 36

$USER$ $DATE$ $TIME$ $FILE$

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

FDOT

TAMPA BAY EXPRESS

INTERSTATE 275

690

FDOT MAINTENANCE YARD

Azure Apartments

South Eastern Mechanical Services

0 50 200

Feet

LEGEND:

- STARTER WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- RIGHT OF WAY
- WETLANDS
- SURFACE WATER
- MANGROVES
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA
- NOISE WALL

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS STARTER PLAN

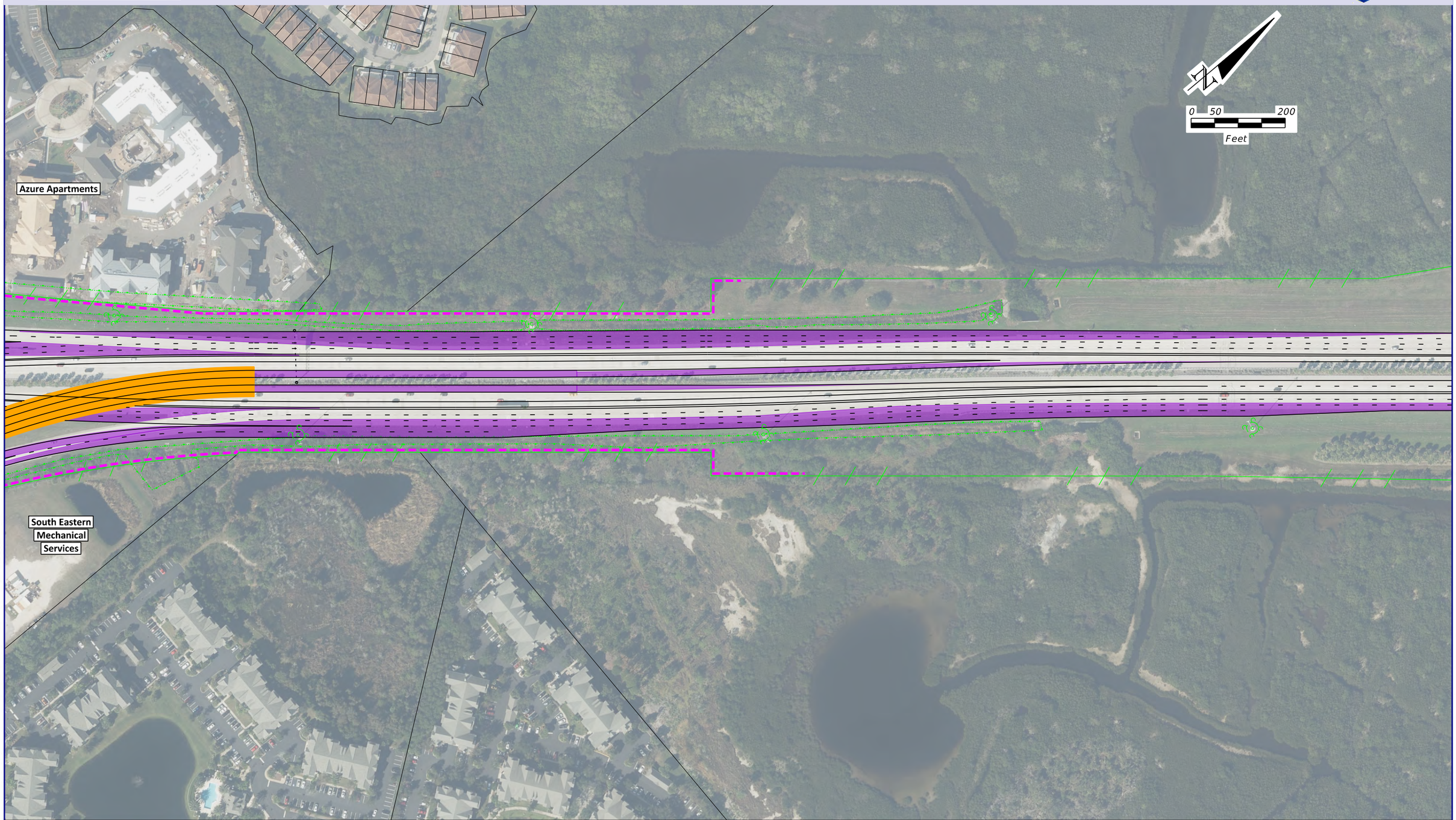
SHEET NO. 37

$USERS $DATES $TIMES $FILES

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- STARTER WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- RIGHT OF WAY
- WETLANDS
- SURFACE WATER
- MANGROVES
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA
- NOISE WALL

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS STARTER PLAN

SHEET NO. 38

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

TAMPA BAY EXPRESS

INTERSTATE 275

LEGEND:

- STARTER WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- RIGHT OF WAY
- WETLANDS
- SURFACE WATER
- MANGROVES
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA
- NOISE WALL

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS STARTER PLAN

SHEET NO. 39

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

TAMPA BAY EXPRESS

INTERSTATE 275

0 50 200
Feet

LEGEND:

- STARTER WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- RIGHT OF WAY
- WETLANDS
- SURFACE WATER
- MANGROVES
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA
- NOISE WALL

Aerial Photos Dec. '13 - Feb. '14

CONCEPT PLANS
EXPRESS STARTER PLAN

SHEET NO. 40

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

TAMPA BAY EXPRESS

INTERSTATE 275

LEGEND:

- STARTER WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- RIGHT OF WAY
- WETLANDS
- SURFACE WATER
- MANGROVES
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA
- NOISE WALL

Aerial Photos Dec. '13 - Feb. '14

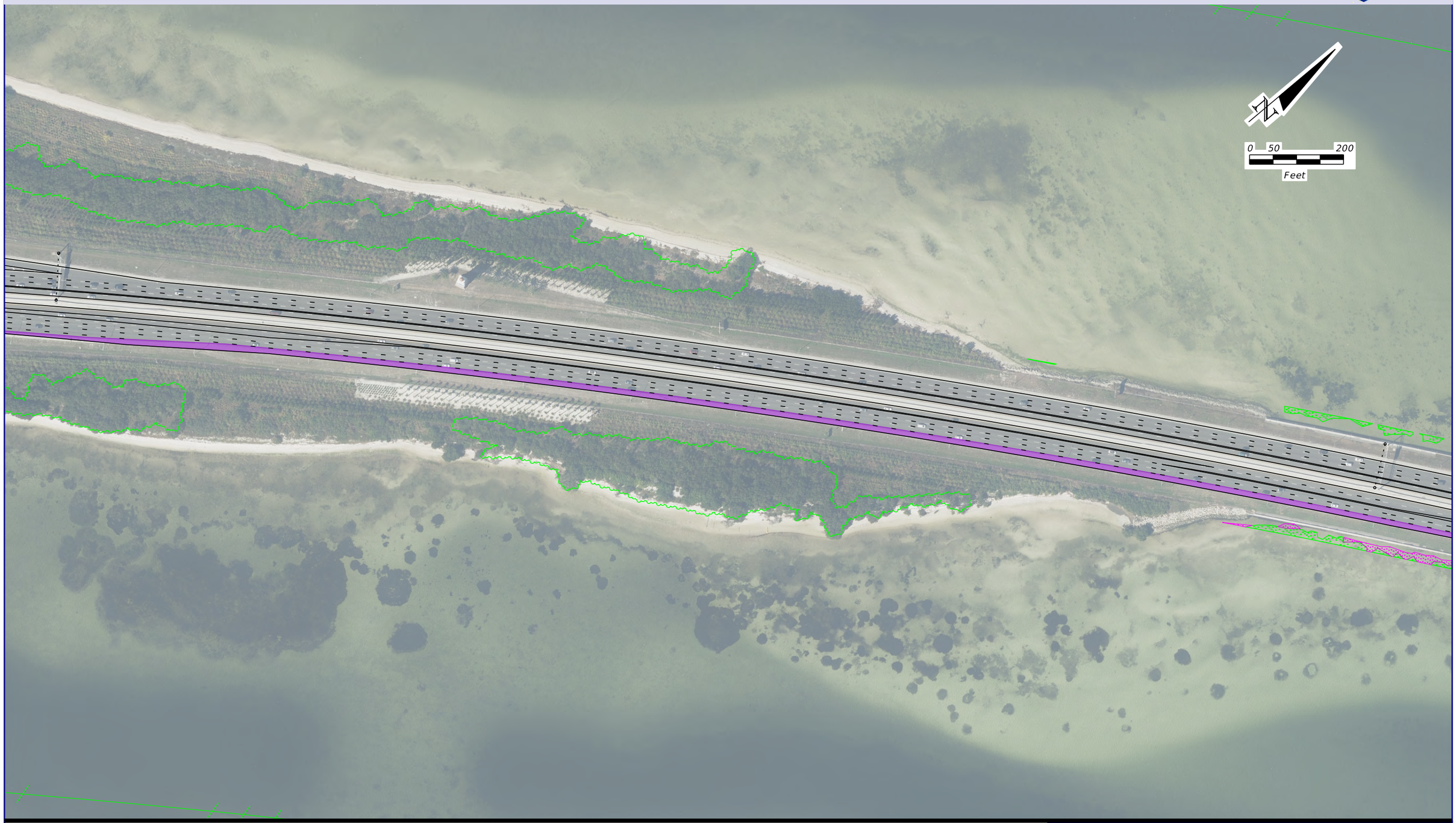
CONCEPT PLANS
EXPRESS STARTER PLAN

SHEET NO. 41

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- STARTER WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- RIGHT OF WAY
- WETLANDS
- SURFACE WATER
- MANGROVES
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA
- NOISE WALL

Aerial Photos Dec. '13 - Feb. '14

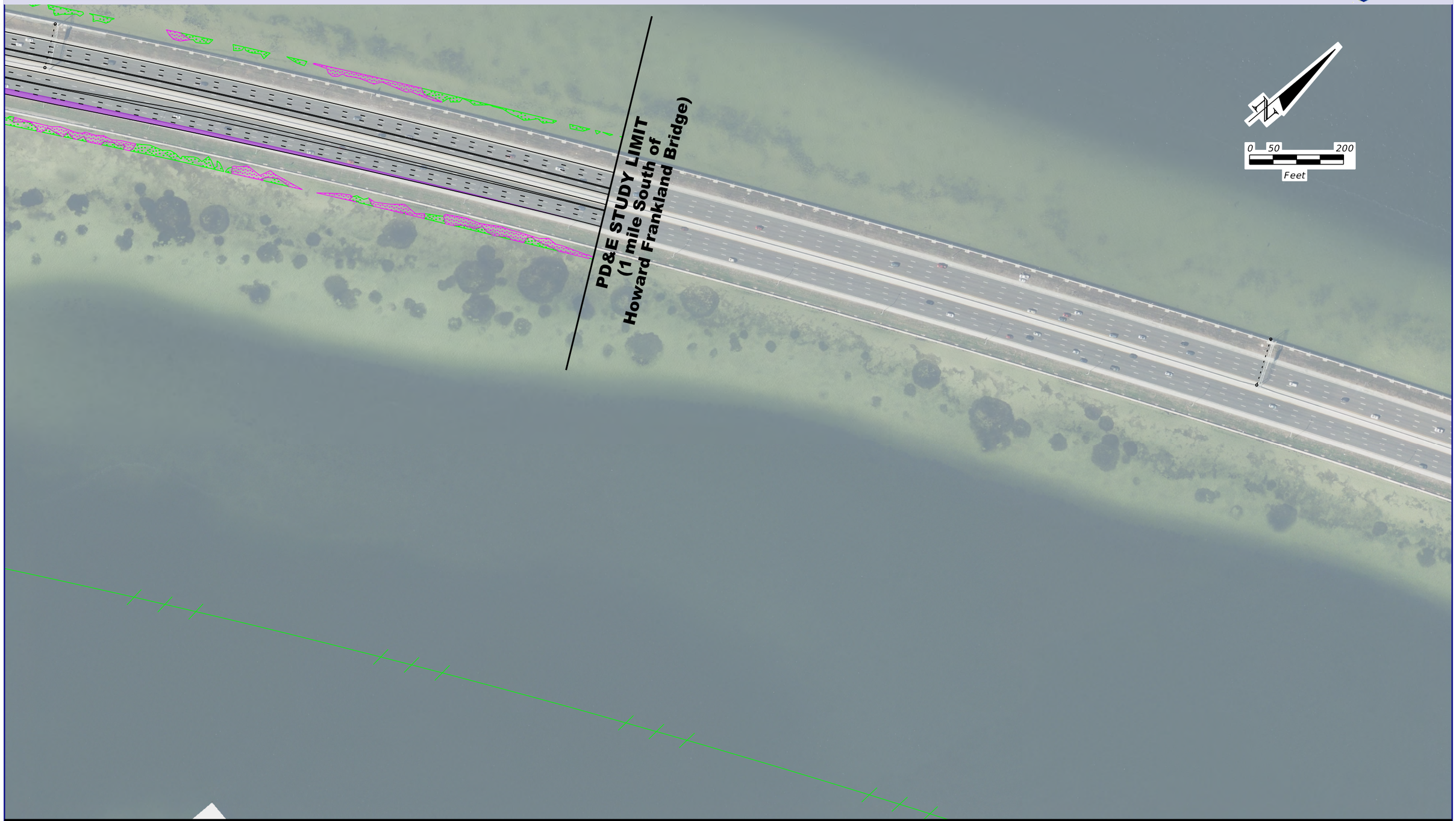
CONCEPT PLANS
EXPRESS STARTER PLAN

SHEET NO. 42

I-275 (SR 93) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

TAMPA BAY EXPRESS

INTERSTATE 275



LEGEND:

- STARTER WIDENING
- PAVEMENT REMOVAL
- BARRIER WALL
- BRIDGE WIDENING
- BRIDGES
- RIGHT OF WAY
- WETLANDS
- SURFACE WATER
- MANGROVES
- FLOOD PLAINS
- CONTINUOUS SEA GRASS
- DISCONTINUOUS SEA GRASS
- OVERHEAD SIGN STRUCTURE
- CONTAMINATION
- ITS CAMERA
- NOISE WALL

Aerial Photos Dec. '13 - Feb. '14

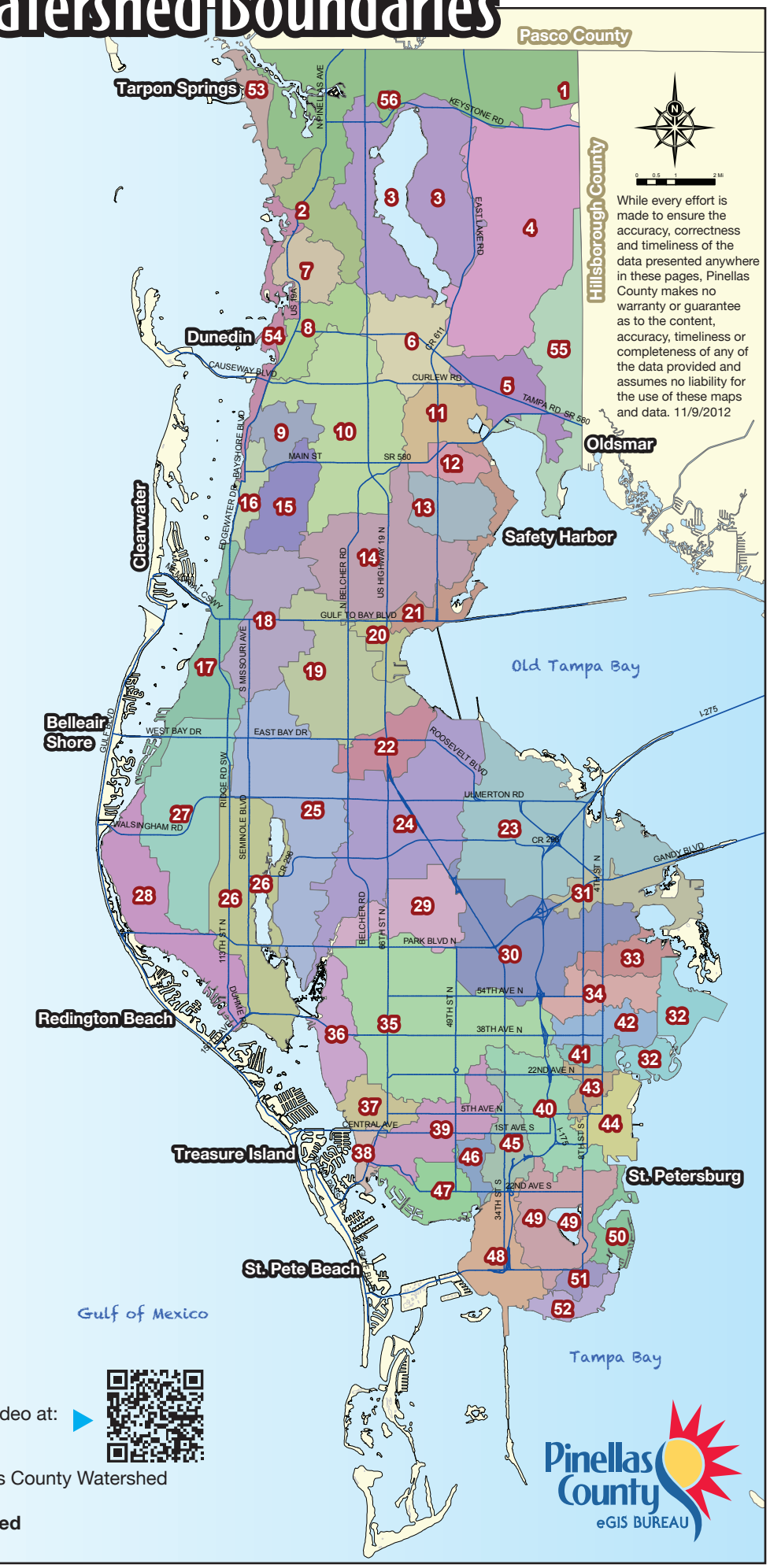
CONCEPT PLANS
EXPRESS STARTER PLAN

SHEET NO. 43

Appendix B.
Watershed Locations and Correspondence

Pinellas County Watershed Boundaries

1) Anclote River
2) Klosterman Bayou
3) Lake Tarpon
3) Lake Tarpon Basin
4) Brooker Creek
5) Oldsmar
6) South Creek
7) Sutherland Bayou
8) Smith Bayou
9) Cedar Creek
10) Curlew Creek
11) Possum Branch
12) Bishop Creek
13) Mullet Creek
14) Alligator Creek
15) Spring Branch
16) Coastal Zone 4
17) Coastal Zone 1
18) Stevensons Creek
19) Allen's Creek
20) Coastal Zone 2
21) Coastal Zone 3
22) Long Branch
23) Roosevelt
24) Cross Bayou
25) Starkey Road
26) Lake Seminole Basin
26) Lake Seminole
27) McKay Creek
28) Coastal Zone 5
29) Pinellas Park Ditch #1
30) Sawgrass Lake
31) Tinney Creek
32) NE St. Petersburg
33) 70th Ave North Canal
34) 54th Ave East Canal
35) Joe's Creek
36) Long Bayou
37) Pasadena Lake
38) SW St. Petersburg
39) Bear Creek
40) Booker Creek
41) North Coffee Pot Bayou
42) 45th Ave North East Canal
43) Coffee Pot Bayou
44) Albert Whitted
45) 34th Street
46) Clam Bayou
47) Gulfport
48) Frenchman's Creek
49) Lake Maggiore
49) Lake Maggiore / Salt Creek
50) Big Bayou
51) Little Bayou Creek
52) Pinellas Point
53) St. Joeseph Sound
54) Clearwater Harbor North
55) Hillsborough County
56) Salt Lake



For more information about watersheds view this video at:
http://youtu.be/dUIAANVBYHM

For more information about Pinellas County Watershed Management visit our website at:
www.pinellascounty.org/watershed

Pinellas County eGIS BUREAU

Ellison, Tracy

From: Miller, Jack
Sent: Thursday, August 07, 2014 1:58 PM
To: Matthew Kuecker
Cc: Ellison, Tracy
Subject: RE: I-275 History of Flooding in Pinellas (Information Request)

We will include this information in the report, Thank You!

From: Matthew Kuecker [mailto:mkuecker@ica-onramp.com]
Sent: Wednesday, August 06, 2014 9:02 AM
To: Miller, Jack
Cc: Ellison, Tracy
Subject: RE: I-275 History of Flooding in Pinellas (Information Request)

Jack,

Thank you for reaching out to ICA to help provide feedback for the ongoing study. In researching with my managers and various contractors, we have come up with several examples of flooding issues to help with your study:

- **I-275 NB approximately MM-26.2.** Drainage canal that connects to Riviera Bay. ICA received complains in the past about street flooding from citizens adjacent to the interstate. Rain water discharges into an FDOT ditch and the ditch runs parallel to the roadway on I-275 (from just south MM-25.9 to 77nd Ave N.) We herbicided and dug out the ditch in 2013 to improved drainage. When the tide is rising and a heavy rain occurs at the same time the water from the neighborhood does not drain quick enough and it pools on the road until the tide recedes or the rain event slows.
- **I-275 SB off ramp to 54th Ave S (exit 17).** Minor pooling occurs at the approach to the traffic signal (in between the bridge structures). Flooding occurs during heavy storms. We have the drains on a routine inspection schedule as we know the area to be flood prone. We keep the drains clear of debris and blockage, but pooling/flooding still seems to occur.
- **I-275 SB Residential Construction (NW Interchange of Roosevelt & I-275).** Grade of adjacent property was raised to accommodate new construction in 2012. Flooding has not occurred, however the ditch on I-275 SB filling with noticeably more water during heavy rain events. Pooling of water on the roadway could occur during the right conditions.

Please let me know if we can help in any other capacity. If any additional locations are identified I will forward them for your review.

Regards,

Matt Kuecker
Project Manager

Infrastructure Corporation of America
10626 East US HW 92
Tampa, FL 33610
T 813-635-9696 | **F** 813-635-9706 | **M** 407-341-5407
mkuecker@ica-onramp.com | www.ica-onramp.com

From: Miller, Jack [mailto:jmiller@hwlochner.com]
Sent: Tuesday, August 05, 2014 10:04 AM
To: Matthew Kuecker
Cc: Ellison, Tracy
Subject: FW: I-275 History of Flooding in Pinellas (Information Request)

From: Miller, Jack
Sent: Tuesday, July 29, 2014 3:39 PM
To: 'MKuecker@ica-onramp.com'
Cc: Ellison, Tracy; 'john.freeman@dot.state.fl.us'
Subject: I-275 History of Flooding in Pinellas (Information Request)

Hello Mr. Kuecker,

Abu Nazmurreza, the FDOT Assistant Maintenance Engineer for Pinellas County, gave me your contact information. He said you have the maintenance contract for I-275.

The FDOT is conducting a Project Development and Environmental (PD&E) study to evaluate the widening of I-275 in Pinellas County from 54th Avenue South to just north of 4th Street (basically from the Sunshine Skyway Bridge to the Howard Franklin Bridge).

As part of this process, HW Lochner is preparing a Location Hydraulics Report, which includes information on existing and historical flooding.

Could you please share any records you have of flooding issues along I-275 in Pinellas?

Also, if you have any maintenance concerns or know of other hydraulic issues along the corridor, we'd be happy to hear about them.

Thank you,

Jack Miller, PE
Drainage Designer
LOCHNER
4350 W. Cypress Street, Suite 800
Tampa, FL 33607
P: 813.357.3750
jmiller@hwlochner.com
www.hwlochner.com

THIS FORM IS INTENDED TO FACILITATE AND GUIDE THE DIALOGUE DURING A PRE-APPLICATION MEETING BY PROVIDING A PARTIAL "PROMPT LIST" OF DISCUSSION SUBJECTS. IT IS NOT A LIST OF REQUIREMENTS FOR SUBMITTAL BY THE APPLICANT.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
RESOURCE REGULATION DIVISION
PRE-APPLICATION MEETING NOTES

FILE NUMBER:

PA 401819

Date:	1/13/2015
Time:	10:00
Project Name:	FDOT I275 PD&E Skyway to Howard Franklin
Attendees:	Richard Alt, Jeff Glas; Jack Miller - H W Lochner jmiller@hwlochner.com , Tracy Ellison – HW Lochner

County:	Pinellas	**Sec/Twp/Rge:**	various
Total Land Acreage:	1,000 +/-	**Project Acreage:**	1,000 +/- acres

Prior On-Site/Off-Site Permit Activity:

- Existing 4,6, and 8 lane interstate highway

Project Overview:

- Lane continuity, manage lanes to reduce weaving
- Portions of the southern project may be exempt, northern areas to be looked at on a case by case basis.

Environmental Discussion: (Wetlands On-Site, Wetlands on Adjacent Properties, Delineation, T&E species, Easements, Drawdown Issues, Setbacks, Justification, Elimination/Reduction, Permanent/Temporary Impacts, Secondary and Cumulative Impacts, Mitigation Options, SHWL, Upland Habitats, Site Visit, etc.)

- Provide the limits of jurisdictional wetlands.
- Provide appropriate mitigation using UMAM for impacts, if applicable.
- Demonstrate elimination and reduction of wetland impacts.
- Maintain minimum 15 foot, average 25 foot wetland conservation area setback or address secondary impacts.
- If the project is located in a county which is listed as a coastal county under the Coastal Zone Management Act (CZM) and the project has wetland impacts, it will require a noticing period once the permit application is deemed complete. Wetland and/or surface waters impacts less than 1 acre in size will require a 10 day noticing period, prior to the issuance of the permit. Wetland and/or surface water impacts greater than 1 acre in size will require a 30 day noticing period, prior to the issuance of the permit. Permits could be issued as early as the 11th or 31st day, but staffs' schedule and workload will determine the actual issuance date.

Site Information Discussion: (SHW Levels, Floodplain, Tailwater Conditions, Adjacent Off-Site Contributing Sources, Receiving Waterbody, etc.)

- Existing roadway
- WBIDs need to be independently verified by the consultant - WBID – various
- Discharging to Tampa Bay which is impaired for nutrients.

Water Quantity Discussions: (Basin Description, Storm Event, Pre/Post Volume, Pre/Post Discharge, etc.)

- Demonstrate that discharges from proposed project area will not cause an adverse impact for a 25-year, 24-hour storm event.
- Demonstrate that site will not impede the conveyance of contributing off-site flows.
- Demonstrate that the project will not increase flood stages up- or down-stream of the project area(s).
- Provide equivalent compensating storage for all 100-year, 24-hour riverine floodplain impacts if applicable.

Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)

- Provide water quality treatment for entire required project area.
- In addition, if the project discharges to an impaired water body, must provide a net environmental improvement.
- Applicant must demonstrate a net improvement for the parameters of concern by performing a pre/post pollutant loading analysis based on existing land use and the proposed land use.
- Also replace treatment function of existing ditches to be filled.
- Will acknowledge compensatory treatment to offset pollutant loads associated with portions of the project area that cannot be physically treated.

Sovereign Lands Discussion: (Determining Location, Correct Form of Authorization, Content of Application, Assessment of Fees, Coordination with FDEP)

- Proprietary approvals will be necessary for work waterward of MHW.

Operation and Maintenance/Legal Information: (Ownership or Perpetual Control, O&M Entity, O&M Instructions, Homeowner Association Documents, Coastal Zone requirements, etc.)

- The permit must be issued to the FDOT.
- Provide proof of ownership in the form of a deed or contract for sale.
- Provide appropriate O&M instructions.
- Provide detailed construction surface water management plan.

Application Type and Fee Required:

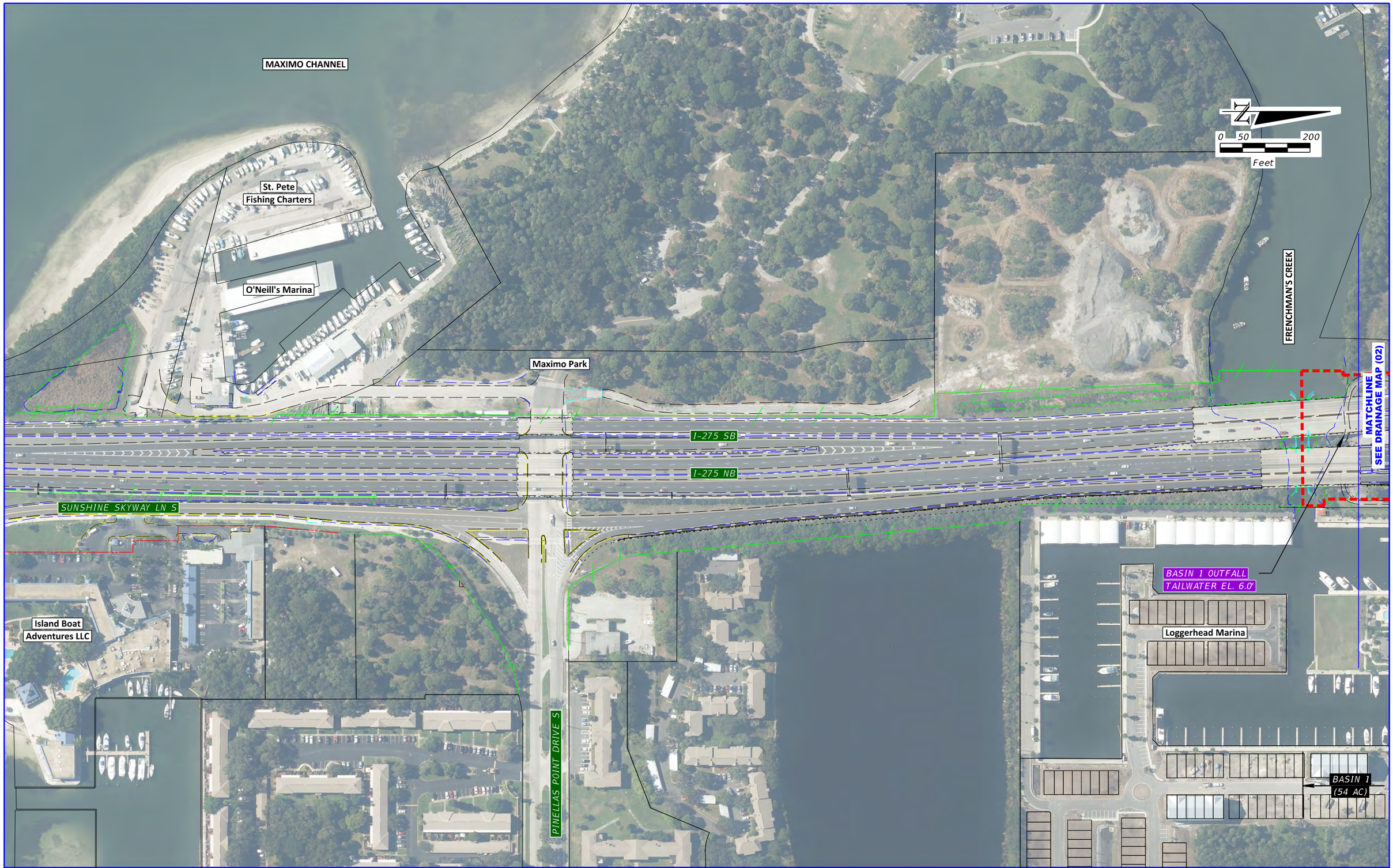
- SWERP – Sections A, C, and E of the ERP Application.
- $ - fee to be determined at submittal or appropriate pre-application meeting

Other: (Future Pre-Application Meetings, Fast Track, Submittal Date, Construction Start Date, Required District Permits – WUP, WOD, Well Construction, etc.)

- In accordance with Rule 40D-1.603(2), F.A.C., no later than 30 days after submittal of an initial application of an Individual surface water management permit the applicant shall publish at the applicant's expense a notice of the District's receipt of the application in a newspaper having general circulation as defined in Chapter 50, F.S., in the county or counties in which the activity is proposed. Please provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP must be in accordance with the language provided in Rule 40D-1.603(11), F.A.C., and receipt of an affidavit establishing proof of this publication will be considered a completeness item of this ERP Application. Per Rule 40D-1.603(13), F.A.C., this must be received before the application will be considered complete and the 60-day timeframe for taking agency action on the application will commence.

40D-1.603(13) – “Applicants required to publish a notice of receipt of application must provide to the District a publisher’s affidavit establishing proof of publication pursuant to Sections 50.041and 50.051, F.S., before the application will be considered complete and the applicable timeframe for taking agency action on the application will commence.”

Appendix C.
Conceptual Drainage Maps



LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (01)

SHEET NO.

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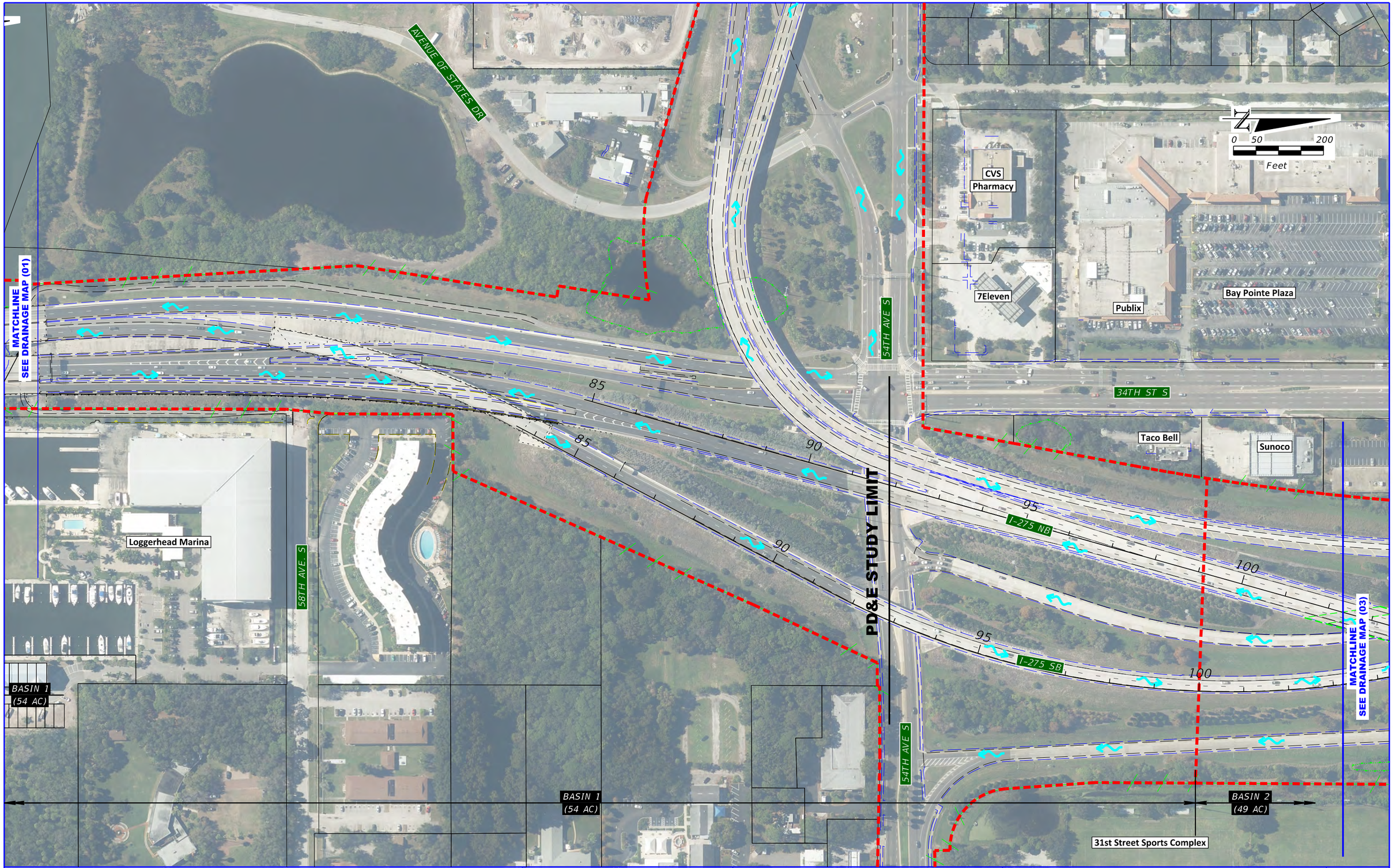

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (02)

SHEET NO.

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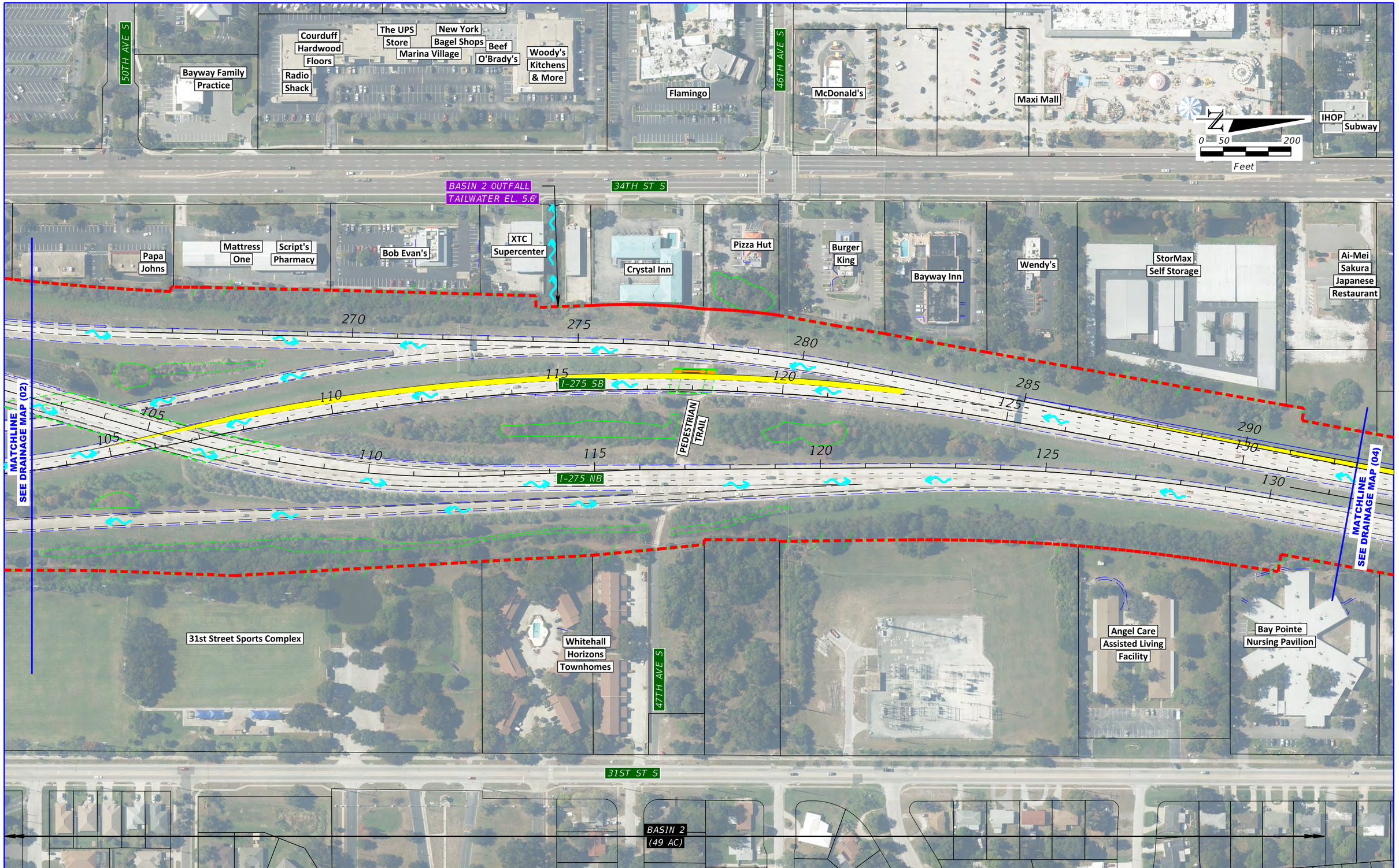

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (03)

SHEET NO.

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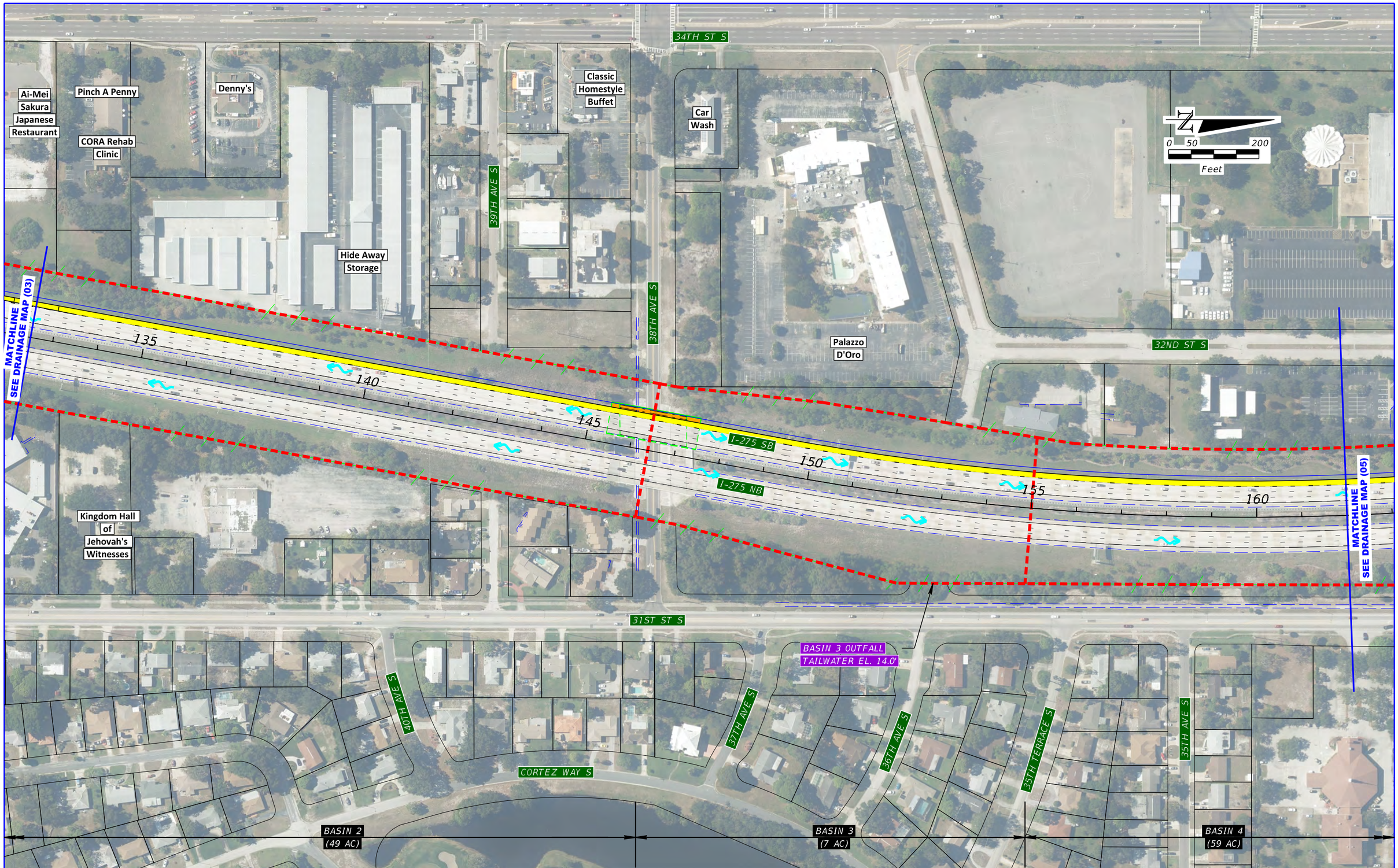

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (04)

SHEET NO.

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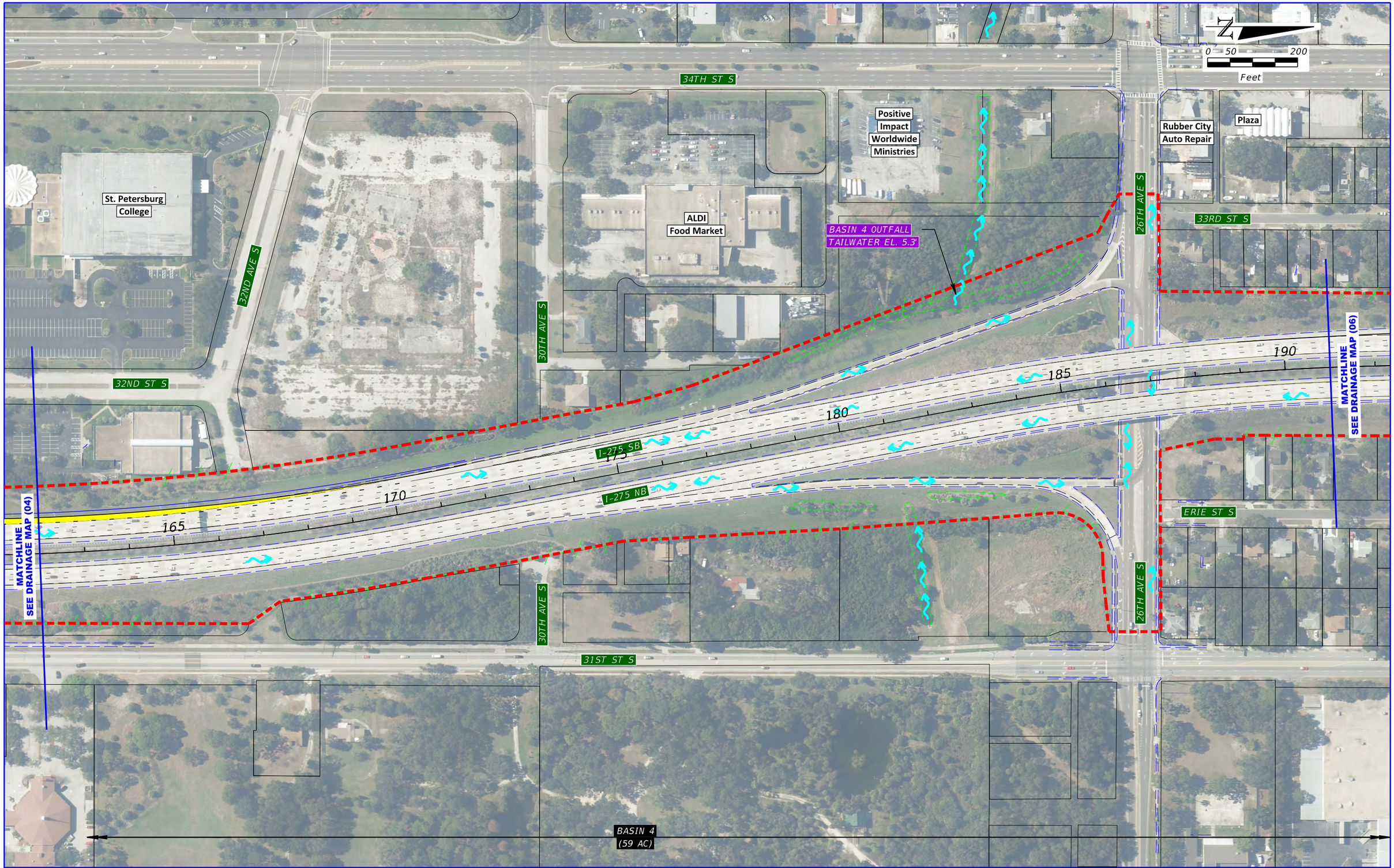

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- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (05)

SHEET NO.

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Lakeview Shopping Center
Citgo
Church's Chicken
Cajun Corner
Soul Food
First Class Auto
Salem's Gyros & Subs
0 50 200
Feet
200
34TH ST S
KFC
31st Street Neighborhood
Liberty Tax
Brake World
Twin Brooks Commons
Alma Ingram
Classic Auto Care
Pet Pal Veterinary Clinic
Shell
Chevron
Elvis Towing & Trasport
Rental Hall
22ND AVE S
18TH AVE S
QUEENSBORO AVE S
17TH AVE S
33RD ST S
190
195
200
I-275 SB
205
210
215
295
I-275 NB
195
SEE DRAINAGE MAP (05) MATCHLINE
SEE DRAINAGE MAP (07) MATCHLINE
ERIE ST S
22ND AVE S
21ST AVE S
20TH AVE S
19TH AVE S
18TH AVE S
BASIN 5 OUTFALL
TAILWATER EL. 34.9'
31ST ST S
BASIN 4
(59 AC)
BASIN 5
(9 AC)

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (06)

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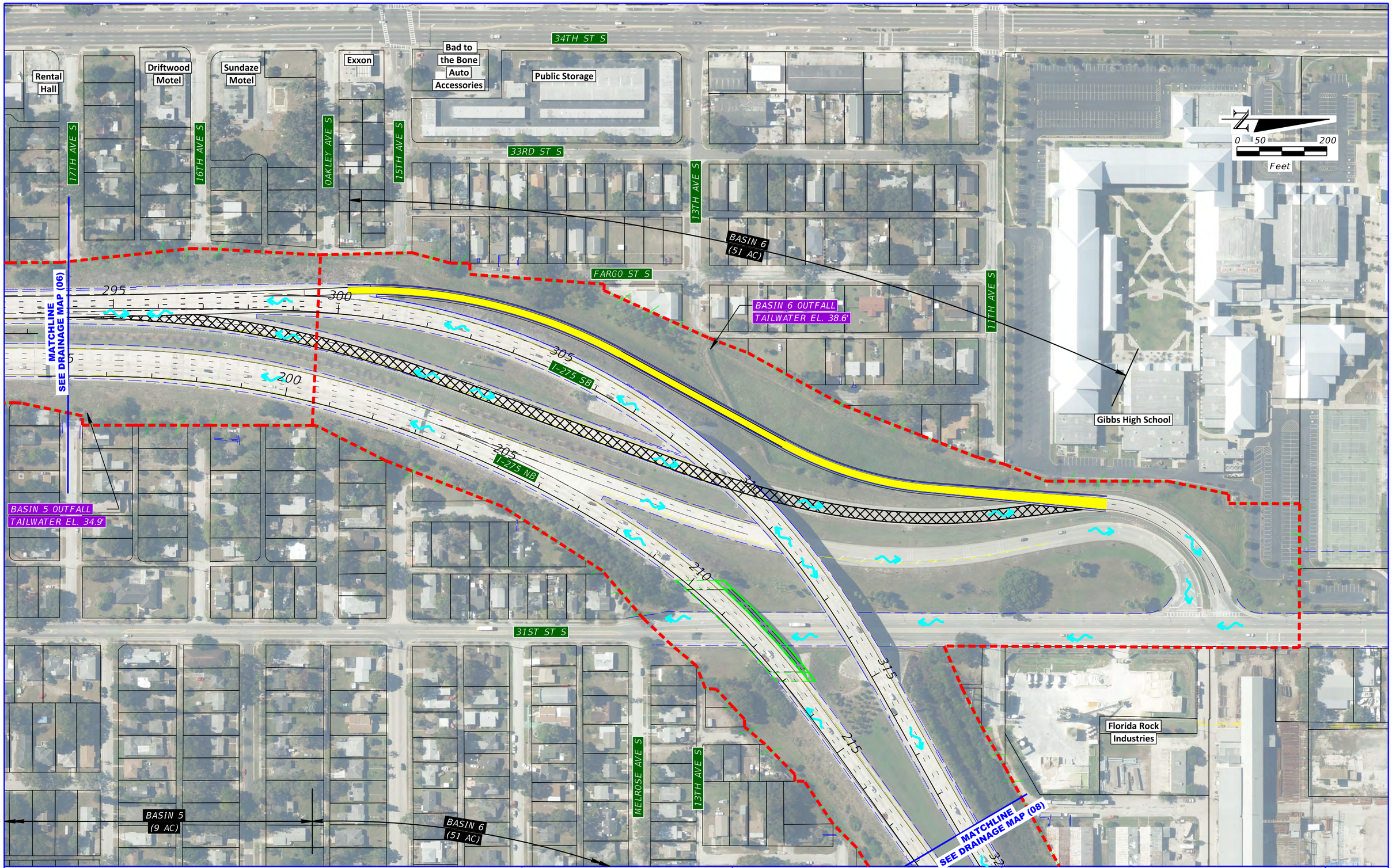

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- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (07)

SHEET NO.

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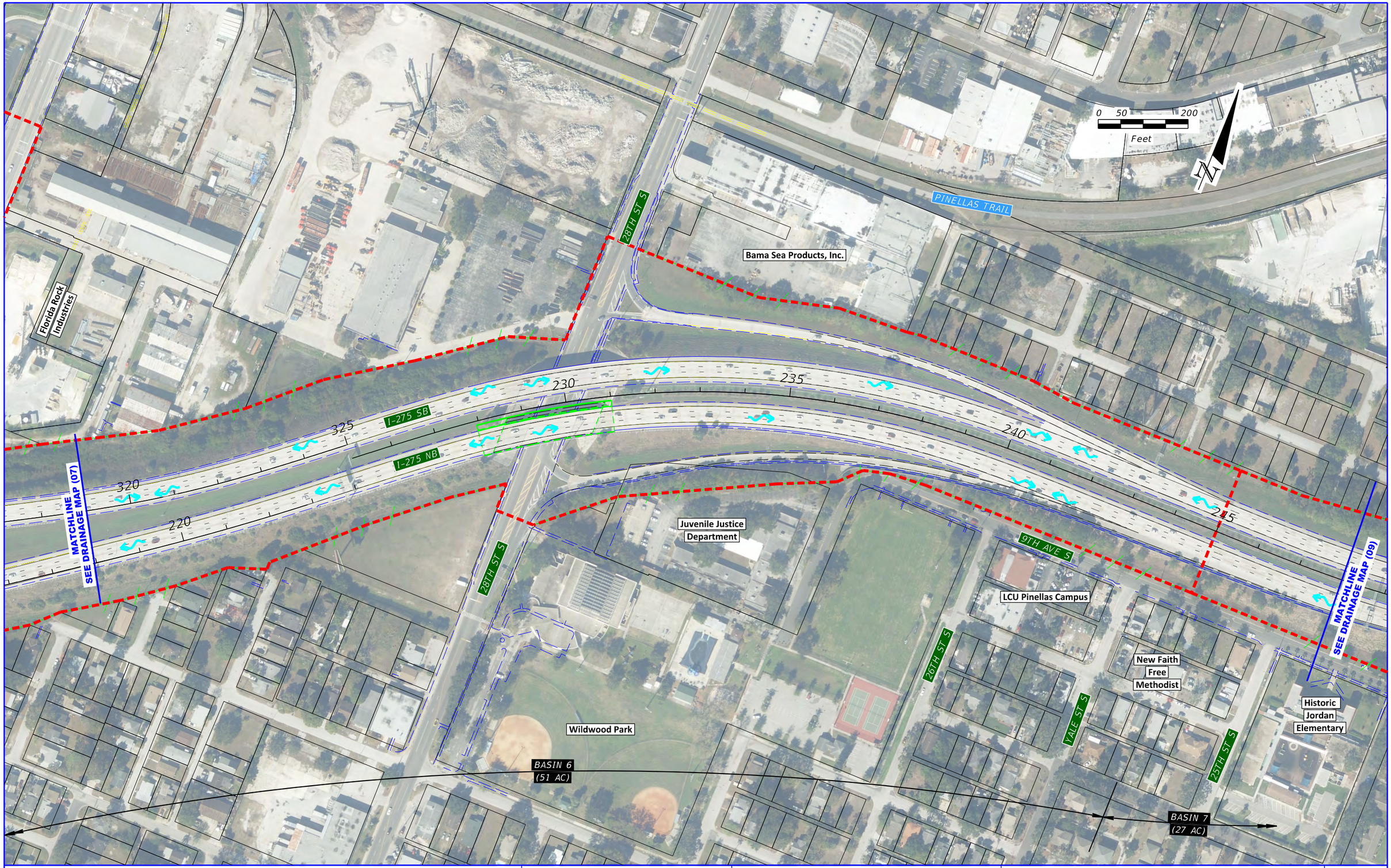

LEGEND:

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- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (08)

SHEET NO.

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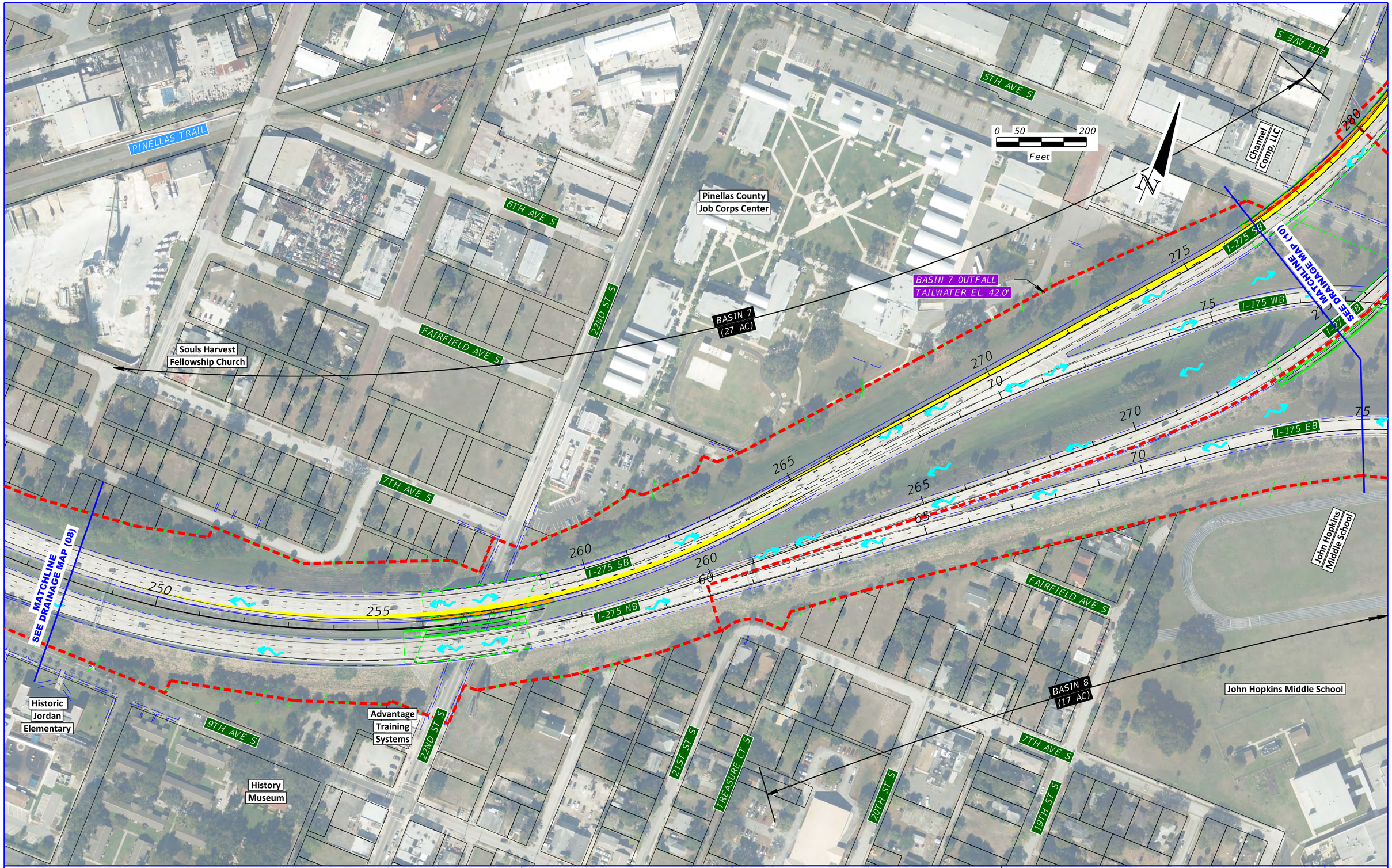

LEGEND:

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- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (09)

SHEET NO.

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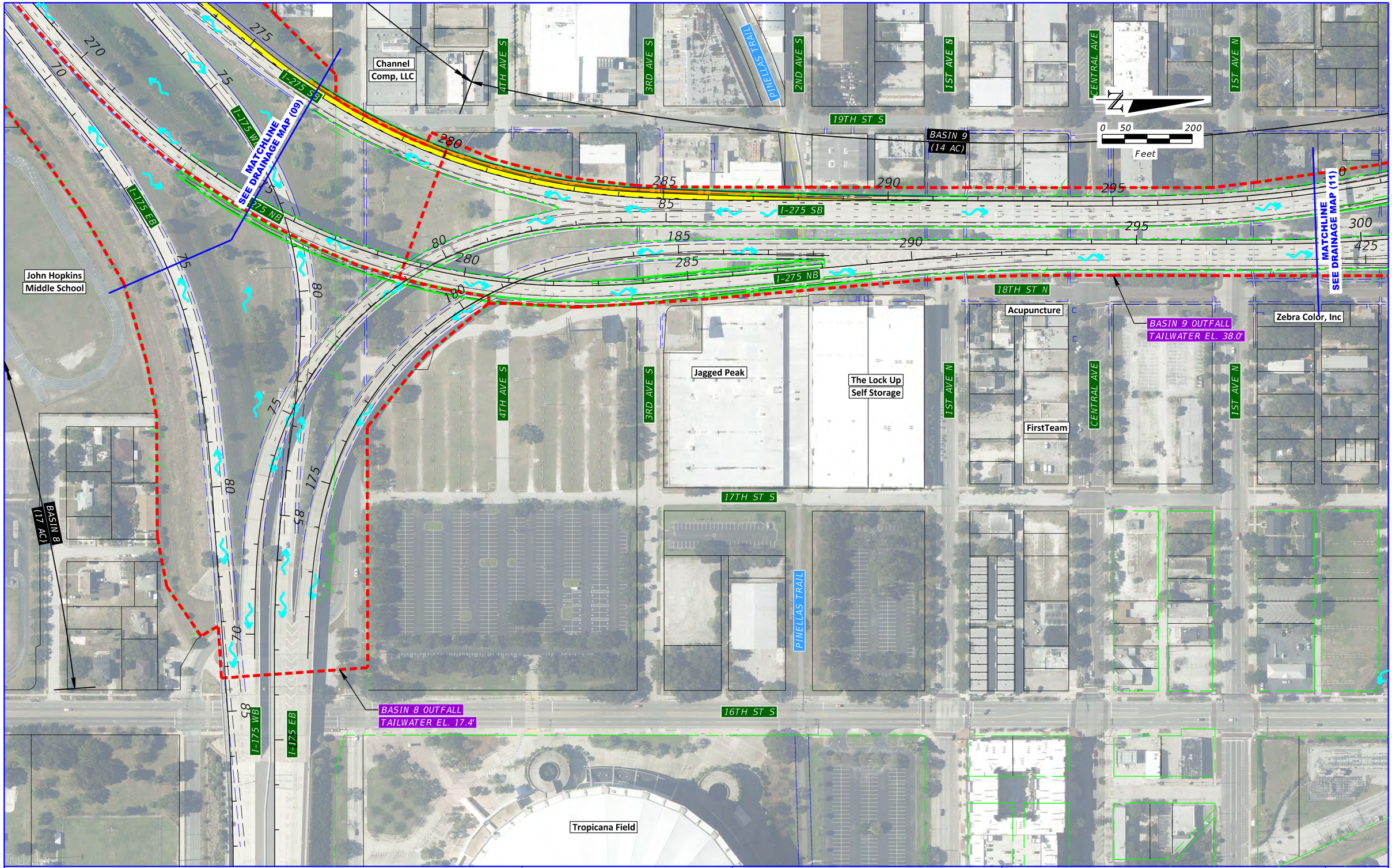

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (10)

SHEET NO.

0 50 200
Feet

20TH ST N
5TH AVE N
BURLINGTON AVE N
2ND AVE N
17TH ST S

BASIN 9 OUTFALL
TAILWATER EL. 38.0'

BASIN 9
(14 AC)

BASIN 10
(30 AC)

BASIN 11
(27 AC)

BASIN 11 OUTFALL
TAILWATER EL. 38.0'

BASIN 10 OUTFALL
TAILWATER EL. 38.0'

I-275 SB
I-275 NB
I-375 WB
I-375 EB

MATCHLINE
SEE DRAINAGE MAP (10)

MATCHLINE
SEE DRAINAGE MAP (12)

Turning Point

Zebra Color, Inc

Booker Creek

St. Petersburg
Water Resources

CSX RAILROAD
CSX RAILROAD

325 125 325 320 120 320 315 220 315 115 310 225 310 230 305 305 300 300 425 430 435 15 20 110 10 105

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (11)

SHEET NO.

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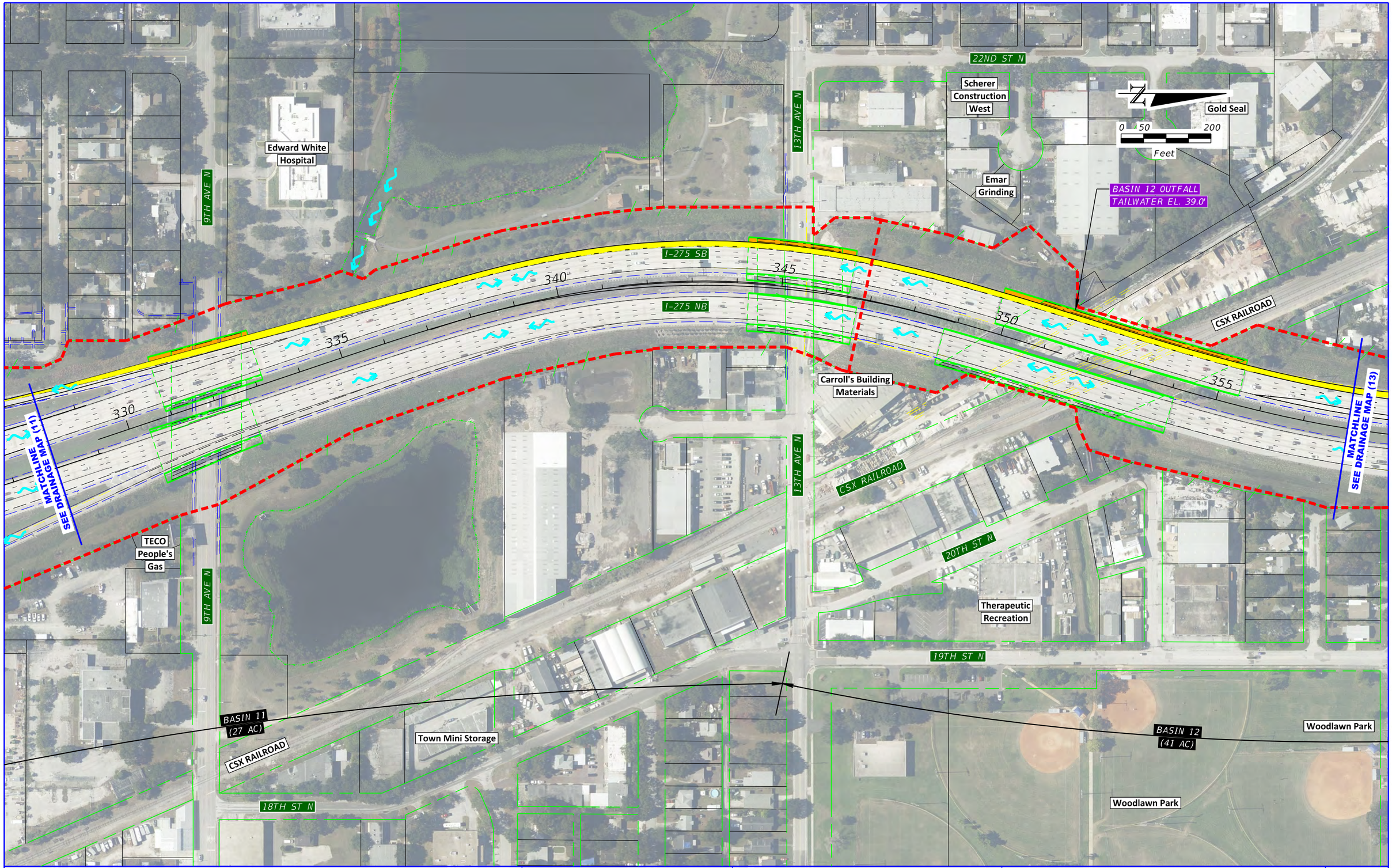

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (12)

SHEET NO.

jgarnica 10/21/2015 9:23:38 AM H:\PD&E\D7\I-275ManagedLanesPinellas\42450112201\drainage\DRMPRD12.DGN

Home Depot
CSX RAILROAD
22ND ST N
Tarheel Roofing
Norwood Secondary School
22ND AVE N
23RD AVE N
24TH AVE N
25TH AVE N
26TH AVE N
0 50 200
Feet
MATCHLINE SEE DRAINAGE MAP (12)
MATCHLINE SEE DRAINAGE MAP (14)
360
365
370
375
380
385
I-275 SB
I-275 NB
19TH ST N
BASIN 12 (41 AC)
Woodlawn Park
18TH AVE N
20TH AVE N
21ST AVE N

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (13)

SHEET NO.

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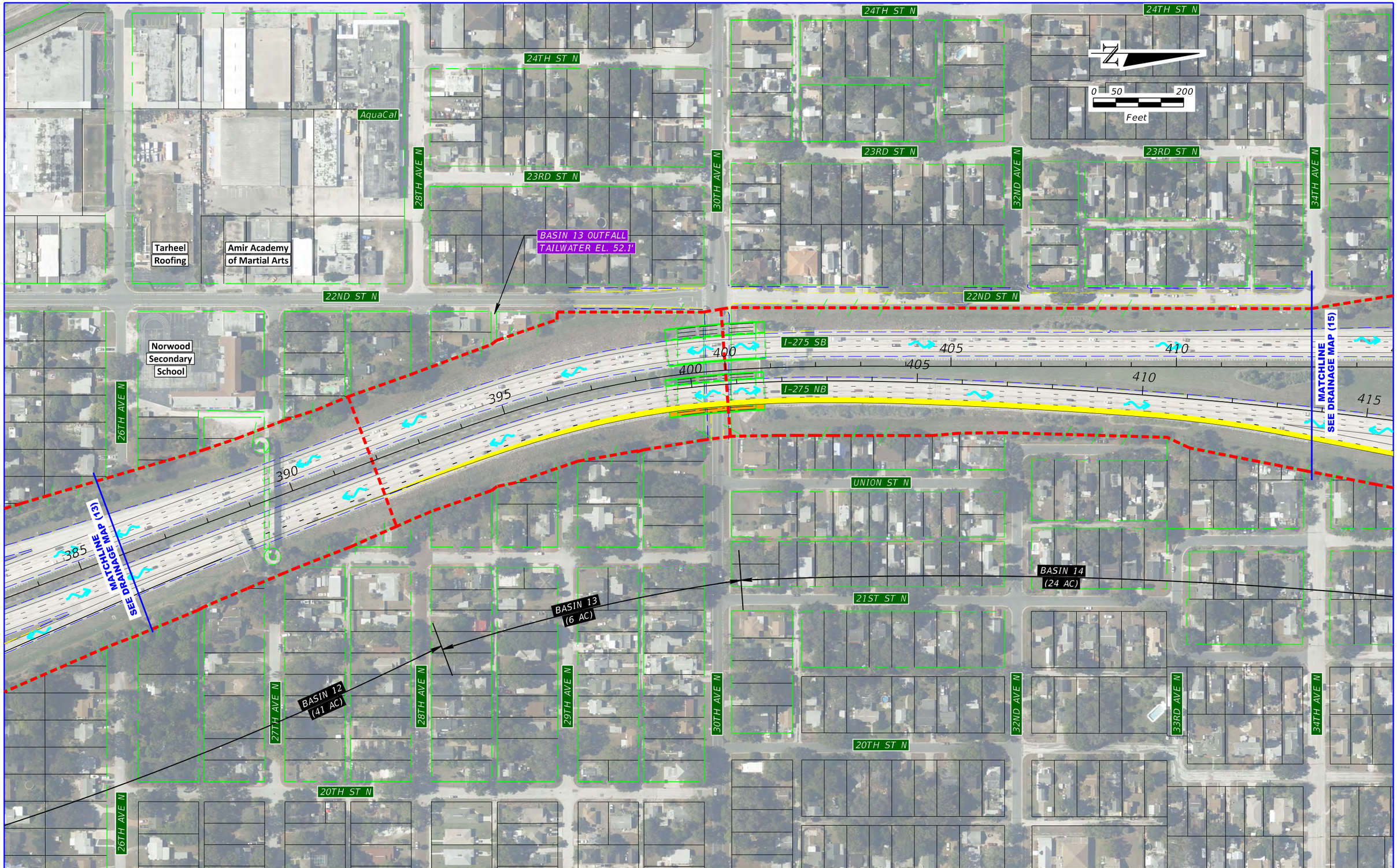

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (14)

SHEET NO.

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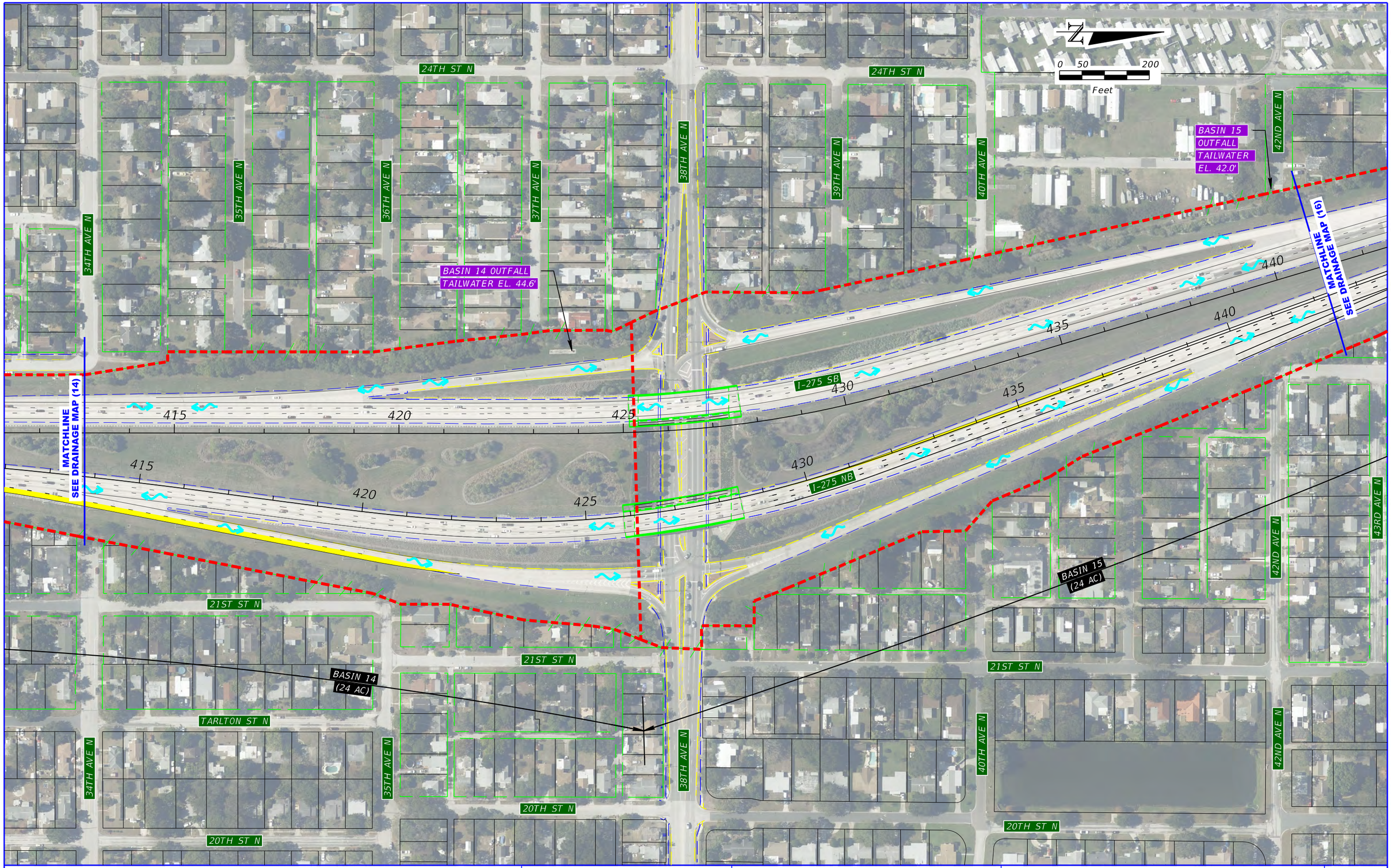

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (15)

SHEET NO.

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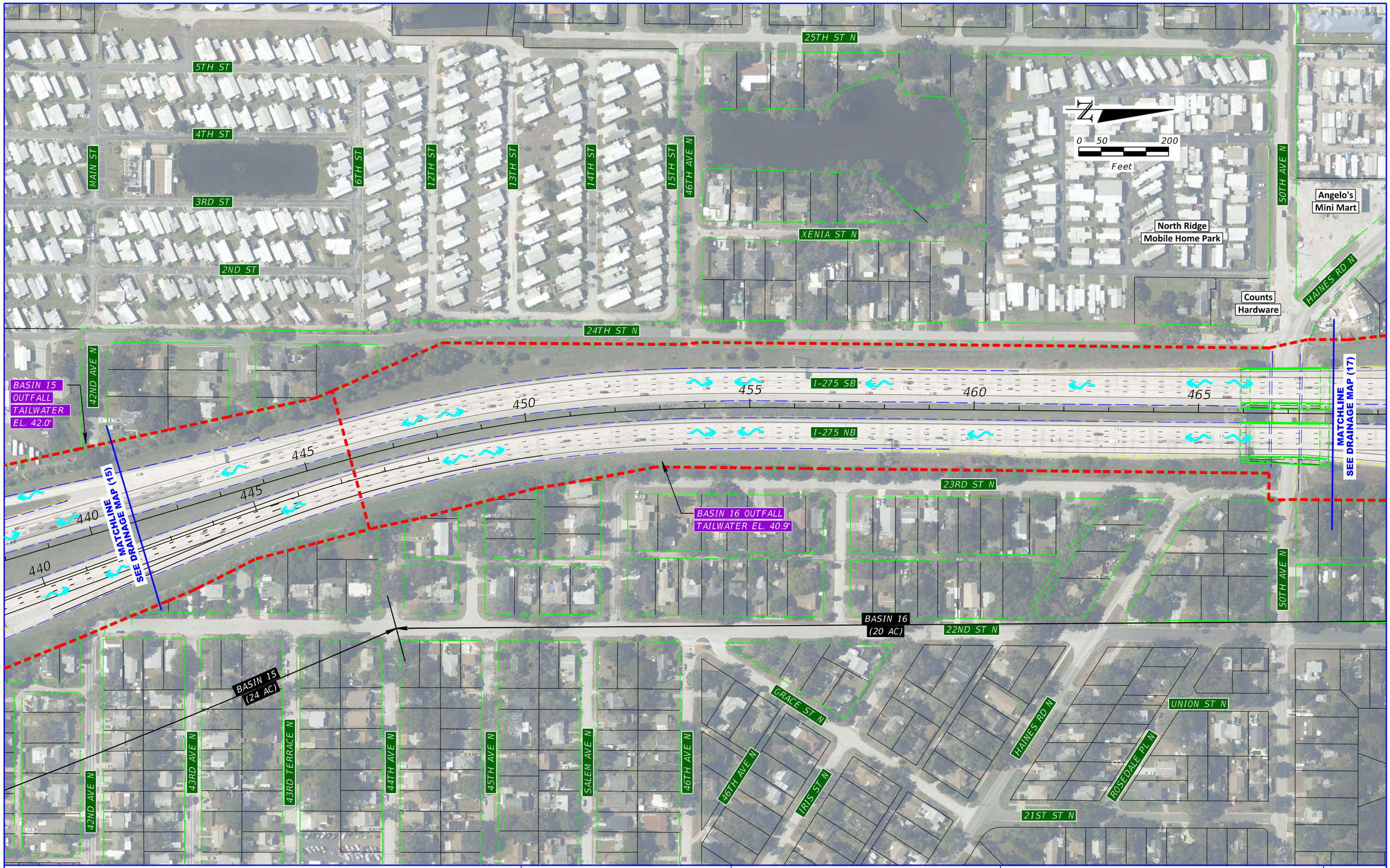

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (16)

SHEET NO.

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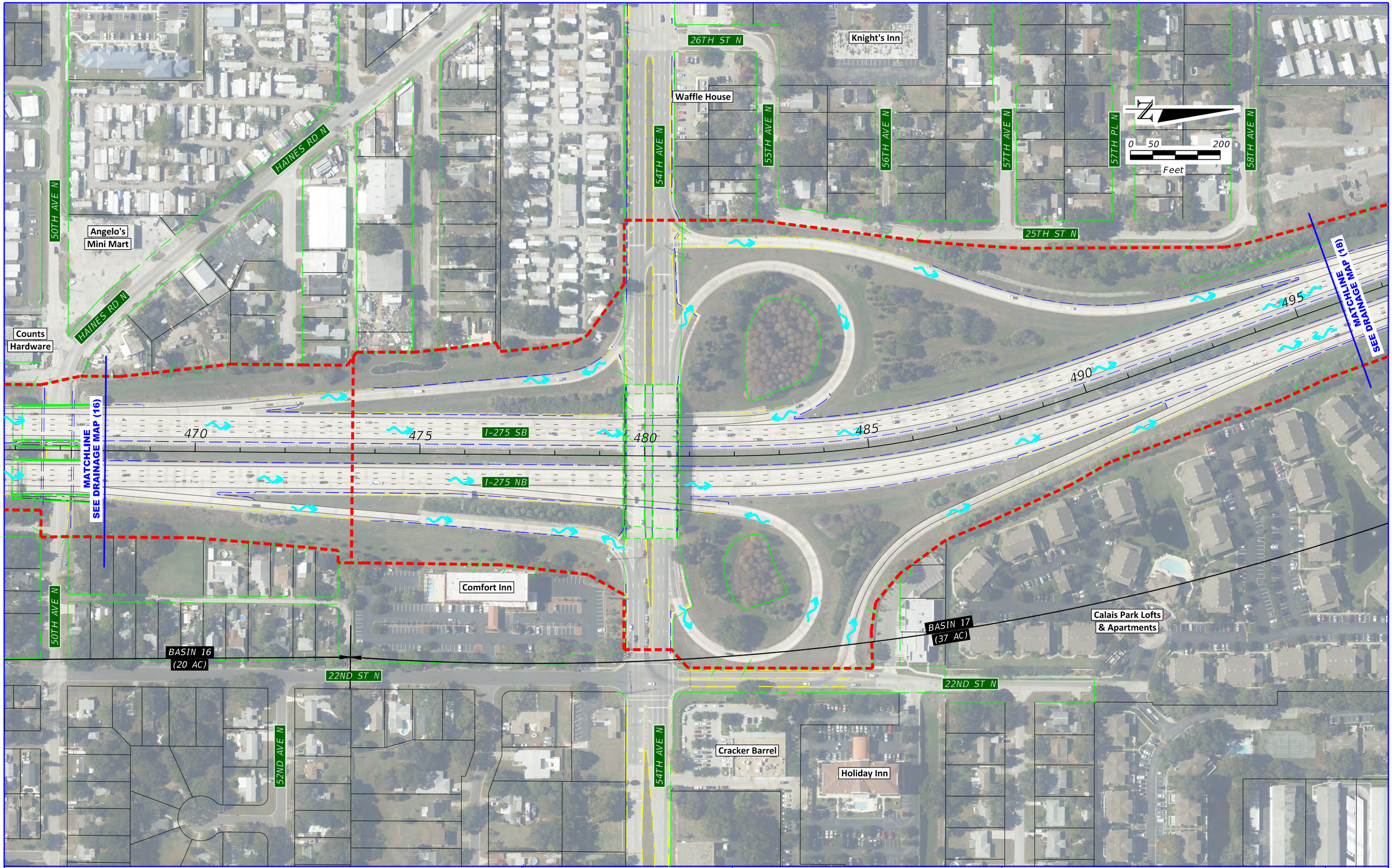

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (17)

SHEET NO.

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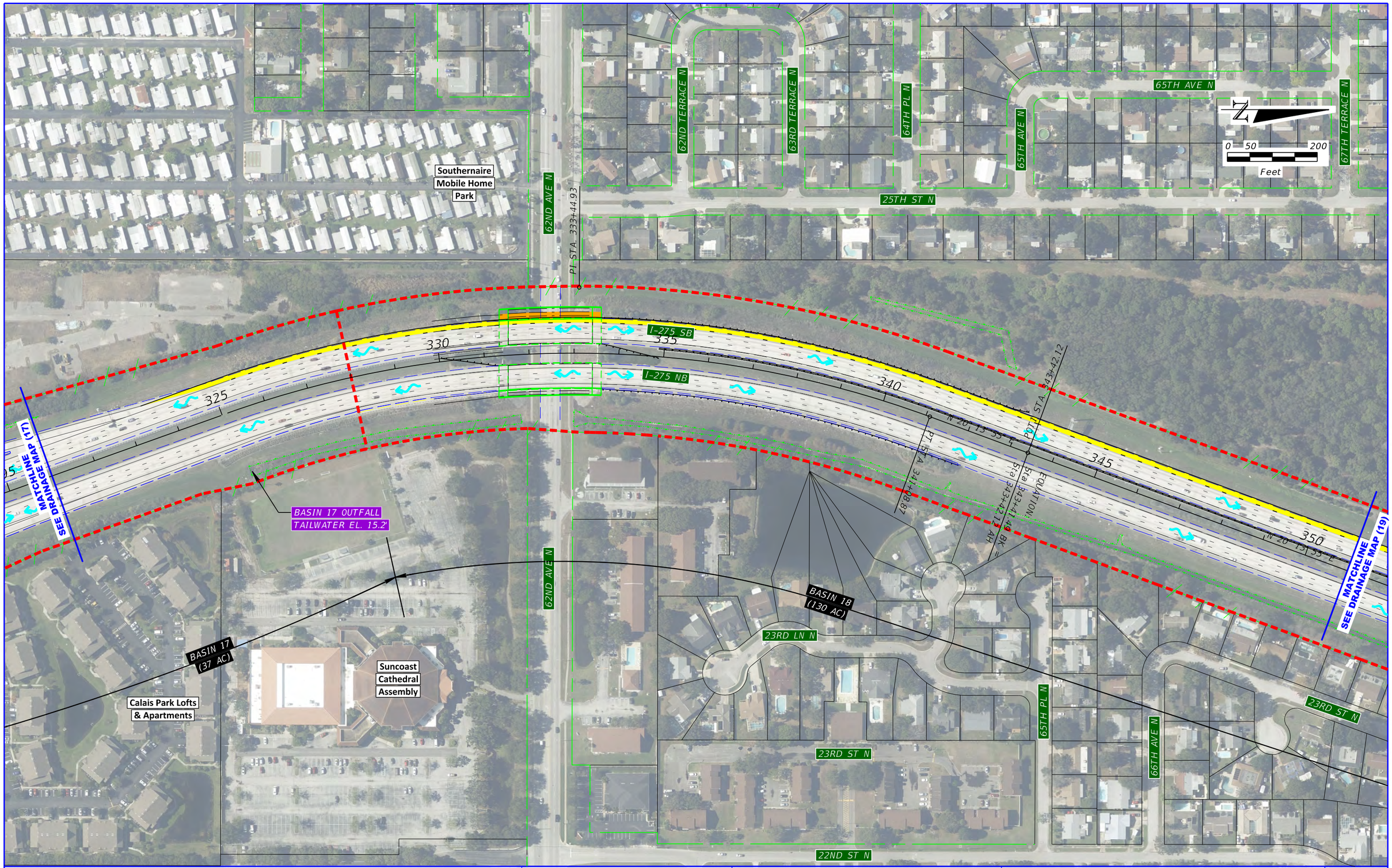

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (18)

SHEET NO.

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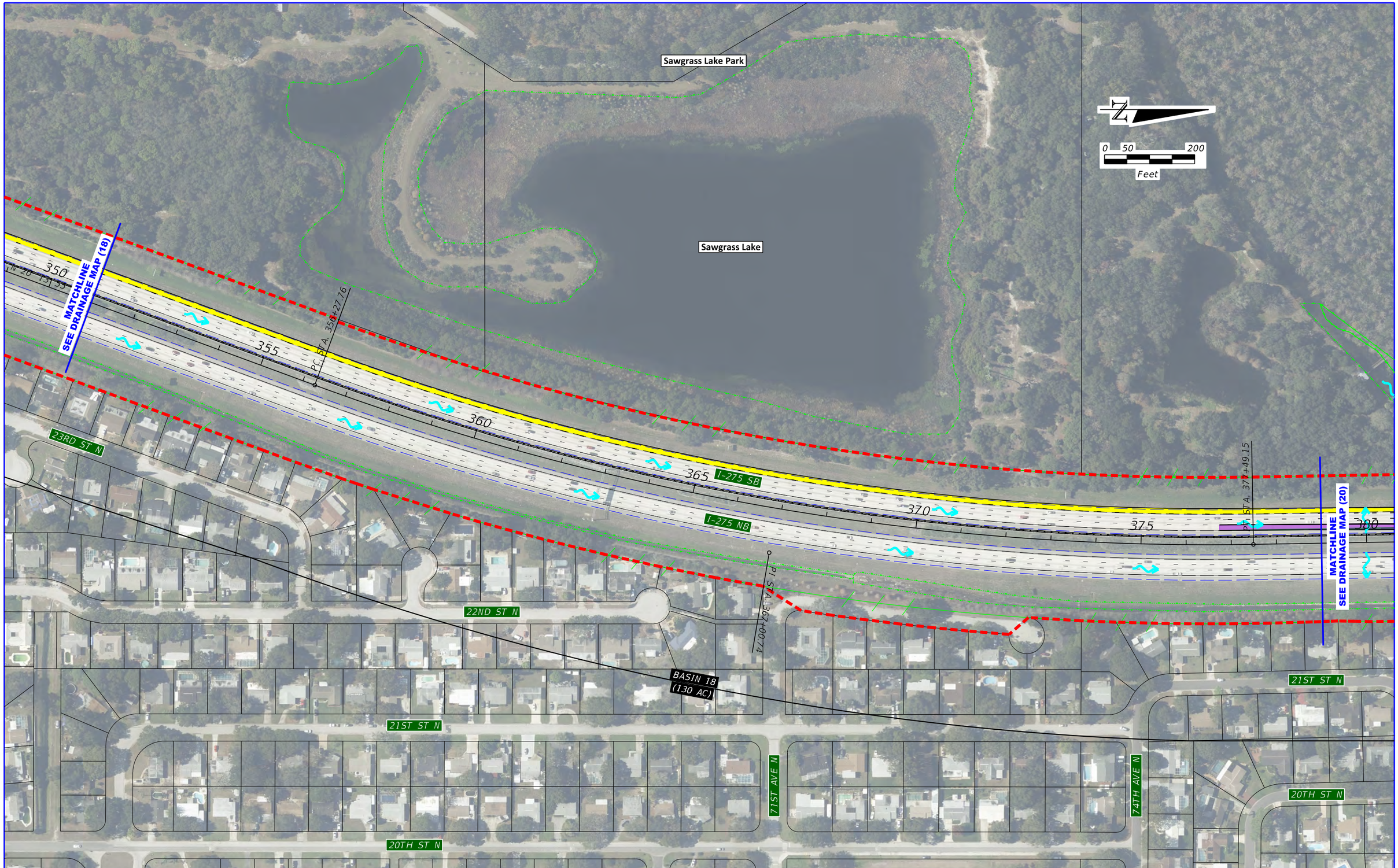

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (19)

SHEET NO.

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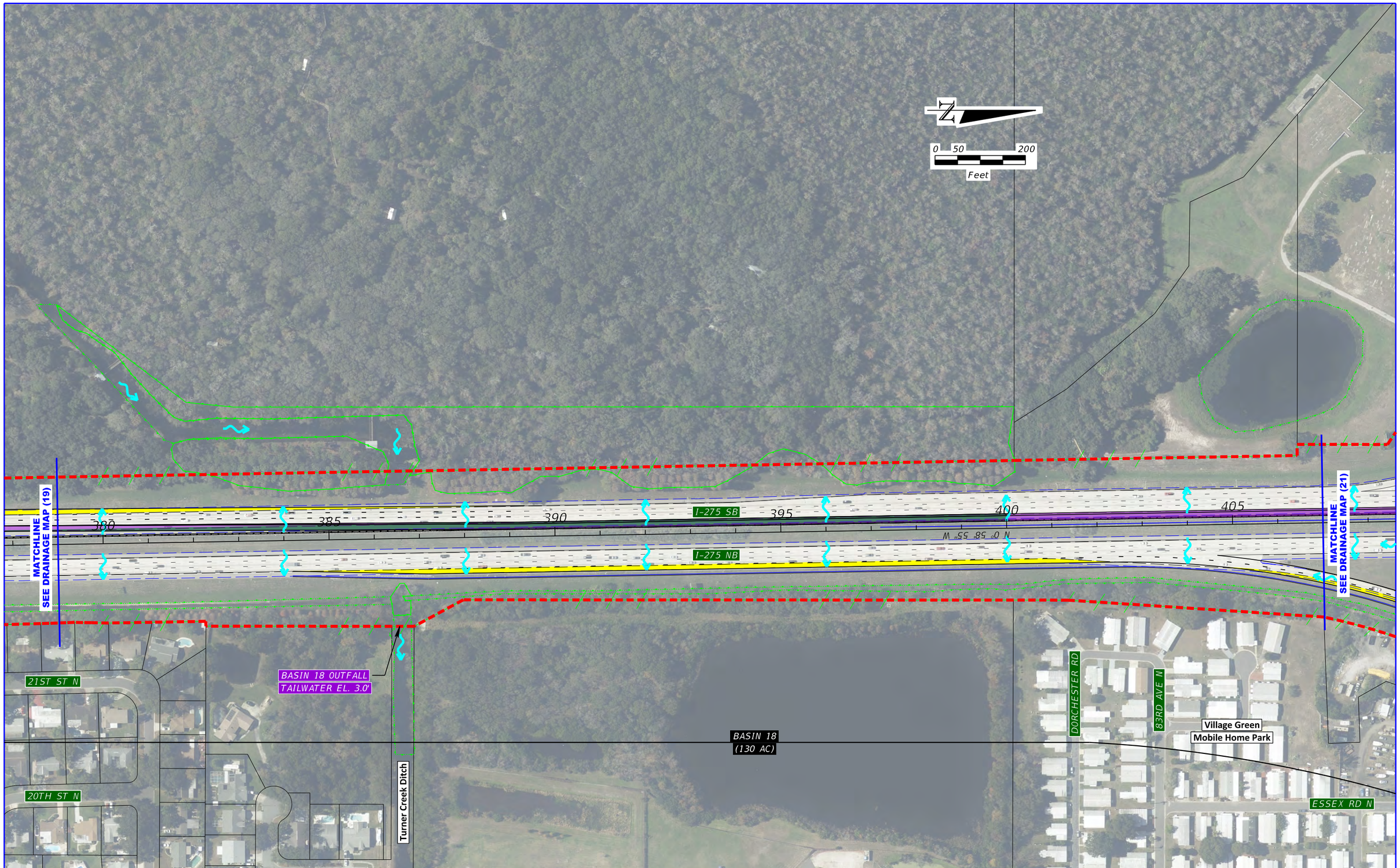


LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (20)

SHEET NO.

jgarnica 10/21/2015 9:26:49 AM H:\PD&E\D7\I-275ManagedLanesPinellas\424501122201\drainage\DRMPRD20.DGN

BASIN 19
(73 AC)

BASIN 19 OUTFALL
TAILWATER EL. 7.2'

N

0 50 200
Feet

GANDY BLVD

STA 421+16.95

I-275 SB

I-275 NB

410 415 420 425 430 435

SEE DRAINAGE MAP (20) MATCHLINE

SEE DRAINAGE MAP (22) MATCHLINE

ESSEX RD N

BASIN 18
(130 AC)

LEGEND:

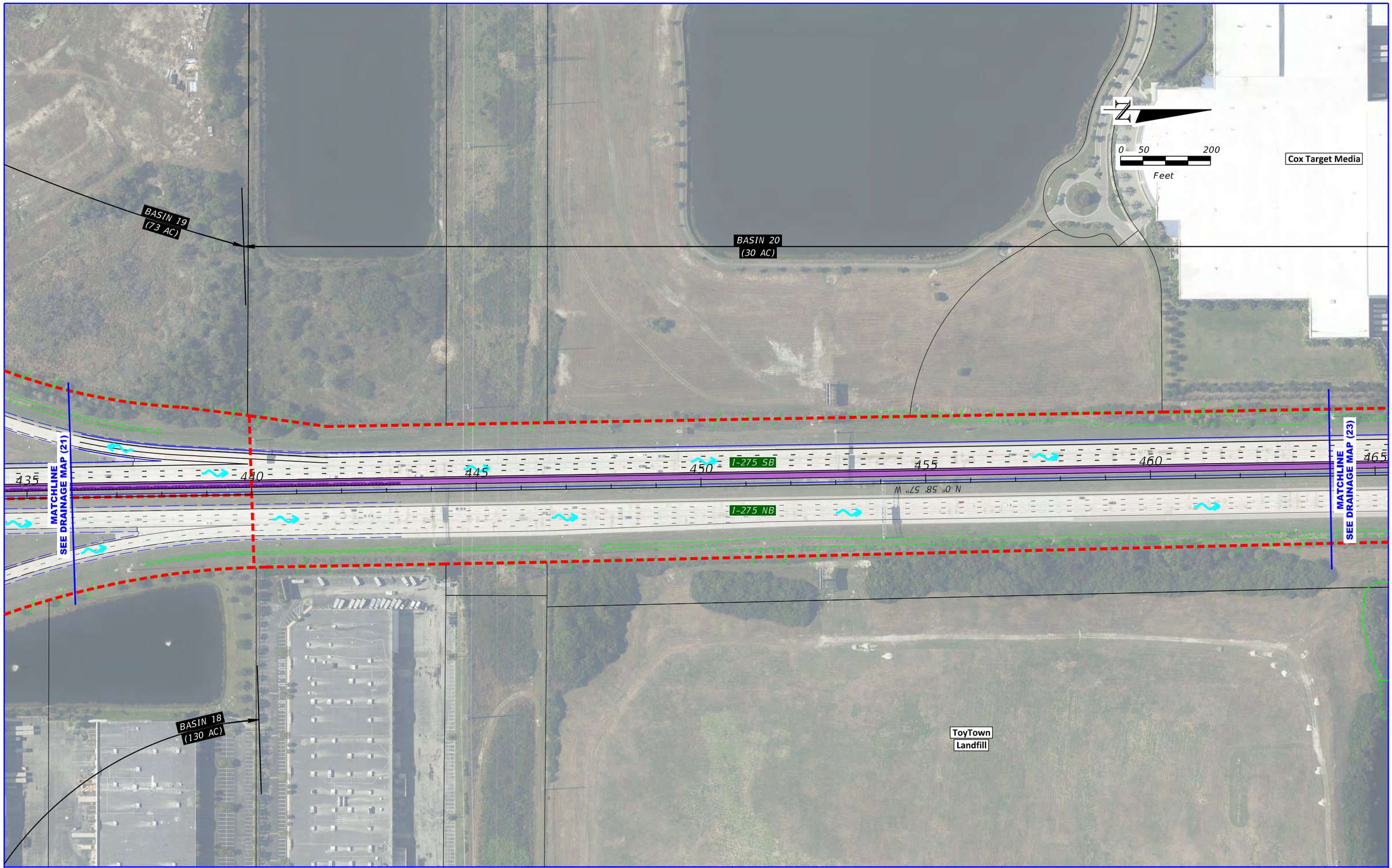
- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (21)

SHEET NO.



LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (22)

SHEET NO.

jgarnica 10/21/2015 9:27:37 AM H:\PD&E\D7\I-275ManagedLanesPinellas\424501122O1\drainage\DRMPRD22.DGN

Cox Target Media

Pinellas County
Resource Recovery

BASIN 20
(30 AC)

BASIN 20
(30 AC)

BASIN 20 OUTFALL
TAILWATER EL. 7.4'

0 50 200
Feet

MATCHLINE
SEE DRAINAGE MAP (22)

465 470 475 I-275 SB 480 485 490

I-275 NB

BASIN R1
(79 AC)

PC STA. 488+92.51

MATCHLINE
SEE DRAINAGE MAP (24)

ToyTown
Landfill

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (23)

SHEET NO.

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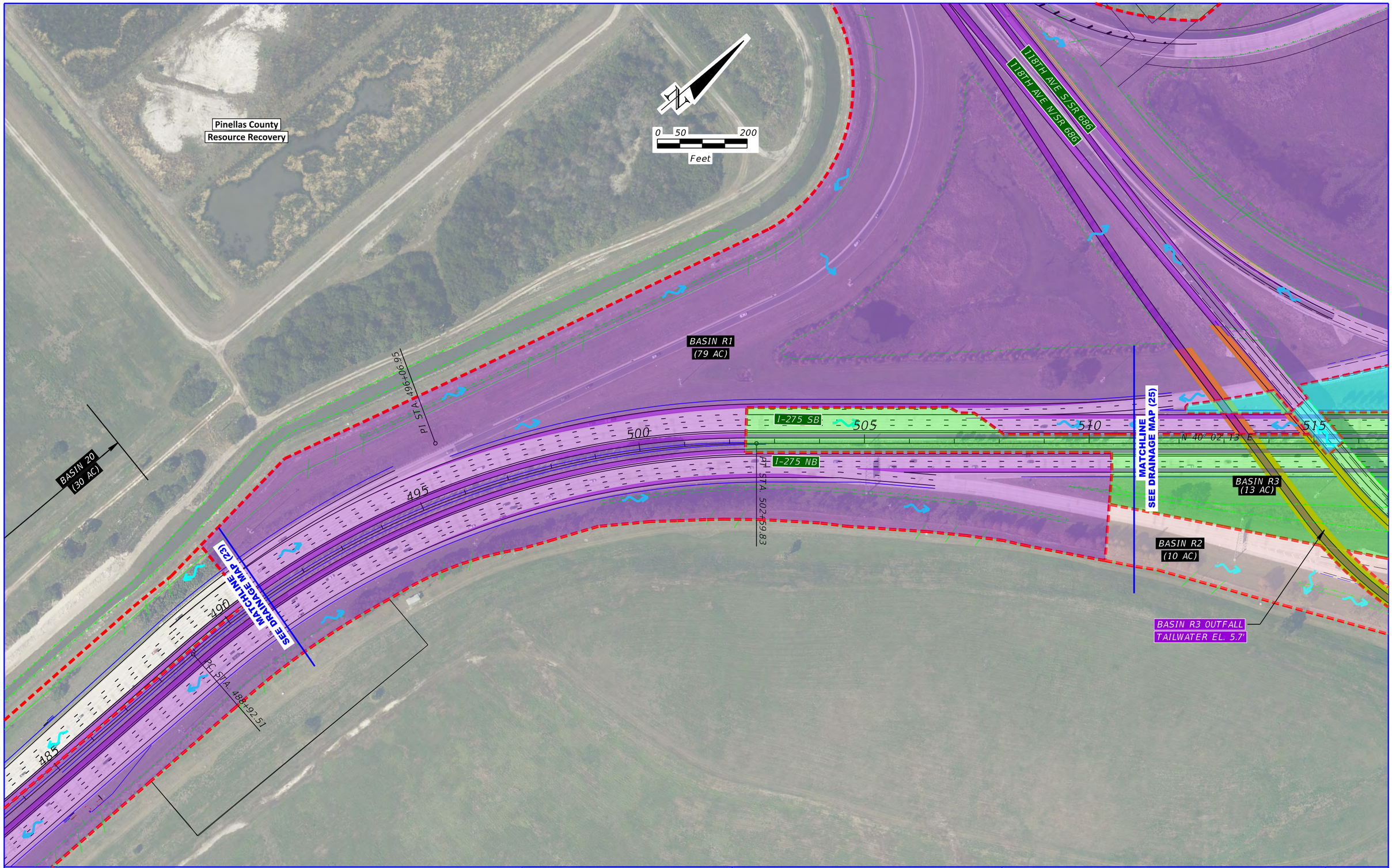

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (24)

SHEET NO.

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BASIN R1 OUTFALL
TAILWATER EL. 2.5'

118TH AVE S/SR 686

118TH AVE N/SR 686

BASIN R1
(79 AC)

ROOSEVELT BLVD N

0 50 200
Feet

BASIN R4 OUTFALL
TAILWATER EL. 4.2'

BASIN R4
(4 AC)

P.I. STA. 523+08.60

510 515 520 525 530 535

N 40° 02' 13" E

I-275 SB

I-275 NB

BRIDGE NO. 150104

MATCHLINE
SEE DRAINAGE MAP (24)

MATCHLINE
SEE DRAINAGE MAP (26)

BASIN R3
(13 AC)

BASIN R2
(10 AC)

BASIN 21
(18 AC)

BASIN 21 OUTFALL
TAILWATER EL. 4.5'

BASIN R3 OUTFALL
TAILWATER EL. 5.7'

BASIN R5
(2 AC)

ROOSEVELT BLVD N

BASIN R5 OUTFALL
TAILWATER EL. 5.2'

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (25)

SHEET NO.

jgarnica 10/21/2015 9:28:47 AM H:\PD&E\D7\I-275ManagedLanesPinellas\424501122201\drainage\DRMPRD25.DGN

Promenade Carillon Apartments

0 50 200
Feet

BASIN M OUTFALL
TAILWATER EL. 1.5'

BASIN M2 OUTFALL
TAILWATER EL. 1.5'

BASIN M
(5 AC)

BASIN M2
(19 AC)

BASIN 21
(18 AC)

BASIN M0
(6 AC)

BASIN M1
(10 AC)

I-275 SB

I-275 NB

PC STA. 545+03.81

PRC STA. 552+29.87

PT STA. 555+92.93

PT STA. 559+55.93

PC STA. 548+66.87

540 545 550 555 560 565

MATCHLINE
SEE DRAINAGE MAP (25)

MATCHLINE
SEE DRAINAGE MAP (27)

BASIN M0 OUTFALL
TAILWATER EL. 1.5'

BASIN M1 OUTFALL
TAILWATER EL. 1.5'

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (26)

SHEET NO.

jgarnica 10/21/2015 9:29:08 AM H:\PD&E\D7\I-275ManagedLanesPinellas\424501122201\drainage\DRMPRD26.DGN

SR 688
ULMERTON ROAD

0 50 200
Feet

MATCHLINE
SEE DRAINAGE MAP (26)

565
N 70° 02' 13" E
570
575
580
585
590

PI STA. 575+89.72
PC STA. 572+68.55
PRC STA. 579+10.85
PI STA. 582+32.03
PI STA. 585+53.16

I-275 SB
I-275 NB

BASIN M2
(19 AC)

BASIN M1
(10 AC)

BASIN M3 OUTFALL
TAILWATER EL. 1.5'

WET-H

BASIN G2
(3 AC)

BASIN M3
(13 AC)

MATCHLINE
SEE DRAINAGE MAP (28)

9TH ST N (MLK BLVD)

BASIN G2 OUTFALL
TAILWATER EL. 1.5'

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (27)

SHEET NO.

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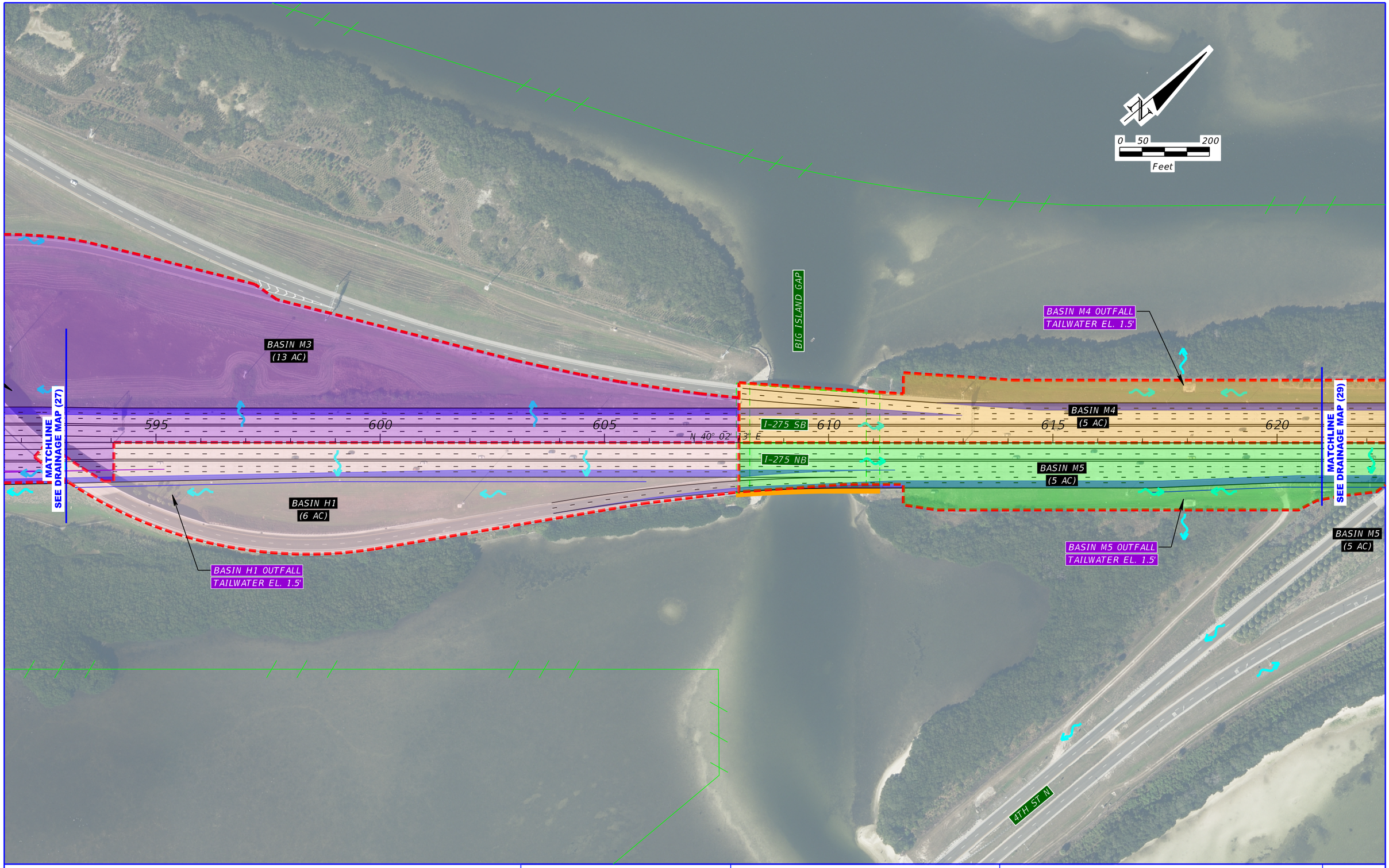

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (28)

SHEET NO.

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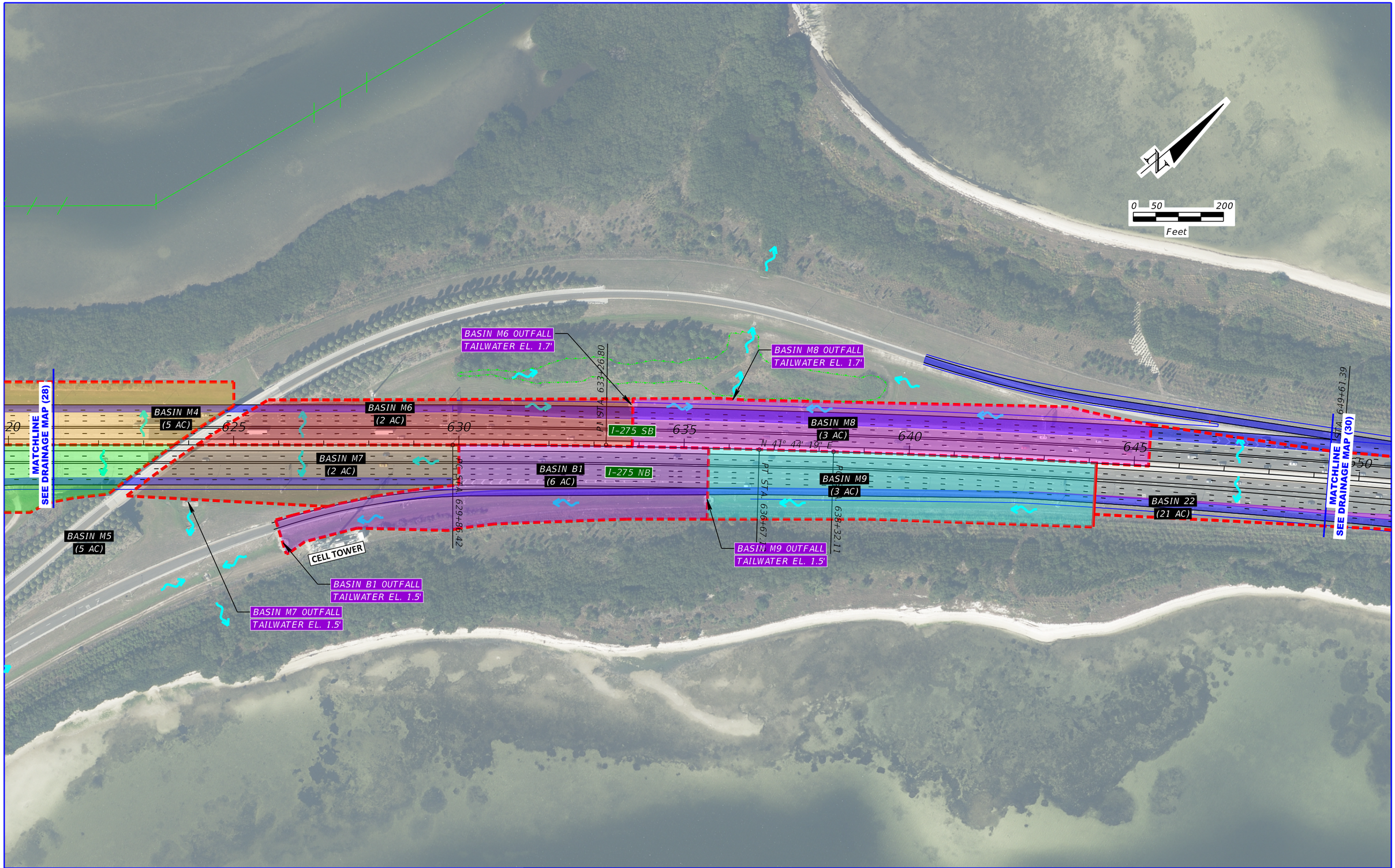

LEGEND:

PAVEMENT WIDENING	BRIDGE WIDENING	DIRECTION OF FLOW
MASTER WIDENING	BRIDGES	WETLANDS
PAVEMENT REMOVAL	BARRIER WALL	BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (29)

SHEET NO.

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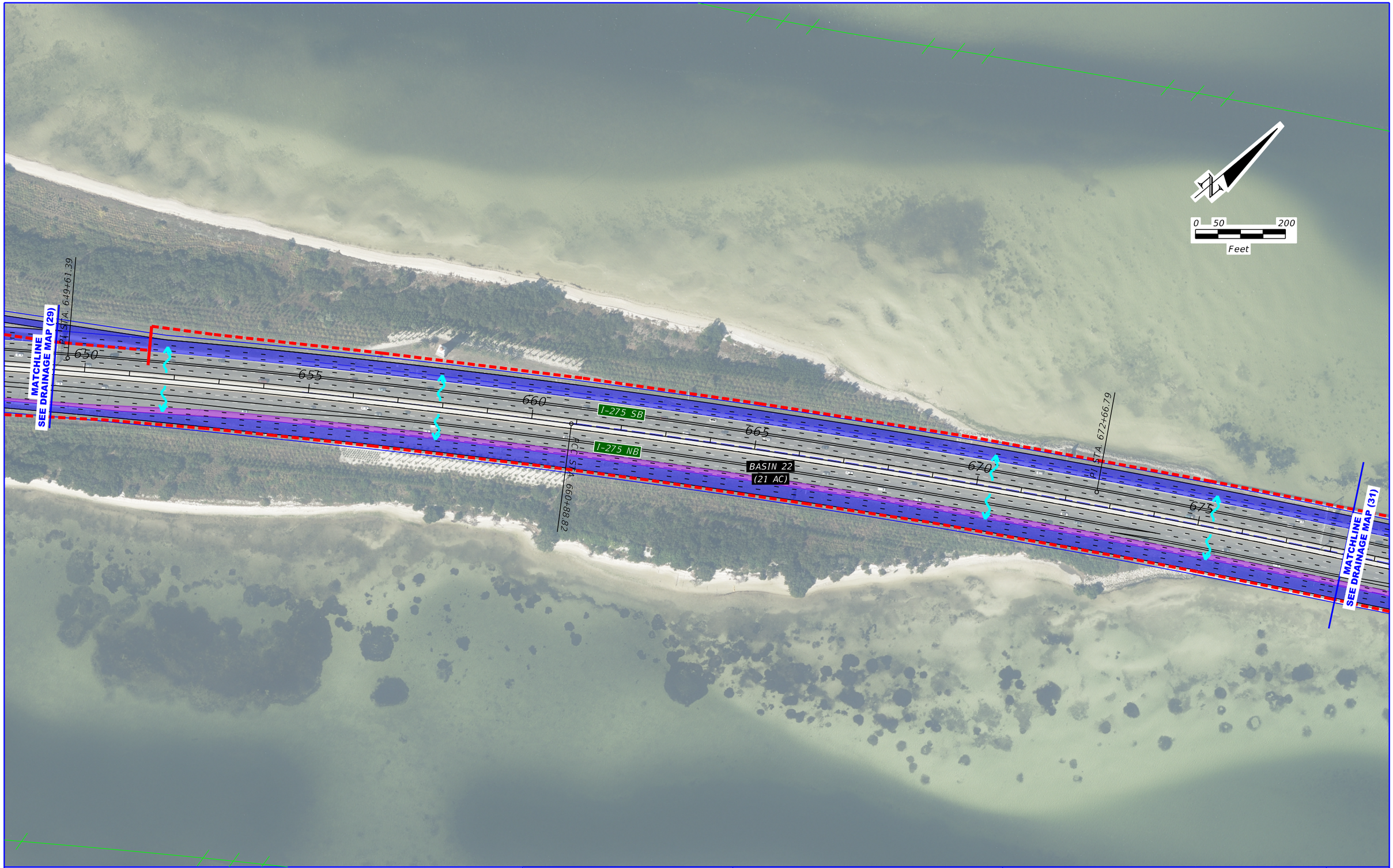

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (30)

SHEET NO.

jgarnica 10/21/2015 3:01:40 PM H:\PD&E\D7\I-275ManagedLanesPinellas\424501122201\drainage\DRMPRD30.DGN

MATCHLINE
SEE DRAINAGE MAP (30)

680

685

690

695

700

705

P1 STA. 684+42.66

BASIN 22
(21 AC)

PD&E STUDY LIMIT
(1 mile South of
Howard Frankland Bridge)

I-275 SB

I-275 NB

P1 STA. 696+12.29

PCC STA. 707+80.52

0 50 200
Feet

LEGEND:

- PAVEMENT WIDENING
- MASTER WIDENING
- PAVEMENT REMOVAL
- BRIDGE WIDENING
- BRIDGES
- BARRIER WALL
- DIRECTION OF FLOW
- WETLANDS
- BASIN BOUNDARY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-275	PINELLAS	424501-1-22-01

DRAINAGE MAP (31)

SHEET NO.

jgarnica 10/21/2015 3:02:04 PM H:\PD&E\D7\I-275ManagedLanesPinellas\424501122201\drainage\DRMPRD31.DGN

Appendix D.
Stormwater Management Calculations

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 2 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	30.21	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	30.02	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.19	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.92	
		x 1" x (1'/12")	
g		0.08	ac-ft

Use 0.08 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	13.00	(assumed from soils data)
i	Existing ground elevation (ft) =	14.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	20.76	(from As-Builts)
k	Design High Water elevation (ft) =	15.00	(assumed)
l	Height of storage volume (ft) =	2.00	(assumed)
m	Minimum required storage volume (ac-ft) =	0.26	(c + max of e or g)
n	Min. req. storage area (ac) =	0.13	(m / l)
o	Length at midheight of storage volume (ft) =	113.33	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	50.37	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.09	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	1.00	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	12.00	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	16.00	(k + s)
x	Distance to tie-in to existing ground (ft) =	8.00	((w - i) * 4)
y	Length of pond (ft) =	193.33	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	130.37	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.58	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.64**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	13.59	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.26	(((k - h) * (o * p)) / 43560)

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 2 — Runoff Calculations

From Station = 100+00 To Station= 146+40 Length (ft) = 4,640

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Adamsville, Immokalee, Matlatcha	B/D	Open Space, Good	80	31.81	2545
Adamsville, Immokalee, Matlatcha	B/D	Impervious, Streets and Roads	98	16.77	1643
Adamsville, Immokalee, Matlatcha	B/D	Future Pond Site	80	0.64	51
			Totals =	49.22	4239

CN (weighted) = total product / total area = 4239.46 / 49.22 = CN = **86.13**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Adamsville, Immokalee, Matlatcha	B/D	Open Space, Good/Pond Area	80	31.44	2515
Adamsville, Immokalee, Matlatcha	B/D	Impervious, Streets and Roads	98	16.77	1643
Adamsville, Immokalee, Matlatcha	B/D	New Impervious Areas	98	0.92	90
Adamsville, Immokalee, Matlatcha	B/D	Pond Impervious Area	98	0.09	9
			Totals =	49.22	4258

CN (weighted) = total product / total area = 4257.64 / 49.22 = CN = **86.50**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	86.13	86.50			
S = 1000/(CN) - 10 =	1.61	1.56			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	7.32	7.36			
Runoff volume (ac-ft) = Q(in)/12*total area =	**30.02**	**30.21**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	30.21
- Existing Runoff Volume (ac-ft) =	30.02
Change in Runoff Volume (ac-ft) =	0.19

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Basin: 3 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	4.36	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	4.31	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.04	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.23	
		x 1" x (1'/12")	
g		0.02	ac-ft

Use 0.02 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	17.00	(assumed from soils data)
i	Existing ground elevation (ft) =	18.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	27.16	(from As-Builts)
k	Design High Water elevation (ft) =	19.00	(assumed)
l	Height of storage volume (ft) =	2.00	(assumed)
m	Minimum required storage volume (ac-ft) =	0.06	(c + max of e or g)
n	Min. req. storage area (ac) =	0.03	(m / l)
o	Length at midheight of storage volume (ft) =	55.79	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	24.80	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.01	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	1.00	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	12.00	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	20.00	(k + s)
x	Distance to tie-in to existing ground (ft) =	8.00	((w - i) * 4)
y	Length of pond (ft) =	135.79	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	104.80	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.33	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.36**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	17.60	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.06	(((k - h) * (o * p)) / 43560)

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Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 3 — Runoff Calculations

From Station = 146+40 To Station= 155+00 Length (ft) = 860

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Immokalee	B/D	Open Space, Good	80	4.15	332
Immokalee	B/D	Impervious, Streets and Roads	98	2.52	247
Immokalee	B/D	Future Pond Site	80	0.36	29
			Totals =	7.03	608

CN (weighted) = total product / total area = 607.76 / 7.03 = CN = **86.45**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Immokalee	B/D	Open Space, Good/Pond Area	80	4.27	342
Immokalee	B/D	Impervious, Streets and Roads	98	2.52	247
Immokalee	B/D	New Impervious Areas	98	0.23	23
Immokalee	B/D	Pond Impervious Area	98	0.01	1
			Totals =	7.03	612

CN (weighted) = total product / total area = 612.08 / 7.03 = CN = **87.07**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	86.45	87.07			
S = 1000/(CN) - 10 =	1.57	1.49			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	7.36	7.43			
Runoff volume (ac-ft) = Q(in)/12*total area =	**4.31**	**4.36**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	4.36
- Existing Runoff Volume (ac-ft) =	4.31
Change in Runoff Volume (ac-ft) =	0.04

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Basin: 4 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	37.37	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	37.30	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.07	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.33	
		x 1" x (1'/12")	
g		0.03	ac-ft

Use 0.03 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	17.00	(assumed from soils data)
i	Existing ground elevation (ft) =	18.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	19.16	(from As-Builts)
k	Design High Water elevation (ft) =	18.16	(assumed)
l	Height of storage volume (ft) =	1.16	(k - h)
m	Minimum required storage volume (ac-ft) =	0.09	(c + max of e or g)
n	Min. req. storage area (ac) =	0.08	(m / l)
o	Length at midheight of storage volume (ft) =	89.18	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	39.64	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.06	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	0.58	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	9.48	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	19.16	(k + s)
x	Distance to tie-in to existing ground (ft) =	4.64	((w - i) * 4)
y	Length of pond (ft) =	157.42	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	107.88	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.39	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.43**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	17.34	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.09	(((k - h) * (o * p)) / 43560)

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Basin: 4 — Runoff Calculations

From Station = 155+00 To Station= 213+14 Length (ft) = 5,814

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Astatula, Immokalee, Matlatcha	B/D	Open Space, Good	80	33.68	2694
Astatula, Immokalee, Matlatcha	B/D	Impervious, Streets and Roads	98	25.48	2497
Astatula, Immokalee, Matlatcha	B/D	Future Pond Site	80	0.43	34
			Totals =	59.59	5226

CN (weighted) = total product / total area = 5225.84 / 59.59 = CN = **87.70**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Astatula, Immokalee, Matlatcha	B/D	Open Space, Good/Pond Area	80	33.72	2698
Astatula, Immokalee, Matlatcha	B/D	Impervious, Streets and Roads	98	25.48	2497
Astatula, Immokalee, Matlatcha	B/D	New Impervious Areas	98	0.33	32
Astatula, Immokalee, Matlatcha	B/D	Pond Impervious Area	98	0.06	6
			Totals =	59.59	5233

CN (weighted) = total product / total area = 5232.86 / 59.59 = CN = **87.81**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	87.70	87.81			
S = 1000/(CN) - 10 =	1.40	1.39			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	7.51	7.52			
Runoff volume (ac-ft) = Q(in)/12*total area =	**37.30**	**37.37**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	37.37
- Existing Runoff Volume (ac-ft) =	37.30
Change in Runoff Volume (ac-ft) =	0.07

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Basin: 6 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	32.59	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	32.45	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.13	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.65	
		x 1" x (1'/12")	
g		0.05	ac-ft

Use 0.05 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	43.00	(assumed from soils data)
i	Existing ground elevation (ft) =	44.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	47.16	(from As-Builts)
k	Design High Water elevation (ft) =	45.00	(assumed)
l	Height of storage volume (ft) =	2.00	(assumed)
m	Minimum required storage volume (ac-ft) =	0.19	(c + max of e or g)
n	Min. req. storage area (ac) =	0.09	(m / l)
o	Length at midheight of storage volume (ft) =	95.68	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	42.53	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.06	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	1.00	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	12.00	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	46.00	(k + s)
x	Distance to tie-in to existing ground (ft) =	8.00	((w - i) * 4)
y	Length of pond (ft) =	175.68	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	122.53	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.49	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.54**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	43.58	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.19	(((k - h) * (o * p)) / 43560)

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Basin: 6 — Runoff Calculations

From Station = 299+55 To Station= 245+00 Length (ft) = 4,633

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Myakka, Urban	B/D	Open Space, Good	80	30.44	2435
Myakka, Urban	B/D	Impervious, Streets and Roads	98	21.20	2078
Myakka, Urban	B/D	Future Pond Site	80	0.54	43
			Totals =	52.18	4556

CN (weighted) = total product / total area = 4556 / 52.18 = CN = **87.31**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Myakka, Urban	B/D	Open Space, Good/Pond Area	80	30.27	2422
Myakka, Urban	B/D	Impervious, Streets and Roads	98	21.20	2078
Myakka, Urban	B/D	New Impervious Areas	98	0.65	64
Myakka, Urban	B/D	Pond Impervious Area	98	0.06	6
			Totals =	52.18	4569

CN (weighted) = total product / total area = 4568.78 / 52.18 = CN = **87.56**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	87.31	87.56			
S = 1000/(CN) - 10 =	1.45	1.42			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	7.46	7.49			
Runoff volume (ac-ft) = Q(in)/12*total area =	**32.45**	**32.59**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	32.59
- Existing Runoff Volume (ac-ft) =	32.45
Change in Runoff Volume (ac-ft) =	0.13

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Basin: 7 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	16.90	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	16.77	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.13	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.63	
		x 1" x (1'/12")	
g		0.05	ac-ft

Use 0.05 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	49.00	(assumed from soils data)
i	Existing ground elevation (ft) =	50.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	63.06	(from As-Builts)
k	Design High Water elevation (ft) =	51.00	(assumed)
l	Height of storage volume (ft) =	2.00	(assumed)
m	Minimum required storage volume (ac-ft) =	0.18	(c + max of e or g)
n	Min. req. storage area (ac) =	0.09	(m / l)
o	Length at midheight of storage volume (ft) =	93.87	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	41.72	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.06	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	1.00	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	12.00	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	52.00	(k + s)
x	Distance to tie-in to existing ground (ft) =	8.00	((w - i) * 4)
y	Length of pond (ft) =	173.87	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	121.72	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.49	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.53**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	49.58	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.18	(((k - h) * (o * p)) / 43560)

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Basin: 7 — Runoff Calculations

From Station = 245+00 To Station= 280+00 Length (ft) = 3,500

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Myakka, Urban	B/D	Open Space, Good	80	16.42	1314
Myakka, Urban	B/D	Impervious, Streets and Roads	98	10.25	1005
Myakka, Urban	B/D	Future Pond Site	80	0.53	42
			Totals =	27.20	2361

CN (weighted) = total product / total area = 2360.5 / 27.2 = CN = **86.78**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Myakka, Urban	B/D	Open Space, Good/Pond Area	80	16.26	1301
Myakka, Urban	B/D	Impervious, Streets and Roads	98	10.25	1005
Myakka, Urban	B/D	New Impervious Areas	98	0.63	62
Myakka, Urban	B/D	Pond Impervious Area	98	0.06	6
			Totals =	27.20	2373

CN (weighted) = total product / total area = 2372.92 / 27.2 = CN = **87.24**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	86.78	87.24			
S = 1000/(CN) - 10 =	1.52	1.46			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	7.40	7.46			
Runoff volume (ac-ft) = Q(in)/12*total area =	**16.77**	**16.90**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	16.90
- Existing Runoff Volume (ac-ft) =	16.77
Change in Runoff Volume (ac-ft) =	0.13

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Basin: 9 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	9.23	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	9.19	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.04	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.21	
		x 1" x (1'/12")	
g		0.02	ac-ft

Use 0.02 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	39.00	(assumed from soils data)
i	Existing ground elevation (ft) =	40.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	68.26	(from As-Builts)
k	Design High Water elevation (ft) =	41.00	(assumed)
l	Height of storage volume (ft) =	2.00	(assumed)
m	Minimum required storage volume (ac-ft) =	0.06	(c + max of e or g)
n	Min. req. storage area (ac) =	0.03	(m / l)
o	Length at midheight of storage volume (ft) =	52.74	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	23.44	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.01	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	1.00	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	12.00	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	42.00	(k + s)
x	Distance to tie-in to existing ground (ft) =	8.00	((w - i) * 4)
y	Length of pond (ft) =	132.74	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	103.44	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.32	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.35**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	39.62	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.06	(((k - h) * (o * p)) / 43560)

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Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 9 — Runoff Calculations

From Station = 280+00 To Station= 303+80 Length (ft) = 2,380

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Astatula, Urban	D	Urban Open Space	80	4.78	382
Astatula, Urban	D	Impervious, Streets and Roads	98	8.73	856
Astatula, Urban	D	Future Pond Site	80	0.35	28
			Totals =	13.86	1266

CN (weighted) = total product / total area = 1265.94 / 13.86 = CN = **91.34**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Astatula, Urban	D	Urban Open Space/Pond Area	80	4.91	393
Astatula, Urban	D	Impervious, Streets and Roads	98	8.73	856
Astatula, Urban	D	New Impervious Areas	98	0.21	21
Astatula, Urban	D	Pond Impervious Area	98	0.01	1
			Totals =	13.86	1270

CN (weighted) = total product / total area = 1269.9 / 13.86 = CN = **91.62**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	91.34	91.62			
S = 1000/(CN) - 10 =	0.95	0.91			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	7.95	7.99			
Runoff volume (ac-ft) = Q(in)/12*total area =	**9.19**	**9.23**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	9.23
- Existing Runoff Volume (ac-ft) =	9.19
Change in Runoff Volume (ac-ft) =	0.04

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 10 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	11.65	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	11.63	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.02	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.31	
		x 1" x (1'/12")	
g		0.03	ac-ft

Use 0.03 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	40.00	(assumed from soils data)
i	Existing ground elevation (ft) =	42.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	62.66	(from As-Builts)
k	Design High Water elevation (ft) =	42.00	(assumed)
l	Height of storage volume (ft) =	2.00	(assumed)
m	Minimum required storage volume (ac-ft) =	0.05	(c + max of e or g)
n	Min. req. storage area (ac) =	0.02	(m / l)
o	Length at midheight of storage volume (ft) =	48.36	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	21.49	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.01	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	1.00	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	12.00	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	43.00	(k + s)
x	Distance to tie-in to existing ground (ft) =	4.00	((w - i) * 4)
y	Length of pond (ft) =	120.36	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	93.49	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.26	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.28**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	41.08	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.05	(((k - h) * (o * p)) / 43560)

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 10 — Runoff Calculations

From Station = 303+80 To Station= 316+50 Length (ft) = 1,270

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Astatula, Urban	A	Open Space, Good	39	17.54	684
Astatula, Urban	A	Impervious, Streets and Roads	98	12.58	1233
Astatula, Urban	A	Future Pond Site	98	0.28	28
			Totals =	30.40	1945

CN (weighted) = total product / total area = 1944.732 / 30.404 = CN = **63.96**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Astatula, Urban	A	Open Space, Good/Pond Area	39	17.50	683
Astatula, Urban	A	Impervious, Streets and Roads	98	12.58	1233
Astatula, Urban	A	New Impervious Areas	98	0.31	30
Astatula, Urban	A	Pond Impervious Area	98	0.01	1
			Totals =	30.40	1947

CN (weighted) = total product / total area = 1946.856 / 30.404 = CN = **64.03**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	63.96	64.03			
S = 1000/(CN) - 10 =	5.63	5.62			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	4.59	4.60			
Runoff volume (ac-ft) = Q(in)/12*total area =	**11.63**	**11.65**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	11.65
- Existing Runoff Volume (ac-ft) =	11.63
Change in Runoff Volume (ac-ft) =	0.02

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 1/12/2016

Basin: 11 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	16.99	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	16.84	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.15	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.55	
		x 1" x (1'/12")	
g		0.05	ac-ft

Use 0.05 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	40.00	(assumed from soils data)
i	Existing ground elevation (ft) =	42.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	60.66	(from As-Builts)
k	Design High Water elevation (ft) =	42.00	(assumed)
l	Height of storage volume (ft) =	2.00	(assumed)
m	Minimum required storage volume (ac-ft) =	0.20	(c + max of e or g)
n	Min. req. storage area (ac) =	0.10	(m / l)
o	Length at midheight of storage volume (ft) =	97.95	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	43.53	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.06	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	1.00	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	12.00	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	43.00	(k + s)
x	Distance to tie-in to existing ground (ft) =	4.00	((w - i) * 4)
y	Length of pond (ft) =	169.95	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	115.53	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.45	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.50**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	40.47	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.20	(((k - h) * (o * p)) / 43560)

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 1/12/2016

Basin: 11 — Runoff Calculations

From Station = 316+50 To Station= 346+85 Length (ft) = 3,035

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Astatula, Matlatcha, St Augustine	C	Open Space, Good	74	13.67	1012
Astatula, Matlatcha, St Augustine	C	Impervious, Streets and Roads	98	13.61	1334
Astatula, Matlatcha, St Augustine	C	Future Pond Site	74	0.50	37
			Totals =	27.78	2382

CN (weighted) = total product / total area = 2382.36 / 27.78 = CN = **85.76**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Astatula, Matlatcha, St Augustine	C	Open Space, Good/Pond Area	74	13.56	1003
Astatula, Matlatcha, St Augustine	C	Impervious, Streets and Roads	98	13.61	1334
Astatula, Matlatcha, St Augustine	C	New Impervious Areas	98	0.55	54
Astatula, Matlatcha, St Augustine	C	Pond Impervious Area	98	0.06	6
			Totals =	27.78	2397

CN (weighted) = total product / total area = 2397 / 27.78 = CN = **86.29**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	85.76	86.29			
S = 1000/(CN) - 10 =	1.66	1.59			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	7.27	7.34			
Runoff volume (ac-ft) = Q(in)/12*total area =	**16.84**	**16.99**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	16.99
- Existing Runoff Volume (ac-ft) =	16.84
Change in Runoff Volume (ac-ft) =	0.15

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** TES
Checked by: TES **Date:** 10/14/2015

Basin: 12 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	26.59	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	26.44	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.15	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.55	
		x 1" x (1'/12")	
g		0.05	ac-ft

Use 0.05 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	56.00	(assumed from soils data)
i	Existing ground elevation (ft) =	58.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	57.66	(from As-Builts)
k	Design High Water elevation (ft) =	56.66	(assumed)
l	Height of storage volume (ft) =	0.66	(k - h)
m	Minimum required storage volume (ac-ft) =	0.20	(c + max of e or g)
n	Min. req. storage area (ac) =	0.30	(m / l)
o	Length at midheight of storage volume (ft) =	170.45	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	75.75	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.27	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	0.33	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	7.98	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	57.66	(k + s)
x	Distance to tie-in to existing ground (ft) =	1.36	((w - i) * 4)
y	Length of pond (ft) =	229.13	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	134.43	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.71	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.78**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	56.15	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.20	(((k - h) * (o * p)) / 43560)

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** TES
Checked by: TES **Date:** 10/14/2015

Basin: 12 — Runoff Calculations

From Station = 346+85 To Station= 391+88 Length (ft) = 4,503

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Matlatcha, St Augustine, Urban	B/D	Open Space, Good	80	22.93	1834
Matlatcha, St Augustine, Urban	B/D	Impervious, Streets and Roads	98	18.41	1804
Matlatcha, St Augustine, Urban	B/D	Future Pond Site	80	0.78	62
			Totals =	42.12	3701

CN (weighted) = total product / total area = 3700.98 / 42.12 = CN = **87.87**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Matlatcha, St Augustine, Urban	B/D	Open Space, Good/Pond Area	80	22.89	1831
Matlatcha, St Augustine, Urban	B/D	Impervious, Streets and Roads	98	18.41	1804
Matlatcha, St Augustine, Urban	B/D	New Impervious Areas	98	0.55	54
Matlatcha, St Augustine, Urban	B/D	Pond Impervious Area	98	0.27	26
			Totals =	42.12	3716

CN (weighted) = total product / total area = 3715.74 / 42.12 = CN = **88.22**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	87.87	88.22			
S = 1000/(CN) - 10 =	1.38	1.34			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	7.53	7.57			
Runoff volume (ac-ft) = Q(in)/12*total area =	**26.44**	**26.59**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	26.59
- Existing Runoff Volume (ac-ft) =	26.44
Change in Runoff Volume (ac-ft) =	0.15

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 13 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	3.72	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	3.68	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.03	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.16	
		x 1" x (1'/12")	
g		0.01	ac-ft

Use 0.01 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	57.00	(assumed from soils data)
i	Existing ground elevation (ft) =	58.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	67.16	(from As-Builts)
k	Design High Water elevation (ft) =	59.00	(assumed)
l	Height of storage volume (ft) =	2.00	(assumed)
m	Minimum required storage volume (ac-ft) =	0.04	(c + max of e or g)
n	Min. req. storage area (ac) =	0.02	(m / l)
o	Length at midheight of storage volume (ft) =	46.83	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	20.81	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.01	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	1.00	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	12.00	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	60.00	(k + s)
x	Distance to tie-in to existing ground (ft) =	8.00	((w - i) * 4)
y	Length of pond (ft) =	126.83	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	100.81	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.29	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.32**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	57.60	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.04	(((k - h) * (o * p)) / 43560)

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 13 — Runoff Calculations

From Station = 391+88 To Station= 400+00 Length (ft) = 812

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Myakka	B/D	Open Space, Good	80	3.26	261
Myakka	B/D	Impervious, Streets and Roads	98	2.36	231
Myakka	B/D	Future Pond Site	80	0.32	26
			Totals =	5.94	518

CN (weighted) = total product / total area = 517.68 / 5.94 = CN = **87.15**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Myakka	B/D	Open Space, Good/Pond Area	80	3.41	273
Myakka	B/D	Impervious, Streets and Roads	98	2.36	231
Myakka	B/D	New Impervious Areas	98	0.16	16
Myakka	B/D	Pond Impervious Area	98	0.01	1
			Totals =	5.94	521

CN (weighted) = total product / total area = 520.74 / 5.94 = CN = **87.67**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	87.15	87.67			
S = 1000/(CN) - 10 =	1.47	1.41			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	7.44	7.51			
Runoff volume (ac-ft) = Q(in)/12*total area =	**3.68**	**3.72**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	3.72
- Existing Runoff Volume (ac-ft) =	3.68
Change in Runoff Volume (ac-ft) =	0.03

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 14 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	15.07	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	14.96	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.11	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.55	
		x 1" x (1'/12")	
g		0.05	ac-ft

Use 0.05 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	55.00	(assumed from soils data)
i	Existing ground elevation (ft) =	56.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	58.86	(from As-Builts)
k	Design High Water elevation (ft) =	57.00	(assumed)
l	Height of storage volume (ft) =	2.00	(assumed)
m	Minimum required storage volume (ac-ft) =	0.16	(c + max of e or g)
n	Min. req. storage area (ac) =	0.08	(m / l)
o	Length at midheight of storage volume (ft) =	87.24	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	38.77	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.05	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	1.00	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	12.00	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	58.00	(k + s)
x	Distance to tie-in to existing ground (ft) =	8.00	((w - i) * 4)
y	Length of pond (ft) =	167.24	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	118.77	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.46	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.50**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	55.59	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.16	(((k - h) * (o * p)) / 43560)

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 14 — Runoff Calculations

From Station = 400+00 To Station= 425+25 Length (ft) = 2,525

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Myakka	B/D	Open Space, Good	80	15.33	1226
Myakka	B/D	Impervious, Streets and Roads	98	8.61	844
Myakka	B/D	Future Pond Site	80	0.50	40
			Totals =	24.44	2110

CN (weighted) = total product / total area = 2110.18 / 24.44 = CN = **86.34**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Myakka	B/D	Open Space, Good/Pond Area	80	15.23	1218
Myakka	B/D	Impervious, Streets and Roads	98	8.61	844
Myakka	B/D	New Impervious Areas	98	0.55	54
Myakka	B/D	Pond Impervious Area	98	0.05	5
			Totals =	24.44	2121

CN (weighted) = total product / total area = 2120.98 / 24.44 = CN = **86.78**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	86.34	86.78			
S = 1000/(CN) - 10 =	1.58	1.52			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	7.35	7.40			
Runoff volume (ac-ft) = Q(in)/12*total area =	**14.96**	**15.07**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	15.07
- Existing Runoff Volume (ac-ft) =	14.96
Change in Runoff Volume (ac-ft) =	0.11

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 15 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	15.03	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	15.01	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.02	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.09	
		x 1" x (1'/12")	
g		0.01	ac-ft

Use 0.01 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	47.00	(assumed from soils data)
i	Existing ground elevation (ft) =	48.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	49.56	(from As-Builts)
k	Design High Water elevation (ft) =	48.56	(assumed)
l	Height of storage volume (ft) =	1.56	(k - h)
m	Minimum required storage volume (ac-ft) =	0.03	(c + max of e or g)
n	Min. req. storage area (ac) =	0.02	(m / l)
o	Length at midheight of storage volume (ft) =	41.20	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	18.31	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.01	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	0.78	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	10.68	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	49.56	(k + s)
x	Distance to tie-in to existing ground (ft) =	6.24	((w - i) * 4)
y	Length of pond (ft) =	115.04	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	92.15	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.24	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.27**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	47.43	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.03	(((k - h) * (o * p)) / 43560)

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 15 — Runoff Calculations

From Station = 425+25 To Station= 446+00 Length (ft) = 2,075

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Myakka	B/D	Open Space, Good	80	13.54	1083
Myakka	B/D	Impervious, Streets and Roads	98	10.20	1000
Myakka	B/D	Future Pond Site	80	0.26	21
			Totals =	24.00	2104

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ = $\frac{2103.6}{24}$ = CN = **87.65**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Myakka	B/D	Open Space, Good/Pond Area	80	13.70	1096
Myakka	B/D	Impervious, Streets and Roads	98	10.20	1000
Myakka	B/D	New Impervious Areas	98	0.09	9
Myakka	B/D	Pond Impervious Area	98	0.01	1
			Totals =	24.00	2105

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ = $\frac{2105.4}{24}$ = CN = **87.73**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	87.65	87.73			
S = 1000/(CN) - 10 =	1.41	1.40			
Runoff Depth Q(in) = $\frac{(P - 0.2 * S)^2}{(P + 0.8 * S)}$ =	7.51	7.51			
Runoff volume (ac-ft) = Q(in)/12*total area =	**15.01**	**15.03**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	15.03
- Existing Runoff Volume (ac-ft) =	15.01
Change in Runoff Volume (ac-ft) =	0.02

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 17 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	13.69	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	13.61	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.08	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.11	
		x 1" x (1'/12")	
g		0.01	ac-ft

Use 0.01 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	21.00	(assumed from soils data)
i	Existing ground elevation (ft) =	23.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	25.25	(from As-Builts)
k	Design High Water elevation (ft) =	23.00	(assumed)
l	Height of storage volume (ft) =	2.00	(assumed)
m	Minimum required storage volume (ac-ft) =	0.09	(c + max of e or g)
n	Min. req. storage area (ac) =	0.04	(m / l)
o	Length at midheight of storage volume (ft) =	64.70	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	28.75	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.02	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	1.00	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	12.00	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	24.00	(k + s)
x	Distance to tie-in to existing ground (ft) =	4.00	((w - i) * 4)
y	Length of pond (ft) =	136.70	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	100.75	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.32	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.35**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	21.21	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.09	(((k - h) * (o * p)) / 43560)

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 17 — Runoff Calculations

From Station = 473+50 To Station= 328+00 Length (ft) = 2,952

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Astatula, Myakka, Felda	A	Open Space, Good	39	22.00	858
Astatula, Myakka, Felda	A	Impervious, Streets and Roads	98	14.75	1446
Astatula, Myakka, Felda	A	Future Pond Site	39	0.35	14
			Totals =	37.10	2317

CN (weighted) = total product / total area = 2317.15 / 37.1 = CN = **62.46**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Astatula, Myakka, Felda	A	Open Space, Good/Pond Area	39	22.22	867
Astatula, Myakka, Felda	A	Impervious, Streets and Roads	98	14.75	1446
Astatula, Myakka, Felda	A	New Impervious Areas	98	0.11	11
Astatula, Myakka, Felda	A	Pond Impervious Area	98	0.02	2
			Totals =	37.10	2325

CN (weighted) = total product / total area = 2324.82 / 37.1 = CN = **62.66**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	62.46	62.66			
S = 1000/(CN) - 10 =	6.01	5.96			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	4.40	4.43			
Runoff volume (ac-ft) = Q(in)/12*total area =	**13.61**	**13.69**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	13.69
- Existing Runoff Volume (ac-ft) =	13.61
Change in Runoff Volume (ac-ft) =	0.08

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 18 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	80.38	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	79.59	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.79	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	3.80	
		x 1" x (1'/12")	
g		0.32	ac-ft

Use 0.32 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	3.00	(assumed from soils data)
i	Existing ground elevation (ft) =	4.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	11.59	(from As-Builts)
k	Design High Water elevation (ft) =	5.00	(assumed)
l	Height of storage volume (ft) =	2.00	(assumed)
m	Minimum required storage volume (ac-ft) =	1.11	(c + max of e or g)
n	Min. req. storage area (ac) =	0.55	(m / l)
o	Length at midheight of storage volume (ft) =	232.88	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	103.50	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.46	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	1.00	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	12.00	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	6.00	(k + s)
x	Distance to tie-in to existing ground (ft) =	8.00	((w - i) * 4)
y	Length of pond (ft) =	312.88	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	183.50	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	1.32	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**1.45**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	3.57	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	1.11	(((k - h) * (o * p)) / 43560)

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Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 18 — Runoff Calculations

From Station = 328+00 To Station= 421+17 Length (ft) = 9,317

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Felda, Myakka, Immokalee	B/D	Open Space, Good	80	88.52	7082
Felda, Myakka, Immokalee	B/D	Impervious, Streets and Roads	98	41.50	4067
Felda, Myakka, Immokalee	B/D	Future Pond Site	80	1.45	116
			Totals =	131.47	11265

CN (weighted) = total product / total area = 11264.6 / 131.47 = CN = **85.68**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Felda, Myakka, Immokalee	B/D	Open Space, Good/Pond Area	80	85.71	6857
Felda, Myakka, Immokalee	B/D	Impervious, Streets and Roads	98	41.50	4067
Felda, Myakka, Immokalee	B/D	New Impervious Areas	98	3.80	372
Felda, Myakka, Immokalee	B/D	Pond Impervious Area	98	0.46	45
			Totals =	131.47	11341

CN (weighted) = total product / total area = 11341.28 / 131.47 = CN = **86.27**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	85.68	86.27			
S = 1000/(CN) - 10 =	1.67	1.59			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	7.26	7.34			
Runoff volume (ac-ft) = Q(in)/12*total area =	**79.59**	**80.38**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	80.38
- Existing Runoff Volume (ac-ft) =	79.59
Change in Runoff Volume (ac-ft) =	0.79

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 19 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	44.60	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	44.43	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.17	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	0.70	
		x 1" x (1'/12")	
g		0.06	ac-ft

Use 0.06 ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	11.00	(assumed from soils data)
i	Existing ground elevation (ft) =	12.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	12.84	(from As-Builts)
k	Design High Water elevation (ft) =	11.84	(assumed)
l	Height of storage volume (ft) =	0.84	(k - h)
m	Minimum required storage volume (ac-ft) =	0.23	(c + max of e or g)
n	Min. req. storage area (ac) =	0.28	(m / l)
o	Length at midheight of storage volume (ft) =	164.24	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	73.00	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.25	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	0.42	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	8.52	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	12.84	(k + s)
x	Distance to tie-in to existing ground (ft) =	3.36	((w - i) * 4)
y	Length of pond (ft) =	228.00	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	136.76	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.72	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.79**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	11.21	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.23	(((k - h) * (o * p)) / 43560)

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 19 — Runoff Calculations

From Station = 421+17 To Station= 440+00 Length (ft) = 1,883

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Pineda, Matlatcha, St Augustine	B/D	Open Space, Good	80	50.87	4070
Pineda, Matlatcha, St Augustine	B/D	Impervious, Streets and Roads	98	22.09	2165
Pineda, Matlatcha, St Augustine	B/D	Future Pond Site	80	0.79	63
			Totals =	73.75	6298

CN (weighted) = total product / total area = 6297.62 / 73.75 = CN = **85.39**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Pineda, Matlatcha, St Augustine	B/D	Open Space, Good/Pond Area	80	50.71	4057
Pineda, Matlatcha, St Augustine	B/D	Impervious, Streets and Roads	98	22.09	2165
Pineda, Matlatcha, St Augustine	B/D	New Impervious Areas	98	0.70	69
Pineda, Matlatcha, St Augustine	B/D	Pond Impervious Area	98	0.25	25
			Totals =	73.75	6315

CN (weighted) = total product / total area = 6314.72 / 73.75 = CN = **85.62**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	85.39	85.62			
S = 1000/(CN) - 10 =	1.71	1.68			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	7.23	7.26			
Runoff volume (ac-ft) = Q(in)/12*total area =	**44.43**	**44.60**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	44.60
- Existing Runoff Volume (ac-ft) =	44.43
Change in Runoff Volume (ac-ft) =	0.17

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 20 — Volume Calculations and Pond Sizing

Attenuation Volume

a	Post-development runof (ac-ft) =	20.27	(SWFWMD 25yr/24hr - see Runoff Calculations)
b	Pre-development runoff (ac-ft) =	19.91	(SWFWMD 25yr/24hr - see Runoff Calculations)
c	Increase in runoff (ac-ft) =	0.36	

Water Quality Volume

The WQV is equal to 1" over the new impervious area.

d		not used	
e		not used	
f	New Impervious area (ac) =	1.76	
		x 1" x (1'/12")	
g		0.15	ac-ft

Use **0.15** ac-ft for required water quality volume.

Pond Sizing

h	ESHGWT (ft) =	9.00	(assumed from soils data)
i	Existing ground elevation (ft) =	10.00	(from As-Builts)
j	Lowest EOP elevation in roadway (ft) =	11.79	(from As-Builts)
k	Design High Water elevation (ft) =	10.79	(assumed)
l	Height of storage volume (ft) =	1.79	(k - h)
m	Minimum required storage volume (ac-ft) =	0.51	(c + max of e or g)
n	Min. req. storage area (ac) =	0.29	(m / l)
o	Length at midheight of storage volume (ft) =	167.14	(1.5 x (n * 43560)^0.5)
p	Width at midheight of storage volume (ft) =	74.29	((n * 43560) / o)
q	Estimated rectangular permanent pool area (ac) =	0.23	(((o-2(r*t)) * ((p-2(r*t))) / 43560)
r	One half the height of storage volume (ft) =	0.90	(l / 2)
s	Freeboard (ft) =	1.00	(assumed)
t	Pond side slope (ft/ft) =	6.00	(assumed)
u	Dist. from midheight of storage vol. to maint. berm (ft) =	11.37	((r + s) * t)
v	Maintenance berm width (ft) =	20.00	(assumed)
w	Top of berm elevation (ft) =	11.79	(k + s)
x	Distance to tie-in to existing ground (ft) =	7.16	((w - i) * 4)
y	Length of pond (ft) =	244.20	(o + 2u + 2v + 2x)
z	Width of pond (ft) =	151.35	(p + 2u + 2v + 2x)
aa	Minimum required rectangular pond area (ac) =	0.85	((y * z) / 43560)
ab	Multiplier increase to account for irregular shape (ac) =	1.10	(assumed)
ac	**Minimum required pond area (ac) =**	**0.93**	(aa * ab)
ad	Estimated Top of Treatment Elevation (ft) =	9.51	(((max e or g * 43560) / (o*p)) + h)
ae	Estimated Total Storage Volume Provided (ac-ft) =	0.51	(((k - h) * (o * p)) / 43560)

LOCHNER

Project: I-275 PD&E
Calculations by: JBM **Job #:** 424501-1
Checked by: TES **Date:** 10/14/2015

Basin: 20 — Runoff Calculations

From Station = 440+00 To Station= 491+50 Length (ft) = 5,150

1a. Existing Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Pineda, Felda	B/D	Open Space, Good	80	15.73	1258
Pineda, Felda	B/D	Impervious, Streets and Roads	98	14.76	1446
Pineda, Felda	B/D	Future Pond Site	80	0.93	74
			Totals =	31.42	2779

CN (weighted) = total product / total area = 2779.28 / 31.42 = CN = **88.46**

1b. Proposed Runoff Curve Number

Soil Name	Hydro. Group	Cover Description	CN	Area* (ac)	(CN) x (Area)
Pineda, Felda	B/D	Open Space, Good/Pond Area	80	14.67	1174
Pineda, Felda	B/D	Impervious, Streets and Roads	98	14.76	1446
Pineda, Felda	B/D	New Impervious Areas	98	1.76	172
Pineda, Felda	B/D	Pond Impervious Area	98	0.23	23
			Totals =	31.42	2815

CN (weighted) = total product / total area = 2815.1 / 31.42 = CN = **89.60**

*: Areas based on shapes drawn in the drprrd01_Starter_V9.dgn cadd file

2. Runoff

	Existing SWFWMD	Proposed SWFWMD			
Frequency (yr)	25	25			
Duration (hr)	24	24			
Rainfall Amount (in)	9	9			
CN (see above)	88.46	89.60			
S = 1000/(CN) - 10 =	1.30	1.16			
Runoff Depth Q(in) = (P - 0.2 * S)^2 / (P + 0.8 * S) =	7.60	7.74			
Runoff volume (ac-ft) = Q(in)/12*total area =	**19.91**	**20.27**			

Change in Runoff Volume

Proposed Runoff Volume (ac-ft) =	20.27
- Existing Runoff Volume (ac-ft) =	19.91
Change in Runoff Volume (ac-ft) =	0.36

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A wet detention treatment system will be used for: Basin R1

The wet detention treatment system shall treat one inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided.

Therefore:

Permitted Treatment Volume Provided =		5.30	AC-FT
New Impervious (Rdwy) Area =		2.81	AC
Additional Treatment Volume Required =	2.81 x 1 in x $^{1\ ft}/_{12\ in}$ =	0.23	AC-FT
Total Treatment Volume Required =		**5.53**	**AC-FT**

Available Pond Volume

SOUTH POND EXPANSION

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
2.67	29708	0.68	0.0	0.0	0.00	
3.0	30625	0.70	9954.9	9954.9	0.23	*Weir EL*
5.5	34225	0.79	81062.5	91017.4	2.09	
6.5	42025	0.96	38125.0	129142.4	2.96	

Required Treatment Volume =	0.23	ac-ft	
Provided Treatment Volume =	**0.23**	**ac-ft**	✓
Required Attenuation Volume =	0.72	ac-ft	
Provided Attenuation Volume =	**1.86**	**ac-ft**	✓

Required Attenuation Volume Calculation (25-YR/24-HR)

BASIN R1

Pre-Development Curve Number Calculation

					CN	Product
Impervious (Rdwy) Area =	890366	sf =	20.44	acres	98	2003
Impervious (Pond) Area =	566280	sf =	13.00	acres	100	1300
Pervious (Sod) Area =	1965863	sf =	45.13	acres	80	3610
Offsite (Commercial) Area =	0	sf =	0.00	acres	94	0
Offsite (Streets & Roads) Area =	0	sf =	0.00	acres	92	0
Offsite (Grass) Area =	0	sf =	0.00	acres	79	0
Total Area =	3422509	sf =	**78.57**	**acres**		6914
Composite Curve Number =			**88.0**			

Pre-Development Runoff Volume Calculation

25-yr/24-hr Rainfall Depth (P) = 9.00 IN
CN = 88.0
Drainage Area (A) = 78.57 AC

Potential maximum retention after runoff begins (S) and S is:

(S) = 1000/CN-10 = 1.36 IN
Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 7.55
Pre-Development Runoff Volume (V_{pre}) = A x Q = 49.41 AC-FT

Post-Development Curve Number Calculation

					CN	Product
Impervious (Rdwy) Area =	890366	sf =	20.44	acres	98	2003
New Impervious (Rdwy) Area =	**122404**	**sf =**	**2.81**	**acres**	98	275
Impervious (Pond) Area =	609840	sf =	14.00	acres	100	1400
Pervious (Sod) Area =	1799899	sf =	41.32	acres	80	3306
Offsite (Commercial) Area =	0	sf =	0.00	acres	94	0
Offsite (Streets & Roads) Area =	0	sf =	0.00	acres	92	0
Offsite (Grass) Area =	0	sf =	0.00	acres	79	0
Total Area =	3422509	sf =	**78.57**	**acres**		6984
Composite Curve Number =			**88.9**			

Post-Development Runoff Volume Calculation

25-yr/24-hr Rainfall Depth (P) = 9.00 IN
CN = 88.9
Drainage Area (A) = 78.57 AC

Potential maximum retention after runoff begins (S) and S is:

(S) = 1000/CN-10 = 1.25 IN
Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 7.66
Post-Development Runoff Volume (V_{pre}) = A x Q = 50.13 AC-FT

Required Attenuation Volume = V_{post} - V_{pre} =	**0.72**	**AC-FT**
	31,227	**CF**

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A wet detention treatment system will be used for: Basin R3

The wet detention treatment system shall treat one inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided.

Therefore:

Permitted Treatment Volume Provided =		0.50	AC-FT
New Impervious (Rdwy) Area =		1.36	AC
Additional Treatment Volume Required =	1.36 x 1 in x $^{1\ ft}/_{12\ in}$ =	0.11	AC-FT
Total Treatment Volume Required =		**0.61**	**AC-FT**

Available Pond Volume

EXISTING FDOT POND 2

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
5.25	63383	1.46	0.0	0.0	0.00	
5.74	69113	1.59	32461.5	32461.5	0.75	*Weir EL*
7.2	89691	2.06	115926.9	148388.4	3.41	
8.2	125496	2.88	107593.5	255981.9	5.88	

Required Treatment Volume =	0.61	ac-ft	
Provided Treatment Volume =	**0.75**	**ac-ft**	✓
Required Attenuation Volume =	0.25	ac-ft	
Provided Attenuation Volume =	**2.66**	**ac-ft**	✓

Required Attenuation Volume Calculation (25-YR/24-HR)

BASIN R3

Pre-Development Curve Number Calculation

					CN	Product
Impervious (Rdwy) Area =	293159	sf =	6.73	acres	98	660
Impervious (Pond) Area =	63598	sf =	1.46	acres	100	146
Pervious (Sod) Area =	211266	sf =	4.85	acres	80	388
Offsite (Commercial) Area =	0	sf =	0.00	acres	94	0
Offsite (Streets & Roads) Area =	0	sf =	0.00	acres	92	0
Offsite (Grass) Area =	0	sf =	0.00	acres	79	0
Total Area =	568022	sf =	**13.04**	**acres**		1194
Composite Curve Number =			**91.5**			

Pre-Development Runoff Volume Calculation

25-yr/24-hr Rainfall Depth (P) = 9.00 IN
CN = 91.5
Drainage Area (A) = 13.04 AC

Potential maximum retention after runoff begins (S) and S is:

(S) = 1000/CN-10 = 0.93 IN
Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 7.98
Pre-Development Runoff Volume (V_{pre}) = A x Q = 8.67 AC-FT

Post-Development Curve Number Calculation

					CN	Product
Impervious (Rdwy) Area =	293159	sf =	6.73	acres	98	660
New Impervious (Rdwy) Area =	**59242**	**sf =**	**1.36**	**acres**	98	133
Impervious (Pond) Area =	63598	sf =	1.46	acres	100	146
Pervious (Sod) Area =	152024	sf =	3.49	acres	80	279
Offsite (Commercial) Area =	0	sf =	0.00	acres	94	0
Offsite (Streets & Roads) Area =	0	sf =	0.00	acres	92	0
Offsite (Grass) Area =	0	sf =	0.00	acres	79	0
Total Area =	568022	sf =	**13.04**	**acres**		1218
Composite Curve Number =			**93.4**			

Post-Development Runoff Volume Calculation

25-yr/24-hr Rainfall Depth (P) = 9.00 IN
CN = 93.4
Drainage Area (A) = 13.04 AC

Potential maximum retention after runoff begins (S) and S is:

(S) = 1000/CN-10 = 0.71 IN
Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 8.21
Post-Development Runoff Volume (V_{pre}) = A x Q = 8.92 AC-FT

Required Attenuation Volume = V_{post} - V_{pre} =	**0.25**	**AC-FT**
	10,776	**CF**

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A wet detention treatment system will be used for: Basin R4

The wet detention treatment system shall treat one inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Provided =		0.15	AC-FT
New Impervious (Rdwy) Area =		0.16	AC
Additional Treatment Volume Required =	0.16 x 1 in x $^{1\ ft}/_{12\ in}$ =	0.01	AC-FT
Total Treatment Volume Required =		**0.16**	**AC-FT**

Available Pond Volume

EXISTING FDOT POND 1

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
5.25	26299	0.60	0.0	0.0	0.00	
5.74	28326	0.65	13383.1	13383.1	0.31	*Weir EL*
7.2	34508	0.79	45868.8	59251.9	1.36	
8.2	44738	1.03	39623.0	98874.9	2.27	

Required Treatment Volume =	0.16	ac-ft	
Provided Treatment Volume =	**0.31**	**ac-ft**	✓
Required Attenuation Volume =	0.03	ac-ft	
Provided Attenuation Volume =	**1.05**	**ac-ft**	✓

Required Attenuation Volume Calculation (25-YR/24-HR)

BASIN R4

Pre-Development Curve Number Calculation

					CN	Product
Impervious (Rdwy) Area =	80586	sf =	1.85	acres	98	181
Impervious (Pond) Area =	26136	sf =	0.60	acres	100	60
Pervious (Sod) Area =	64033	sf =	1.47	acres	80	118
Offsite (Commercial) Area =	0	sf =	0.00	acres	94	0
Offsite (Streets & Roads) Area =	0	sf =	0.00	acres	92	0
Offsite (Grass) Area =	0	sf =	0.00	acres	79	0
Total Area =	170755	sf =	**3.92**	**acres**		359
Composite Curve Number =			**91.6**			

Pre-Development Runoff Volume Calculation

25-yr/24-hr Rainfall Depth (P) = 9.00 IN

CN = 91.6

Drainage Area (A) = 3.92 AC

Potential maximum retention after runoff begins (S) and S is:

(S) = 1000/CN-10 = 0.92 IN

Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 7.98

Pre-Development Runoff Volume (V_{pre}) = A x Q = 2.61 AC-FT

Post-Development Curve Number Calculation

					CN	Product
Impervious (Rdwy) Area =	80586	sf =	1.85	acres	98	181
New Impervious (Rdwy) Area =	**6970**	**sf =**	**0.16**	**acres**	98	16
Impervious (Pond) Area =	26136	sf =	0.60	acres	100	60
Pervious (Sod) Area =	57064	sf =	1.31	acres	80	105
Offsite (Commercial) Area =	0	sf =	0.00	acres	94	0
Offsite (Streets & Roads) Area =	0	sf =	0.00	acres	92	0
Offsite (Grass) Area =	0	sf =	0.00	acres	79	0
Total Area =	170755	sf =	**3.92**	**acres**		362
Composite Curve Number =			**92.3**			

Post-Development Runoff Volume Calculation

25-yr/24-hr Rainfall Depth (P) = 9.00 IN

CN = 92.3

Drainage Area (A) = 3.92 AC

Potential maximum retention after runoff begins (S) and S is:

(S) = 1000/CN-10 = 0.84 IN

Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 8.07

Post-Development Runoff Volume (V_{pre}) = A x Q = 2.64 AC-FT

Required Attenuation Volume = V_{post} - V_{pre} =	**0.03**	**AC-FT**
	1,269	**CF**

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A wet detention treatment system will be used for: Basin 21

A wet detention treatment system shall treat one inch of runoff from the NEW roadway impervious area or the area of equivalent treatment directed to the system.

Therefore:

Required Treatment Volume = New Impervious (Rdwy) Area x 1 inch x $^{1\ \text{foot}}/_{12\ \text{inches}}$

New Impervious (Rdwy) Area:	3.12	AC
New Impervious (Rdwy) Area for Basin 22:	5.40	AC *
Total Impervious Area to be treated:	8.52	AC
Total Treatment Volume Required =	**0.71**	**AC-FT**

** Basin 22 discharges directly to Old Tampa Bay and has no area available for stormwater management. Therefore, compensatory treatment has been provided Basin 21.*

Proposed Pond 21 Volume

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
6.00	34225	0.786	0.0	0.0	0.00	
7.25	38025	0.873	45156.3	45156.3	1.04	*Weir EL*
9.00	43681	1.003	71492.8	116649.0	2.68	
10.00	62001	1.423	52841.0	169490.0	3.89	

Required Treatment Volume =	0.71	ac-ft	
Provided Treatment Volume =	**1.04**	**ac-ft**	✓
Required Attenuation Volume =	1.64	ac-ft	
Provided Attenuation Volume =	**1.64**	**ac-ft**	✓

Required Attenuation Volume Calculation (SWFWMD 25-YR/24-HR)

BASIN 21

Pre-Development Curve Number Calculation

					CN	Product
Impervious (Rdwy) Area =	341946	sf =	7.85	acres	98	769
Pervious (Sod) Area =	429066	sf =	9.85	acres	80	788
Offsite (Grass) Area =	0	sf =	0.00	acres	80	0
Total Area =	771012	sf =	**17.70**	**acres**		1557
Composite Curve Number =			**88.0**			

Pre-Development Runoff Volume Calculation

25-yr/24-hr Rainfall Depth (P) = 9.00 IN

CN = 88.0

Drainage Area (A) = 17.70 AC

Potential maximum retention after runoff begins (S) and S is:

(S) = 1000/CN-10 = 1.37 IN

Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 7.55

Pre-Development Runoff Volume (V_{pre}) = A x Q = 11.13 AC-FT

Post-Development Curve Number Calculation

					CN	Product
Impervious (Rdwy) Area =	341946	sf =	7.85	acres	98	769
New Impervious (Rdwy) Area =	**135907**	**sf =**	**3.12**	**acres**	98	306
Pervious (Sod) Area =	302742	sf =	6.95	acres	80	556
Pond (Pervious) Area =	21780	sf =	0.50	acres	80	40
Pond (Impervious) Area =	39204	sf =	0.90	acres	100	90
Total Area =	841579	sf =	**19.32**	**acres**		1761
Composite Curve Number =			**91.2**			

Post-Development Runoff Volume Calculation

25-yr/24-hr Rainfall Depth (P) = 9.00 IN

CN = 91.2

Drainage Area (A) = 19.32 AC

Potential maximum retention after runoff begins (S) and S is:

(S) = 1000/CN-10 = 0.97 IN 2.9

Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 7.93 0.22

Post-Development Runoff Volume (V_{pre}) = A x Q = 12.77 AC-FT 3.12

Required Attenuation Volume = V_{post} - V_{pre} =	**1.64**	**AC-FT**
	71,426	**CF**

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A wet detention treatment system will be used for: Basin R5

The wet detention treatment system shall treat one inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Provided =		0.07	AC-FT
New Impervious (Rdwy) Area =		0.39	AC
Additional Treatment Volume Required =	0.39 x 1 in x $^{1\ ft}/_{12\ in}$ =	0.03	AC-FT
Total Treatment Volume Required =		**0.10**	**AC-FT**

Available Pond Volume

EXISTING FDOT POND 3

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
5.25	5288	0.12	0.0	0.0	0.00	
5.84	9723	0.22	4428.2	4428.2	0.10	*Weir EL*
7.2	27103	0.62	25041.7	29469.9	0.68	
8.2	39008	0.90	33055.5	62525.4	1.44	

Required Treatment Volume =	0.10	ac-ft	
Provided Treatment Volume =	**0.10**	**ac-ft**	✓
Required Attenuation Volume =	0.07	ac-ft	
Provided Attenuation Volume =	**0.57**	**ac-ft**	✓

Note: Raise weir elevation 0.1' to 5.84.

Required Attenuation Volume Calculation (25-YR/24-HR)

BASIN R5

Pre-Development Curve Number Calculation

					CN	Product
Impervious (Rdwy) Area =	45738	sf =	1.05	acres	98	103
Impervious (Pond) Area =	5227	sf =	0.12	acres	100	12
Pervious (Sod) Area =	40511	sf =	0.93	acres	80	74
Offsite (Commercial) Area =	0	sf =	0.00	acres	94	0
Offsite (Streets & Roads) Area =	0	sf =	0.00	acres	92	0
Offsite (Grass) Area =	0	sf =	0.00	acres	79	0
Total Area =	91476	sf =	**2.10**	**acres**		189
Composite Curve Number =			**90.1**			

Pre-Development Runoff Volume Calculation

25-yr/24-hr Rainfall Depth (P) = 9.00 IN

CN = 90.1

Drainage Area (A) = 2.10 AC

Potential maximum retention after runoff begins (S) and S is:

(S) = 1000/CN-10 = 1.09 IN

Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 7.81

Pre-Development Runoff Volume (V_{pre}) = A x Q = 1.37 AC-FT

Post-Development Curve Number Calculation

					CN	Product
Impervious (Rdwy) Area =	45738	sf =	1.05	acres	98	103
New Impervious (Rdwy) Area =	**16988**	**sf =**	**0.39**	**acres**	98	38
Impervious (Pond) Area =	5227	sf =	0.12	acres	100	12
Pervious (Sod) Area =	23522	sf =	0.54	acres	80	43
Offsite (Commercial) Area =	0	sf =	0.00	acres	94	0
Offsite (Streets & Roads) Area =	0	sf =	0.00	acres	92	0
Offsite (Grass) Area =	0	sf =	0.00	acres	79	0
Total Area =	91476	sf =	**2.10**	**acres**		196
Composite Curve Number =			**93.5**			

Post-Development Runoff Volume Calculation

25-yr/24-hr Rainfall Depth (P) = 9.00 IN

CN = 93.5

Drainage Area (A) = 2.10 AC

Potential maximum retention after runoff begins (S) and S is:

(S) = 1000/CN-10 = 0.70 IN

Runoff Depth (Q) = (P-0.2S)^2/(P+0.8S) = 8.21

Post-Development Runoff Volume (V_{pre}) = A x Q = 1.44 AC-FT

Required Attenuation Volume = V_{post} - V_{pre} =	**0.07**	**AC-FT**
	3,093	**CF**

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A wet detention treatment system will be used for: Basin M

The wet detention treatment system shall treat one inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Provided =		0.34	AC-FT
New Impervious (Rdwy) Area =		1.29	AC
Additional Treatment Volume Required =	1.29 x 1.5 in x $^{1\ ft}/_{12\ in}$ =	0.16	AC-FT
Total Treatment Volume Required =		**0.50**	**AC-FT**

Reconstructed Pond M Volume

Estimated Seasonal High Water Table (SHWT) = 1.80 ft
Low Roadway EOP Elevation = 7.16 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
1.8	34867	0.80	0.0	0.0	0.00	
2.6	39929	0.92	29918.4	29918.4	0.69	*Weir EL*
3.8	47621	1.09	52530.0	82448.4	1.89	*Berm*

Required Treatment Volume = 0.50 ac-ft
Provided Treatment Volume = 0.69 ac-ft ✓

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A wet detention treatment system will be used for: Basin M0

The wet detention treatment system shall treat one inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Provided =		0.31	AC-FT
New Impervious (Rdwy) Area =		1.63	AC
Additional Treatment Volume Required =	1.63 x 1.5 in x $^{1\ ft}/_{12\ in}$ =	0.20	AC-FT
Total Treatment Volume Required =		**0.51**	**AC-FT**

Reconstructed Pond M0 Volume

Estimated Seasonal High Water Table (SHWT) = 1.80 ft
Low Roadway EOP Elevation = 7.16 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
1.8	43144.0	0.99	0.0	0.0	0.00	
2.3	46683.0	1.07	22456.8	22456.8	0.52	*Weir EL*
2.8	50226.0	1.15	24227.3	46684.0	1.07	*Berm*

Required Treatment Volume = 0.51 ac-ft
Provided Treatment Volume = 0.52 ac-ft ✓

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A dry treatment system will be used for: Basin M1

The dry treatment system shall treat one-half inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Required =		0.28	AC-FT
New Impervious (Rdwy) Area =		0.80	AC
Additional Treatment Volume Required =	0.80 x 0.75 in x $^{1\ ft}/_{12\ in}$ =	0.05	AC-FT
Total Treatment Volume Required =		**0.33**	**AC-FT**

Available Pond Volume

EXPANDED POND M1

Estimated Seasonal High Water Table (SHWT) = 1.50 ft
Low Roadway EOP Elevation = 6.16 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
3.30	86556	1.99	0.0	0.0	0.00	
3.45	93083	2.14	13472.9	13472.9	0.31	
3.60	99610	2.29	14452.0	27924.9	0.64	*Weir EL*
4.30	130069	2.99	80387.7	108312.6	2.49	
5.00	160528	3.69	101709.0	210021.5	4.82	*Berm*

Required Treatment Volume = 0.33 ac-ft
Provided Treatment Volume = 0.64 ac-ft ✓

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A dry treatment system will be used for: Basin M2

The dry treatment system shall treat one-half inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Required =		0.44	AC-FT
New Impervious (Rdwy) Area =		1.35	AC
Additional Treatment Volume Required =	1.35 x 0.75 in x $^{1\ ft}/_{12\ in}$ =	0.08	AC-FT
Total Treatment Volume Required =		**0.52**	**AC-FT**

Available Pond Volume

POND M2 REDUCED

Estimated Seasonal High Water Table (SHWT) = 1.50 ft
Low Roadway EOP Elevation = 6.16 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
3.30	250643	5.75	0.0	0.0	0.00	
3.40	253780	5.83	25221.2	25221.2	0.58	
3.45	255489	5.87	12731.7	37952.9	0.87	*Weir EL*
4.40	285148	6.55	256802.6	294755.5	6.77	
5.00	303969	6.98	176735.1	471490.6	10.82	*Berm*

Required Treatment Volume =	0.52	ac-ft	
Provided Treatment Volume =	**0.87**	**ac-ft**	✓

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A dry treatment system will be used for: Basin G2

The dry treatment system shall treat one-half inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Required =		0.12	AC-FT
New Impervious (Rdwy) Area =		0.35	AC
Additional Treatment Volume Required =	0.35 x 0.75 in x $^{1\ ft}/_{12\ in}$ =	0.02	AC-FT
Total Treatment Volume Required =		**0.14**	**AC-FT**

Available Pond Volume

SWALE G2

Estimated Seasonal High Water Table (SHWT) = 1.50 ft
Low Roadway EOP Elevation = 6.01 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
3.30	12066	0.28	0.0	0.0	0.00	
3.80	16117	0.37	7045.8	7045.8	0.16	*Weir EL*
4.24	19602	0.45	7858.2	14904.1	0.34	
4.70	23174	0.53	9838.5	24742.5	0.57	*Berm*

Required Treatment Volume = 0.14 ac-ft
Provided Treatment Volume = 0.16 ac-ft ✓

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A dry treatment system will be used for: Basin M3

The dry treatment system shall treat one-half inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Required =		0.30	AC-FT
New Impervious (Rdwy) Area =		0.75	AC
Additional Treatment Volume Required =	0.75 x 0.75 in x $^{1\ ft}/_{12\ in}$ =	0.05	AC-FT
Total Treatment Volume Required =		**0.35**	**AC-FT**

Available Pond Volume

SWALE M3 REDUCED

Estimated Seasonal High Water Table (SHWT) = 1.50 ft
Low Roadway EOP Elevation = 5.90 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
5.0	198059	4.55	0.0	0.0	0.00	
5.2	199940	4.59	39799.9	39799.9	0.91	*Weir EL*
5.63	206861	4.75	87462.2	127262.1	2.92	
7.0	217190	4.99	290474.9	417737.1	9.59	*Berm*

Required Treatment Volume = 0.35 ac-ft
Provided Treatment Volume = 0.91 ac-ft ✓

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A dry treatment system will be used for: Basin H1

The dry treatment system shall treat one-half inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Required =		0.25	AC-FT
New Impervious (Rdwy) Area =		0.49	AC
Additional Treatment Volume Required =	0.49 x 0.75 in x $^{1\ ft}/_{12\ in}$ =	0.03	AC-FT
Total Treatment Volume Required =		**0.28**	**AC-FT**

Available Pond Volume

SWALE H1 REDUCED

Estimated Seasonal High Water Table (SHWT) = 1.50 ft
Low Roadway EOP Elevation = 6.16 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
15.0	37518	0.86	0.0	0.0	0.00	
15.6	42340	0.97	23957.4	23957.4	0.55	*Weir EL*
16.74	50965	1.17	53183.8	77141.2	1.77	
18.0	60178	1.38	70020.1	147161.3	3.38	*Berm*

Required Treatment Volume =	0.28	ac-ft	
Provided Treatment Volume =	**0.55**	**ac-ft**	✓

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A dry treatment system will be used for: Basin M4

The dry treatment system shall treat one-half inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Required =		0.20	AC-FT
New Impervious (Rdwy) Area =		0.42	AC
Additional Treatment Volume Required =	0.42 x 0.75 in x $^{1\ ft}/_{12\ in}$ =	0.03	AC-FT
Total Treatment Volume Required =		**0.23**	**AC-FT**

Reconstructed Pond M4 Volume

Estimated Seasonal High Water Table (SHWT) = 1.50 ft
Low Roadway EOP Elevation = 7.16 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
3.5	10000	0.23	0.0	0.0	0.00	
3.8	16841	0.39	4026.2	4026.2	0.09	
4.1	25200	0.58	6306.2	10332.4	0.24	*Weir EL*
4.4	31631	0.73	8524.7	18857.1	0.43	*Berm*

Required Treatment Volume = 0.23 ac-ft
Provided Treatment Volume = 0.24 ac-ft

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A dry treatment system will be used for: Basin M5

The dry treatment system shall treat one-half inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Required =		0.19	AC-FT
New Impervious (Rdwy) Area =		0.53	AC
Additional Treatment Volume Required =	0.53 x 0.75 in x $^{1\ ft}/_{12\ in}$ =	0.03	AC-FT
Total Treatment Volume Required =		**0.22**	**AC-FT**

Reconstructed Pond M5 Volume

Estimated Seasonal High Water Table (SHWT) = 1.50 ft
Low Roadway EOP Elevation = 7.16 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
3.6	10502	0.24	0.0	0.0	0.00	
3.9	19728	0.45	4534.4	4534.4	0.10	
4.2	25308	0.58	6755.4	11289.8	0.26	*Weir EL*
4.5	30888	0.71	8429.4	19719.2	0.45	*Berm*

Required Treatment Volume = 0.22 ac-ft
Provided Treatment Volume = 0.26 ac-ft

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A dry treatment system will be used for: Basin M6

The dry treatment system shall treat one-half inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Required =		0.11	AC-FT
New Impervious (Rdwy) Area =		0.37	AC
Additional Treatment Volume Required =	0.37 x 0.75 in x $^{1\ ft}/_{12\ in}$ =	0.02	AC-FT
Total Treatment Volume Required =		**0.13**	**AC-FT**

Reconstructed Pond M6 Volume

Estimated Seasonal High Water Table (SHWT) = 1.50 ft
Low Roadway EOP Elevation = 7.16 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
4.0	7950	0.18	0.0	0.0	0.00	
4.5	16150	0.37	6025.0	6025.0	0.14	*Weir EL*
5.0	19495	0.45	8911.3	14936.3	0.34	*Berm*
5.5	22840	0.52	10583.8	25520.0	0.59	

Required Treatment Volume = 0.13 ac-ft
Provided Treatment Volume = 0.14 ac-ft ✓

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A dry treatment system will be used for: Basin M7

The dry treatment system shall treat one-half inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Required =		0.08	AC-FT
New Impervious (Rdwy) Area =		0.25	AC
Additional Treatment Volume Required =	0.25 x 0.75 in x $^{1\ ft}/_{12\ in}$ =	0.02	AC-FT
Total Treatment Volume Required =		**0.10**	**AC-FT**

Reconstructed Pond M7 Volume

Estimated Seasonal High Water Table (SHWT) = 1.50 ft
Low Roadway EOP Elevation = 7.16 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
3.5	9600	0.22	0.0	0.0	0.00	
3.7	11744	0.27	2134.4	2134.4	0.05	
3.9	13888	0.32	2563.2	4697.6	0.11	*Weir EL*
4.1	16274	0.37	3016.2	7713.8	0.18	*Berm*

Required Treatment Volume = 0.10 ac-ft
Provided Treatment Volume = 0.11 ac-ft

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A dry treatment system will be used for: Basin B1

The dry treatment system shall treat one-half inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Required =		0.09	AC-FT
New Impervious (Rdwy) Area =		0.19	AC
Additional Treatment Volume Required =	0.19 x 0.75 in x $^{1\ ft}/_{12\ in}$ =	0.01	AC-FT
Total Treatment Volume Required =		**0.10**	**AC-FT**

Available Pond Volume

SWALE B1

Estimated Seasonal High Water Table (SHWT) = 1.50 ft
Low Roadway EOP Elevation = 7.86 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
3.6	3003	0.07	0.0	0.0	0.00	
3.9	7820	0.18	1623.5	1623.5	0.04	
4.2	12822	0.29	3096.3	4719.8	0.11	*Weir EL*
4.5	16550	0.38	4405.8	9125.6	0.21	*Berm*

Required Treatment Volume = 0.10 ac-ft
Provided Treatment Volume = 0.11 ac-ft

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A dry treatment system will be used for: Basin M8

The dry treatment system shall treat one-half inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Required =		0.11	AC-FT
New Impervious (Rdwy) Area =		0.73	AC
Additional Treatment Volume Required =	0.73 x 0.75 in x $^{1\ ft}/_{12\ in}$ =	0.05	AC-FT
Total Treatment Volume Required =		**0.16**	**AC-FT**

Reconstructed Pond M8 Volume

Estimated Seasonal High Water Table (SHWT) = 1.50 ft
Low Roadway EOP Elevation = 8.66 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
3.8	200	0.00	0.0	0.0	0.00	
4.1	12635	0.29	1925.3	1925.3	0.04	
4.4	19555	0.45	4828.5	6753.8	0.16	*Weir EL*
4.7	25675	0.59	6784.5	13538.3	0.31	*Berm*

Required Treatment Volume = 0.16 ac-ft
Provided Treatment Volume = 0.16 ac-ft ✓

Required Water Quality Treatment Volume

The volume of runoff to be treated from a site shall be determined by the type of treatment system.

A dry treatment system will be used for: Basin M9

The dry treatment system shall treat one-half inch of runoff from the NEW roadway impervious area directed to the system plus the existing permitted treatment volume provided. In addition, the outfall is OFW, requiring 50% additional treatment volume.

Therefore:

Permitted Treatment Volume Required =		0.10	AC-FT
New Impervious (Rdwy) Area =		0.31	AC
Additional Treatment Volume Required =	0.31 x 0.75 in x $^{1\ ft}/_{12\ in}$ =	0.02	AC-FT
Total Treatment Volume Required =		**0.12**	**AC-FT**

Reconstructed Pond M9 Volume

Estimated Seasonal High Water Table (SHWT) = 1.50 ft
Low Roadway EOP Elevation = 8.96 ft

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
3.6	4004	0.09	0.0	0.0	0.00	
3.9	8289	0.19	1844.0	1844.0	0.04	
4.2	18846	0.43	4070.3	5914.2	0.14	*Weir EL*
4.5	27571	0.63	6962.6	12876.8	0.30	*Berm*

Required Treatment Volume = 0.12 ac-ft
Provided Treatment Volume = 0.14 ac-ft

GENERAL SITE INFORMATION: V7.3

GO TO INTRODUCTION PAGE

Blue Numbers = Input data

Red Numbers = Calculated or Carryover

Select the appropriate Meteorological Zone, input the appropriate Mean Annual Rainfall amount and select the type of analysis

NAME OF PROJECT

I-275 JOE'S CREEK

HELP

VIEW ZONE MAP

Meteorological Zone (Please use zone map): CLICK ON CELL BELOW TO SELECT — Zone 4

Mean Annual Rainfall (Please use rainfall map): 51.00 Inches

VIEW MEAN ANNUAL RAINFALL MAP

Type of analysis: CLICK ON CELL BELOW TO SELECT — Specified removal efficiency

Treatment efficiency (N, P) (leave empty if net improvement or BMP analysis is used): 49.00 49.00 %

GO TO WATERSHED CHARACTERISTICS

Select the STORMWATER TREATMENT ANALYSIS Button below to begin analyzing the effectiveness of Best Management Practices.

Model documentation and example problems.

STORMWATER TREATMENT ANALYSIS

Systems available for analysis:
Retention Basin with option for calculating effluent concentration
Wet Detention
Exfiltration Trench
Pervious Pavement
Stormwater Harvesting
Underdrain Biofiltration
Greenroof
Rainwater Harvesting
Floating Island with Wet Detention
Vegetated Natural Buffer
Vegetated Filter Strip
Swale
Rain Garden
Lined reuse pond
User Defined BMP

There is a user's manual for the BMPTRAINS model. It can be downloaded from www.stormwater.ucf.edu. The results from the example problems shown in the manual however may not reflect current model results due to ongoing updates of the model.

RESET INPUT FOR STORMWATER TREATMENT ANALYSIS

METHODOLOGY FOR CALCULATING REQUIRED TREATMENT EFFICIENCY

METHODOLOGY FOR RETENTION SYSTEMS

METHODOLOGY FOR WET DETENTION SYSTEMS

METHODOLOGY FOR GREENROOF SYSTEMS

METHODOLOGY FOR WATER HARVESTING SYSTEMS

WATERSHED CHARACTERISTICS V7.3

GO TO STORMWATER TREATMENT ANALYSIS

Blue Numbers = Input data
Red Numbers = Calculated

HELP - LAND USES/EMC

SELECT CATCHMENT CONFIGURATION

CLICK ON CELL BELOW TO SELECT CONFIGURATION
A - Single Catchment

VIEW CATCHMENT CONFIGURATION

CATCHMENT NO.1 CHARACTERISTICS:

\ If mixed land uses (side calculation)

	CLICK ON CELL BELOW TO SELECT	Land use	Area Acres	non DCIA CN	%DCIA
Pre-development land use:	Highway: TN=1.640 TP=0.220				
with default EMCs	CLICK ON CELL BELOW TO SELECT				
Post-development land use:	Highway: TN=1.640 TP=0.220				
with default EMCs		Total			

Total pre-development catchment area:	67.59	AC
Total post-development catchment or BMP analysis area:	67.59	AC
Pre-development Non DCIA CN:	79.00	
Pre-development DCIA percentage:	42.39	%
Post-development Non DCIA CN:	79.00	
Post-development DCIA percentage:	49.65	%
Estimated Area of BMP (used for rainfall excess not loadings)	1.00	AC

OVERWRITE DEFAULT CONCENTRATIONS USING:

	PRE:		POST:	
EMC(N):		mg/L		mg/L
EMC(P):		mg/L		mg/L

CLICK ON CELL BELOW TO SELECT:
USE DEFAULT CONCENTRATIONS

Average annual runoff volume:	133.068	ac-ft/year
Pre-development Annual Mass Loading - **Nitrogen:**	243.916	kg/year
Pre-development Annual Mass Loading - **Phosphorus:**	32.720	kg/year
Post-development Annual Mass Loading - **Nitrogen:**	269.136	kg/year
Post-development Annual Mass Loading - **Phosphorus:**	36.104	kg/year

CATCHMENT NO.2 CHARACTERISTICS:

\ If mixed land uses (side calculation)

	CLICK ON CELL BELOW TO SELECT	Land use	Area Acres	non DCIA CN	%DCIA
Pre-development land use:	PLEASE SELECT LAND USE:				
with default EMCs	CLICK ON CELL BELOW TO SELECT				
Post-development land use:	PLEASE SELECT LAND USE:				
with default EMCs		Total			

Total pre-development catchment area:		AC
Total post-development catchment or BMP analysis area:		AC
Pre-development Non DCIA CN:		
Pre-development DCIA percentage:		%
Post-development Non DCIA CN:		
Post-development DCIA percentage:		%
Estimated Area of BMP (used for rainfall excess not loadings)		AC

OVERWRITE DEFAULT CONCENTRATIONS:

	PRE:		POST:	
EMC(N):		mg/L		mg/L
EMC(P):		mg/L		mg/L

CLICK ON CELL BELOW TO SELECT:
USE DEFAULT CONCENTRATIONS

Average annual runoff volume:		ac-ft/year
Pre-development Annual Mass Loading - **Nitrogen:**		kg/year
Pre-development Annual Mass Loading - **Phosphorus:**		kg/year
Post-development Annual Mass Loading - **Nitrogen:**		kg/year
Post-development Annual Mass Loading - **Phosphorus:**		kg/year

CATCHMENT NO.3 CHARACTERISTICS:

\ If mixed land uses (side calculation)

	CLICK ON CELL BELOW TO SELECT	Land use	Area Acres	non DCIA CN	%DCIA
Pre-development land use:					
with default EMCs	CLICK ON CELL BELOW TO SELECT				
Post-development land use:					
with default EMCs		Total			

Total pre-development catchment area:		AC
Total post-development catchment or BMP analysis area:		AC
Pre-development Non DCIA CN:		
Pre-development DCIA percentage:		%
Post-development Non DCIA CN:		
Post-development DCIA percentage:		%
Estimated Area of BMP (used for rainfall excess not loadings)		AC

OVERWRITE DEFAULT CONCENTRATIONS:

	PRE:		POST:	
EMC(N):		mg/L		mg/L
EMC(P):		mg/L		mg/L

CLICK ON CELL BELOW TO SELECT:
USE DEFAULT CONCENTRATIONS

Average annual runoff volume:		ac-ft/year
Pre-development Annual Mass Loading - **Nitrogen:**		kg/year
Pre-development Annual Mass Loading - **Phosphorus:**		kg/year
Post-development Annual Mass Loading - **Nitrogen:**		kg/year
Post-development Annual Mass Loading - **Phosphorus:**		kg/year

CATCHMENT NO.4 CHARACTERISTICS:

\ If mixed land uses (side calculation)

	CLICK ON CELL BELOW TO SELECT	Land use	Area Acres	non DCIA CN	%DCIA
Pre-development land use:					
with default EMCs	CLICK ON CELL BELOW TO SELECT				
Post-development land use:					
with default EMCs		Total			

Total pre-development catchment area:		AC
Total post-development catchment or BMP analysis area:		AC
Pre-development Non DCIA CN:		
Pre-development DCIA percentage:		%
Post-development Non DCIA CN:		
Post-development DCIA percentage:		%
Estimated Area of BMP (used for rainfall excess not loadings)		AC

OVERWRITE DEFAULT CONCENTRATIONS:

	PRE:		POST:	
EMC(N):		mg/L		mg/L
EMC(P):		mg/L		mg/L

CLICK ON CELL BELOW TO SELECT:
USE DEFAULT CONCENTRATIONS

Average annual runoff volume:		ac-ft/year
Pre-development Annual Mass Loading - **Nitrogen:**		kg/year
Pre-development Annual Mass Loading - **Phosphorus:**		kg/year
Post-development Annual Mass Loading - **Nitrogen:**		kg/year
Post-development Annual Mass Loading - **Phosphorus:**		kg/year

RETENTION BASIN: V7.3

Blue Numbers =	Input data
Red Numbers =	Calculated or Carryover

RETENTION BASIN SERVING: I-275 JOE'S CREEK

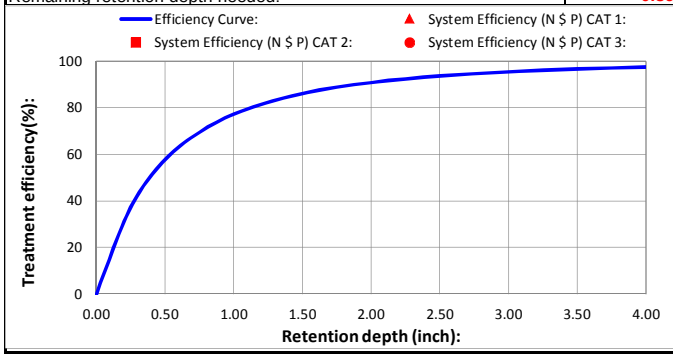
GO TO STORMWATER TREATMENT ANALYSIS

ERROR MESSAGE WINDOW FOR SINGLE RETENTION BASIN:

	Catchment 1	Catchment 2	Catchment 3	Catchment 4	
Watershed area:	66.590	0.000	0.000	0.000	ac
Required Treatment Eff (**Nitrogen**):	49.000	49.000	49.000	49.000	%
Required Treatment Eff (**Phosphorus**):	49.000	49.000	49.000	49.000	%
Required retention depth over the watershed to meet required efficiency	0.395	0.395	0.395	0.395	in
Required water quality retention volume:	2.191	0.000	0.000	0.000	ac-ft

RETENTION BASIN FOR MULTIPLE TREATMENT SYSTEMS (if there is a need for additional removal efficiencies in a series of BMPs):

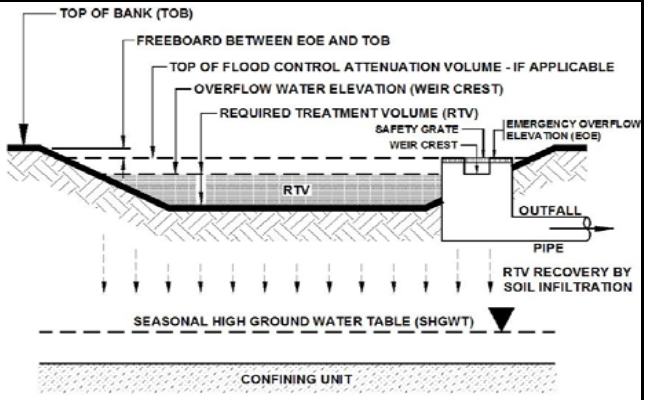
Retention volume based on retention depth	0.000	0.000	0.000	0.000	ac-ft
Provided retention depth (inches over the watershed area):					in
Provided treatment efficiency (**Nitrogen**):	0.000	0.000	0.000	0.000	%
Provided treatment efficiency (**Phosphorus**):	0.000	0.000	0.000	0.000	%
Remaining treatment efficiency (**Nitrogen**):	49.000	49.000	49.000	49.000	%
Remaining treatment efficiency (**Phosphorus**):	49.000	49.000	49.000	49.000	%
Remaining retention depth needed:	0.395	0.395	0.395	0.395	in



NOTE FOR TREATMENT EFFICIENCY GRAPH:

The purpose of this graph is to help illustrate the treatment efficiency of the retention system as the function of retention depth **for a single BMP and in a single catchment**. The graph illustrates that there is a diminished return as the retention depth is increased. Thus evaluations of other alternatives in "treatment trains" and compensatory treatment should be considered.

HELP - EXAMPLE PROBLEM 3



TYPICAL CROSS SECTION OF A "DRY" RETENTION SYSTEM

View Media Mixes

	Catchment 1	Catchment 2	Catchment 3	Catchment 4
If using media mix as a filter before water enters the ground, specify type				
Nitrogen mass reduction in groundwater discharge (%)				
Phosphorus mass reduction in groundwater discharge (%)				

Source of Graphic: draft **STORMWATER QUALITY APPLICANT'S HANDBOOK** dated March 2010, by the Department of Environmental Protection, available at: http://www.dep.state.fl.us/water/wetlands/erp/rules/stormwater, March 2010.

Available Pond Volume for Dry Pretreatment in Joe's Creek

Available Stage Storage						REMARKS
Elevation (ft)	Area (sf)	Area (ac)	Acu. Volume (cf)	Total Volume (cf)	Total Volume (ac-ft)	
57.0	17100.0	0.393	0.0	0.0	0.00	
60.0	29232.0	0.671	69498.0	69498.0	1.60	
61.0	33852.0	0.777	31542.0	101040.0	2.32	*Weir EL*
63.0	43956.0	1.009	77808.0	178848.0	4.11	