FLORIDA DEPARTMENT OF TRANSPORTATION

FLORIDA'S TURNPIKE

SR 869 (SAWGRASS EXPRESSWAY) WIDENING PROJECT DEVELOPMENT & ENVIRONMENT (PD&E) STUDY

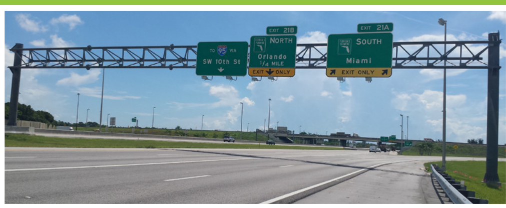
From West of US 441 (SR 7) to Powerline Road (SR 845)

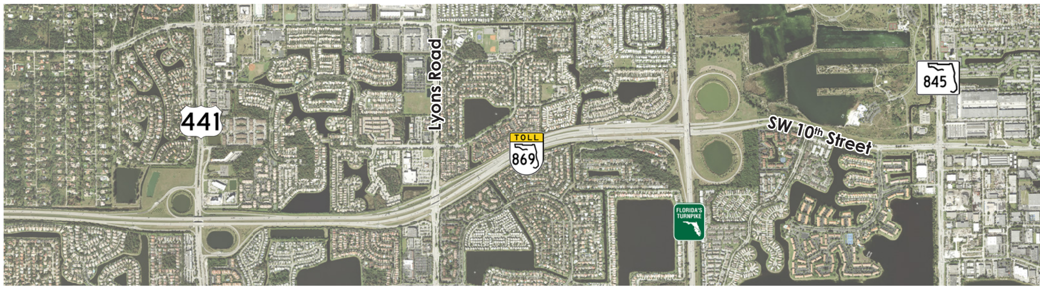
FPID No.: 437153-1-22-01 • ETDM No.: 14280 • Broward County

POND SITING REPORT

DRAFT

FEBRUARY 2024





POND SITING REPORT

Florida Department of Transportation
Florida's Turnpike Enterprise

SR 869/Sawgrass Expressway
Project Development and Environment (PD&E) Study
Broward County, Florida

Financial Project ID Number: 437153-1-22-01
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JANUARY 2024

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1.0 EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT), Florida's Turnpike Enterprise (FTE), is performing a Project Development and Environment (PD&E) Study for State Road 869 (SR 869)/Sawgrass Expressway from west of US 441/SR 7 to Powerline Road (SR 845), a distance of approximately 4 miles (see Figure 1.1). The objective of this PD&E Study is to evaluate corridor modifications to improve operations and interchange access. The proposed improvements will address existing and future traffic needs, improve travel time reliability, enhance safety, and provide long-term mobility options along the corridor. The study is evaluating additional lanes, new collector distributor (CD) roadway systems and interchange improvements.

The study also includes 2.7 miles of the Florida's Turnpike (SR 91) from Wiles Road to the Broward/Palm Beach County Line. The study area is located in Broward County and traverses the cities of Parkland, Coral Springs, Coconut Creek, and Deerfield Beach, as well as an area of unincorporated Broward County.

This Pond Siting Report includes the preliminary drainage calculations to determine the water management facilities necessary for the widening from the existing six-lane rural divided expressway to ten-lane or twelve-lane rural divided expressway alternatives. The corridor traverses the Cities of Coral Springs, Parkland, Coconut Creek and Deerfield Beach, as well as an area of unincorporated Broward County.

The project site is located under the jurisdiction of South Florida Water Management District (SFWMD) Hillsboro Basin and primarily discharges to local drainage district canals along the Sawgrass Expressway and Florida's Turnpike. The local drainage districts are, Pinetree Drainage District, Cocomar Drainage District and Broward County Water Control District #2.

The current stormwater management facilities were designed and permitted for an 8-lane roadway section when it was originally designed for a four-lane section. During the design and construction of the widening to 6-lane section, the facilities were regraded to ensure the provision of the original permitted storage. The preferred alternative is analyzed for stormwater management requirements. The ten-lane option with CD system will significantly impact the roadside swales and therefore the interchange ponds will be utilized for stormwater management. Roadside swales will be used as much as possible to convey the runoff into the proposed water management facilities.

There are several offsite FTE parcels available within project corridor to accommodate stormwater management needs. No Right-of-Way acquisition is deemed necessary to provide the required water quality, quantity, and floodplain compensation storage with the preferred stormwater management option.

This PD&E Study cannot accommodate the stormwater needs of The Florida's Turnpike widening project south of Wiles Road. However, it can meet stormwater requirements for the Turnpike section north of the Hillsboro Boulevard.

The vertical datum for this study is NAVD 1988.

2.0 INTRODUCTION

The Florida Department of Transportation (FDOT), Florida's Turnpike Enterprise (FTE), is performing a Project Development and Environment (PD&E) Study for State Road 869 (SR 869)/Sawgrass Expressway from west of US 441/SR 7 to Powerline Road (SR 845), a distance of approximately 4 miles (see Figure 1.1). The objective of this PD&E Study is to evaluate corridor modifications to improve operations and interchange access. The proposed improvements will address existing and future traffic needs, improve travel time reliability, enhance safety, and provide long-term mobility options along the corridor. The study is evaluating additional lanes, new CD roadway systems and interchange improvements.

The study also includes 2.7 miles of the Florida's Turnpike (SR 91) from Wiles Road to the Broward/Palm Beach County Line. The study area is located in Broward County and traverses the cities of Parkland, Coral Springs, Coconut Creek, and Deerfield Beach, as well as an area of unincorporated Broward County.

The proposed widening of the Sawgrass Expressway within the project limits results in an increased need for water quality and water quantity storage along the corridor. Additionally, several of the interchanges along the corridor are being modified resulting in the need to upgrade and modify the corresponding stormwater management, collection, and conveyance systems. The scope of the stormwater management system improvements will include the following:

- Reshaping of existing roadside dry detention/retention swales to provide storage capacity as needed.
- Reshaping of existing interchange infield areas and wet ponds to provide storage capacity as needed.
- Conversions of Turnpike parcel to either wet or dry detention ponds or floodplain mitigation
- Modification of existing outfall structures as needed.
- Modification of cross drains and stormwater collection and conveyance systems.

The current stormwater management facilities were designed and permitted for an 8-lane typical section. During the design and construction of the widening to 6-lane section, the facilities were regraded to ensure the provision of the original permitted storage. The preferred alternative was analyzed for stormwater treatment, attenuation, and floodplain compensation. A Pond Siting Report (PSR) and a Location Hydraulics Technical Memorandum (LHTM) have been prepared for the preferred roadway alternative in accordance with Part 2 of the FDOT PD&E Manual.

3.0 PROJECT DESCRIPTION

This project proposes improvements to the portion of Sawgrass Expressway from US 441 to Powerline Road, approximately four miles including the interchanges.

The entire Sawgrass Expressway is a tolled, 21-mile limited access facility located in northern Broward County. Most of the facility is located on the western fringe of the Broward urban area. The Sawgrass Expressway is part of the Florida's Strategic Intermodal System (SIS), and the National Highway System (NHS). In addition, Sawgrass Expressway is designated as an evacuation route providing connectivity to other evacuation routes such as I-75, Florida's Turnpike and I-95. The existing limited access right-of-way width varies within the study limits but is generally 300 feet wide. The right-of-way is typical throughout the corridor except at the interchanges, where it varies to accommodate entrance and exit ramps. See ***Figure 3.1*** for project location map.

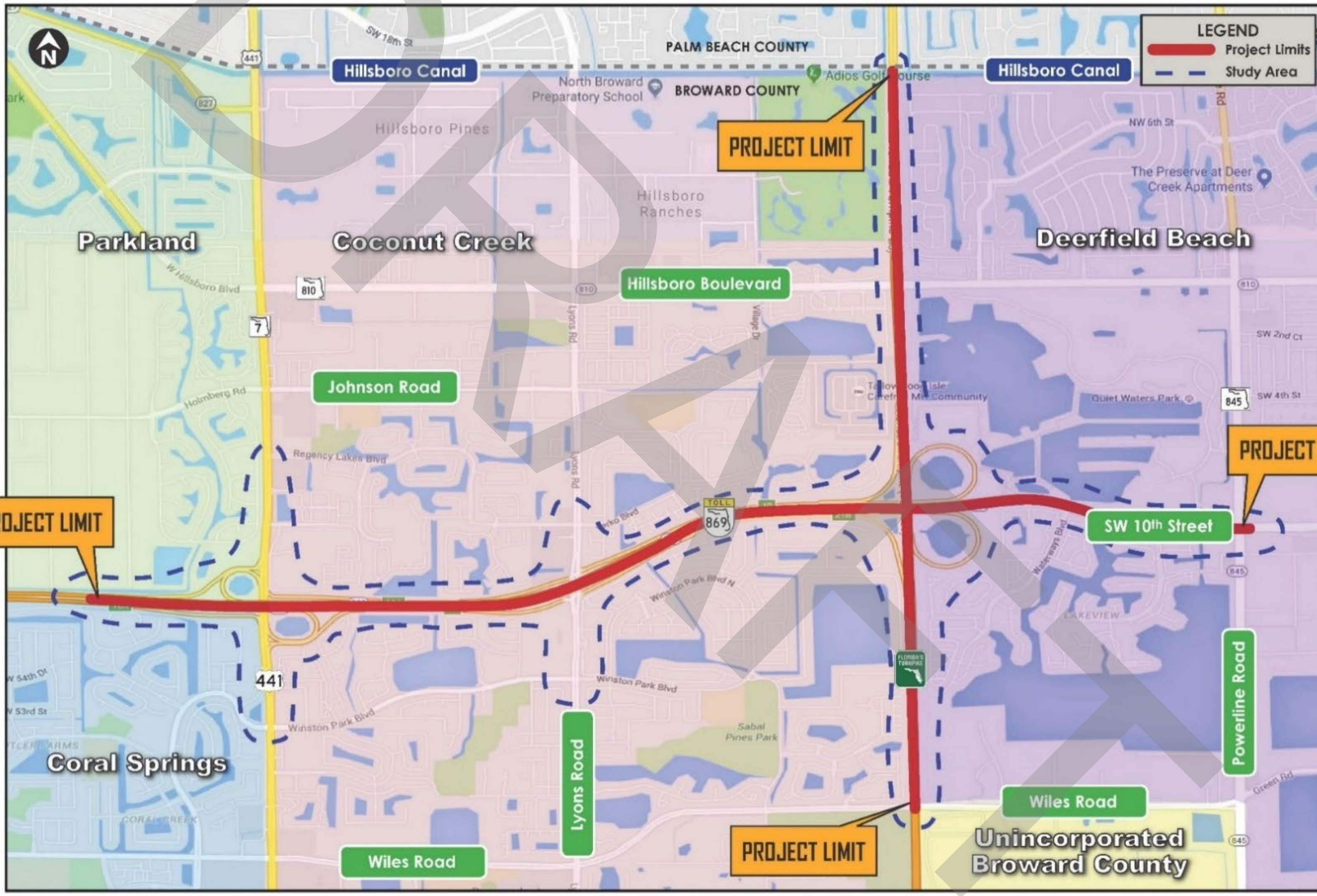


Figure 3.1 - Project Location Map

The vertical datum for this study is NAVD 1988. The conversion from NGVD to NAVD '88 datum is: NAVD'88 = NGVD'29 – 1.529 ft.

3.1 EXISTING TYPICAL SECTION

Sawgrass Expressway – Sawgrass Expressway, between west of US 441 and Florida's Turnpike, consists of four to six 12-foot wide travel lanes (two to three lanes in each direction) with 12-foot wide auxiliary lanes at select locations and 12-foot wide inside and outside shoulders. The median width varies within this segment of the corridor. The section between west of US 441 and east of Lyons Road has a 64-foot wide depressed grassed median separated by guardrail (see ***Figure 3.2(a)*** and ***Figure 3.2(b)***). The section between east of Lyons Road and Florida's Turnpike narrows down to a 2-foot wide median barrier wall (see ***Figure 3.2(c)***). This section also has a two-lane collector-distributor roadway system with 12-foot wide travel lanes and 12-foot wide auxiliary lanes on both sides of the corridor providing ramp access to and from the Florida's Turnpike. Inside and outside shoulder widths vary depending on the number on lanes, tolling point locations and ramp gores.

SW 10th Street – SW 10th Street, between Florida's Turnpike and Powerline Road, consists of six 12-foot wide travel lanes (three lanes in each direction) and a raised grassed curbed median. The median width varies between 30-65 feet wide. The median currently accommodates landscape vegetation and exclusive left-turn lanes at the intersections (see ***Figure 3.2(d)***).

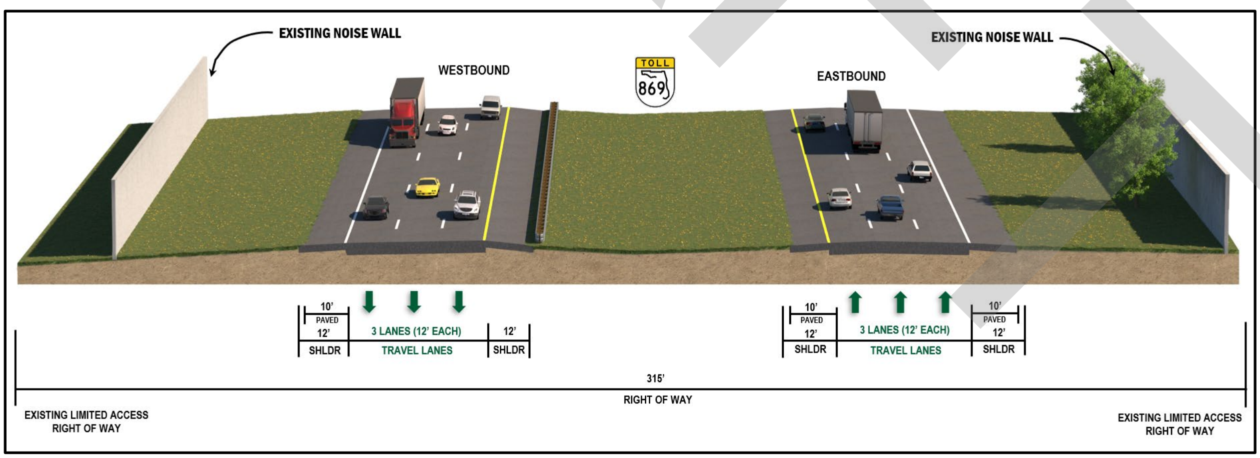


Figure 3.2(a) - Existing Roadway Section of SR 869 West of US 441

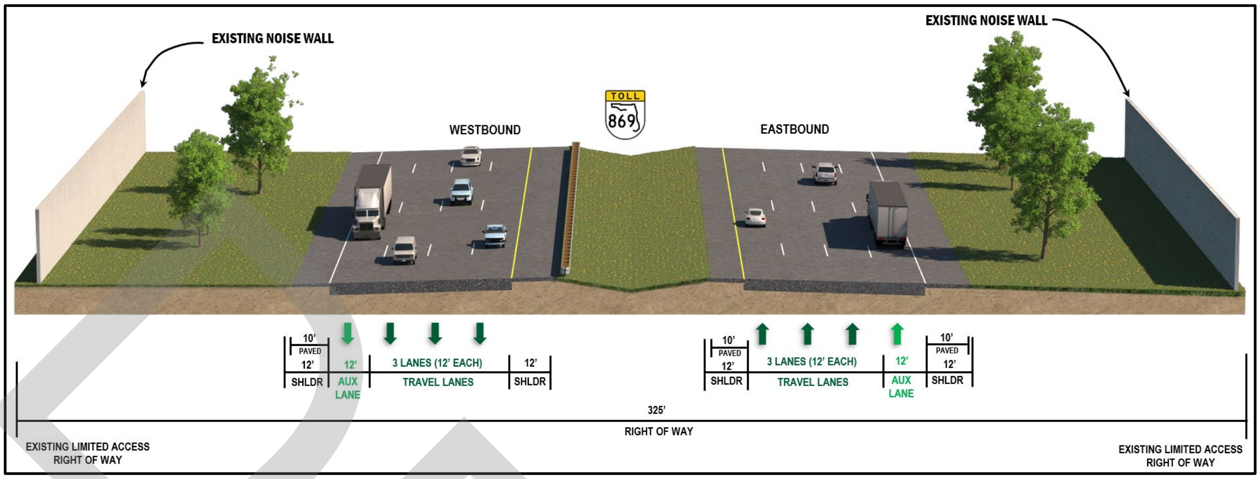


Figure 3.2(b) - Existing Roadway Section of SR 869 between US 441 and Lyons Road

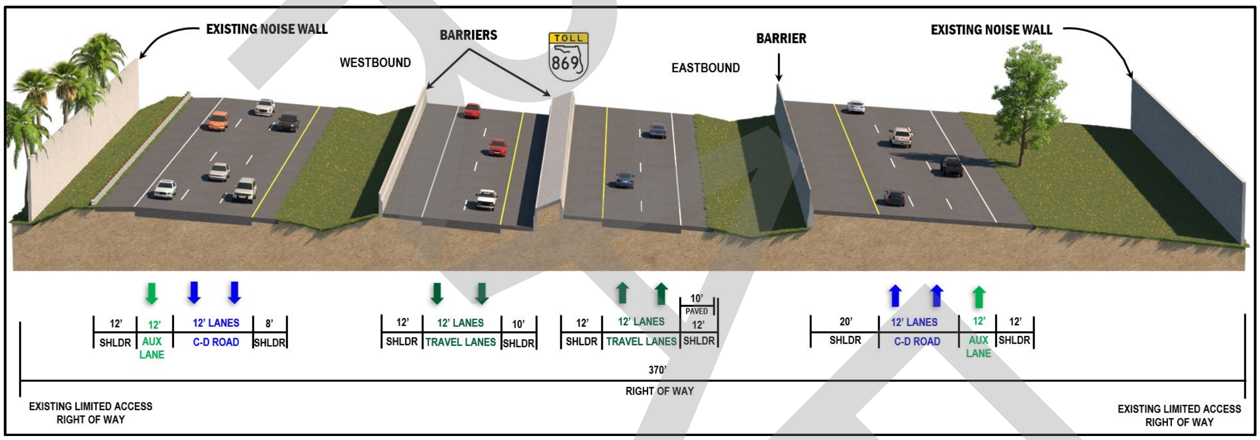


Figure 3.2(c) - Existing Roadway Section of SR 869 between Lyons Road and Florida's Turnpike

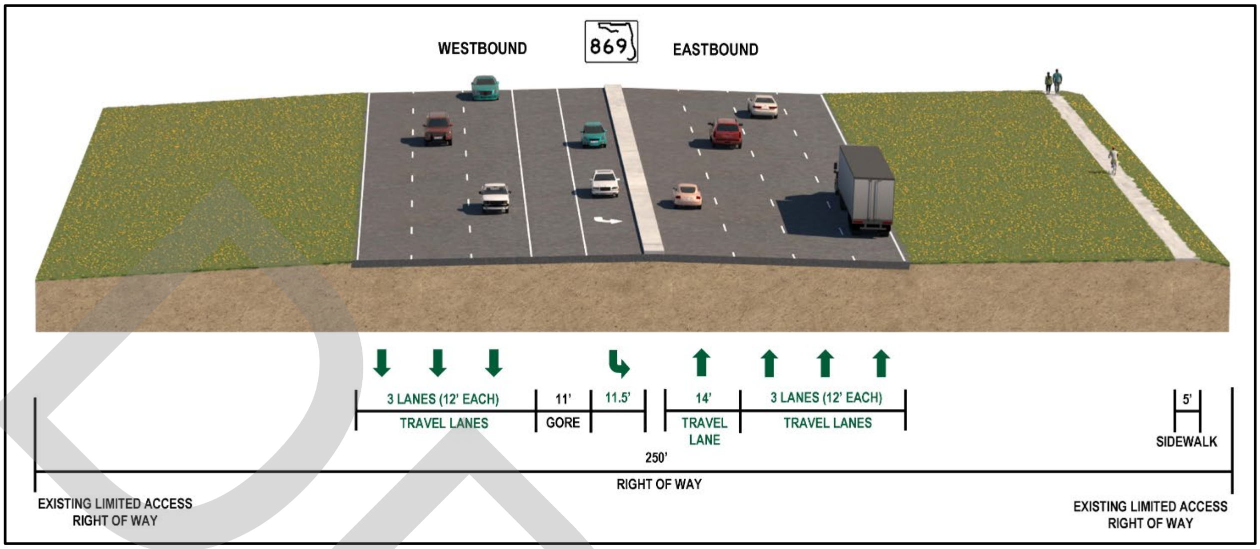


Figure 3.2(d) - Existing Roadway Section of SR 869 between Florida's Turnpike and Powerline Road

Florida's Turnpike – Florida's Turnpike, between Wiles Road and the County Line, consists of six 12-foot wide travel lanes (three lanes in each direction) with 8.5-10-foot wide inside shoulders, 12-foot wide outside shoulders and a 2-foot wide median barrier wall (see ***Figure 3.3(a)*** and ***Figure 3.3(b)***).

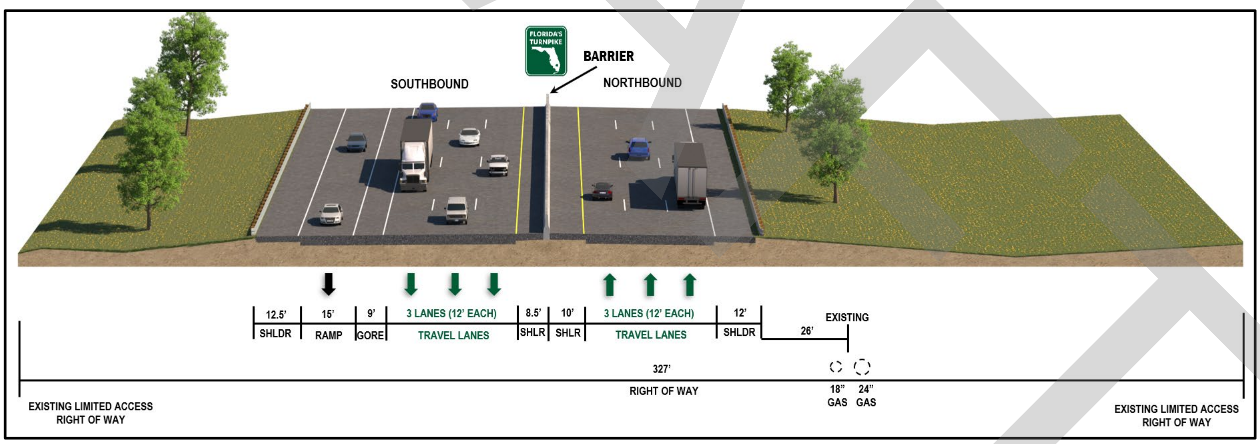


Figure 3.3(a) – Existing Roadway Section of Florida's Turnpike between Wiles Road and Sawgrass Expressway

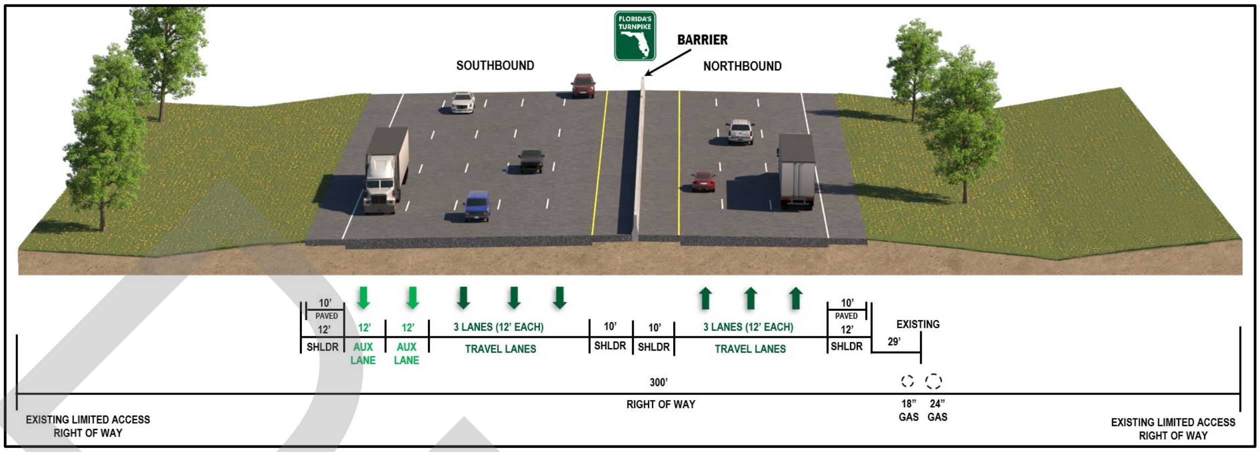


Figure 3.3(b) - Existing Roadway Section of Florida's Turnpike between Sawgrass Expressway and the County Line

3.2 PROPOSED TYPICAL SECTION

Sawgrass Expressway – The preferred alternative proposes to widen the Sawgrass Expressway to four travel lanes in each direction with auxiliary lanes at select locations. The preferred alternative also includes collector distributor roadway systems on both sides of the corridor. The collector distributor roadway systems will separate local traffic and interchange traffic from the mainline traffic. Separating traffic patterns reduces lane changes, weaving maneuvers, speed differentials and friction along the corridor. The collector distributor roadway systems will be barrier separated from the Sawgrass Expressway mainline lanes.

Sawgrass Expressway, west of US 441, will consist of 12-foot wide travel lanes and auxiliary lanes with 15-foot wide inside shoulders, 12-foot wide outside shoulders and a 2-foot wide median barrier wall (see ***Figure 3.4(a)***). This section is consistent with the proposed Sawgrass Expressway widening project to the west between Atlantic Boulevard and west of US 441 (FPID# 435461-1). Between US 441 and Lyons Road, the roadway section will consist of 12-foot wide travel lanes and auxiliary lanes with 15-foot wide inside shoulders, 12-foot wide outside shoulders and a 2-foot wide median barrier wall. The collector distributor roadway systems begin at US 441 and end at the Florida's Turnpike. Between US 441 and Lyons Road, the collector distributor roadway system will consist of two 12-foot wide travel lanes with varying inside and outside shoulders widths between 8-12 feet wide separated from the mainlines lanes with a 2-foot wide barrier wall (see ***Figure 3.4(b)***).

Between Lyons Road and Florida's Turnpike, the roadway section will consist of 12-foot wide travel lanes and auxiliary lanes with varying inside and outside shoulders widths between 12-14 feet wide and a 2-foot wide median barrier wall. The collector distributor roadway system will consist of two 12-foot wide travel lanes and one auxiliary lane with varying inside and outside shoulders widths between 8-12 feet wide separated from the mainlines lanes with a 2-foot wide barrier wall (see ***Figure 3.4(c)***).

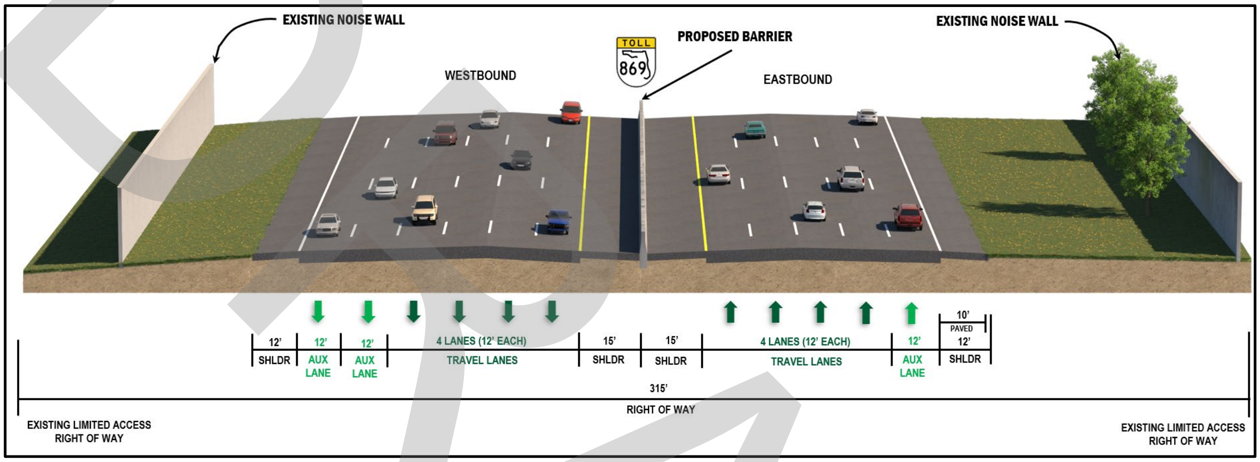


Figure 3.4(a) - Preferred Alternative Roadway Section of SR 869 West of US 441

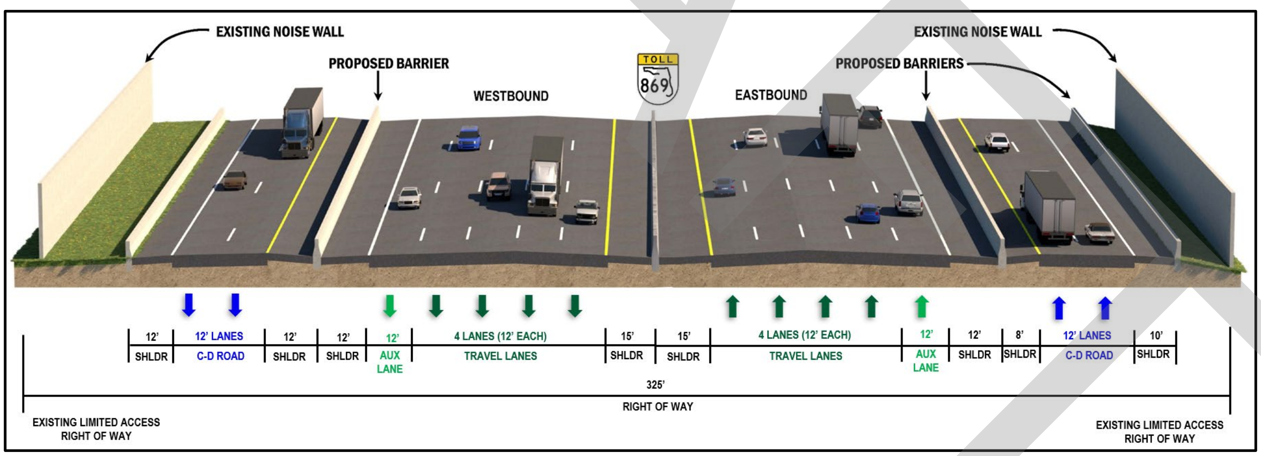


Figure 3.4(b) - Preferred Alternative Roadway Section of SR 869 between US 441 and Lyons Road

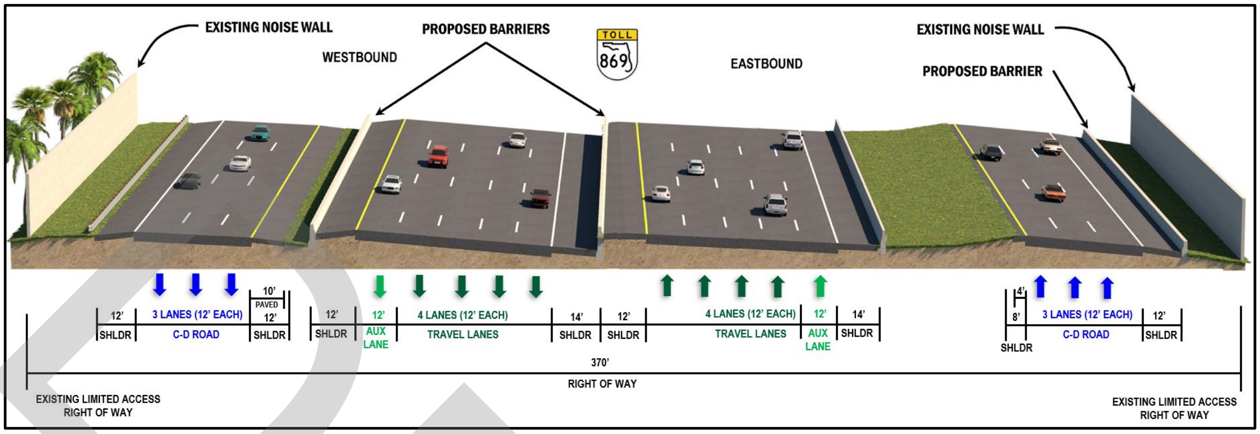


Figure 3.4(c) - Preferred Alternative Roadway Section of SR 869 between Lyons Road and Florida's Turnpike

SW 10th Street – SW 10th Street, between Florida's Turnpike and Powerline Road, will consist of two separate roadway corridors: 1) SW 10th Street and 2) SW 10th Street Connector. This roadway section overlaps with the SW 10th Street project currently underway by FDOT District Four (FPID# 439891-1). This project is proposing to add two limited access connector lanes in each direction on the north side of the existing SW 10th Street corridor between Florida's Turnpike and I-95. The FDOT project is also proposing other corridor improvements along the SW 10th Street existing corridor (see ***Figure 3.4(d)***).

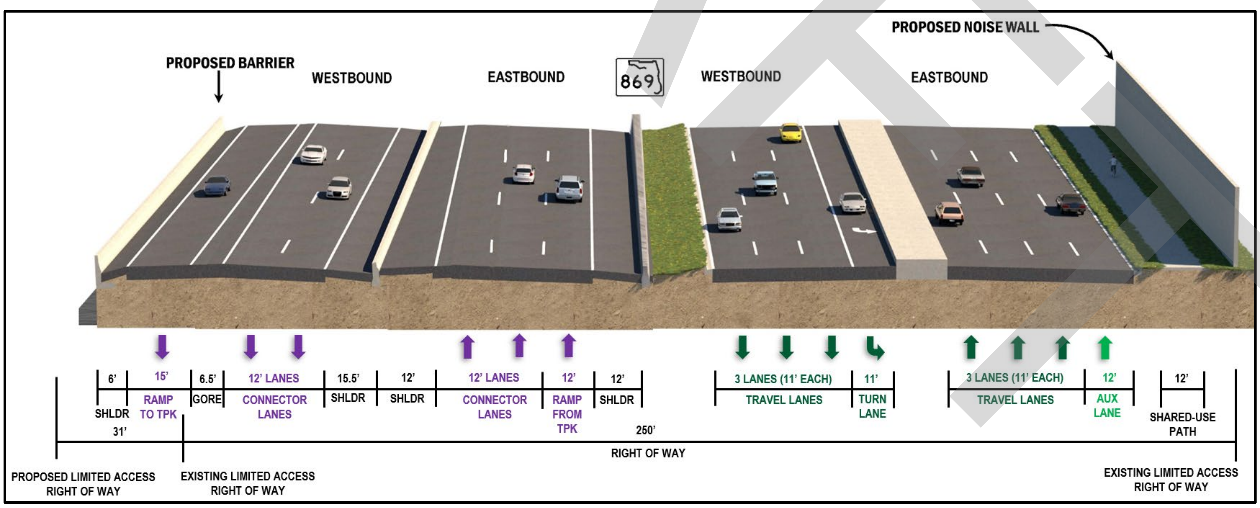


Figure 3.4(d) - Preferred Alternative Roadway of SR 869 between Florida's Turnpike and Powerline Road

Florida's Turnpike – The preferred alternative proposes to widen the Florida's Turnpike between Wiles Road and the County Line to four travel lanes and one thru lane in each direction for a total of ten lanes, with auxiliary lanes at select locations (see ***Figure 3.5(a)*** and ***Figure 3.5(b)***). Thru lanes are additional travel lanes that help provide congestion relief in high traffic areas. These lanes offer customers making longer, more regional trips, the ability to bypass the local traffic entering and exiting the road. Customers pay the same amount to use the thru lanes as they do in any other lane on the toll road. All mainline lanes and shoulders are 12-foot wide, with a 2-foot wide median barrier wall.

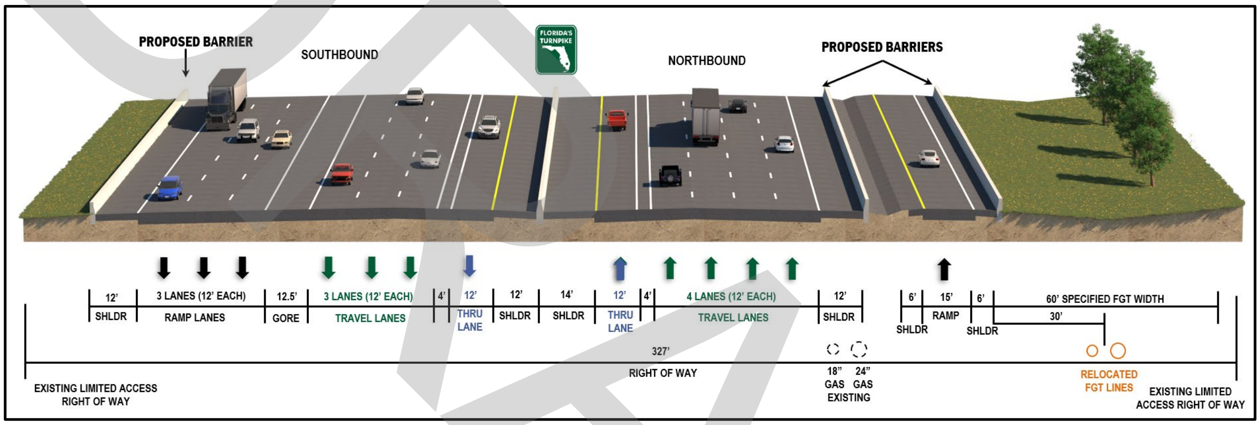


Figure 3.5(a) – Preferred Alternative Roadway Section of Florida's Turnpike between Wiles Road and Sawgrass Expressway

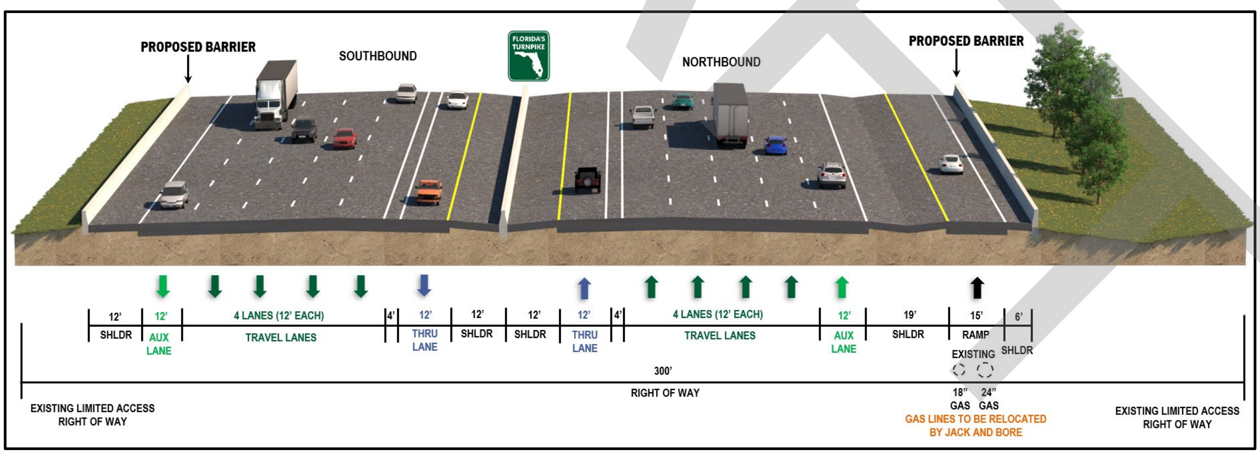


Figure 3.5(b) - Preferred Alternative Roadway Section of Florida's Turnpike between Sawgrass Expressway and the County Line

3.3 ADJACENT STUDIES/PROJECTS

As shown in ***Figure 3.6*** there are a total of twelve studies/projects within the project area.

Project	Facility/FPID #	Location	Description
1	Sawgrass Expressway 437153-1	South of US 441/SR 7 to Powerline Road	PD&E Study Widen from 8 to 10 lanes and interchange improvements
2	SW 10th Street 439891-1	Florida's Turnpike to SW 24th Avenue	Design Project Add four connector lanes (by FDOT D4)
3	I-95 and SW 10th Street 436964-2	I-95 from North of Sample Road to Hillsboro Boulevard SW 10th Street from SW 24th Avenue to I-95	Design Project I-95/SW 10th Street connector interchange (by FDOT D4)
4	Florida's Turnpike 442212-1	I-595 to Wiles Road	PD&E Study Widen to 10 lanes and interchange improvements
5	Sawgrass Expressway 435461-5	University Drive to SR 7	Design Project Widening and interchange improvements
6	Sawgrass Expressway 435461-4	Sample Road to University Drive	Design Project Widening and interchange improvements
7	Sawgrass Expressway 435461-1	Atlantic Boulevard to Sample Road	Design Project Widening and interchange improvements
8	Sawgrass Expressway 443956-1	Atlantic Boulevard interchange	Construction Project Widening and interchange improvements
9	Sawgrass Expressway 437155-6	Oakland Park Boulevard to Atlantic Boulevard	Design Project Widening and interchange improvements
10	Sawgrass Expressway 437155-1	Sunrise Boulevard to Oakland Park Boulevard	Design Project Widening and interchange improvements
11	Sawgrass Expressway 437155-5	NW 8th Street to Sunrise Boulevard	Design Project Widening and new interchange at NW 8th Street
12	Florida's Turnpike 415927-1	Sawgrass Expressway to Glades Road	Design Project Widen to 8 lanes

Note: Projects 1 and 2 have overlapping limits between Florida's Turnpike and Powerline Road.
Projects 1 and 12 have overlapping limits between Sawgrass Expressway and the County Line.

Figure 3.6 – Adjacent Projects

There are four immediate adjacent projects.

North of Project Limits along Florida's Turnpike – FPID#415927-1 – Florida's Turnpike from the Hillsboro Canal to Hillsboro Boulevard PD&E Study:

The roadway segment from the Hillsboro Canal to Hillsboro Boulevard overlaps with this PD&E Study. Stormwater runoff from the segment south of the Hillsboro Canal flows south and into the Sawgrass northeastern interchange pond. The required treatment, attenuation and flood mitigation will be provided within the project.

South of Project Limits along Florida's Turnpike – FPID#-442212-1 – Florida's Turnpike from Atlantic Boulevard to Wiles Road PD&E Study:

Runoff from northern segment of the project, from Sample Road to Wiles Road, is within the Hillsboro Canal basin. Rainfall runoff enters the southern limits of the Turnpike/Sawgrass PD&E project limits at Wiles Road. A PSR prepared by the PD&E Study to the south identified three alternative pond sites. The preferred site is Alternative 1, which is a joint-use stormwater management facility with the Tradewinds Park and entails a land swap in connection with the Sample Road Interchange.

The roadway improvements will also require approximately 17.2 ac-ft of floodplain mitigation as the widening impacts FEMA floodplains on the west side of the Turnpike. Alternatives 2 and 3, in the vicinity of Wiles Road are mentioned in the PSR as potential floodplain mitigation sites. Both sites are not well-suited for floodplain mitigation as Alternative 2 site is a wetland and Alternative 3 site is a landfill and designated as contaminated site.

There is not enough floodplain mitigation volume available within project limits to accommodate required mitigation volume for the project, FPID#406150 (the FTE south of Wiles Road). Floodplain mitigation volume needs to be revisited to accommodate floodplain needs.

East of Project Limits along Sawgrass Expressway – 439891-1 – SW 10th Street from Sawgrass/Turnpike Interchange to Military Trail:

The project overlaps the section from the Florida's Turnpike interchange to Powerline Road. Runoff from the SW 10th Street is designed to flow to the interchange ponds for treatment and attenuation. The interchange ponds also used for flood mitigation. The overlapped section of Sawgrass Expressway/SW 10th Street will be reconstructed. Therefore, provided volume for this project is not considered for volume calculations of the Sawgrass Expressway PD&E study.

West of Project Limits along Sawgrass Expressway – 435461-5 – Sawgrass Expressway from West of University Drive to US 441 (SR 7) Design:

The roadway segment west of SR 441 overlaps with this PD&E Study. Project, FPID#435461-5 have enough volume capacity within its project limits. Therefore, no additional treatment, attenuation and floodplain mitigation volume is required to accommodate within the Sawgrass Expressway PD&E study.

4.0 DATA COLLECTION

The following documents are the main sources of information consulted and evaluated for the preparation of this PSR.

Permit Research:

- SFWMD Permit No. 06-00629-S for the Sawgrass Expressway in Broward County Issued on - February 14, 1985, and further permit modifications.
- SFWMD PERMIT No. 06-10034-S for the Florida's Turnpike in Broward County Issued on - February 14, 1985, and further permit modifications.

Original As-built plans:

- Sawgrass/Deerfield Expressway Section V (Sta. 910+00 to Sta. 1110+00.00) from East of University Drive to East of Lyons Road
- Sawgrass/Deerfield Expressway Section VI (Sta. 1110+00.00 to Sta. 1200+00.00) from East of Lyons Road to East of Powerline Road
- FPID 406153-1-52-01 Sawgrass Expressway Widening from Coral Ridge Drive to Florida's Turnpike (Sta. 786+00 to Sta. 1152+00)
- FPID 412286-2-52-01 Sawgrass Expressway Widening from Coral Ridge Drive to Florida's Turnpike (Sta. 786+00 to Sta. 1152+00)
- FPID 420289-6-52-01 Sawgrass Expressway Deerfield Toll Plaza Modifications 2007 (Sta. 1095+98.12 to Sta. 1178+82.52)
- FPID 431281-1 AET5B
- FPID 406150-152-01, As- built plans for the 6-lane Widening Turnpike:
- FPID 232316-1-52-01 Turnpike North and South of Sawgrass Expressway
- FPID 232233-1-52 Turnpike from North of Sample Road to South of the Hillsboro Canal

Drainage Reports:

- FPI 466150-1 Turnpike widening from Atlantic Boulevard to the Sawgrass Expressway - SFWMD ERP No. 060509-10

5.0 DESIGN CRITERIA AND AGENCY COORDINATION

5.1 DESIGN CRITERIA

The design criteria considered in the development of the drainage for this project are summarized in **Table 5.1**.

Table 5.1 - Drainage Design Criteria

Design Element	Design Standard	Source
Open Channel Design Frequency	10 Year for Ditches/Swales	DM Section 2.2 Table 2.1
	25 Year for Outfall Ditches and Canals	
Open Channel Minimum Slope	0.0005 ft/ft	DM Section 2.4.2
Channel Velocity (Maximum)	4 fps for Sod Lining	DM Table 2.5
	5 fps for Stake Sod Lining	
	6 fps for Riprap Rubble Lining	
	10 fps for Rigid Lining	
Storm Drain Design Frequency	3 Year for General Design	DM Section 3.3 Table 3.1
	10 Year for Interstate Facilities	
Storm Drain Design Tailwater	Stormwater Ponds: Peak stage in the pond during storm drain design event	DM Section 3.4
	French Drains: Design Head over the outlet control structure	
	Regulated Canals: Agency regulated control elevation	
Minimum Time of Concentration	10 Minutes	DM Section 3.5.1
Minimum Pipe Slope	Minimum Slope which produces a storm drain velocity of 2.5 fps when full and no greater than 15 fps when the storm drain is flowing full	DM Section 3.6.1
Hydraulic Gradient	When minor the Hydraulic Grade Line (HGL) energy losses are not considered, HGL shall be 1 ft below the theoretical gutter elevation	DM Section 3.6.2
Outlet Velocity	When outlet velocity exceeds 6 fps provide special channel lining and/or energy dissipater	DM Section 3.6.3
Spread Standards	Spread resulting from 4 inches per hour shall be limited to: ½ lane for < 45 MPH 8 ft of lane clear for 45 MPH to 55 MPH No encroachment for > 55 MPH	DM Section 3.9 Table 3.9.1
Minimum Pipe Size	18 inches	DM Section 3.10.1

Table 5.1 - Drainage Design Criteria (continued)

Design Element	Design Standard	Source
Maximum Pipe Length	Pipe without French Drains 300 ft for 18 inches pipes 400 ft for 24 to 36 inches pipes 500 ft for > 42 inches pipes French Drains (Minimum Length from Access) 150 ft for 18 to 30 inches pipes 200 ft for > 36 inches pipes	DM Section 3.10.1
Cross Drains Design Frequency	50 years for Mainline Interstate and Facilities with projected 20 year ADT > 1500 25 years for Facilities with projected 20 year ADT < 1500 10 years for roadside ditch culverts	DM Section 4.3
Wet Detention and Retention Ponds Maintenance Berm	20 ft minimum between top edge of normal pool elevation and right of way line, 15 ft adjacent to the water sloped at 1:8 or flatter	DM Section 5.4.4.2 SFWMD ERP Manual Section 7.5
Detention and Retention Ponds Freeboard	1 ft freeboard required above peak design stage for ponds and 0.5 foot minimum freeboard for linear treatment swales	DM Section 5.4.4.2
Wet Detention and Retention Ponds Requirements	Total Area = 0.5 acre minimum Slopes between control elevation and 2 ft below it shall be 1:4 or flatter	DM Figure 5-1 SFWMD ERP Manual Section 7.4
Water Quality Requirements	Wet Detention: Greater of 1 inch over total project area or 2.5 inches over total impervious Dry Detention: 75% of wet detention Wet/Dry Retention: 50% of wet or dry detention accordingly	SFWMD ERP Manual Section 5.2.1
Water Quality Requirements	Post Development discharge rate equal to or less than pre development discharge rate for 25 year – 3 day storm event, or rates specified in district criteria	SFWMD ERP Manual Section 6.2 and 6.3
Floodplain Encroachment	No encroachment allowed	SFWMD ERP Manual Section 6.4
Outfall Structures	Structures shall include baffles systems. Structures shall include bleed down notch or orifice that allows ½ inches of the detention volume to be discharged within 24 hours.	SFWMD ERP Manual Section 7.1 and 7.2

This study corridor is located within SFWMD Hillsboro Canal Basin and under the local drainage district authorities of Pinetree Drainage District (PTWCD), Cocomar Drainage District (CWCD) and the Broward County Water Control District #2 (BCWCD #2). Refer to ***Figure 5.1*** below for local drainage districts.

The original SFWMD Permit No. 06-00629-S included 8-lane widening within project corridor for SR 869. However, the proposed improvement will eliminate most of the roadside swales and therefore will require complete redesign of stormwater management system. A new Environmental Resource Permit is anticipated for the Sawgrass Expressway improvement. The Permit Application will involve the agencies with jurisdiction over this project are, a SFWMD, US Army Corps of Engineers (USACE) and the Florida Department of Environmental Protection (FDEP). The SFWMD water quality criteria requires wet detention treatment volume from the first inch of runoff of the total area, or 2.5 inches of runoff from the impervious area, whichever is greater. For dry detention or dry retention 75% or 50% of this treatment volume should be provided respectively. The peak discharge from post development condition cannot exceed pre-development or previously permitted discharges.

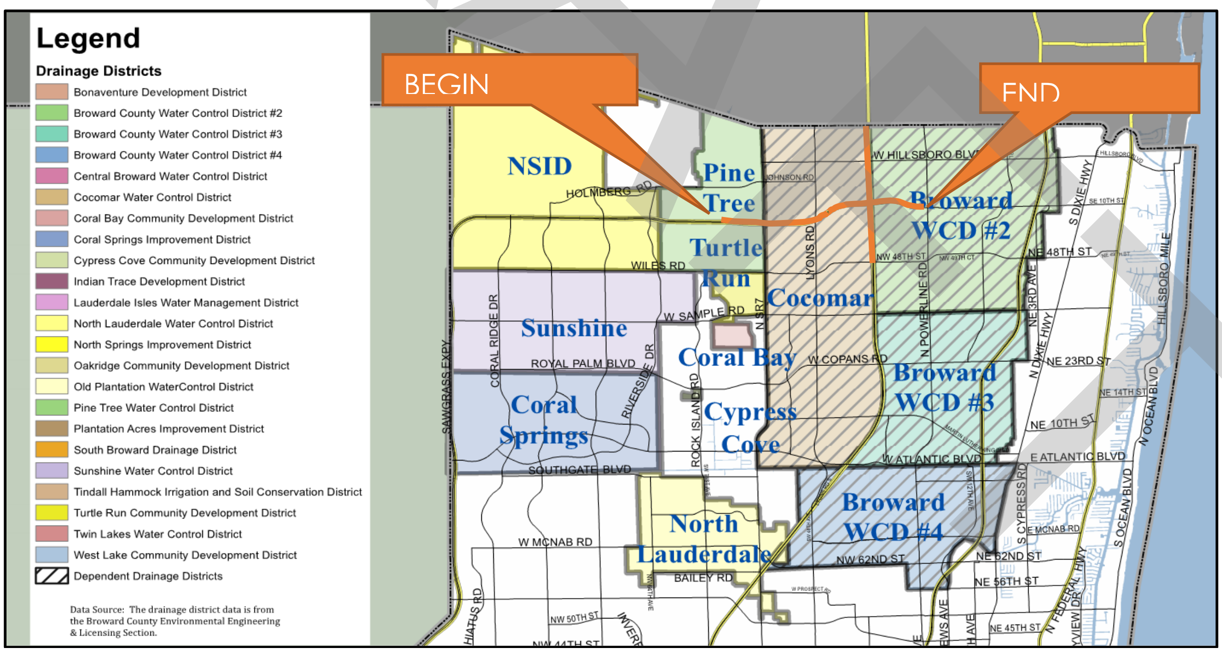


Figure 5.1 - Broward County Drainage Districts

The project west of the Florida's Turnpike is in Water Preserve Area (WPA), which requires an additional 50% water quality volume for additional impervious area.

Since required treatment volume for the study is calculated for maximum of project area or 2.5" of total impervious area, the provided treatment volume is larger than required treatment volume. **Table 5.2** shows a comparison of provided treatment volume and required treatment volume for WPA basin (Basin 1and 2 in this study). Therefore, the WPA water quality criteria is satisfied for the study.

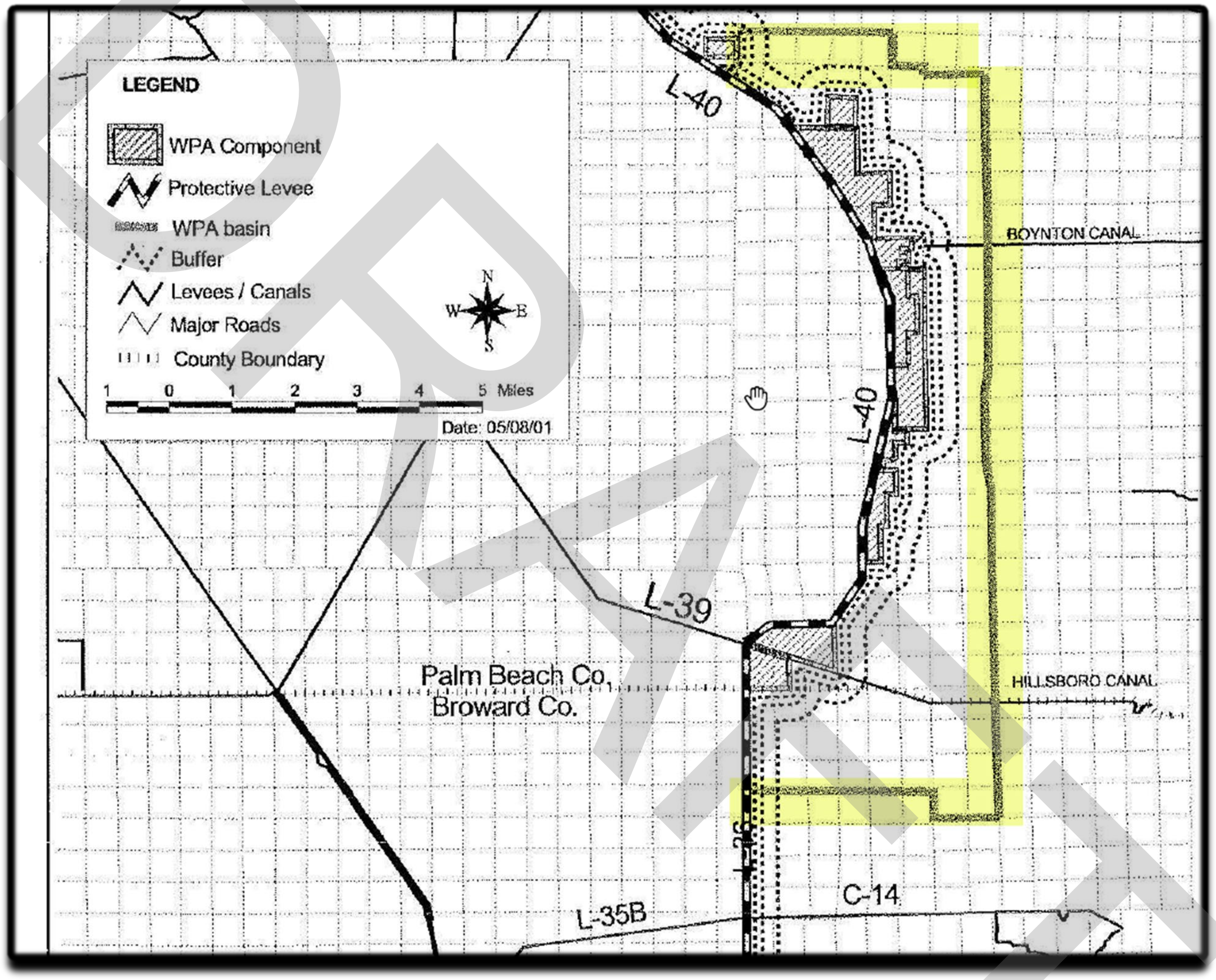


Figure 5.2 - Water Preserve Area Basin

Table 5.2 - Comparison of Provided and Required Treatment Volume with the SFWMD WPA Basins

Basin Name	(1) Total Area (ac)	(2) Imp. Area - Existing (ac)	(3) Imp. Area - Proposed (ac)	(4) Additional Imp. Area (ac)	(5) Required Treatment Vol. 2.5" of Additional Imp. Area (Ac-ft)	(6) Additional 50% Treatment Vol. for Water Preserve Area Basin (ac-ft)	(7) Required Treatment Vol. per Water Preserve Area Basin (ac-ft)	(8) Calculated Required Treatment Vol. (ac-ft)	(9) Provided Treatment Vol. more than Rquired Treatment Vol.?
1	110.64	45.33	86.76	41.43	8.63	4.32	12.95	13.45	Yes
2	85.88	40.29	64.08	23.79	4.96	2.48	7.43	12.05	Yes

Column (1) = From Table 10.1 Water Quality and Quantity Calculation Summary
Column (2) = From Table 10.1 Water Quality and Quantity Calculation Summary
Column (3) = From Table 10.1 Water Quality and Quantity Calculation Summary
Column (4) = Column (3) -(2)
Column (5) = 2.5" X Column (4)/12
Column (6) = 50% of Column (5)
Column (7) = Column (5) + (6)
Column (8) = From Table 10.1 Water Quality and Quantity Calculation Summary

5.2 AGENCY COORDINATION

The water quality and quantity criteria and requirements have been reviewed in the pre-application meeting with SFWMD held on August 2, 2018. Since the project primarily discharges to local canals, coordination meetings were held with local drainage districts as well (Refer to **Appendix A**). A new Environmental Permit Application with current permitting criteria is the preferred permitting approach. The latest requirements from the FDOT Drainage Manual and Turnpike Design Handbook has been considered for sizing the water management facilities.

6.0 EXISTING CONDITION

6.1 EXISTING DRAINAGE CONDITION

Information was obtained from field review, planning documents, construction drawings, aerial photographs, and permit applications to identify the existing stormwater management system serving the study corridor, which is 4.68 miles long and covers an area of 430.56 acres.

The Sawgrass Expressway is a divided limited access highway with design speed of 65 miles per hour. The original 21-mile project for a four-lane divided expressway was separated into six sections for design purposes. The original stormwater management system for the Sawgrass Expressway, permitted by SFWMD on February 14, 1985, was approved for an ultimate eight-lane typical section. Roadway runoff water treatment was provided within the median and the roadside swales. Most of the former borrow pits and the interchange infield areas were not designed to provide water quality treatment. Subsequent projects during the 2000 decade widened the Sawgrass Expressway from four to six lanes. The additional travel lanes were added on the median, but the water management facilities remained the same with minor alterations based on the 8-lane typical section originally permitted. Improvements to the interchange ramps, the addition of sound barrier walls and landscape have been reducing the original swales gradually.

Basin 1 through 6 are for Sawgrass Expressway.
Basin 1: This basin begins east of Riverside Drive and ends at SR-7/441 including the West side of the SR-7/441 interchange. The existing drainage system consist of catch basins, gutter drains, cross drain and storm sewer that convey the stormwater runoff into roadside swales and ponds. The roadside swales and the interchange ponds discharges into the PTWCD canals. The minimum roadway grade elevation is 16.50 feet NAVD, roadside ditch bottom elevation is 11.00 feet NAVD and PTWCD Control Elevation is 10.05 feet NAVD. There is also an FDOT parcel available the NW quadrant of the interchange beyond Sawgrass right-of-way. Basin 1 within the SFWMD Water Preserve Area (WPA).

Basin 2: This basin begins at US 441 and ends at Lyons Road including the east side of SR7/441 interchange and discharges to the local canal under the jurisdiction of CWCD. Ditch blocks are regularly located along the ditches dividing them into subsystems. The local canals are interconnected with two 72" cross drains, both located west and east of Lyons Road. The minimum roadway grade elevation is 16.50 feet NAVD, roadside ditch bottom elevation is 11.00 feet NAVD and CWCD Control Elevation is 9.45 feet NAVD. Basin 1 within the SFWMD Water Preserve Area (WPA).

***Basin 3*:** The basin from the Lyons Road to the west of Florida's Turnpike Interchange discharges to the local canal under the jurisdiction of CWCD. The local canals are interconnected through a 72" cross drain located west of the Florida's Turnpike interchange. The local canals ultimately discharge into the Hillsboro canal. The minimum roadway grade elevation is 17.50 ft. NAVD. The roadside ditch bottom elevation is 11.00 FT. NAVD. CWCD Control Elevation is 9.45 ft.

***Basin 4*:** This basin begins east of Florida's Turnpike at Sta. 1145+00.00 and ends up at Sta. 1168+39.00, just west of the Waterways Boulevard along the Sawgrass Expressway. Along the Florida Turnpike, the basin begins at Wiles Road at Sta. 5570+00.00 and ends up at Sta. 5665+00.00, just south of Hillsboro Boulevard. It includes the east and westbound to the Sawgrass Expressway and north and southbound of the Florida's Turnpike. The existing drainage system consists of catch basins, gutter drains, cross drains, and storm sewer that convey the runoff into roadside swales and ponds. Treatment for water quality is provided along the roadside swales using ditch blocks and raised ditch bottom inlets. Ditch blocks are regularly located along the ditches dividing them into subsystems. The existing ponds and swales located within the Turnpike right-of-way are all operated and maintained by Florida's Turnpike Enterprise. The runoff that accumulates in the ditches infiltrates into the ground and the excess is discharged by outfall structures, primary earthen weirs, into the receiving ponds at the Sawgrass Expressway Interchange. It then flows through a 48" culvert to the residential lake located at the south-east quadrant of the interchange, it continues within a residential community through a 20-foot drainage easement, and ultimately discharges into the C-3 Canal and Hillsboro Canal. The minimum roadway grade elevation is 17.50 ft. NAVD. The roadside ditch bottom elevation is 11.00 FT. NAVD. CWCD Control Elevation is 9.45 ft. NAVD and BCWCD#2 Control Elevation is 9.45 ft. NAVD.

***Basin 5*:** This existing drainage basin begins east of the Florida's Turnpike at Sta. 1168+39.00 and ends at Sta. 1193+17.00, just west of Independence Drive. It includes the east and westbound roadway of SW 10th Street. It also include half of the road and the roadside swales of westbound SW 10th Street between Sta. 1193+17.00 and Sta. 1209+25.00. The existing drainage systems consist of catch basins, cross drains and storm sewers that convey stormwater runoff into roadside treatment swales along the west and eastbound SW 10th Street into the Florida's Turnpike drainage system at the Southeast Quadrant of the interchange through a raised ditch bottom inlet that is connected to the wet pond. The minimum roadway grade elevation is 12.00 ft. NAVD and roadside ditch bottom elevation is 11.00 FT. NAVD. CWCD Control Elevation is 9.45 ft. NAVD and BCWCD#2 Control Elevation is 9.50 ft. NAVD.

***Basin 6*:** This basin begins west of Independence Drive at Sta. 1193+17.00 and ends up at Sta. 1209+25.00 at the Powerline Road Intersection. It includes the eastbound roadway of SW 10th Street. The existing drainage system consists of catch basins, cross drains and storm sewers that convey stormwater runoff into the roadside swales along the westbound SW 10th Street. The roadside swale along the south side of the road is connected to the local canal/lake through a 30" pipe which is connected to the 2-60" cross drain. This cross drain is west of Powerline Road and is part of the C-3 Canal. This system ultimately discharges into the Hillsboro Canal. The minimum roadway grade elevation is 14.00 ft. NAVD. The roadside ditch bottom elevation is 11.0 FT. NAVD. CWCD Control Elevation is 9.45 ft. NAVD. BCWCD#2 Control Elevation is 9.50 ft. NAVD. Existing drainage features are summarized below in **Table 6.1**.

Table 6.1 - Existing Outfalls

Sawgrass Expressway: Permitted Water Management Systems											
Existing Basin	Station		Length		Acres	Outfalls			Cross Drains	SFWMD Basin	Jurisdiction
	From	To	(ft.)	(mile)		(Each)	Weir	Bleeder			
1	962+30.00	1060+00.00	9770	1.85	129.73	8	0	0	4	Hillsboro Canal	PTWCD, CWCD SFWMD WPA
2	1060+00.00	1110+00.00	5000	0.95	49.35	2	0	0	2		CWCD SFWMD WPA
3	1110+00.00	1145+00.00	3500	0.66	34.70	0	0	0	1		CWCD
4	1145+00.00	1168+39.00	2339	0.44	183.90	3	0	0	5		CWCD, BCWCD#2
5	1168+39.00	1193+17.00	2478	0.47	26.66	1	0	0	0		BCWCD#2
6	1193+17.00	1209+25.00	1608	0.30	6.22	1	0	0	0		BCWCD#2

6.2 CROSS DRAINS

There are several pipes crossing Sawgrass Expressway, but only seven culverts provide conveyance beneath the corridor for off-site runoff: No erosion or structural damages have been reported for the cross drains.

Table 6.2 - Existing Cross Drains

Sawgrass Expressway: Existing Cross Drains

CROSSDRAIN	MAINLINE STATION	PIPE COUNT	PIPE SIZE (IN)	PIPE LENGTH (FT)	PIPE TYPE	REMARKS
CD-1A	963+00 (SR 869)	1	60	316	UNKNOWN	Local Canal
CD-1	989+00 (SR 869)	1	60	307	RCP	Local Canal
CD-2	1028+25 (SR 869)	2	72	530	RCP	Pine Tree Canal
CD-3	1070+00 (SR 869)	1	72	324	RCP	Cocomar Canal
CD-4	1105+58 (SR 869)	1	72	405	RCP	Local Canal
CD-5	1127+82 (SR 869)	1	72	477	RCP	Local Canal
CD-6	1158+30 ((SR 869))	1	48	396	RCP	Under SR 869 connecting wet ponds Pond 3B-4 and Pond 3B-5
CD-7	5652+71 (SR 821)	1	48	185	RCP	Under SR 821
CD-8	5639+13 (SR 821)	1	48	405	RCP	Under SR 821 connecting wet ponds Pond 3A-2 and Pond 3B-4
CD-9	5631+00 (SR 821)	1	48	365	RCP	Under SR 821 connecting wet ponds Pond 3B-1 and Pond 3B-5
CD-10	1203+07 (SR 869)	2	60	294	RCP	C-3 Canal

6.3 OFF SITE FLOW CONTRIBUTION

The Sawgrass Expressway is mostly flanked by canals, berms, and interchange infield and sound barrier walls. As such, the off-site contributions to the roadway drainage systems are negligible.

6.4 SOILS AND GEOTECHNICAL CHARACTERISTICS

The evaluation of the NRCS Web Soil Survey within the study site reports that the existing soils are Margate fine sands, occasionally ponded, 0 to 1 percent slopes or Hallandale fine sands, 0 to 2 percent slope. The roadway footprint was de-mucked for the initial construction work and replaced with the soils excavated in the adjacent borrow canals. The hydrologic Soils Group is determined as D. Refer **Appendix B Soil Data and Geotechnical Information**. The geotechnical evaluation prepared by GCME, Inc reports Seasonal High Ground Water Table Elevation (SHGWT) varies between 11 ft. NAVD to 8.5 ft. NAVD.

Within the project limit Average Wet Season Water Table Elevation is determined from Broward County Average Wet season water table map. Based on the map from the beginning of the project to US 441 is SHGWT is 10.0 ft. NAVD and from

US 441 to end project is 9.50 ft. NAVD, which is consistent with the previous permit information.

7.0 PROPOSED CONDITION

7.1 PROPOSED DRAINAGE CONDITION

The current PD&E Study includes the last two sections (V and part of VI) of the original corridor improvement approximately four miles in length. The Study performs preliminary drainage analysis to determine the locations and sizes of the required water management facilities for the most critical alternative that will impact the drainage and environmental permitting needs. The use of roadside treatment swales, the former borrow pit areas and the infield areas in the four interchanges (US 441, Lyons Rd., Florida's Turnpike and Powerline Rd.) will be the first option to consider. Off-site ponds requiring right-of-way acquisition would be the last resort.

Four alternatives have been evaluated. The preferred alternative is used for the designing stormwater facilities. Proposed road section for the preferred alternative is shown in **Figure 3.4(a) to 3.4 (d), 3.5(a) and 3.5(b).**

7.2 PROPOSED BASINS

The project has been primarily divided into five basins to analyze the proposed condition.

Basin 1: Basin 1 begins from the beginning of the project to US 441, which includes the West side of the SR-7/441 interchange. Roadside swales, dry and wet detention ponds at the interchange are available for stormwater management. A FDOT owned parcel at the NW quadrant of the interchange beyond Sawgrass right-of-way is available, but not included in the calculations. Basin 1 discharges to Pinetree Water Control District Canals and is within the SFWMD Water Preserve Area.

Basin 2: This basin begins at SR-7/441 and ends up at Sta. 1110+00.00, just east of Lyons Road. It includes the East side of the SR-7/441 interchange, the ramps and bridges over Lyons Road, Lyons Road interchange as well as the east and westbound roadway of the Sawgrass Expressway. For stormwater management both dry treatment swales and wet detention ponds are available within this basin. Basin 2 discharges to the Cocomar Water Control District Canals and is within the SFWMD Water Preserve Area.

Basin 3A: This basin begins east of Lyons Road at Sta. 1110+00.00 and ends at Sta. 1153+00.00 at the Florida's Turnpike. It includes the eastbound Sawgrass Expressway, eastbound on ramp from FTE to Sawgrass and a portion of the southbound FTE. For stormwater management both dry treatment swales and wet detention ponds are available within this basin. Basin 3A discharges to Cocomar Water Control District Canals

Basin 3B: This basin begins at east of Lyons Road at Sta. 1145+00.00 and ends, just west of Waterways Boulevard, at Sta. 1168+39.00. It includes the Sawgrass Expressway east and westbound roadway and the Florida's Turnpike north and southbound roadway.

Interchange wet detention ponds are available for treatment and attenuation of this basin, before it discharges to the existing outfall at the southeast corner of the interchange. An FTE-owned parcel at the northeast corner of the interchange is available for stormwater management, which will be converted to a wet detention pond. Basin 3B discharges to BCWCD#2

Basin 3B-1: The basin begins north of Sawgrass Express interchange (Sta. 5652+50) and at Broward/Palm Beach County Line (Sta. 5716+70) along the Florida's Turnpike. The basin flows to the interchange wet pond through a dry swale. The swale also provides partial treatment and attenuation.

Basin 3B-2: The basin begins from Wies Road (Sta. 5575+50) to South of Sawgrass Expressway interchange (Sta. 5622+00) along the Florida's Turnpike. The basin flows to the interchange wet pond through swales where partially treatment and attenuation is provided.

Basin 4: This basin begins west of Independence Drive at Sta. 1193+17.00 and ends at Sta. 1209+50.00 at the Powerline Road intersection. In the proposed condition, existing swales are filled by the widening, therefore runoff from the basin area will be directed to the interchange ponds for treatment and attenuation. Since in the existing conditions runoff from the area does not flow to the interchange pond, no credit is taken for existing treatment and attenuation for the basin. Basin 4 discharges to BCWCD#2

Refer to **Appendix C** for proposed basins and Drainage Maps.

8.0 FLOODPLAIN AND ENVIRONMENTAL INFORMATION

8.1 FLOODPLAIN ANALYSIS

FEMA FIRMS have been reviewed to evaluate the floodplain impacts and required floodplain. In general, Sawgrass Expressway corridor is outside of the FEMA 100-year floodplain; however, some ramps and the interchange ponds and the vicinity of Sawgrass Expressway are surrounded by FEMA Special Flood Hazard Areas Zones AE and AH with determined flood elevations (Refer to **Appendix D** for FEMA Maps).From the US 441 to the Turnpike/Sawgrass Expressway interchange the FEMA flood elevations range from EL. 10 ft. NAVD to EL. 14 ft. NAVD on the south side and from EL. 12 ft. NAVD to EL. 18 ft. NAVD on the north side. Excavation and fill volume between seasonal high water and 100-year flood elevation need to be accounted for at those areas. Some of the FTE Parcel are being converted to wet detention ponds, which will compensate for the loss of storage of 100-year flood plain. Refer to **Table 8.1** for the Summary of Floodplain Compensation Calculations and **Appendix D** for detailed calculations. While the overall project meets floodplain mitigation requirements, there is a floodplain mitigation deficit within Basin 2. This deficit can be reduced by expanding the pond using MSE walls along the ramps.

Table 8.1 - Summary of Floodplain Compensation Calculations

LOCAL WATER MANAGEMENT DISTRICT	PROJECT BASIN	FLOODPLAIN ENCROACHMENT (AC-FT)	Provided Storage In	FLOODPLAIN COMPENSATION (AC-FT)
Pinetree Water Management District	BASIN 1	0.98	POND 1-1	1.26
Cocomar Water Management District	BASIN 2 & 3A	8.50	POND 2-1	5.17
Broward County Water Management District # 2	BASIN 3B, 3B-1, 3B-2 & 4	38.76	FLOOD MITIGATION 3B-1	18.70
			FLOOD MITIGATION 3B-2	23.26
	PROJECT TOTAL =	**48.24**		**48.39**

8.2 ENVIRONMENTAL INFORMATION

Wetland and Endangered Species

There is no wetland, archeological or historic sites impact within the project corridor. There is a presence of Bald Eagles nest at the NE corner of Sawgrass interchange, which is to be protected. No stormwater facility has been proposed at this site.

Contamination

Draft Contamination Screening Evaluation Report (CSER) identifies a total of 16 sites of potential contamination risk. Those include two High Risk, five Medium Risk and nine Low Risk sites. None of the sites will be impacted by the proposed stormwater facilities. Refer to **Appendix E** for contamination map and Excerpts of Draft CSER

Wellfield Protection Zone

There is a wellfield at the North-East quadrant of Sawgrass and Turnpike interchange. The proposed drainage design will avoid any impact to the existing wellfield zone. Refer to **Appendix F** for Wellfield Protection Zone.

9.0 STORMWATER MANAGEMENT ALTERNATIVES

Stormwater management alternatives are considered based on the available options within and around the project corridor. Appropriate agency coordination has also been conducted to evaluate the alternatives. The following alternatives are considered by study.

9.1 DRY AND WET DETENTION

Throughout the project dry retention/detention facilities and wet detention ponds are available within roadway right-of-way, but this condition varies for different basins. Most of the existing roadside swales are diminished by the widening of the roadway except in Basin 1. Interchange wet ponds are large and underused in the existing condition in most cases. Besides, there are few FTE Parcels available for stormwater management. All these conditions made interchange ponds the most viable option for stormwater management. However, high tail water elevations controlled by the canal stages for the outfalls of the ponds and long stormsewer trunk lines to convey stormwater runoff due to lack of roadside swales pose a challenge to full utilization of the interchange ponds.

9.2 EXFILTRATION SYSTEM WITH DRY OR WET DETENTION

Exfiltration system is possible within the project corridor. Geotechnical tests show that the percolation rate varies from 4.72E-05 to 8.73E-06, which can be considered moderate to poor. Dry detention or wet detention facilities needs to be designed along with exfiltration system to provide water quality and attenuation of stormwater runoff. Exfiltration systems can be used to meet partial water quality requirements at the locations where dry or wet detention system is not possible or practical.

9.3 ENVIRONMENTAL LOOK AROUND

Coordination was carried out to investigate if opportunities are available to manage stormwater on a regional or join-use basis which would benefit other stakeholders. During coordination with BCWCD it was revealed that the NE side of the project is actually under welfield zone and it requires water recharge. It was also mentioned that ground water naturally flows from south to north towards Hillsboro Canal on the east side of the Florida's Turnpike. Due to loss of water, Broward County pumps water from Hillsboro Canal to C-3 Canal Basin. After coordination and discussion with the agencies no further concept was established that would allow stormwater to help recharge the well field. In the agency coordination meeting it was also mentioned that the Cocomar Water Control District has control structures at the ultimate discharge point at Hillsboro Canal, which indicates additional water quality and quantity may be available within the system. However, the C-3 Canal basin does not have a defined water quality mechanism which could provide an opportunity to use C-3 Canal and associated waterbodies directly for stormwater management.

9.4 JOINT-USE POND OPPORTUNITY

An attempt was made to use Independence Bay pond as a join- use facility. The Independence Bay pond serves the entire private development at SE quadrant of Sawgrass Expressway and Turnpike interchange. During coordination meeting BCWCD mentioned that water level on the east side of the Turnpike is about a foot lower than west side and BCWCD always wanted to bring the runoff from the west side to the eastside of the Turnpike. This indicates that additional flow may be accommodated on the east side where Independence Bay pond is located.

9.5 EVALUATION OF ALTERNATIVES AND PREFERRED ALTERNATIVE FOR EACH BASIN

Each proposed basin has been evaluated with multiple viable alternatives for storm water management. Alternatives are numbered below:

1. Dry and wet detention systems
2. Exfiltration system with dry or wet detention systems
3. Offsite Ponds
4. Joint use Ponds

Basin 1: In Alternative 1, the storm water runoff from the proposed roadway can be treated and attenuated at the linear dry detention swales SWALE 1-1 to SWALE 1-4, dry detention facility DRY POND 1-1 and wet detention facilities WET POND 1-1 and WET POND 1-2 as depicted in the Drainage Map attached in **Appendix C**. Roadside swales, dry ponds and wet ponds provide treatment and attenuation of roadway runoff from station 962+30 to 1041+00, before discharging to the Pinetree Water Control District Canals. The average swale bottom elevation and wet season water table is 11.0 ft. and 10.0 ft. NAVD respectively. Detailed calculations are attached in **Appendix G**.

The offsite FDOT-owned parcel at the NW quadrant of the interchange beyond Sawgrass right-of-way is available, but not included in the stormwater management calculations.

In Alternative 2, Exfiltration Trench is considered to meet water quality requirement along with dry detention or wet detention systems.

Comparing both the alternatives, Alternative 1 is considered as the preferred one since the runoff from this basin in the proposed condition can be managed within the FTE right-of-way without any foreseeable issues, whereas; in alternative 2 it would require significant amount of exfiltration trench to manage stormwater due to moderate to poor percolation rates. Exfiltration trench is known to be a maintenance intensive stormwater management feature. In addition of exfiltration trench will provide little benefit for the basin. Detailed calculations for preferred alternative is attached in **Appendix G**.

Basin 2:

In Alternative 1, storm water runoff from the proposed roadway can be treated and attenuated at the linear dry detention swales SWALE 2-1 to SWALE 2-6, dry detention facility DRY POND 2-1 to DRY POND 2-5 and wet detention facilities WET POND 2-1, as depicted in the Drainage Map attached in **Appendix C.** Roadside swales, dry ponds and wet ponds provide treatment and attenuation of roadway runoff from Station 1041+00 to 1110+00, before discharging to the Cocomar Water Control District Canals. The average swale bottom elevation and wet season water table is 11.0 ft. and 9.5 ft. NAVD, respectively.

In Alternative 2, Exfiltration trench meets water quality requirements along with dry detention or wet detention systems. Comparing both the alternatives, Alternative 1 is considered as the preferred one since runoff from this basin in the proposed condition can be managed within FTE right-of-way without any foreseeable issues, whereas; In alternative 2 it would require significant amount of exfiltration trench due to moderate to poor percolation rates and exfiltration trench is known to be a maintenance intensive stormwater management feature. In addition, exfiltration trench will provide little benefit to reduce the swale storage in this basin. Detailed calculations for the preferred alternative are attached in **Appendix G**.

Basin 3A:

In Alternative 1, storm water runoff from the proposed roadway can be treated and attenuated at dry detention facility DRY POND 2-1 and DRY POND 2-2 and wet detention facilities WET POND 2-1 and WET POND2-2 as depicted in the Drainage Map attached in **Appendix C.** Roadside swales, dry ponds and wet ponds provide treatment and attenuation of roadway runoff from Station 1110+00 to 1180+00, before discharging to the Cocomar Water Control District Canals. The average swale bottom elevation and wet season water table is 11.0 ft. and 9.5 ft. NAVD, respectively.

In Alternative 2, exfiltration trench meets water quality requirements along with dry detention or wet detention systems.

Comparing both the alternatives, Alternative 1 is the preferred one since the runoff from this basin in the proposed condition can be managed within FTE right-of-way without any probable issues, whereas; In alternative 2 it would require significant amount of exfiltration trench to manage stormwater due to moderate to poor percolation rates and exfiltration Trench is a maintenance intensive stormwater management feature. In addition, exfiltration trench will provide little benefit to reduce the required swale storage in this basin. Detailed calculations are included in **Appendix G**.

Basin 3B, 3B-1 and 3B-2:

In Alternative 1, storm water runoff from the proposed roadway can be treated and attenuated at the linear dry detention swales SWALE 3B-1 and SWALE 3B-2, dry detention facility DRY POND 3B-1 to DRY POND 3B-3 and wet detention facilities WET POND 3B-1 to 3B-4, as depicted in the Drainage Map attached in **Appendix C**. The normal water level at the ponds are 8.40 ft. NAVD and minimum berm elevation is 11.90 ft. NAVD.

In Alternative 2, exfiltration trench meets partial or full water quality requirements along with wet detention systems for attenuation purposes.

Alternative 3 is an offsite pond at northeast corner of Turnpike and Wiles Road. This pond site, proposed by FPID 442212-1 will reduce the need for long stormsewer system to the south of Sawgrass Expressway. However, on the negative side, a new parcel of right-of-way will need to be acquired and pond siting process needs to be carried out duly. The parcel is also contaminated site. Additional permitting efforts are needed to use the parcel for mitigation.

Alternative 4 is also considered to use the Independence Bay Pond for the stormwater needs for the Turnpike segment south of Sawgrass Expressway. This alternative will also reduce the need for long stormsewer line to the south of Sawgrass Expressway. However, on the negative side, it might introduce a complicated permitting process since the Independence Bay pond is privately owned and serves the subdivision at the SE quadrant of the interchange. Extensive coordination with the agencies and stakeholders would be required.

Comparing the alternatives, Alternative 1 is the preferred one since the runoff from this basin in the proposed condition can be managed within FTE right-of-way. Alternative 2 would require a significant amount of exfiltration trench due to moderate to poor percolation rates and exfiltration trench is a maintenance intensive stormwater management feature, In addition, exfiltration trench alone will not provide full treatment and attenuation for the basin. In alternative 3, a new parcel will need to be acquired through duly carried out pond siting process. The process will need to show that the proposed pond at the parcel is the most cost-effective alternative stormwater management of this basin. In alternative 4 rigorous coordination and complicated analysis needs to be done to use the Independent Bay Pond. An agreement with the Home Owners Association (HOA) needs to be reached should the Independence Bay pond be deemed a feasible site.

As per coordination with consultant of project FPID#406150-1 (the FTE south of Wiles Road) consultant, some alternatives are evaluated to provided required permitting stormwater needs. One of the alternatives is joint use of Tradewinds Park & Stable. If agreement fails, the stormwater storage is required within the PD&E Study limit. The study needs to evaluate to accommodate stormwater needs of the project south of Wiles Road.

Basin 3B discharges to BCWCD#2 Canals. Detailed calculations are attached in **Appendix G**.

Basin 4:

In Alternative 1, roadway runoff west of cross-drain at Sta.1203+00 will be directed to the interchange ponds for treatment and attenuation. Due limited right-of-way and longer hydraulic path, larger and deeper conveyance system is required to satisfy hydraulic gradient criteria. Refer to **Appendix G** for hydraulic calculation summary.

Approximately 600 ft east roadway segment between the cross-drain and the Powerline Road will be discharged to the Canal same as discharging in existing conditions. There is no indication of provided of treatment and attenuation of the roadway segment. It seems runoff from the segment sheet flows to roadside swales and discharges into the canal through Ditch Bottom Inlets (DBI) on both sides of roadway.

In Alternative two, exfiltration trench meets water quality requirements along with wet detention systems.

Alternative 3 develops two offsite dry ponds at the south side of the Quite Waters Park. This alternative reduces the need for long stormsewer system and raising of the Powerline Road Intersection. However, on the negative side, the two new parcels of right-of-way need to be acquired from the Quiet Waters Park and a full pond siting evaluation needs to be carried out.

Comparing the alternatives, alternative 1 is considered the preferred one since the runoff from this basin in the proposed condition can be managed within FTE right-of-way without any foreseeable issues, whereas; In alternative 2 it would require significant amount of exfiltration trench due to moderate to poor percolation rates and exfiltration trench is known to be a maintenance intensive stormwater management feature. In addition, exfiltration trench will provide little benefit to reduce the required swale storage.

In alternative 3 the off-site pond will require coordination and duly done pond siting process to acquire the parcel for the wet pond. Basin 4 discharges to BCWCD#2. Detailed calculations are included in **Appendix G**.

10.0 RESULTS

Preliminary drainage evaluations show that the water treatment and attenuation requirements for the approximately 485-acre study area can be provided within the existing Right-of-Way. Refer to **Table 10-1** for a summary of water quality and quantity calculations. The stormwater storage at each facility per basin is summarized in **Table 10-2.** The required volume of treatment and attenuation for the study corridor is exceeded by the provided storage in wet detention ponds in the interchanges or at the FTE owned parcels, re-graded roadside swales and re-graded interchange infield areas. The surplus areas will be utilized for landscaping and beautification purposes. Refer to **Appendix G** for all calculations and supporting documentation. Design aids are attached in **Appendix H.**

Table 10.1 - Water Quality and Quantity Calculation Summary

TABLE 10.1 WATER QUALITY AND QUANTITY CALCULATION SUMMARY														
Basin Area Calculation									Water Quality Calculation Summary	Water Quantity Calculation Summary	Required Storage For Stormwater Management	Provided Storage	Surplus Volume	Remarks
Project Basin		Station		Side	Length	Total Area	Impervious Area		Water Quality Treatment Req'd (1)	Net Runoff Increase (Post-Pre) (2)	Water Quality+Water Quantity (3)	(4)	(5)	
No.	Description	From	To	LT/RT	(ft.)	(Ac.)	Exist.	Prop.	(Ac.ft.)	(Ac.ft.)	(Ac.ft.)	(Ac.ft.)	(Ac.ft.)	
1	From West of US-441 to US-441	962+30	1041+00	LT/RT	7870	110.64	45.33	86.76	13.45	6.29	19.74	24.25	4.51	Dry Detention and Wet Detention
2	From US-441 to East of Lyons Road	1041+00	1110+00	LT/RT	6900	85.88	40.29	64.08	12.04	3.54	15.58	15.65	0.07	Dry Detention and Wet Detention
3A	From East of Lyons Road to FTE	1135+00	1153+00	LT/RT	1800	22.37	12.30	14.92	2.66	0.42	3.08	5.58	2.50	Dry Detention and Wet Detention
3B	Sawgrass Expressway from FTE to Waterways Blvd.	1110+00	1180+00	LT/RT	7000	158.37	68.10	98.91	14.46	4.67	19.13	48.11	28.98	Wet Detention. Required storage for Basin 4 is added in Required Storage
3B-1	FTE from north of the Sawgrass/FTE interchange to Hilsboro Canal	5652+38	5716+70	LT/RT	6432	44.27	18.66	30.89	6.44	1.82	8.25	2.40	-5.85	Dry Detention along right side
3B-2	Turnpike from Wiles Road to Sawgrass/FTE interchange	5572+50	5622+10	LT/RT	4960	36.01	0.00	24.39	5.08	3.71	8.79	4.90	-3.89	Dry Detention along right side
4	From Waterways Blvd. to Powerline Rd.	1180+00	1209+00	LT/RT	2900	17.80	0.00	20.47	3.16	18.55	21.71	0.00	-21.71	Wet Detention. Provided storage is Basin 3B
										Total 3A, 3B, 3B-1 & 4	60.96	60.99	0.03	

Notes:

(1) Water Quality Treatment required = Wet detention volume calculated for the first inch of runoff from the developed project, or the total runoff of 2.5 inches times the total impervious area, whichever is greater. See separate spreadsheet for detail calculation.

(2) Water Quantity required = Net Runoff generated from Design Storm (25YR-72HR) = Post Development Runoff - Pre Development Runoff. See separate spreadsheets for detail calculation.

(3) Required Storage for Stormwater management (Water Quality + Water Quantity) = (1) +(2)

(4) From Table 2 Wet and Dry Detention System Storage Calculation

(5) Surplus Volume (5) = (4) -(3). Landscaping needs can be fulfilled at the area where surplus volume is available.

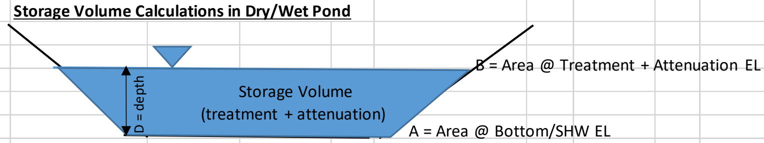
Table 10.2 - Wet and Dry Detention System Storage Calculation

WET AND DRY DETENTION SYSTEM STORAGE CALCULATION											
BASIN No.	WATER MANAGEMENT FACILITIES					CONTROL/BOTTOM EL		TREATMENT AND ATTENUATION EL		STORAGE	REMARKS
	DESCRIPTION	From Sta.	To Sta.	Side	TREATMENT METHOD	Elev. (ft.)	Area (Ac.)	Elev (ft.)	Area (Ac.)	Volume (Ac-ft)	Minimum Berm EL
1	Swale 1-1	962+50	1012+00	LT	Dry Detention	11	0.57	12.5	0.66	0.92	14.50
	Swale 1-2	962+50	1009+00	RT	Dry Detention	11	1.71	12.5	1.86	2.68	13.50
	Swale 1-3	1023+50	1030+50	LT	Dry Detention	11	0.39	12.5	0.47	0.64	13.50
	Swale 1-4	1028+00	1040+00	RT	Dry Detention	11	0.43	12.5	0.51	0.70	13.50
	Dry Pond 1-1	1030+00	1035+00	LT	Dry Detention	11	1.19	12.5	1.32	1.88	13.50
									Σ Dry Detention =	*6.83*	
	Wet Pond 1-1	1030+00	1039+00	LT	Wet Detention	10	7.73	11.5	8.05	11.84	14.50
	Wet Pond 1-2	1035+00	1040+00	LT	Wet Detention	10	3.61	11.5	3.83	5.58	14.50
									Σ Wet Detention =	*17.42*	
	TOTAL AVAILABLE STORAGE AT BASIN 1 = 24.25 AC-FT										
2	Dry Pond 2-1	1042+00	1043+00	RT	Dry Detention	11	0.21	12.5	0.27	0.36	13.50
	Swale 2-1	1042+00	1046+00	RT	Dry Detention	11	0.23	12.5	0.32	0.41	13.20
	Swale 2-2	1042+50	1058+50	LT	Dry Detention	11	0.65	12.5	0.75	1.05	13.20
	Swale 2-3	1047+00	1052+50	RT	Dry Detention	11	0.20	12.5	0.25	0.34	13.20
	Dry Pond 2-2	1049+00	1053+00	RT	Dry Detention	11	0.99	12.5	1.11	1.57	13.45
	Swale 2-4	1076+00	1091+00	RT	Dry Detention	11	0.41	12.5	0.49	0.67	13.20
	Swale 2-5	1077+00	1083+00	LT	Dry Detention	11	0.09	12.5	0.13	0.16	13.45
	Swale 2-6	1082+50	1092+50	RT	Dry Detention	11	0.32	12.5	0.39	0.53	13.45
	Dry Pond 2-3	1090+50	1092+50	RT	Dry Detention	11	0.21	12.5	0.27	0.36	13.45
	Dry Pond 2-4	1095+00	1097+00	LT	Dry Detention	11	0.17	12.5	0.22	0.29	13.45
	Dry Pond 2-5	1095+00	1098+00	LT	Dry Detention	11	0.13	12.5	0.17	0.23	13.45
									Σ Dry Detention =	*5.98*	
	Wet Pond 2-1	1042+50	1048+50	RT	Wet Detention	9.5	6.30	11.0	6.59	9.67	12.95
									Σ Wet Detention =	*9.67*	
	TOTAL AVAILABLE STORAGE AT BASIN 2 = 15.65 AC-FT										
3A	Wet Pond 3A-1	1147+00	1151+00	LT	Wet Detention	8.4	1.21	9.9	1.27	1.86	12.95
	Wet Pond 3A-2	1149+00	1151+00	LT	Wet Detention	8.4	0.86	9.9	0.91	1.33	12.95
									Σ Wet Detention =	*3.19*	
	Dry Pond 3A-1	1136+00	1143+00	LT	Dry Detention	11	0.64	12.5	0.69	1.00	13.45
	Dry Pond 3A-2	1145+00	1150+00	LT	Dry Detention	11	0.90	12.5	0.96	1.39	13.45
									Σ Dry Detention =	*2.39*	
	TOTAL AVAILABLE STORAGE AT BASIN 3A = 5.58 AC-FT										
3B	Wet Pond 3B-1	1147+50	1151+00	RT	Wet Detention	8.4	0.85	9.9	0.90	1.32	11.9
	Wet Pond 3B-2	1155+00	1162+50	LT	Wet Detention	8.4	6.08	9.9	6.22	9.23	11.9
	Wet Pond 3B-3	1155+00	1159+00	RT	Wet Detention	8.4	12.90	9.9	13.11	19.51	11.9
	Wet Pond 3B-4	1156+00	1163+00	LT	Wet Detention	8.4	2.09	9.9	2.17	3.20	11.9
	Wet Pond 3B-5	1155+00	1163+00	RT	Wet Detention	8.4	7.59	9.9	7.75	11.50	11.9
									Σ Wet Detention =	*44.75*	
	Dry Pond 3B-1	1090+50	1092+50	RT	Dry Detention	9.4	0.61	10.9	0.70	0.98	11.90
	Dry Pond 3B-2	1090+50	1092+50	RT	Dry Detention	9.4	0.49	10.9	0.57	0.80	11.90
	Dry Pond 3B-3	1090+50	1092+50	RT	Dry Detention	9.4	0.99	10.9	1.11	1.57	11.90
									Σ Dry Detention =	*3.36*	
	TOTAL AVAILABLE STORAGE AT BASIN 3B = 48.11 AC-FT										
3B-1	Swale 3B-1	5651+00	5678+00	RT	Dry Detention	9.4	1.53	10.9	1.68	2.40	11.90
	TOTAL AVAILABLE STORAGE AT BASIN 3B-1 = 2.40 AC-FT										
3B-2	Swale 3B-2	5577+00	5609+00	RT	Dry Detention	9.4	3.16	10.9	3.37	4.90	11.90
	TOTAL AVAILABLE STORAGE AT BASIN 3B-2 = 4.90 AC-FT										

Notes:

1. Swale and Pond locations are shown in the associated Drainage Map.
2. Swale and pond sections are estimated from existing plans and conceptual roadway design. See associated exhibit
3. Treatment volume provided by new roadside swales or enlarging interchange ponds.
4. All Elevations are in feet NAVD-88 datum. Datum Conversion factor, NAVD EL = NGVD EL - 1.529'

Storage Volume Calculations in Dry/Wet Pond



$$\textit{Storage Volume} = \textit{Average of } (A \,\&\, B)\, X\, D$$

The preliminary base clearance evaluation was done based on the original roadway profile, Typical Sections and pavement design. The January 2019 FTE Drainage Manual Supplement, Section 5.4.1.1 requires the design high water for base clearance to be set above the outfall weir elevation. If the above criteria cannot be achieved in some roadway stretches, the base clearance could be evaluated, in a case-by-case basis, from the swale bottom elevation or from the SHGWT. Detailed base clearance should be evaluated during final design.

11.0 CONCLUSIONS

The current Sawgrass Expressway corridor is permitted to eight lane section; however, the proposed improvement will eliminate roadside swales. Therefore, a complete preliminary storm water management calculation was done to meet current SFWMD criteria where interchange ponds will be used as stormwater management facilities and several FDOT parcels are available for storm water management use. The calculation shows adequate storage is available at those facilities to meet both FDOT and SFWMD criteria. Long stormsewer conveyance systems are expected in the detailed design. No Right-of-Way acquisition is deemed necessary.

12.0 REFERENCES

SFWMD PERMIT No. 06-00629-S
SFWMD PERMIT No. 06-10034-S
FDOT DRAINAGE MANUAL (DM) 2023
FDOT Florida Design Manual (FDM) 2023
ERP APPLICANT'S HANDBOOK VOLUME I. FDEP December 2020
ERP APPLICANT'S HANDBOOK VOLUME II. SFWMD May 2016
B.M.P. FOR SOUTH FLORIDA URBAN STORMWATER MANAGEMENT SYSTEMS. SFWMD September 2020
PD&E MANUAL. FDOT June 2023
USDA-NRCS SOIL SURVEY OF BROWARD COUNTY, FL
FEMA FLOOD INSURANCE RATE MAPS

APPENDIX A

Correspondence and Meeting Notes

Coordination with Broward Water Control District #2 & Cocomar Water Control District

Sawgrass Expressway (SR 869) Widening PD&E Study
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
Broward County, Florida
FPID# 437153-1-22-01 / Contract Number C-9P63

Monday, February 12, 2018
1:30 PM – 2:30 PM
Broward Co. Water and Wastewater Services/Water Management Division
2555 West Copans Road Pompano Beach, Fl. 33069

Meeting Minutes

Introductions

Mike Ciscar: We are doing a PD&E Study of the Sawgrass Expressway from just West of US-441 to Turnpike East, to complete the PD&E Study from Sunrise Rd. up to US-441. This is the remaining segment of the corridor from West of SR-441 to the mainline and ultimately down to Powerline Road. The main objective is to continue/complete the Express lanes network, to put Express lanes in the median along the Sawgrass Expressway as well as Interchange modifications necessary at US-441 and Lyons Road. The Mainline Interchange between the Sawgrass and the Turnpike it's a partial interchange from the North to the West as part of this study we are introducing the missing movements running from the East and also Direct Connects Express Lanes connections from the proposed express lanes to the main line because Turnpike also is going to be implementing Express lines on the mainline as well as the Sawgrass. That's the overall scope of our project. One very important component of it, is coordination with other adjacent projects. The Turnpike has projects like I mentioned on the Sawgrass to the west of this job and then on the main line north and south of this job and on the East district 4 (FDOT) is also conducting a PD&E Study along Southwest 10th Street, looking at several options there, one of which is a depressed option. So we have been coordinating closely with them on a bi weekly basis on that. But that's not part of our scope. Our scope is to coordinate with them and tie into them were then tie into us, make a seamless transition. But our objective is express lanes on the Sawgrass and then a mainline Interchange as well as the two service in general.

Mohammad Pervez: For drainage purposes for the corridor we researched the permits and the existing as-built plans. We are going through the basins, where those are, and how it is behaving. From the beginning of the project up to US-441 which is under Pine Tree Water Control District. Then from US-441 it's actually a genuine divide to Turnpike, is under Cocomar Water Control District. From Turnpike to the end of the project it under Broward County Water Control District No. 2. Turnpike interchange it is connected, meaning that both sides of the Turnpike are connected. Is there any physical divide between a Cocomar and Broward County Water Control District No. 2? Outfall 82 on the South East corner discharges to the Broward County Water Control District Canals and Outfall 84 North West Corner discharges to Cocomar Water Control District.

Carl Archie: A connection not included in SFWMD Permits shows a connection between Coco Lakes and the wet pond located SW of the turnpike interchange. Cross culvert No. 9 connects West and East of the Turnpike, which eventually discharges to a lake west of Independence Bay Community. We've always been concerned with the connectivity of these lakes. There were missing pipes, there was a whole lot missing infrastructure that was never put in. Some of the Sawgrass was over dredged, some was under dredged and there are missing piece. For example outfall 85, we know it was never approved by the adjacent land owner. They used to be a lake and they never obtained an easement to drain. When they developed Independence Bay, the owner got permission to fill in that lake or to relocate it. The pipe goes nowhere because the lake was moved. I think the Sawgrass relocated the outfall between Waterways Blvd. and Independence Dr., you'll need to check our files for that. That's how the system goes. It's a whole series of four separate plans. The lakes (NE and SE of US-441, Cross Culvert No. 3) they were always a problem for us in the county since we need to get the across the states and divide and we regularly use this space and the light to get from over here to over here. There is a connection between these two lakes here,

Mohammad Pervez: I assume those were part of the development plans.

Carl Archie: The Lake (SE of US-441) was used by the Sawgrass, but the storage is owned by a development (NE of US-441). NE Lake is owned by the FDOT now. North and South Lakes are connected. There is an additional outfall underneath Sawgrass that connects North and South Lakes (West of Cross Culvert No. 3).

Mohammad Pervez: So as far as the storm management goes, seems like is mixed by the districts.

Carl Archie: The Cocomar plans were developed way before the Sawgrass Authority developed theirs. We had to have a north-south connectivity so pretty much. The Sawgrass was just in case the secondary user for the entire of things. And back then I think was Broward County was the developing the Sawgrass

Anaily Padron: Before you continue I have a question regarding Cross Culvert No. 4. Per BCPA all the outfalls located in Cocomar WCD are property of the City or County, except for Cross Culvert No. 4. It looks like it is property of Winston Park.

Carl Archie: This development was all coming in at one time and they needed the service. So they installed it.

Susan Juncosa: It's ours.

Mohammad Pervez: For stormwater management purposes, is there a separation a physical separation between East and West of the Turnpike?

Carl Archie: There is a physical divide that's about ten feet from the Turnpike property. The reason for suspicion at the lakes, they just doesn't look alike, it looks like that lake is isolated with the pipes were never maintained.

Mohammad Pervez: We will treat the interchange as a whole, meaning that in that interchange footprint would probably going to bring it in, in those two ponds and whatever the swales we get in between. And then finally we'll find the outfall, fall through the canal. Is it going to be OK to look at one interchange drainage?

Carl Archie: Yes. The divider is outside your right of way in the presumption it is closed. You can presume that the elevation 10.0 NGVD. That was the control elevation for that pond, but it was intended to be a basin divide that we can point.

Fred Gaines: Going back to the control structure. Where does it outfall? Does it the outfall on to the lake?

Carl Archie: It actually followed the fence line and goes into this lake then under the turnpike and then is actually a canal, this was supposed to be an off ramp and way back when they pick it up and that's the outfall to the east. It is piped from the Turnpike and it becomes an open canal.

Ryan Solis-Rios: The northern boundaries of the turnpike are actually changing. Right now the limits ends at the Hillsboro Blvd. We just recently got notice that we have to evaluate another PD&E that's actually 4,000 ft more from the County line. We're basically adding two express lanes of Sawgrass Expressway and two express lanes to FTE, just two lanes only ran into what's out there today and actually there's going to be an additional lane (auxiliary lane). Within the interchange area, we basically have four more lanes.

Mohammad Pervez: As far as the stormwater management goes, Mike already described the roadway improvements in the drainage part or a storm water management part. We would be providing a detention system in the interchanges and we'd be probably providing dry detention or retention in some places. We're explore if there is any way we can provide exfiltration trench. We have the Geotechnical Report and a few other things to do with all those options. We will provide a stormwater treatment attenuation within the limits of the project. So that's of our proposed improvement. For the stormwater management criteria as we always do we will be following south Florida water management district criteria for water quality and water quantity. We know that does project was permitted for 8-lanes, if we can have that storage for eighth lane permitted and then provide for the additional improvement and also analyze to see whether that is beneficial or all the water quality before entire project. And then we would provide the option for the project. For water quantity, we'll analyze Pre VS Post. Post development discharge will be less than Pre-development discharge without affecting any of the downstream properties.

Susan Juncosa: What would you be considering the project area?

Fred Gaines: For now we will consider from ROW to ROW. May be less, but I don't think there's that much new additional ROW they take them for the most part.

Ryan Solis-Rios: We may impacting the Park on both sides (additional ROW) on FTE and SW 10th St. corridor, but everything else in the project we are basically using the existing ROW.

Carl Archie: We had some plans associated to get more conveyance across FTE South of Sawgrass. I'll have to discuss it with John. In fact, we were planning this whole idea of getting water from the space in addition to independence bay.

Fred Gains: Is that the same area you and Jennifer Hereto talk about in 2006? We're not constructing but it is still an option if you wanted to do that anytime.

Carl Archie: Yes. Broward County Commissioners had some questions about that project and the Turnpike decided to just step back from the design. Secondly, we will have to see the intent with our wellfileld folks, about the lake and area NE FTE Interchange. The Ski Lake and the beach it's not supposed to be mixed with stormwater because of human contact, and so we have always wanted to surround this area with the water from over here, very close, 10 feet in some cases. There were plans associated with getting water over here. I'll get with our well field folks to see if they want to pursue it.

Anaily Padron: I have a question regarding the pipe connections inside Quiet Waters Park from this sketch from the ERP Permit. Looks like all the lakes are interconnected with equalizer pipes and they eventually discharge to C-3 Canal and that ultimately discharges to the Hillsboro Canal via a Control Structure.

Carl Archie: This was never put in place and everyone was glad that was never put in place, it was installed far too high to be effective. We are not allowed to put water there. That option never came through. The System in the East is so depressed that they never had a flood issue. We have to talk to our wellfield folks, they desperately want to protect the well field. The best idea is to fill the surrounding lakes with surface water.

Fred Gains: All the culverts that are in your system are they free flowing, there are no gates underneath?

Carl Archie: Yes, at least in the Cocomar District.

Anaily Padron: We have no recent permits for SW 10th Street, we located the crossing pipes bases on the Survey and old permits.

Mohammad Pervez: Moving on with the Cross Culvert Extension. The only culvert extension that we have that might be outside FTE ROW is the one connecting the C-3 Canal. In that case do we need to submit permits?

Carl Archie: Yes. If you are impacting and the structure needs to be replaced.

Fred Gains: Do you want to move to question number five?

Mohammad Pervez: So challenging. You know, we don't have much room for stormwater in our area. I'm wondering, is there any storage available in the System that we can use or Cocomar needs more water?

Carl Archie: The district has no surplus left. All of it was sold out. I will need to contact Susan Bodman, Jennifer Hereto (Hydro geologists). I will let them know and we can plan another meeting with them.

Ryan Solis-Rios: You said that you had plans convey stormwater West-East of the FTE Mainline.

Fred Gains: We have done this, as you all know. We did it with Winding Waters, Palm Beach County. There are several instances when folks want stormwater runoff and it's relatively clean.

Mohammad Pervez: Can we treat FTE as a whole basin?

Carl Archie: You'll do it for both, the system are mixed. I suppose you can do it.

Fred Gains: We will make sure that all our coordination's will have NAVD, NGVD references.

Meeting Adjourned: 2:30 PM

Action Items:

- As-Builts from FDOT/FTE required by Susan Juncosa.
- Response from Well field office
- Meeting with Broward County Hydro geologist

Please see sign in sheet for attendance.

Coordination Meeting with South Florida
Water Management District
Sawgrass Expressway (SR 869) Widening PD&E Study
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
Broward County, Florida
FPID# 437153-1-22-01 / Contract Number C-9P63

Thursday, August 2, 2018
10:00 AM – 10:30 AM
SFWMD District Headquarter
3301 Gun Club Road West Palm Beach, FL 33406

MINUTES

1. **Introduction to the Project**

   a. Objective and Schedule

   The meeting was held to discuss scope of the project and pertinent South Florida Water Management District (SFWMD) drainage design criteria for the project. Fred Gaines opened meeting with a brief description of the project. Mr. Solis-Rios added more project information with discussing the project limits, importance of project and other surrounding FDOT and Turnpike projects within the vicinity of project area.

2. **Existing Stormwater Management**

   a. Local Drainage Districts

   There are three local drainage districts with in the project limits. From the beginning of the project to US 441 is within Pine Tree water Control District, from US 441 to FL Turnpike is within Cocomar Water Control District and from FL Turnpike to Powerline Road is within Broward County Water Control District #2.

   b. Existing Permits and Pre-development Drainage for this Project

   Mr. Pervez mentioned that there is an existing permit approved in 1985 for 8 lane section of the road within the project limit but only 4 lane section was built at that time. In the year 2005, 2 more lanes were added at the median with a letter modification. Mr. Pervez mentioned that the proposed project will have 10 to 12 lane of roadway and there are significant amount of existing roadside swales will be lost due to widening or reconstruction.

3. **Stormwater Management Criteria**

   a. Water Quality and Water Quantity Criteria

   Mr. Pervez mentioned that the design team would like to consider providing the storage (current volume) plus the required volume for the treatment of additional impervious area as an option to meet the water quality requirement for the project. The other option is to provide the water quality for entire roadway. Mr. De Rojas from SFWMD explained that since most roadside swale will be used for widening of the road, it is fair to use new permit with current design criteria (1" over the project area or 2.5" over impervious area, whichever the greater) for water quality treatment for new roadway. However, during the final design phase if the project finds that it is beneficial to use previous 8 lane section volume plus the additional volume for additional impervious area, SFWMD would like to evaluate the option at that time.
   Mr. Gaines inquired if Independence Bay Ponds can be used for treatment and attenuation to avoid buying additional right of way. Mr. De Rojas replied that it depends on local drainage authority.

4. Proposed Improvement

a. Stormwater Management – Post-development

Basins – There are primarily four basins; (1) from beginning of the project to US 441, (2) from US 441 to east of Lyons Road, (3) from east of Lyons Road to waterways Blvd and (4) from waterways Blvd to Powerline Road.

Stormwater Management Options – *stormwater management will be primarily provided by wet detention in the interchange ponds and dry detention in the roadside swales and interchange infield areas.*

5. Cross-Culverts Extensions in WCD's Facilities

a. Culverts and jurisdiction – *There are several cross-culverts within the project needs to be extended which is under local drainage district jurisdiction*

6. Regional Stormwater Management Opportunities

a. Potential Wellfield Recharge Activity and Well Wellfield Protection Zones - *Mr. Pervez mentioned that the project team is coordinating with Local Drainage Districts about to design stormwater system that could help well field recharge located north-east of Turnpike and Sawgrass Expressway interchange. Mr. De Rojas mentioned Department of Environmental Protection (DEP) needs to be contacted in case well field recharge is involved.*

b. Regional Water Quality and Water Quality Basin, Quiet Waters Park and Independence Bay Community – *Mr. Rojas mentioned that Cocomar WCD has control structures at the system that regulates the flow to the Hillsboro Canal but BCWCD#2 does not have any defined system. Permitting at BCWCD#2 was delegated to the County*

7. Environmental Features and Approach

Rob Myers described the environmental features within the project corridor. They include a bald eagle nest in the Northeast quadrant of the intersection of Sawgrass Expressway and Florida's Turnpike. Mr. Myers stated that nest was active during the 2017/2018 nesting season and produced one chick. Mr. Myers pointed out that the nest is in a different tree than during previous years, but it is still on FDOT right-of-way. Other environmental features within the project area included wetlands, and Mr. Myers noted that wetlands occur on Quiet Waters Park, immediately north of Sawgrass Expressway and east of Florida's turnpike. The SFWMD noted that some of these lakes and wetlands appear to have been cut into uplands and are not natural wetlands. Wetlands and surface waters are also potentially suitable foraging habitat for the federally listed wood stork. Mr. Myers noted that potentially contaminated sites occur in the project area, included several gas stations and a landfill near the southern terminus along Florida's Turnpike.

8. Other

Mr. Pervez inquired if Hillsboro Aquifer Storage and Recovery, a Comprehensive Everglades Restoration Plan (CERP) project will be impacted by the project. SFWMD staff mentioned that CERP is little far north side of project, therefore it may not affect the project.

9. Closing Comments/Questions – Action Items

Meeting was concluded at 11:30 am on Thursday, August 3, 2018.

SFWMD COORDINATION MEETING

Sawgrass Expressway (SR 869) Widening PD&E Study
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
Broward County, Florida
FPID# 437153-1-22-01 / Contract Number C-9P63

Thursday, August 2, 2018
10:00 AM – 11:00 AM

SIGN IN SHEET

NAME	AGENCY / COMPANY	TELEPHONE	EMAIL	INITIALS
1) Barb Conmy	SFWMD	561-682-6937	bconmy@sfwmd.gov	BC
2) Carlos de Rojas	SFWMD	561-682-6505	cderojas@sfwmd.gov	CR
3) Martin Horwitz	FTE/EMO	407-264-3022	martin.horwitz@dot.state.fl.us	MH
4) Fred Gainer	Atkins	407 264 3689	fred.gainer@dot.state.fl.us	FG
5) Ryan Solis-Rios	Corradino	954-777-0044	rsolis-rios@corradino.com	RJR
6) Mohammad Pervez	HDR	305-728-7446	mohammad.pervez@hdrinc.com	MP
7) Imtyaz Shaikh	HDR	305-728-7434	imtyaz.shaikh@hdrinc.com	IS
8)				
9)				
10)				
11)				
12)				
13)				
14)				
15)				
16)				

Coordination with Broward Water Control District #2 and Cocomar Water Control District

Sawgrass Expressway (SR 869) Widening PD&E Study
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
Broward County, Florida
FPID# 437153-1-22-01 / Contract Number C-9P63

Thursday, August 2, 2018
2:00 PM – 3:00 PM
Broward Co. Water and Wastewater Services/Water Management Division
2555 West Copans Road Pompano Beach, Fl. 33069

AGENDA

1. Update on Project

- *This is a follow-up meeting with Broward County Water Control District#2 to provide an update on the project and to discuss the opportunity to recharge the wellfields.*
- *Fred Gaines opened the meeting with a brief description of the project. Mr. Solis-Rios added more project information with discussing the project limits, importance of project and other surrounding FDOT and FL Turnpike projects within the vicinity of project area.*

2. Update on Stormwater Management Approach

1. Proposed Basins- *Mohammad Pervez provided an update on the drainage design approach of the project since last meeting.*

3. Update on Stormwater Management Opportunities

2. Wellfield Recharge Possibility - Ponds at Quiet Waters Park
    - *Broward County Staff mentioned that the ground water flows from south to north through the wellfield zone on the east side of FL Turnpike. Therefore, Broward County has been trying to send water to the south side of Sawgrass Express way and east side of FL Turnpike. Mr. Archie mentioned to have a possible pipe connection under the FL Turnpike to bring water from west to east just north of Wiles Road towards well fields. Mr. Gaines mentioned that the crossing could be a cost sharing opportunity for both FL Turnpike and BCWCD#2 for mutual benefits.*
    - *Broward County staff mentioned that they do not have any issues on the location of the new ponds in Basin 4 inside the quite waters park. Since the parcels are owned by Broward County Parks and Recreational Department, the staff advised to contact the Parks department. They also mentioned that Quiet Waters Park ponds cannot be used for discharge because of human contact in the water (class I water).*

a. Project Discharge in Independence Bay Pond – Compensatory Discharge Opportunity

Carl Archie informed that BCWCD#2 has no objection on sending runoff from Sawgrass FL Turnpike interchange to Independence Bay through the current outfall at SE corner of the interchange. He also mentioned that the existing Sawgrass Express way east of FL Turnpike is also discharging to Independence bay. So Discharge for that part will also be allowed.

b. Potential Alternative Pond at NW Corner of Turnpike and Wiles Road

Regarding the potential offsite pond at the SE corner of FL Turnpike and Wiles Road, Mr. Archie suggested to relocate the pond footprint further north so that it falls in the path of the proposed crossing from Coco Lakes to Independence Bay.

c. Potential Overflow Discharge at Independence Bay from Basin 3B

Broward County staff mentioned to use SFWMD criteria for quality and quantity to release stormwater at Independence Bay. Carl Archie informed that any additional runoff going to the Independence Bay Pond will be subject to a potential Broward County permit. He suggested to have a well-established connection among proposed ponds with lower invert elevation at the pipes to help water to flow towards south of Sawgrass Expressway which may help recharging the well field.
Mr. Archie promised to send the legal agreement between the community and the county for receiving water to the lake.

4. Other Items

Broward County staff Ms. Maran suggested to use new Broward County Ground Water Elevation Maps for the design purposes.

Meeting was concluded at 3:30 am on Thursday, August 3, 2018.

COORDINATION WITH BROWARD WATER CONTROL DISTRICT #2 AND COCOMAR WATER CONTROL DISTRICT

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2555 West Copans Road Pompano Beach, FL 33069

SIGN IN SHEET

NAME	AGENCY / COMPANY	TELEPHONE	EMAIL	INITIALS
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3) Ryan Solis-Rios	Corradino	(954) 777-0044	rsolis-rios@corradino.com	RSR
4) Anaily Padron	HDR	(305) 728-7459	Anaily.padron@hdrinc.com	
5) Mohammad Pervez	HDR	(305) 728-7446	Mohammad.Pervez@hdrinc.com	[illegible]
MH 6) Martin Horwitz	FTE	(407) 264-3022	Martin.Horwitz@dot.state.fl.us	MH
7) Erin Yao	FTE	(407) 264-3479	Erin.Yao@dot.state.fl.us	
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11) Adam Gardner	Broward Co	954-831-0754	agardner@Broward.org	AG
12) Joe Heilman	"	(9)831-0764	JHeilman@Broward.org	JH
13) Susan Juncosa	BC WMD	831-0778	Sjuncosa@broward.org	SJ
14) Susan Bodmann	BC WMD	831-0760	sbodmann@broward.org	SB
15) Imtyaz Shaikh	HDR	305-728-7434	imtyaz.shaikh@hdrinc.com	IS
16) Fred Gaines	Atkins	407 264 3689	fred.gaines@dot.state.fl.us	FG

~~Martin Horwitz FTE~~

17) Carolina Maran Broward (954) 5190356 cmaran@broward.org

From:	Ryan Solis-Rios
To:	Shaikh, Imtyaz; Lopez, Carlos J.
Subject:	FW: 437153-1 PD&E Widen Sawgrass US441 to Powerline
Date:	Friday, October 6, 2023 9:35:43 AM
Attachments:	image001.png image002.png
Importance:	High

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Guys:
See below from Turnpike.
Please confirm.
Thanks,

From: Stewart, Kevin <Kevin.Stewart@dot.state.fl.us>
Sent: Friday, October 6, 2023 9:14 AM
To: Heywood, Jazlyn <Jazlyn.Heywood@dot.state.fl.us>; Ryan Solis-Rios <rsolis-rios@CORRADINO.com>
Cc: Yao, Erin <Erin.Yao@dot.state.fl.us>; Gaines, Fred <Fred.Gaines@dot.state.fl.us>
Subject: 437153-1 PD&E Widen Sawgrass US441 to Powerline

Ryan/Jazlyn,

An RAI comment recently came up on the widening project just east of this project. The Sawgrass (west of Turnpike mainline only) is within a WPA (special basin) which has some additional requirements such as an additional 50% water quality volume (for the extra lanes above 8 lanes that were previously permitted). I don't believe this has been accounted for in the volumes for this project. I wanted to pass this information along so it can be included. Thanks! See the SFWMD SWERP manual at erp_swerp_manual.pdf (sfwmd.gov) .

Kevin G. Stewart, P.E.

Senior Drainage Engineer
AtkinsRéalis
Engineering, Design and Project Management

Florida's Turnpike Milepost 263, Building 5315, Ocoee, Florida 34761
Tel: 407-264-3417 Mob: 407-448-3616

PLEASE NOTE THAT FLORIDA HAS A BROAD PUBLIC RECORDS LAW, AND THAT ALL CORRESPONDENCE TO ME VIA E-MAIL MAY BE SUBJECT TO DISCLOSURE.

APPENDIX B

Soil Data & Geotechnical Information

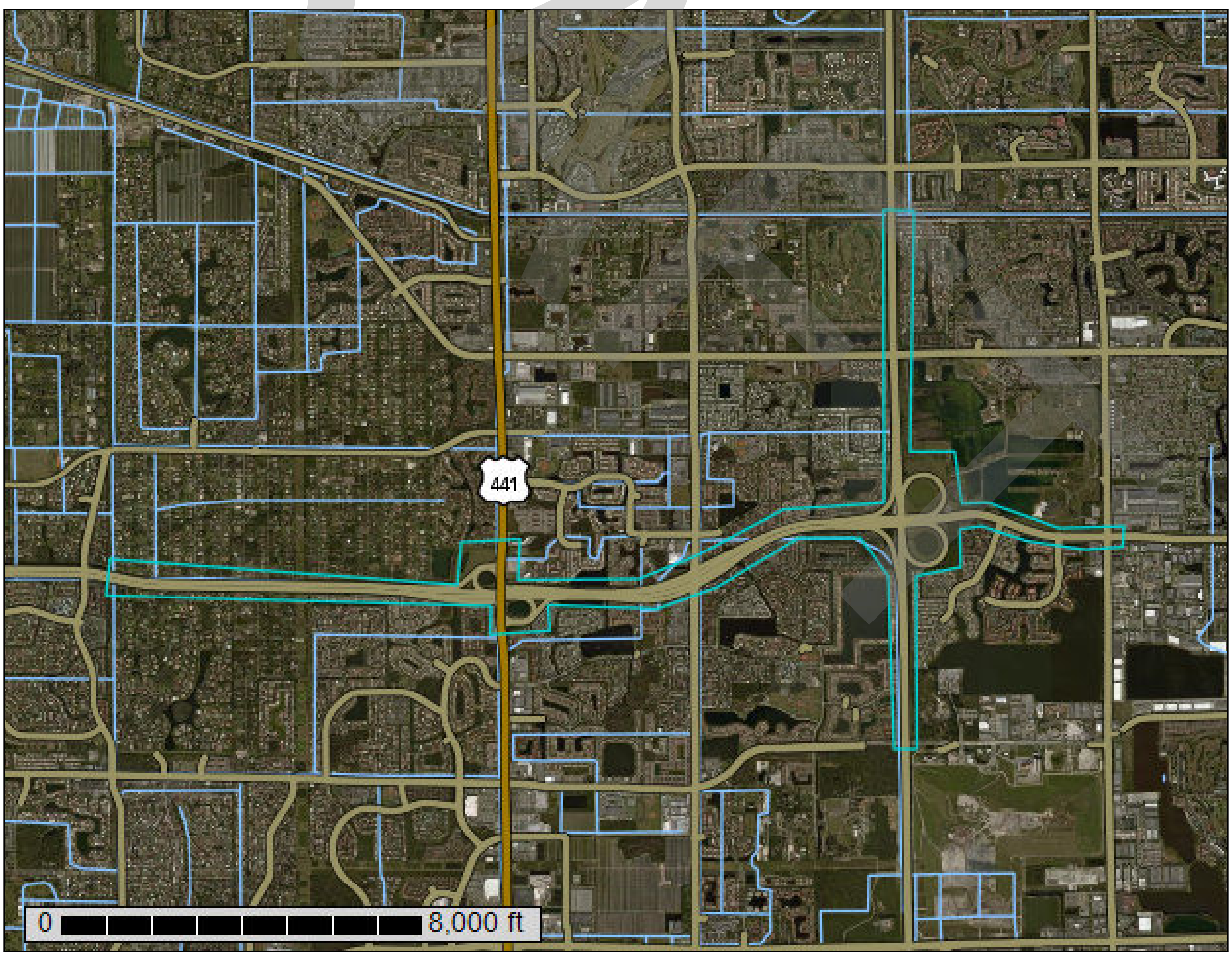
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Broward County, Florida, East Part; and Palm Beach County Area, Florida



February 18, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

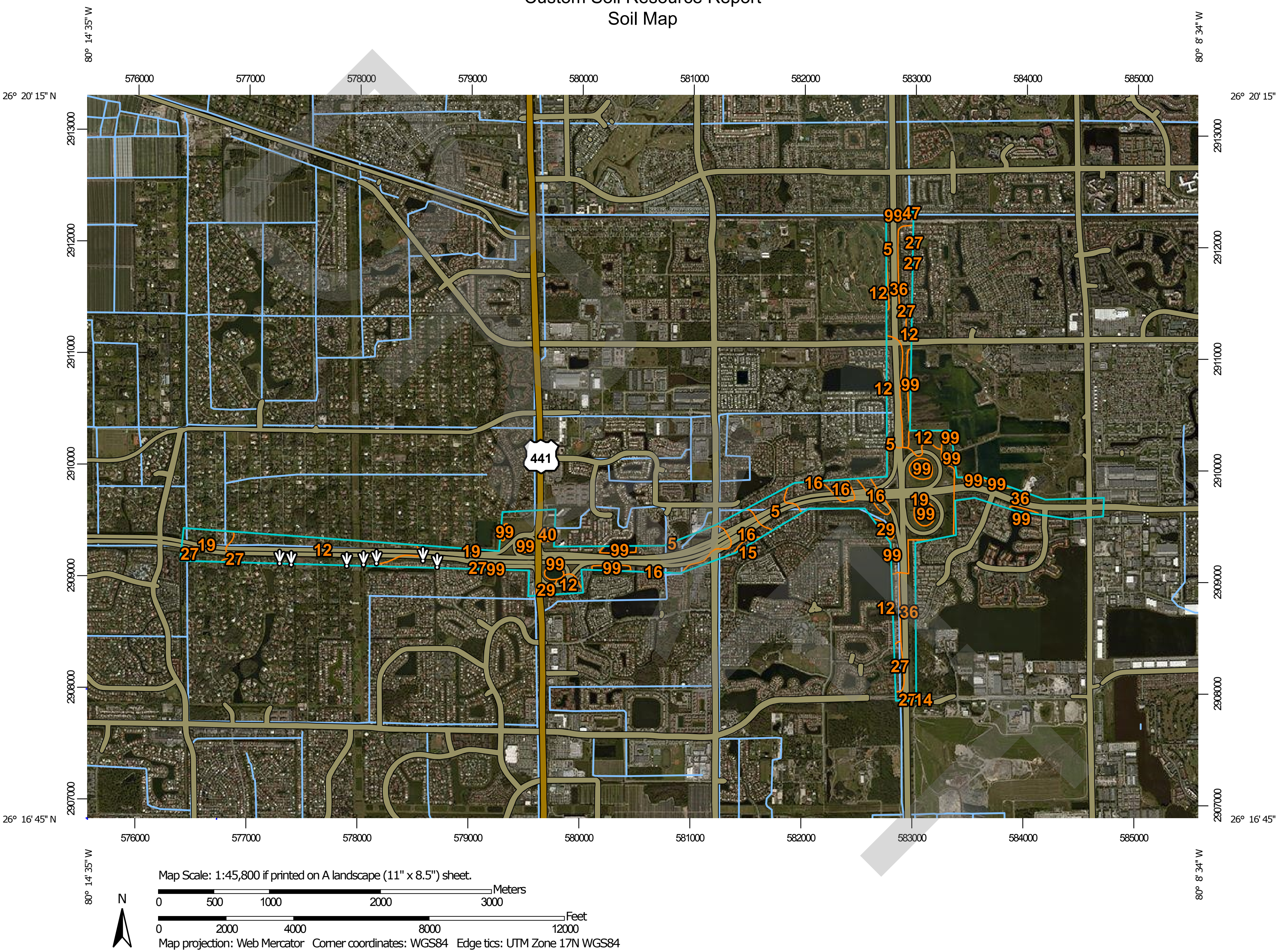
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:45,800 if printed on A landscape (11" x 8.5") sheet.

Meters: 0, 500, 1000, 2000, 3000

Feet: 0, 2000, 4000, 8000, 12000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Broward County, Florida, East Part
Survey Area Data: Version 14, Sep 17, 2018

Soil Survey Area: Palm Beach County Area, Florida
Survey Area Data: Version 14, Sep 17, 2018

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 17, 2014—Feb 11, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5	Boca fine sand, 0 to 2 percent slopes	24.6	2.9%
12	Hallandale fine sand, 0 to 2 percent slopes	180.1	21.1%
14	Matlacha gravelly fine sand, limestone substratum	0.3	0.0%
15	Immokalee fine sand, 0 to 2 percent slopes	2.3	0.3%
16	Immokalee, limestone substratum-Urban land complex	46.9	5.5%
19	Margate fine sand, occasionally ponded, 0 to 1 percent slopes	371.4	43.5%
27	Plantation muck	15.5	1.8%
29	Pompano fine sand, 0 to 2 percent slopes	7.2	0.8%
36	Udorthents	153.5	18.0%
40	Urban land, 0 to 2 percent slopes	3.2	0.4%
99	Water	46.6	5.5%
Subtotals for Soil Survey Area		**851.6**	**99.7%**
Totals for Area of Interest		**854.2**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
47	Udorthents, 2 to 35 percent slopes	1.9	0.2%
99	Water	0.7	0.1%
Subtotals for Soil Survey Area		**2.6**	**0.3%**
Totals for Area of Interest		**854.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Broward County, Florida, East Part

5—Boca fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2svz9
Elevation: 0 to 60 feet
Mean annual precipitation: 42 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Boca and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boca

Setting

Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear, convex
Across-slope shape: Concave, linear
Parent material: Sandy and loamy marine deposits over limestone

Typical profile

A - 0 to 3 inches: fine sand
E - 3 to 14 inches: fine sand
E/B - 14 to 25 inches: fine sand
Btg - 25 to 30 inches: fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 8 to 40 inches to lithic bedrock
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 4 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: South Florida Flatwoods (R155XY003FL)

Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Minor Components

Hallandale

Percent of map unit: 7 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Wabasso

Percent of map unit: 6 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Ft. drum

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

12—Hallandale fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tzx4
Elevation: 0 to 70 feet
Mean annual precipitation: 60 to 70 inches
Mean annual air temperature: 72 to 79 degrees F
Frost-free period: 360 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Hallandale and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hallandale

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits over limestone

Typical profile

A - 0 to 2 inches: fine sand
Eg - 2 to 7 inches: fine sand
Bw - 7 to 12 inches: fine sand
2R - 12 to 22 inches: bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 2 to 20 inches to lithic bedrock
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 0.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Minor Components

Dania

Percent of map unit: 5 percent
Landform: Marshes on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R156AY010FL)
Hydric soil rating: Yes

Plantation

Percent of map unit: 5 percent
Landform: Depressions on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave

Hydric soil rating: Yes

14—Matlacha gravelly fine sand, limestone substratum

Map Unit Setting

National map unit symbol: 1hn8t
Mean annual precipitation: 60 to 68 inches
Mean annual air temperature: 72 to 79 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Matlacha, limestone substratum, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Matlacha, Limestone Substratum

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy mine spoil or earthy fill

Typical profile

C - 0 to 23 inches: gravelly fine sand
2Ab - 23 to 27 inches: fine sand
2Eb - 27 to 48 inches: fine sand
3R - 48 to 52 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Natural drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B

Forage suitability group: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: No

Minor Components

Hallandale

Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Margate

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

15—Immokalee fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2s3lk
Elevation: 0 to 130 feet
Mean annual precipitation: 44 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Immokalee and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Immokalee

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 35 inches: fine sand
Bh - 35 to 54 inches: fine sand
BC - 54 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Basinger

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Pomello

Percent of map unit: 2 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope, interfluve, riser
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: Sand Pine Scrub (R155XY001FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Wabasso

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Margate

Percent of map unit: 1 percent

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Placid
Percent of map unit: 1 percent
Landform: Drainageways on marine terraces, depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

16—Immokalee, limestone substratum-Urban land complex

Map Unit Setting
National map unit symbol: 1hn8w
Elevation: 10 to 100 feet
Mean annual precipitation: 60 to 68 inches
Mean annual air temperature: 72 to 79 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition
Immokalee, limestone substratum, and similar soils: 50 percent
Urban land: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Immokalee, Limestone Substratum

Setting
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile
A - 0 to 5 inches: fine sand
E - 5 to 48 inches: fine sand
Bh - 48 to 58 inches: fine sand
2R - 58 to 62 inches: weathered bedrock

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 72 inches to paralithic bedrock
Natural drainage class: Poorly drained
Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: No

Description of Urban Land

Setting
Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear

Minor Components

Immokalee
Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Basinger
Percent of map unit: 3 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Margate
Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Pompano
Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave

Hydric soil rating: Yes

19—Margate fine sand, occasionally ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2sm5l
Elevation: 0 to 30 feet
Mean annual precipitation: 60 to 70 inches
Mean annual air temperature: 72 to 81 degrees F
Frost-free period: 360 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Margate and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Margate

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy marine deposits over limestone

Typical profile

A - 0 to 8 inches: fine sand
E - 8 to 16 inches: fine sand
Bw - 16 to 28 inches: fine sand
C - 28 to 32 inches: very gravelly fine sand
2R - 32 to 42 inches: bedrock

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 4 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G156AC145FL)
Hydric soil rating: Yes

Minor Components

Basinger

Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

Matlacha

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Hydric soil rating: No

Plantation

Percent of map unit: 5 percent
Landform: Marshes on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

27—Plantation muck

Map Unit Setting

National map unit symbol: 1hn97
Elevation: 0 to 30 feet
Mean annual precipitation: 60 to 68 inches
Mean annual air temperature: 72 to 79 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Plantation, drained, and similar soils: 70 percent
Plantation, undrained, and similar soils: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Plantation, Drained

Setting

Landform: Marshes on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over sandy marine deposits over limestone

Typical profile

Oa - 0 to 10 inches: muck
A - 10 to 28 inches: fine sand
Cg - 28 to 35 inches: fine sandy loam
2R - 35 to 39 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Forage suitability group: Organic soils in depressions and on flood plains (G156AC645FL)
Hydric soil rating: Yes

Description of Plantation, Undrained

Setting

Landform: Marshes on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over sandy marine deposits over limestone

Typical profile

Oa - 0 to 10 inches: muck
A - 10 to 28 inches: fine sand
Btg - 28 to 35 inches: fine sandy loam
2R - 35 to 39 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Organic soils in depressions and on flood plains (G156AC645FL)
Hydric soil rating: Yes

Minor Components

Hallandale

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Dania

Percent of map unit: 3 percent
Landform: Marshes on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Margate

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Lauderhill

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

29—Pompano fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tzw3
Elevation: 0 to 100 feet
Mean annual precipitation: 44 to 65 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pompano and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pompano

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
C - 4 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Anclote

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Valkaria

Percent of map unit: 4 percent
Landform: Drainageways on flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

Malabar

Percent of map unit: 4 percent
Landform: — error in exists on —
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: Slough (R155XY011FL)
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

Immokalee

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Myakka

Percent of map unit: 3 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Riviera

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf

Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: Slough (R155XY011FL)
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

36—Udorthents

Map Unit Setting

National map unit symbol: 1hn9j
Mean annual precipitation: 60 to 68 inches
Mean annual air temperature: 72 to 79 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Typical profile

C - 0 to 57 inches: cobbly sand

Properties and qualities

Slope: 2 to 40 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G156AC999FL)

Hydric soil rating: No

40—Urban land, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2x9fc
Elevation: 0 to 200 feet
Mean annual precipitation: 40 to 68 inches
Mean annual air temperature: 68 to 79 degrees F
Frost-free period: 345 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Hills on marine terraces, ridges on marine terraces, knolls on marine terraces, rises on marine terraces, flatwoods on marine terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Interfluve, side slope, riser, rise, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: No parent material

Typical profile

M - 0 to 6 inches: cemented material
^C - 6 to 36 inches: paragravelly sand
2Ab - 36 to 46 inches: paragravelly fine sand
2Cb - 46 to 80 inches: paragravelly fine sand

Minor Components

Matlacha

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Hydric soil rating: No

St. augustine

Percent of map unit: 3 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Paola

Percent of map unit: 1 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope, interfluve, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Pomello

Percent of map unit: 1 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope, interfluve, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Adamsville

Percent of map unit: 1 percent
Landform: Rises on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R155XY008FL)
Hydric soil rating: No

Boca

Percent of map unit: 1 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Eaugallie

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Hallandale

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Immokalee

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Myakka

Percent of map unit: 1 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Apopka

Percent of map unit: 1 percent
Landform: Hills on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R155XY002FL)
Hydric soil rating: No

99—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Palm Beach County Area, Florida

47—Udorthents, 2 to 35 percent slopes

Map Unit Setting

National map unit symbol: 1j7dz
Mean annual precipitation: 48 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Typical profile

A - 0 to 7 inches: gravelly sand
C1 - 7 to 57 inches: gravelly sand
C2 - 57 to 80 inches: gravelly sand

Properties and qualities

Slope: 2 to 65 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: No

Minor Components

Riviera

Percent of map unit: 5 percent

Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

99—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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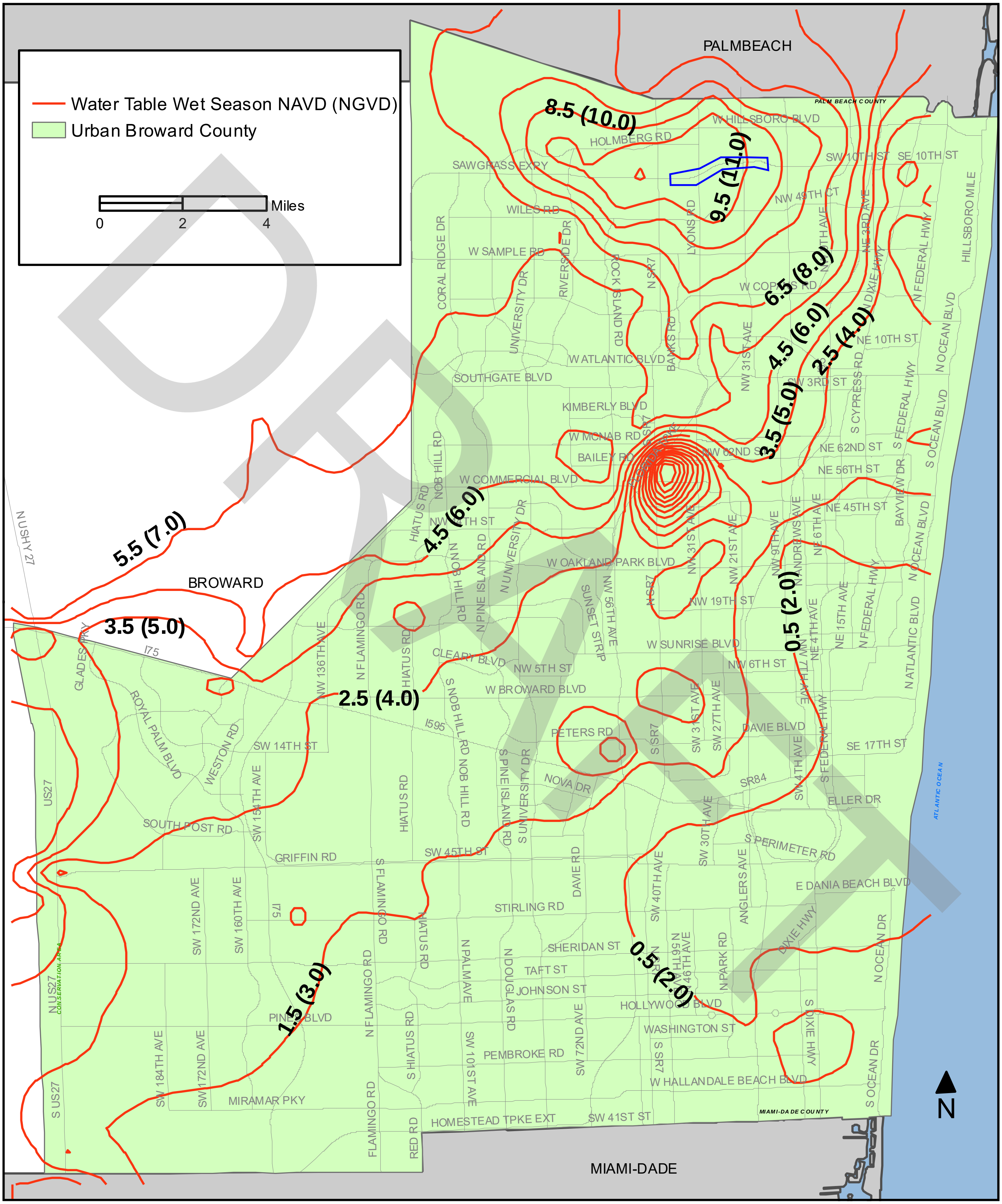
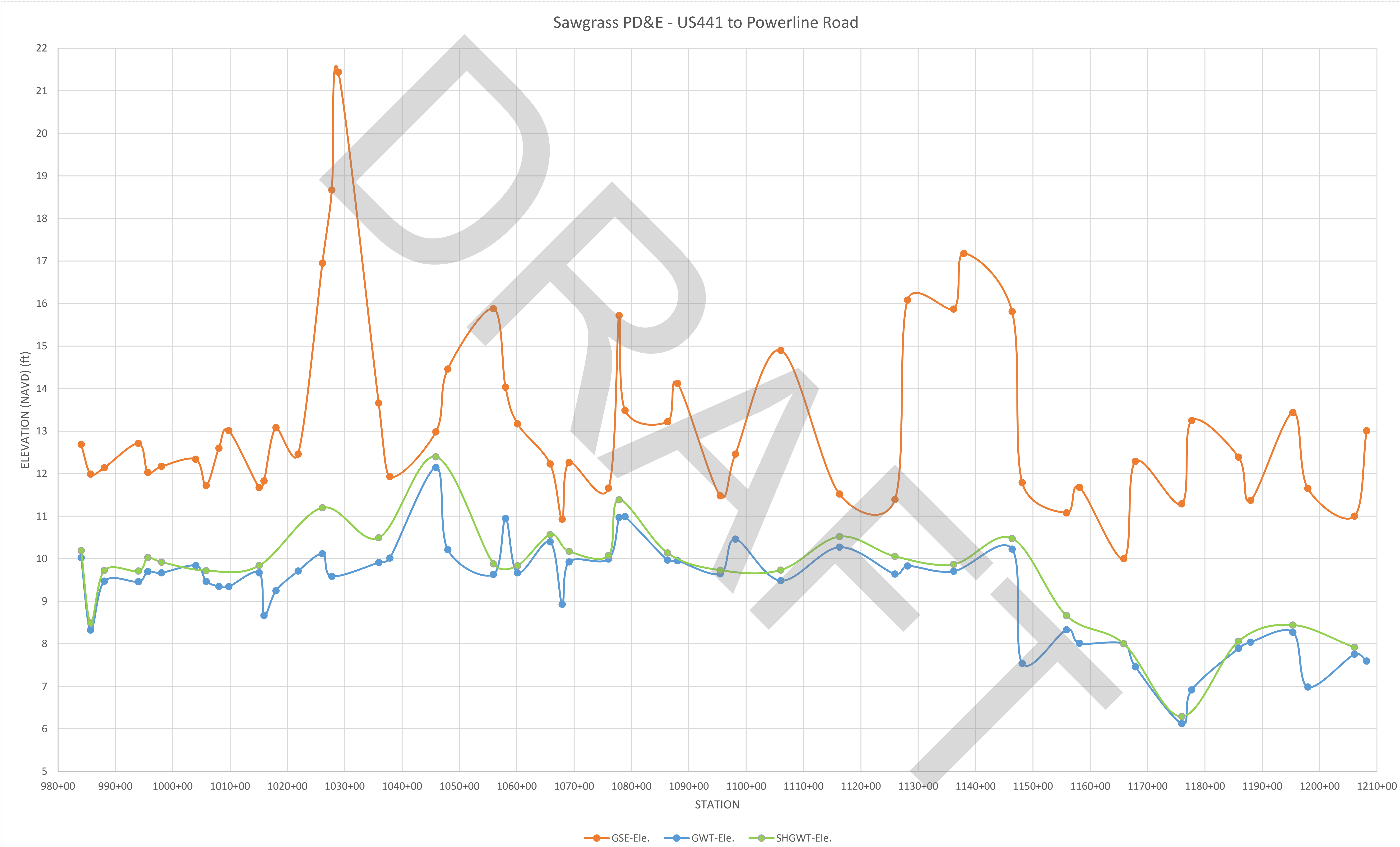
WATER TABLE MAP - AVERAGE WET SEASON



Division Name: Planning and Environmental Regulation
Department Name: Environmental Protection and Growth Management

This map is for conceptual purposes only and should not be used for legal boundary determinations.
Elevation converted from NGDV to NAVD using the FEMA approved conversion factor for Broward County of (-) 1.5



GCME Project No.: 2000-01-16001

FTE Sawgrass PD&E-US441 to Powerline

Boring #	Drilled Date	GWT Depth (ft)	GWT Ele. (ft)	Station	Elevation	Offset	Depth
R-101A	8/18/2017	2.67	10.02	984+03	12.69	7.6	10
R-101B	8/18/2017	3.25	9.46	994+01	12.71	7.05	10
R-101	8/15/2017	2.50	9.84	1003+99	12.34	7.76	10
R-102	8/15/2017	3.67	9.34	1009+77	13.01	10.66	10
R-103	8/15/2017	3.17	8.66	1015+92	11.83	6.91	10
R-104	8/15/2017	2.75	9.71	1021+87	12.46	4.7	10
R-105	8/15/2017	7.08	14.36	1028+89	21.44	11	10
R-106	8/16/2017	GNE	GNE	1053+35	21.89	13.16	10
R-107	8/16/2017	3.50	9.67	1060+14	13.17	9.43	10
R-108	8/16/2017	2.33	9.93	1069+12	12.26	7.8	10
R-109	8/16/2017	4.75	10.97	1077+83	15.72	11.87	10
R-110	8/16/2017	8.58	18.18	1104+84	26.76	-21.88	10
R-201A	8/18/2017	3.67	8.32	985+68	11.99	118.14	10
R-201B	8/18/2017	2.33	9.70	995+63	12.03	111.53	10
R-201	8/16/2017	2.25	9.47	1005+84	11.72	121.44	10
R-202	8/16/2017	2.00	9.67	1015+06	11.67	120.6	10
R-203	8/16/2017	6.83	10.12	1026+09	16.95	109.72	10
R-204	8/16/2017	3.75	9.91	1035+92	13.66	166.56	10
R-205	8/17/2017	0.83	12.15	1045+88	12.98	196.58	10
R-206	8/17/2017	6.25	9.63	1055+92	15.88	124.35	10
R-207	8/17/2017	1.83	10.40	1065+81	12.23	123.78	10
R-208	8/17/2017	1.67	9.99	1076+00	11.66	182.77	10
R-209	8/17/2017	3.25	9.97	1086+27	13.22	181.27	10
R-210	8/17/2017	1.83	9.65	1095+47	11.48	223.13	10
R-211	8/17/2017	5.42	9.48	1106+04	14.9	176.21	10
R-212	8/17/2017	1.25	10.27	1116+27	11.52	137.24	10
R-213	8/16/2017	1.75	9.64	1125+93	11.39	150.76	10
R-214	8/16/2017	6.17	9.70	1136+18	15.87	57.39	10

FTE Sawgrass PD&E-US441 to Powerline

Boring #	Drilled Date	GWT Depth (ft)	GWT Ele. (ft)	Station	Elevation	Offset	Depth
R-215	8/16/2017	5.58	10.23	1146+37	15.81	63.12	10
R-216	8/16/2017	2.75	8.33	1155+86	11.08	163.94	10
R-217	8/16/2017	2.00	8.00	54+85	10	69.46	10
R-218	8/17/2017	5.17	6.12	64+95	11.29	57.36	10
R-219	8/17/2017	4.50	7.89	74+86	12.39	21.96	10
R-220	8/17/2017	5.17	8.27	84+34	13.44	38.07	10
R-221	8/17/2017	3.25	7.75	95+07	11	40.79	10
R-301A	8/18/2017	2.67	9.47	988+07	12.14	-112.82	10
R-301B	8/18/2017	2.50	9.67	998+05	12.17	-113.45	10
R-301	8/15/2017	3.25	9.35	1008+04	12.6	-110.83	10
R-302	8/15/2017	3.83	9.25	1018+02	13.08	-123.85	10
R-303	8/15/2017	9.08	9.59	1027+75	18.67	-112.53	10
R-304	8/15/2017	1.92	10.01	1037+85	11.93	-176.19	10
R-305	8/15/2017	4.25	10.21	1047+97	14.46	-158.74	10
R-306	8/15/2017	3.08	10.95	1058+03	14.03	-148.18	10
R-307	8/14/2017	2.00	8.93	1067+90	10.93	-131.59	10
R-308	8/14/2017	2.50	10.99	1078+87	13.49	-147.56	10
R-309	8/14/2017	4.17	9.95	1088+03	14.12	-156.79	10
R-310	8/14/2017	2.00	10.46	1098+12	12.46	-245.15	10
R-313	8/14/2017	6.25	9.83	1128+14	16.08	-108.79	10
R-314	8/14/2017	1.42	15.76	1137+97	17.18	-106	10
R-315	8/14/2017	4.25	7.54	1148+13	11.79	-166.08	10
R-316	8/14/2017	3.67	8.01	1158+12	11.68	-149.1	10
R-317	8/14/2017	4.83	7.46	56+89	12.29	-145	10
R-318	8/14/2017	6.33	6.92	66+69	13.25	-126.75	10
R-319	8/14/2017	3.33	8.04	76+96	11.37	-126.67	10
R-320	8/14/2017	4.67	6.98	86+95	11.65	-119.92	10
R-321	8/14/2017	5.42	7.59	97+19	13.01	-166.83	10

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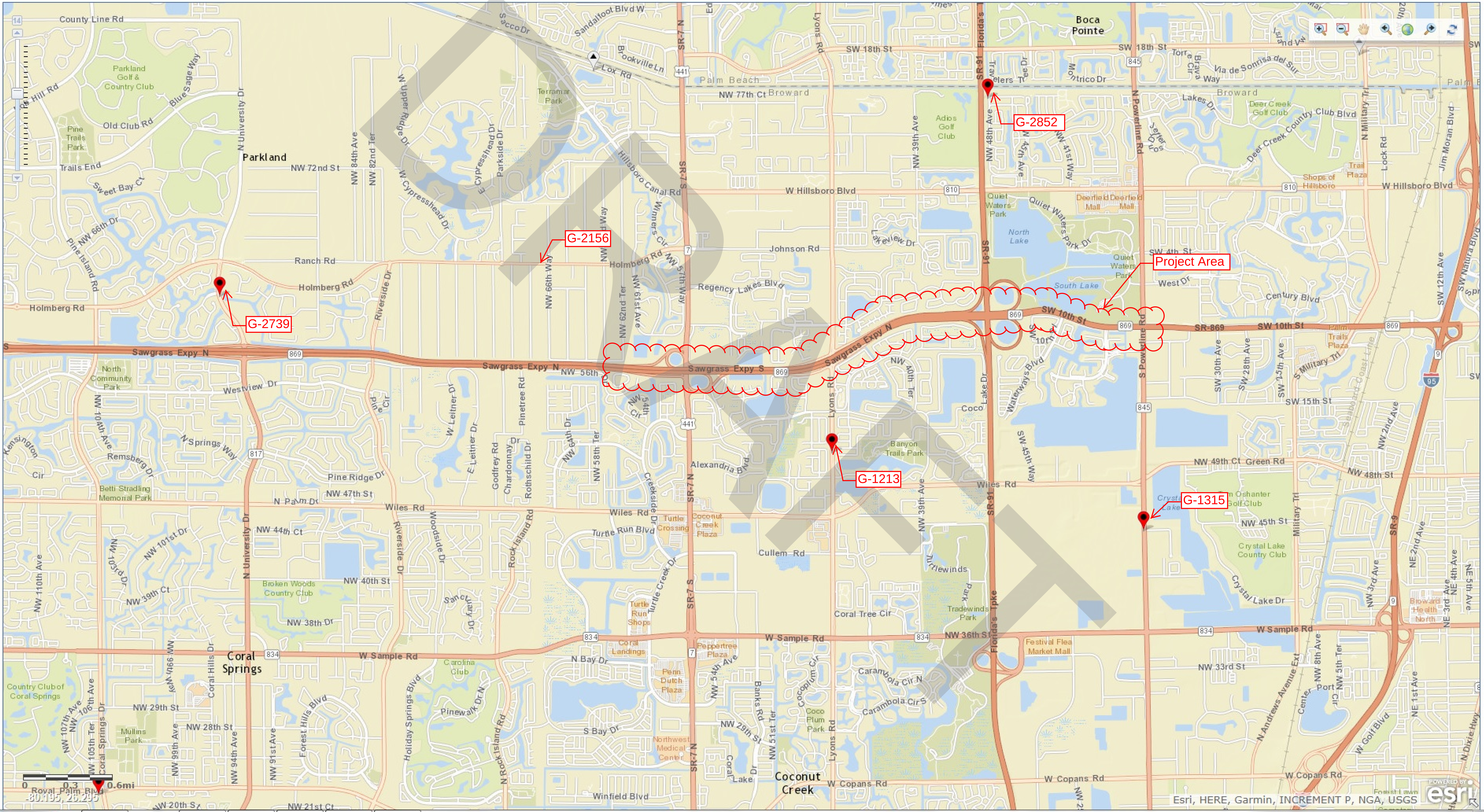
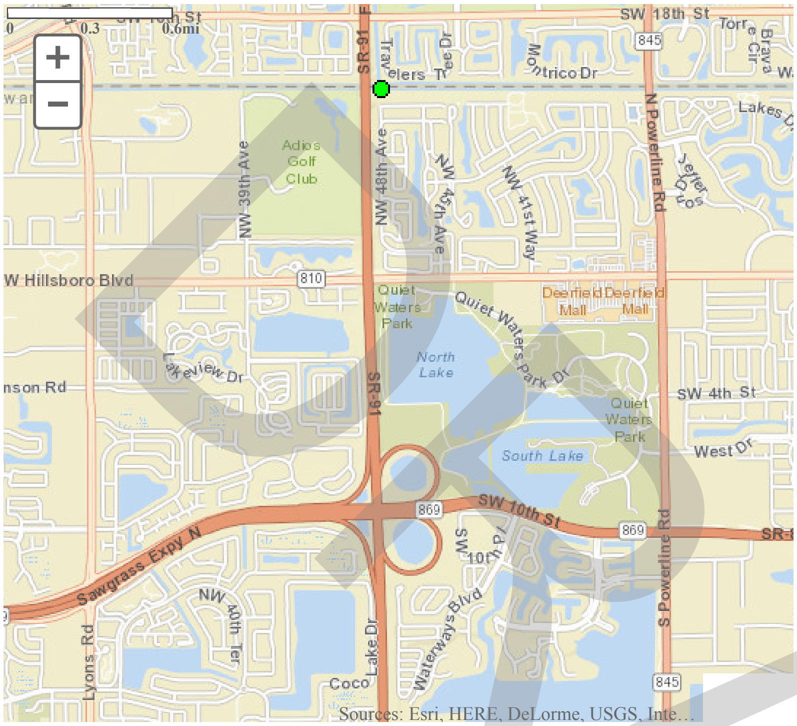


Desktop 12:50 PM 9/19/2017

Site Number: 261938080101001 - G -2852



Groundwater Watch Help Page

DESCRIPTION:
Latitude 26°19'39.6", Longitude 80°10'09.3" NAD83
Broward County, Florida, Hydrologic Unit 03090202
Well depth: 140 feet
Hole depth: 221 feet
Land surface altitude: 15.82feet above NGVD29.
Well completed in "Biscayne aquifer" (N400BISCYN) national aquifer.
Well completed in "Biscayne Limestone Aquifer" (112BSCNN) local aquifer

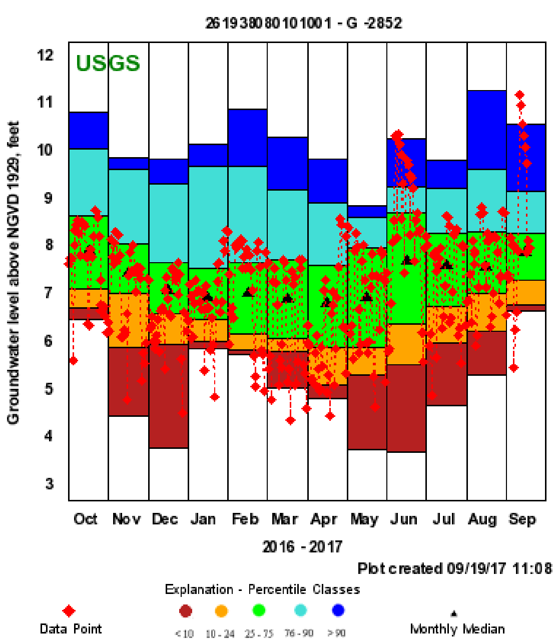
AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Current / Historical Observations	2007-10-01	2017-09-16	
Daily Data			
Groundwater level above NGVD 1929, feet	1995-11-09	2017-09-15	7680
Field groundwater-level measurements	1988-10-25	2017-08-07	199
Field/Lab water-quality samples			
Water-Year Summary	2006	2016	11

Additional Data Sources	Begin Date	End Date	Count
Groundwater Watch **offsite**	1988	2017	199

OPERATION:
Record for this site is maintained by the USGS Florida Water Science Center - Ft. Lauderdale
Email questions about this site toFlorida Water-Data Inquiries

Site Statistics



Most recent data value: 7.94 on 9/18/2017
Period of Record Monthly Statistics for 261938080101001
Groundwater level above NGVD 1929, feet
All Approved Continuous & Periodic Data Used In Analysis
Note: Highlighted values in the table indicate closest statistic to the most recent data value.

Month	Lowest Median	10th %ile	25th %ile	50th %ile	75th %ile	90th %ile	Highest Median	Number of Years
Jan	5.84	6.00	6.47	6.90	7.54	9.66	10.12	26
Feb	5.72	5.83	6.15	7.01	7.65	9.66	10.84	26
Mar	5.03	5.80	6.07	6.89	7.70	9.19	10.27	26
Apr	4.82	5.09	5.89	6.80	7.59	8.90	9.81	27
May	3.74	5.29	5.87	6.93	7.95	8.61	8.83	29
Jun	3.67	5.50	6.38	7.69	8.70	9.24	10.25	26
Jul	4.66	5.98	6.73	7.60	8.27	9.20	9.79	25
Aug	5.29	6.20	7.00	7.57	8.28	9.61	11.26	25
Sep	6.64	6.76	7.29	7.85	8.26	9.16	10.54	26
Oct	6.47	6.69	7.11	7.90	8.63	10.04	10.78	28
Nov	4.43	5.88	7.00	7.43	8.04	9.59	9.84	27
Dec	3.77	5.94	6.58	7.06	7.66	9.29	9.82	25

As of 9/15/2017 18:33-2

Statistics Options

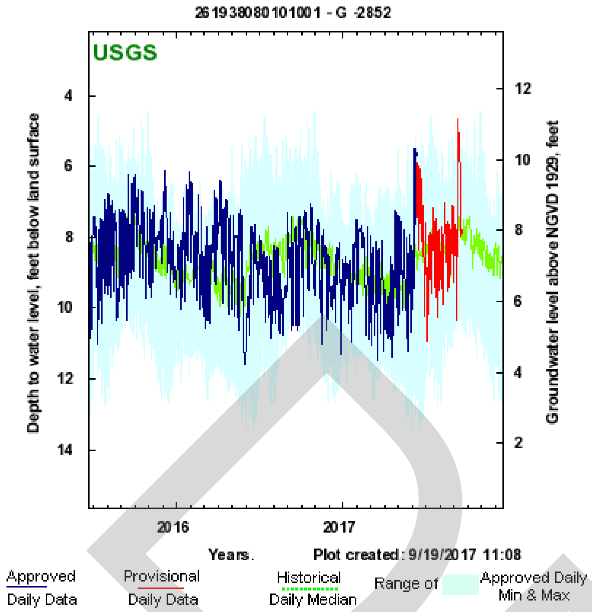
View month/year statistics

Daily Groundwater Data

Most recent Provisional daily data value: 7.94 on 09/18/17

Summary for Period of Continuous Record
Groundwater level above NGVD 1929, feet
Approved Daily Maximum Values Data Used in Analysis

Begin Date	End Date	Days	% Complete



11/09/95	06/11/17				7,584			96
Lowest Level	**5th %ile**	**10th %ile**	**25th %ile**	**50th %ile**	**75th %ile**	**90th %ile**	**95th %ile**	**Highest Level**
2.40	4.73	5.25	6.17	7.05	7.89	8.66	9.08	11.37

Daily Data Options

View latest data on NWISWeb

View data in calendar format

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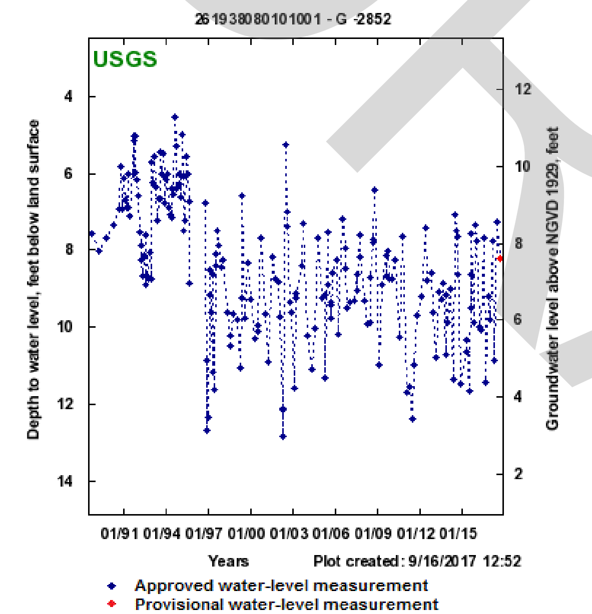
View daily medians

Periodic Groundwater Data



Summary for Period of Record Periodic Water Levels
Elevation above NGVD 1929, feet
Approved Periodic Water Level Values

Begin Date	End Date	Number of Values
10/25/88	08/07/17	199

Lowest WL	Date of Lowest WL	Highest WL	Date of Highest WL
3.01	04/30/02	11.26	08/26/94

Groundwater Levels Options

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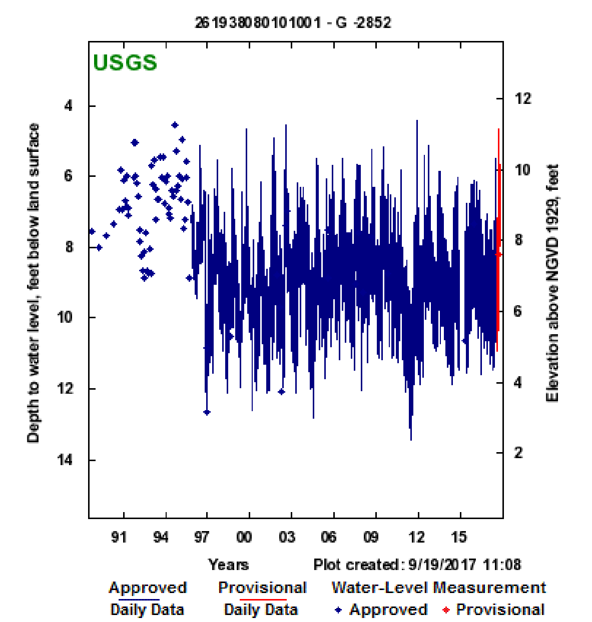
Period of Record - All Data Types



Summary for Period of Record - All Data Types
Elevation above NGVD 1929, feet

Begin Date	End Date	Number of Values
10/25/88	09/18/17	8,605

Lowest WL	Date of Lowest WL	Highest WL	Date of Highest WL
2.4	06/19/11	11.37	10/29/11

Period of Record Options

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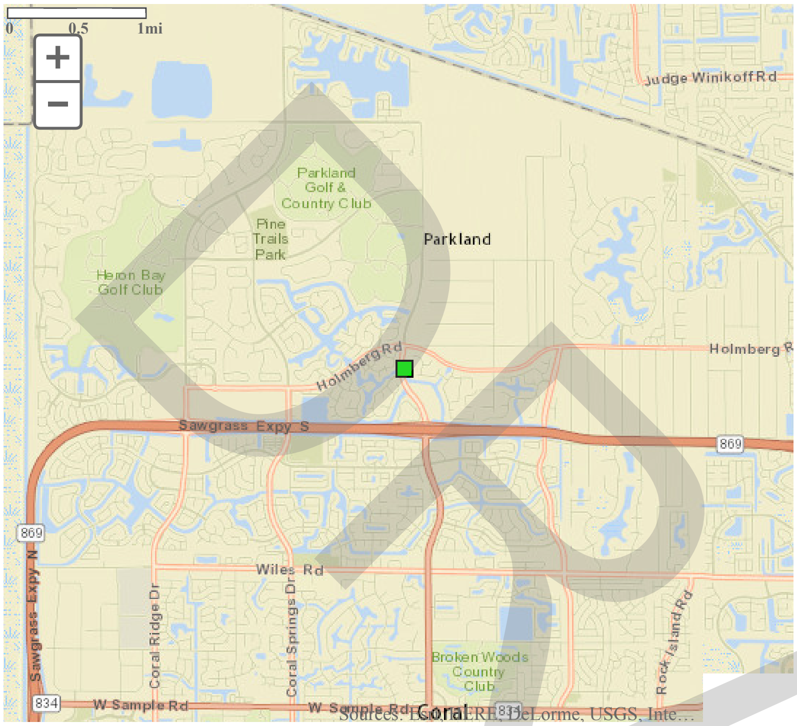
Site Number: 261831080151301 - G -2739



DESCRIPTION:
Latitude 26°18'29.7", Longitude 80°15'10.8" NAD83
Broward County, Florida, Hydrologic Unit 03090202
Well depth: 21 feet
Land surface altitude: 12.30feet above NGVD29.
Well completed in "Biscayne aquifer" (N400BISCYN) national aquifer.
Well completed in "Biscayne Limestone Aquifer" (112BSCNN) local aquifer

AVAILABLE DATA:

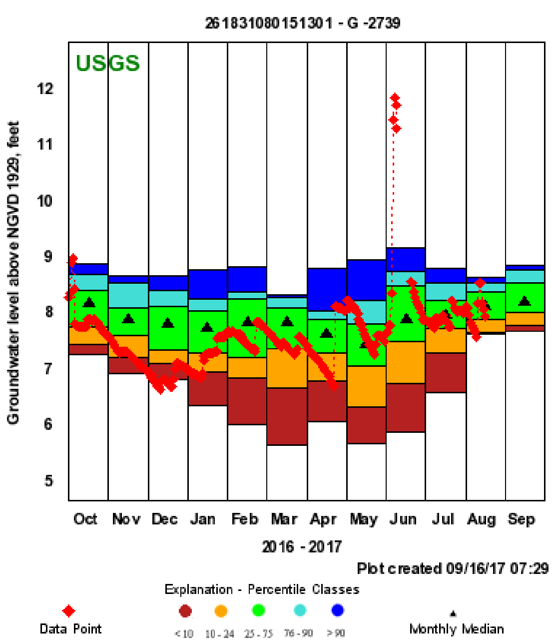
Data Type	Begin Date	End Date	Count
Current / Historical Observations	2007-10-01	2017-08-15	
Daily Data			
Groundwater level above NGVD 1929, feet	1991-12-07	2017-08-14	9033
Field groundwater-level measurements	1993-11-23	2017-08-15	128
Water-Year Summary	2006	2016	11

Additional Data Sources	Begin Date	End Date	Count
Groundwater Watch **offsite**	1993	2017	128

OPERATION:
Record for this site is maintained by the USGS Florida Water Science Center - Ft. Lauderdale
Email questions about this site toFlorida Water-Data Inquiries

Groundwater Watch Help Page

Site Statistics



Most recent data value: 7.93 on 8/15/2017
Period of Record Monthly Statistics for 261831080151301
Groundwater level above NGVD 1929, feet
All Approved Continuous & Periodic Data Used In Analysis
Note: Highlighted values in the table indicate closest statistic to the most recent data value.

Month	Lowest Median	10th %ile	25th %ile	50th %ile	75th %ile	90th %ile	Highest Median	Number of Years
Jan	6.34	6.94	7.28	7.72	8.04	8.24	8.76	26
Feb	6.02	6.84	7.20	7.84	8.24	8.38	8.82	25
Mar	5.66	6.66	7.37	7.83	8.08	8.26	8.33	26
Apr	6.06	6.80	7.28	7.62	7.88	8.04	8.80	26
May	5.68	6.32	7.05	7.43	7.80	8.22	8.96	26
Jun	5.87	6.75	7.48	7.89	8.49	8.75	9.15	26
Jul	6.59	7.29	7.73	7.95	8.23	8.54	8.79	25
Aug	7.61	7.66	7.89	8.12	8.37	8.52	8.64	25
Sep	7.68	7.78	8.00	8.19	8.53	8.76	8.85	25
Oct	7.26	7.45	7.75	8.18	8.40	8.70	8.87	25
Nov	6.93	7.20	7.60	7.89	8.10	8.53	8.67	25
Dec	6.82	7.09	7.33	7.80	8.11	8.39	8.67	26

As of 9/15/2017 18:32-2

Statistics Options

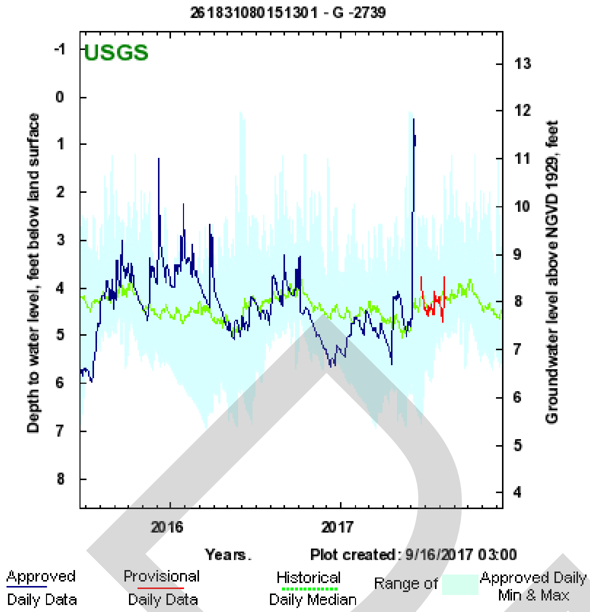
View month/year statistics

Daily Groundwater Data

Most recent Provisional daily data value: 8.06 on 08/14/17

Summary for Period of Continuous Record
Groundwater level above NGVD 1929, feet
Approved Daily Maximum Values Data Used in Analysis

Begin Date	End Date	Days	% Complete



12/07/91	06/09/17				8,978			96
Lowest Level	**5th %ile**	**10th %ile**	**25th %ile**	**50th %ile**	**75th %ile**	**90th %ile**	**95th %ile**	**Highest Level**
5.34	6.73	6.99	7.45	7.89	8.27	8.67	8.92	12.00

Daily Data Options

USGS View latest data on NWISWeb

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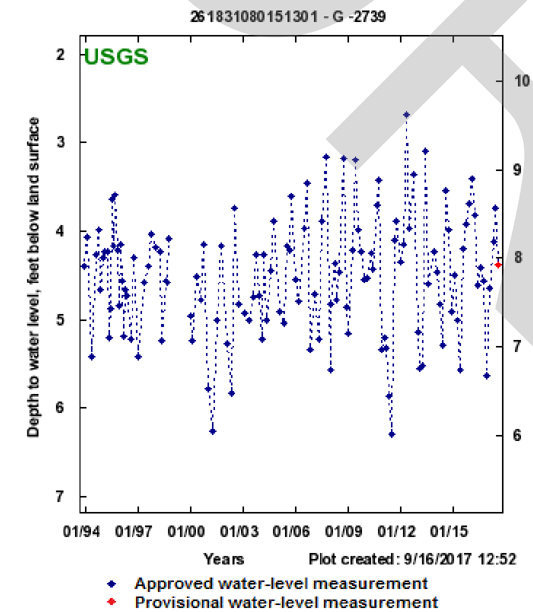
Periodic Groundwater Data



Summary for Period of Record Periodic Water Levels
Elevation above NGVD 1929, feet
Approved Periodic Water Level Values

Begin Date	End Date	Number of Values
11/23/93	08/15/17	128

Lowest WL	Date of Lowest WL	Highest WL	Date of Highest WL
6.02	06/28/11	9.61	05/23/12

Groundwater Levels Options

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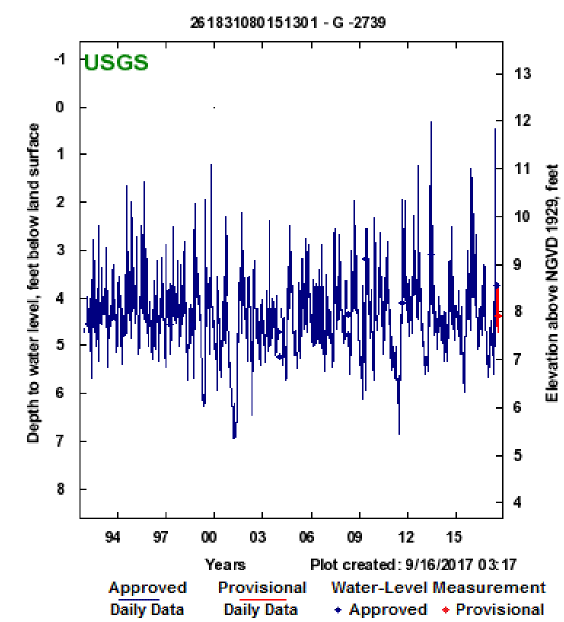
Period of Record - All Data Types



Summary for Period of Record - All Data Types
Elevation above NGVD 1929, feet

Begin Date	End Date	Number of Values
12/07/91	08/15/17	9,162

Lowest WL	Date of Lowest WL	Highest WL	Date of Highest WL
5.34	03/18/01	12	05/29/13

Period of Record Options

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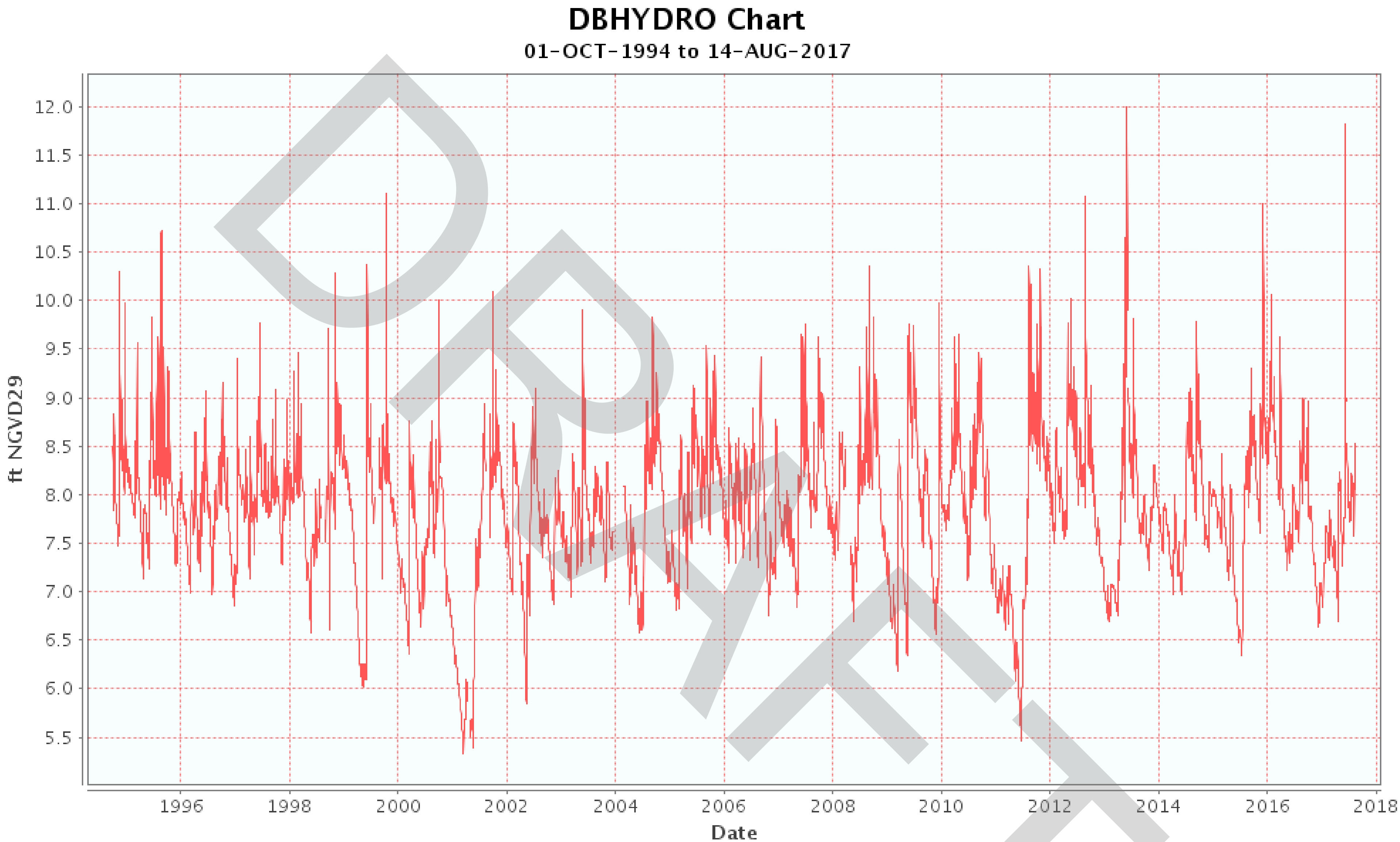
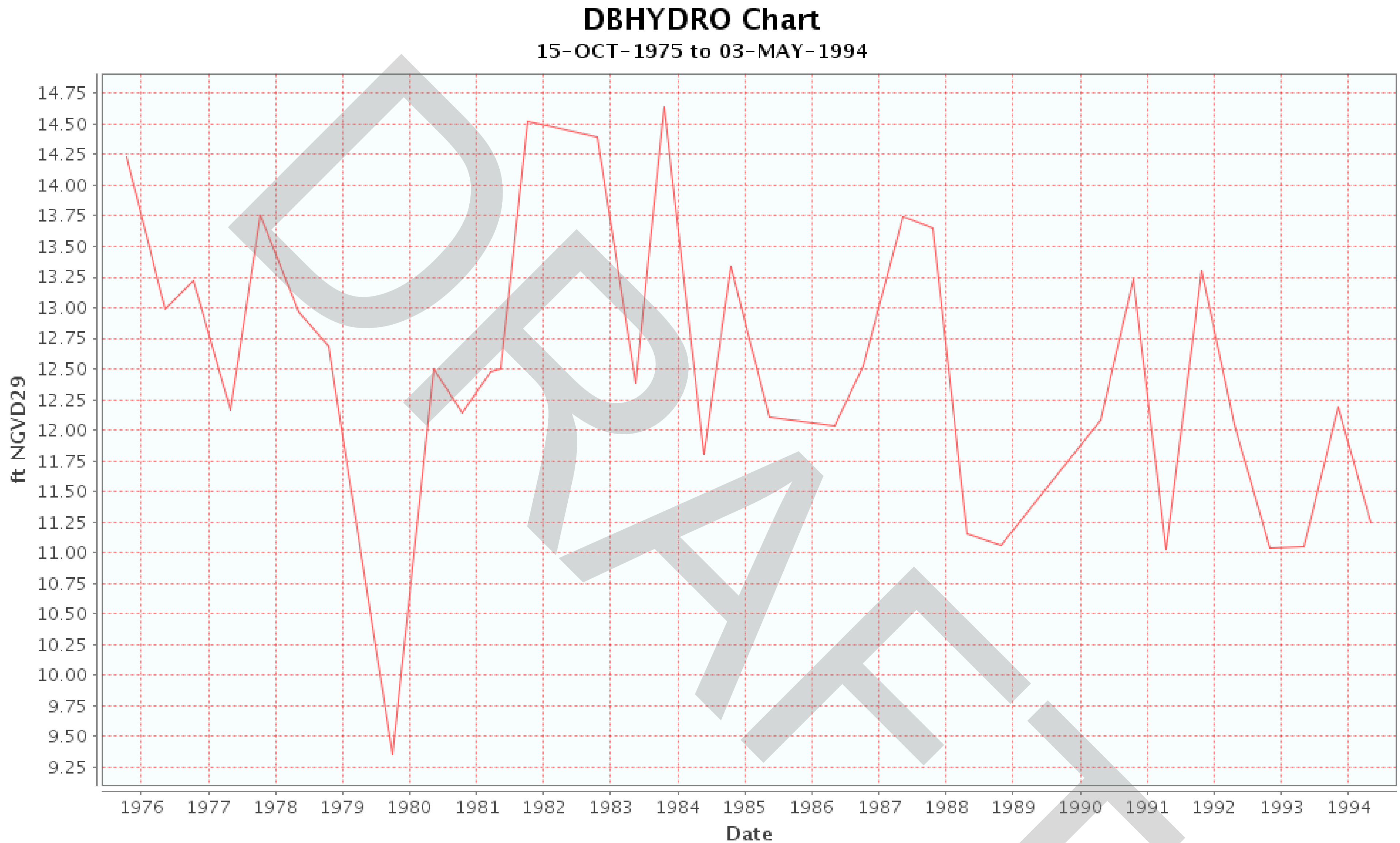


DBKey	Station	Agency	Data Type	Unit	Statistic	Frequency	Strata	Gate/Pump#
LP672	G-2739	USGS	WELL	ft NGVD29	MAX	DA	21	N/A



DBKey	Station	Agency	Data Type	Unit	Statistic	Frequency	Strata	Gate/Pump#
02224	G-2156	USGS	WELL	ft NGVD29	RAND	RI	99.5	N/A

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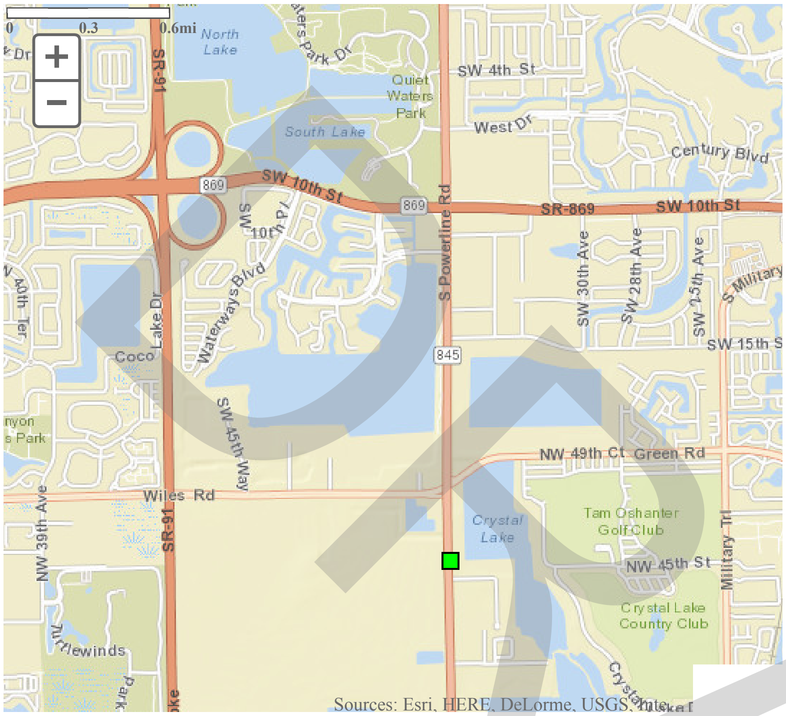
Site Number: 261708080090801 - G -1315



DESCRIPTION:
Latitude 26°17'07.2", Longitude 80°09'08.0" NAD83
Broward County, Florida, Hydrologic Unit 03090202
Well depth: 14 feet
Land surface altitude: 15.4feet above NGVD29.
Well completed in "Biscayne aquifer" (N400BISCYN) national aquifer.
Well completed in "Biscayne Limestone Aquifer" (112BSCNN) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Current / Historical Observations	2007-10-01	2017-08-07	
Daily Data			
Groundwater level above NGVD 1929, feet	1973-10-01	2017-08-06	15364
Field groundwater-level measurements	1978-10-14	2017-08-07	149
Field/Lab water-quality samples			
Water-Year Summary	2006	2016	11

Additional Data Sources	Begin Date	End Date	Count
Groundwater Watch **offsite**	1978	2017	149

OPERATION:
Record for this site is maintained by the USGS Florida Water Science Center - Ft. Lauderdale
Email questions about this site toFlorida Water-Data Inquiries

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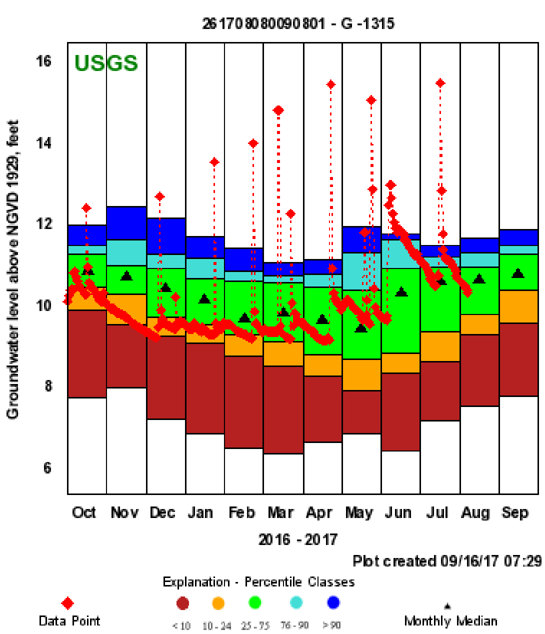
Site Statistics



Most recent data value: 10.32 on 8/7/2017
Period of Record Monthly Statistics for 261708080090801
Groundwater level above NGVD 1929, feet
All Approved Continuous & Periodic Data Used In Analysis
Note: Highlighted values in the table indicate closest statistic to the most recent data value.

Month	Lowest Median	10th %ile	25th %ile	50th %ile	75th %ile	90th %ile	Highest Median	Number of Years
Jan	6.84	9.08	9.52	10.12	10.65	11.15	11.69	44
Feb	6.48	8.77	9.29	9.67	10.60	10.83	11.40	43
Mar	6.36	8.49	9.11	9.80	10.57	10.75	11.04	42
Apr	6.62	8.26	8.78	9.63	10.45	10.78	11.12	43
May	6.85	7.92	8.68	9.41	10.37	11.30	11.92	43
Jun	6.41	8.32	8.84	10.32	10.92	11.60	11.76	41
Jul	7.18	8.62	9.37	10.59	10.93	11.18	11.46	43
Aug	7.52	9.30	9.77	10.61	10.95	11.30	11.65	43
Sep	7.76	9.55	10.37	10.77	11.25	11.49	11.86	42
Oct	7.72	9.90	10.45	10.85	11.28	11.47	11.98	43
Nov	7.96	9.53	10.27	10.69	10.97	11.63	12.44	44
Dec	7.19	9.25	9.70	10.40	10.90	11.28	12.13	44

As of 9/15/2017 18:30-2

Statistics Options

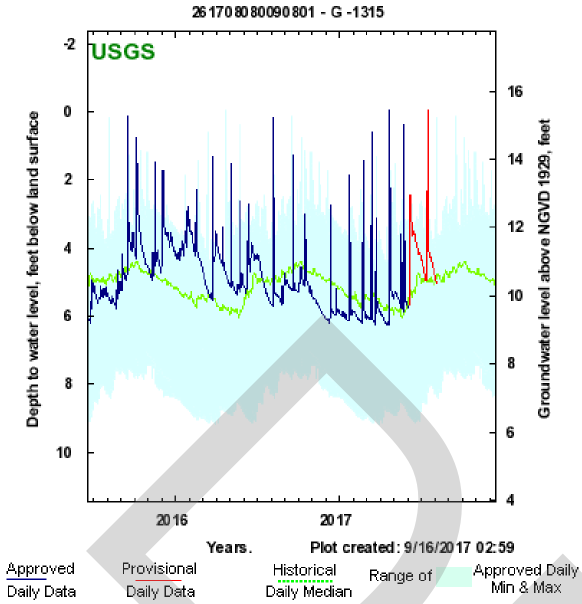
View month/year statistics

Daily Groundwater Data

Most recent Provisional daily data value: 10.39 on 08/06/17

Summary for Period of Continuous Record
Groundwater level above NGVD 1929, feet
Approved Daily Maximum Values Data Used in Analysis

Begin Date	End Date	Days	% Complete
10/01/73	06/04/17	15,301	95



Lowest Level	5th %ile	10th %ile	25th %ile	50th %ile	75th %ile	90th %ile	95th %ile	Highest Level
6.26	8.20	8.77	9.53	10.30	10.83	11.35	11.68	15.42

Daily Data Options

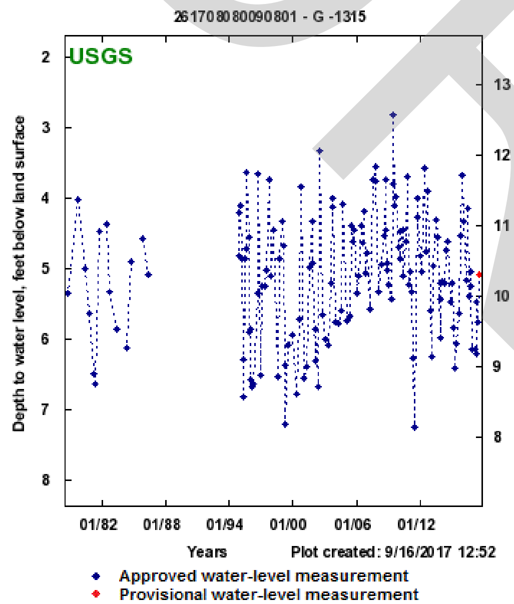
View latest data on NWISWeb

View data in calendar format

Download data in text format

View daily medians

Periodic Groundwater Data



Summary for Period of Record Periodic Water Levels
Elevation above NGVD 1929, feet
Approved Periodic Water Level Values

Begin Date	End Date	Number of Values
10/14/78	08/07/17	149

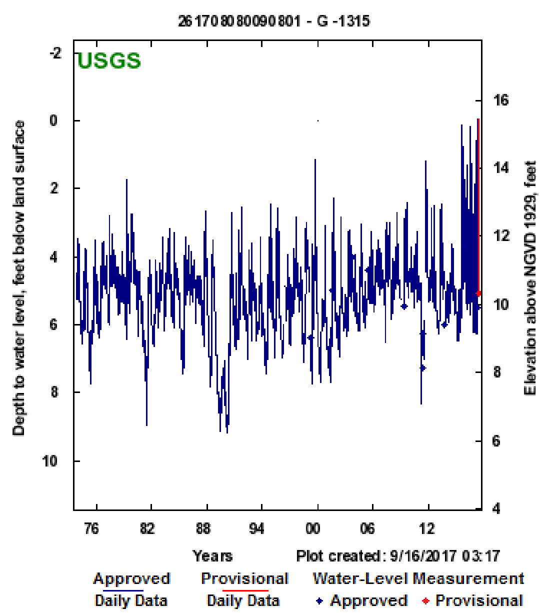
Lowest WL	Date of Lowest WL	Highest WL	Date of Highest WL
8.14	06/28/11	12.59	06/30/09

Groundwater Levels Options

View latest data on NWISWeb

Download groundwater levels in text format

Period of Record - All Data Types



Summary for Period of Record - All Data Types
Elevation above NGVD 1929, feet

Begin Date	End Date	Number of Values
10/01/73	08/07/17	15,514

Lowest WL	Date of Lowest WL	Highest WL	Date of Highest WL
6.26	03/30/90	15.46	07/16/17

Period of Record Options

View latest data on NWISWeb for all data types

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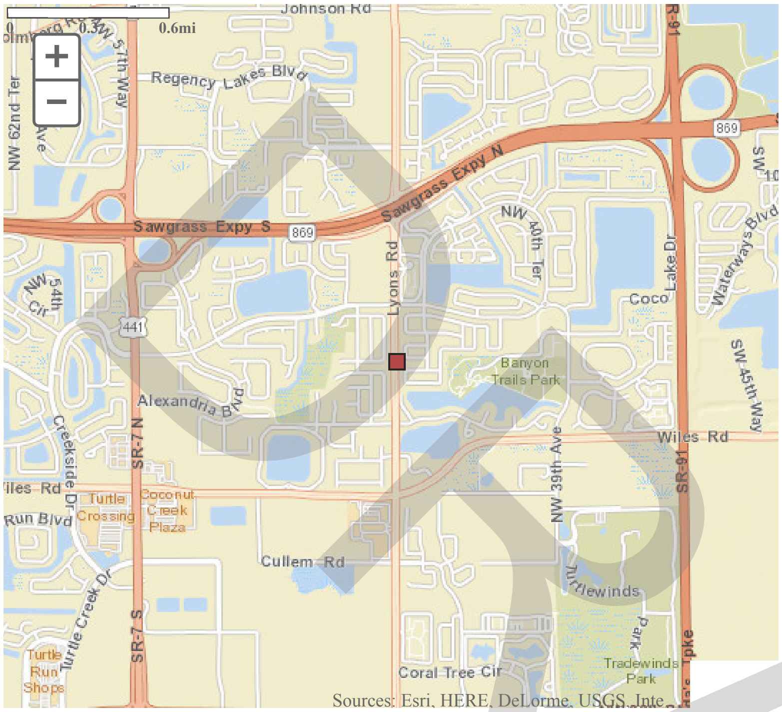
Site Number: 261734080111301 - G -1213



DESCRIPTION:
Latitude 26°17'34.6", Longitude 80°11'10.5" NAD83
Broward County, Florida, Hydrologic Unit 03090202
Well depth: 15 feet
Land surface altitude: 18.3feet above NGVD29.
Well completed in "Biscayne aquifer" (N400BISCYN) national aquifer.
Well completed in "Biscayne Limestone Aquifer" (112BSCNN) local aquifer

AVAILABLE DATA:

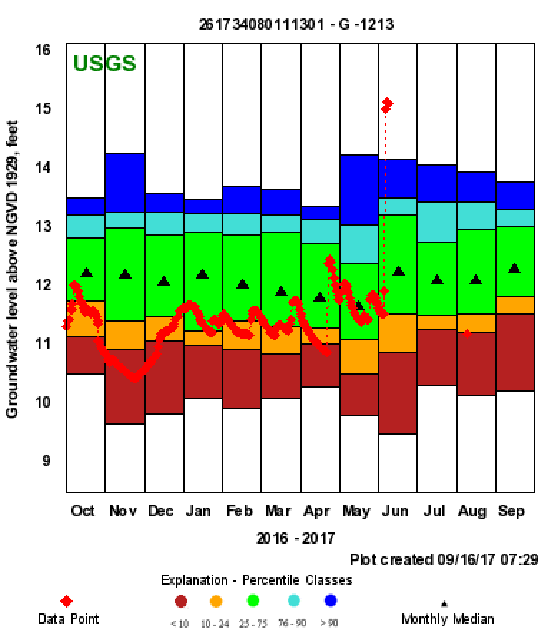
Data Type	Begin Date	End Date	Count
Current / Historical Observations	2007-10-01	2017-06-09	
Daily Data			
Groundwater level above NGVD 1929, feet	1963-01-05	2017-06-08	16192
Field groundwater-level measurements	1963-01-04	2017-08-09	303
Field/Lab water-quality samples			
Water-Year Summary	2006	2016	11

Additional Data Sources	Begin Date	End Date	Count
Groundwater Watch **offsite**	1963	2017	303

OPERATION:
Record for this site is maintained by the USGS Florida Water Science Center - Ft. Lauderdale
Email questions about this site toFlorida Water-Data Inquiries

Groundwater Watch Help Page

Site Statistics



Most recent data value: 11.19 on 8/9/2017
Period of Record Monthly Statistics for 261734080111301
Groundwater level above NGVD 1929, feet
All Approved Continuous & Periodic Data Used In Analysis
Note: Highlighted values in the table indicate closest statistic to the most recent data value.

Month	Lowest Median	10th %ile	25th %ile	50th %ile	75th %ile	90th %ile	Highest Median	Number of Years
Jan	10.07	10.98	11.22	12.17	12.92	13.22	13.48	55
Feb	9.92	10.92	11.40	12.01	12.85	13.22	13.69	55
Mar	10.09	10.83	11.31	11.88	12.91	13.20	13.64	55
Apr	10.28	11.01	11.27	11.79	12.72	13.12	13.35	55
May	9.78	10.49	11.08	11.65	12.37	13.02	14.23	55
Jun	9.47	10.85	11.53	12.22	13.20	13.49	14.15	55
Jul	10.29	11.24	11.50	12.09	12.74	13.42	14.05	54
Aug	10.14	11.20	11.52	12.07	12.95	13.43	13.93	54
Sep	10.21	11.52	11.81	12.27	13.00	13.30	13.77	54
Oct	10.49	11.13	11.74	12.20	12.82	13.21	13.49	54
Nov	9.64	10.92	11.39	12.19	12.99	13.25	14.24	54
Dec	9.80	11.06	11.46	12.05	12.86	13.24	13.57	53

As of 9/15/2017 18:31-2

Statistics Options

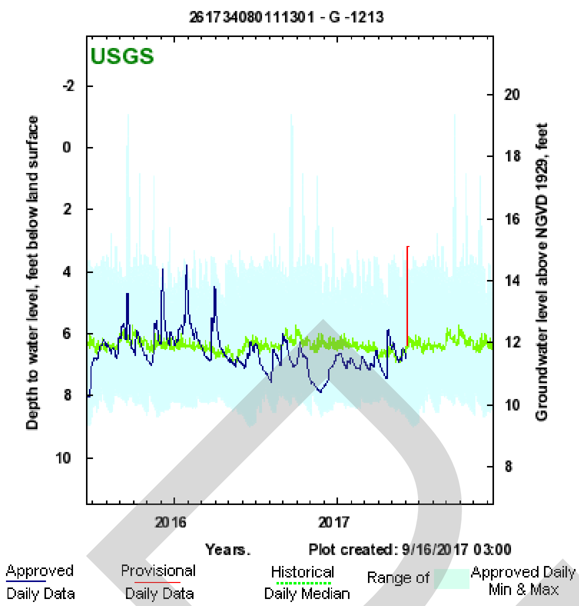
View month/year statistics

Daily Groundwater Data

Most recent Provisional daily data value: 15.11 on 06/08/17

Summary for Period of Continuous Record
Groundwater level above NGVD 1929, feet
Approved Daily Maximum Values Data Used in Analysis

Begin Date	End Date	Days	% Complete
01/05/63	06/04/17	16,188	81



Lowest Level	5th %ile	10th %ile	25th %ile	50th %ile	75th %ile	90th %ile	95th %ile	Highest Level
9.32	10.43	10.90	11.30	11.87	12.59	13.20	13.64	19.38

Daily Data Options

View latest data on NWISWeb

View data in calendar format

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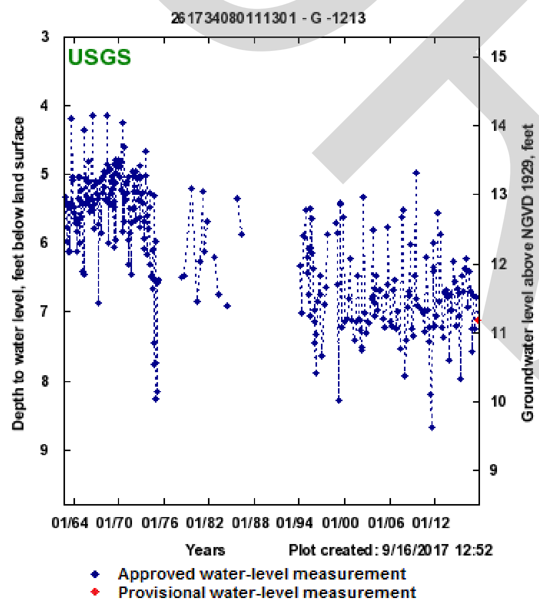
View daily medians

Periodic Groundwater Data



Summary for Period of Record Periodic Water Levels
Elevation above NGVD 1929, feet
Approved Periodic Water Level Values

Begin Date	End Date	Number of Values
01/04/63	08/09/17	303

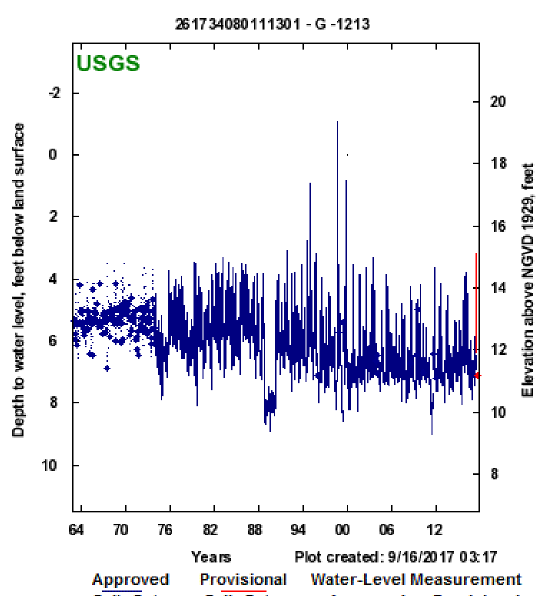
Lowest WL	Date of Lowest WL	Highest WL	Date of Highest WL
9.64	06/29/11	14.16	06/27/68

Groundwater Levels Options

View latest data on NWISWeb

Download groundwater levels in text format

Period of Record - All Data Types



Summary for Period of Record - All Data Types
Elevation above NGVD 1929, feet

Begin Date	End Date	Number of Values
01/04/63	08/09/17	16,496

Lowest WL	Date of Lowest WL	Highest WL	Date of Highest WL
9.32	06/19/11	19.38	09/19/98

Period of Record Options

View latest data on NWISWeb for all data types

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Download groundwater levels in text format of all data types

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*References to non-Department of the Interior (DOI) products do not constitute an endorsement by the DOI.

TABLE - 1

BOREHOLE PERMEABILITY TEST RESULTS

Project: Sawgrass Expressway, from US-441 to Powerline Rd.

SFWMD METHOD

BHP No.	Date	Approx. Station	Approx. Offset	Bore Hole Dia. (in)	Depth of Hole (ft)	GWT Depth (ft)	Flow Rate Q [gal/min]	K [cfs/ft^2]	K [ft/day]
BHP-1	02/12/18			8.00	10.0	2.83	0.3000	1.29E-05	1.11
BHP-2	02/14/18			8.00	10.0	3.42	0.3000	1.10E-05	0.95
BHP-3	02/14/18			8.00	10.0	2.75	1.0000	4.40E-05	3.80
BHP-4	02/12/18			8.00	10.0	3.50	0.5000	1.81E-05	1.56
BHP-5	02/14/18			8.00	10.0	4.17	0.5000	1.58E-05	1.36
BHP-6	02/09/18			8.00	10.0	4.67	0.3000	8.73E-06	0.75
BHP-7	02/09/18			8.00	10.0	3.67	0.5000	1.74E-05	1.50
BHP-8	02/12/18			8.00	10.0	3.75	1.3800	4.72E-05	4.08
BHP-9	02/12/18			8.00	10.0	7.00	1.0000	2.28E-05	1.97

TABLE - D1

Project: 2000-01-16001 (FTE Sawgrass PD&E-US441 to Powerline-BC_Corradino)

DOUBLE RING INFILTRATION TEST RESULTS SUMMARY

TEST NUMBER	BASELINE	APPROX. STATION	APPROX. OFFSET	GWT (ft)	Infiltration Rate Summary [inch/hour]	Infiltration Rate Summary [ft/day]
DRIT-1				GNE	2.2	4.3
DRIT-2				GNE	2.4	4.9
DRIT-3				GNE	1.1	2.2
DRIT-4				GNE	1.3	2.7
DRIT-5				2.5	1.9	3.8
DRIT-6				3.5	1.3	2.7
DRIT-7				2.5	4.3	8.6
DRIT-8				GNE	3.2	6.5
DRIT-9				GNE	2.7	5.4
DRIT-10						
DRIT-11				1.0	1.1	2.2
DRIT-12				3.0	1.1	2.2
DRIT-13				1.0	1.1	2.2
DRIT-14				GNE	1.3	2.7
DRIT-15				5.0	9.7	19.4
DRIT-16				3.5	6.5	12.9
DRIT-17				GNE	8.6	17.3
DRIT-18				GNE	4.3	8.6
DRIT-19				GNE	10.0	20.0
DRIT-20				GNE	8.1	16.2

DOUBLE RING INFILTRATION TEST RESULTS

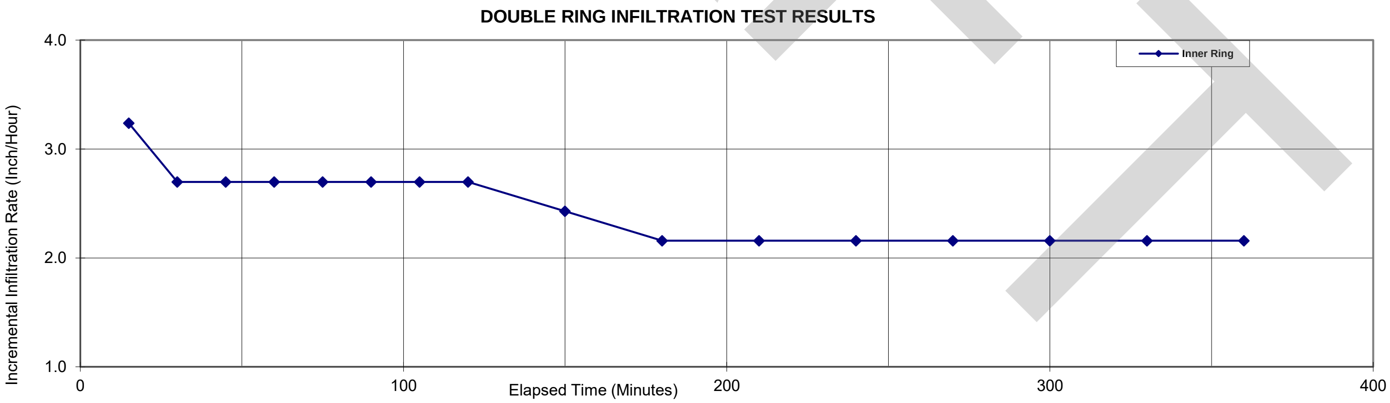
TEST No.:	**DRIT-1**
DATE:	1/31/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	71

PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'3.64"N 80°13'20.48"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	N/A				
PENETRATION OF RINGS INTO GROUND (Inches):		INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):		INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):		INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):		INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	1500	3750		3.24	2.70	Partly Cloudy
2	15	30	1250	3750		2.70	2.70	Partly Cloudy
3	15	45	1250	3750		2.70	2.70	Partly Cloudy
4	15	60	1250	3500		2.70	2.52	Partly Cloudy
5	15	75	1250	3500		2.70	2.52	Partly Cloudy
6	15	90	1250	3500		2.70	2.52	Partly Cloudy
7	15	105	1250	3000		2.70	2.16	Partly Cloudy
8	15	120	1250	3000		2.70	2.16	Partly Cloudy
9	30	150	2250	6000		2.43	2.16	Partly Cloudy
10	30	180	2000	6000		2.16	2.16	Partly Cloudy
11	30	210	2000	6000		2.16	2.16	Partly Cloudy
12	30	240	2000	6000		2.16	2.16	Partly Cloudy
13	30	270	2000	6000		2.16	2.16	Partly Cloudy
14	30	300	2000	6000		2.16	2.16	Partly Cloudy
15	30	330	2000	6000		2.16	2.16	Partly Cloudy
16	30	360	2000	6000		2.16	2.16	Partly Cloudy



GCME Project No.: 2000-01-16001

DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-2**
DATE:	2/1/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	70

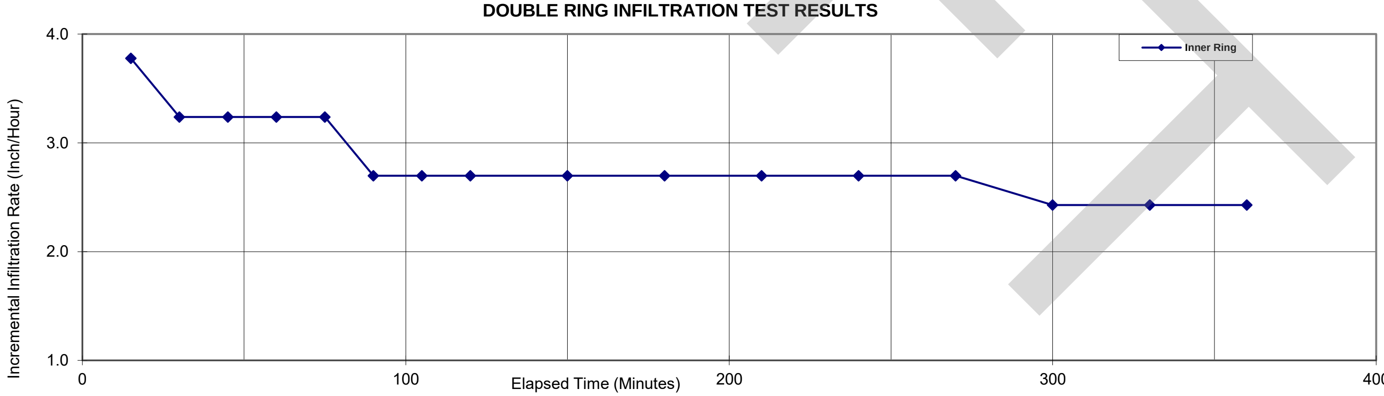
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'1.27"N 80°13'20.84"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	N/A				
PENETRATION OF RINGS INTO GROUND (Inches):		INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):		INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):		INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):		INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	1750	4500		3.78	3.24	Sunny
2	15	30	1500	4500		3.24	3.24	Sunny
3	15	45	1500	4500		3.24	3.24	Sunny
4	15	60	1500	4500		3.24	3.24	Sunny
5	15	75	1500	4250		3.24	3.06	Sunny
6	15	90	1250	4250		2.70	3.06	Sunny
7	15	105	1250	4250		2.70	3.06	Sunny
8	15	120	1250	4250		2.70	3.06	Sunny
9	30	150	2500	8000		2.70	2.88	Sunny
10	30	180	2500	8000		2.70	2.88	Sunny
11	30	210	2500	8000		2.70	2.88	Sunny
12	30	240	2500	8000		2.70	2.88	Sunny
13	30	270	2500	8000		2.70	2.88	Sunny
14	30	300	2250	8000		2.43	2.88	Sunny
15	30	330	2250	8000		2.43	2.88	Sunny
16	30	360	2250	8000		2.43	2.88	Sunny

DOUBLE RING INFILTRATION TEST RESULTS



DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-3**
DATE:	1/29/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	72

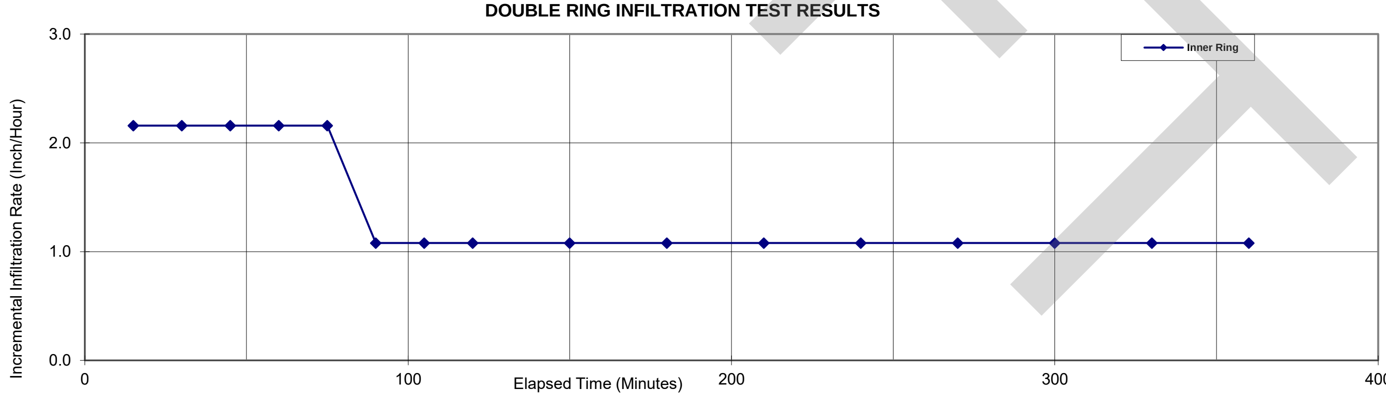
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'3.40"N 80°12'58.40"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	N/A				
PENETRATION OF RINGS INTO GROUND (Inches):		INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):		INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):		INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):		INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	1000	2000		2.16	1.44	Sunny
2	15	30	1000	2000		2.16	1.44	Sunny
3	15	45	1000	2000	71	2.16	1.44	Sunny
4	15	60	1000	2000		2.16	1.44	Sunny
5	15	75	1000	2000		2.16	1.44	Sunny
6	15	90	500	1000		1.08	0.72	Sunny
7	15	105	500	1000		1.08	0.72	Sunny
8	15	120	500	1000		1.08	0.72	Sunny
9	30	150	1000	2000		1.08	0.72	Sunny
10	30	180	1000	2000		1.08	0.72	Sunny
11	30	210	1000	2000		1.08	0.72	Sunny
12	30	240	1000	2000		1.08	0.72	Sunny
13	30	270	1000	2000		1.08	0.72	Sunny
14	30	300	1000	2000		1.08	0.72	Sunny
15	30	330	1000	2000		1.08	0.72	Sunny
16	30	360	1000	2000		1.08	0.72	Sunny

DOUBLE RING INFILTRATION TEST RESULTS



GCME Project No.: 2000-01-16001

DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-4**
DATE:	2/2/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	72

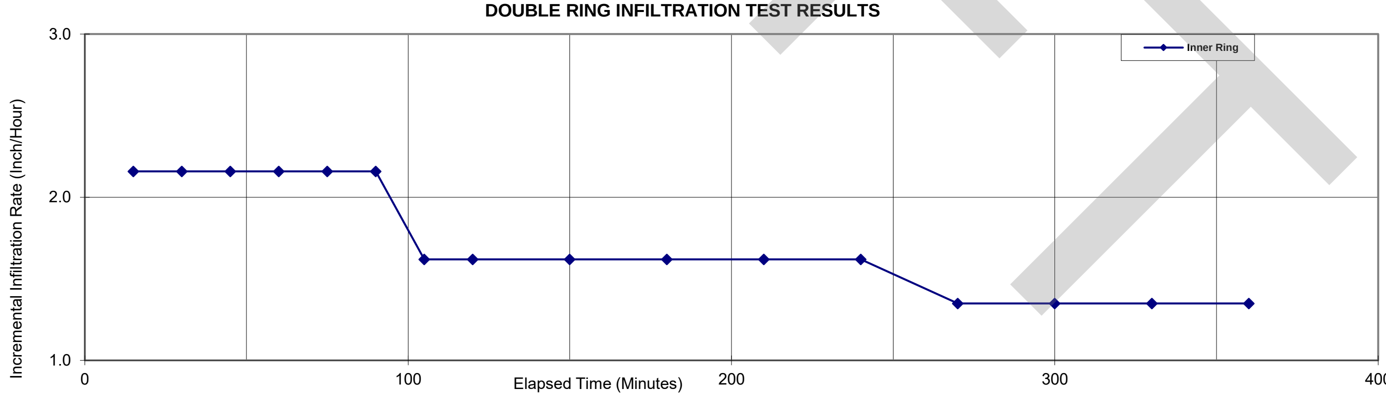
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'0.97"N 80°12'58.83"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet): N/A				
PENETRATION OF RINGS INTO GROUND (Inches):	INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):	INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):	INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):	INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	1000	3500		2.16	2.52	Overcast
2	15	30	1000	3250		2.16	2.34	Overcast
3	15	45	1000	3250		2.16	2.34	Overcast
4	15	60	1000	3000		2.16	2.16	Overcast
5	15	75	1000	3000		2.16	2.16	Overcast
6	15	90	1000	2500		2.16	1.80	Overcast
7	15	105	750	2500		1.62	1.80	Overcast
8	15	120	750	2500		1.62	1.80	Overcast
9	30	150	1500	4750		1.62	1.71	Overcast
10	30	180	1500	4750		1.62	1.71	Overcast
11	30	210	1500	4500		1.62	1.62	Sunny
12	30	240	1500	4500		1.62	1.62	Sunny
13	30	270	1250	4500		1.35	1.62	Sunny
14	30	300	1250	4500		1.35	1.62	Sunny
15	30	330	1250	4500		1.35	1.62	Sunny
16	30	360	1250	4500		1.35	1.62	Sunny

DOUBLE RING INFILTRATION TEST RESULTS



GCME Project No.: 2000-01-16001

DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-5**
DATE:	1/29/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	71

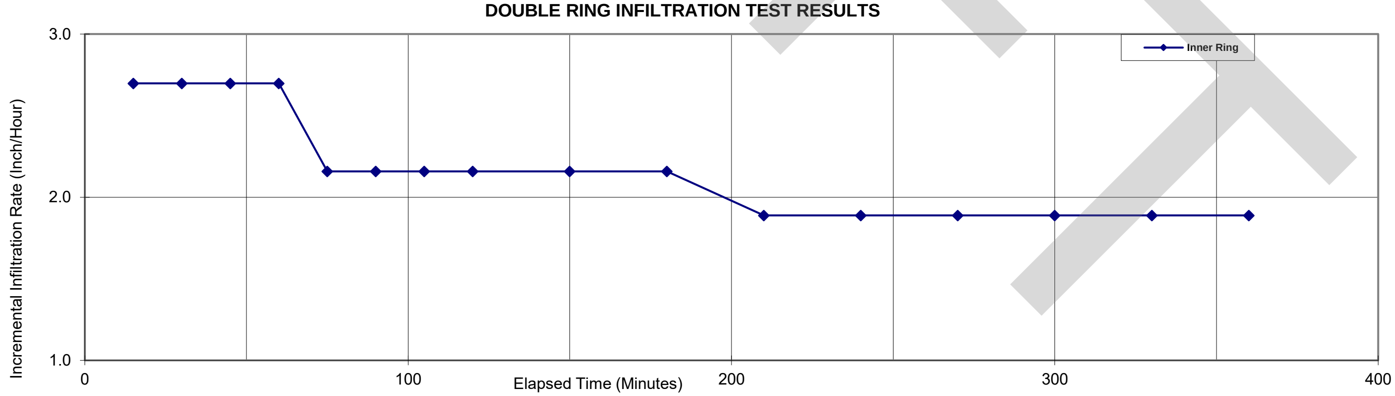
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'2.33"N 80°12'25.31"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	2.5				
PENETRATION OF RINGS INTO GROUND (Inches):		INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):		INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):		INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):		INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	1250	3500		2.70	2.52	Overcast
2	15	30	1250	3250		2.70	2.34	Overcast
3	15	45	1250	3250		2.70	2.34	Overcast
4	15	60	1250	3000		2.70	2.16	Overcast
5	15	75	1000	3000		2.16	2.16	Overcast
6	15	90	1000	3000		2.16	2.16	Overcast
7	15	105	1000	3000		2.16	2.16	Overcast
8	15	120	1000	3000		2.16	2.16	Overcast
9	30	150	2000	5500		2.16	1.98	Overcast
10	30	180	2000	5500		2.16	1.98	Overcast
11	30	210	1750	5500		1.89	1.98	Overcast
12	30	240	1750	5500		1.89	1.98	Overcast
13	30	270	1750	5500		1.89	1.98	Overcast
14	30	300	1750	5500		1.89	1.98	Overcast
15	30	330	1750	5500		1.89	1.98	Overcast
16	30	360	1750	5500		1.89	1.98	Overcast

DOUBLE RING INFILTRATION TEST RESULTS



DOUBLE RING INFILTRATION TEST RESULTS

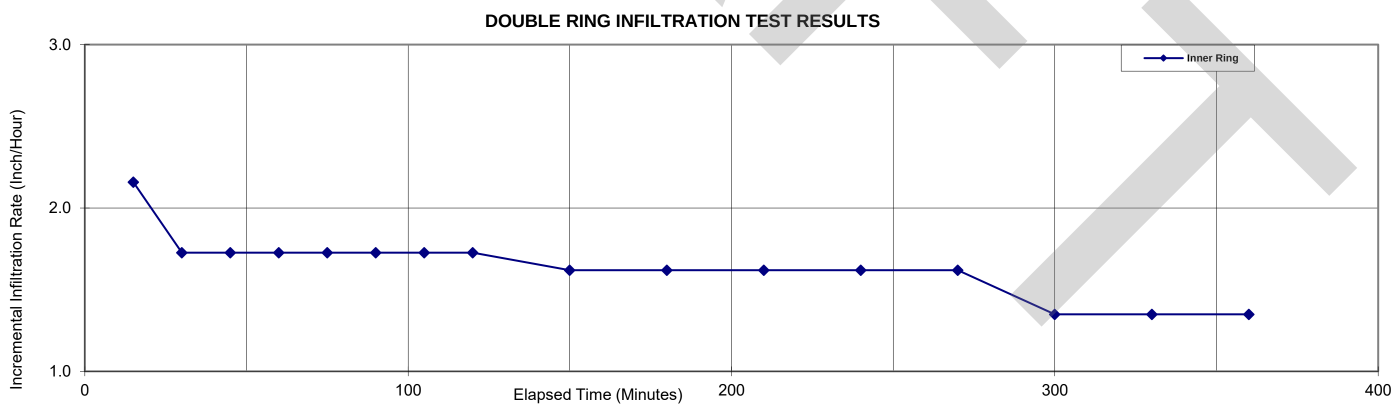
TEST No.:	DRIT-6
DATE:	2/7/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	5
GROUND TEMPERATURE (°F):	73

PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°17'58.69"N 80°12'20.98"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	3.5			
PENETRATION OF RINGS INTO GROUND (Inches):	INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):	INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):	INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):	INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	1000	2750		2.16	1.98	Sunny
2	15	30	800	2750		1.73	1.98	Sunny
3	15	45	800	2750		1.73	1.98	Sunny
4	15	60	800	2750		1.73	1.98	Sunny
5	15	75	800	2750		1.73	1.98	Sunny
6	15	90	800	2500		1.73	1.80	Sunny
7	15	105	800	2500		1.73	1.80	Sunny
8	15	120	800	2500		1.73	1.80	Sunny
9	30	150	1500	4500		1.62	1.62	Sunny
10	30	180	1500	4500		1.62	1.62	Sunny
11	30	210	1500	4500		1.62	1.62	Sunny
12	30	240	1500	4250		1.62	1.53	Sunny
13	30	270	1500	4250		1.62	1.53	Sunny
14	30	300	1250	4250		1.35	1.53	Sunny
15	30	330	1250	4250		1.35	1.53	Sunny
16	30	360	1250	4250		1.35	1.53	Sunny



DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-7**
DATE:	1/25/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	70

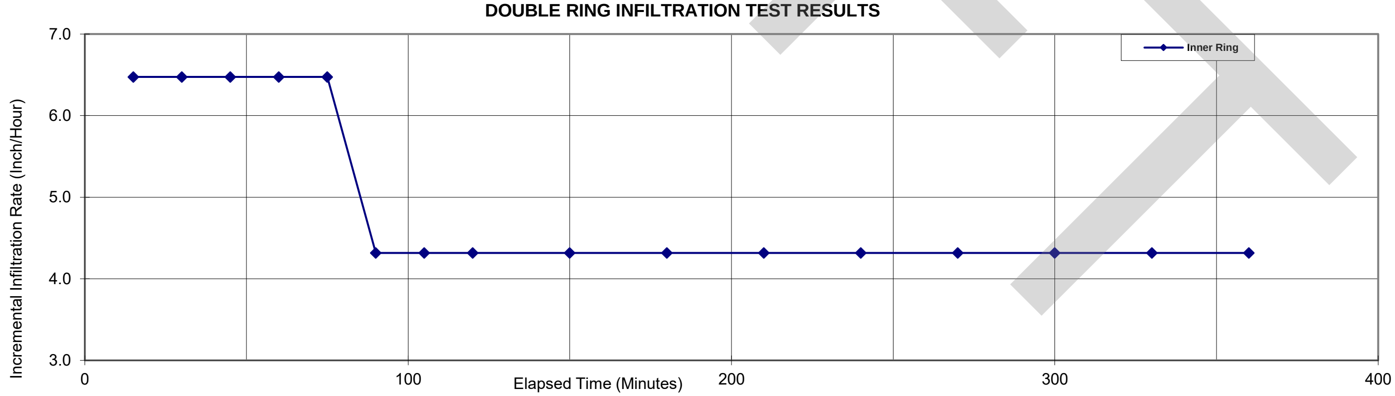
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'3.20"N 80°12'17.30"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	2.5					
PENETRATION OF RINGS INTO GROUND (Inches):		INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):		INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):		INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):		INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	3000	5000	72	6.47	3.60	Sunny
2	15	30	3000	5000		6.47	3.60	Sunny
3	15	45	3000	5000		6.47	3.60	Sunny
4	15	60	3000	5000		6.47	3.60	Sunny
5	15	75	3000	5000		6.47	3.60	Sunny
6	15	90	2000	4000		4.32	2.88	Sunny
7	15	105	2000	4000		4.32	2.88	Sunny
8	15	120	2000	4000		4.32	2.88	Sunny
9	30	150	4000	8000		4.32	2.88	Sunny
10	30	180	4000	8000		4.32	2.88	Sunny
11	30	210	4000	8000		4.32	2.88	Sunny
12	30	240	4000	8000		4.32	2.88	Sunny
13	30	270	4000	8000		4.32	2.88	Sunny
14	30	300	4000	8000		4.32	2.88	Sunny
15	30	330	4000	8000		4.32	2.88	Sunny
16	30	360	4000	8000		4.32	2.88	Sunny

DOUBLE RING INFILTRATION TEST RESULTS



GCME Project No.: 2000-01-16001

DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-8**
DATE:	1/25/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	70

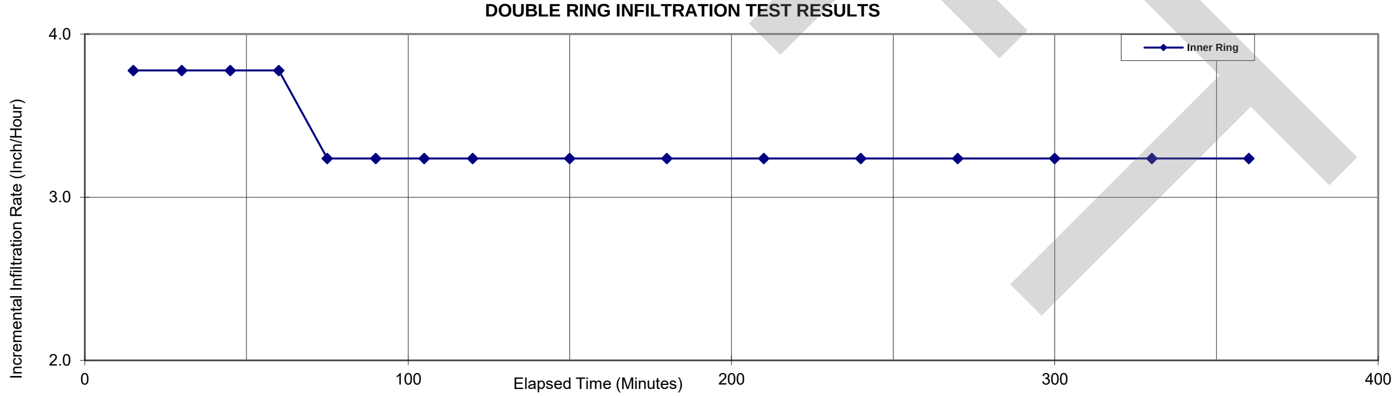
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'8.63"N 80°12'9.97"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet): N/A				
PENETRATION OF RINGS INTO GROUND (Inches):	INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):	INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):	INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):	INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0			72			
1	15	15	1750	6000		3.78	4.32	Overcast
2	15	30	1750	6000		3.78	4.32	Overcast
3	15	45	1750	5500		3.78	3.96	Overcast
4	15	60	1750	5500		3.78	3.96	Overcast
5	15	75	1500	5500		3.24	3.96	Overcast
6	15	90	1500	5500		3.24	3.96	Overcast
7	15	105	1500	5500		3.24	3.96	Overcast
8	15	120	1500	5500		3.24	3.96	Overcast
9	30	150	3000	10500		3.24	3.78	Overcast
10	30	180	3000	10500		3.24	3.78	Overcast
11	30	210	3000	10000		3.24	3.60	Overcast
12	30	240	3000	10000		3.24	3.60	Overcast
13	30	270	3000	10000		3.24	3.60	Overcast
14	30	300	3000	10000		3.24	3.60	Overcast
15	30	330	3000	10000		3.24	3.60	Overcast
16	30	360	3000	10000		3.24	3.60	Overcast

DOUBLE RING INFILTRATION TEST RESULTS



GCME Project No.: 2000-01-16001

DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-9**
DATE:	2/8/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	5
GROUND TEMPERATURE (°F):	74

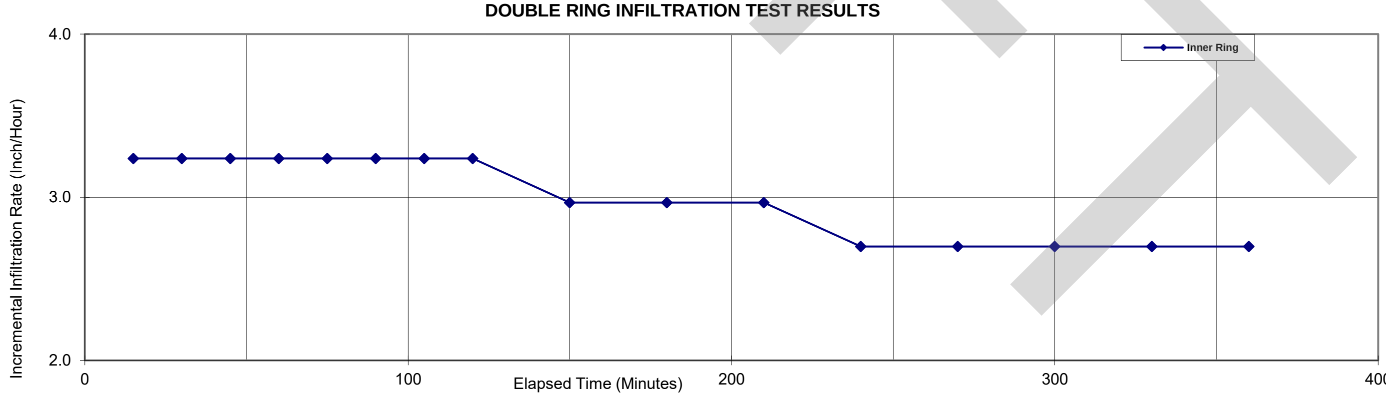
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°17'58.34N 80°12'9.69"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	N/A				
PENETRATION OF RINGS INTO GROUND (Inches):		INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):		INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):		INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):		INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						Sunny
1	15	15	1500	4500		3.24	3.24	Sunny
2	15	30	1500	4500		3.24	3.24	Sunny
3	15	45	1500	4500		3.24	3.24	Sunny
4	15	60	1500	4500		3.24	3.24	Sunny
5	15	75	1500	4500		3.24	3.24	Sunny
6	15	90	1500	4250		3.24	3.06	Sunny
7	15	105	1500	4250		3.24	3.06	Sunny
8	15	120	1500	4250		3.24	3.06	Sunny
9	30	150	2750	8000		2.97	2.88	Sunny
10	30	180	2750	8000		2.97	2.88	Sunny
11	30	210	2750	8000		2.97	2.88	Sunny
12	30	240	2500	8000		2.70	2.88	Sunny
13	30	270	2500	8000		2.70	2.88	Sunny
14	30	300	2500	8000		2.70	2.88	Sunny
15	30	330	2500	8000		2.70	2.88	Sunny
16	30	360	2500	8000		2.70	2.88	Sunny

DOUBLE RING INFILTRATION TEST RESULTS



GCME Project No.: 2000-01-16001

DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-11**
DATE:	1/24/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	70

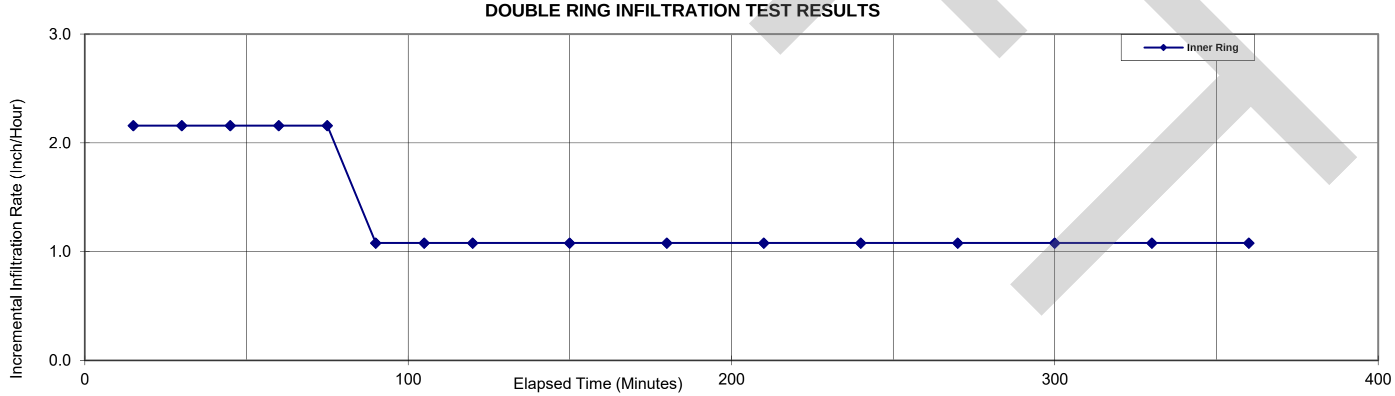
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'2.10"N 80°11'57.90"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	1.0			
PENETRATION OF RINGS INTO GROUND (Inches):	INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):	INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):	INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):	INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	1000	2000	76	2.16	1.44	Sunny
2	15	30	1000	2000		2.16	1.44	Sunny
3	15	45	1000	2000		2.16	1.44	Sunny
4	15	60	1000	2000		2.16	1.44	Sunny
5	15	75	1000	2000		2.16	1.44	Sunny
6	15	90	500	1000		1.08	0.72	Sunny
7	15	105	500	1000		1.08	0.72	Sunny
8	15	120	500	1000		1.08	0.72	Sunny
9	30	150	1000	2000		1.08	0.72	Sunny
10	30	180	1000	2000		1.08	0.72	Sunny
11	30	210	1000	2000		1.08	0.72	Sunny
12	30	240	1000	2000	80	1.08	0.72	Sunny
13	30	270	1000	2000		1.08	0.72	Sunny
14	30	300	1000	2000		1.08	0.72	Sunny
15	30	330	1000	2000		1.08	0.72	Sunny
16	30	360	1000	2000		1.08	0.72	Sunny

DOUBLE RING INFILTRATION TEST RESULTS



GCME Project No.: 2000-01-16001

DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-12**
DATE:	2/9/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	5
GROUND TEMPERATURE (°F):	74

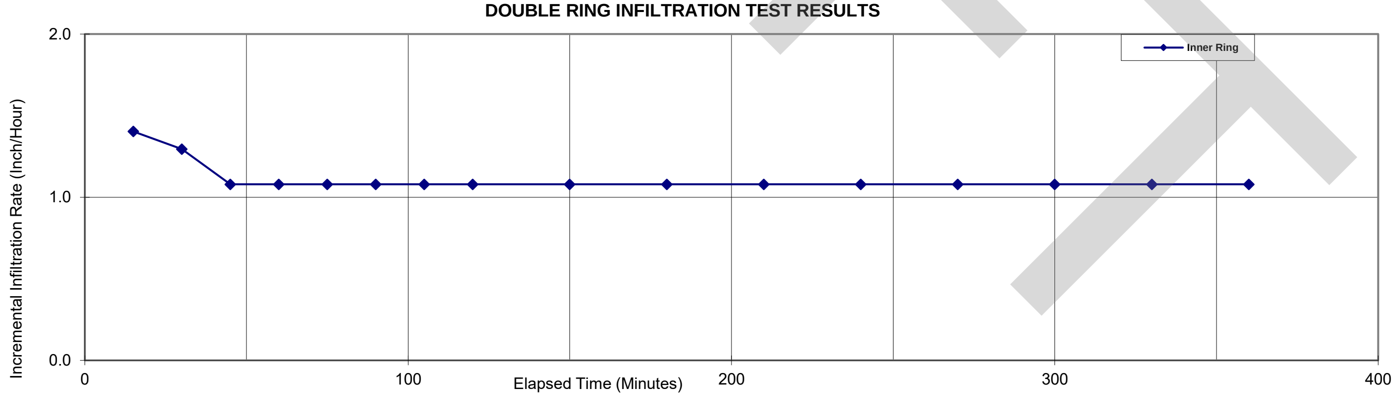
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°17'57.08"N 80°11'57.31"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	3.0				
PENETRATION OF RINGS INTO GROUND (Inches):		INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):		INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):		INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):		INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	650	2000	76	1.40	1.44	Sunny
2	15	30	600	2000		1.29	1.44	Sunny
3	15	45	500	2000		1.08	1.44	Sunny
4	15	60	500	2000		1.08	1.44	Sunny
5	15	75	500	1750		1.08	1.26	Sunny
6	15	90	500	1750		1.08	1.26	Sunny
7	15	105	500	1750		1.08	1.26	Sunny
8	15	120	500	1750		1.08	1.26	Sunny
9	30	150	1000	3250		1.08	1.17	Sunny
10	30	180	1000	3250		1.08	1.17	Sunny
11	30	210	1000	3250		1.08	1.17	Sunny
12	30	240	1000	3250	80	1.08	1.17	Sunny
13	30	270	1000	3250		1.08	1.17	Sunny
14	30	300	1000	3250		1.08	1.17	Sunny
15	30	330	1000	3250		1.08	1.17	Sunny
16	30	360	1000	3250		1.08	1.17	Sunny

DOUBLE RING INFILTRATION TEST RESULTS



DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-13**
DATE:	1/24/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	71

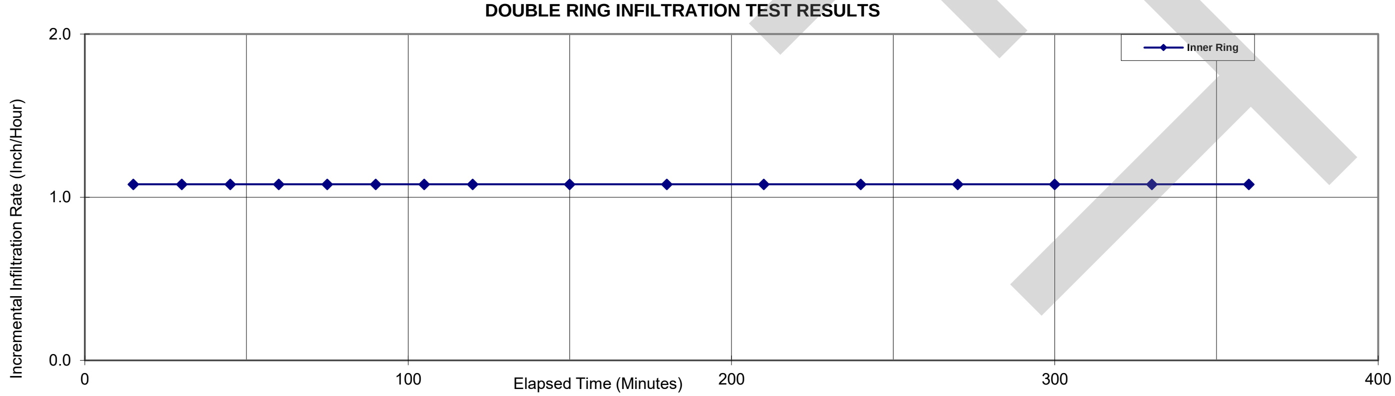
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'3.06"N 80°11'21.91"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet): 1.0				
PENETRATION OF RINGS INTO GROUND (Inches):	INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):	INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):	INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):	INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0			72			
1	15	15	500	1750		1.08	1.26	Overcast
2	15	30	500	1750		1.08	1.26	Overcast
3	15	45	500	1750		1.08	1.26	Overcast
4	15	60	500	1750		1.08	1.26	Overcast
5	15	75	500	1500		1.08	1.08	Overcast
6	15	90	500	1500		1.08	1.08	Overcast
7	15	105	500	1500		1.08	1.08	Overcast
8	15	120	500	1500		1.08	1.08	Overcast
9	30	150	1000	3000		1.08	1.08	Overcast
10	30	180	1000	3000		1.08	1.08	Overcast
11	30	210	1000	3000		1.08	1.08	Overcast
12	30	240	1000	3000		1.08	1.08	Overcast
13	30	270	1000	3000		1.08	1.08	Overcast
14	30	300	1000	3000		1.08	1.08	Overcast
15	30	330	1000	3000		1.08	1.08	Overcast
16	30	360	1000	3000		1.08	1.08	Overcast

DOUBLE RING INFILTRATION TEST RESULTS



GCME Project No.: 2000-01-16001

DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-14**
DATE:	2/12/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	76

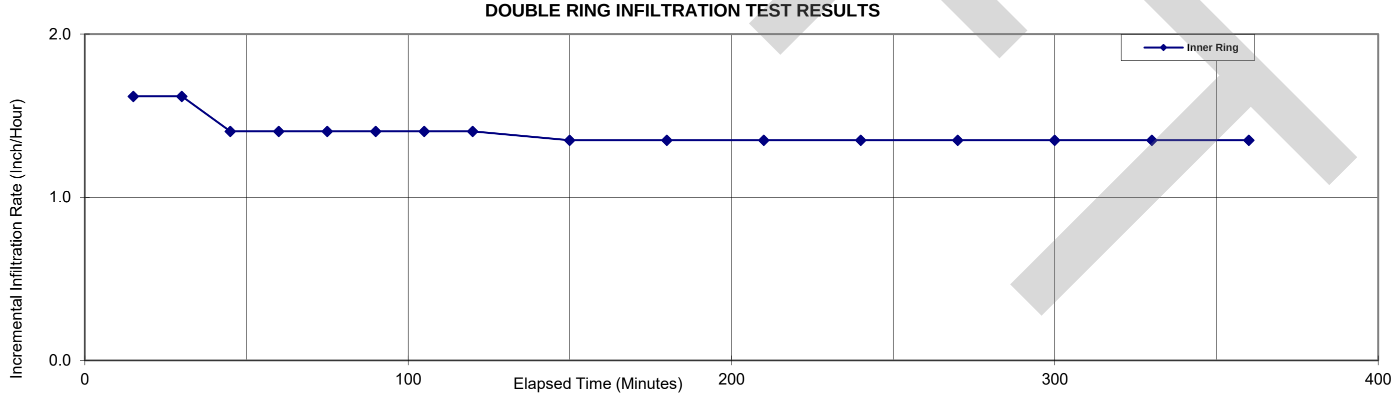
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'0.01"N 80°11'19.30"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	N/A				
PENETRATION OF RINGS INTO GROUND (Inches):		INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):		INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):		INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):		INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	750	2750		1.62	1.98	Sunny
2	15	30	750	2750		1.62	1.98	Sunny
3	15	45	650	2750		1.40	1.98	Sunny
4	15	60	650	2750		1.40	1.98	Sunny
5	15	75	650	2500		1.40	1.80	Sunny
6	15	90	650	2500		1.40	1.80	Sunny
7	15	105	650	2400		1.40	1.73	Sunny
8	15	120	650	2400		1.40	1.73	Sunny
9	30	150	1250	4500		1.35	1.62	Sunny
10	30	180	1250	4500		1.35	1.62	Sunny
11	30	210	1250	4500		1.35	1.62	Sunny
12	30	240	1250	4500		1.35	1.62	Sunny
13	30	270	1250	4500		1.35	1.62	Sunny
14	30	300	1250	4500		1.35	1.62	Sunny
15	30	330	1250	4500		1.35	1.62	Sunny
16	30	360	1250	4500		1.35	1.62	Sunny

DOUBLE RING INFILTRATION TEST RESULTS



GCME Project No.: 2000-01-16001

DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-15**
DATE:	2/13/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	76

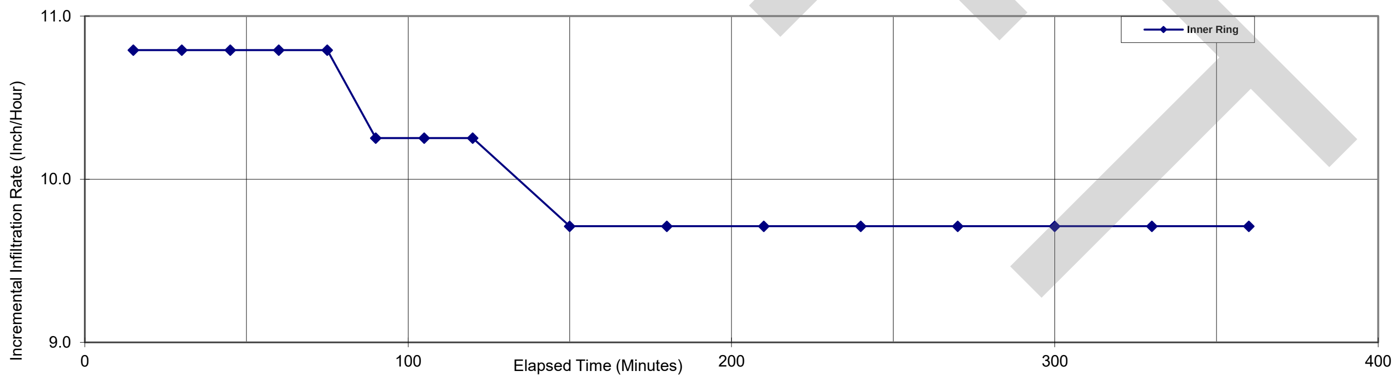
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'0.49"N 80°11'12.96"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet): 5.0				
PENETRATION OF RINGS INTO GROUND (Inches):	INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):	INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):	INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):	INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	5000	14750		10.79	10.61	Sunny
2	15	30	5000	14500		10.79	10.43	Sunny
3	15	45	5000	14500		10.79	10.43	Sunny
4	15	60	5000	14500		10.79	10.43	Sunny
5	15	75	5000	14500		10.79	10.43	Sunny
6	15	90	4750	14000		10.25	10.07	Sunny
7	15	105	4750	14000		10.25	10.07	Sunny
8	15	120	4750	14000		10.25	10.07	Sunny
9	30	150	9000	27750		9.71	9.98	Sunny
10	30	180	9000	27750		9.71	9.98	Sunny
11	30	210	9000	27750		9.71	9.98	Sunny
12	30	240	9000	27500		9.71	9.89	Sunny
13	30	270	9000	27500		9.71	9.89	Sunny
14	30	300	9000	27500		9.71	9.89	Sunny
15	30	330	9000	27500		9.71	9.89	Sunny
16	30	360	9000	27500		9.71	9.89	Sunny

DOUBLE RING INFILTRATION TEST RESULTS



DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-16**
DATE:	1/23/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	72

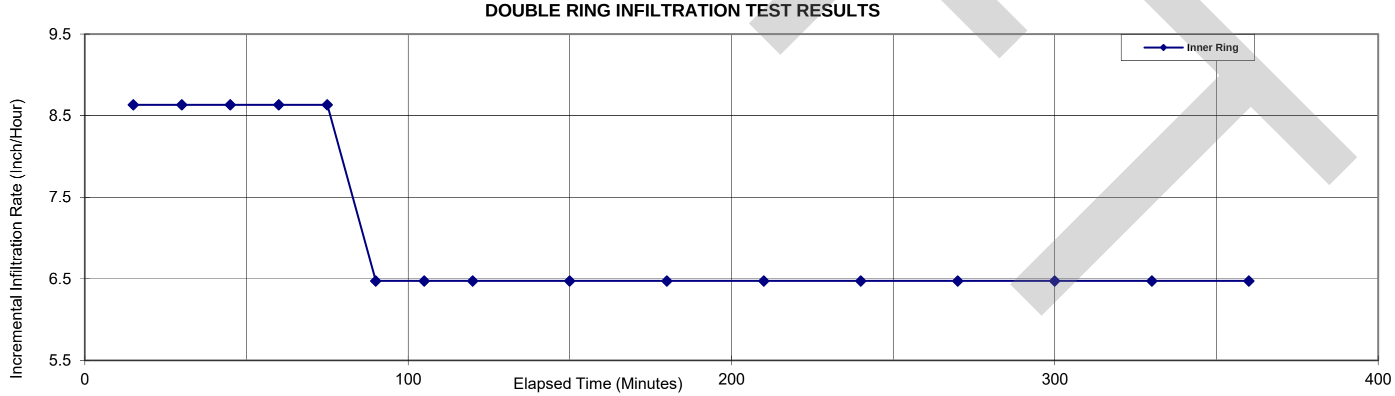
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'8.40"N 80°11'9.70"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	3.5				
PENETRATION OF RINGS INTO GROUND (Inches):		INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):		INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):		INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):		INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	4000	12000		8.63	8.63	Sunny
2	15	30	4000	12000		8.63	8.63	Sunny
3	15	45	4000	12000		8.63	8.63	Sunny
4	15	60	4000	12000		8.63	8.63	Sunny
5	15	75	4000	12000		8.63	8.63	Sunny
6	15	90	3000	10000		6.47	7.19	Sunny
7	15	105	3000	10000		6.47	7.19	Sunny
8	15	120	3000	10000		6.47	7.19	Sunny
9	30	150	6000	20000		6.47	7.19	Sunny
10	30	180	6000	20000		6.47	7.19	Sunny
11	30	210	6000	20000		6.47	7.19	Sunny
12	30	240	6000	20000		6.47	7.19	Sunny
13	30	270	6000	20000		6.47	7.19	Sunny
14	30	300	6000	20000		6.47	7.19	Sunny
15	30	330	6000	20000		6.47	7.19	Sunny
16	30	360	6000	20000		6.47	7.19	Sunny

DOUBLE RING INFILTRATION TEST RESULTS



GCME Project No.: 2000-01-16001

DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-17**
DATE:	2/14/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	75

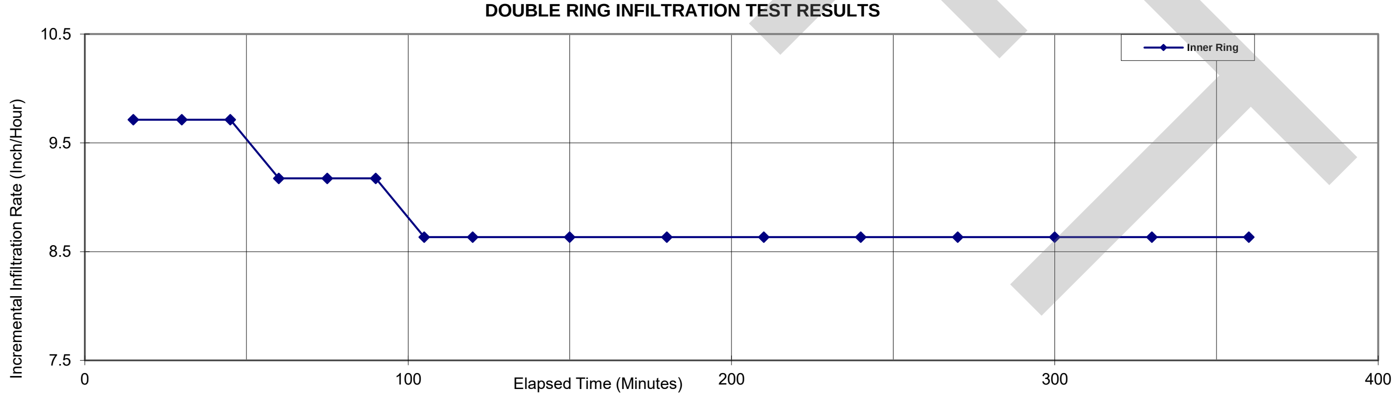
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'5.7"N 80°11'4.83"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	N/A			
PENETRATION OF RINGS INTO GROUND (Inches):	INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):	INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):	INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):	INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	4500	13750		9.71	9.89	Sunny
2	15	30	4500	13750		9.71	9.89	Sunny
3	15	45	4500	13750		9.71	9.89	Sunny
4	15	60	4250	13750		9.17	9.89	Sunny
5	15	75	4250	13750		9.17	9.89	Sunny
6	15	90	4250	13500		9.17	9.71	Sunny
7	15	105	4000	13500		8.63	9.71	Sunny
8	15	120	4000	13500		8.63	9.71	Sunny
9	30	150	8000	26000		8.63	9.35	Sunny
10	30	180	8000	26000		8.63	9.35	Sunny
11	30	210	8000	26000		8.63	9.35	Sunny
12	30	240	8000	25500		8.63	9.17	Sunny
13	30	270	8000	25500		8.63	9.17	Sunny
14	30	300	8000	25500		8.63	9.17	Sunny
15	30	330	8000	25500		8.63	9.17	Sunny
16	30	360	8000	25500		8.63	9.17	Sunny

DOUBLE RING INFILTRATION TEST RESULTS



DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-18**
DATE:	1/22/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	70

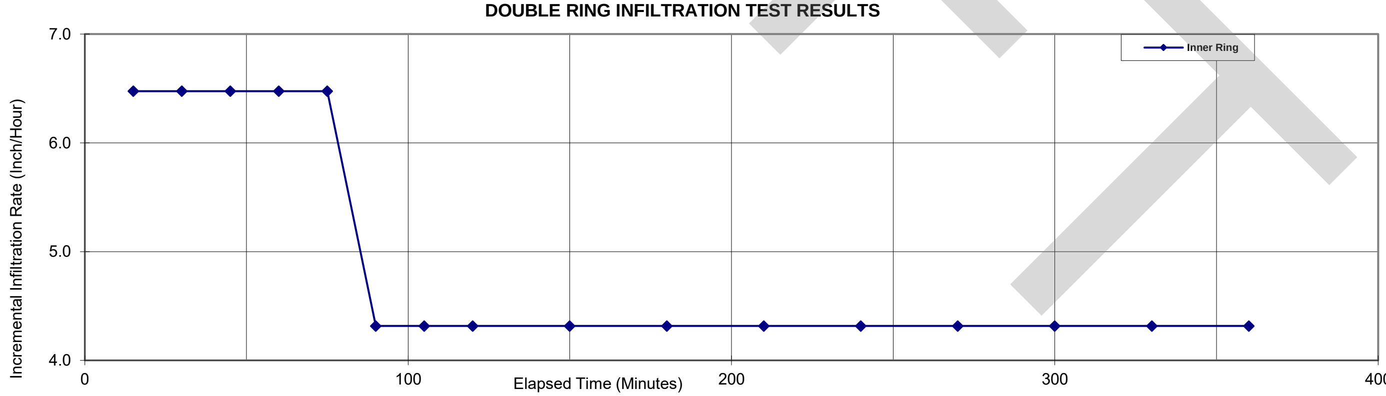
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'14.12"N 80° 9'4.65"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	N/A				
PENETRATION OF RINGS INTO GROUND (Inches):		INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):		INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):		INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):		INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						Sunny
1	15	15	3000	6000		6.47	4.32	Sunny
2	15	30	3000	6000		6.47	4.32	Sunny
3	15	45	3000	6000		6.47	4.32	Sunny
4	15	60	3000	6000	75	6.47	4.32	Sunny
5	15	75	3000	6000		6.47	4.32	Sunny
6	15	90	2000	5000		4.32	3.60	Sunny
7	15	105	2000	5000		4.32	3.60	Sunny
8	15	120	2000	5000		4.32	3.60	Sunny
9	30	150	4000	10000		4.32	3.60	Sunny
10	30	180	4000	10000		4.32	3.60	Sunny
11	30	210	4000	10000	78	4.32	3.60	Sunny
12	30	240	4000	10000		4.32	3.60	Sunny
13	30	270	4000	10000		4.32	3.60	Sunny
14	30	300	4000	10000		4.32	3.60	Sunny
15	30	330	4000	10000		4.32	3.60	Sunny
16	30	360	4000	10000		4.32	3.60	Sunny

DOUBLE RING INFILTRATION TEST RESULTS



GCME Project No.: 2000-01-16001

DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-19**
DATE:	1/23/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	71

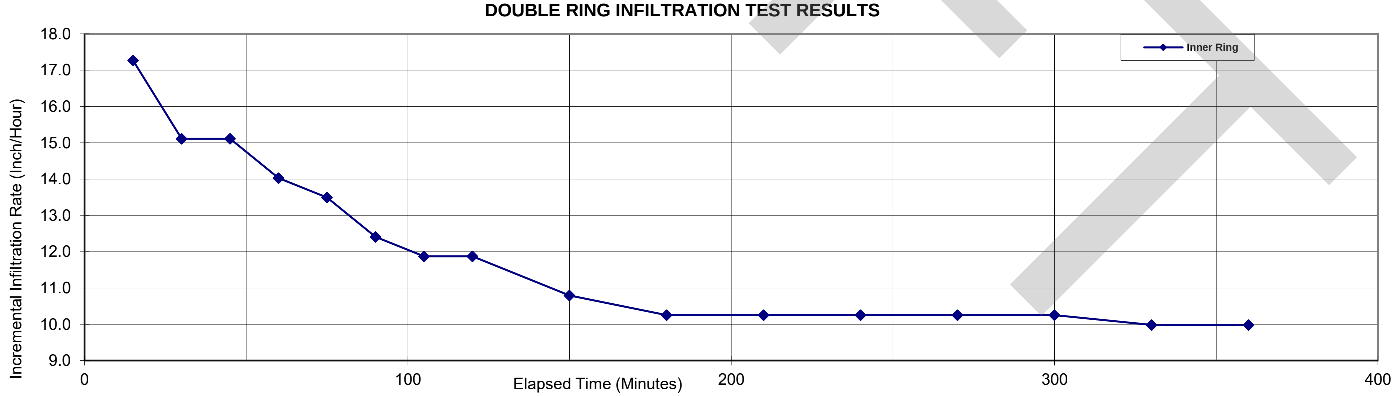
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'16.36"N 80°11'52.04"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet):	N/A			
PENETRATION OF RINGS INTO GROUND (Inches):	INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):	INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):	INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):	INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	8000	26000		17.27	18.71	Sunny
2	15	30	7000	26000		15.11	18.71	Sunny
3	15	45	7000	24500		15.11	17.63	Sunny
4	15	60	6500	24000		14.03	17.27	Sunny
5	15	75	6250	23000		13.49	16.55	Sunny
6	15	90	5750	22500		12.41	16.19	Sunny
7	15	105	5500	22500		11.87	16.19	Sunny
8	15	120	5500	21500		11.87	15.47	Sunny
9	30	150	10000	39000		10.79	14.03	Sunny
10	30	180	9500	38000		10.25	13.67	Sunny
11	30	210	9500	38000		10.25	13.67	Sunny
12	30	240	9500	37000		10.25	13.31	Sunny
13	30	270	9500	37000		10.25	13.31	Sunny
14	30	300	9500	37000		10.25	13.31	Sunny
15	30	330	9250	37000		9.98	13.31	Sunny
16	30	360	9250	37000		9.98	13.31	Sunny

DOUBLE RING INFILTRATION TEST RESULTS



DOUBLE RING INFILTRATION TEST RESULTS

TEST No.:	**DRIT-20**
DATE:	1/22/2018
FPID No.:	437153-1-22-01
LIQUID USED:	Water
pH:	6
GROUND TEMPERATURE (°F):	70

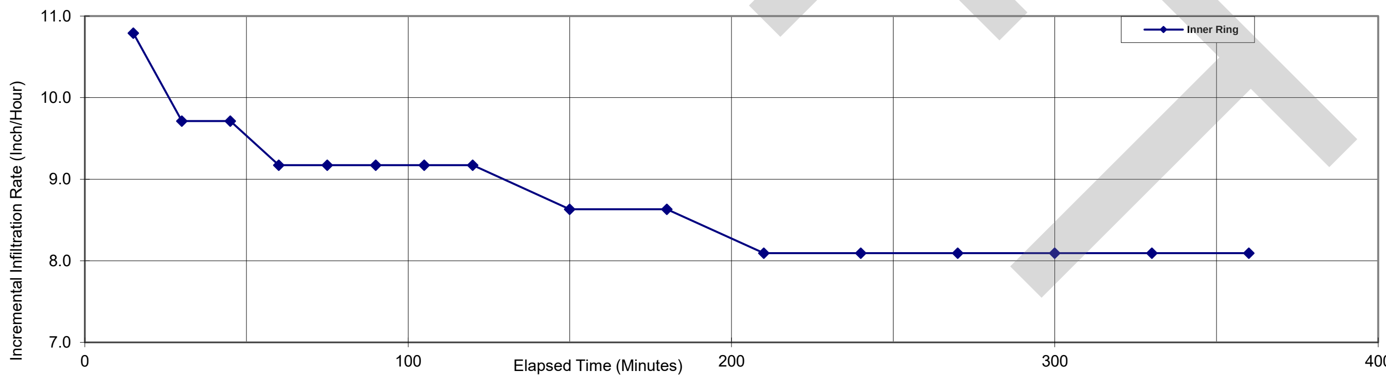
PROJECT NAME:	Sawgrass Expy
TEST LOCATION:	26°18'13.43"N 80°8'48.26"W
STATION:	
OFFSET:	
GROUND ELEVATION:	

GENERAL SUBSURFACE PROFILE		
DEPTH (FEET)	SOIL DESCRIPTION	STRATUM No.

DEPTH TO WATER TABLE (Feet): N/A				
PENETRATION OF RINGS INTO GROUND (Inches):	INNER:	3	OUTER:	6
INTERNAL DIAMETER OF RINGS (Inches):	INNER:	12	OUTER:	24
THICKNESS OF RING WALL (Inches):	INNER:	0.125	OUTER:	0.125
AREA OF RINGS (Inches ^ 2):	INNER:	113.10	ANNULAR:	339.29

INCREMENT No.	ELAPSED TIME (MIN.)	TOTAL TIME (MIN.)	FLOW READINGS (ml)		LIQUID TEMPERATURE (°F)	INCREMENTAL INFILTRATION RATE (IN/HOUR)		REMARKS
			INNER RING	ANNULAR SPACE		INNER RING	ANNULAR SPACE	
0		0						
1	15	15	5000	17000		10.79	12.23	Sunny
2	15	30	4500	17000		9.71	12.23	Sunny
3	15	45	4500	16500		9.71	11.87	Sunny
4	15	60	4250	16000		9.17	11.51	Sunny
5	15	75	4250	15750		9.17	11.33	Sunny
6	15	90	4250	15250		9.17	10.97	Sunny
7	15	105	4250	15250		9.17	10.97	Sunny
8	15	120	4250	15000		9.17	10.79	Sunny
9	30	150	8000	29000		8.63	10.43	Sunny
10	30	180	8000	28000		8.63	10.07	Sunny
11	30	210	7500	28000		8.09	10.07	Sunny
12	30	240	7500	27500		8.09	9.89	Sunny
13	30	270	7500	27500		8.09	9.89	Sunny
14	30	300	7500	27000		8.09	9.71	Sunny
15	30	330	7500	27000		8.09	9.71	Sunny
16	30	360	7500	27000		8.09	9.71	Sunny

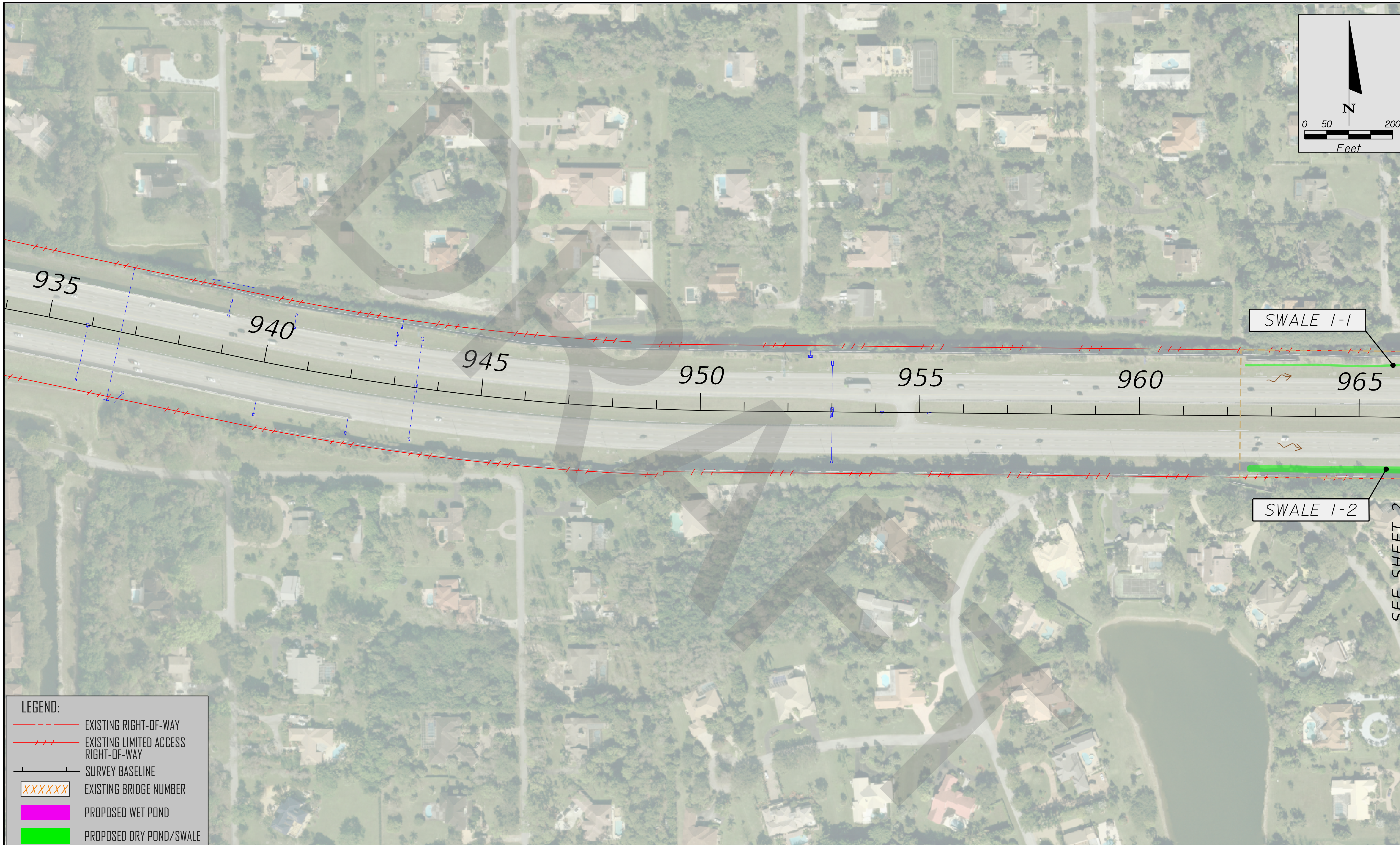
DOUBLE RING INFILTRATION TEST RESULTS



GCME Project No.: 2000-01-16001

APPENDIX C

Drainage Maps



FLORIDA'S TURNPIKE
FDOT

FLORIDA'S TURNPIKE ENTERPRISE
MILE POST 263 - TURKEY LAKE SERVICE PLAZA, BUILDING 5315
OCOEE, FL 34761

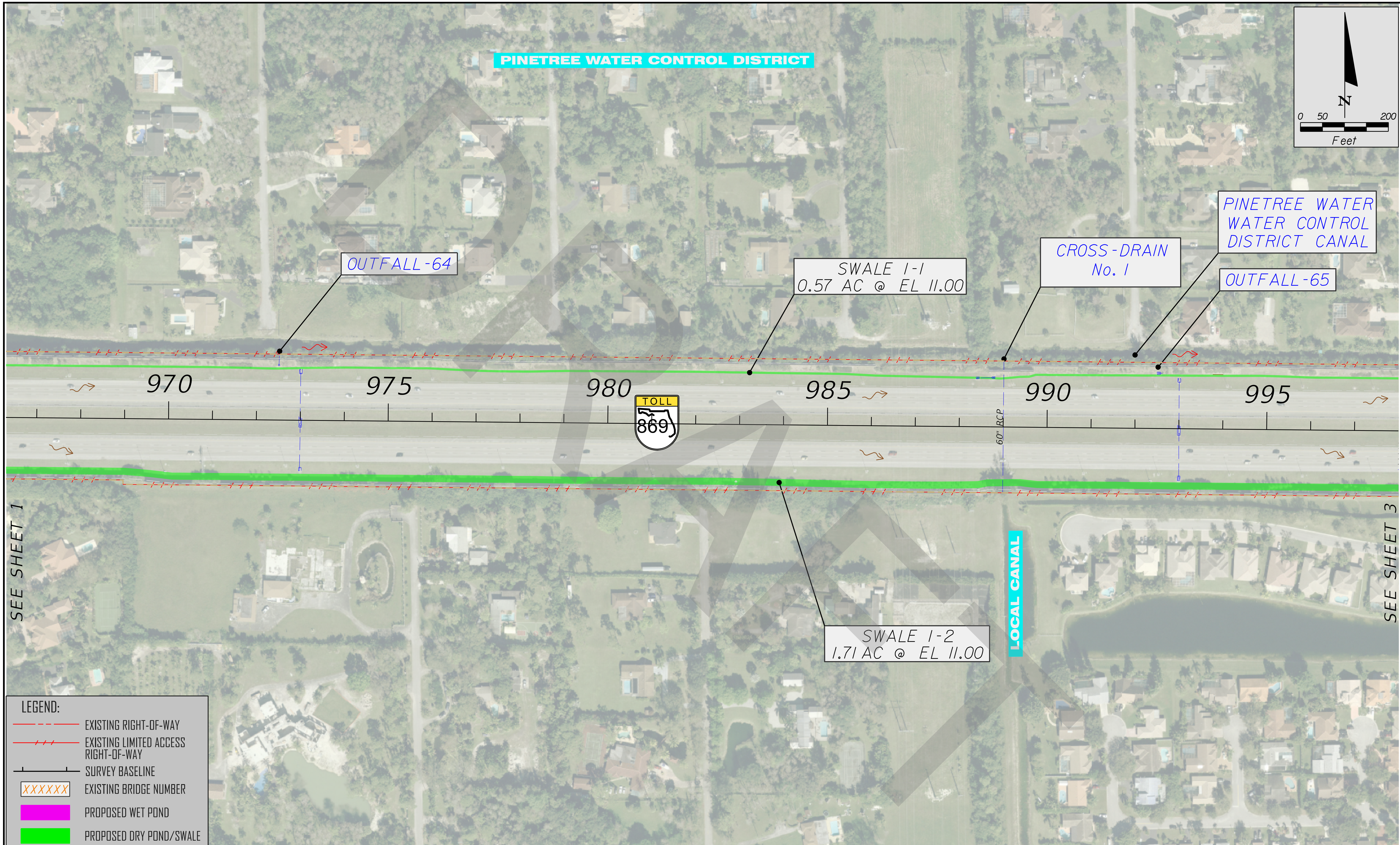
OCTOBER 2023

TOLL 869

SAWGRASS EXPRESSWAY (SR 869) WIDENING PD&E STUDY
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
FPID No.: 437153-1-22-01
ETDM No: 14280

SAWGRASS EXPRESSWAY (SR 869)
DRAINAGE MAP

SHEET NO.
1



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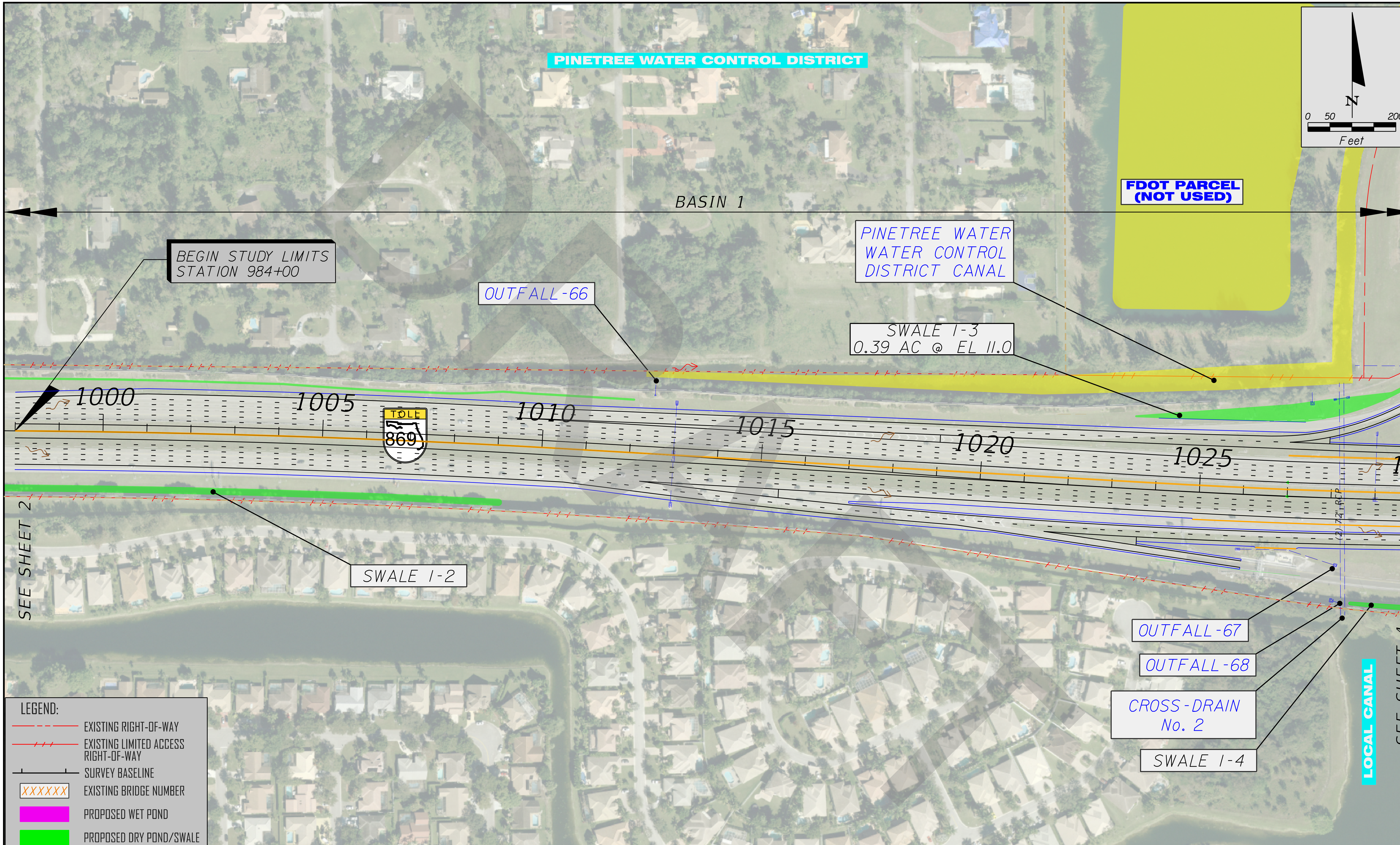
FPID No.: 437153-1-22-01
ETDM No: 14280

SAWGRASS EXPRESSWAY (SR 869)
DRAINAGE MAP

SHEET NO.
2



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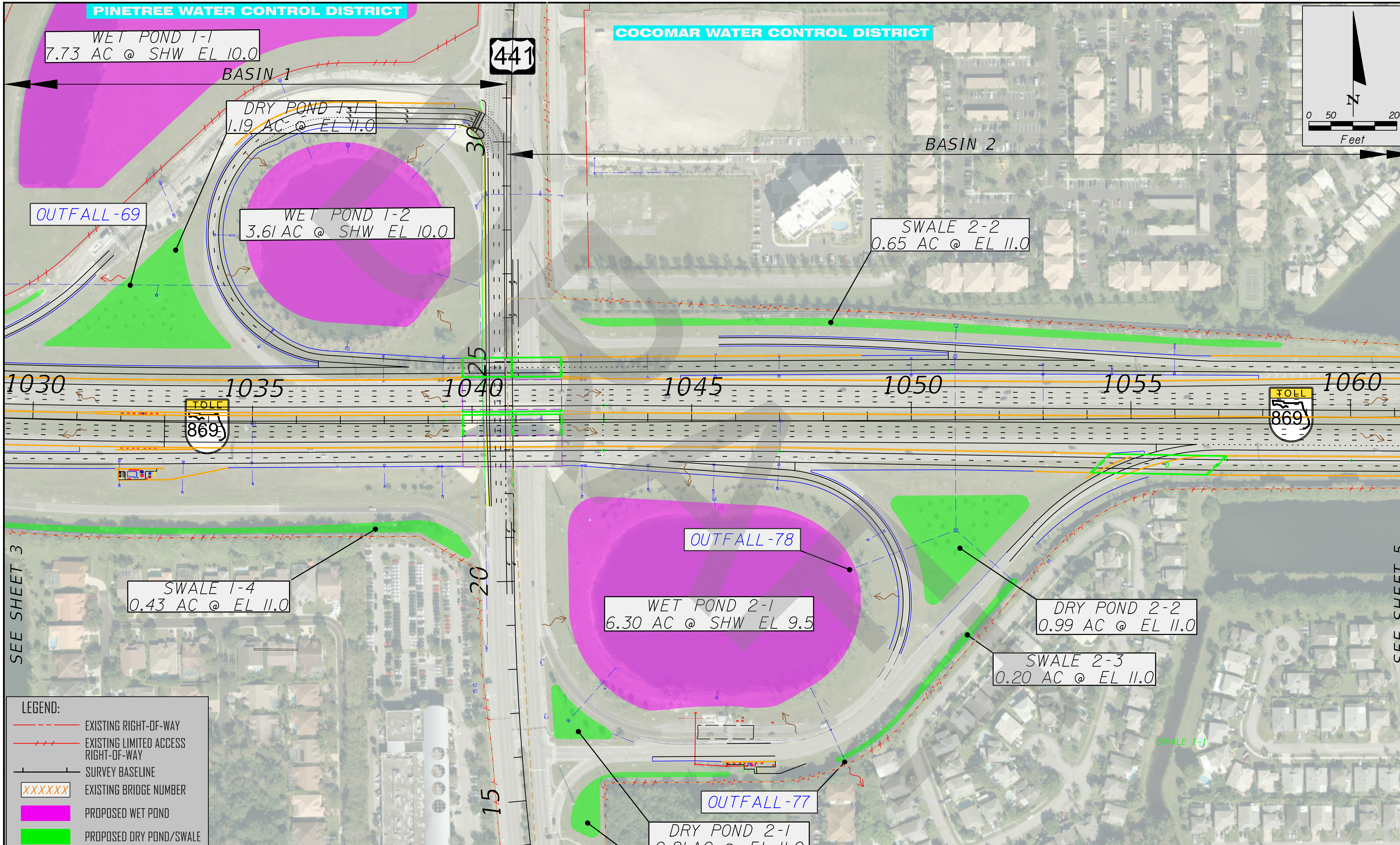
FPID No.: 437153-1-22-01
ETDM No: 14280

SAWGRASS EXPRESSWAY (SR 869)
DRAINAGE MAP

SHEET NO.
3



FLORIDA'S TURNPIKE

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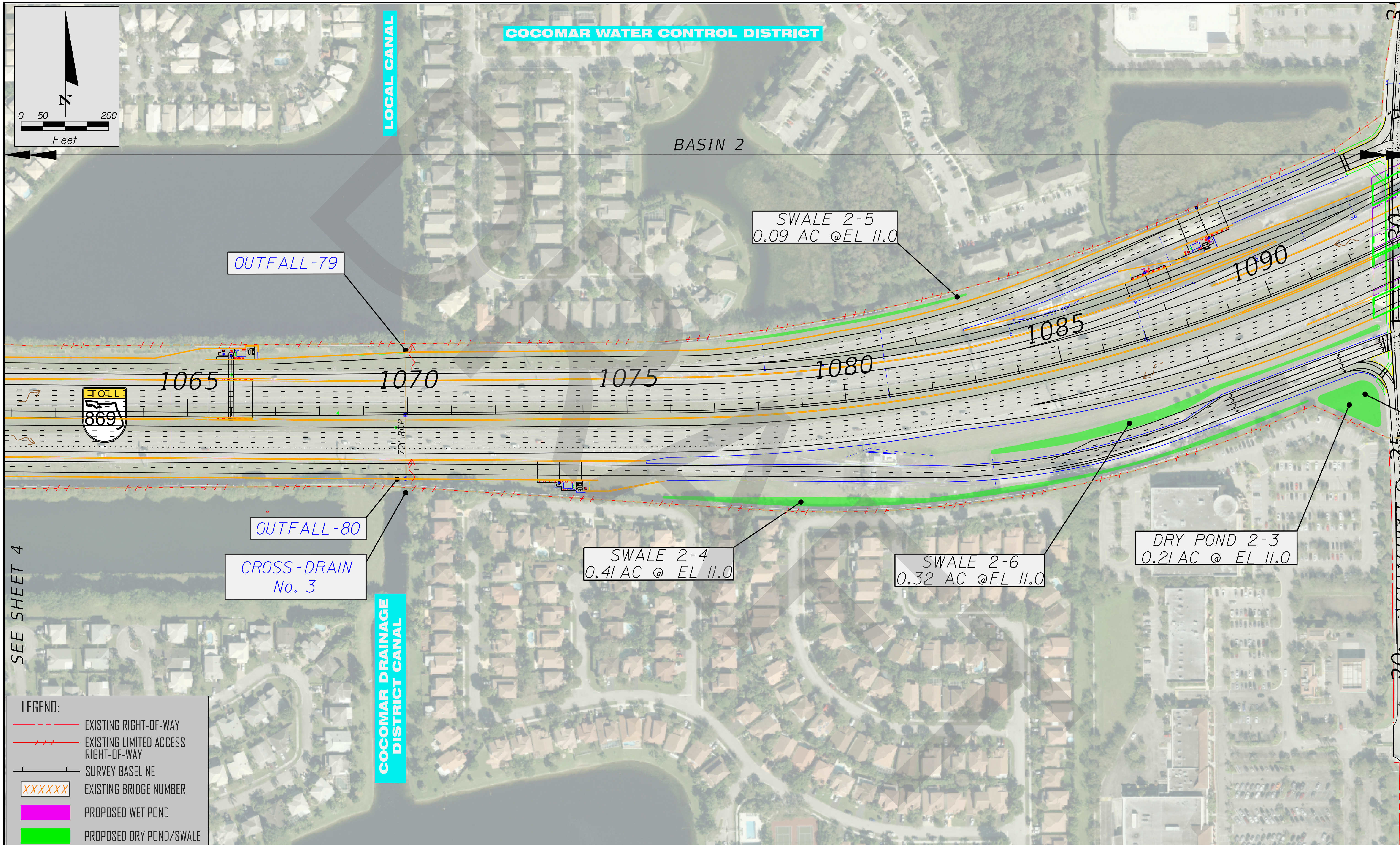
FPID No.: 437153-1-22-01
ETDM No: 14280

SAWGRASS EXPRESSWAY (SR 869)
DRAINAGE MAP

SHEET NO.
4



FLORIDA'S TURNPIKE

FDOT

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OCOEE, FL 34761

OCTOBER 2023

TOLL 869

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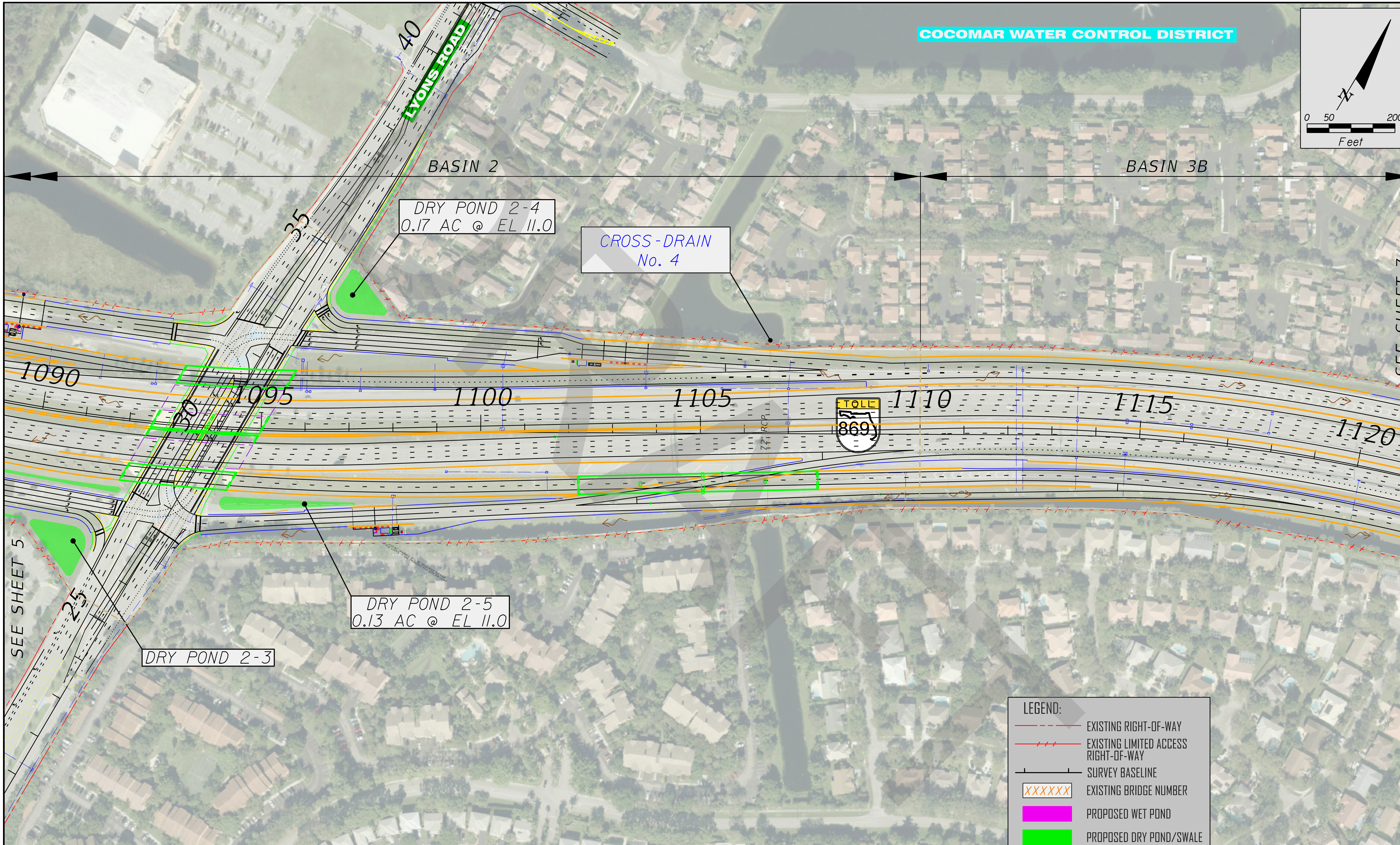
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
FPID No.: 437153-1-22-01
ETDM No: 14280

SAWGRASS EXPRESSWAY (SR 869)
DRAINAGE MAP

SHEET NO.
5



FLORIDA'S TURNPIKE ENTERPRISE
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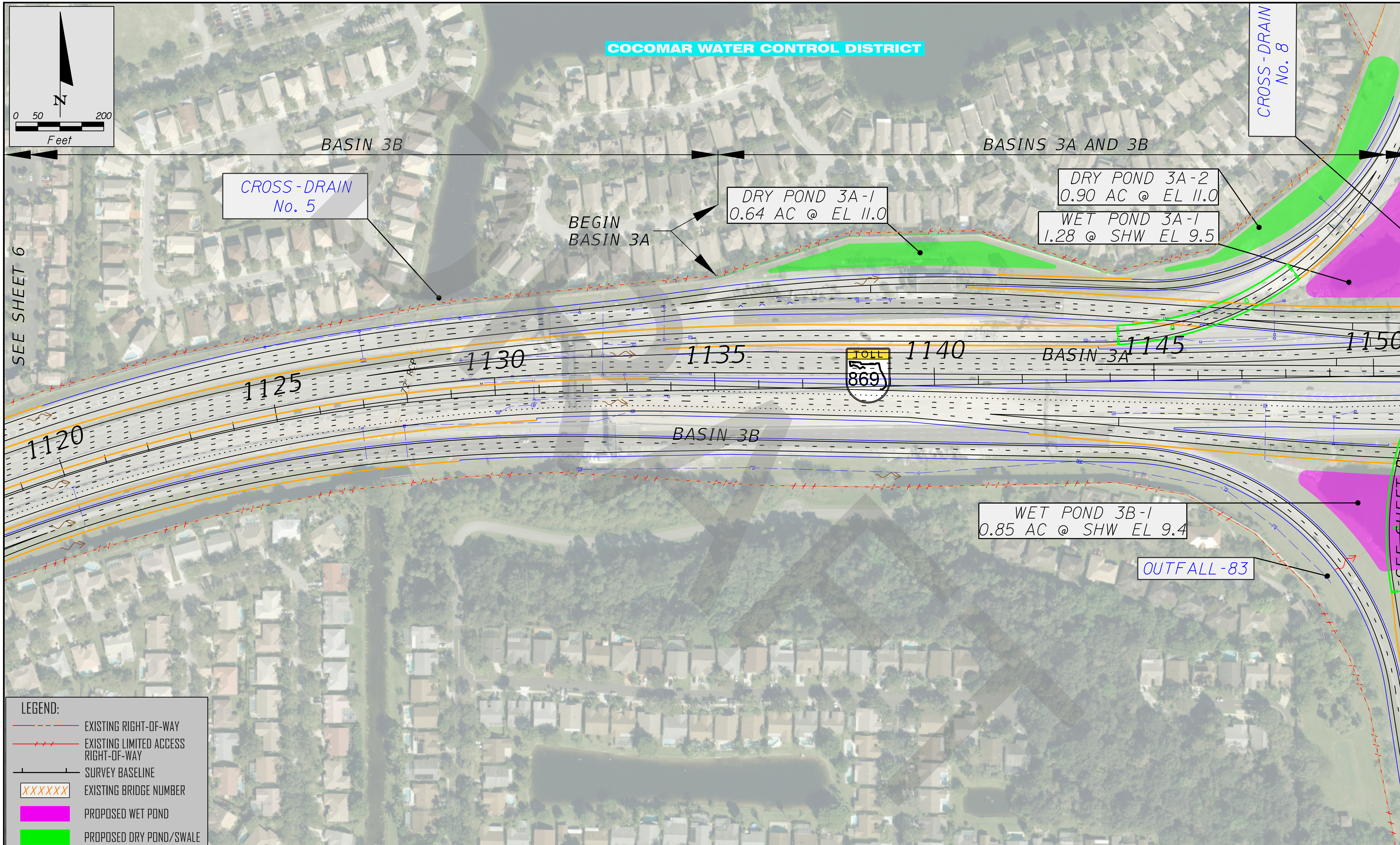
OCOEE, FL 34761

OCTOBER 2023

SAWGRASS EXPRESSWAY (SR 869) WIDENING PD&E STUDY
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
FPID No.: 437153-1-22-01
ETDM No: 14280

SAWGRASS EXPRESSWAY (SR 869)
DRAINAGE MAP

SHEET NO.
6



FLORIDA'S TURNPIKE

FDOT

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OCTOBER 2023

TOLL 869

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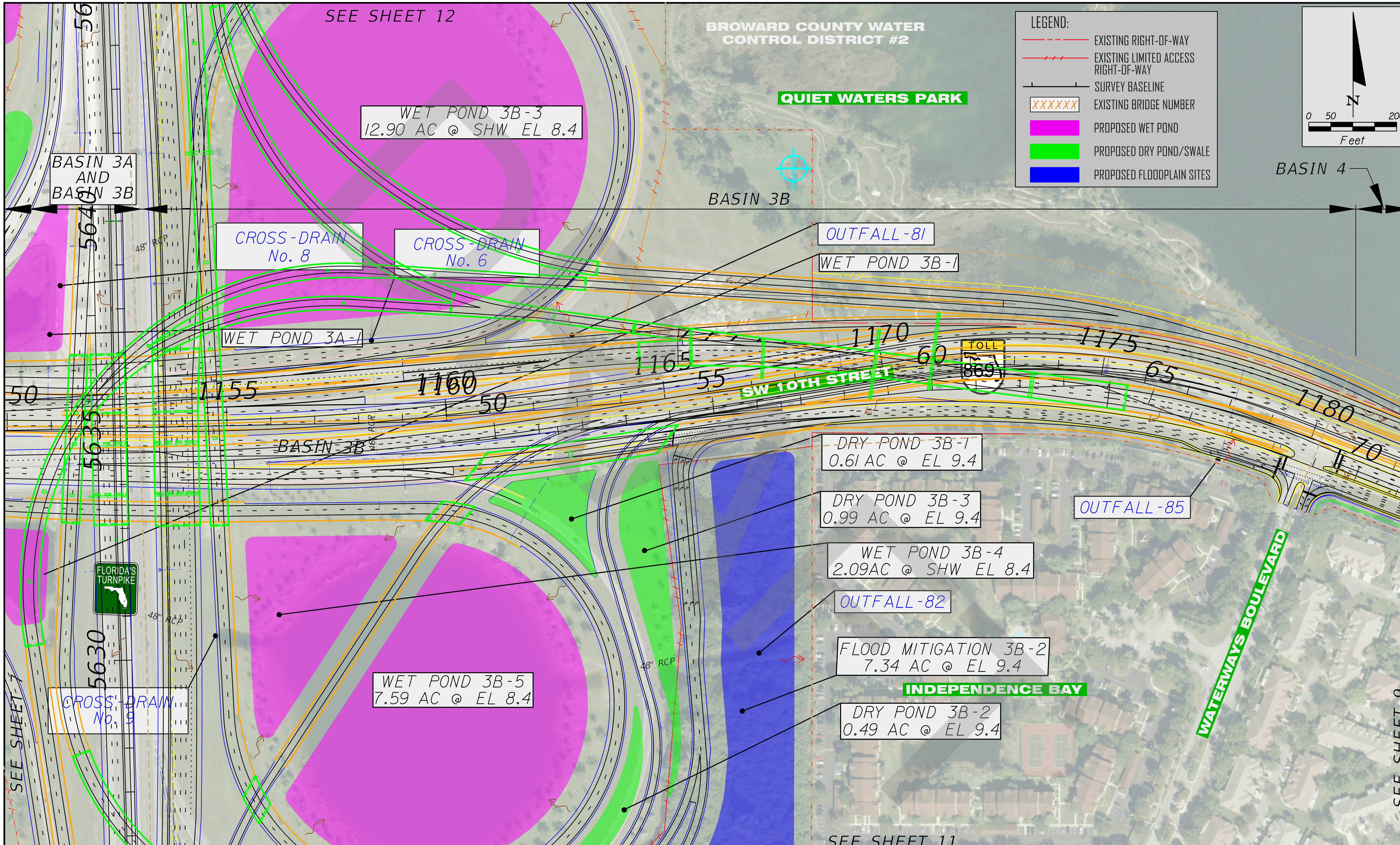
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
FPID No.: 437153-1-22-01
ETDM No: 14280

SAWGRASS EXPRESSWAY (SR 869)
DRAINAGE MAP

SHEET NO.
7



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OCOEE, FL 34761

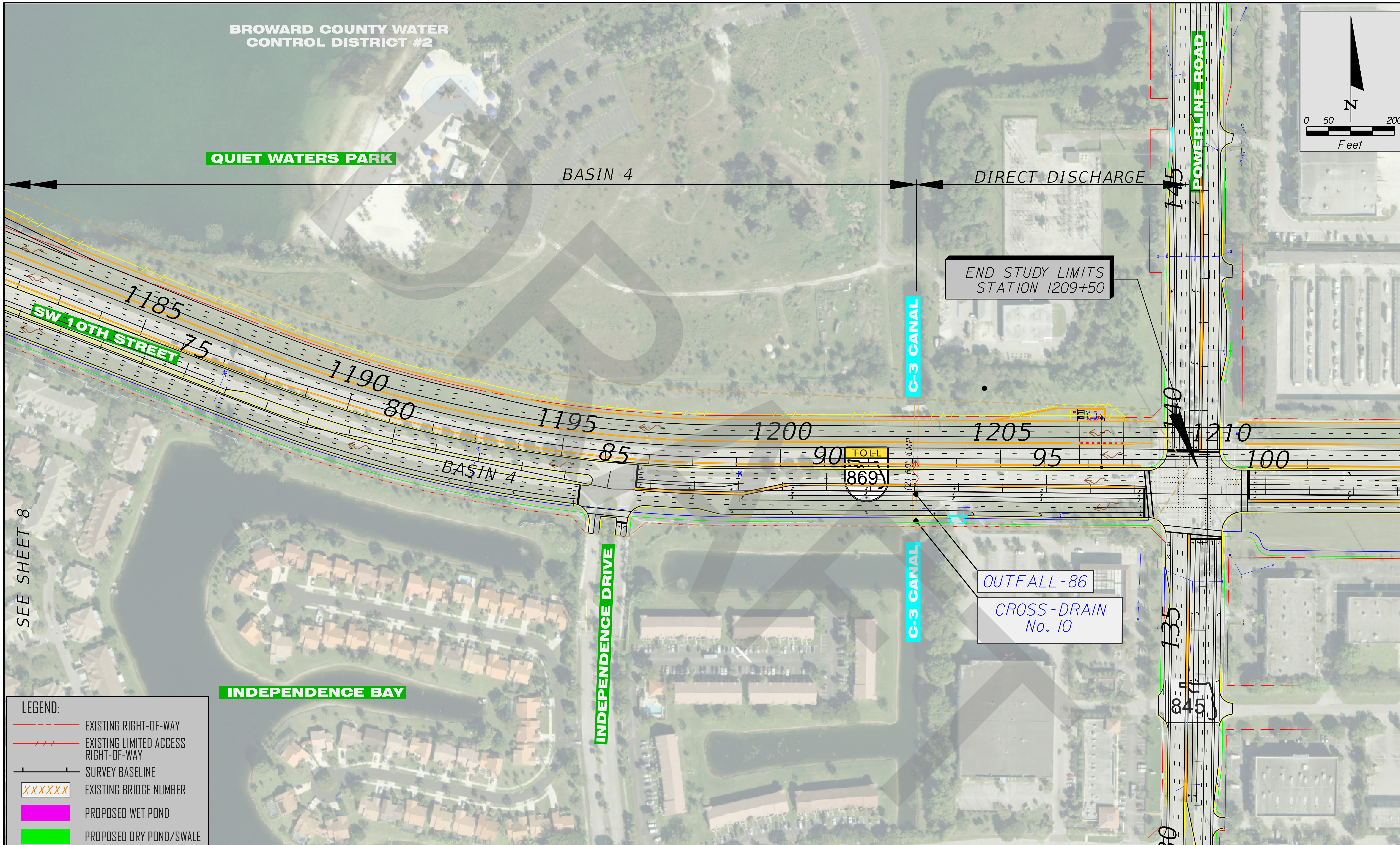
OCTOBER 2023

TOLL 869

SAWGRASS EXPRESSWAY (SR 869) WIDENING PD&E STUDY
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
FPID No.: 437153-1-22-01
ETDM No: 14280

SW 10TH STREET (SR 869)
DRAINAGE MAP

SHEET NO.
8



FLORIDA'S TURNPIKE ENTERPRISE
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OCOEE, FL 34761

OCTOBER 2023

SAWGRASS EXPRESSWAY (SR 869) WIDENING PD&E STUDY
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
FPID No.: 437153-1-22-01
ETDM No: 14280

SW 10TH STREET (SR 869)
DRAINAGE MAP

SHEET NO.
9

FLORIDA'S TURNPIKE

FDOT

FLORIDA'S TURNPIKE ENTERPRISE
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OCOEE, FL 34761

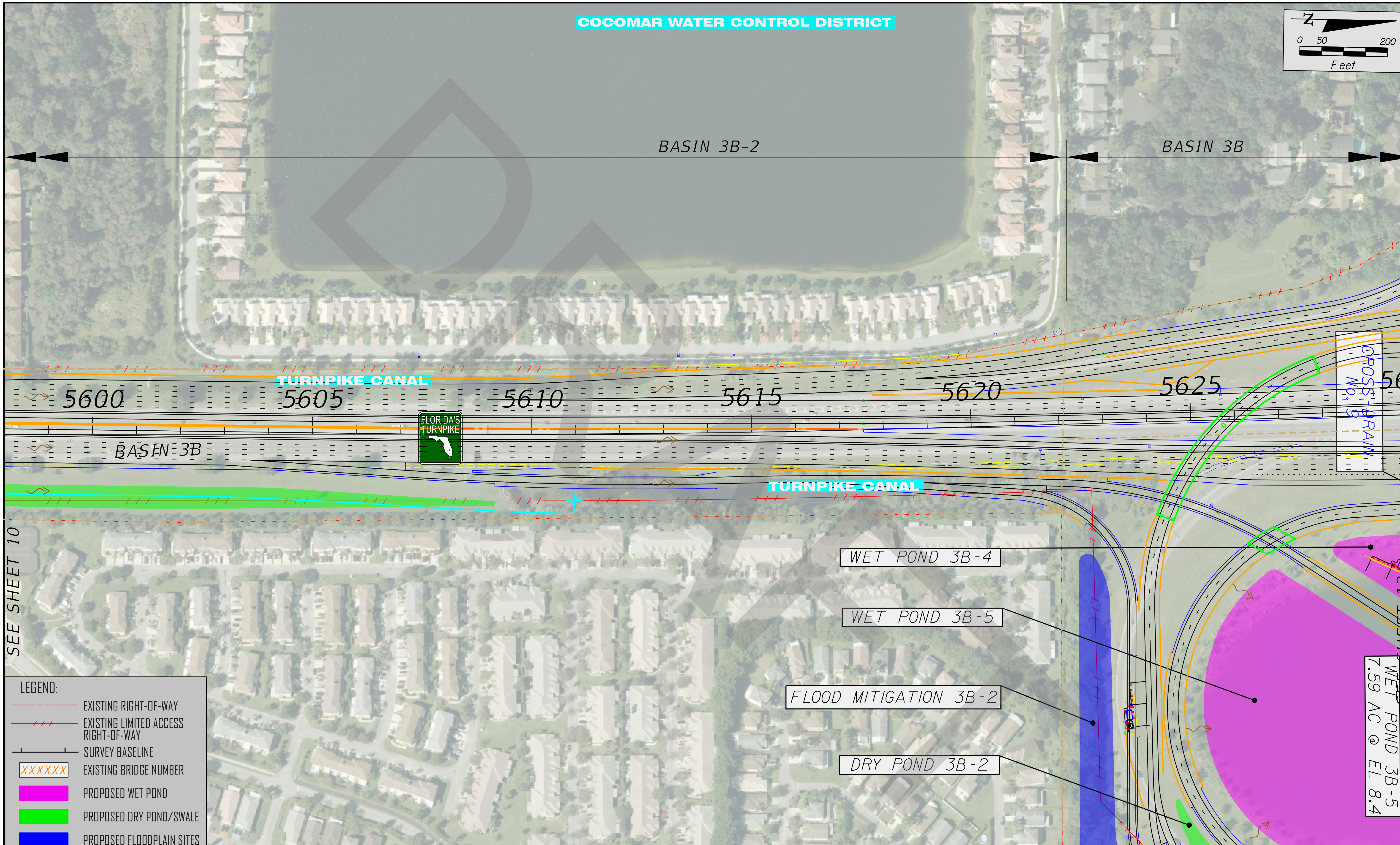
OCTOBER 2023

TOLL 869

SAWGRASS EXPRESSWAY (SR 869) WIDENING PD&E STUDY
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
FPID No.: 437153-1-22-01
ETDM No: 14280

FLORIDA'S TURNPIKE (SR 91)
DRAINAGE MAP

SHEET NO.
10



FLORIDA'S TURNPIKE ENTERPRISE
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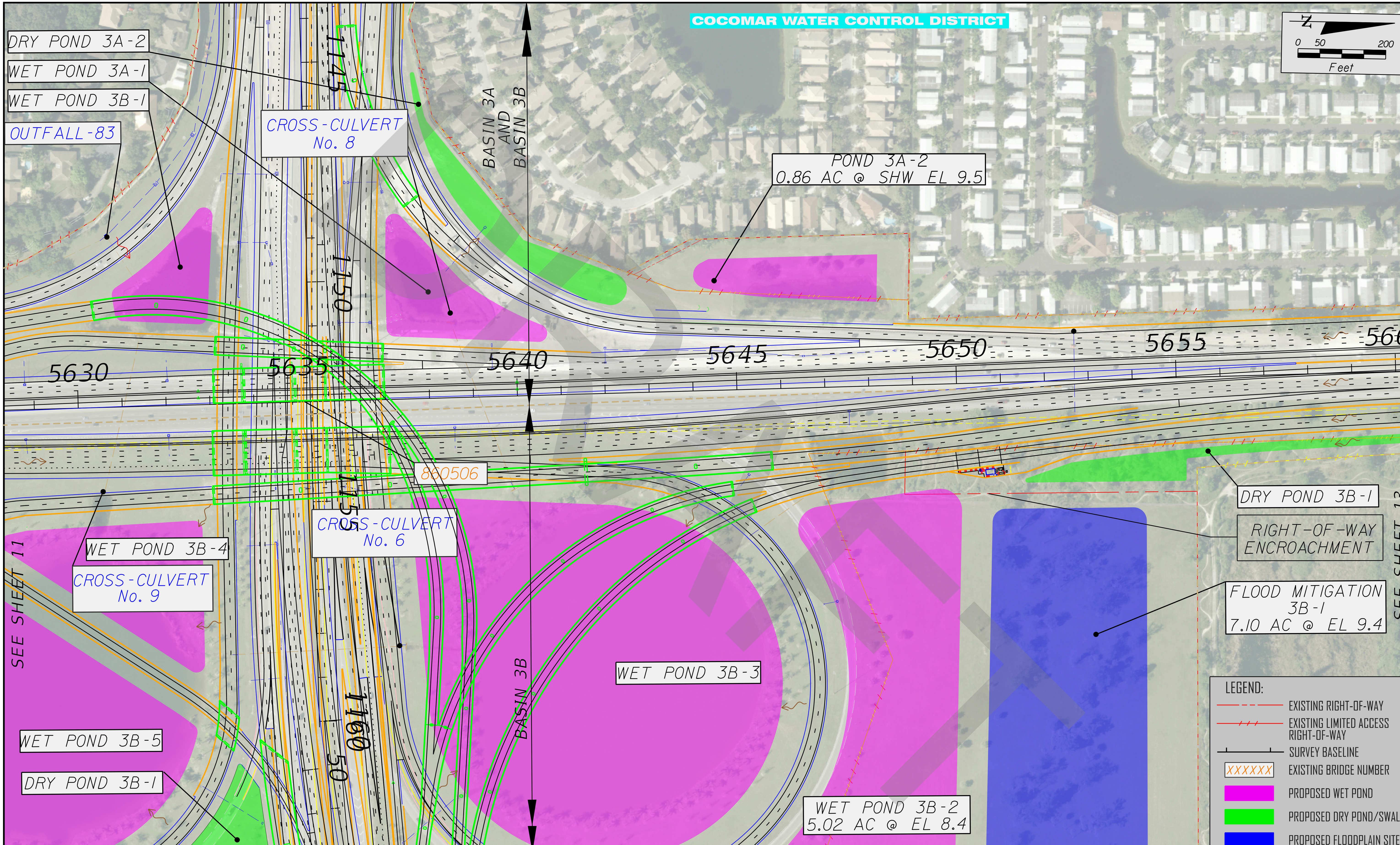
OCTOBER 2023

TOLL 869

SAWGRASS EXPRESSWAY (SR 869) WIDENING PD&E STUDY
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
FPID No.: 437153-1-22-01
ETDM No: 14280

FLORIDA'S TURNPIKE (SR 91)
DRAINAGE MAP

SHEET NO.
11



FLORIDA'S TURNPIKE ENTERPRISE
MILE POST 263 - TURKEY LAKE SERVICE PLAZA, BUILDING 5315
OCOEE, FL 34761

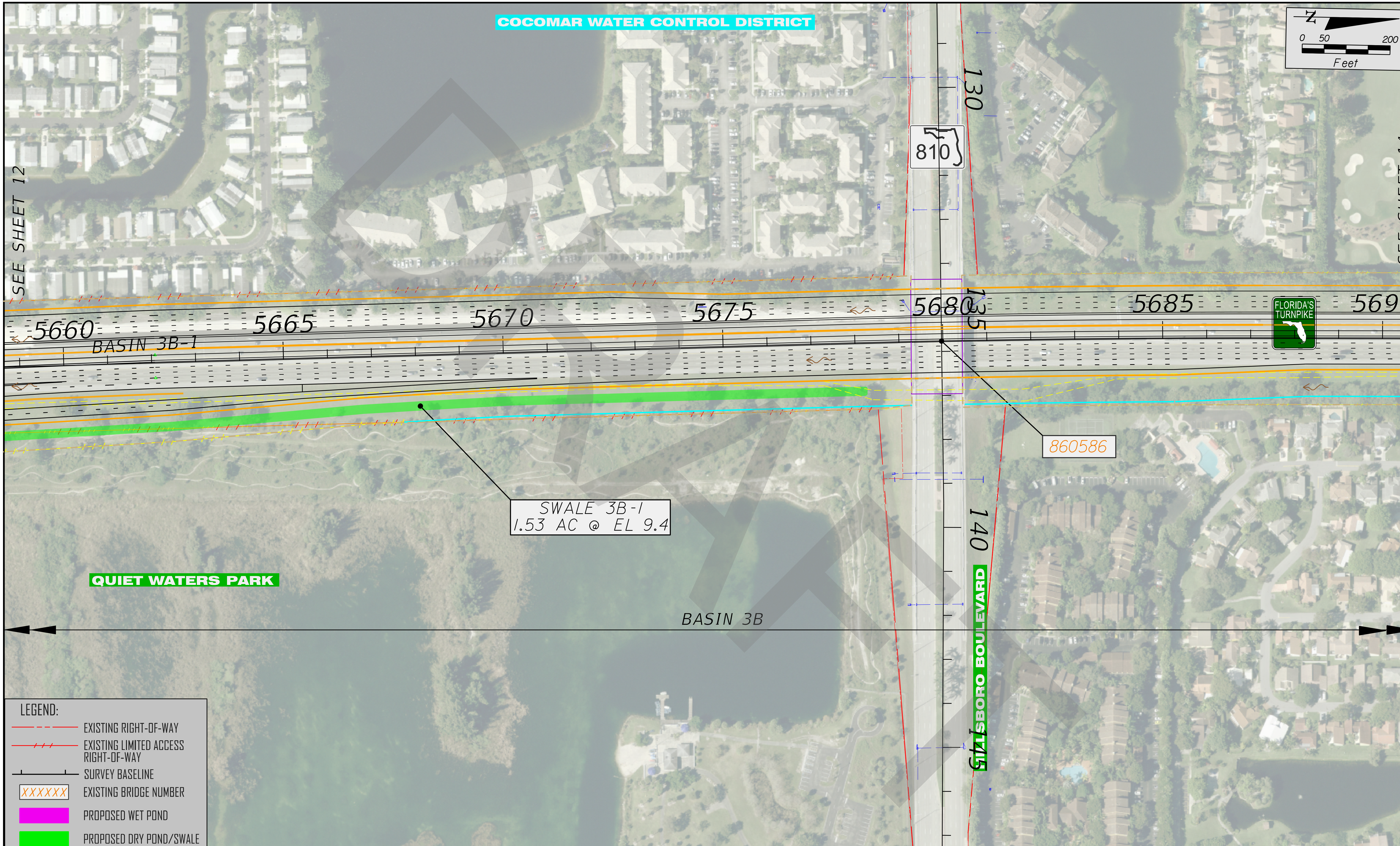
OCTOBER 2023

TOLL 869

SAWGRASS EXPRESSWAY (SR 869) WIDENING PD&E STUDY
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
FPID No.: 437153-1-22-01
ETDM No: 14280

FLORIDA'S TURNPIKE (SR 91)
DRAINAGE MAP

SHEET NO.
12



FLORIDA'S TURNPIKE ENTERPRISE
MILE POST 263 - TURKEY LAKE SERVICE PLAZA, BUILDING 5315
OCOEE, FL 34761

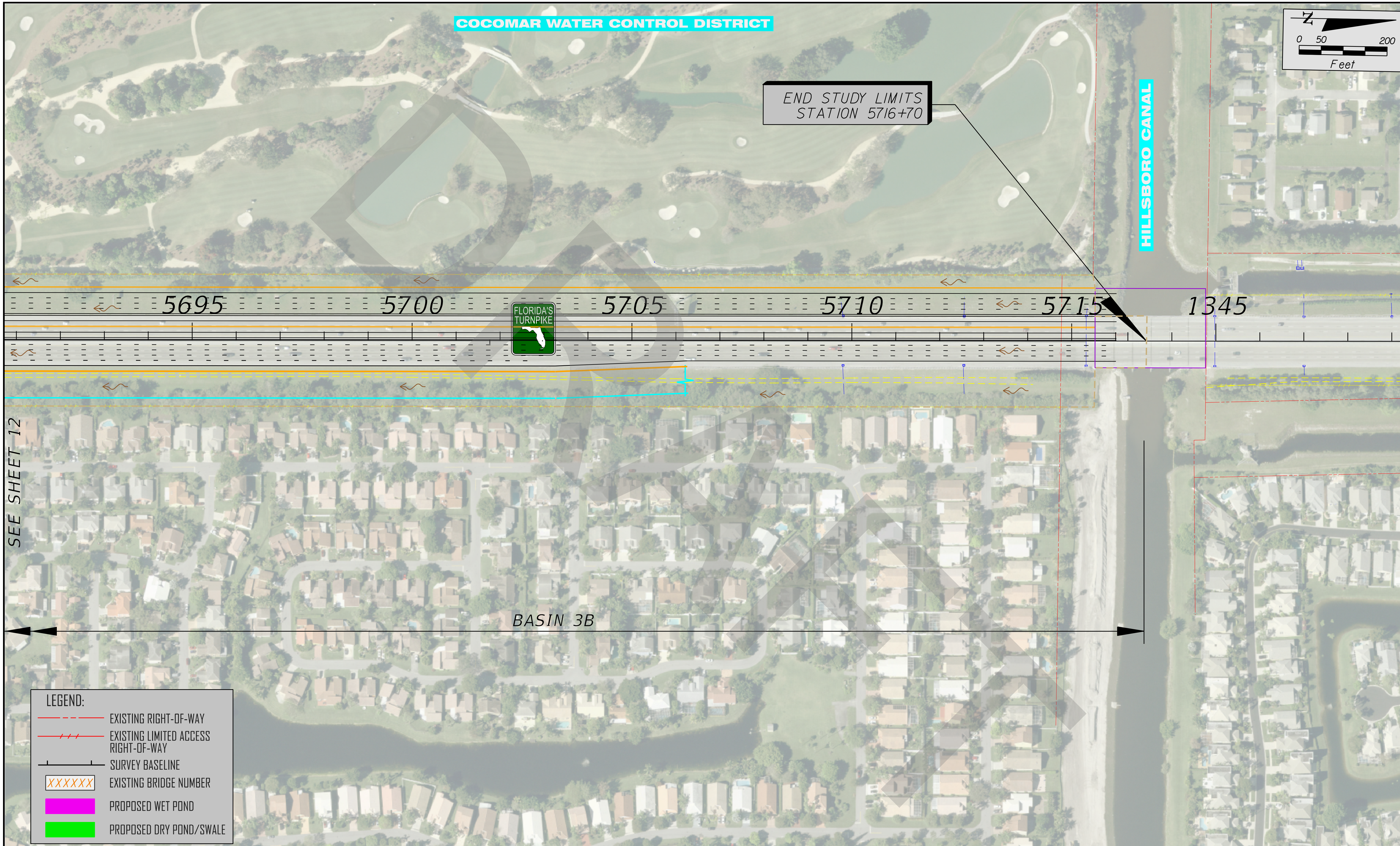
OCTOBER 2023

TOLL 869

SAWGRASS EXPRESSWAY (SR 869) WIDENING PD&E STUDY
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
FPID No.: 437153-1-22-01
ETDM No: 14280

FLORIDA'S TURNPIKE (SR 91)
DRAINAGE MAP

SHEET NO. 13



FLORIDA'S TURNPIKE ENTERPRISE
MILE POST 263 - TURKEY LAKE SERVICE PLAZA, BUILDING 5315
OCOEE, FL 34761

OCTOBER 2023

TOLL 869

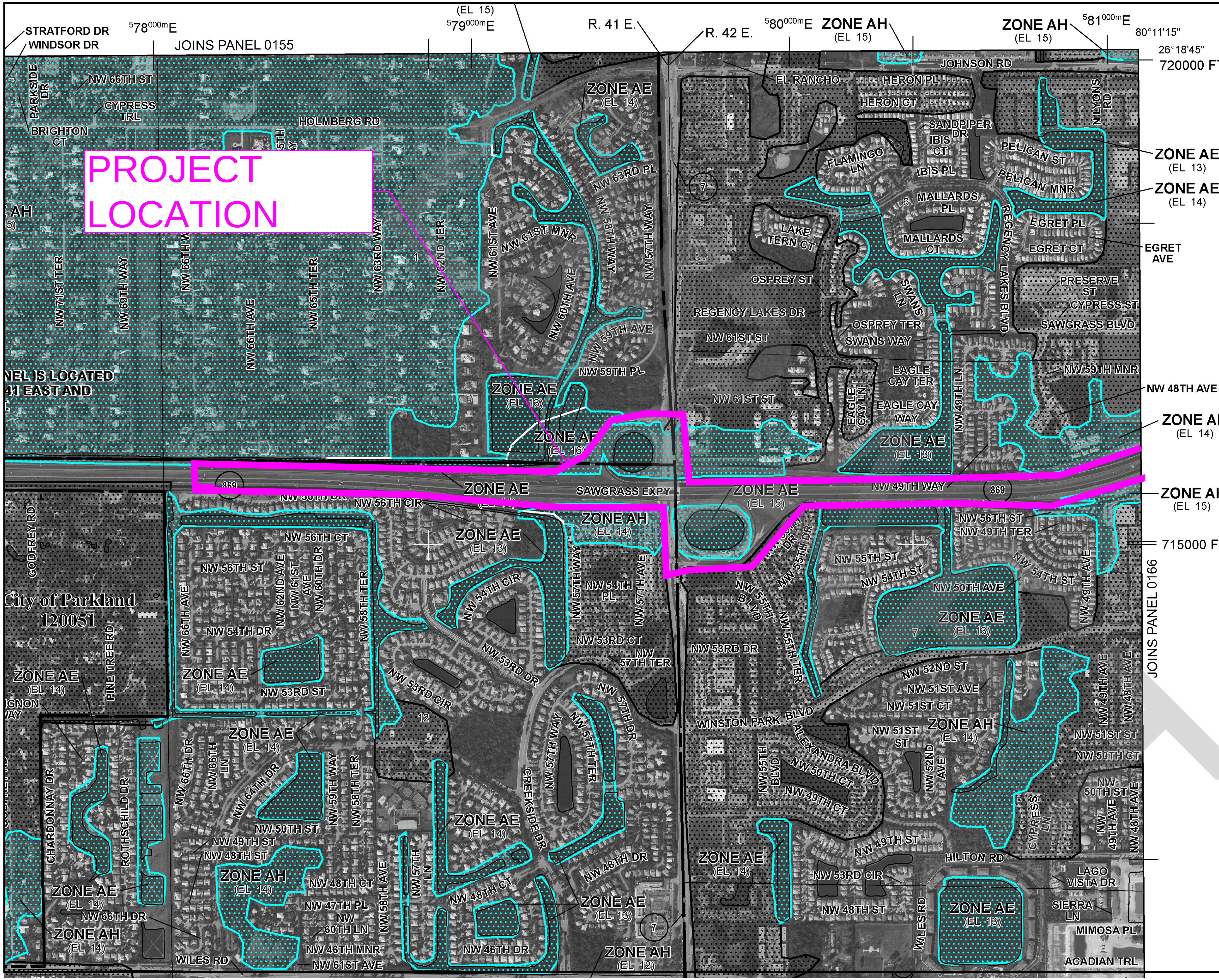
SAWGRASS EXPRESSWAY (SR 869) WIDENING PD&E STUDY
From South of US 441/SR 7 (MP 18.0) to Powerline Road (MP 22.0)
FPID No.: 437153-1-22-01
ETDM No: 14280

FLORIDA'S TURNPIKE (SR 91)
DRAINAGE MAP

SHEET NO. 14

APPENDIX D

FEMA Maps & Floodplain Compensation Calculations



e Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

0 500 1,000 1,500 2,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0165H

FIRM

FLOOD INSURANCE RATE MAP

BROWARD COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 165 OF 751

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COCONUT CREEK, CITY OF	120031	0165	H
CORAL SPRINGS, CITY OF	120033	0165	H
MARGATE, CITY OF	120047	0165	H
PARKLAND, CITY OF	120051	0165	H
SEMINOLE TRIBE OF FLORIDA	120685	0165	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
12011C0165H

EFFECTIVE DATE
AUGUST 18, 2014

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded tenth-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in preparation of this map was Transverse Mercator State Plane Florida East FIPS 0901. The **horizontal datum** was NAD83 HARN, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.mgs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by Broward County. The original orthophotographic base imagery was provided in color with a one-foot pixel resolution at a scale of 1" = 300' from photography flown in 2008.

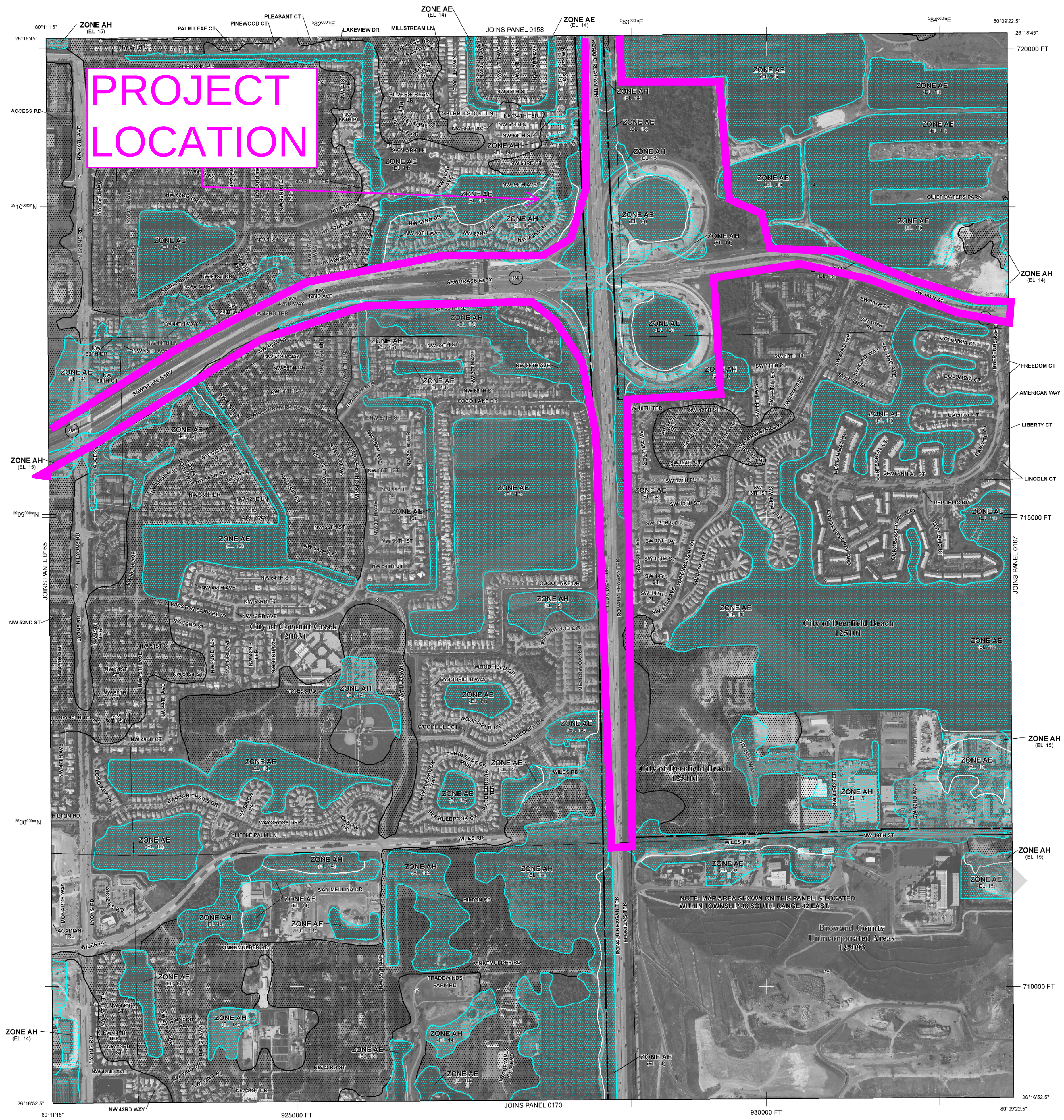
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange** at 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema/gov. Available products may include previously issues Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

The **"profile base lines"** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the profile base line, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities

~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)- - - -(23)	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4275000mE	1000-meter Universal Transverse Mercator grid ticks, zone 17
6000000 FT	5000-foot grid values: Florida State Plane coordinate system, East Zone (FIPSZONE = 0901), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 18, 2014

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0166H

FIRM

FLOOD INSURANCE RATE MAP

BROWARD COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 166 OF 751

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

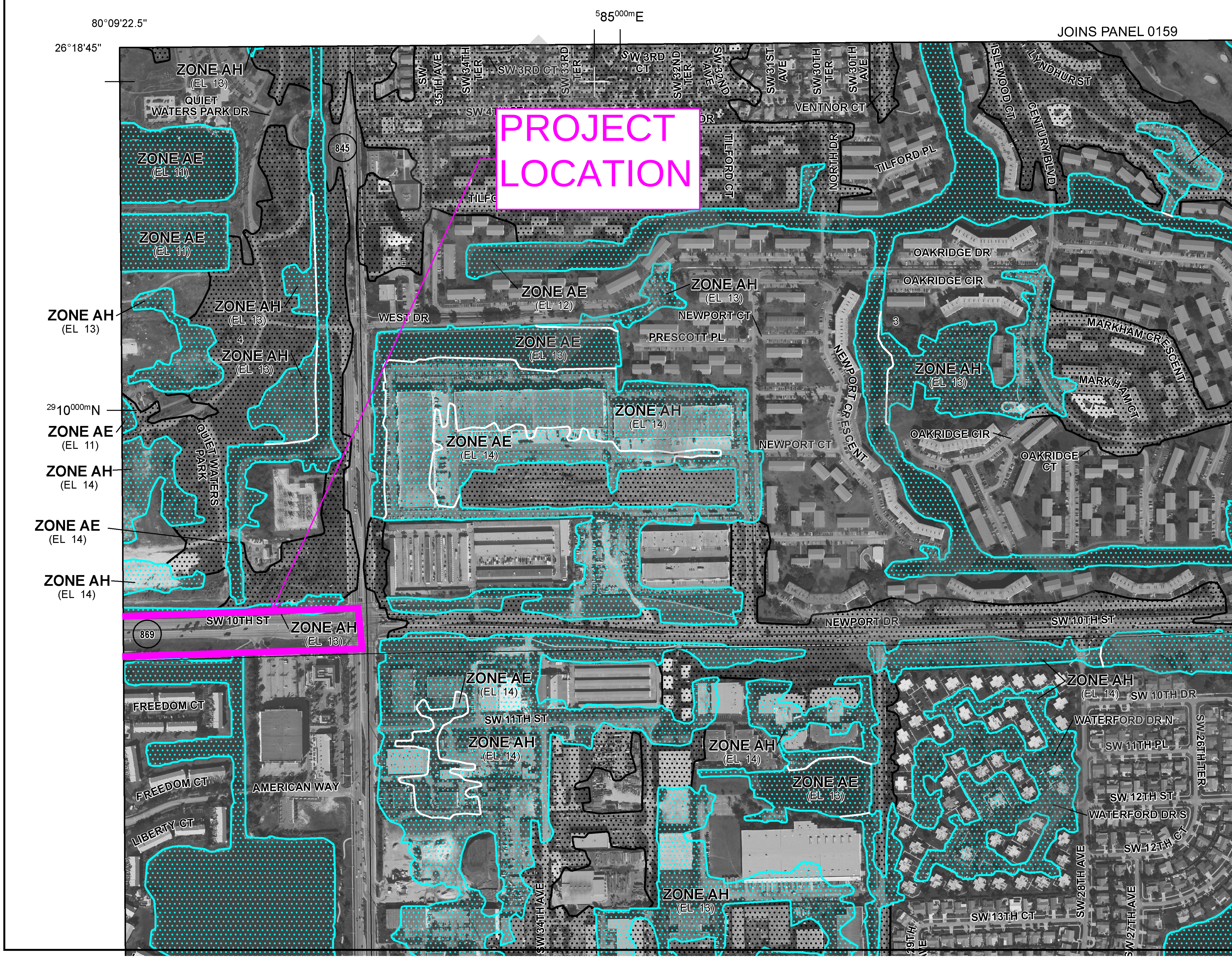
COMMUNITY	NUMBER	PANEL	SUFFIX
BROWARD COUNTY	125093	0166	H
COCONUT CREEK, CITY OF	120031	0166	H
DEERFIELD BEACH, CITY OF	125101	0166	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
12011C0166H

EFFECTIVE DATE
AUGUST 18, 2014

Federal Emergency Management Agency



...ance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

0 250 500 750 1,000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

NFIP

PANEL 0167H

FIRM

FLOOD INSURANCE RATE MAP

BROWARD COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 167 OF 751

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BROWARD COUNTY	125093	0167	H
DEERFIELD BEACH, CITY OF	125101	0167	H

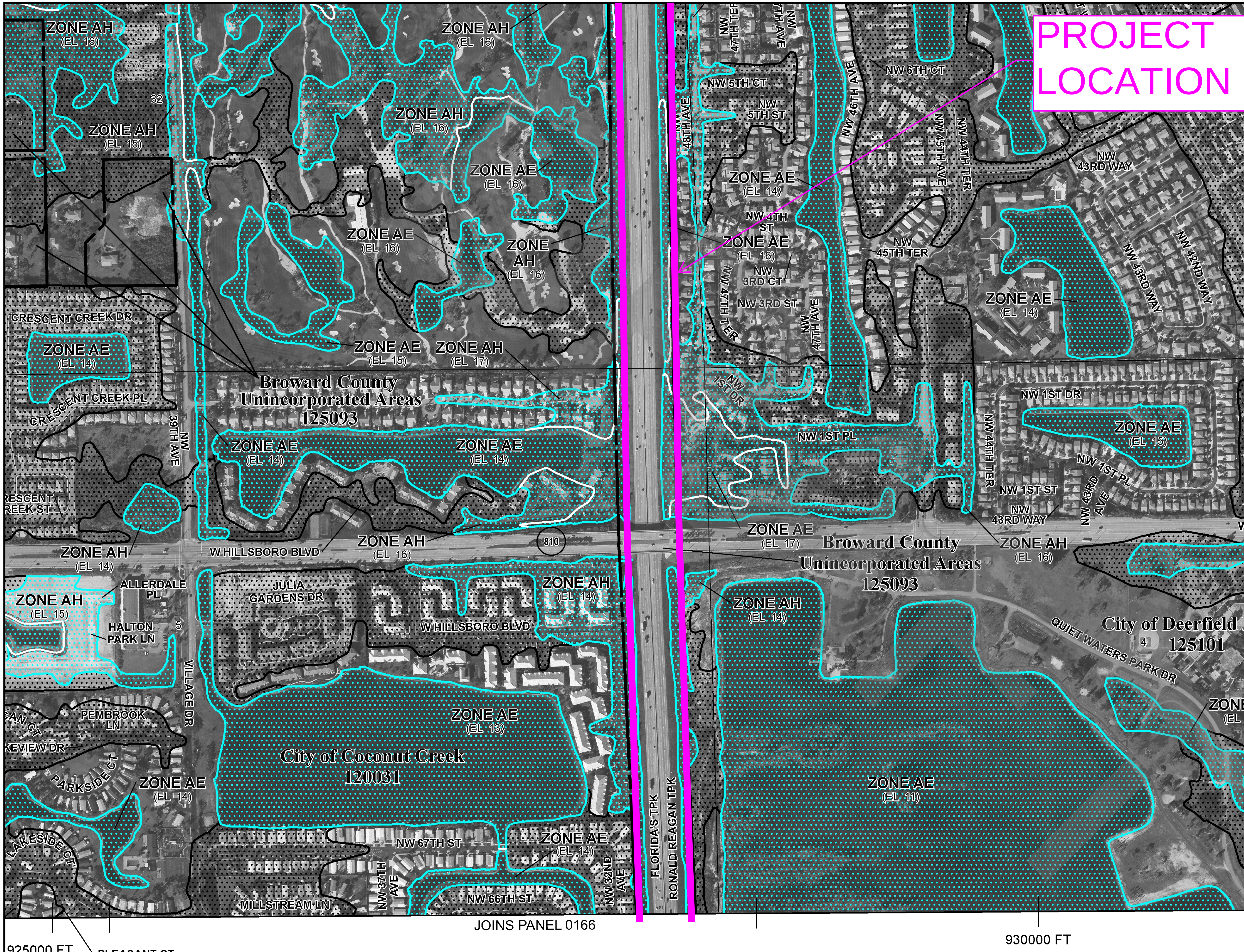
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
12011C0167H

EFFECTIVE DATE
AUGUST 18, 2014

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



...ance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

0 250 500 750 1,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0158H

FIRM
FLOOD INSURANCE RATE MAP
BROWARD COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 158 OF 751

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BROWARD COUNTY	125093	0158	H
COCONUT CREEK, CITY OF	120031	0158	H
DEERFIELD BEACH, CITY OF	125101	0158	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 12011C0158H

EFFECTIVE DATE AUGUST 18, 2014

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded tenth-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in preparation of this map was Transverse Mercator State Plane Florida East FIPS 0901. The **horizontal datum** was NAD83 HARN, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.mgs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by Broward County. The original orthophotographic base imagery was provided in color with a one-foot pixel resolution at a scale of 1" = 300' from photography flown in 2008.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange** at 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema/gov. Available products may include previously issues Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

The **"profile base lines"** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the profile base line, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities

~~~ 513 ~~~ Base Flood Elevation line and value; elevation in feet*

(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)——(A) Cross section line

(23)- - - -(23) Transect line

97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

4275000mE 1000-meter Universal Transverse Mercator grid ticks, zone 17

6000000 FT 5000-foot grid values: Florida State Plane coordinate system, East Zone (FIPSZONE = 0901), Transverse Mercator projection

DX5510 × Bench mark (see explanation in Notes to Users section of this FIRM panel)

● M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 18, 2014

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0158H

FIRM

FLOOD INSURANCE RATE MAP

BROWARD COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 158 OF 751

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BROWARD COUNTY	125093	0158	H
COCONUT CREEK, CITY OF	120031	0158	H
DEERFIELD BEACH, CITY OF	125101	0158	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
12011C0158H

EFFECTIVE DATE
AUGUST 18, 2014

Federal Emergency Management Agency
~~~

Summary of Floodplain Compensation Calculations

LOCAL WATER MANAGEMENT DISTRICT	PROJECT BASIN	FLOODPLAIN ENCROACHMENT (AC-FT)	Provided Storage In	FLOODPLAIN COMPENSATION (AC-FT)
Pinetree Water Management District	BASIN 1	0.98	POND 1-1	1.26
Cocomar Water Management District	BASIN 2 & 3A	8.50	POND 2-1	5.17
Broward County Water Management District # 2	BASIN 3B, 3B-1, 3B-2 & 4	38.76	FLOOD MITIGATION 3B-1	18.70
			FLOOD MITIGATION 3B-2	23.26
	PROJECT TOTAL =	**48.24**		**48.39**

FLOODPLAIN COMPENSATION CALCULATIONS

BASIN 1

SHW EL = 10 (NAVD)

BOTTOM EL = 11 (NAVD)

FEMA 100YR El = 14

STORAGE IN DRY POND 1-1

Average Pond Area @bottom El (ac)	Average Pond Area @ El 12(ac)	Depth between Avg. Ground El 12 & Bottom El 11 (ft)	Storage provided in pond (ac-ft)
1.17	1.34	1.0	1.26

BASIN 2 & 3A

SHW EL = 9.5 (NAVD)

TREATMENT AND ATTENUATION EL = 11.0 (NAVD)

FEMA 100YR El = 15

STORAGE IN WET POND 2-1

Average c/s area between El 11 & 15 (sf)	Periphery of POND 2-1 (ft)	Storage provided in POND 2-1	Storage provided in pond (ac-ft)
116.0	1943.00	225388.0	5.17

Note: Treatment and attenuation will be provided between SHW El 9.5 and El 11.0. Therefore the storage is excluded as floodplain compensation

BASIN 3B & 4

SHW EL = 8.4 (NAVD)

AVG. EXIST. GR EL = 12.00

FEMA 100YR El = 14

STORAGE IN FLOOD MITIGATION 3B-1 (DRY)

Average Pond Area @ Bottom El 9.4 (ac)	Average Pond Area @ El 12.0 (ac)	Depth between Avg. Ground El 12 & Bottom El 9.4 (ft)	Storage provided in pond (ac-ft)
7.06	7.33	2.6	18.70

SHW EL = 8.4 (NAVD)
AVG. EXIST. GR EL = 12.50
FEMA 100YR El = 14
STORAGE IN FLOOD MITIGATION 3B-2 (DRY)

Average Pond Area @ Bottom El 9.4 (ac)	Average Pond Area @ El 12.5 (ac)	Depth between Avg. Ground El 12 & Bottom El 9.4 (ft)	Storage provided in pond (ac-ft)
7.34	7.67	3.1	23.26

FLOODPLAIN ENCROACHMENT CALCULATIONS

BASIN 1

SHW EL = 10 (NAVD)

Station	OFFSET/RT (FEMA 100YR El = 14)				OFFSET/LT				REQUIRED FLOODPLAIN COMPENSATION (AC-FT)	PROVIDED FLOODPLAIN COMPENSATION (AC-FT)
	Area of Fill within Flood Plain (sf)	Average (sf)	Length (ft)	Volume of Fill within FloodPlain (ac-ft)	Area of Fill within Flood Plain (sf)	Average	Length	Volume of Fill within FloodPlain (ac-ft)		
1033+00	91.1				0					
1037+00	5.9	42.5	1000	0.98	0	0	0	0.00	0.98	
1039+00	30.5				0					
									0.98 ac-ft	1.26

BASIN 2 & 3A

SHW EL = 8.4 (NAVD)

Station	OFFSET/RT (FEMA 100YR El = 14)				OFFSET/LT (FEMA 100YR El = 16)				REQUIRED FLOODPLAIN COMPENSATION (AC-FT)	PROVIDED FLOODPLAIN COMPENSATION (AC-FT)
	Area of Fill within Flood Plain (sf)	Average (sf)	Length (ft)	Volume of Fill within FloodPlain (ac-ft)	Area of Fill within Flood Plain (sf)	Average	Length	Volume of Fill within FloodPlain (ac-ft)		
1044+00	0	0	0	0	283.2	266.6	1000	6.12	6.12	
1046+00	0				250.0					
	OFFSET/RT (FEMA 100YR El = 15)				OFFSET/LT (FEMA 100YR El = 15)					
1152+00	20.40	20.4	200	0.09	78.9	78.9	200	0.36	0.46	
	OFFSET/RT (FEMA 100YR El = 14)				OFFSET/LT (FEMA 100YR El = 15)					
1088+00	52.65				67.3					
1090+00	66.05	63.3	300	0.44	149.2	108.2	600	1.49	1.93	
1091+00	71.30				1652.5					
									8.50 ac-ft	5.17

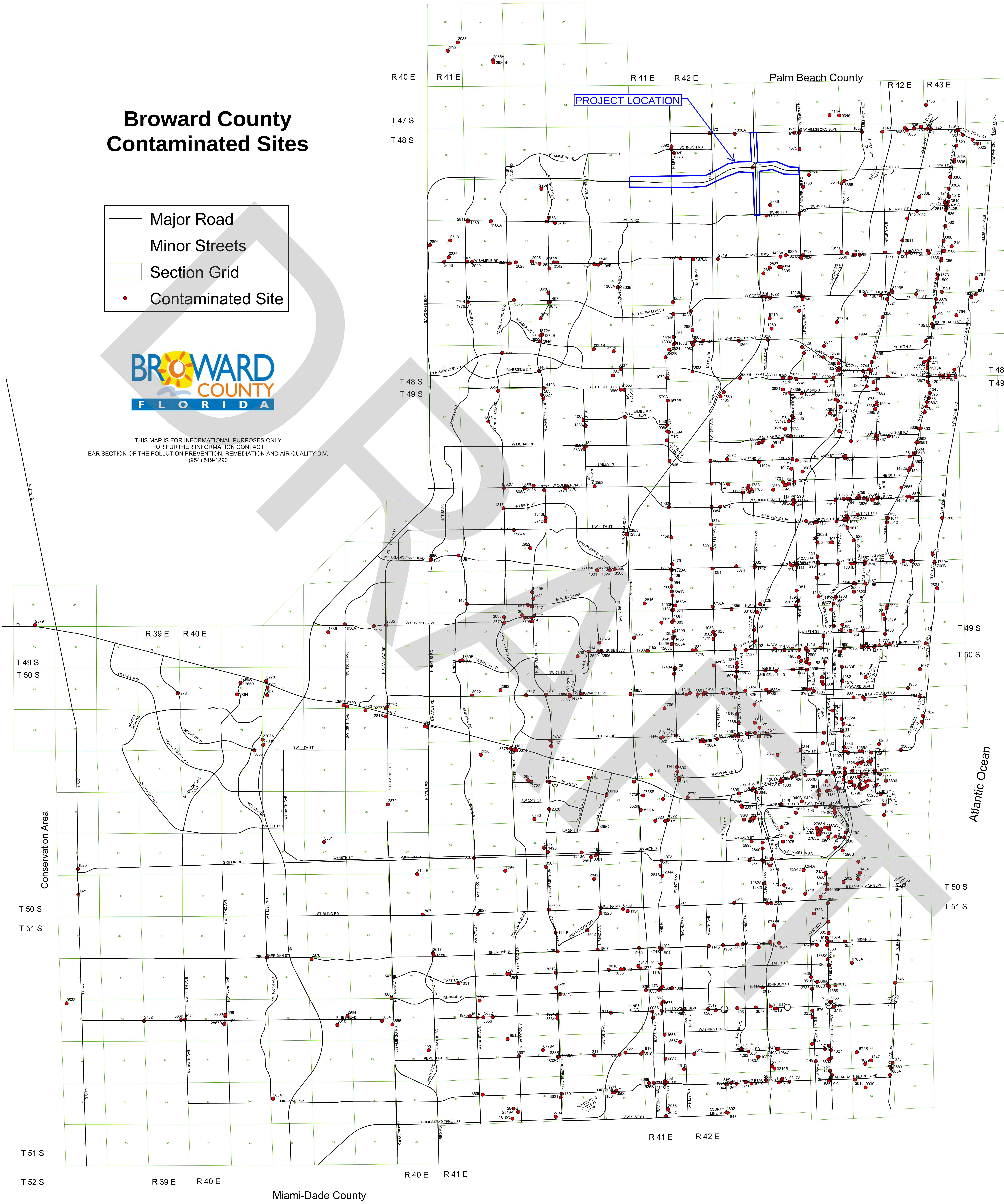
<u>BASIN 3B, 3B-1, 3B-2 & 4</u>

SHW EL = 8.4 (NAVD)

Station	OFFSET/RT (FEMA 100YR El = 14)				OFFSET/LT (FEMA 100YR El = 14)				REQUIRED FLOODPLAIN COMPENSATION (AC-FT)	PROVIDED FLOODPLAIN COMPENSATION (AC-FT)
	Area of Fill within Flood Plain (sf)	Average (sf)	Length (ft)	Volume of Fill within FloodPlain (ac-ft)	Area of Fill within Flood Plain (sf)	Average	Length	Volume of Fill within FloodPlain (ac-ft)		
5580+00	0	0	0	0	195.35	202.7	1200	5.58	5.58	
5590+00	0				210					
5610+00	381.3	403.3	1200	11.11	0	0.0	0	0.00	11.11	
5620+00	425.3				0					
5650+00	524.3	233.9	3200	17.18	13.7	46.3	3200	3.40	20.59	
5660+00	75.2				79.0					
5665+00	102.3				84.1					
5681+00	0.0	0.0	0	0.00	14.0	19.0	3400	1.48	1.48	
5715+00	0.0				24.0					
									38.76 ac-ft	18.70

APPENDIX E

Contaminated Sites and Excerpts of Draft CSER



Environmental Protection & Growth Management Department
Updated February 2013, Subject to Further Revision

0 0.5 1 2 3 Miles

o:\PPR\EAR\earmap2013.mxd

5.2 Government Database and Regulatory File Review

Information regarding potentially contaminated sites was obtained through the ETDM system, EST contamination layer, and Florida Geographic Data Library Geographic Information System (GIS) layers as well as the FDEP OCULUS, FDEP Map Direct, Broward County and USEPA RCRA contamination databases. These data sources include information on biomedical waste sites, brownfield location boundaries, dry cleaners, gasoline stations, hazardous waste sites, NPL and Superfund sites, nuclear site locations, State Underground Petroleum Environmental Response Act (SUPER Act) Risk Sources, solid waste facilities, storage tanks, RCRA facilities, and sites where environmental contamination has been documented in the soil or groundwater.

5.3 Historical Aerial Photograph Review

A review of historical aerial photos was performed using a website from the University of Florida Digital Collections (http://ufdc.ufl.edu/aerials/all/table/2), which contained aerial photographs of the project area from 1949, 1958 and 1984. Aerial photographs from 1995 to today's date were reviewed using the Google Earth historical imagery function. The aerial images were reviewed for potential contamination concerns, including but not limited to mounds, depressions, storage areas or drastic changes in landscaping or geographic features. Prior to 1980s, the region around the project was mostly undeveloped or used as agricultural land and most of the available aerial photography lacks labeled reference points (e.g. major roads) necessary to identify the project corridor. A brief discussion of the review of historic aerial photographs is provided below.

- 1949- The area around the project is predominantly undeveloped or under agricultural use.

- 1958- Additional roads are visible and expanded agricultural areas are evident.

- 1984- Only the far eastern portion of the Broward County is visible. An extensive network of roads and canals near the coast is visible and there is evident urbanization in the region.

- 1995- The project area is predominantly developed with residential land uses simliar to the present configuration. The current road network is in place, and multiple drainage ponds are visible.

- 1999- Additional residential development is especially evident between US 441 and Powerline Road.

- 2002- Residential and commercial development as filled in much of the remaining undeveloped land, particularly just south of N. Hillsborough Blvd and east of US 441 and near the intersection of Florida's Turnpike and NW 48th Street.

- 2005- Little major changes are evident as the majority of the region has been urbanized. Small infill developments are visible.

5.4 Field Reviews

Field observations to determine the potential for contamination include visual inspections for pipes, storage tanks or other infrastructure, and changes in topography, mounding, or depresssions that may indicate subsurface concerns. Field inspections also note any staining, odor, or distressed vegetation that could indicate a spill or release of contaminants and when available include interviews with local residents and business employees. Photographs and notes about each potentially contaminated site are also collected.

Field reviews of the project area were conducted on October 14 and 18, 2019. Data was collected to determine the location of potentially contaminated sites and the current occupancy and operations.

5.5 Risk Ratings

Based on the compilation of data collection activities described above, each site was assigned a risk rating as outlined in the FDOT *PD&E Manual*. The ratings system expresses the degree of concern for a potential contamination impact to the project via cost and schedule. Each site was assigned a contamination risk rating of No, Low, Medium, or High based on the following criteria:

1. No - A review of available information on the property and a review of the design plans indicates there is no potential for contamination to impact the project. It is possible that contaminants had been handled on the property. However, all information (assessment reports, monitoring well abandonments, results of recent soil and groundwater sampling, etc.) indicate that contamination impacts are not expected.

2. Low - A review of available information indicates that former or current activities on the property have an ongoing contamination concern, has a hazardous waste generator identification (ID) number, or handles hazardous materials in some capacity. However, based on all available information and current design plans, it is not likely that there would be any contamination impacts related to this project.

3. Medium – After a review of all available information, the potential contamination has been identified. This may include known soil and/or groundwater contamination that may not require remediation, is currently being remediated, or that is currently in the monitoring only phase. The complete status of remediation is important to determine what FDOT must do if the property were to be acquired. If there is insufficient reliable information (such as regulatory records or site historical documents) to make a determination as to the potential for contamination, and there is reasonable suspicion that contamination may exist, the property should be rated at least as a "Medium".

   A recommendation should be made for each property in this category based on whether it would be within the proposed project, what additional assessment or remedial actions might be required if the property is acquired, and the possible requirements for additional actions if there is a need to avoid the property.

   This ranking is the lowest possible rating a currently operating petroleum fueling, or storage facility can receive in an assessment document, based on its distance to the right-of-way, contamination type, need for dewatering in the area, etc.

4. High - After a review of all available information and current conceptual or design plans, there is a reasonable potential for contamination impacts during construction. Once the Design Alternative has been selected, sites rated with high contamination potential require further assessment to confirm and delineate potential contaminants and to determine if remediation or special construction provisions will be needed during construction. The recommendation for this rating should include a listing of the parameters of concern and media to be assessed, and if known, what construction activities will occur within or adjacent to the contaminated media. Properties used historically as gasoline stations, and which have not been evaluated or assessed, would likely receive this rating.

6.0 POTENTIAL PROJECT IMPACTS

6.1 POTENTIALLY CONTAMINATED SITES

After screening for sites within appropriate buffers, a total of 16 sites of potential contamination risk were identified. Those include two High Risk, five Medium Risk, and nine Low Risk sites (**Error! Reference source not found.** None of these p otentially contaminated sites are proposed for right-of-way acquisition. Information on each site is summarized in ***Table 6.2*** and locations are shown in ***Figures 6.1*** and **6.2Error! Reference source not found.**. Individual site descriptions, i ncluding field observations and a summary of available documentation, are provided in the text below. ***Appendix A*** contains regulatory documents and information associated with each site and ***Appendix B*** contains photographs related to each Medium and High risk site.

Table 6.1— Contamination Risk Rating Summary for Preferred Alternative

Risk Rating	Number of Sites	Sites Proposed for Right-of-Way Acquisition Under Preferred Alterative
Low	9	0
Medium	5	0
High	2	0

Table 6.2— Sites of Potential Contamination Risk

Site #	Facility Name	Address/Location	Facility ID (FDEP/RCRA)	Databases	Concern	Distance to Preferred Alternative	Risk Rating
1	Lou Bachrodt Chevrolet/Mazda	5500 N Hwy 7	9700091	STCM	Storage Tank	Adjacent	Low
2	Capella Farms Inc	5730 N SR 7	8625849	FDEP STCM	Historic record of Underground Storage Tank	Within FDOT right-of-way	Low
3	Residence Inn by Marriott	5730 N State Road 7	9817162	STCM	Storage Tank	Adjacent	Low
4	Club Caribe Associates	5510 NW 61st Street #101	9400067	FDEP STCM, PCTS	Diesel spill and Storage Tanks	Adjacent	Low
5	BOCA #7838	6330 N SR 7	9807767	STCM, PCTS	Retail Gas Station	Adjacent	High
6	Hampton Inn and Suites	5740 N SR 7	9814296	STCM	Diesel Storage Tank	Adjacent	Low
7	Marathon – Winston Park	5425 Lyons Road	9801357	FDEP STCM	Retail Gas Station	Adjacent	Medium
8	Coconut Creek – Shell Station	6135 Lyons Road	9805503	FDEP STCM, PCTS	Retail Gas Station	Adjacent	Medium
9	McFarlane Trucking 03-2I-0279	Deerfield Toll Plaza EB on Sawgrass	9807332	FDEP STCM, PCTS	Diesel Fuel Spill	Within FDOT right-of-way	Medium
10	Douglas Fertilizer/Liquid AG Systems	Sawgrass Expressway	ERIC 10265	ERIC	Liquid Fertilizer Spill	Within FDOT right-of-way	Low
11	Chemical Waste Mgt Pompano	2700 NW 48th St	77155917, ERIC_8689	DEP Cleanup	Waste Transfer Station	Adjacent	Low
12	Central Sanitary Landfill and Recycling Center	1801 SW 45 Way	77155916, ERIC 8682	DEP Cleanup	Mapped by FDEP Map Direct	Adjacent	Low
13	Monarch Hill	2700 Wiles Road	8622531 / 55093	FDEP STCM, Solid Waste, Institutional Controls Registry	Landfill, Leachate in groundwater	Adjacent	High
14	Med-Care Pharmacy	1052 S. Powerline Road	9100756	FDEP STCM	Storage Tanks	200 ft	Low
15	Shell – First Coast Energy #1836	1011 S Powerline Road	9800891	FDEP STCM	Retail Gas Station	Adjacent	Medium
16	FDOT Bridges and Overpasses	Throughout Project	None	None	Asbestos, Lead Based Paint, Metal Coatings	Within FDOT right-of-way	Medium

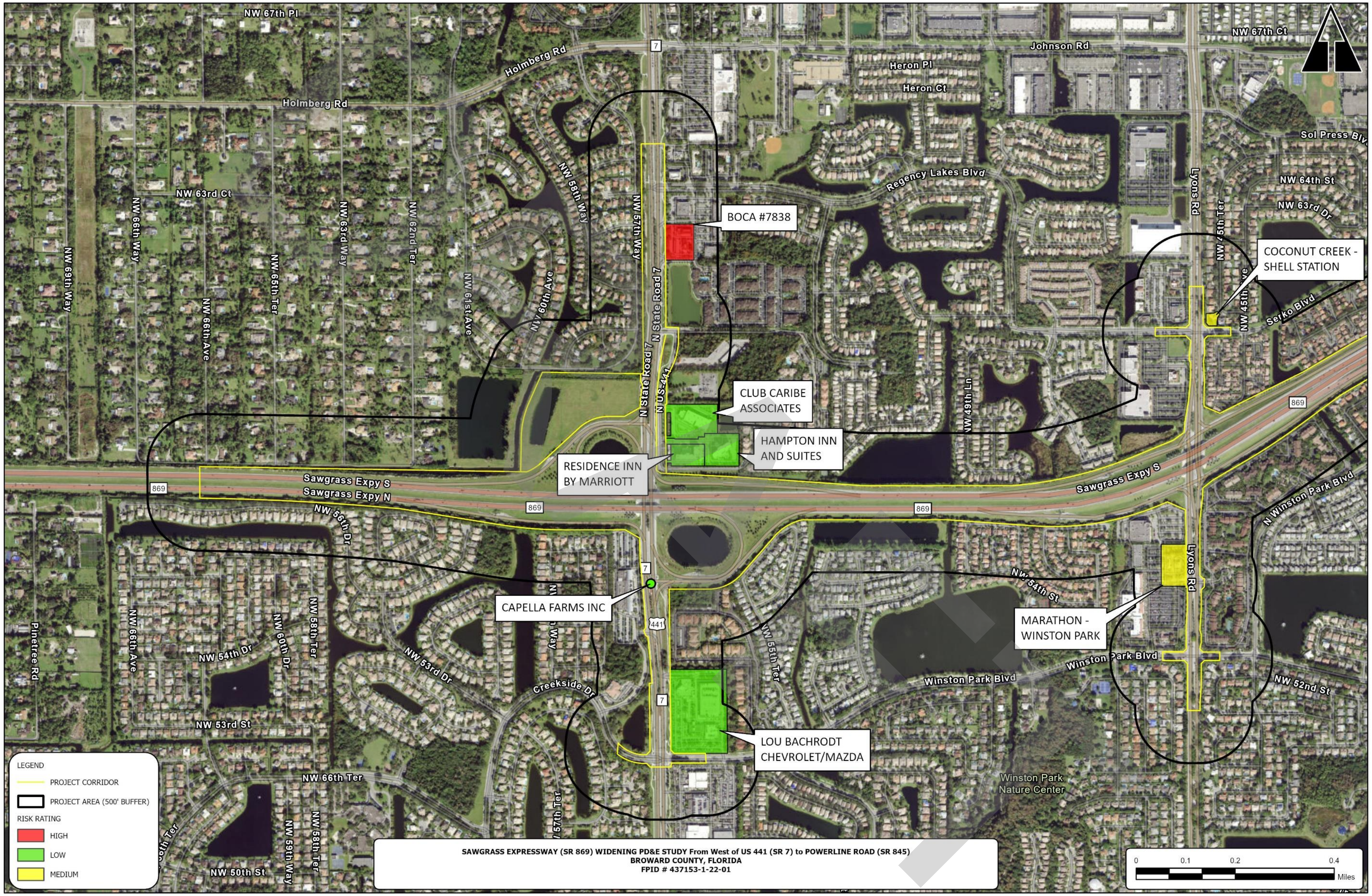


Figure 6.1 — Potentially Contaminated Sites in Western Project Area

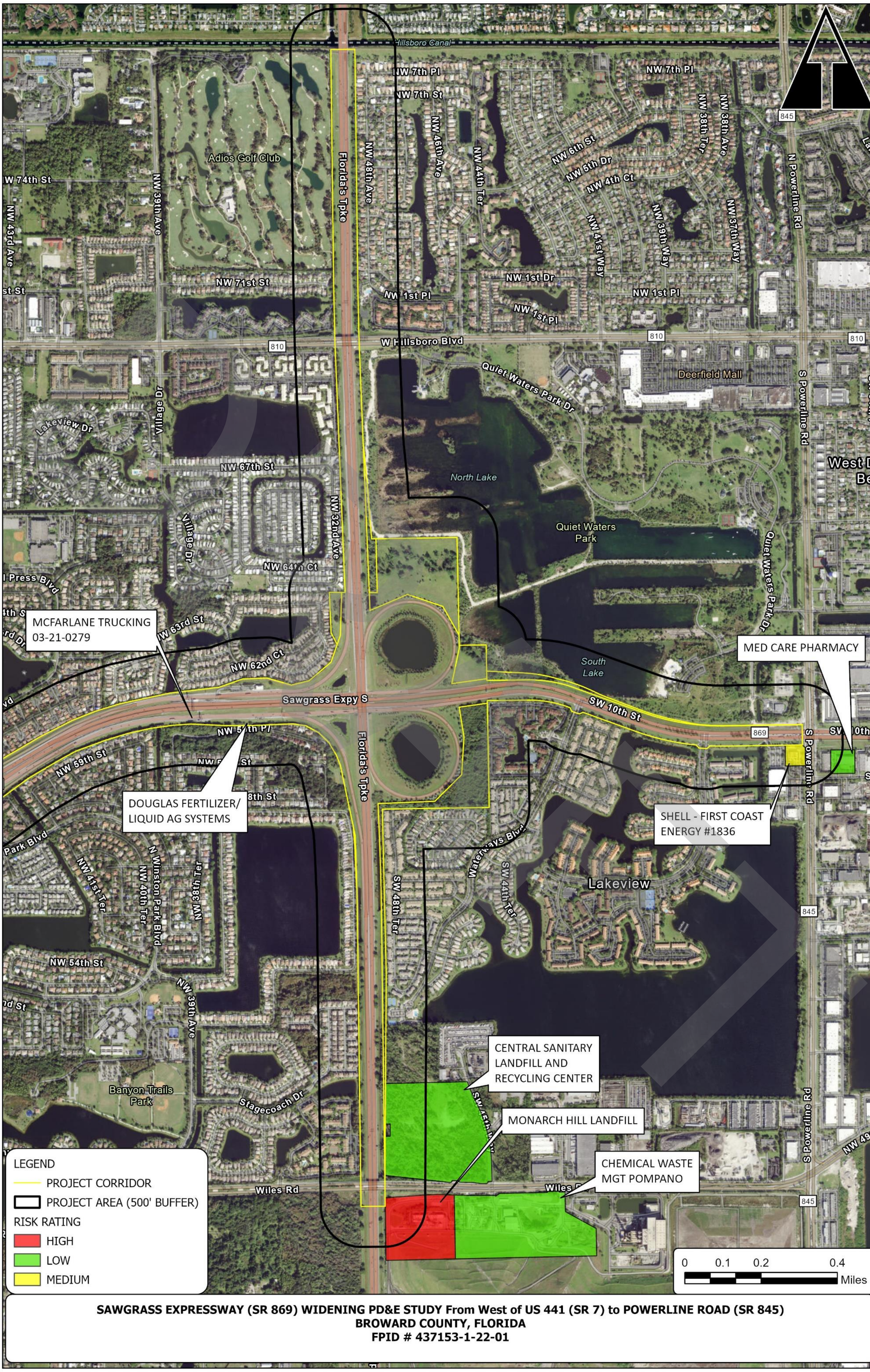


Figure 6.2 — Potentially Contaminated Sites in Eastern Project Area

6.2 Individual Site Summaries

6.2.1 Site 1 Lou Bachrodt Chevrolet/Mazda

5500 N HWY 7
Facility ID: 9700091
Risk Rating: Low
This site is a car dealership located in the northeast quadrant of the intersection of US 441 and Winston Park Boulevard. It was reported in the FDEP Storage Tank Contamination Monitoring database. Documents on file indicate the presence of one 2,000 gallon diesel storage tank and one 2,200-gallon gasoline storage tank by October 1996. There is no documented history of spills or release of any contaminants. Because this site has fuel storage tanks but no history of contaminated soil or groundwater, it is assigned a risk rating of Low.

6.2.2 Site 2 Capella Farms Inc

5730 N SR 7
Facility ID: 8625849
Risk Rating: Low
This site is located east of US 441, immediately south of Sawgrass Expressway. This area contains ramps and a stormwater pond for Sawgrass Expressway as well as a complex of condominiums. The only document on file with FDEP is a Stationary Tank Registration/Notification Form dated 11-14-1984. It reports the presence of two 2,000-gallon and one 3,000-gallon underground storage tank used for unleaded fuel. That form includes a map (***Appendix A***) showing the location of the three tanks in the central part of the property, not adjacent to US 441. A hand-written note on that form states the site was closed February 1996. Although it has been redeveloped, there is a record of underground storage tanks on site and no official documentation of removal, so site is assigned a risk rating of Low.

6.2.3 Site 3 Residence Inn by Marriott

5730 N State Road 7
Facility ID: 9817162
Risk Rating: Low
This site is a hotel in the northeastern quadrant of the intersection of Sawgrass Expressway and US 441. It was reported in the Storage Tank Contamination Monitoring database. Records indicate the presence of five underground storage tanks in 1984. Because there are storage tanks but no record of soil or groundwater contamination, this site is assigned a risk rating of Low.

6.2.4 SITE 4 CLUB CARIBE ASSOCIATES

5510 NW 61st St #101
Facility ID: 9400067
Risk Rating: Low
This site is a condominium development located in the northeastern quadrant of the intersection of Sawgrass Expressway and US 441. Construction on condominiums appears to have started around 1990. Portions of this site were previously under cultivation. Documents from FDEP indicate that in 1989 multiple storage tanks were removed and no signs of contamination were apparent. A discharge of diesel fuel was reported on 12-7-1992. FDEP indicated that the site was assigned No Further Cleanup status by January 19, 1994. A Storage Tank Registration Form from February 1, 1993, indicates the presence of three 1,000-gallon storage tanks at this site. Because of the No Further Action Status, this site is assigned a risk rating of Low.

6.2.5 SITE 5 BOCA #7838

6330 N SR 7
Facility ID: 9807767
Risk Rating: High
This site is a retail gas station located approximately 2,200 feet north of Sawgrass Expressway and immediately east of US 441. The property contains a covered fuel island, a convenience store and car wash. The earliest document on file is a 2005 Storage Tank Facility Registration Form noting the new registration of three underground storage tanks (20,000 gallon, 12,000 gallon, and 10,000 gallon). A Storage Tank System Leak Autopsy Report Form from September 2007 reports that gasoline was discharged into groundwater. A Discharge Report Form was also completed September 2007. There is no record of site closure or cleanup. Because this site is an operating retail fuel facility with a history of discharge and no site closure or testing to show contaminants are below target levels, this site is assigned a risk rating of High.

6.2.6 SITE 6 HAMPTON INN AND SUITES

5740 N State Road 7
Facility ID: 9814296
Risk Rating: Low
This site is a hotel in the northeastern quadrant of the intersection of Sawgrass Expressway and US 441. It was reported in the Storage Tank Contamination Monitoring database. A Storage Tank Facility Annual Compliance Site Inspection

Report notes the presence of one 1,355-gallon diesel aboveground storage tank in December 2014. The tank was installed without an Install Permit and the facility was also in violation for lack of financial responsibility. There is no documented discharge or any contaminants. Because there are storage tanks but no record of soil or groundwater contamination, this site is assigned a risk rating of Low.

6.2.7 Site 7 Marathon – Winston Park

5425 Lyons Rd, Coconut Creek
Facility ID: 9801357
Risk Rating: Medium
This site is an operating gas station located adjacent to the project west of Lyons Road, south of Sawgrass Expressway. Historic aerial images show it was constructed between 1995 and February 1999. It is part of a large commercial center that includes a Publix supermarket. A Storage Tank Registration form from 3-11-1999 lists three 10,000-gallon, double-walled, underground storage tanks used for unleaded gasoline. Minor violations were reported in an inspection report dated 7-5-2019 that confirmed the presence of three underground storage tanks. An associated warning notice was issued by Broward County and is the most recent document on file. A non-compliance letter was issued on February 15, 2022, for one violation regarding repairs. Because this site is an operating gas station, it is assigned a risk rating of Medium.

6.2.8 Site 8 Coconut Creek – Shell Station

6135 Lyons Road
Facility ID: 9805503
Risk Rating: Medium
This site is an operating gas station located approximately 1,000 feet north of the Sawgrass Expressway and Lyons Road Interchange. This retail fuel-station has three registered Underground Storage Tanks (USTs) which were installed in early 2003; Two 15,000-gallon gasoline and one 12,000-gallon diesel tank. Water apparently leaked into the primary tank, as noted on an Incident Notification Form (INF) dated 3-5-2014, no free product was released according to this form. A separate INF was filed later that year on 9-24-2014 when the diesel spill bucket failed a hydrostatic test. Again, no free product release was reported. A Discharge Reporting Form (DRF) dated 11-12-14 was later filed after free product appeared to be leaking from the spill bucket into the surrounding pea gravel. Impacted pea gravel was excavated and placed into a drum for disposal and the three spill buckets were removed and disposed of later that month. Analytical

results from the soil samples verified that impacted gravel was removed and that no detectable levels of hydrocarbons remained in the area. Final sample results were provided to the Broward County Pollution Prevention Division and on 7-15-2015, the County accepted the report and specified that no additional assessment activities were required at that time. An inspection report from November 2015 documents that no further issues were identified. An attached Memorandum dated March 12, 2020, noted contamination from a discharge on November 6, 2014, was addressed via source removal. The status has been changed from Cleanup to No Cleanup Required (NREQ). Because this facility is an operating gas station and no additional assessment activities were required following a discharge, it is assigned a risk rating of Medium.

6.2.9 Site 9 McFarlane Trucking 03-2L-0279

Deerfield Toll Plaza Eastbound on Sawgrass
Facility ID: 9807332
Risk Rating: Medium
This is the location of a diesel spill within FDOT right-of-way on eastbound Sawgrass Expressway, just north of NW 40th Avenue. Documents from FDEP indicate that a diesel spill occurred on 9-26-2003 and the site was referred to Broward County. The spill occurred immediately east the Deerfield Toll Plaza on eastbound lanes. This site is listed in the FDEP Storage Tank Contamination Monitoring Database as well as the Pollution Contamination Monitoring Discharges Database. Maps (***Appendix A***) show the site of the spill adjacent to Sawgrass Expressway travel lanes. Because of the history of a diesel spill and co-location with the project, this site is assigned a risk rating of Medium.

6.2.10 Site 10 Douglas Fertilizer/Liquid AG Systems

Located within Sawgrass Expressway right-of-way
Facility ID: ERIC_10265
Risk Rating Low
This site is located within FDOT right-of-way on northbound Sawgrass Expressway, approximately 400 feet west of the ramp to Florida's Turnpike southbound. In 2005 a liquid fertilizer truck experienced a severed line and the driver pulled off the road. Approximately 1200 gallons of nitrogen-based liquid fertilizer was released. Source removal was conducted followed by groundwater sampling. Soil and groundwater concentrations were found to be below applicable target levels, and a Site Rehabilitation Completion Order was issued December 27, 2010.

Because a Site Rehabilitation Completion Order was issued, this site is assigned a risk rating of Low.

6.2.11 Site 11 Chemical Waste Management Pompano

2700 NW 48th Street
FDEP Cleanup 77595814, ERIC_8689
Risk Rating: Low
This site is located in the southeast quadrant of the intersection of Florida's Turnpike and Wiles Road. This sits is on the property of a major landfill that covers approximately 500 acres. The earliest document on-file is from 1980 and includes a permit to construct a solid waste transfer station on approximately one acre. That site would receive hazardous waste and transfer it to a location in Emelle, Alabama. Documents indicate a total storage capacity of 160 containers with a provision for storing an additional 20 drums in an emergency. There is no documentation or indication of any historic release of contaminants at this site, and no right-of-way would be acquired from this site. For these reasons, but because the site handles and stores waste, a risk rating of Low is assigned to this site.

6.2.12 Site 12 Central Sanitary Landfill and Recycling Center

1801 SW 45 Way
DEP Cleanup Sites 77155916, ERIC 8682
Risk Rating: Low
This site is mapped by FDEP Map Direct in the northeast quadrant of the intersection of Florida's Turnpike and Wiles Road. The address is reported in Map Direct as 3140 NW 48th Street, but this is apparently erroneous and does not occur in the vicinity of the project. The Property Appraiser reports the address of the mapped location as 1801 SW 45 Way, Deerfield Beach, FL. The property is owned by RMT-SDE-3-LLC and was last sold in 2021.

The parcel is currently forested and crisscrossed with vehicle tracks. An outdoor storage business and a steel fabrication business are located northeast of the property, at the north end of SW 45th Way. The Waterways residential neighborhood borders this property to the north. Historic imagery from 1995 shows the central portion of the property is cleared, but most of it has revegetated by 2002 and vehicle tracks are visible on this and adjoining properties. Dirt piles are visible in several years after 2011 but no pits are apparent.

No documents are visible through map direct and there are no indications of contamination. This site may be incorrectly mapped to this location, and a landfill occurs directly across Wiles Road from this site. Improvements are proposed to the overpass at the intersection of Florida's Turnpike and Wiles Road, but right-of-way would be acquired from this site. For these reasons, and because there is no documentation of contamination at this site, it is assigned a risk rating of low.

6.2.13 Site 13 Monarch Hill

2700 Wiles Road
Facility ID: 8622531
Risk Rating: High
This site is an operating landfill located in the southeastern quadrant of the intersection of Wiles Road and Florida's Turnpike. The facility covers approximately 500 acres, does not accept hazardous waste and contains two above ground storage tanks. There is an associated waste transfer station and waste-to-energy facility to the east. The landfill is protected by a double composite liner system that include a geosynthetic clay line and a polyethylene membrane to isolate waste and wastewater. Groundwater is monitored through at least 70 wells on the site. On 7-2-2019 site personnel noticed an accidental release of leachate. The location of the release is approximately 2,072 feet from the east property boundary and 987 feet from the north property boundary. Some leachate entered a storm water retention area 340 feet to the east. The affected ground was estimated to be approximately 6,000 square feet and maximum volume of leachate released was estimated to be 3,500 gallons. Future soil sampling is anticipated for this site. A Return to Compliance letter was issued on 3/9/2021 regarding the Department's Storage Tank rules and regulations. Because this site is an active landfill that contains waste and because of the recent release of leachate and lack of an official completion or closure order, this site is assigned a risk rating of High.

6.2.14 Site 14 Med-Care Pharmacy Inc.

1052 S. Powerline Road
Facility ID: 9100756
Risk Rating: Low
This site is located adjacent to the project, in the southeast quadrant of the intersection of S.W. 10th Street and Powerline Road. FDEP documents include a Storage Tank Notification form from 1989 reporting the presence of one 550-gallon underground storage tank and a storage tank registration form from 2003

reporting a 1,000-gallong storage tank. This area was developed prior to 1995. There is no record of release of contaminants and the site has been developed since at least 1995, but because there are storage tanks present, this site is assigned a risk rating of Low.

6.2.15 Site 15 Shell-First Coast Energy #1836

1011 S Powerline Road
Facility ID: 9800891
Risk Rating: Medium
This site is an operating gas station located in the southwestern quadrant of the intersection of S.W. 10th Street and S. Powerline Road, adjacent to the project. This retail fuel station contains five USTs for gasoline and diesel which were installed in October of 1998; four 10,000-gallon tanks and one 8,000-gallon tank. Groundwater flow in this area appears to generally be towards the north. A DRF dated 3/10/15 was completed when gasoline was observed leaking into surrounding soil from fill buckets during a closure assessment conducted while replacing fill buckets. Leaks were speculated to have originated from punctures to two of the USTs. Gravel was excavated down to approximately 3-feet below land surface in the area around each USTs fill and vapor bucket and were submitted for analysis. Results revealed that groundwater samples were above the Groundwater Cleanup Target Levels (GCTLs) for dissolved-phase hydrocarbon concentrations, but below Natural Attenuation Default Concentrations (NADCs), at two of the twelve Monitoring Wells located on-site. The remaining samples collected demonstrated dissolved phase hydrocarbons concentrations below GCTLs, and thus a Natural Attenuation Monitoring (NAM) Plan was requested by the facility on November 12, 2015. The NAM Plan was approved on February 25, 2016, by the Broward County Pollution Prevention Division (Division) on behalf of the Florida Department of Environmental Protection. In September 2017 a Site Rehabilitation and Completion Report and No Further Action Proposal were accepted by Broward County on behalf of FDEP. This site resolved all violations concerning ongoing cleanup efforts and has been advised to resume state-funded cleanup activities. Because this site is an operating gas station, it is assigned a risk rating of Medium.

6.2.16 Site 16 FDOT Bridges and Overpasses

Throughout the Project
Facility ID: None
Risk Rating: Medium
The project contains multiple bridges and overpasses that could potentially contain asbestos, lead-based paint, or metal-based coatings. A series of 2017 survey reports provide the results of analysis of several bridges in the project area. Those bridges include the Wiles Road bridge over Florida's Turnpike, the Sawgrass Expressway bridges over US 441, and the Sawgrass Expressway bridges over Lyons Road. For each of these bridges, the 2017 reports noted that no asbestos was detected, but lead and chromium were present. Because lead and chromium were detected, a risk rating of Medium is assigned to all bridges and overpasses. Additional surveys are recommended prior to construction to determine the presence and extent asbestos, lead-based paint, and metal-based coatings.

7.0 CONCLUSION AND RECOMMENDATIONS

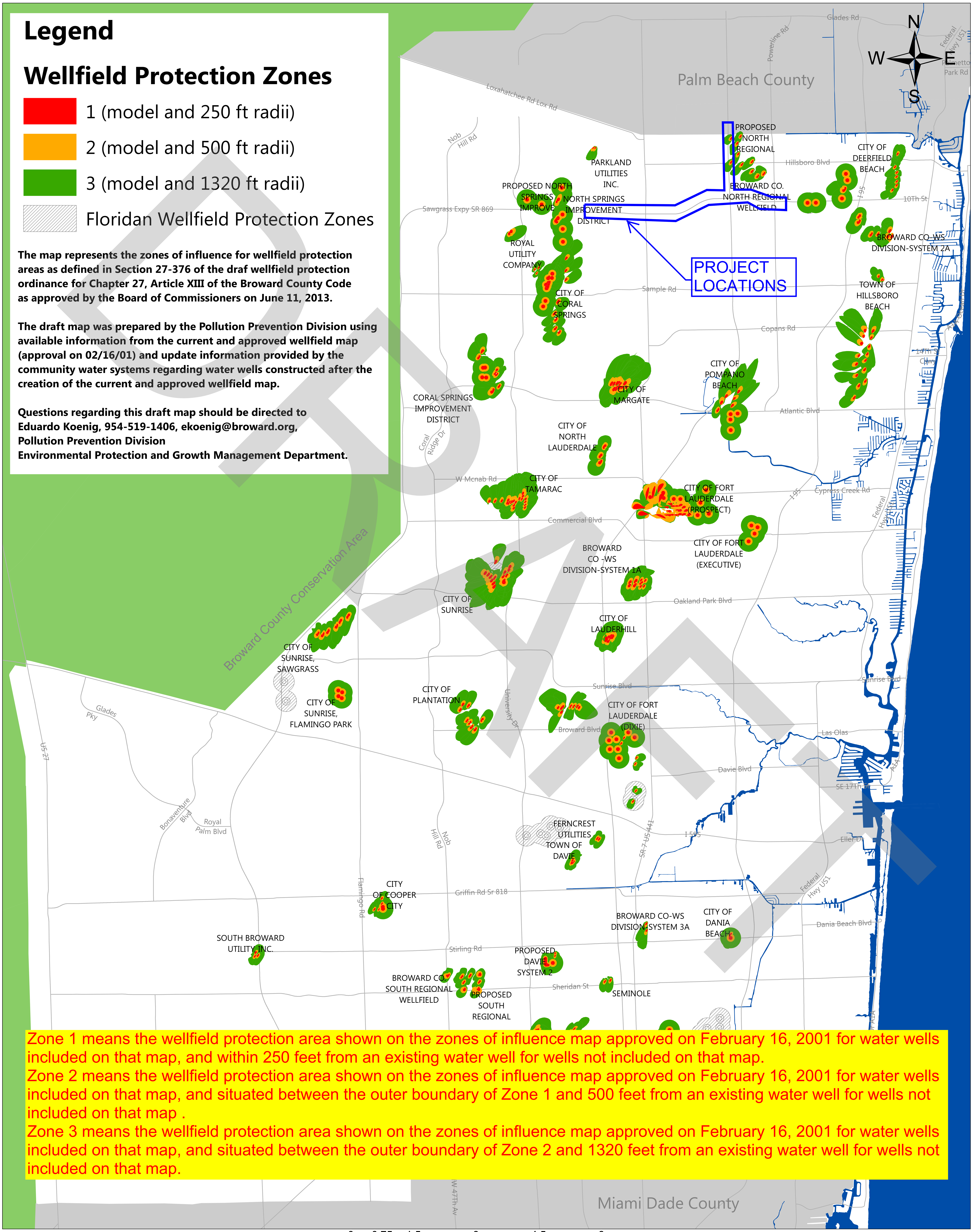
A total of 16 sites of potential contamination risk were identified, including two High Risk, five Medium Risk, and nine Low Risk sites. None of these potentially contaminated sites are proposed for right-of-way acquisition. Level II Contamination Assessment investigations are recommended where proposed dewatering or subsurface work (e.g., pole foundations, drainage features, soil excavation, etc.) would occur at or adjacent to any sites rated High or Medium Risk. If dewatering is necessary during construction, a SFWMD Dewatering Permit will be required. The contractor will be held responsible for ensuring compliance with any necessary dewatering permit(s). A dewatering plan will be necessary to avoid potential exacerbation of any contamination plumes. All permits will be obtained in accordance with Federal, state, and local laws and regulations, and in coordination with the District Contamination Impact Coordinator.

APPENDIX F

Wellfield Protection Zone

Broward County Wellfield Map

Broward County Board of County Commissioners Chapter 27- Article XIII Rule of 6/11/2013



Legend

Wellfield Protection Zones

1 (model and 250 ft radii)

2 (model and 500 ft radii)

3 (model and 1320 ft radii)

Floridan Wellfield Protection Zones

The map represents the zones of influence for wellfield protection areas as defined in Section 27-376 of the draf wellfield protection ordinance for Chapter 27, Article XIII of the Broward County Code as approved by the Board of Commissioners on June 11, 2013.

The draft map was prepared by the Pollution Prevention Division using available information from the current and approved wellfield map (approval on 02/16/01) and update information provided by the community water systems regarding water wells constructed after the creation of the current and approved wellfield map.

Questions regarding this draft map should be directed to Eduardo Koenig, 954-519-1406, ekoenig@broward.org, Pollution Prevention Division Environmental Protection and Growth Management Department.

Zone 1 means the wellfield protection area shown on the zones of influence map approved on February 16, 2001 for water wells included on that map, and within 250 feet from an existing water well for wells not included on that map.

Zone 2 means the wellfield protection area shown on the zones of influence map approved on February 16, 2001 for water wells included on that map, and situated between the outer boundary of Zone 1 and 500 feet from an existing water well for wells not included on that map .

Zone 3 means the wellfield protection area shown on the zones of influence map approved on February 16, 2001 for water wells included on that map, and situated between the outer boundary of Zone 2 and 1320 feet from an existing water well for wells not included on that map.

Update By N. Herne - POLLUTION PREVENTION DIVISION: 1/15/2016

APPENDIX G

Calculations

TABLE 10.1 WATER QUALITY AND QUANTITY CALCULATION SUMMARY														
Basin Area Calculation									Water Quality Calculation Summary	Water Quantity Calculation Summary	Required Storage For Stormwater Management	Provided Storage	Surplus Volume	Remarks
Project Basin		Station		Side	Length	Total Area	Impervious Area		Water Quality Treatment Req'd (1)	Net Runoff Increase (Post-Pre) (2)	Water Quality+Water Quantity (3)	(4)	(5)	
No.	Description	From	To	LT/RT	(ft.)	(Ac.)	Exist.	Prop.	(Ac.ft.)	(Ac.ft.)	(Ac.ft.)	(Ac.ft.)	(Ac.ft.)	
1	From West of US-441 to US-441	962+30	1041+00	LT/RT	7870	110.64	45.33	86.76	13.45	6.29	19.74	24.25	4.51	Dry Detention and Wet Detention
2	From US-441 to East of Lyons Road	1041+00	1110+00	LT/RT	6900	85.88	40.29	64.08	12.04	3.54	15.58	15.65	0.07	Dry Detention and Wet Detention
3A	From East of Lyons Road to FTE	1135+00	1153+00	LT/RT	1800	22.37	12.30	14.92	2.66	0.42	3.08	5.58	2.50	Dry Detention and Wet Detention
3B	Sawgrass Expressway from FTE to Waterways Blvd.	1110+00	1180+00	LT/RT	7000	158.37	68.10	98.91	14.46	4.67	19.13	48.11	28.98	Wet Detention. Required storage for Basin 4 is added in Required Storage
3B-1	FTE from north of the Sawgrass/FTE interchange to Hilsboro Canal	5652+38	5716+70	LT/RT	6432	44.27	18.66	30.89	6.44	1.82	8.25	2.40	-5.85	Dry Detention along right side
3B-2	Turnpike from Wiles Road to Sawgrass/FTE interchange	5572+50	5622+10	LT/RT	4960	36.01	0.00	24.39	5.08	3.71	8.79	4.90	-3.89	Dry Detention along right side
4	From Waterways Blvd. to Powerline Rd.	1180+00	1209+00	LT/RT	2900	17.80	0.00	20.47	3.16	18.55	21.71	0.00	-21.71	Wet Detention. Provided storage is Basin 3B
										Total 3A, 3B, 3B-1 & 4	60.96	60.99	0.03	

Notes:

(1) Water Quality Treatment required = Wet detention volume calculated for the first inch of runoff from the developed project, or the total runoff of 2.5 inches times the total impervious area, whichever is greater. See separate spreadsheet for detail calculation.

(2) Water Quantity required = Net Runoff generated from Design Storm (25YR-72HR) = Post Development Runoff - Pre Development Runoff. See separate spreadsheets for detail calculation.

(3) Required Storage for Stormwater management (Water Quality + Water Quantity) = (1) +(2)

(4) From Table 2 Wet and Dry Detention System Storage Calculation

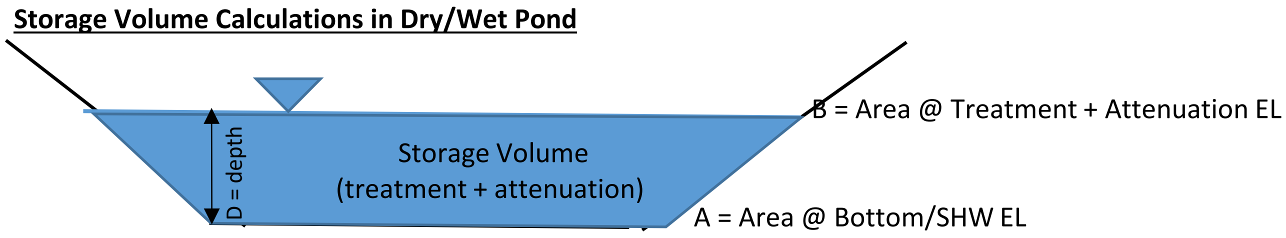
(5) Surplus Volume (5) = (4) -(3). Landscaping needs can be fulfilled at the area where surplus volume is available.

WET AND DRY DETENTION SYSTEM STORAGE CALCULATIONS											
BASIN No.	WATER MANAGEMENT FACILITIES					CONTROL /BOTTOM EL		TREATMENT AND ATTENUATION EL		STORAGE	REMARKS
	DESCRIPTION	From Sta.	To Sta.	Side	TREATMENT METHOD	Elev. (ft.)	Area (Ac.)	Elev (ft.)	Area (Ac.)	Volume (Ac-ft)	Minimum Berm EL
1	Swale 1-1	962+50	1012+00	LT	Dry Detention	11	0.57	12.5	0.66	0.92	14.50
	Swale 1-2	962+50	1009+00	RT	Dry Detention	11	1.71	12.5	1.86	2.68	13.50
	Swale 1-3	1023+50	1030+50	LT	Dry Detention	11	0.39	12.5	0.47	0.64	13.50
	Swale 1-4	1028+00	1040+00	RT	Dry Detention	11	0.43	12.5	0.51	0.70	13.50
	Dry Pond 1-1	1030+00	1035+00	LT	Dry Detention	11	1.19	12.5	1.32	1.88	13.50
									Σ Dry Detention =	*6.83*	
	Wet Pond 1-1	1030+00	1039+00	LT	Wet Detention	10	7.73	11.5	8.05	11.84	14.50
	Wet Pond 1-2	1035+00	1040+00	LT	Wet Detention	10	3.61	11.5	3.83	5.58	14.50
									Σ Wet Detention =	*17.42*	
	TOTAL AVAILABLE STORAGE AT BASIN 1 = 24.25 AC-FT										
2	Dry Pond 2-1	1042+00	1043+00	RT	Dry Detention	11	0.21	12.5	0.27	0.36	13.50
	Swale 2-1	1042+00	1046+00	RT	Dry Detention	11	0.23	12.5	0.32	0.41	13.20
	Swale 2-2	1042+50	1058+50	LT	Dry Detention	11	0.65	12.5	0.75	1.05	13.20
	Swale 2-3	1047+00	1052+50	RT	Dry Detention	11	0.20	12.5	0.25	0.34	13.20
	Dry Pond 2-2	1049+00	1053+00	RT	Dry Detention	11	0.99	12.5	1.11	1.57	13.45
	Swale 2-4	1076+00	1091+00	RT	Dry Detention	11	0.41	12.5	0.49	0.67	13.20
	Swale 2-5	1077+00	1083+00	LT	Dry Detention	11	0.09	12.5	0.13	0.16	13.45
	Swale 2-6	1082+50	1092+50	RT	Dry Detention	11	0.32	12.5	0.39	0.53	13.45
	Dry Pond 2-3	1090+50	1092+50	RT	Dry Detention	11	0.21	12.5	0.27	0.36	13.45
	Dry Pond 2-4	1095+00	1097+00	LT	Dry Detention	11	0.17	12.5	0.22	0.29	13.45
	Dry Pond 2-5	1095+00	1098+00	LT	Dry Detention	11	0.13	12.5	0.17	0.23	13.45
									Σ Dry Detention =	*5.98*	
	Wet Pond 2-1	1042+50	1048+50	RT	Wet Detention	9.5	6.30	11.0	6.59	9.67	12.95
									Σ Wet Detention =	*9.67*	
	TOTAL AVAILABLE STORAGE AT BASIN 2 = 15.65 AC-FT										
3A	Wet Pond 3A-1	1147+00	1151+00	LT	Wet Detention	8.4	1.21	9.9	1.27	1.86	12.95
	Wet Pond 3A-2	1149+00	1151+00	LT	Wet Detention	8.4	0.86	9.9	0.91	1.33	12.95
									Σ Wet Detention =	*3.19*	
	Dry Pond 3A-1	1136+00	1143+00	LT	Dry Detention	11	0.64	12.5	0.69	1.00	13.45
	Dry Pond 3A-2	1145+00	1150+00	LT	Dry Detention	11	0.90	12.5	0.96	1.39	13.45
									Σ Dry Detention =	*2.39*	
	TOTAL AVAILABLE STORAGE AT BASIN 3A = 5.58 AC-FT										
3B	Wet Pond 3B-1	1147+50	1151+00	RT	Wet Detention	8.4	0.85	9.9	0.90	1.32	11.9
	Wet Pond 3B-2	1155+00	1162+50	LT	Wet Detention	8.4	6.08	9.9	6.22	9.23	11.9
	Wet Pond 3B-3	1155+00	1159+00	RT	Wet Detention	8.4	12.90	9.9	13.11	19.51	11.9
	Wet Pond 3B-4	1156+00	1163+00	LT	Wet Detention	8.4	2.09	9.9	2.17	3.20	11.9
	Wet Pond 3B-5	1155+00	1163+00	RT	Wet Detention	8.4	7.59	9.9	7.75	11.50	11.9
									Σ Wet Detention =	*44.75*	
	Dry Pond 3B-1	1090+50	1092+50	RT	Dry Detention	9.4	0.61	10.9	0.70	0.98	11.90
	Dry Pond 3B-2	1090+50	1092+50	RT	Dry Detention	9.4	0.49	10.9	0.57	0.80	11.90
	Dry Pond 3B-3	1090+50	1092+50	RT	Dry Detention	9.4	0.99	10.9	1.11	1.57	11.90
									Σ Dry Detention =	*3.36*	
	TOTAL AVAILABLE STORAGE AT BASIN 3B = 48.11 AC-FT										
3B-1	Swale 3B-1	5651+00	5678+00	RT	Dry Detention	9.4	1.53	10.9	1.68	2.40	11.90
	TOTAL AVAILABLE STORAGE AT BASIN 3B-1 = 2.40 AC-FT										
3B-2	Swale 3B-2	5577+00	5609+00	RT	Dry Detention	9.4	3.16	10.9	3.37	4.90	11.90
	TOTAL AVAILABLE STORAGE AT BASIN 3B-2 = 4.90 AC-FT										

Notes:

1. Swale and Pond locations are shown in the associated Drainage Map.
2. Swale and pond sections are estimated from existing plans and conceptual roadway design. See associated exhibit
3. Treatment volume provided by new roadside swales or enlarging interchange ponds.
4. All Elevations are in feet NAVD-88 datum. Datum Conversion factor, NAVD EL = NGVD EL - 1.529'

Storage Volume Calculations in Dry/Wet Pond



$$\boldsymbol{Storage\ Volume = Average\ of\ (A\ \&\ B)X\ D}$$

Project Name: Sawgrass Expressway (SR 869) Widening PD Study

Project No. 437153-1-22-01

Drainage Area: Basin 1
POND No.
OUTFALL Pine Tree WCD

Designed By: IS
Date: 11/28/2023

WATER QUALITY CRITERIA FROM SFWMD

DATA:	AREAS PRE-DEV.	AREAS POST-DEV.
FROM STA. ft	962+30	962+30
TO STA. ft	1041+00	1041+00
LENGHT ft	7870	7870
ROW WIDTH ft	612.4	612.4
PAVED WIDTH ft	173.85	357.22
TOTAL AREA		
INSIDE ROW Ac	110.64	110.64
OUTSIDE ROW Ac	0	0
TOTAL AREA Ac	110.64	110.64
IMP. AREA		
PAVED AREAS Ac	31.41	64.54
WET OUT AREA Ac	13.92	22.22
OTHER IMP. AREA Ac	0.00	0.00
TOTAL (Ai) Ac	45.33	86.76
PER. AREA		
Ap Ac	65.31	23.88

WET DETENTION	SFWMD PRE-DEV.	SFWMD POST-DEV
1" on the Basin Ac-ft		9.22
2.5" on Pav. Area Ac-ft		13.45
Greater of Above Ac-ft		**13.45**

PEAK ATTENUATION: SCS METHOD

SOIL TYPE D	PRE-DEV. CN	PRE-DEV. AREA (Ac)	POST-DEV. CN	POST-DEV. AREA (Ac)
IMP. AREA				
Paved Areas	98	31.41	98	64.54
Lakes and wet areas	100	13.92	100	22.22
Other	98	0.00	98	0.00
SUB-TOTAL (Ai)	**98.6**	**45.33**	**98.5**	**86.76**
PER. AREA				
Gravel Roads	91	0.00	91	0.00
Dirt Roads	89	0.00	89	0.00
Cultivated Land	91	0.00	91	0.00
Pasture or range	80	0.00	80	0.00
Meadow, good cond.	78	0.00	78	0.00
Wood or forest land	83	0.00	83	0.00
Lawns/sod, fair cond.	84	65.31	84	23.88
Other	0	0.00	0	0.00
SUB-TOTAL (Ap)	**84.0**	**65.31**	**84.0**	**23.88**
TOTAL AREA (At= Ai+Ap) / **CNw=Sum(A*CN)/At**	**90.0**	**110.64**	**95.4**	**110.64**

	Units	PRE-DEV.	POST-DEV.
DESIGN RAINFALL (25yr-72hr) (P)	in	13	13
WATERSHED STORAGE: S=(1000/CNw)-10	in	1.11	0.48
DIRECT RUNOFF: $R=(P-0.2S)^2/(P+0.8S)$	in	11.75	12.44
TOTAL RUNOFF: (Rt=At*R/12)	Ac-ft	108.37	114.66

NET RUNOFF = POST DEV. RUNOFF - PRE DEV. RUNOFF Ac-ft **6.29**

Project Name: Sawgrass Expressway (SR 869) Widening PD Study

Project No. 437153-1-22-01

Drainage Area: Basin 2
POND No.
OUTFALL Cocomar WCD

Designed By: IS
Date: 11/28/2023

WATER QUALITY CRITERIA FROM SFWMD

		AREAS	
DATA:		PRE-DEV.	POST-DEV.
FROM STA.	ft	1041+00	1041+00
TO STA.	ft	1110+00	1110+00
LENGHT	ft	6900	6900
ROW WIDTH	ft	542.15	542.15
PAVED WIDTH	ft	223.48	364.77
TOTAL AREA			
INSIDE ROW	Ac	85.88	85.88
OUTSIDE ROW	Ac	0	0
TOTAL AREA	Ac	85.88	85.88
IMP. AREA			
PAVED AREAS	Ac	35.40	57.78
WET OUT AREA	Ac	4.89	6.30
OTHER IMP. AREA	Ac	0.00	0.00
TOTAL (Ai)	Ac	40.29	64.08
PER. AREA			
Ap	Ac	45.59	21.80

		SFWMD	
WET DETENTION		PRE-DEV.	POST-DEV
1" on the Basin	Ac-ft		7.16
2.5" on Pav. Area	Ac-ft		12.04
Greater of Above	Ac-ft		**12.04**

PEAK ATTENUATION: SCS METHOD

SOIL TYPE D	PRE-DEV.		POST-DEV.	
	CN	AREA (Ac)	CN	AREA (Ac)
IMP. AREA				
Paved Areas	98	35.40	98	57.78
Lakes and wet areas	100	4.89	100	6.30
Other	98	0.00	98	0.00
SUB-TOTAL (Ai)	**98.2**	**40.29**	**98.2**	**64.08**
PER. AREA				
Gravel Roads	91	0.00	91	0.00
Dirt Roads	89	0.00	89	0.00
Cultivated Land	91	0.00	91	0.00
Pasture or range	80	0.00	80	0.00
Meadow, good cond.	78	0.00	78	0.00
Wood or forest land	83	0.00	83	0.00
Lawns/sod, fair cond.	84	45.59	84	21.80
Other	0	0.00	0	0.00
SUB-TOTAL (Ap)	**84.0**	**45.59**	**84.0**	**21.80**
TOTAL AREA (At= Ai+Ap)				
CNw=Sum(A*CN)/At	**90.7**	**85.88**	**94.6**	**85.88**

	Units	PRE-DEV.	POST-DEV.
DESIGN RAINFALL (25yr-72hr) (P)	in	13	13
WATERSHED STORAGE: S=(1000/CNw)-10	in	1.03	0.57
DIRECT RUNOFF: $R=(P-0.2S)^2/(P+0.8S)$	in	11.84	12.34
TOTAL RUNOFF: (Rt=At*R/12)	Ac-ft	84.76	88.30

NET RUNOFF = POST DEV. RUNOFF - PRE DEV. RUNOFF Ac-ft **3.54**

Project Name: Sawgrass Expressway (SR 869) Widening PD Study

Project No. 437153-1-22-01

Drainage Area: Basin 3A
POND No.
OUTFALL Cocomar WCD

Designed By: IS
Date: 11/28/2023

WATER QUALITY CRITERIA FROM SFWMD

DATA:	AREAS PRE-DEV.	AREAS POST-DEV.
FROM STA. ft	1135+00	1135+00
TO STA. ft	1153+00	1153+00
LENGHT ft	1800	1800
ROW WIDTH ft	541.4	541.4
PAVED WIDTH ft	282.65	309.52
TOTAL AREA		
INSIDE ROW Ac	22.37	22.37
OUTSIDE ROW Ac	0	0
TOTAL AREA Ac	22.37	22.37
IMP. AREA		
PAVED AREAS Ac	11.68	12.79
WET OUT AREA Ac	0.62	2.13
OTHER IMP. AREA Ac	0.00	0.00
TOTAL (Ai) Ac	12.30	14.92
PER. AREA		
Ap Ac	10.07	7.45

WET DETENTION	SFWMD PRE-DEV.	SFWMD POST-DEV
1" on the Basin Ac-ft		1.86
2.5" on Pav. Area Ac-ft		2.66
Greater of Above Ac-ft		**2.66**

PEAK ATTENUATION: SCS METHOD

SOIL TYPE D	PRE-DEV. CN	PRE-DEV. AREA (Ac)	POST-DEV. CN	POST-DEV. AREA (Ac)
IMP. AREA				
Paved Areas	98	11.68	98	12.79
Lakes and wet areas	100	0.62	100	2.13
Other	98	0.00	98	0.00
SUB-TOTAL (Ai)	**98.1**	**12.30**	**98.3**	**14.92**
PER. AREA				
Gravel Roads	91	0.00	91	0.00
Dirt Roads	89	0.00	89	0.00
Cultivated Land	91	0.00	91	0.00
Pasture or range	80	0.00	80	0.00
Meadow, good cond.	78	0.00	78	0.00
Wood or forest land	83	0.00	83	0.00
Lawns/sod, fair cond.	84	10.07	84	7.45
Other	0	0.00	0	0.00
SUB-TOTAL (Ap)	**84.0**	**10.07**	**84.0**	**7.45**
TOTAL AREA (At= Ai+Ap) **CNw=Sum(A*CN)/At**	**91.8**	**22.37**	**93.5**	**22.37**

	Units	PRE-DEV.	POST-DEV.
DESIGN RAINFALL (25yr-72hr) (P)	in	13	13
WATERSHED STORAGE: $S=(1000/CNw)-10$	in	0.90	0.69
DIRECT RUNOFF: $R=(P-0.2S)^2/(P+0.8S)$	in	11.98	12.20
TOTAL RUNOFF: $(Rt=At*R/12)$	Ac-ft	22.34	22.75
NET RUNOFF = POST DEV. RUNOFF - PRE DEV. RUNOFF	Ac-ft		**0.42**

Project Name: Sawgrass Expressway (SR 869) Widening PD Study

Project No. 437153-1-22-01

Drainage Area: Basin 3B
POND No.
OUTFALL BCWCD No.2

Designed By: IS
Date: 11/28/2023

WATER QUALITY CRITERIA FROM SFWMD

DATA:	AREAS PRE-DEV.	AREAS POST-DEV.
FROM STA. ft	1110+00	1110+00
TO STA. ft	1180+00	1180+00
LENGHT ft	7000	7000
ROW WIDTH ft	985.51	985.51
PAVED WIDTH ft	265.47	431.93
TOTAL AREA		
INSIDE ROW Ac	158.37	158.37
OUTSIDE ROW Ac	0	0
TOTAL AREA Ac	158.37	158.37
IMP. AREA		
PAVED AREAS Ac	42.66	69.41
WET OUT AREA Ac	25.44	29.50
OTHER IMP. AREA Ac	0.00	0.00
TOTAL (Ai) Ac	68.10	98.91
PER. AREA		
Ap Ac	90.27	59.46

WET DETENTION	SFWMD PRE-DEV.	SFWMD POST-DEV
1" on the Basin Ac-ft		13.20
2.5" on Pav. Area Ac-ft		14.46
Greater of Above Ac-ft		**14.46**

PEAK ATTENUATION: SCS METHOD

SOIL TYPE D	PRE-DEV. CN	PRE-DEV. AREA (Ac)	POST-DEV. CN	POST-DEV. AREA (Ac)
IMP. AREA				
Paved Areas	98	42.66	98	69.41
Lakes and wet areas	100	25.44	100	29.50
Other	98	0.00	98	0.00
SUB-TOTAL (Ai)	**98.7**	**68.10**	**98.6**	**98.91**
PER. AREA				
Gravel Roads	91	0.00	91	0.00
Dirt Roads	89	0.00	89	0.00
Cultivated Land	91	0.00	91	0.00
Pasture or range	80	0.00	80	0.00
Meadow, good cond.	78	0.00	78	0.00
Wood or forest land	83	0.00	83	0.00
Lawns/sod, fair cond.	84	90.27	84	59.46
Other	0	0.00	0	0.00
SUB-TOTAL (Ap)	**84.0**	**90.27**	**84.0**	**59.46**
TOTAL AREA (At= Ai+Ap) / **CNw=Sum(A*CN)/At**	**90.3**	**158.37**	**93.1**	**158.37**

	Unit	PRE-DEV.	POST-DEV.
DESIGN RAINFALL (25yr-72hr) (P)	in	13	13
WATERSHED STORAGE: $S=(1000/CNw)-10$	in	1.07	0.74
DIRECT RUNOFF: $R=(P-0.2S)^2/(P+0.8S)$	in	11.80	12.15
TOTAL RUNOFF: $(Rt=At*R/12)$	Ac-ft	155.72	160.39

NET RUNOFF = POST DEV. RUNOFF - PRE DEV. RUNOFF Ac-ft **4.67**

Drainage Area: Basin 3B-1
POND No.
OUTFALL BCWCD No.2

Designed By: IS
Date: 11/28/2023

WATER QUALITY CRITERIA FROM SFWMD

DATA:	AREAS PRE-DEV.	AREAS POST-DEV.
FROM STA. ft	5652+38	5652+38
TO STA. ft	5716+70	5716+70
LENGHT ft	6432	6432
ROW WIDTH ft	299.81	299.81
PAVED WIDTH ft	126.37	209.2
TOTAL AREA		
INSIDE ROW Ac	44.27	44.27
OUTSIDE ROW Ac	0	0
TOTAL AREA Ac	44.27	44.27
IMP. AREA		
PAVED AREAS Ac	18.66	30.89
WET OUT AREA Ac	0.00	0.00
OTHER IMP. AREA Ac	0.00	0.00
TOTAL (Ai) Ac	18.66	30.89
PER. AREA		
Ap Ac	25.61	13.38

WET DETENTION	SFWMD PRE-DEV.	SFWMD POST-DEV
1" on the Basin Ac-ft		3.69
2.5" on Pav. Area Ac-ft		6.44
Greater of Above Ac-ft		**6.44**

PEAK ATTENUATION: SCS METHOD

SOIL TYPE D	PRE-DEV. CN	PRE-DEV. AREA (Ac)	POST-DEV. CN	POST-DEV. AREA (Ac)
IMP. AREA				
Paved Areas	98	18.66	98	30.89
Lakes and wet areas	100	0.00	100	0.00
Other	98	0.00	98	0.00
SUB-TOTAL (Ai)	**98.0**	**18.66**	**98.0**	**30.89**
PER. AREA				
Gravel Roads	91	0.00	91	0.00
Dirt Roads	89	0.00	89	0.00
Cultivated Land	91	0.00	91	0.00
Pasture or range	80	0.00	80	0.00
Meadow, good cond.	78	0.00	78	0.00
Wood or forest land	83	0.00	83	0.00
Lawns/sod, fair cond.	84	25.61	84	13.38
Other	0	0.00	0	0.00
SUB-TOTAL (Ap)	**84.0**	**25.61**	**84.0**	**13.38**
TOTAL AREA (At= Ai+Ap)				
CNw=Sum(A*CN)/At	**89.9**	**44.27**	**93.8**	**44.27**

	Units	PRE-DEV.	POST-DEV.
DESIGN RAINFALL (25yr-72hr) (P)	in	13	13
WATERSHED STORAGE: S=(1000/CNw)-10	in	1.12	0.66
DIRECT RUNOFF: $R=(P-0.2S)^2/(P+0.8S)$	in	11.74	12.24
TOTAL RUNOFF: (Rt=At*R/12)	Ac-ft	43.32	45.14

NET RUNOFF = POST DEV. RUNOFF - PRE DEV. RUNOFF Ac-ft **1.82**

Project Name: Sawgrass Expressway (SR 869) Widening PD Study — Project No. 437153-1-22-01

Drainage Area: Basin 3B-2 — Designed By: IS

POND No. — Date: 11/28/2023

OUTFALL BCWCD No.2

WATER QUALITY CRITERIA FROM SFWMD

DATA:	AREAS PRE-DEV.	AREAS POST-DEV.
FROM STA. ft	5572+50	5572+50
TO STA. ft	5622+10	5622+10
LENGHT ft	4960	4960
ROW WIDTH ft	316.25	316.25
PAVED WIDTH ft	0	214.2
TOTAL AREA		
INSIDE ROW Ac	36.01	36.01
OUTSIDE ROW Ac	0	0
TOTAL AREA Ac	36.01	36.01
IMP. AREA		
PAVED AREAS Ac	0.00	24.39
WET OUT AREA Ac	0.00	0.00
OTHER IMP. AREA Ac	0.00	0.00
TOTAL (Ai) Ac	0.00	24.39
PER. AREA		
Ap Ac	36.01	11.62

WET DETENTION	SFWMD PRE-DEV.	SFWMD POST-DEV
1" on the Basin Ac-ft		3.00
2.5" on Pav. Area Ac-ft		5.08
Greater of Above Ac-ft		**5.08**

PEAK ATTENUATION: SCS METHOD

SOIL TYPE D	PRE-DEV. CN	PRE-DEV. AREA (Ac)	POST-DEV. CN	POST-DEV. AREA (Ac)
IMP. AREA				
Paved Areas	98	0.00	98	24.39
Lakes and wet areas	100	0.00	100	0.00
Other	98	0.00	98	0.00
SUB-TOTAL (Ai)	**98.0**	**0.00**	**98.0**	**24.39**
PER. AREA				
Gravel Roads	91	0.00	91	0.00
Dirt Roads	89	0.00	89	0.00
Cultivated Land	91	0.00	91	0.00
Pasture or range	80	0.00	80	0.00
Meadow, good cond.	78	0.00	78	0.00
Wood or forest land	83	0.00	83	0.00
Lawns/sod, fair cond.	84	36.01	84	11.62
Other	0	0.00	0	0.00
SUB-TOTAL (Ap)	**84.0**	**36.01**	**84.0**	**11.62**
TOTAL AREA (At= Ai+Ap)				
CNw=Sum(A*CN)/At	**84.0**	**36.01**	**93.5**	**36.01**

	Unit	PRE-DEV.	POST-DEV.
DESIGN RAINFALL (25yr-72hr) (P)	in	13	13
WATERSHED STORAGE: $S=(1000/CNw)-10$	in	1.90	0.70
DIRECT RUNOFF: $R=(P-0.2S)^2/(P+0.8S)$	in	10.96	12.20
TOTAL RUNOFF: $(Rt=At*R/12)$	Ac-ft	32.90	36.61

NET RUNOFF = POST DEV. RUNOFF - PRE DEV. RUNOFF Ac-ft **3.71**

Project Name: Sawgrass Expressway (SR 869) Widening PD Study | Project No. 437153-1-22-01

Drainage Area: Basin 4 (No Pond)
POND No.
OUTFALL BCWCD No.2

Designed By: AP
Date: 11/28/2023

WATER QUALITY CRITERIA FROM SFWMD

DATA:		AREAS PRE-DEV.	AREAS POST-DEV.
FROM STA.	ft	1180+00	1180+00
TO STA.	ft	1209+00	1209+00
LENGHT	ft	2900	2900
ROW WIDTH	ft	254.3	267.37
PAVED WIDTH	ft	113.55	245.43
TOTAL AREA			
INSIDE ROW	Ac	16.93	17.80
OUTSIDE ROW	Ac	0	0.00
TOTAL AREA	Ac	16.93	17.80
IMP. AREA			
PAVED AREAS	Ac	7.56	15.17
WET OUT AREA	Ac	0.00	0.00
OTHER IMP. AREA	Ac	0.00	0.00
TOTAL (Ai)	Ac	7.56	15.17
PER. AREA			
Ap	Ac	9.37	2.63

WET DETENTION		SFWMD PRE-DEV.	SFWMD POST-DEV
1" on the Basin	Ac-ft		1.48
2.5" on Pav. Area	Ac-ft		3.16
Greater of Above	Ac-ft		**3.16**

PEAK ATTENUATION: SCS METHOD

SOIL TYPE D	PRE-DEV. CN	PRE-DEV. AREA (Ac)	POST-DEV. CN	POST-DEV. AREA (Ac)
IMP. AREA				
Paved Areas	98.0	7.56	98	15.17
Lakes and wet areas	100	0.00	100	0.00
Other	98	0.00	98	0.00
SUB-TOTAL (Ai)	**98.0**	**7.56**	**98.0**	**15.17**
PER. AREA				
Gravel Roads	91	0.00	91	0.00
Dirt Roads	89	0.00	89	0.00
Cultivated Land	91	0.00	91	0.00
Pasture or range	80	0.00	80	0.00
Meadow, good cond.	78	0.00	78	0.00
Wood or forest land	83	0.00	83	0.00
Lawns/sod, fair cond.	84	9.37	84	2.63
Other	0	0.00	0	0.00
SUB-TOTAL (Ap)	**84.0**	**9.37**	**84.0**	**2.63**
TOTAL AREA (At= Ai+Ap) / **CNw=Sum(A*CN)/At**	**90.3**	**16.93**	**95.9**	**17.80**

	Unit	PRE-DEV.	POST-DEV.
DESIGN RAINFALL (25yr-72hr) (P)	in	13	13
WATERSHED STORAGE: S=(1000/CNw)-10	in	1.08	0.42
DIRECT RUNOFF: R=(P-0.2S)2/(P+0.8S)	in	11.79	12.50
TOTAL RUNOFF: (Rt=At*R/12)	Ac-ft	0.00	18.55

PRE-POST DEVELOPMENT RUNOFF Ac-ft **18.55**

AS-BUILT PLANS AND SWALE STORAGE CALCULATION BACK UP

COMPONENTS OF CONTRACT PLANS SET

ROADWAY PLANS
SIGNING AND PAVEMENT MARKING PLANS
LIGHTING PLANS
STRUCTURE PLANS
SOUNDWALL PLANS
LANDSCAPE PLANS

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH COMPONENT

INDEX OF ROADWAY PLANS

GOVERNING STANDARDS AND SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION,
DESIGN STANDARDS DATED JANUARY 2004,
AND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 2004,
AS AMENDED BY CONTRACT DOCUMENTS.

APPLICABLE DESIGN STANDARDS MODIFICATIONS: 7-1-05
For Design Standards Modifications click on "Design Standards" at the following web site:
http://www.dot.state.fl.us/rddesign/

REVISIONS:

ROADWAY SHEETS MOT-1, MOT-20, MOT-21, MOT-23, MOT-28, MOT-29, MOT-32, MOT-35, MOT-36, MOT-38, MOT-39, MOT-42, MOT-43, MOT-46, MOT-47, MOT-49, MOT-50, MOT-54, & MOT-55 (REVISED 08-02-05)

ROADWAY SHEETS 16, 25, 29, 30, 32, 33, 34, 37, 38, 39, 40, 41, 42, 43, 45, 46, 47, 49, 51, 52, 56, 85, 86, 106, MOT-1, MOT-2, MOT-5, MOT-13, MOT-33, MOT-34, MOT-37, MOT-40, MOT-41, MOT-44, MOT-45, MOT-48, MOT-51, MOT-52 & MOT-53 (REVISED 08-11-05)

ROADWAY SHEETS 11, 13, 23, 25, 30, 54, 59, 67-101, 123, 123A, 127, 129-295, 297, 298
MOT-1, MOT-5, MOT-11, MOT-13, MOT-15, MOT-16, MOT-17, MOT-18, MOT-34, MOT-37, MOT-41, MOT-45, MOT-48, MOT-52 (REVISED 08-31-05)

ROADWAY SHEETS 30, 41-44, 172-183, 278, 279, MOT 44, & MOT-45 (REVISED 12-06-05)

ROADWAY SHEETS 32-35, 133-144, 261, 262, 270-275 (REVISED 03-10-06)

ROADWAY SHEETS 36-39, 148-164 (REVISED 01-24-06)

ROADWAY SHEETS 45-49, 189-203, MOT-12, MOT-52 (REVISED 02-06-06)

ROADWAY SHEETS 1-7, 16-25, 32-66, 68-100, 104-107, 109-124, 127, 128, 130-287, 294-295G, MOT-15, MOT-34, MOT-37, MOT-41, MOT-45, MOT-48, MOT-52, MOT-58, MOT-59 (REVISED 08-09-07)

ROADWAY SHEETS 19-21, 23, 37, 38, 105-107 (REVISED 06-28-07)

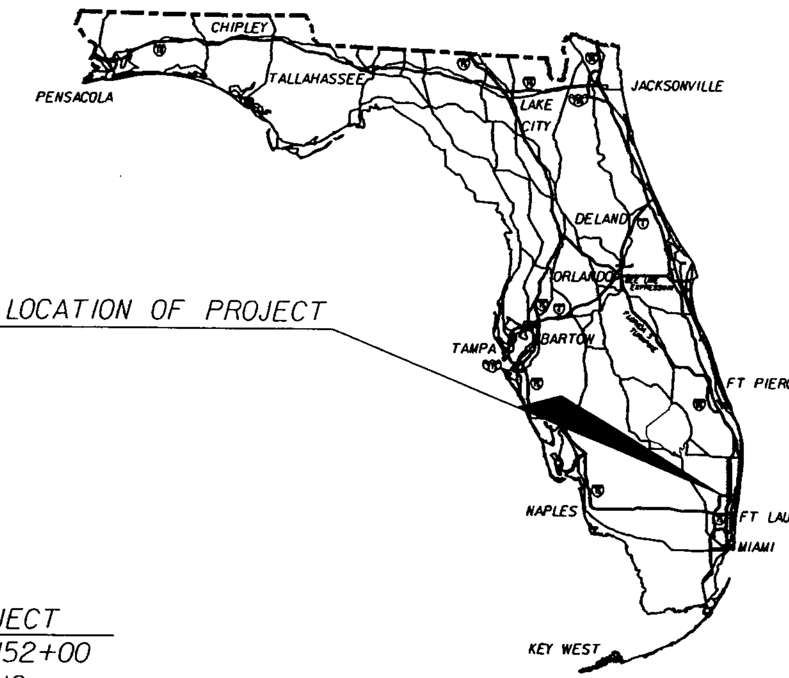
LIGHTING SHEETS L1, L-2A thru L-9, L-12, L-17, L-19 thru L-22, L-31, L-34 thru L-36, L-40 thru L-42, L-49 thru L-53 (08-09-07)

SIGNING & PAVEMENT MARKING SHEETS S-1, S-4 thru S-7, S-12, S-20, S-26, S-29, S-30, S-31, S-33, S-37 thru S-42, S-44 thru S-46, S-52, S-53, S-55, S-57, S-58 & S-59 (08-18-06)

SOUNDWALL SHEETS 1.1, 8.00, 8.01, 8.02, 12.06, 12.07, 12.13, 18.08, 19.01, 1.7 (07-20-06)

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
FINAL "AS-BUILT" PLANS
~~CONTRACT PLANS~~

FINANCIAL PROJECT ID 406153-1-52-01
BROWARD COUNTY (86472)
STATE ROAD NO. 869

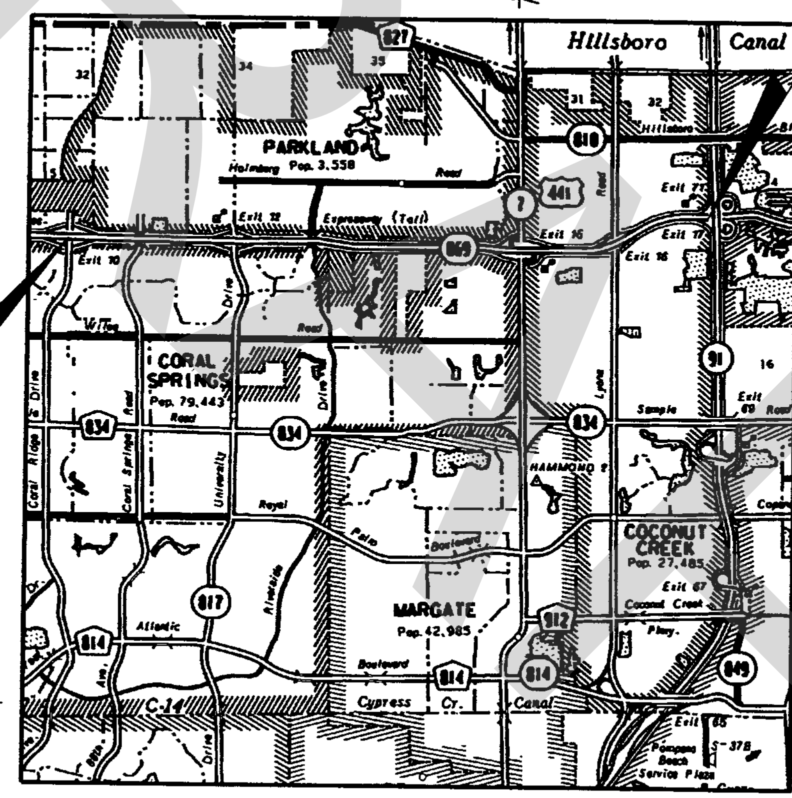


LOCATION OF PROJECT

R-41-E | R-42-E

END PROJECT
℄ STA. 1152+00
M.P. 20.712

T-47-S | T-48-S



N
0 1 2
Miles

BEGIN PROJECT
℄ STA. 786+00
M.P. 13.781

T-48-S | T-49-S

NAME OF CONTRACTOR: APAC
NAME OF ALL CONSULTANTS INVOLVED: PARSONS TRANSPORTATION GROUP: WILLIAMS EARTH SCIENCES.: MANUEL G. VERA & ASSOCIATES
RESIDENT ENGINEER: FELIX VERGARA, P.E.
PROJECT ADMINISTRATOR: MAURICIO ARZE, P.E.
CONSTRUCTION PROJECT MANAGER: MARIO ROJAS, P.E.
TURNPIKE CHIEF EXECUTIVE OFFICER: JAMES ELY
DATE WORK STARTED: MARCH 7, 2005
DATE WORK FINAL ACCEPTANCE OR COMPLETED: MARCH 14, 2008

PE #46223
5/14/2008
As-Built Revisions Only

THIS PROJECT WAS CONSTRUCTED IN SUBSTANCIAL COMPLIANCE WITH THESE PLANS AS PROVIDED BY THE ENGINEER OF RECORD. IF CHANGES WERE MADE, THOSE CHANCES ARE INDICATED BY BLACK INK REVISION AND BEAR THE SEAL, SIGNATURE AND DATE OF THE RESPONSIBLE ENGINEER.

THIS PROJECT WAS CONSTRUCTED IN SUBSTANCIAL COMPLIANCE WITH THESE PLANS AS PROVIDED BY THE ENGINEER OF RECORD. THESE PLANS REFLECT "AS-BUILTS" CONDITIONS AND NO CHANGES WERE MADE TO THE PLAN SHEETS.

RESIDENT ENGINEER ______ DATE ______

PLANS PREPARED BY:

PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FLORIDA 32207
CERTIFICATE OF AUTHORIZATION 1838
CONTRACT NO. E8F73
VENDOR NO. 62320

LENGTH OF PROJECT

	LINEAR FEET	MILES
ROADWAY	35325.00	6.690
BRIDGES	1275.00	0.242
NET LENGTH OF PROJECT	36600.00	6.932
EXCEPTIONS	0.00	0.00
GROSS LENGTH OF PROJECT	36600.00	6.932

KEY SHEET REVISIONS

DATE	BY	DESCRIPTION
08-18-06	DFW	ADDED SOUNDWALL AND LANDSCAPE PLAN COMPONENTS.

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

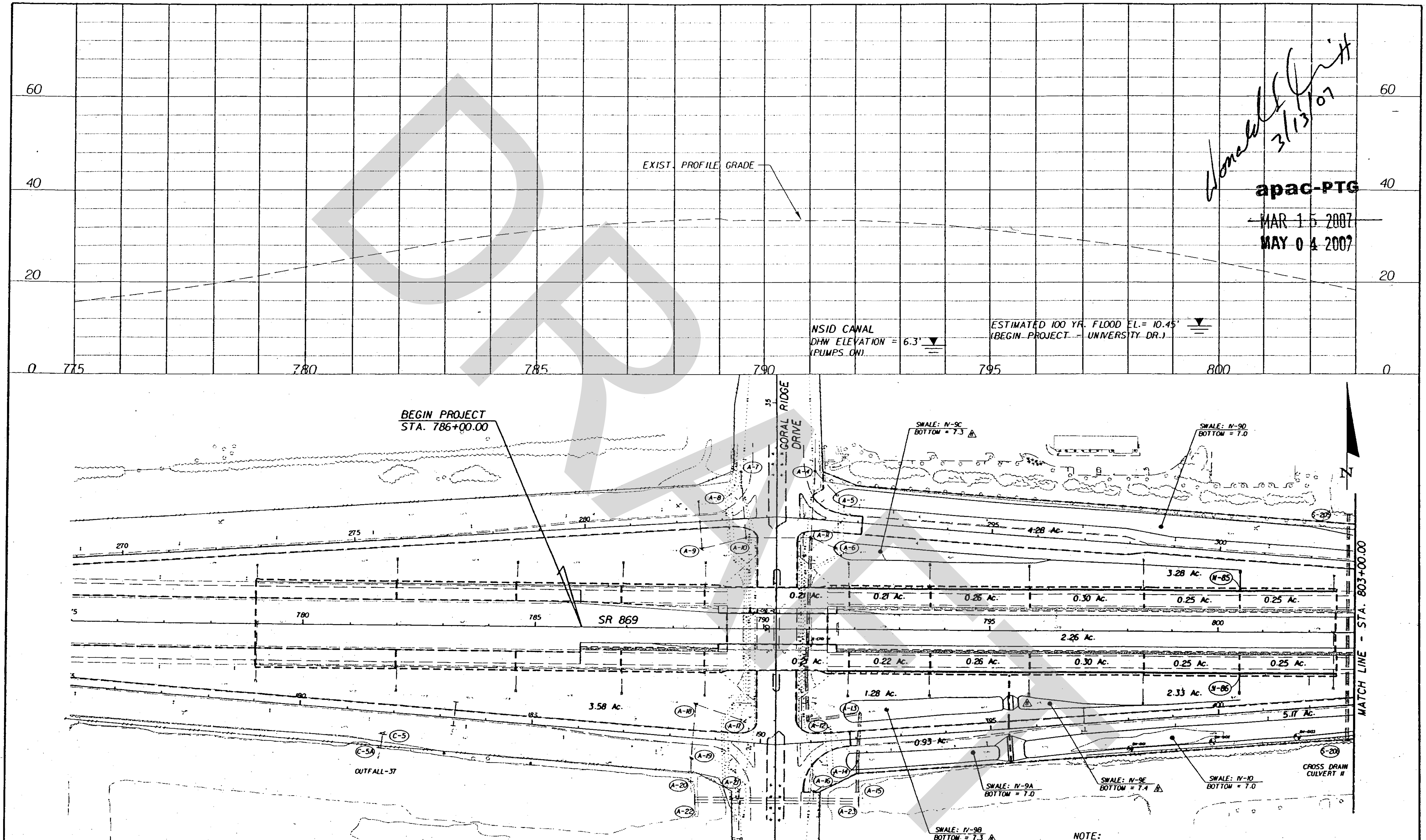
ROADWAY PLANS
ENGINEER OF RECORD: LONNIE D. OGDEN, P.E.

P.E. NO.: 53200

FISCAL YEAR	SHEET NO.
05	01

FDOT PROJECT MANAGER: WILLIAM SLOUP, P.E.

GEC PROJECT MANAGER: MIKE VAN DER HEYDEN, P.E.



DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES.
This sheet is in the plans for documentation and to assist construction personnel with drainage concerns.

NOTE:
ALL ELEVATIONS NAVD '88 DATUM.
(NAVD '88 EL 0.00 = NGVD '29 EL 1.55')
FOR EXAMPLE: 15.98' SHOWN IN THE PLANS IS EQUAL TO 17.53' NGVD '29.

0 50 200
Feet

REVISIONS		
DATE	BY	DESCRIPTION
08-18-06	DFW	REVISED SWALE BOTTOM ELEVATIONS, ADDED SWALE IV-9E.

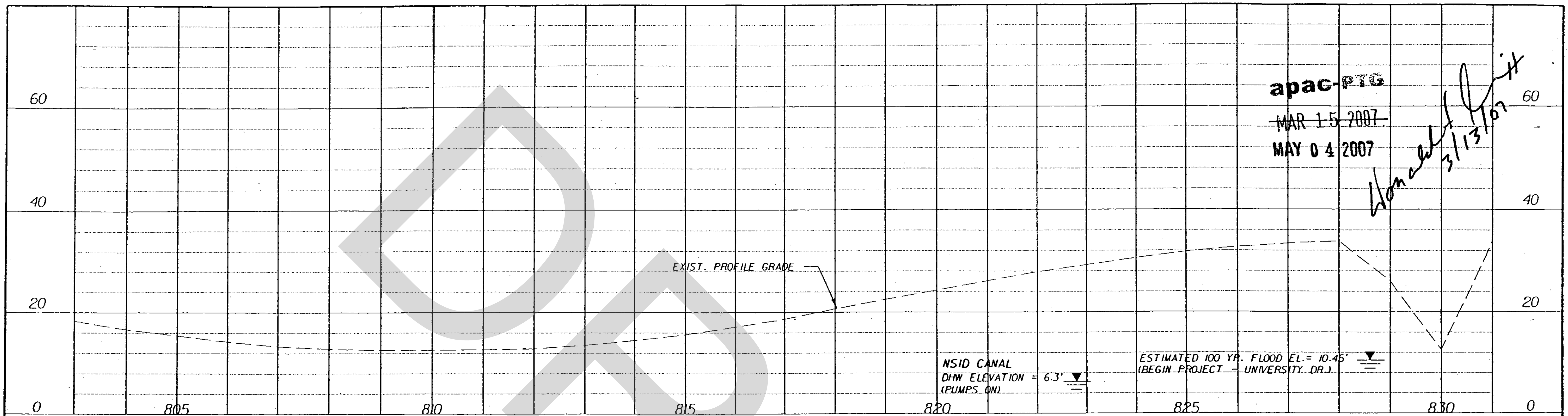
EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225

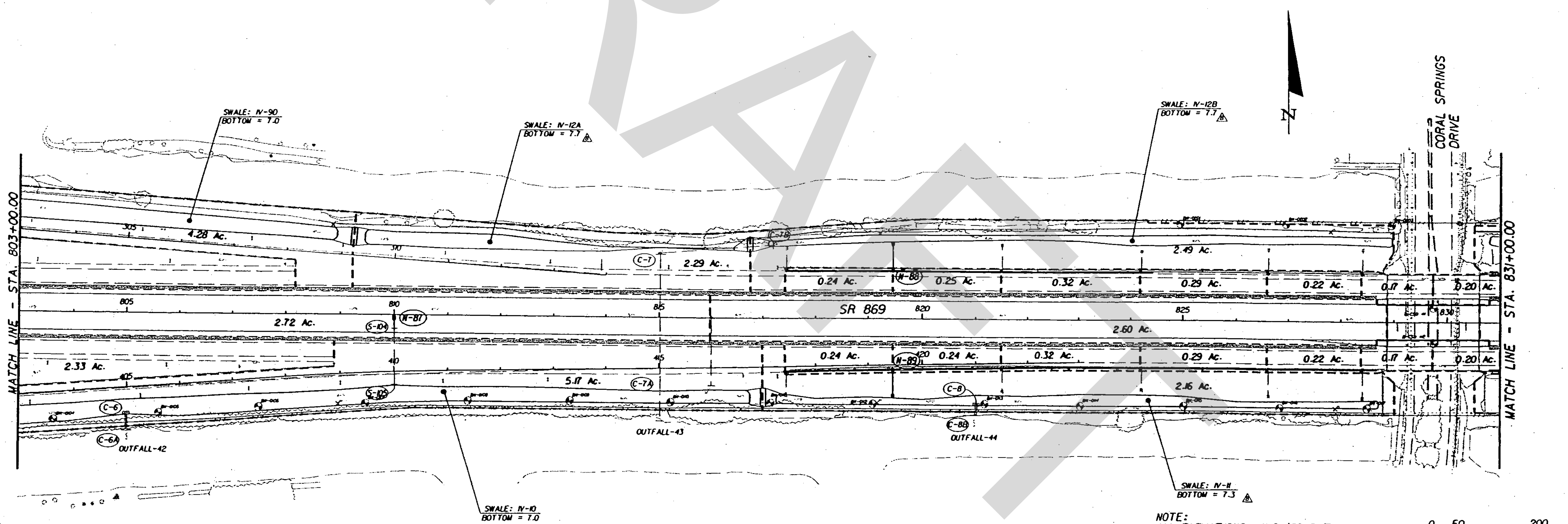
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
DRAINAGE MAP

SHEET NO. 2





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0 50 200
Feet

REVISIONS

DATE	BY	DESCRIPTION
08-18-06	DFW	REVISED SWALE BOTTOM ELEVATIONS.

apac
PARSONS

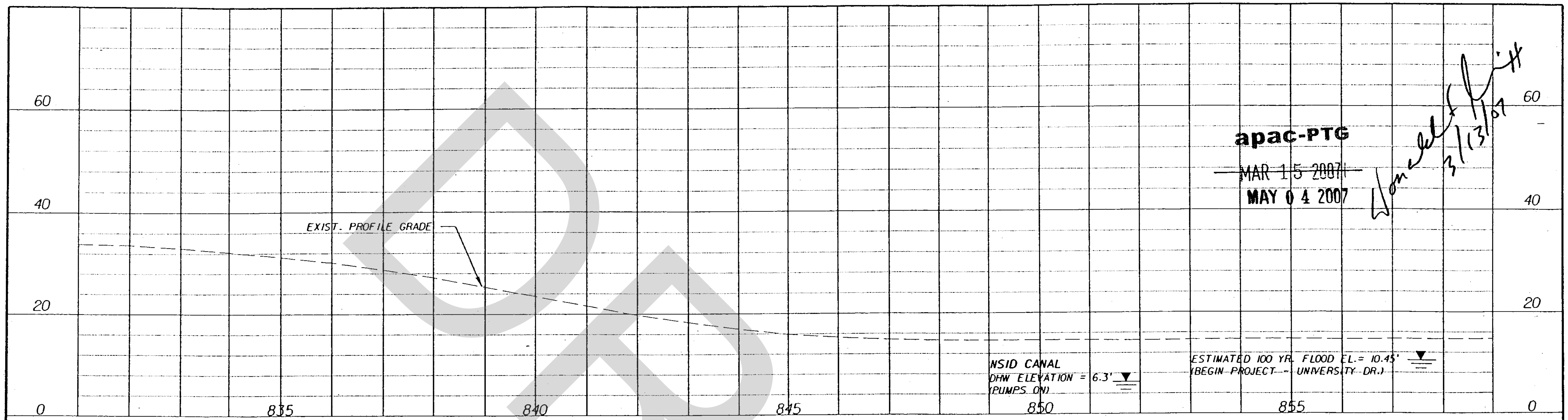
EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225

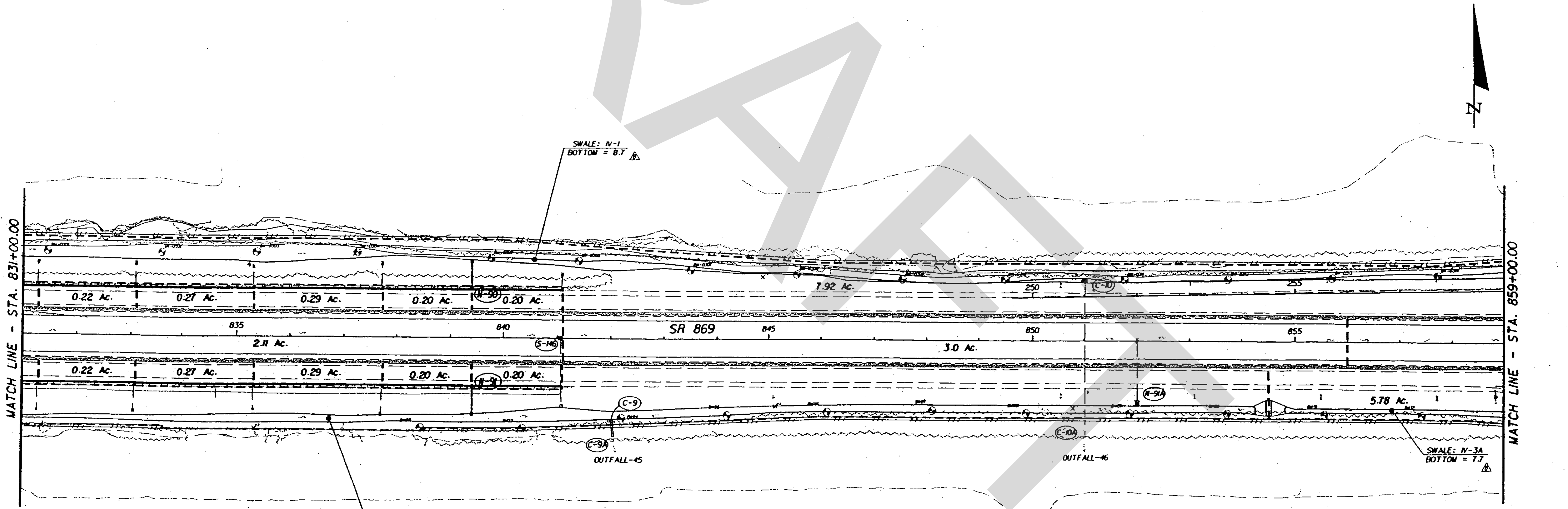
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
DRAINAGE MAP

SHEET NO.
3





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NOTE:
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FOR EXAMPLE: 15.98' SHOWN IN THE PLANS IS EQUAL TO 17.53' NGVD '29.

0 50 200
Feet

REVISIONS		
DATE	BY	DESCRIPTION
08-18-06	DFW	REVISED SWALE BOTTOM ELEVATIONS.

apac

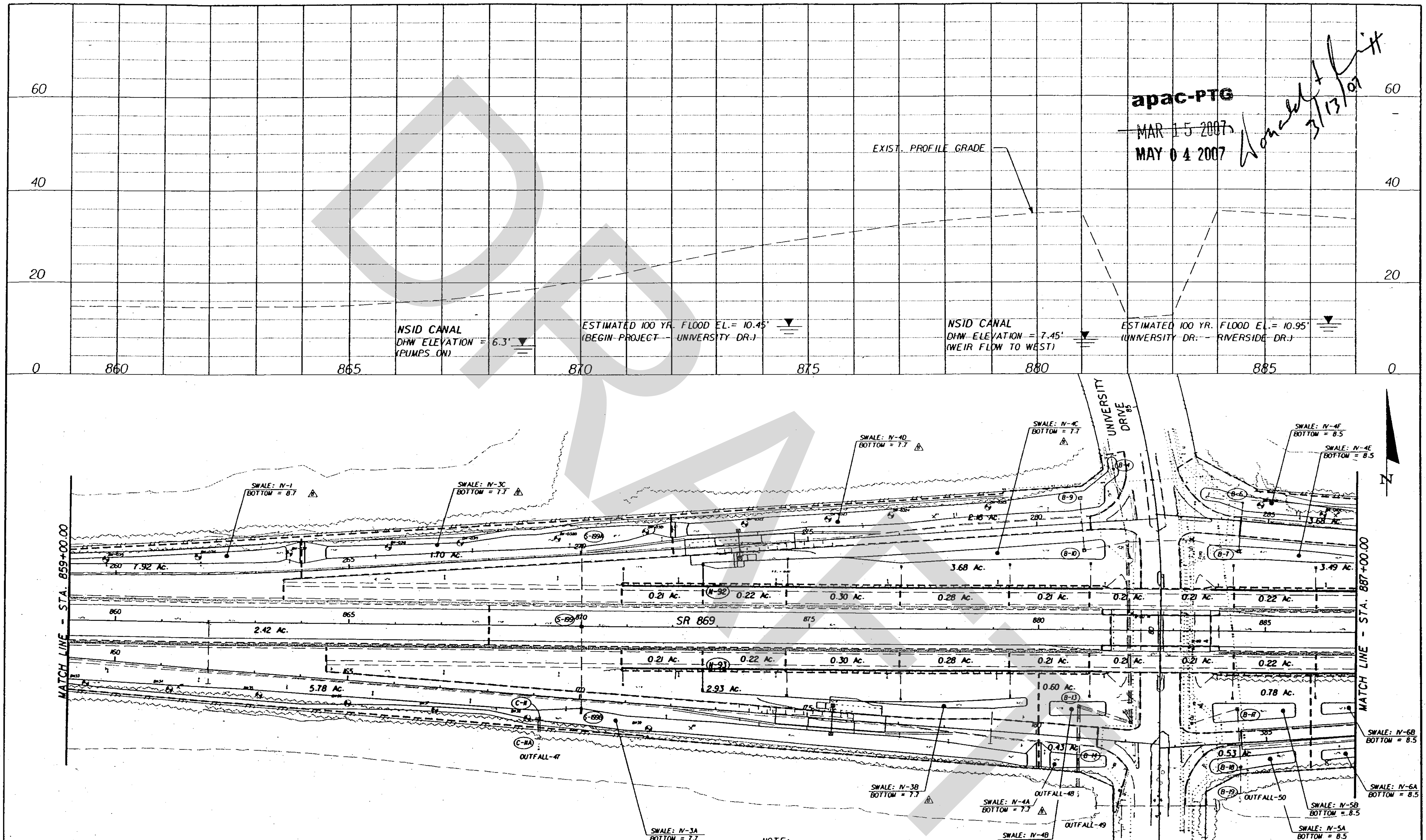
EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
DRAINAGE MAP

SHEET NO.
4



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FOR EXAMPLE: 15.98' SHOWN IN THE PLANS IS EQUAL TO 17.53' NGVD '29.

REVISIONS		
DATE	BY	DESCRIPTION
08-18-06	DFW	REVISED SWALE BOTTOM ELEVATIONS

apac PARSONS

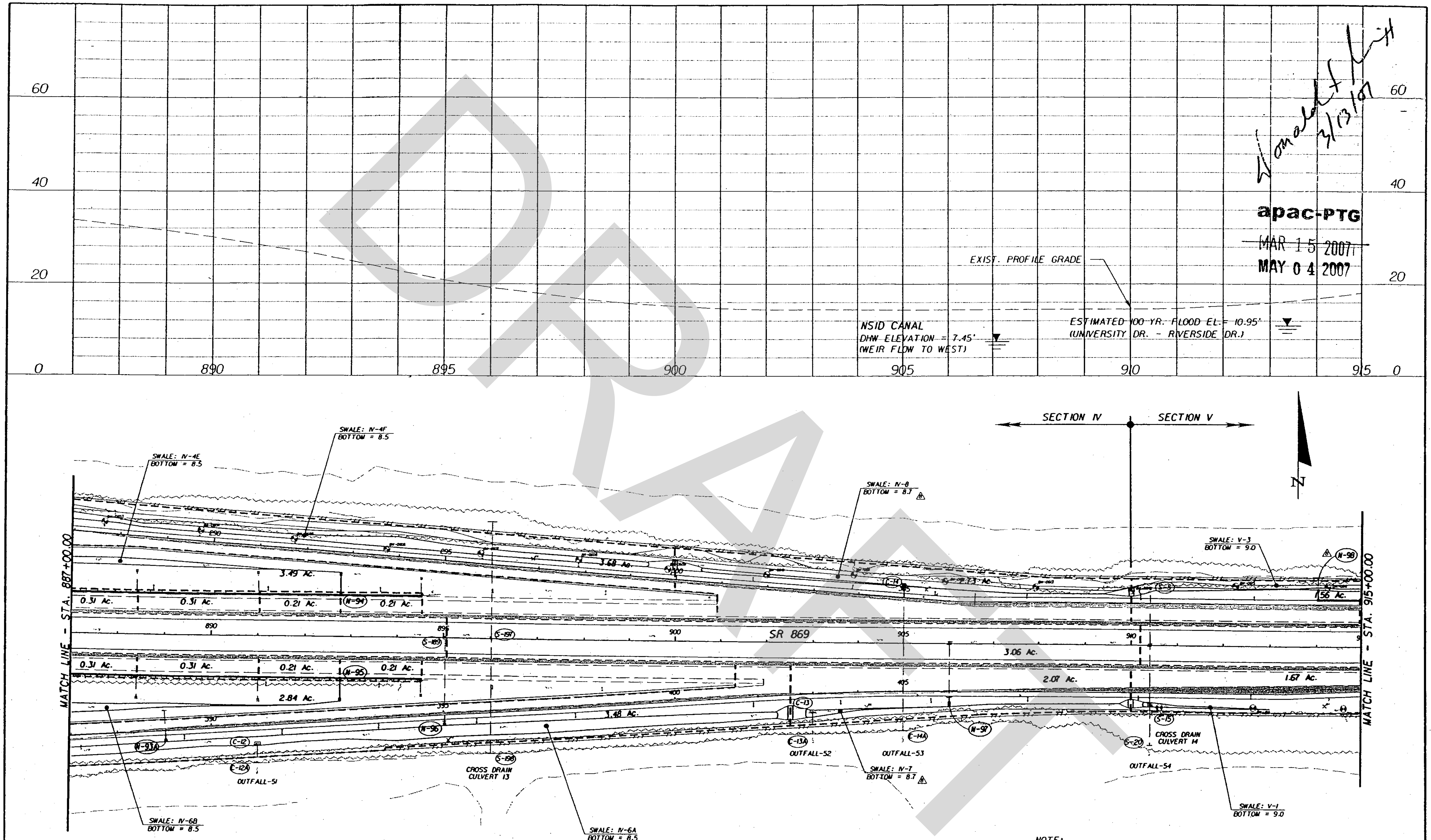
EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
DRAINAGE MAP

SHEET NO. 5



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FOR EXAMPLE: 15.98' SHOWN IN THE PLANS IS EQUAL TO 17.53' NGVD '29.

0 50 200
Feet

REVISIONS

DATE	BY	DESCRIPTION
08-18-06	DFW	REVISED SWALE BOTTOM ELEVATIONS, RELOCATE STRUCTURE IV-98.

apac PARSONS

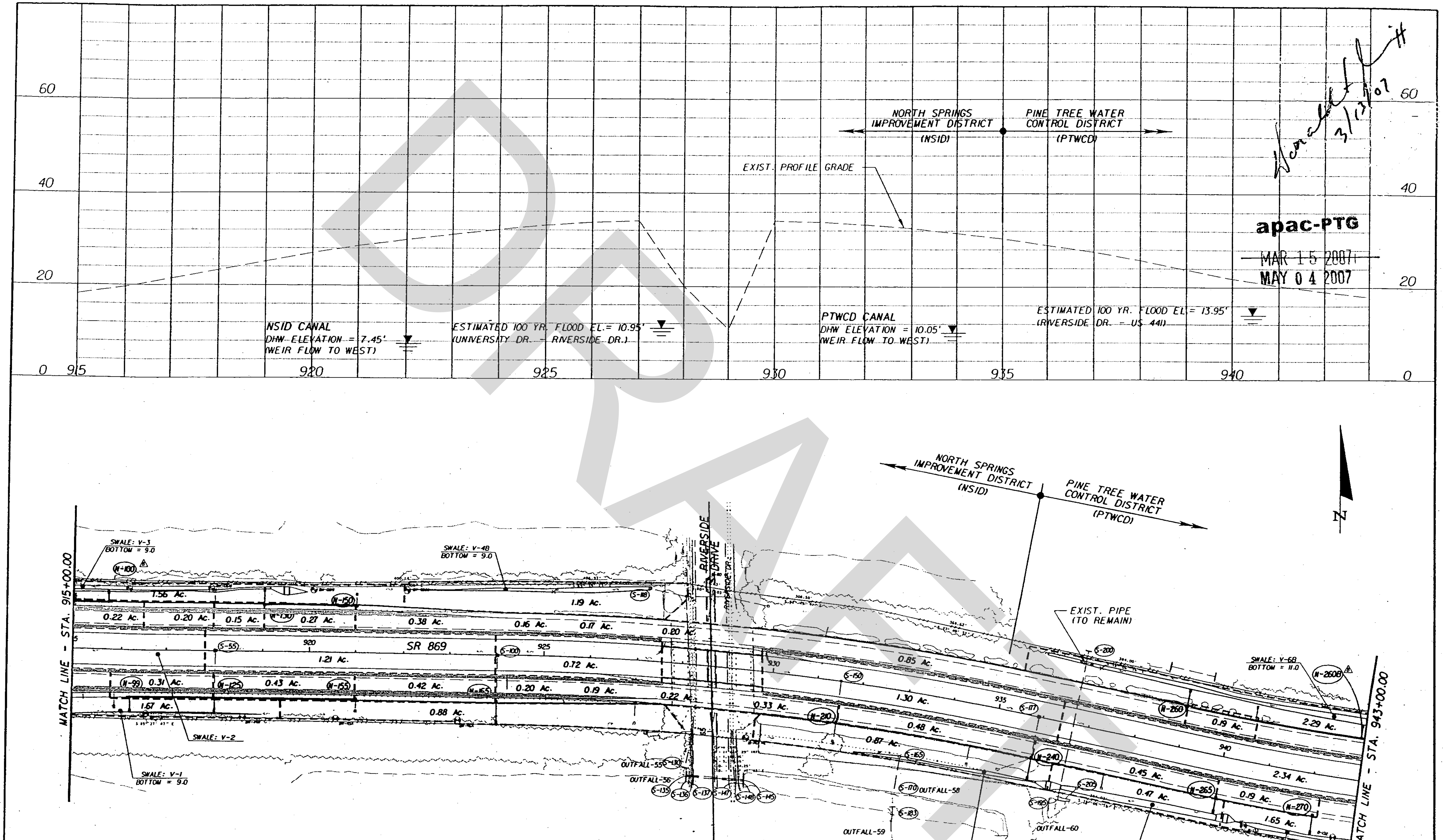
EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225
CERTIFICATE OF AUTHORIZATION 1878

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
DRAINAGE MAP

SHEET NO.
6



DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES.
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NOTE:
ALL ELEVATIONS NAVD '88 DATUM.
(NAVD '88 EL 0.00 = NGVD '29 EL 1.55')
FOR EXAMPLE: 15.98' SHOWN IN THE PLANS IS EQUAL TO 17.53' NGVD '29.

REVISIONS		
DATE	BY	DESCRIPTION
08-18-06	DFW	RELOCATE STRUCTURES N-98 AND N-100 (SEE SHEET 6, N-98 NEW LOCATION), ADDED STRUCTURE N-260B.

apac
PARSONS

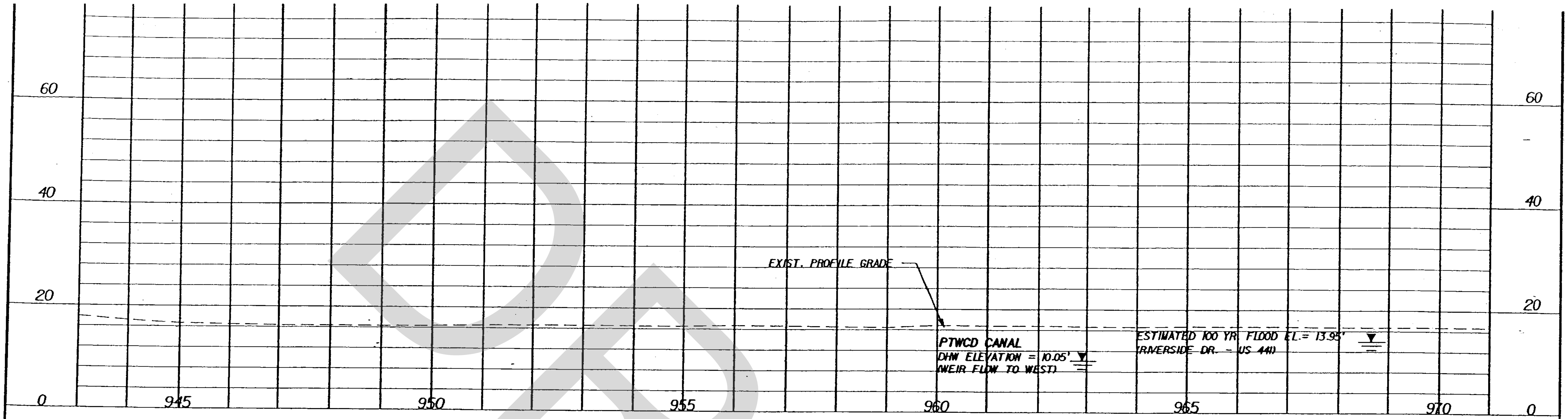
EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225
CERTIFICATE OF AUTHORIZATION 1878

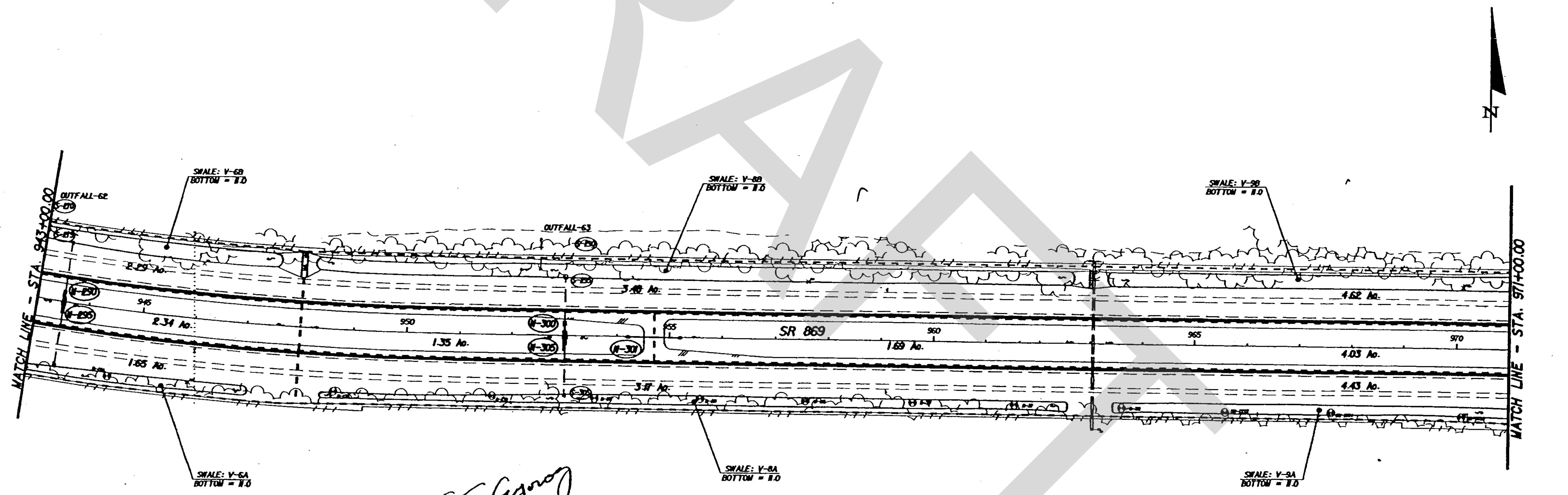
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY DRAINAGE MAP

SHEET NO. 7





DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES.
This sheet is in the plans for documentation and to assist construction personnel with drainage concerns.

T.J. Gyorog
8/31/05

NOTE:
ALL ELEVATIONS NAVD '88 DATUM.
(NAVD '88 EL 0.00 = NGVD '29 EL 1.55')
FOR EXAMPLE: 15.98' SHOWN IN THE PLANS IS EQUAL TO 17.53' NGVD '29.

0 50 200
Feet

REVISIONS		
DATE	BY	DESCRIPTION

apac
PARSONS

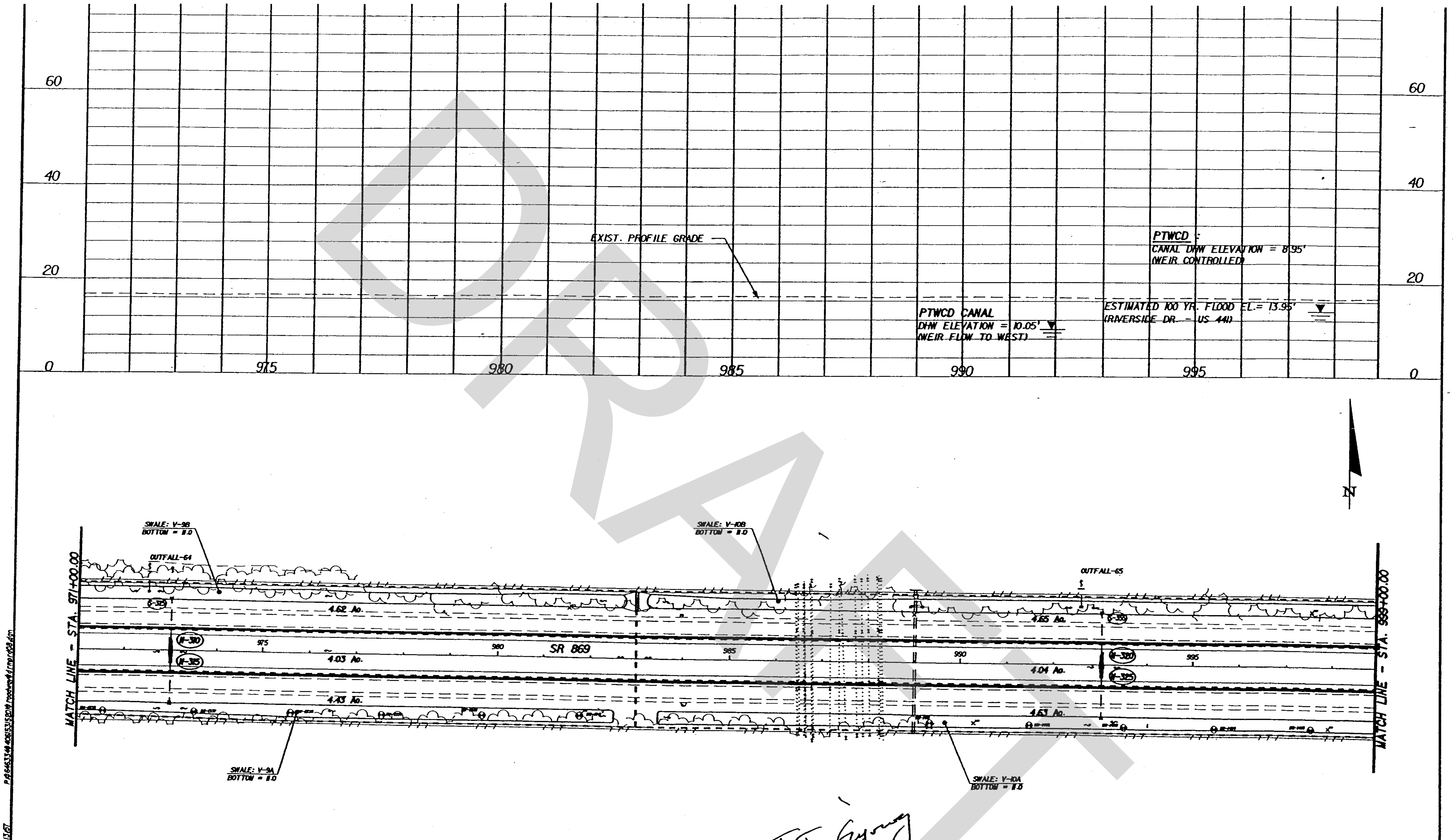
EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
DRAINAGE MAP

SHEET NO.
8



T.J. Gyorog
8/31/05

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NOTE:
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(NAVD '88 EL 0.00 = NGVD '29 EL 1.55')
FOR EXAMPLE: 15.98' SHOWN IN THE PLANS IS EQUAL TO 17.53' NGVD '29.

0 50 200
Feet

REVISIONS		
DATE	BY	DESCRIPTION

apac
PARSONS

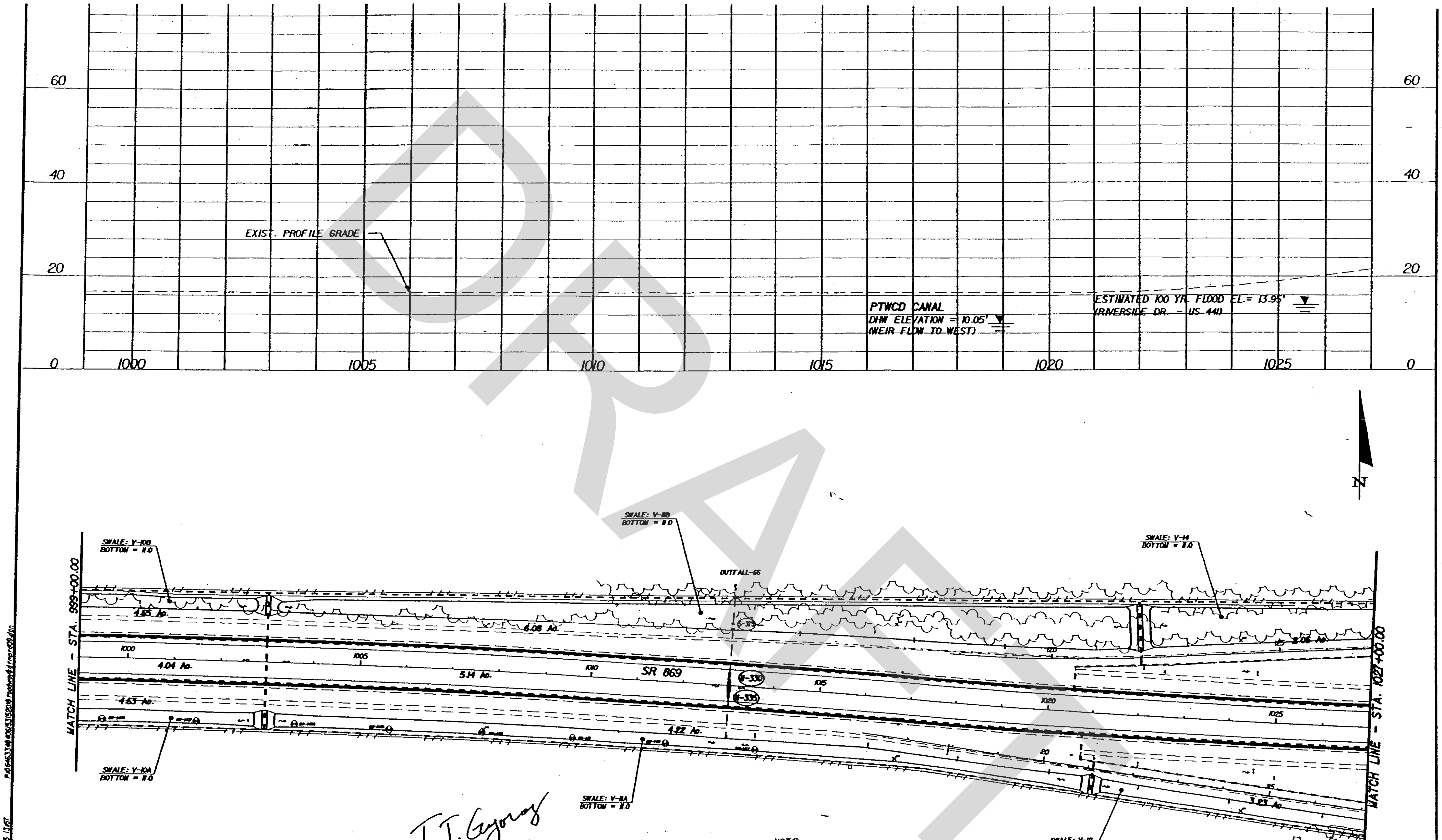
EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
DRAINAGE MAP

SHEET NO.
9



T.J. Gyorog
8/31/05

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(NAVD '88 EL 0.00 = NGVD '29 EL 1.55')
FOR EXAMPLE: 15.98' SHOWN IN THE PLANS IS EQUAL TO 17.53' NGVD '29.

REVISIONS		
DATE	BY	DESCRIPTION

apac PARSONS

EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225
CERTIFICATE OF AUTHORIZATION 1838

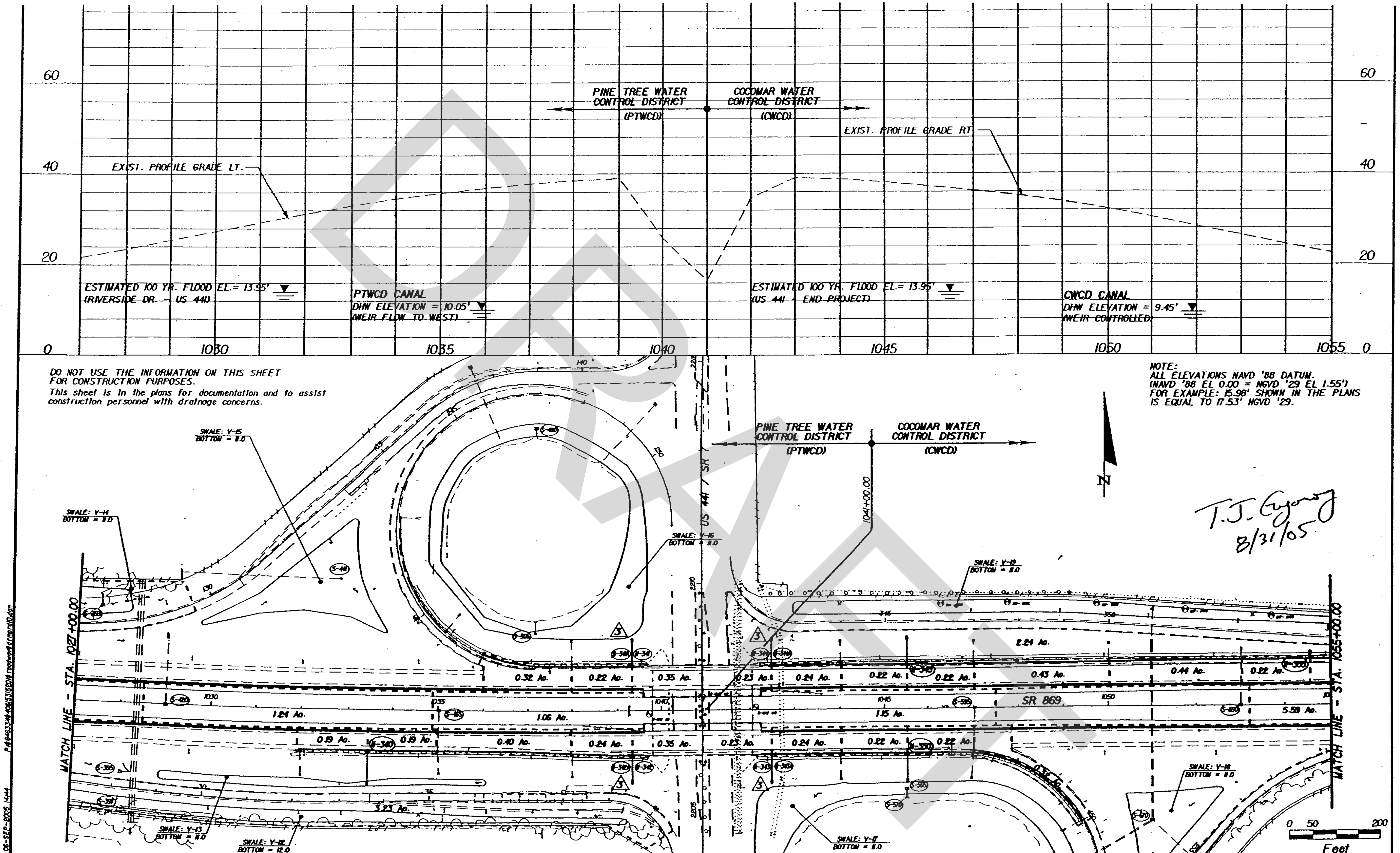
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
DRAINAGE MAP

SHEET NO.
10

01-SEP-2005 13:07



REVISIONS		
DATE	BY	DESCRIPTION
8-31-05	TJG	3 ADDED N-341, N-341A, N-342, N-342A, N-343, N-343A, N-344, & N-344A.

apac PARSONS

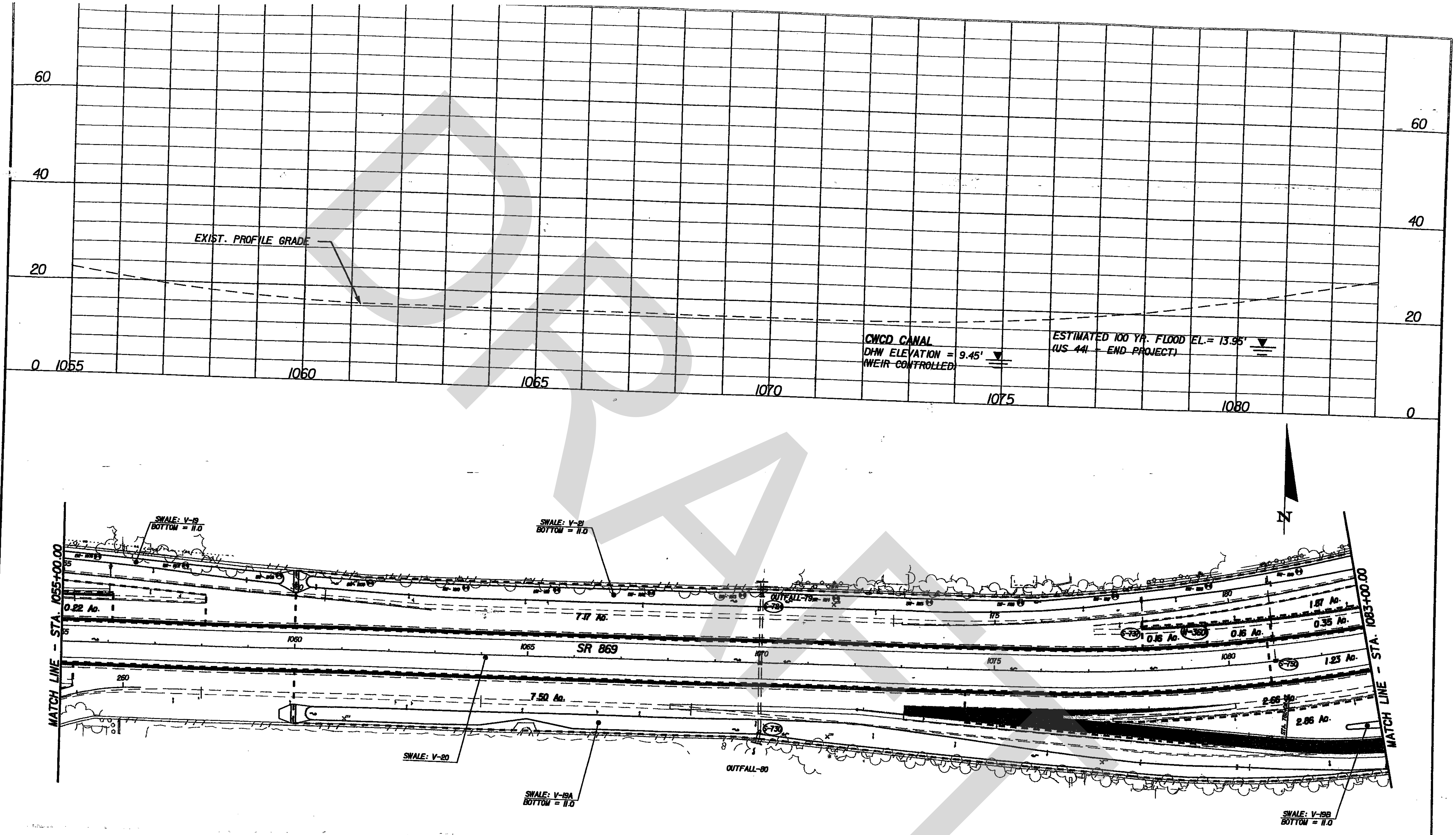
EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
DRAINAGE MAP

SHEET NO.
11



DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES.
This sheet is in the plans for documentation and to assist construction personnel with drainage concerns.

T.J. Gyorog
8/31/05

NOTE:
ALL ELEVATIONS NAVD '88 DATUM.
(NAVD '88 EL 0.00 = NGVD '29 EL 1.55')
FOR EXAMPLE: 15.98' SHOWN IN THE PLANS IS EQUAL TO 17.53' NGVD '29.

0 50 200
Feet

01-SEP-2005 13:59

REVISIONS		
DATE	BY	DESCRIPTION
		RELEASED FOR CONSTRUCTION

apac PARSONS

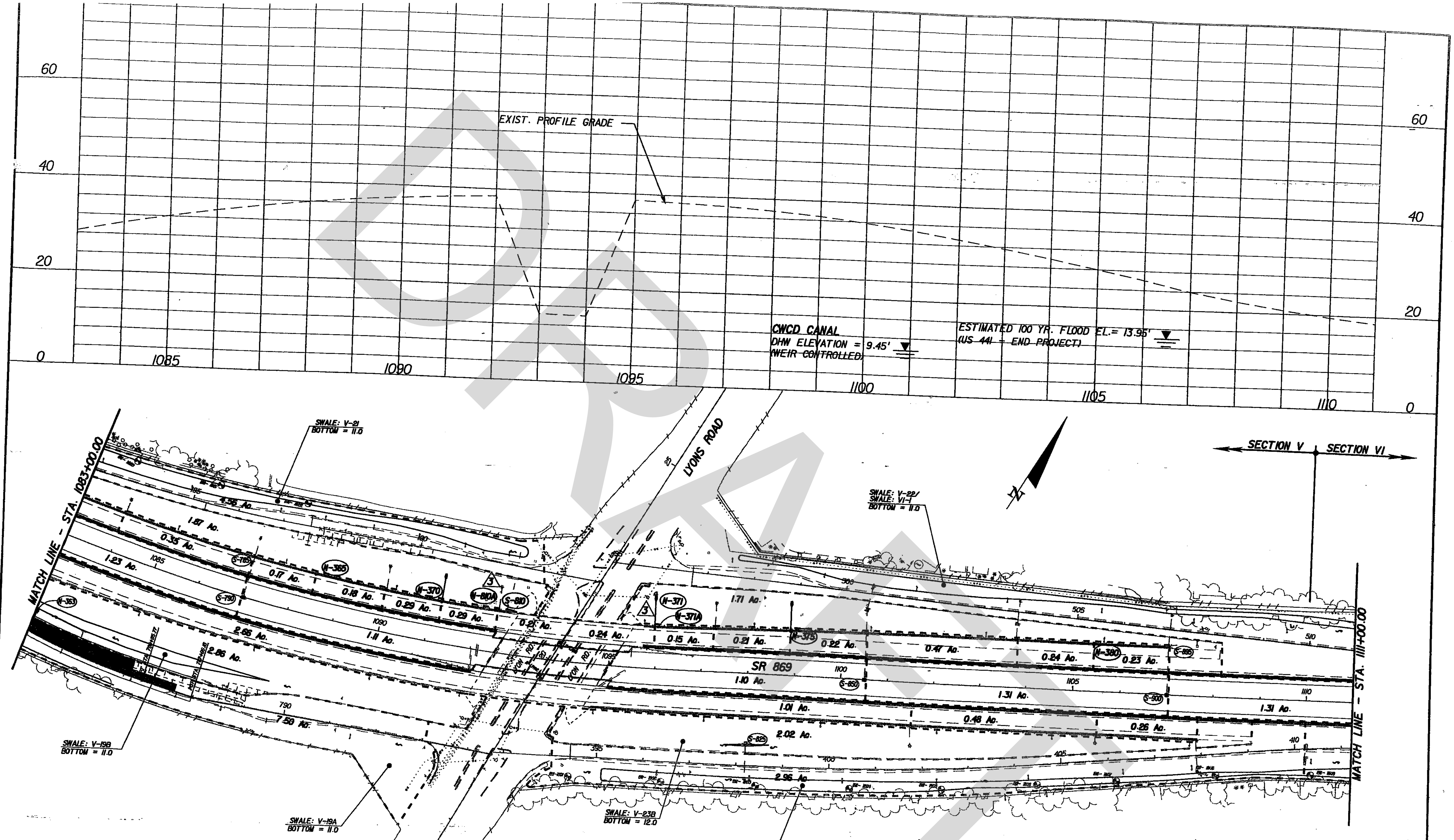
EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
DRAINAGE MAP

SHEET NO.
12



DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES.
This sheet is in the plans for documentation and to assist construction personnel with drainage concerns.

T.J. Gyorog
8/31/05

NOTE:
ALL ELEVATIONS NAVD '88 DATUM.
(NAVD '88 EL 0.00 = NGVD '29 EL 1.55')
FOR EXAMPLE: 15.98' SHOWN IN THE PLANS IS EQUAL TO 17.53' NGVD '29.

0 50 200
Feet

03-SEP-2005 12:27 P:\6463340\406153152010\roadway\drmprd12.dgn

REVISIONS		
DATE	BY	DESCRIPTION
8-31-05	TJG	3 ADDED N-810A & N-371, & N-371A

RELEASED FOR CONSTRUCTION

apac
PARSONS

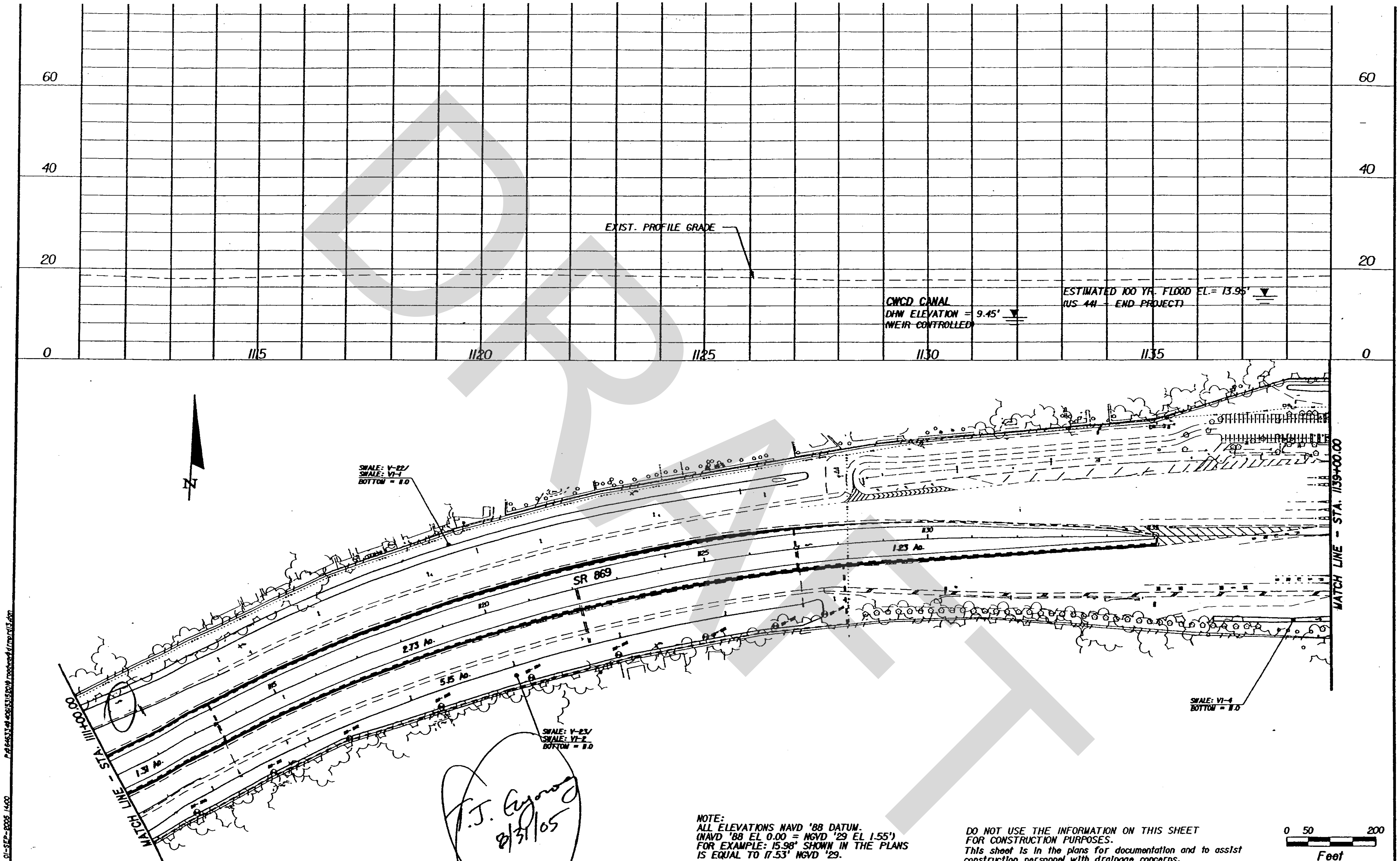
EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
DRAINAGE MAP

SHEET NO.
13



NOTE:
ALL ELEVATIONS NAVD '88 DATUM.
(NAVD '88 EL 0.00 = NGVD '29 EL 1.55')
FOR EXAMPLE: 15.98' SHOWN IN THE PLANS
IS EQUAL TO 17.53' NGVD '29.

DO NOT USE THE INFORMATION ON THIS SHEET
FOR CONSTRUCTION PURPOSES.
This sheet is in the plans for documentation and to assist
construction personnel with drainage concerns.

REVISIONS		
DATE	BY	DESCRIPTION

apac
PARSONS

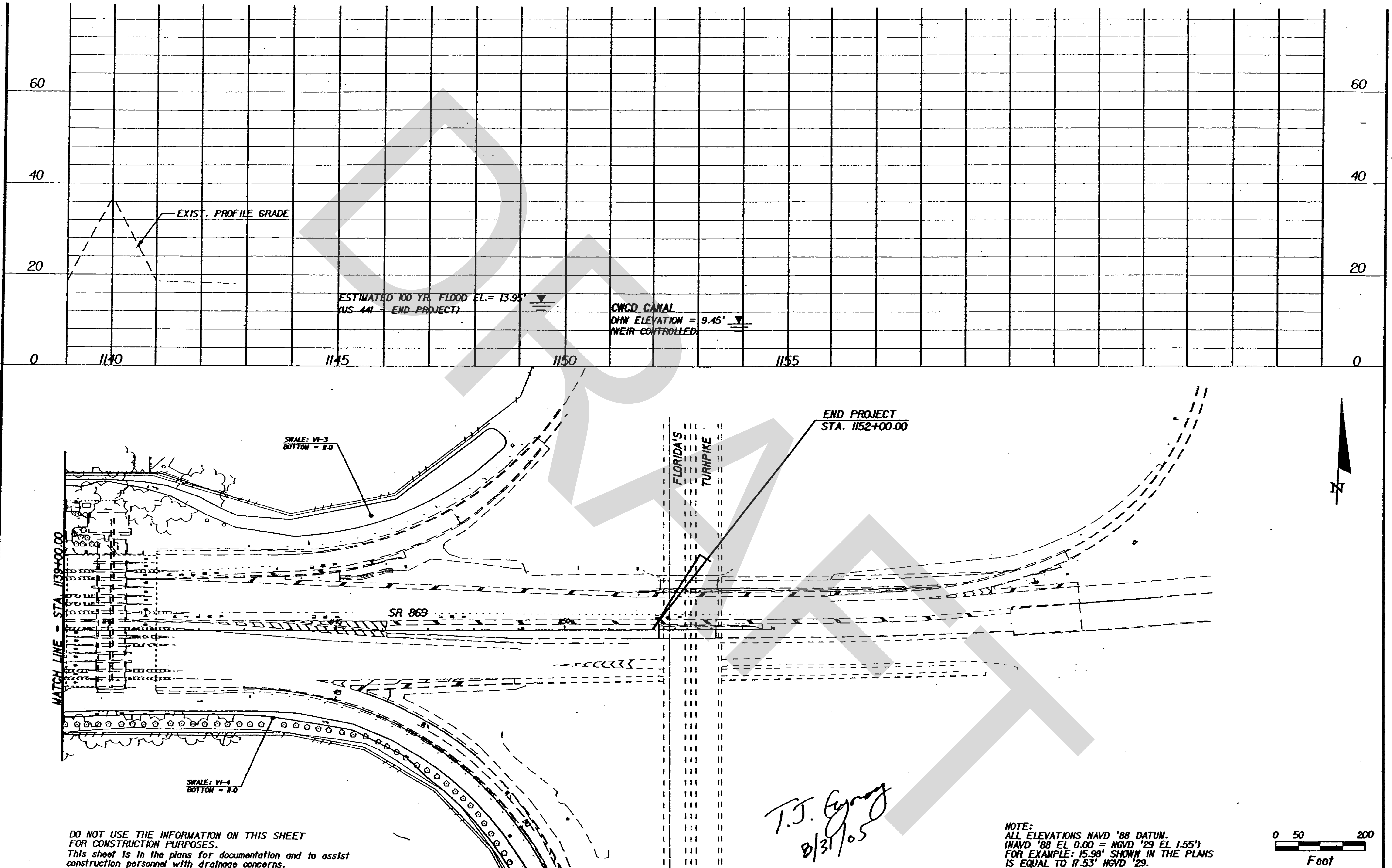
EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
DRAINAGE MAP

SHEET NO.
14



DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES.
This sheet is in the plans for documentation and to assist construction personnel with drainage concerns.

T.J. Gyorog
8/31/05

NOTE:
ALL ELEVATIONS NAVD '88 DATUM.
(NAVD '88 EL 0.00 = NGVD '29 EL 1.55')
FOR EXAMPLE: 15.98' SHOWN IN THE PLANS IS EQUAL TO 17.53' NGVD '29.

REVISIONS		
DATE	BY	DESCRIPTION

apac
PARSONS

EOR: THOMAS J. GYOROG
P.E. LICENSE NUMBER 46612
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32225
CERTIFICATE OF AUTHORIZATION 1838

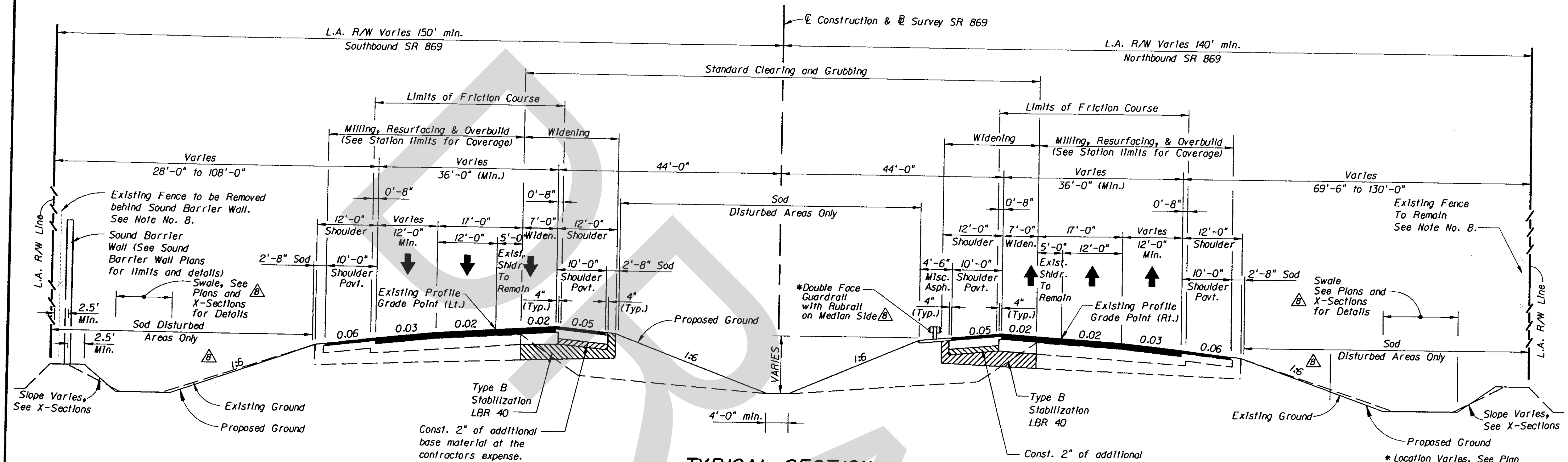
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
DRAINAGE MAP

SHEET NO. 15

01-SEP-2005 14:01



TYPICAL SECTION
SR 869 MAINLINE
(SAWGRASS EXPRESSWAY)
STA. 786+00.00 TO STA. 1152+00.00

DESIGN SPEED = 70 MPH

TYPICAL SECTION NOTES

1. NONE OF THE EXISTING LIMEROCK BASE THAT IS REMOVED MAY BE USED IN THE CONSTRUCTION OF THE NEW LIMEROCK BASE.
2. ALL OF THE EXISTING LIMEROCK BASE THAT IS REMOVED MAY BE INCORPORATED IN THE STABILIZED PORTION OF THE SUBGRADE.
3. ACTUAL WIDTH OF BASE WIDENING MAY VARY DUE TO ACTUAL EXISTING PAVEMENT WIDTH. CONTRACTOR MAY ELECT TO PLACE UNIFORM WIDTH BASE WIDENING STRIP AT NO ADDITIONAL COST (SEE TYPICAL WIDENING PAVEMENT DETAIL).
4. ALL MAINLINE FLEXIBLE PAVEMENT SHOULDERS SHALL UTILIZE GROUND-IN RUMBLE STRIPS AS PER INDEX NO. 518. THERE WILL BE NO GROUND-IN RUMBLE STRIPS ON BRIDGE SHOULDERS APPROACH SLABS. SEE INTERIM STANDARD INDEX NO. 518 SHEET 2 OF 2 AS PER TURNPIKE MEMORANDUM NO. 34-00, DATED DEC 5, 2000.
5. THE CONTRACTOR SHALL GRADE ALL DITCHES TO ELEVATIONS SHOWN IN THE SPECIAL DITCH PROFILES, CROSS SECTIONS, AND MEDIAN DITCH DEPTH TABLE. DITCH BOTTOM WIDTH SHALL VARY ACCORDINGLY.
6. CONTRACTOR SHALL BE REQUIRED TO SOD ALL AREAS DISTURBED DURING CONSTRUCTION.
7. STRUCTURAL COURSE ON THE SHOULDERS SHALL BE FLUSH WITH STRUCTURAL COURSE ON THE TRAVELWAY.
8. EXISTING FENCE SHALL BE REMOVED IN AREAS BEHIND SOUND BARRIER WALL. EXISTING FENCE SHALL REMAIN IN AREAS WITHOUT SOUND BARRIER WALL AND RESET TO MATCH ENDS OF SOUND BARRIER WALL. PRIVATE PROPERTY FENCES ADJACENT TO SOUND BARRIER WALL SHALL BE EXTENDED TO SOUND BARRIER WALL WITH 'LIKE KIND' FENCE. FENCE SHALL ALSO BE RELOCATED IN AREAS OF BERM RELOCATION AND NO SOUND WALL.

TRAFFIC DATA

CURRENT YEAR ESTIMATE = 2003 = 63,800
OPENING YEAR ESTIMATE = 2010 = 70,700
DESIGN YEAR ESTIMATE = 2030 = 89,500
K = 11.22% D = 51.93% T = 4.6%
DESIGN SPEED = 70mph

PAVEMENT DESIGN DATA

NEW TRAVEL LANES

12" TYPE B STABILIZATION LBR 40
OPTIONAL BASE GROUP 9
WITH 3½" TYPE SP STRUCTURAL COURSE, TRAFFIC LEVEL C
(PG 76-22) AND ¾" FRICTION COURSE FC-5

NEW SHOULDERS

12" TYPE B STABILIZATION LBR 40
OPTIONAL BASE GROUP 9
WITH 1½" TYPE SP STRUCTURAL COURSE, TRAFFIC LEVEL B

NEW OUTSIDE WIDENING

18" ~~12"~~ LIMEROCK BASE
3½" ~~2½"~~ TYPE SP STRUCTURAL COURSE, TRAFFIC LEVEL C (PG 76-22)
¾" FRICTION COURSE FC-5

EXISTING TRAVEL LANES

MILLING
MILL EXISTING ASPHALT CONCRETE PAVEMENT:
INSIDE LANE AND INSIDE SHLDR. (3/4" AVERAGE DEPTH)
OUTSIDE LANE (1½" AVERAGE DEPTH)

RESURFACING
1½" TYPE SP STRUCTURAL COURSE, TRAFFIC LEVEL C
(PG 76-22) AND ¾" FRICTION COURSE FC-5

EXISTING SHOULDER PAVEMENT

MILLING
MILL EXISTING ASPHALT CONCRETE PAVEMENT (1" AVG. DEPTH)

RESURFACING
1" TYPE SP STRUCTURAL COURSE, TRAFFIC LEVEL B

Donald [illegible] PE #46223 5/14/2008 As-Built Revisions Only

REVISIONS

DATE	BY	DESCRIPTION
8-11-05	LDO	ADDED 2" OF ADDITIONAL BASE MATERIAL
8-18-06	DFW	ADJUST FRONT SLOPES FROM 1:4 TO 1:6. REVISED RUBRAIL NOTATION.

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

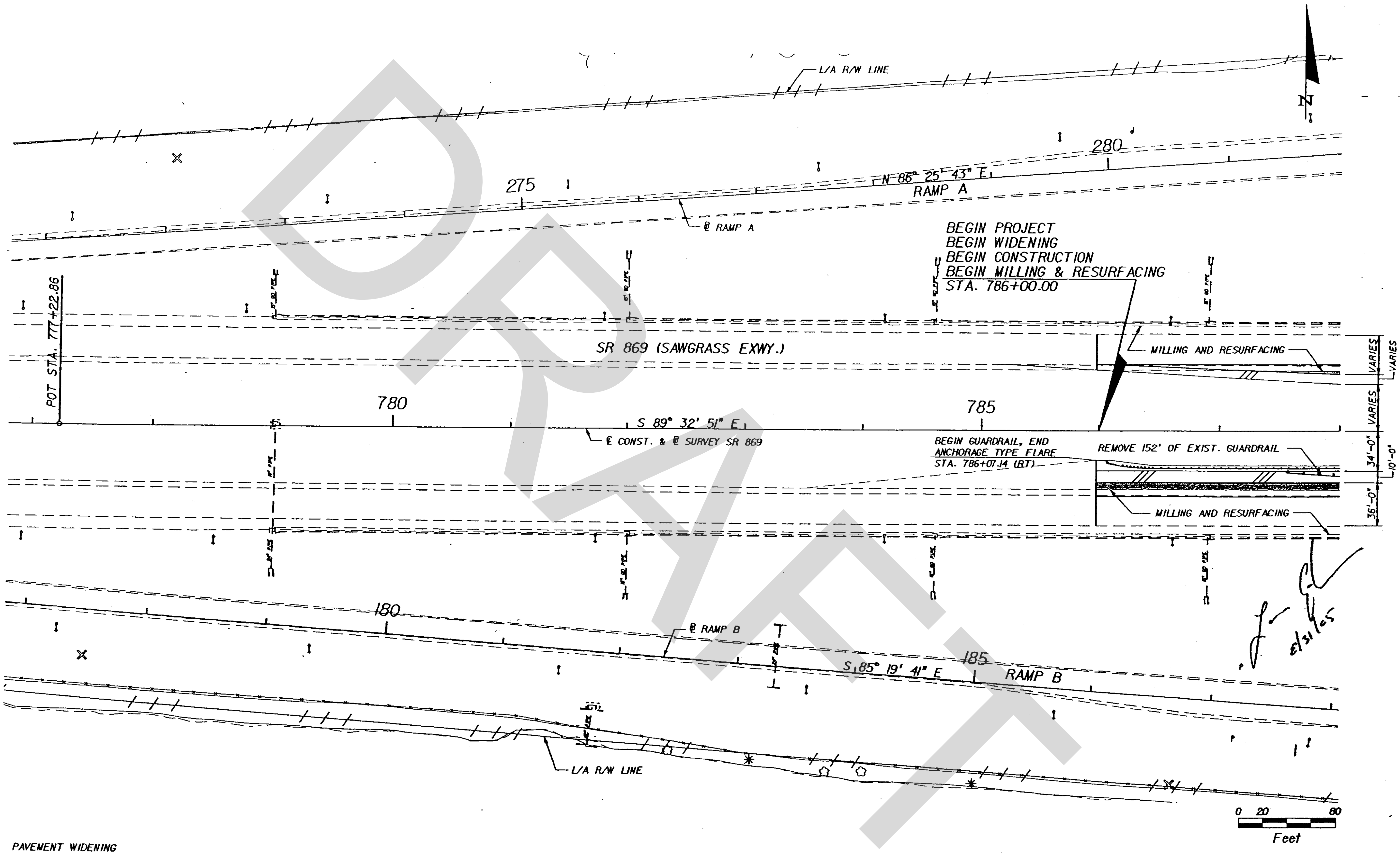
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

SAWGRASS EXPRESSWAY
TYPICAL SECTIONS

SHEET NO. 16

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



PAVEMENT WIDENING

SHOULDER PAVEMENT

REVISIONS		
DATE	BY	DESCRIPTION

apac PARSONS

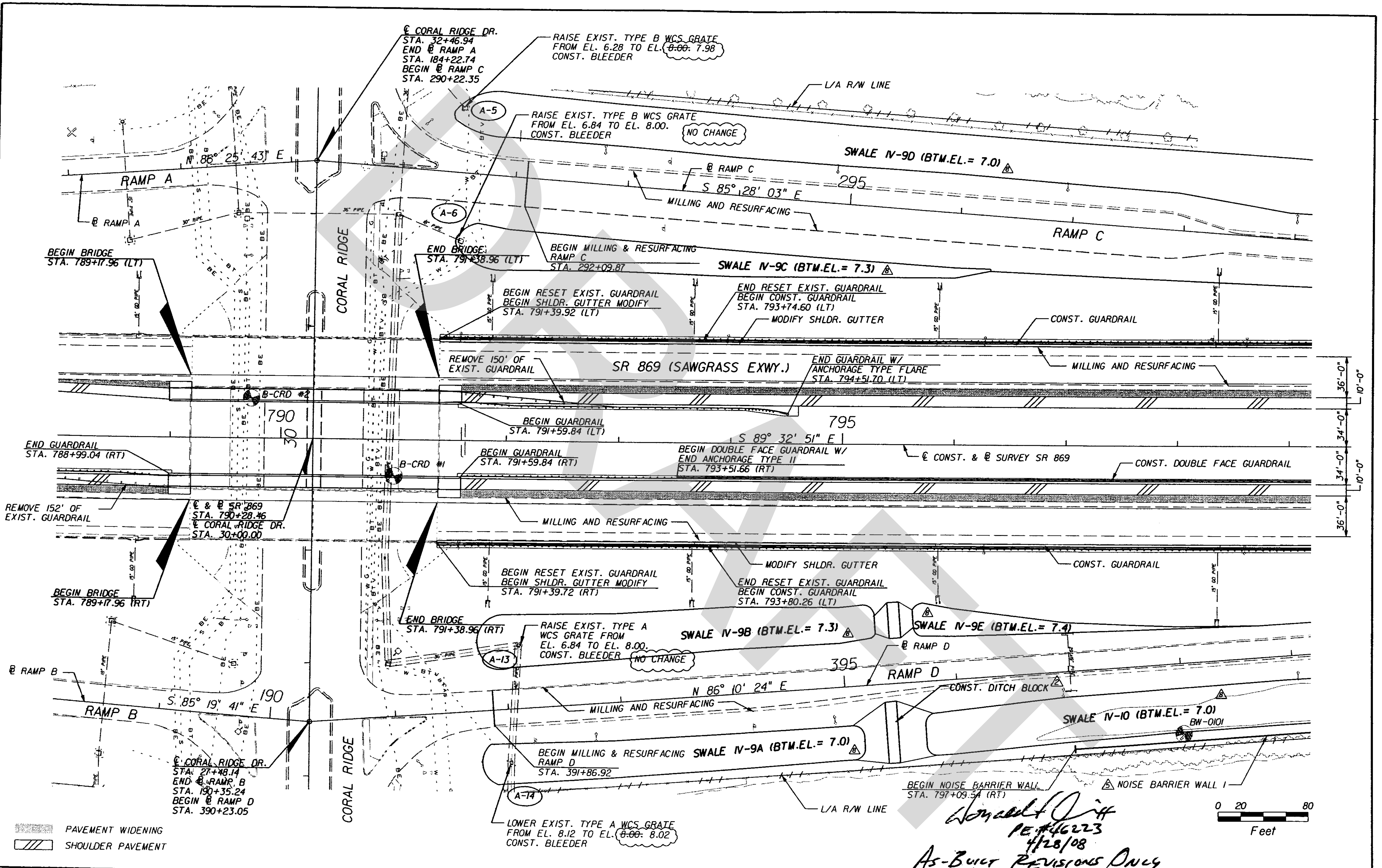
EOR: LON D. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
31



REVISIONS		
DATE	BY	DESCRIPTION
08-11-05	LDO	ADDED DITCH BLOCK NOTE.
01-19-06	RVS	REVISED NOISE BARRIER WALLS 1 ALIGNMENT.
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES.

apac
PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
32

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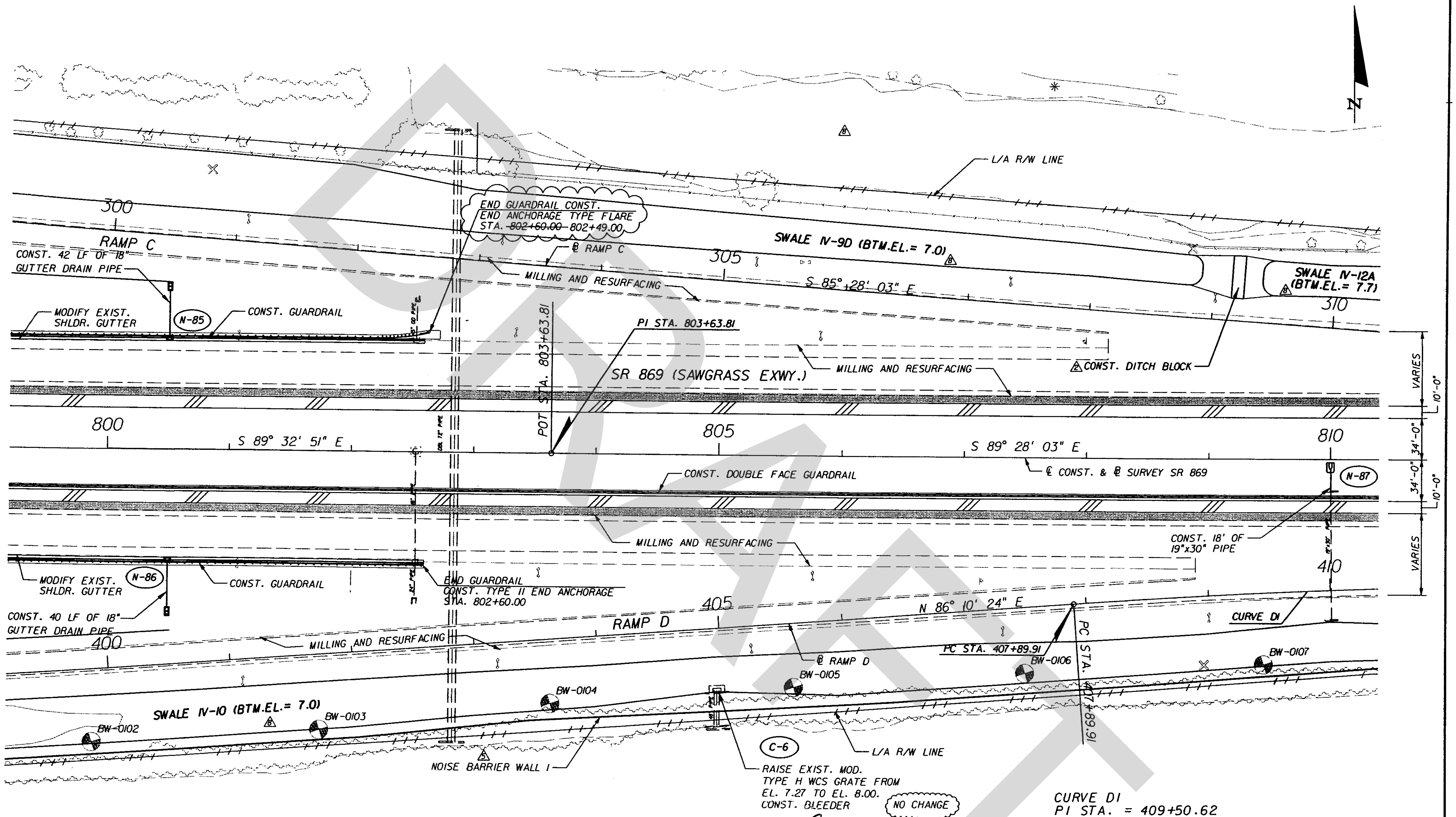

CURVE DI
PI STA. = 409+50.62
Delta = 3° 12' 48" (RT)
D = 1° 00' 00"
T = 160.71
L = 321.33
R = 5,729.58
PC STA. = 407+89.91
PT STA. = 411+11.24

0 20 80
Feet

Donald L. Gift
PE #46223
4/28/08
As-Built Revisions Only

PAVEMENT WIDENING

SHOULDER PAVEMENT

REVISIONS		
DATE	BY	DESCRIPTION
08-11-05	LDO	8 ADDED DITCH BLOCK NOTE.
01-19-06	RVS	5 REVISED NOISE BARRIER WALL I ALIGNMENT.
08-18-06	DFW	6 REVISED STORMWATER TREATMENT SWALES, DELETE CANAL REVETMENT.

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
33

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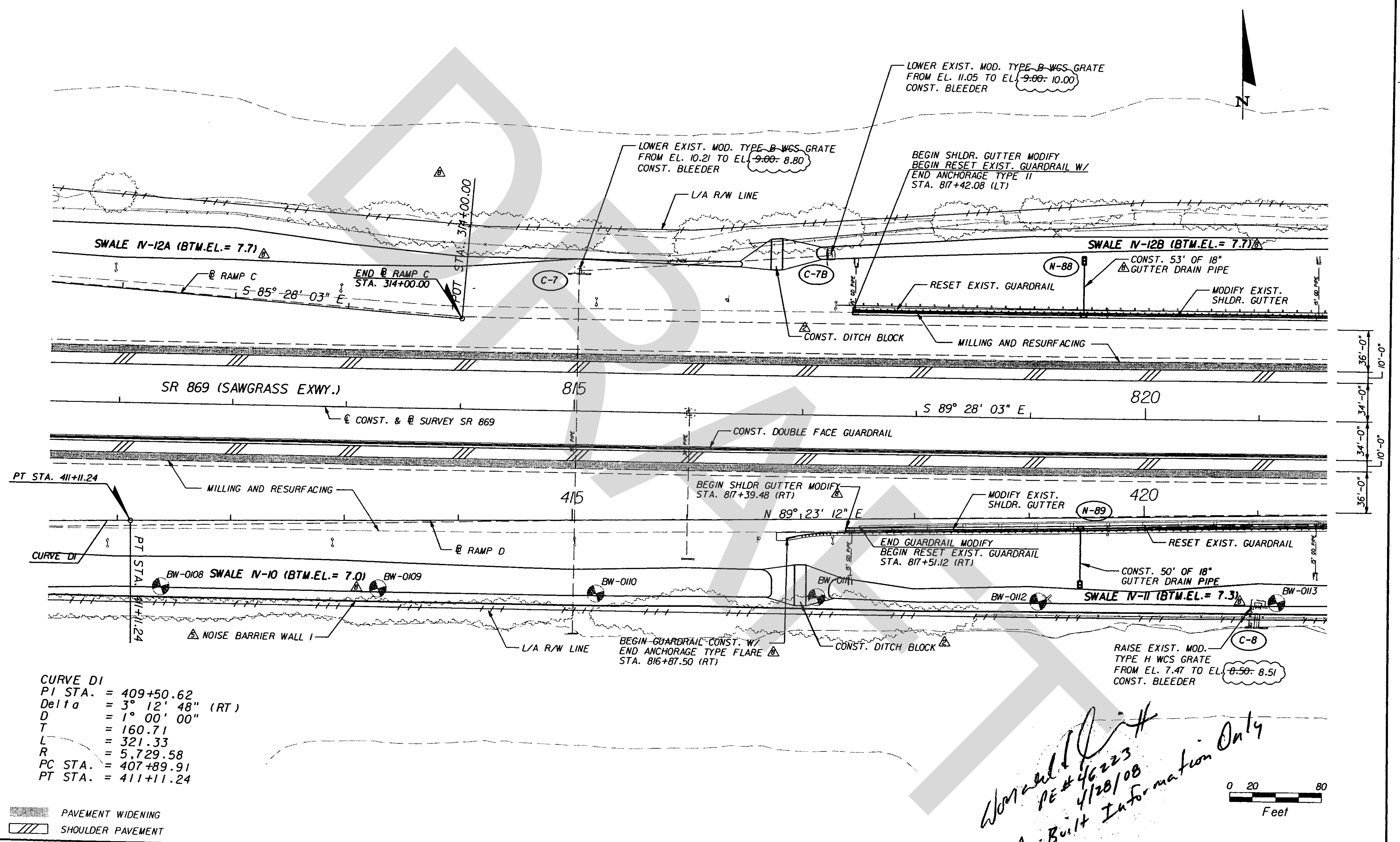


REVISIONS

DATE	BY	DESCRIPTION
08-11-05	LDO	2 ADDED DITCH BLOCK NOTE.
01-19-06	RVS	5 REVISED NOISE BARRIER WALLS I ALIGNMENT.
08-18-06	DFW	8 REVISED STORMWATER TREATMENT SWALES, DELETE CANAL REVETMENT, MODIFY BEGIN SHOULDER GUTTER (RT) & GUTTER DRAIN LENGTHS.

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

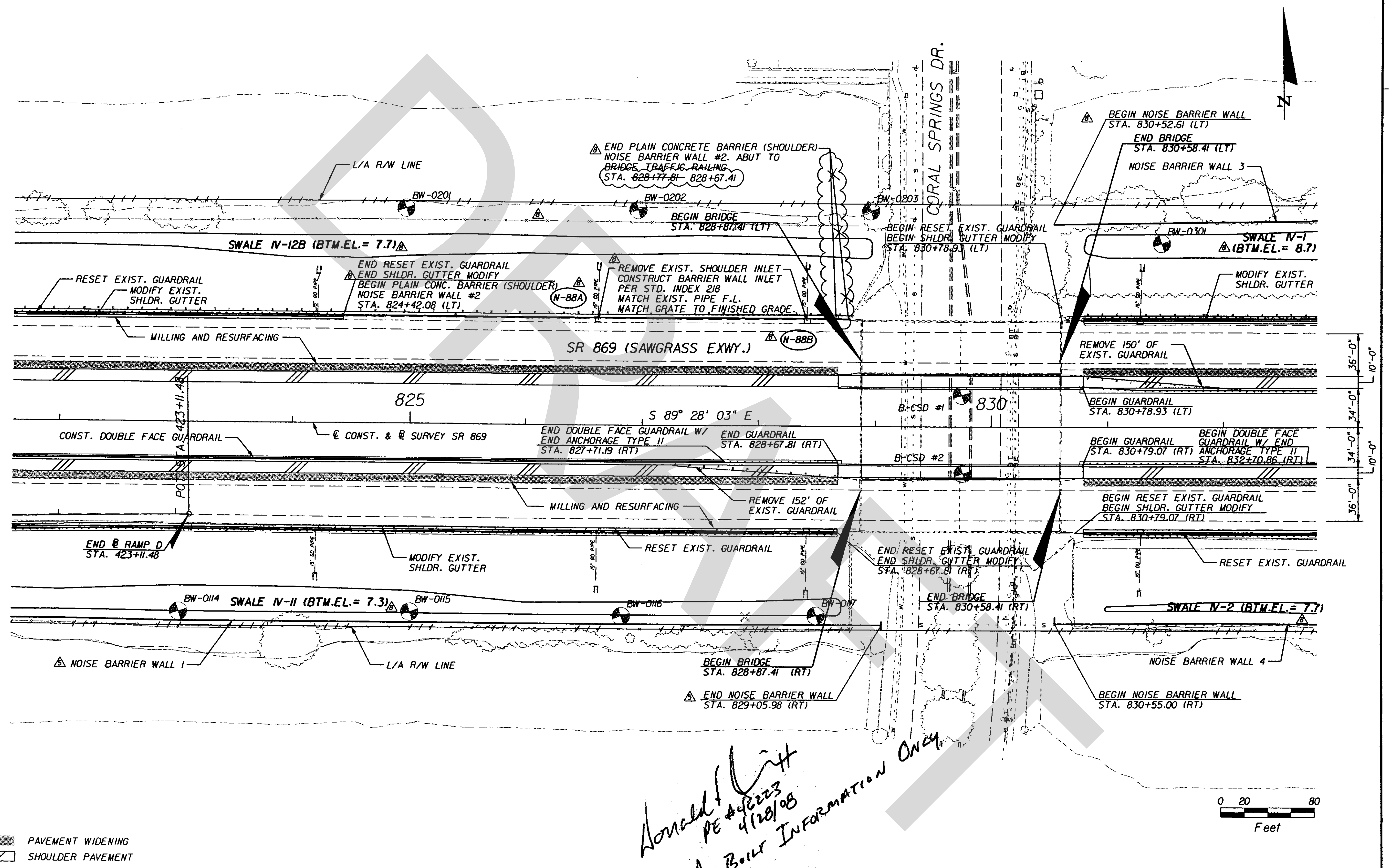
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 34

USER: p0024664 4/28/2008



Donald [illegible] PE #46223 4/28/08
As-Built Information Only

PAVEMENT WIDENING
SHOULDER PAVEMENT

REVISIONS		
DATE	BY	DESCRIPTION
08-11-05	LDO	ADDED DITCH BLOCK NOTE.
01-19-06	RVS	REVISED NOISE BARRIER WALL 1 ALIGNMENT.
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES, DELETE CANAL REVETMENT, REVISE NOISE BARRIER WALLS 2 &3 ADD CONC. BARRIER WALL INLETS

apac
PARSONS

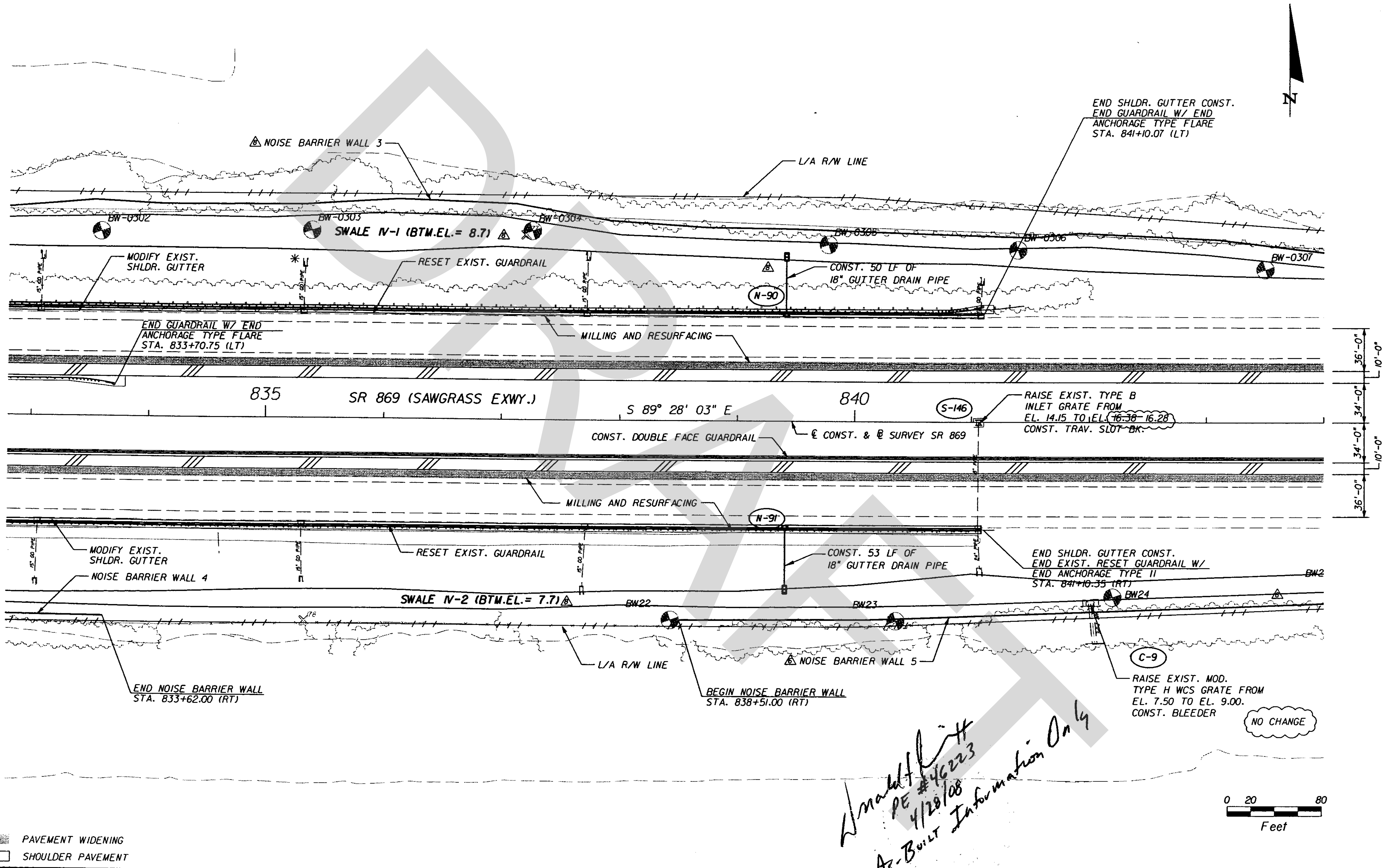
EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 35



REVISIONS

DATE	BY	DESCRIPTION
01-24-06	RVS	REVISED LOCATION OF NOISE BARRIER NO.5
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES & NOISE BARRIER WALL 3. ADJUST PIPE LENGTH, DELETE CANAL REVETMENT.

apac PARSONS

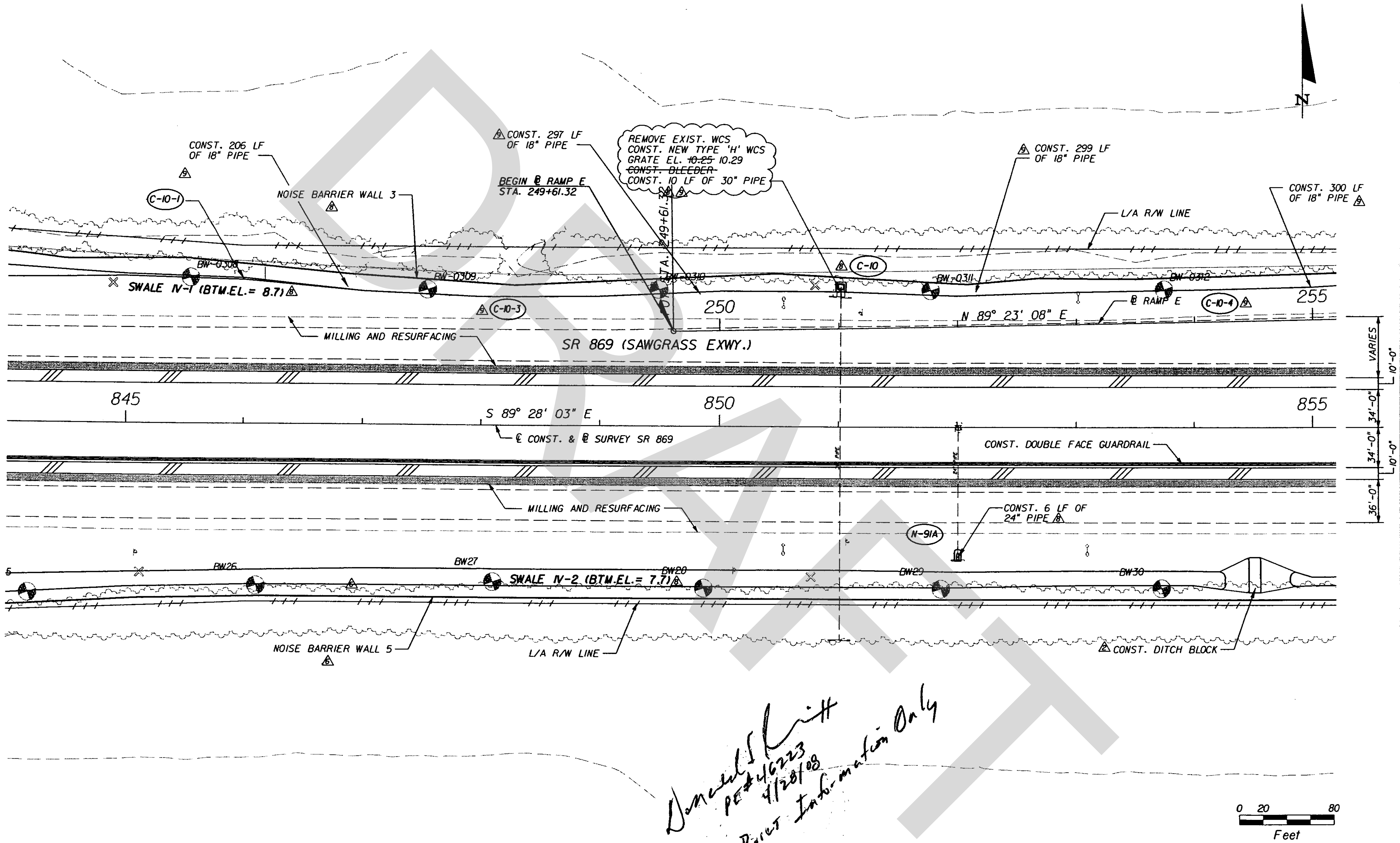
EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 36



PAVEMENT WIDENING

SHOULDER PAVEMENT

REVISIONS		
DATE	BY	DESCRIPTION
08-11-05	LDO	ADDED DITCH BLOCK NOTE.
01-24-06	RVS	REVISED LOCATION OF NOISE BARRIER NO. 5
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES, DELETE CANAL REVET. REVISE PIPE LENGTH & NOISE BARRIER WALL 3.
06-28-07	DFW	REVISED PIPES AND DRAINAGE STRUCTURES.

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 37

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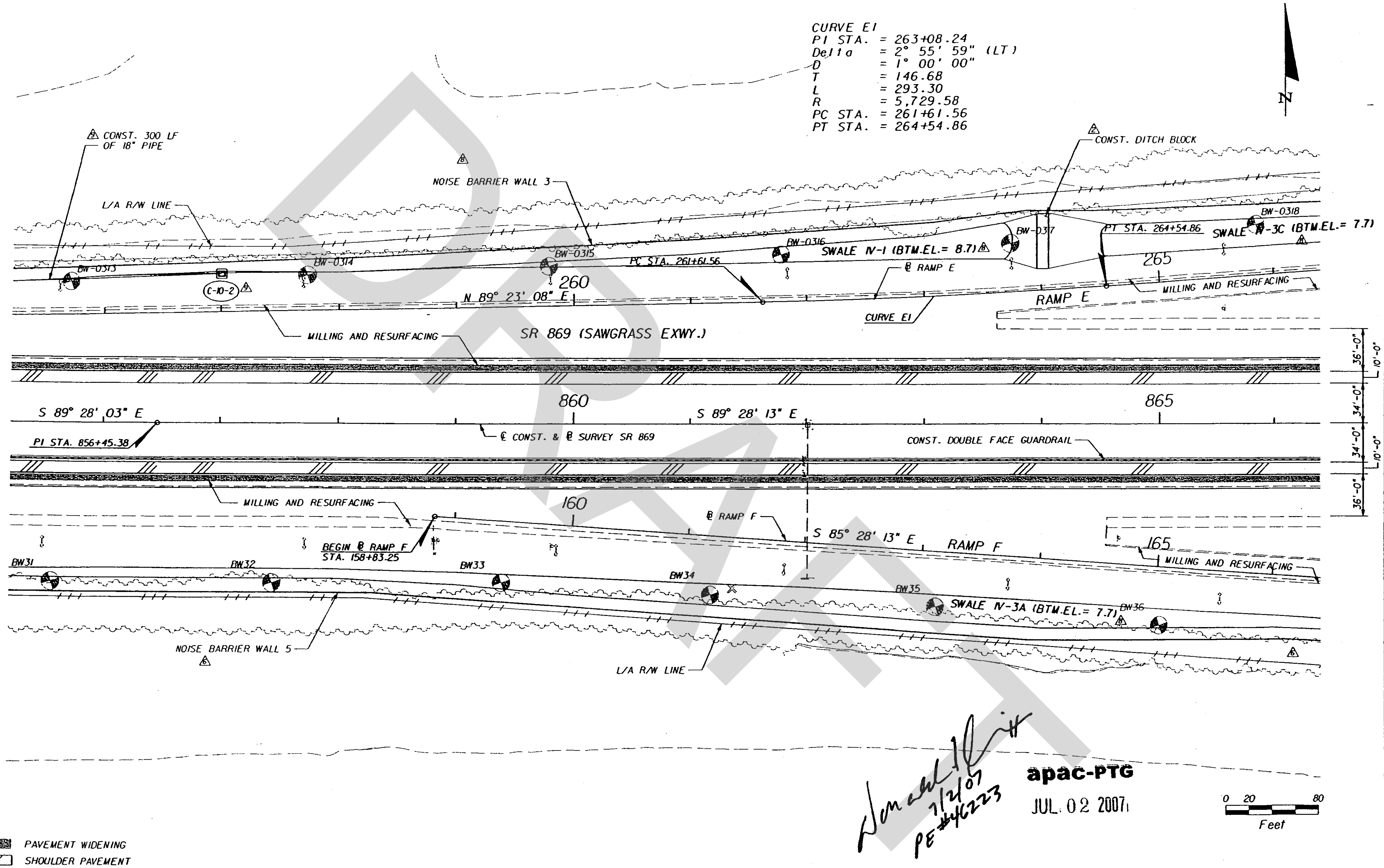

apac-PTG

JUL 02 2007

7/2/07
PE #46223

DRAFT

REVISIONS		
DATE	BY	DESCRIPTION
08-11-05	LDO	1 ADDED DITCH BLOCK NOTE.
01-24-06	RVS	2 REVISED LOCATION NOISE BARRIER NO. 5
08-18-06	DFW	3 REVISED STORMWATER TREATMENT SWALES. DELETE CANAL REVETMENT. REVISE NOISE BARRIER WALL 3.
06-28-07	DFW	4 REVISED PIPES AND DRAINAGE STRUCTURES.

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
38

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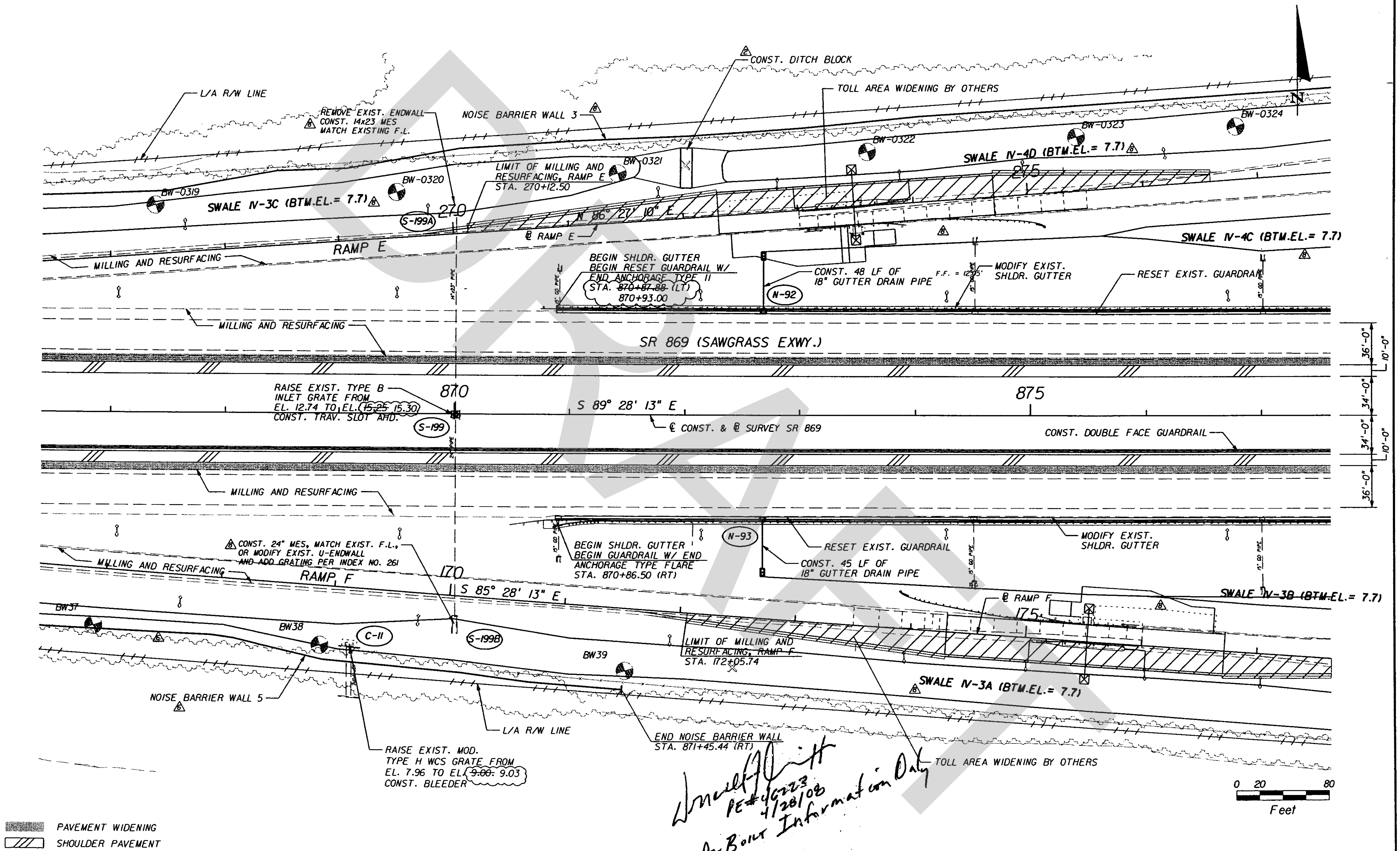


REVISIONS

DATE	BY	DESCRIPTION
08-11-05	LDO	2 ADDED DITCH BLOCK NOTE.
01-24-06	RVS	5 REVISED LOCATION OF NOISE BARRIER NO. 5
08-18-06	DFW	8 REVISED STORMWATER TREATMENT SWALES. DELETE CANAL REVETMENT. ADD S-199A, S-199B & FUTURE TOLL WIDENING. REVISE NOISE BARRIER WALL 3

apac PARSONS

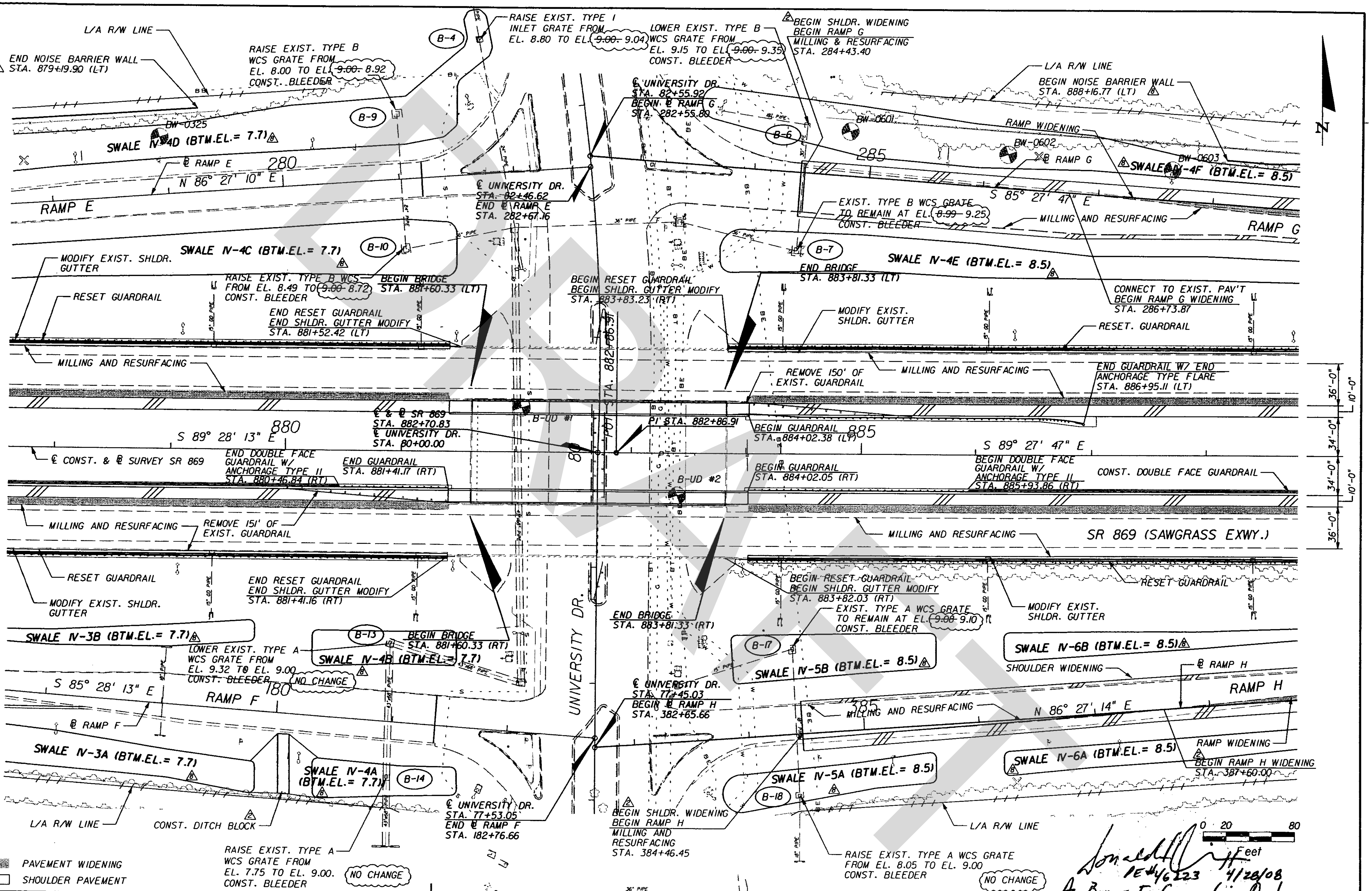
EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
39



PE #46223 4/28/08
As-Built Information Only

DATE	BY	DESCRIPTION
		REVISIONS
08-11-05	LDO	ADDED DITCH BLOCK NOTE.
08-11-05	LDO	REVISED RAMP WIDENING NOTES & EXTENDED SHLDR. WIDENING
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES, DELETE CANAL REVETMENT. REVISE NOISE BARRIER WALLS 3 AND 6.

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
40

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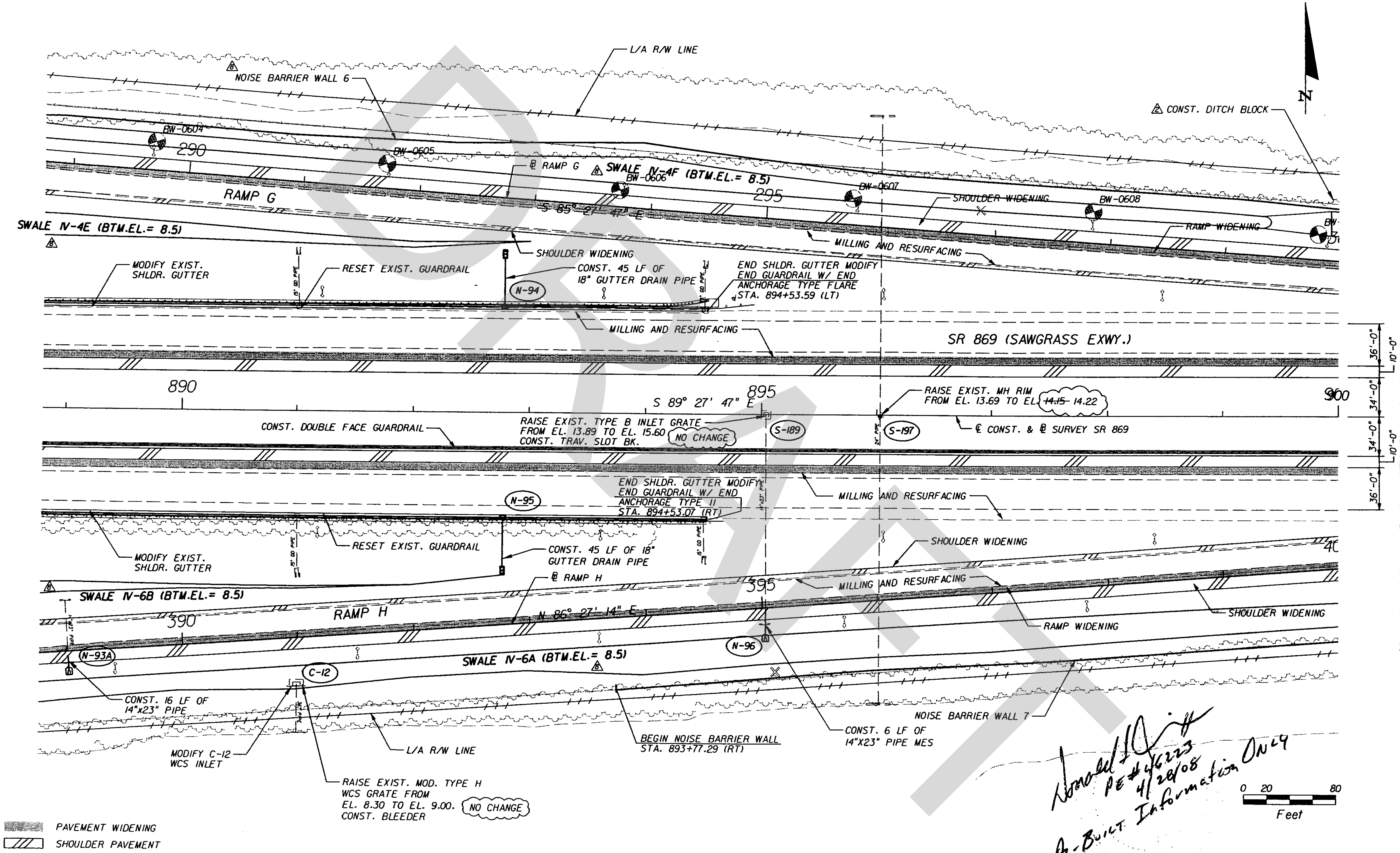

REVISIONS

DATE	BY	DESCRIPTION
08-11-05	LDO	⚠1 ADDED DITCH BLOCK NOTE.
12-06-05	RVS	⚠2 REVISED NOISE BARRIER WALL 7 ALIGNMENT.
08-18-06	DFW	⚠3 REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALL 6. DELETE CANAL REVETMENT.

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 41

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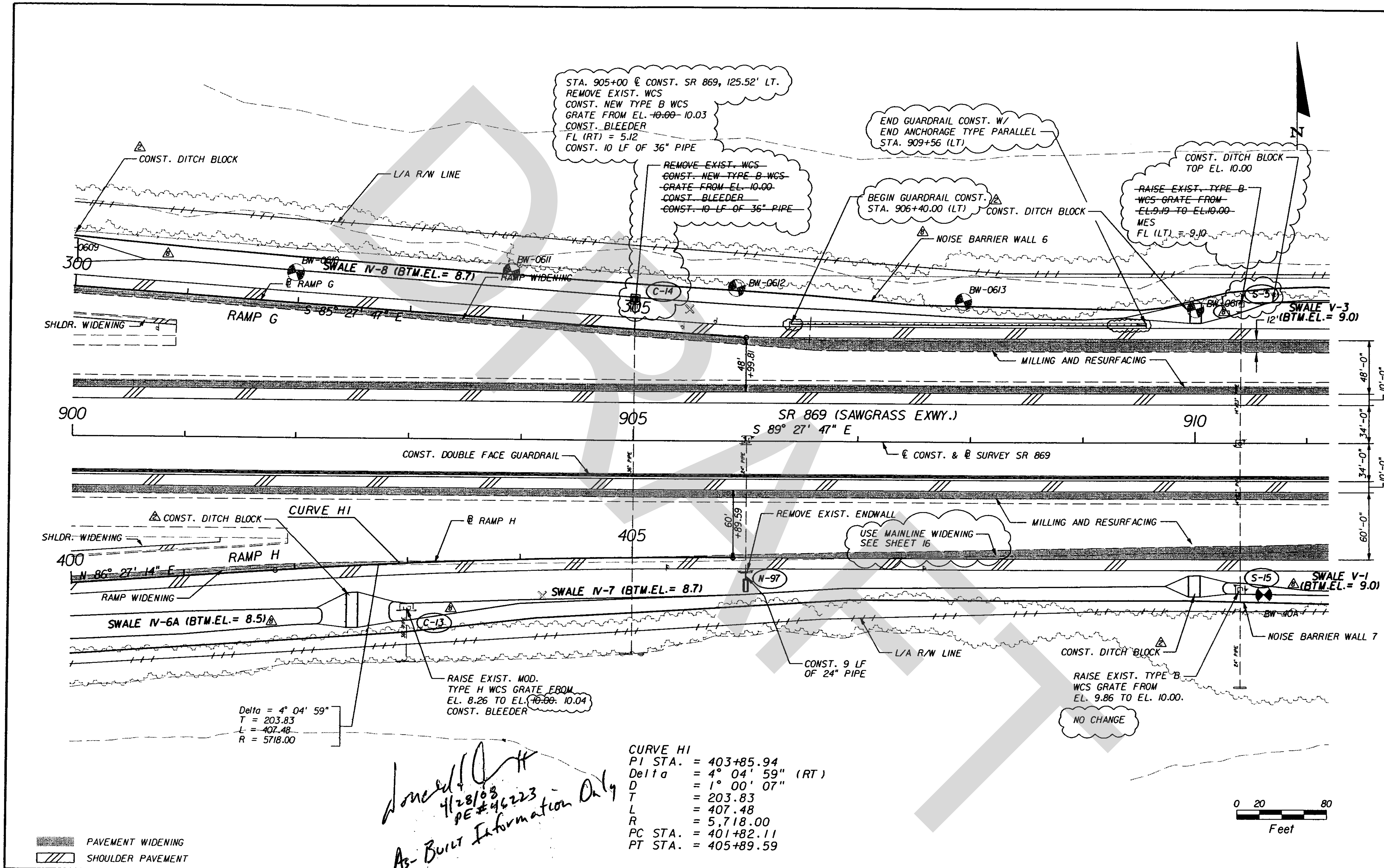

REVISIONS		
DATE	BY	DESCRIPTION
08-11-05	LDO	ADDED DITCH BLOCK NOTE.
12-06-05	RVS	REVISED NOISE BARRIER WALL 7 ALIGNMENT.
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALL 6. DELETE CANAL REVETMENT.

apac
PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
42

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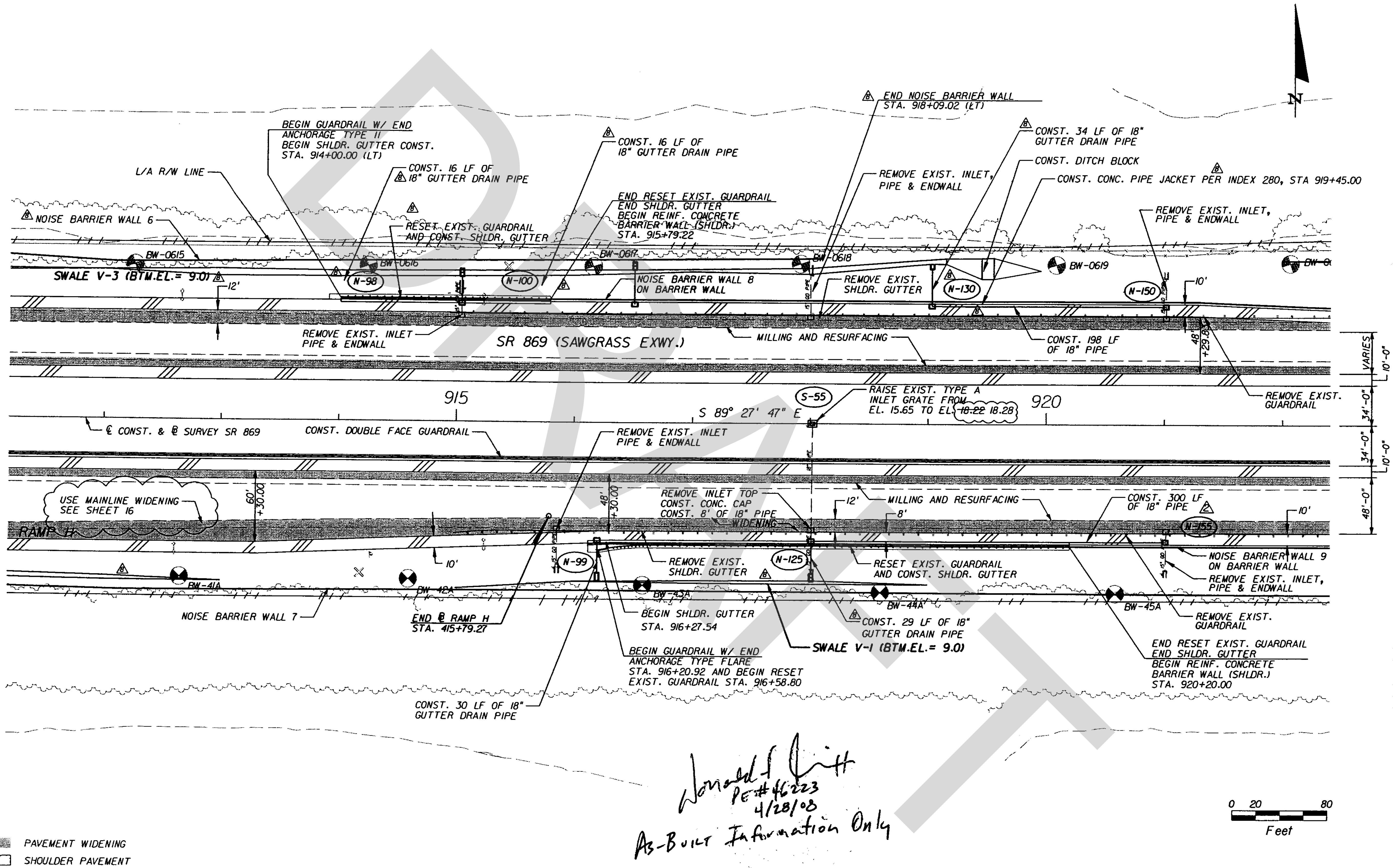

Donald J. Smith
PE#46223
4/28/08
As-Built Information Only

REVISIONS		
DATE	BY	DESCRIPTION
08-11-05	TJG	△1 REVISED LABEL
12-06-05	RVS	△2 REVISED NOISE BARRIER WALL 7 ALIGNMENT.
08-18-06	DFW	△3 REV. STORMWATER TREATMENT SWALES, DEL. REVETMENT, ADJUST NOISE WALLS 6 AND 8. REVISED N-98, N-100, N-130 AND ADJ. PIPES.

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 43

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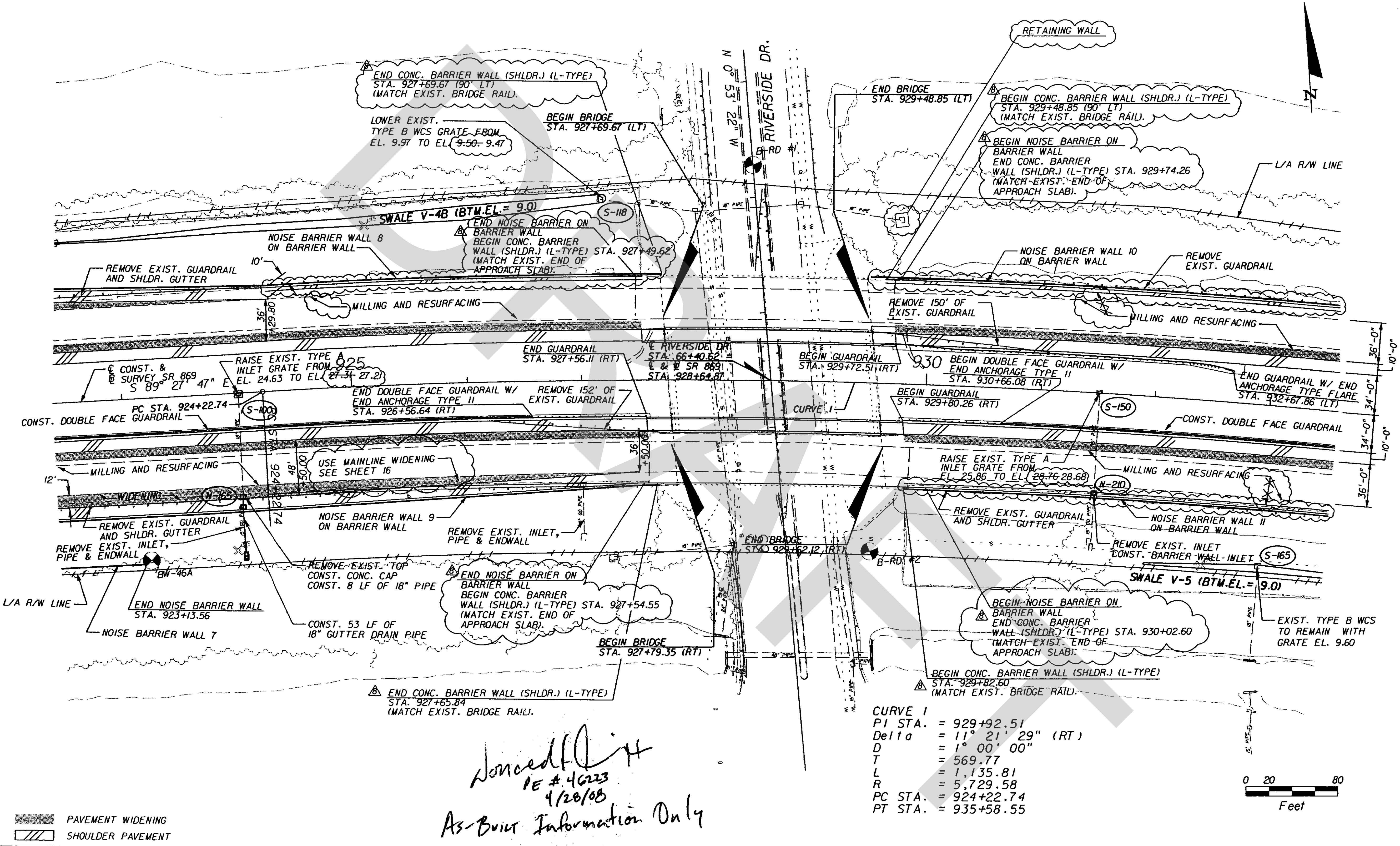

REVISIONS		
DATE	BY	DESCRIPTION
12-06-05	RVS	REVISED NOISE BARRIER WALL 7 ALIGNMENT.
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES, DELETE CANAL REVETMENT, REVISED CIP NOISE WALLS AT APPROACH SLABS.

apac PARSONS

EOR: LON C. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
44

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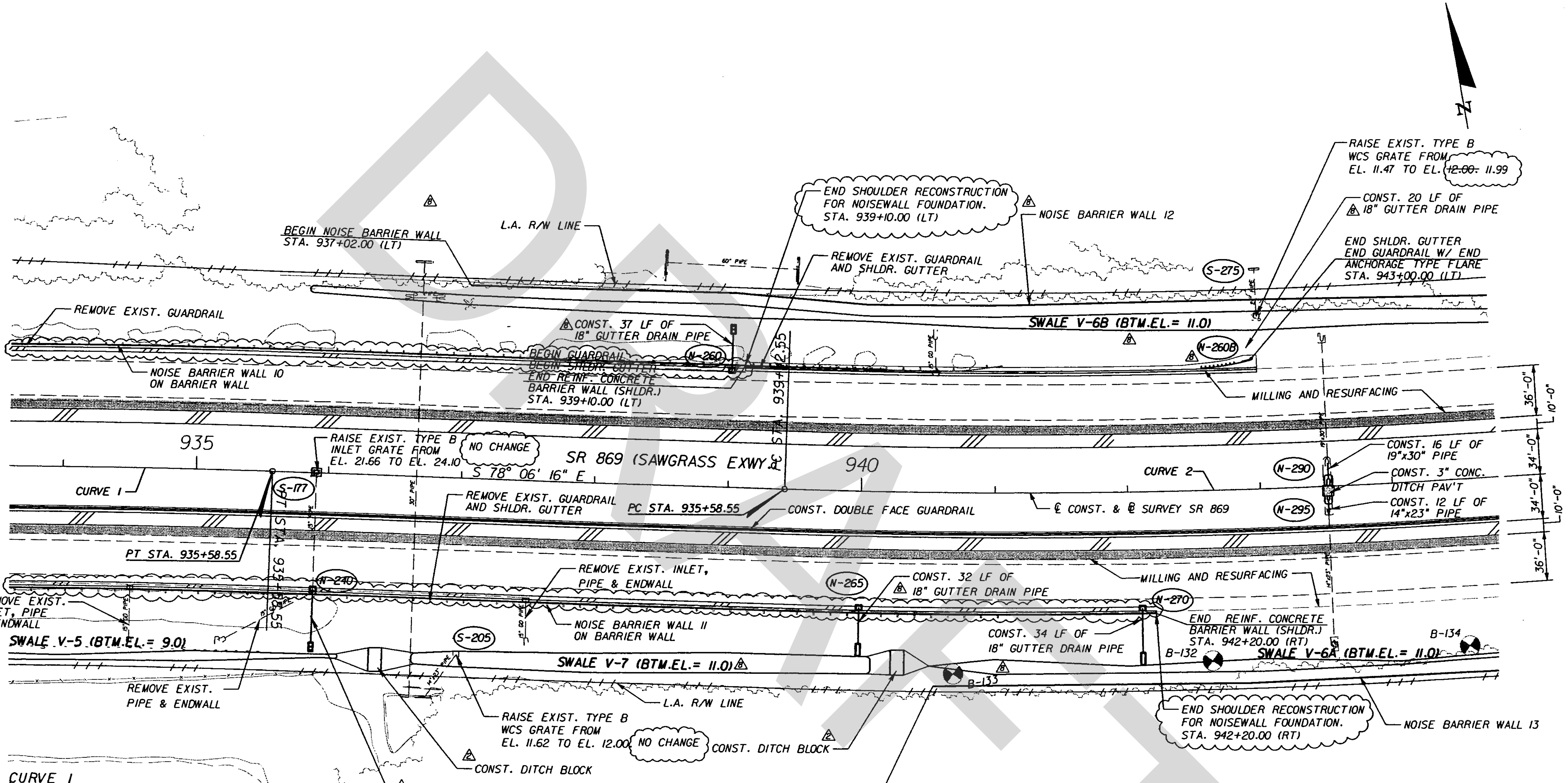


CURVE 1
PI STA. = 929+92.51
Delta = 11° 21' 29" (RT)
D = 1° 00' 00"
T = 569.77
L = 1,135.81
R = 5,729.58
PC STA. = 924+22.74
PT STA. = 935+58.55

CURVE 2
PI STA. = 945+12.19
Delta = 11° 21' 20" (LT)
D = 1° 00' 00"
T = 569.64
L = 1,135.56
R = 5,729.58
PC STA. = 939+42.55
PT STA. = 950+78.10

Donald F. [illegible]
PE# 46223
4/28/08
As-Built Information Only

PAVEMENT WIDENING
SHOULDER PAVEMENT

REVISIONS

DATE	BY	DESCRIPTION
08-11-05	LDO	ADDED DITCH BLOCK NOTE.
02-06-06	DFW	REVISED NOISE BARRIER WALL NO. 13 ALIGNMENT.
08-18-06	DFW	REV. STORMWATER TREATMENT SWALES, DEL. CANAL REVET. & REVISE WALL 12 ALIGN., ADDED N-260B, REVISED PIPE LENGTH.

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

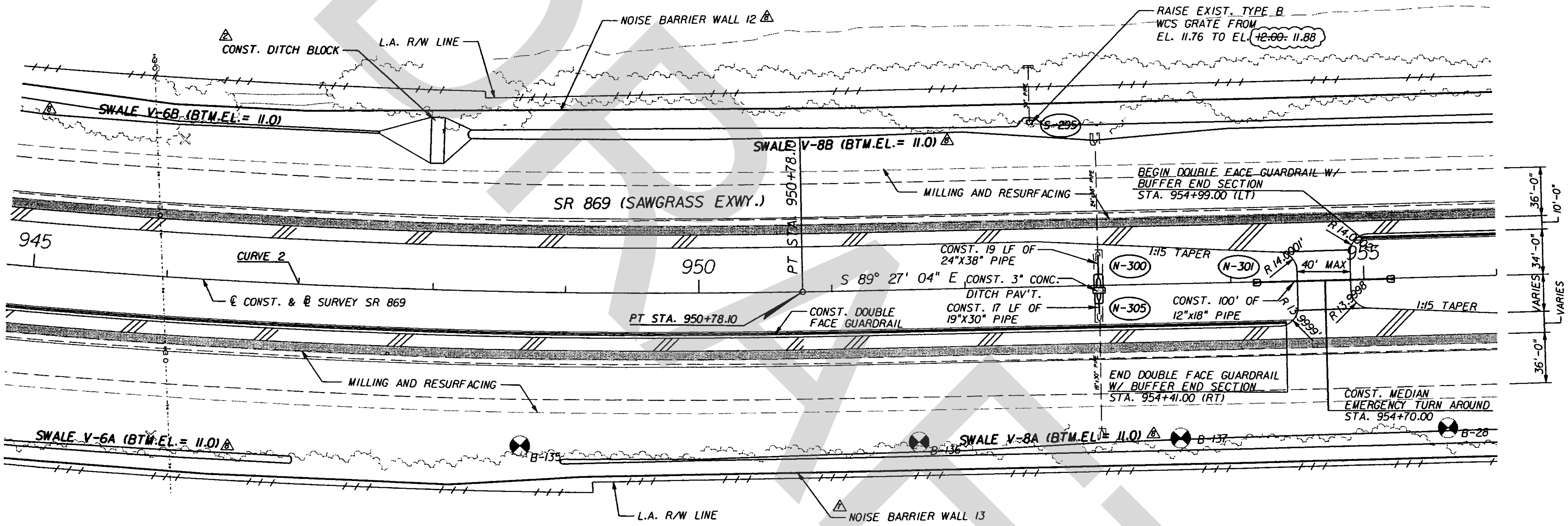
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 45

(N-301) STA. 954+20.00 ℄ CONST. SR 869 0.5' RT.
CONST. 12"x18" PIPE
FL = ~~11.40~~ 11.43 (EXIST.)
INDEX NO. 272

STA. 955+20.00 ℄ CONST. SR 869 0.5' RT.
CONST. 12"x18" PIPE
FL = ~~11.59~~ 12.55 (EXIST.)
INDEX NO. 272



CURVE 2
PI STA. = 945+12.19
Delta = 11° 21' 20" (LT)
D = 1° 00' 00"
T = 569.64
L = 1,135.56
R = 5,729.58
PC STA. = 939+42.55
PT STA. = 950+78.10

Donald [illegible]
PE #46223
4/28/08
As-Built Information Only

0 20 80
Feet

PAVEMENT WIDENING
SHOULDER PAVEMENT

REVISIONS		
DATE	BY	DESCRIPTION
08-11-05	LDO	2 ADDED DITCH BLOCK NOTE.
02-06-06	DFW	7 REVISED NOISE BARRIER WALL NO. 13 ALIGNMENT.
08-18-06	DFW	8 REVISED STORMWATER TREATMENT SWALES. REVISE WALL 12 ALIGNMENT

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 46

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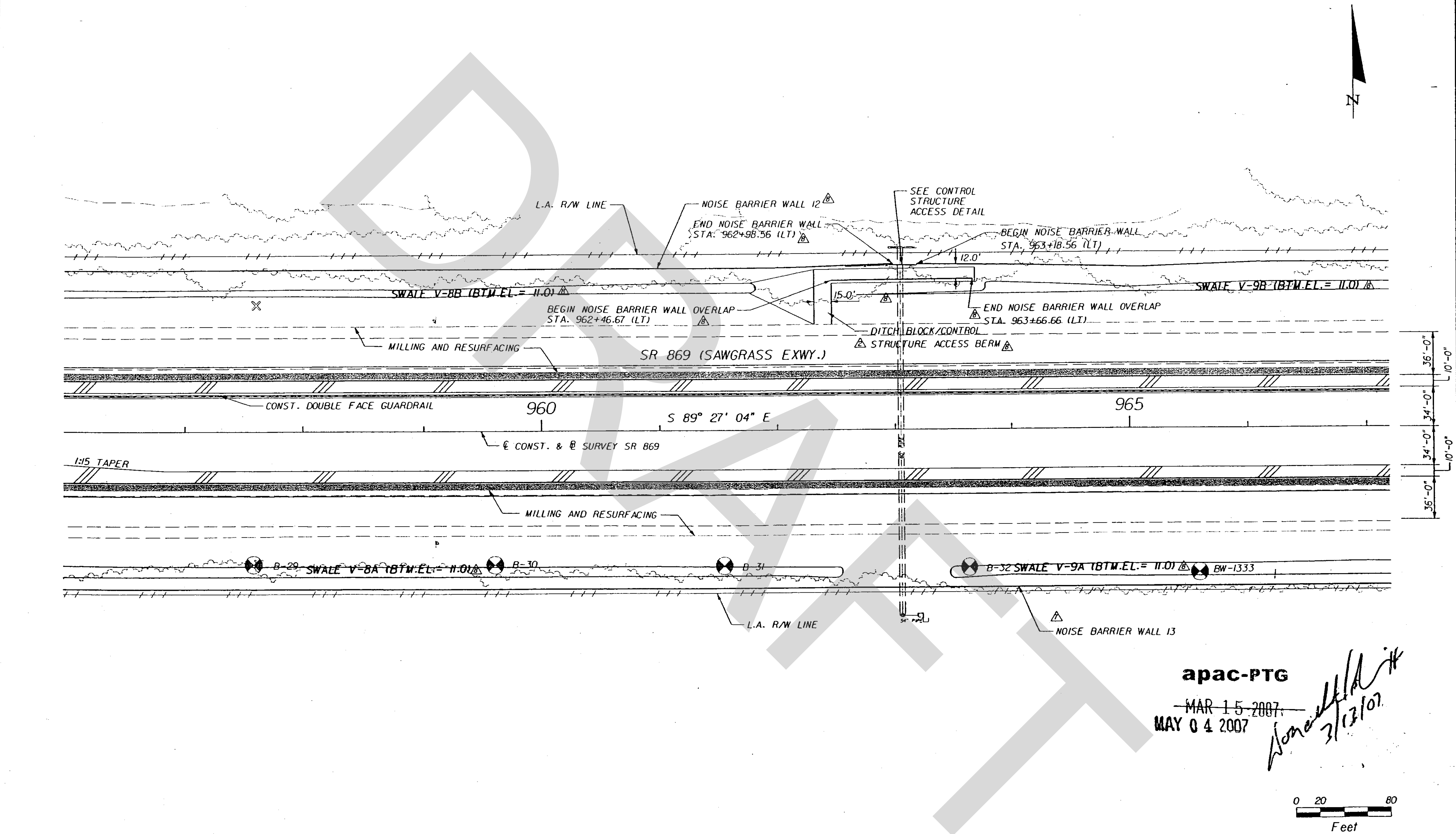


PAVEMENT WIDENING

SHOULDER PAVEMENT

REVISIONS		
DATE	BY	DESCRIPTION
08-11-05	LDO	ADDED DITCH BLOCK NOTE.
02-06-06	DFW	REVISED NOISE BARRIER WALL NO. 13 ALIGNMENT.
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES, REVISED NOISE BARRIER WALL 12. ADDED NOISE BARRIER WALL

apac PARSONS

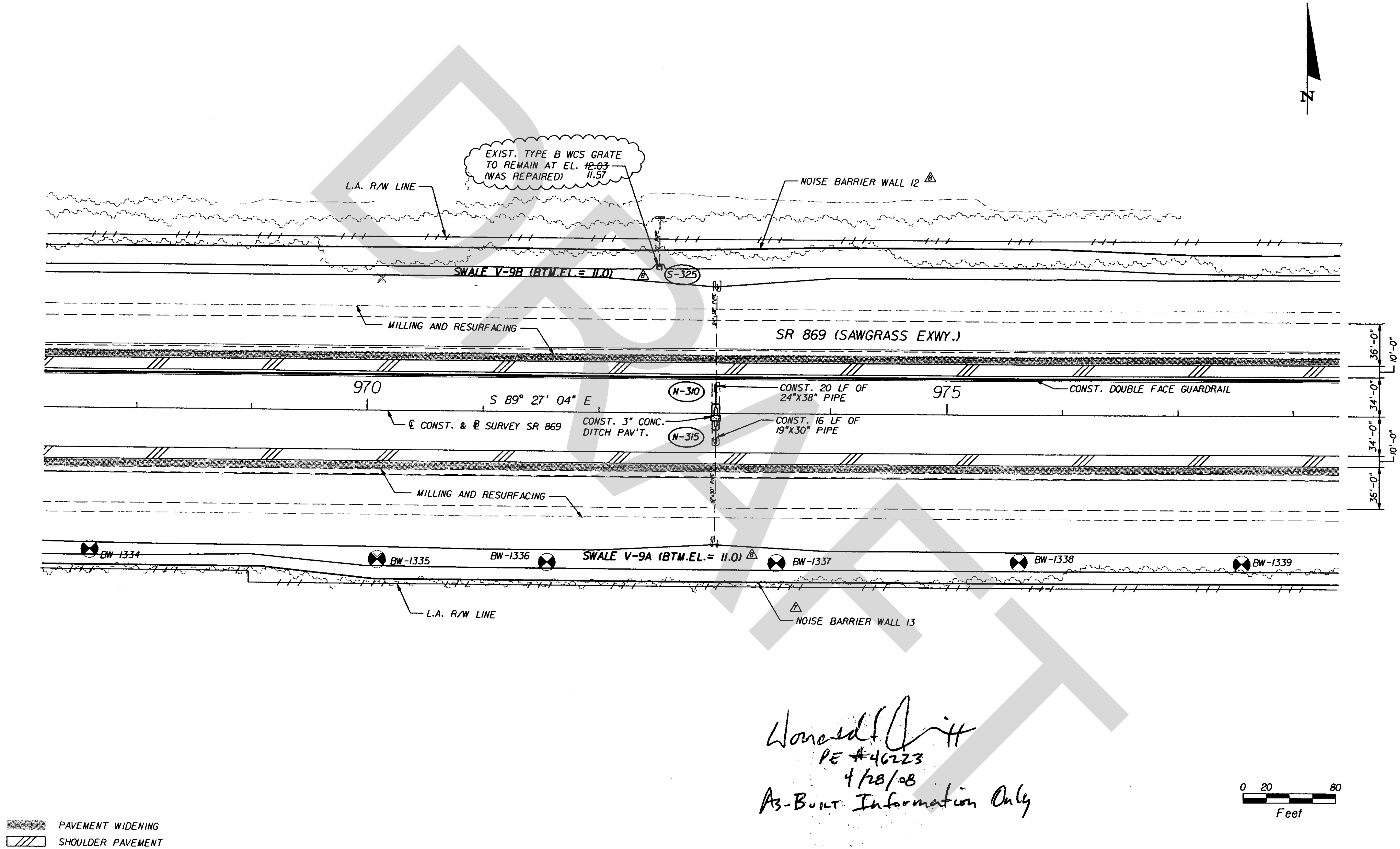
EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 47



Howard [illegible]
PE #46223
4/28/08
As-Built Information Only

REVISIONS		
DATE	BY	DESCRIPTION
02-06-06	DFW	⚠ REVISED NOISE BARRIER WALL NO. 13 ALIGNMENT.
08-18-06	DFW	⚠B REVISED STORMWATER TREATMENT SWALES, REVISE WALL 12 ALIGNMENT

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 48

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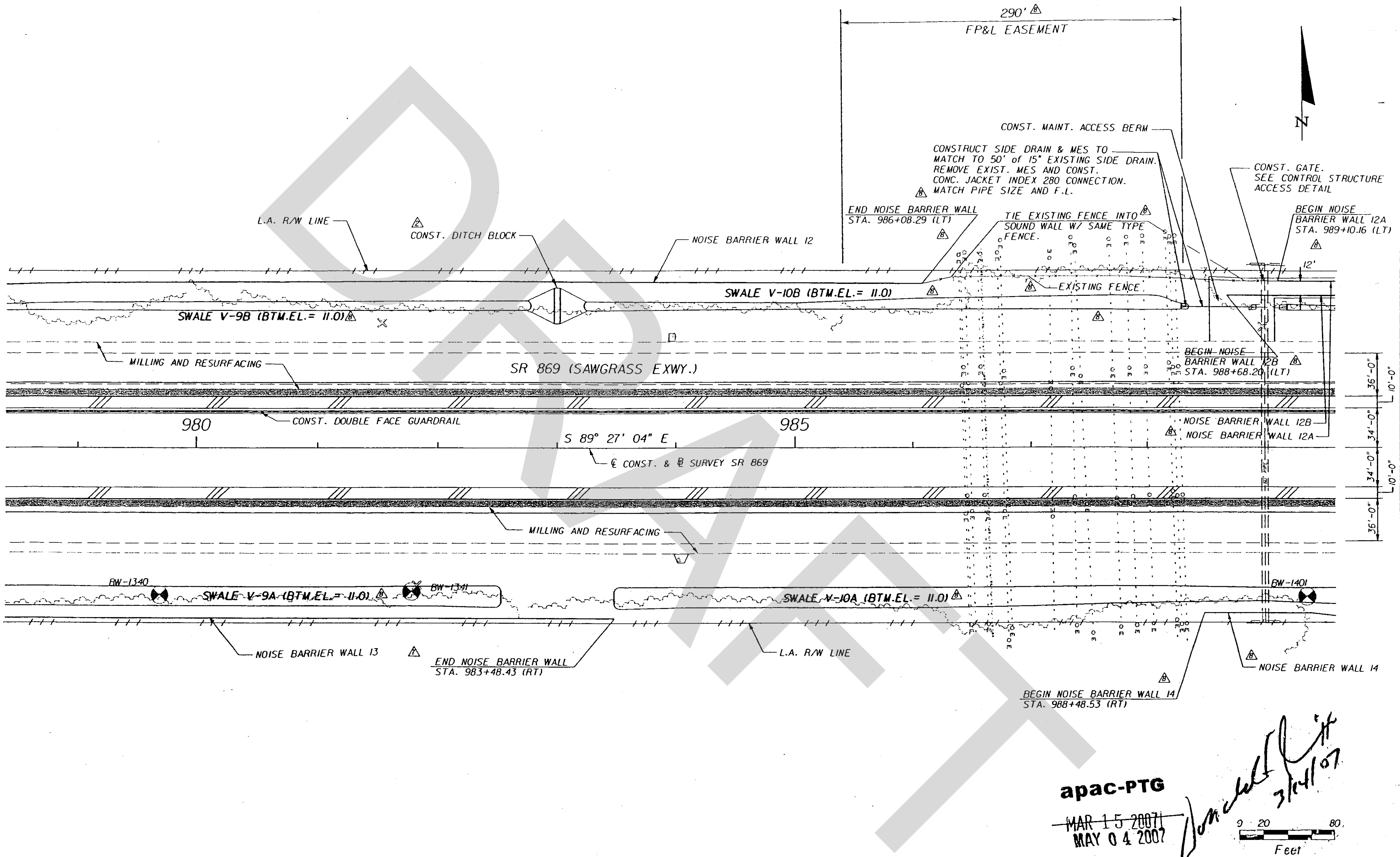


apac-PTG
~~MAR 15 2007~~
MAY 04 2007
3/14/07

PAVEMENT WIDENING
SHOULDER PAVEMENT

REVISIONS

DATE	BY	DESCRIPTION
08-11-05	LDO	2 ADDED DITCH BLOCK NOTE.
02-06-06	DFW	7 REVISED NOISE BARRIER WALL NO. 13 ALIGNMENT.
08-18-06	DFW	8 REVISED TREATMENT SWALES, AND NOISE WALLS 12, 12A, [illegible]

apac PARSONS

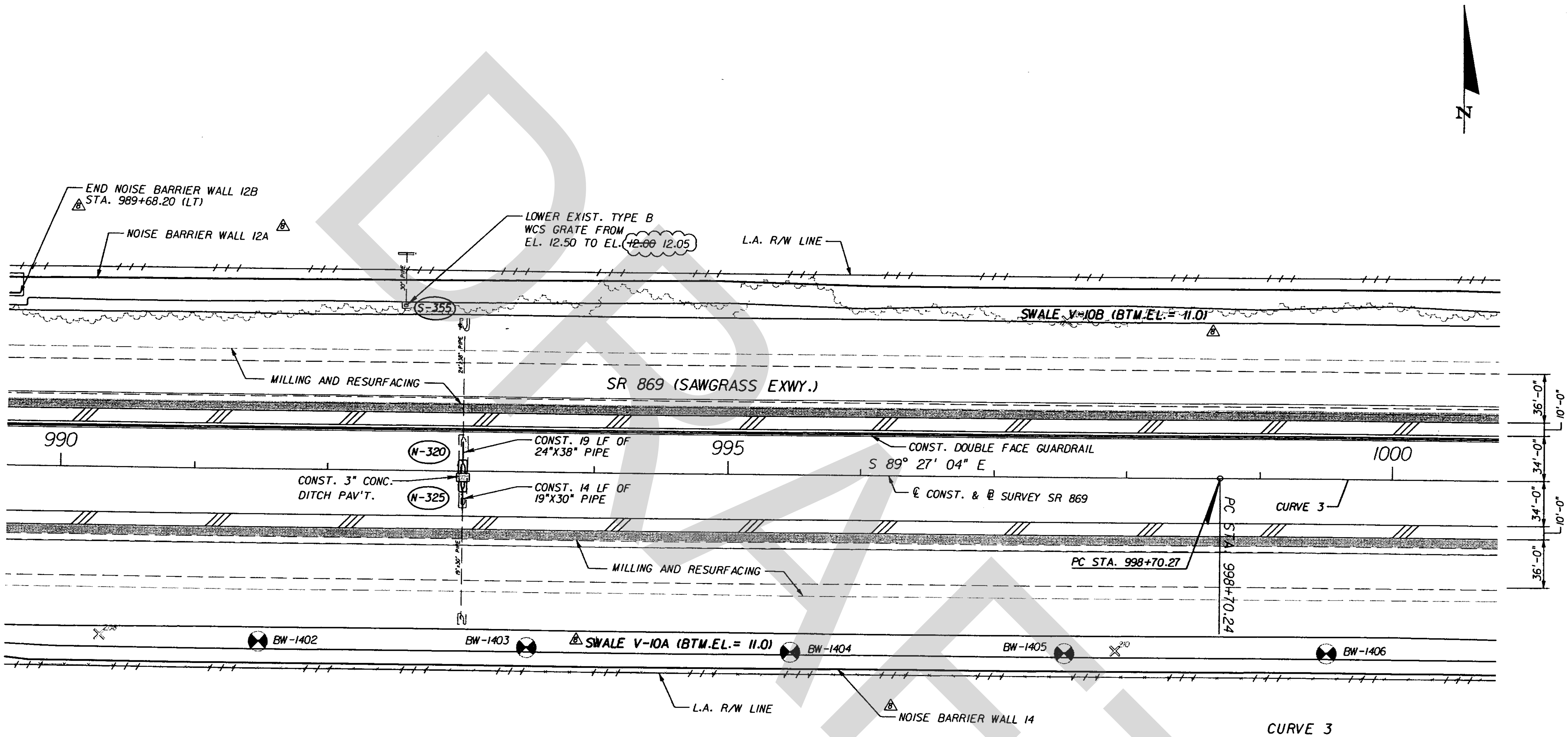
EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
49



CURVE 3
PI STA. = 1007+73.51
Delta = 4° 12' 48" (RT)
D = 0° 14' 00"
T = 903.26
L = 1,805.71
R = 24,555.33
PC STA. = 998+70.27
PT STA. = 1016+75.98

Donald [illegible]
PE#46223
4/28/08
As-Built Revisions Only

0 20 80
Feet

PAVEMENT WIDENING
SHOULDER PAVEMENT

REVISIONS

DATE	BY	DESCRIPTION
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES, AND NOISE BARRIER WALLS 12A & 14

apac PARSONS

EOR: LON C. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
50

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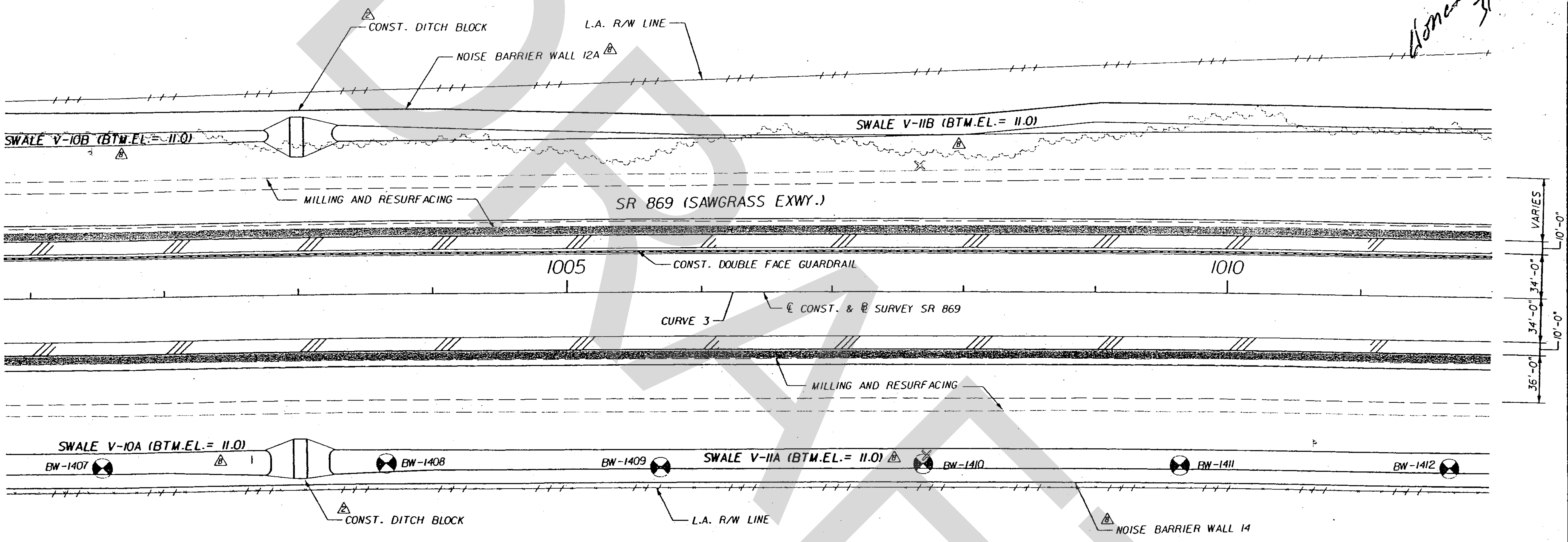
apac-PTG
~~MAR 15 2007~~
MAY 04 2007



CURVE 3

PI STA.	= 1007+73.51
Delta	= 4° 12' 48" (RT)
D	= 0° 14' 00"
T	= 903.26
L	= 1,805.71
R	= 24,555.33
PC STA.	= 998+70.24
PT STA.	= 1016+75.96

0 20 80
Feet

PAVEMENT WIDENING
SHOULDER PAVEMENT

REVISIONS

DATE	BY	DESCRIPTION
08-11-05	LDO	ADDED DITCH BLOCK NOTE.
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALLS 12A & 14

apac PARSONS

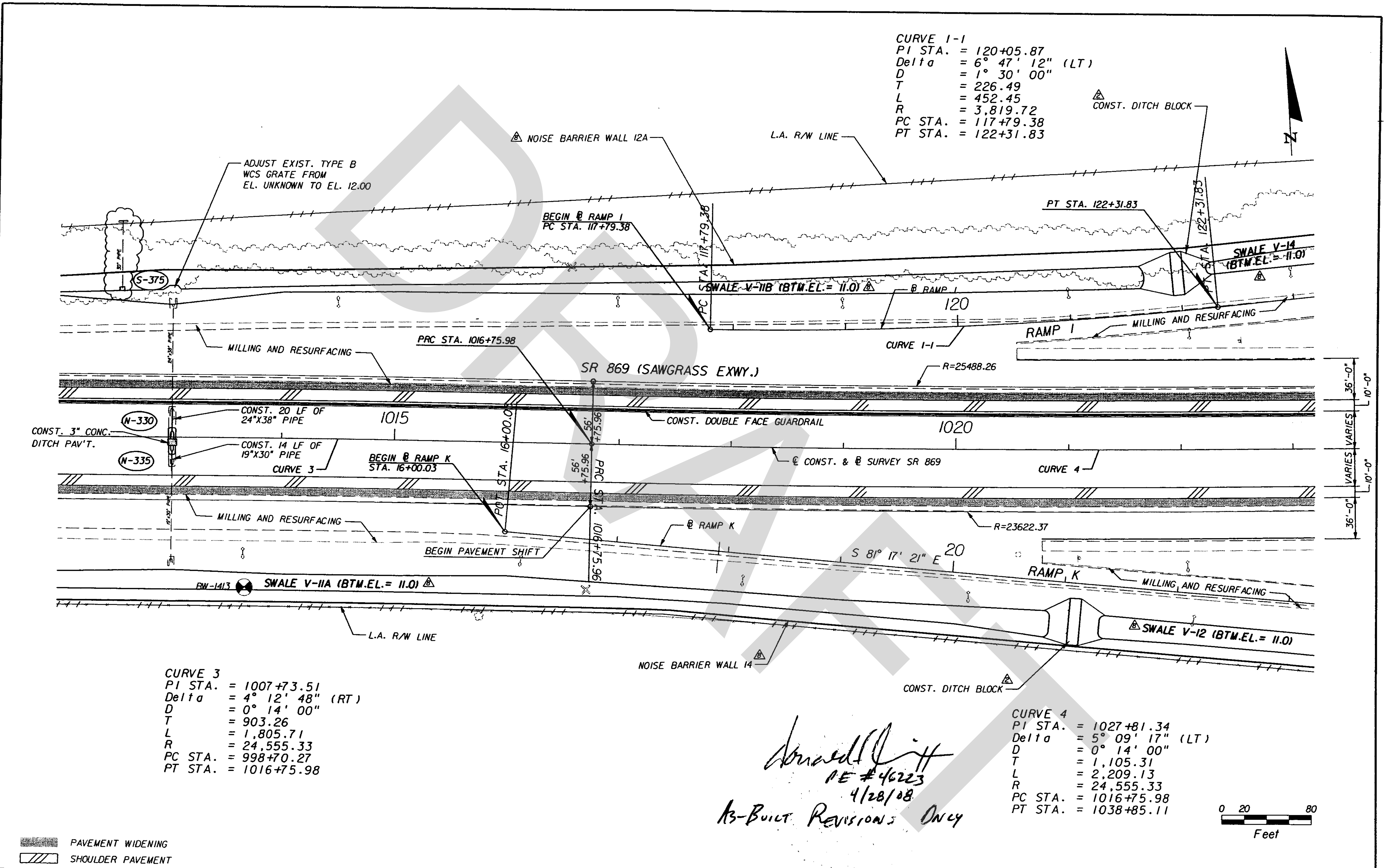
EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
51



DATE	BY	REVISIONS DESCRIPTION
08-11-05	LDO	ADDED DITCH BLOCK NOTE.
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALLS 12A & 14

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 52

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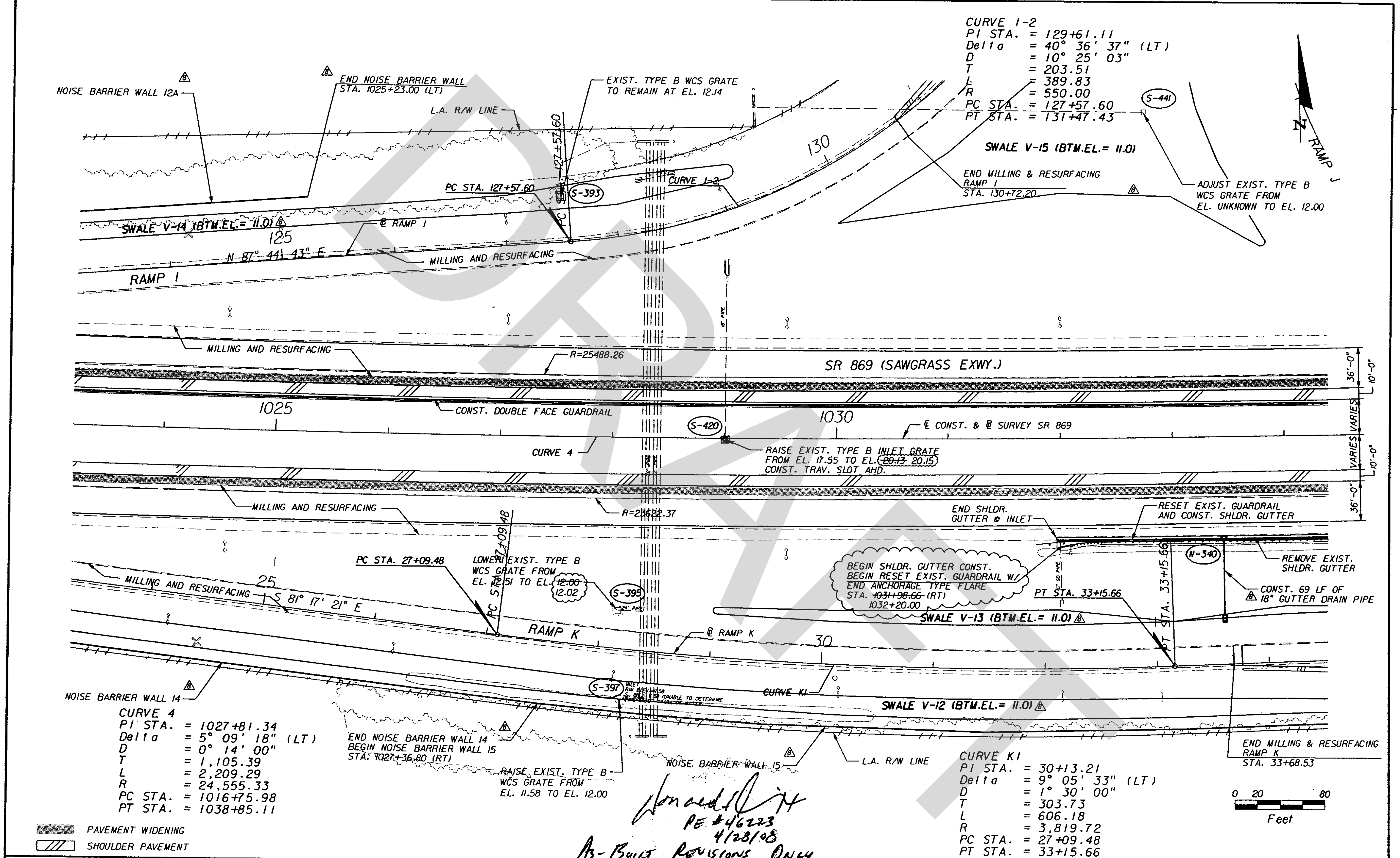


REVISIONS		
DATE	BY	DESCRIPTION
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES, NOISE BARRIER WALLS 12, 14 & 15, AND GUTTER DRAIN LENGTH.

apac PARSONS

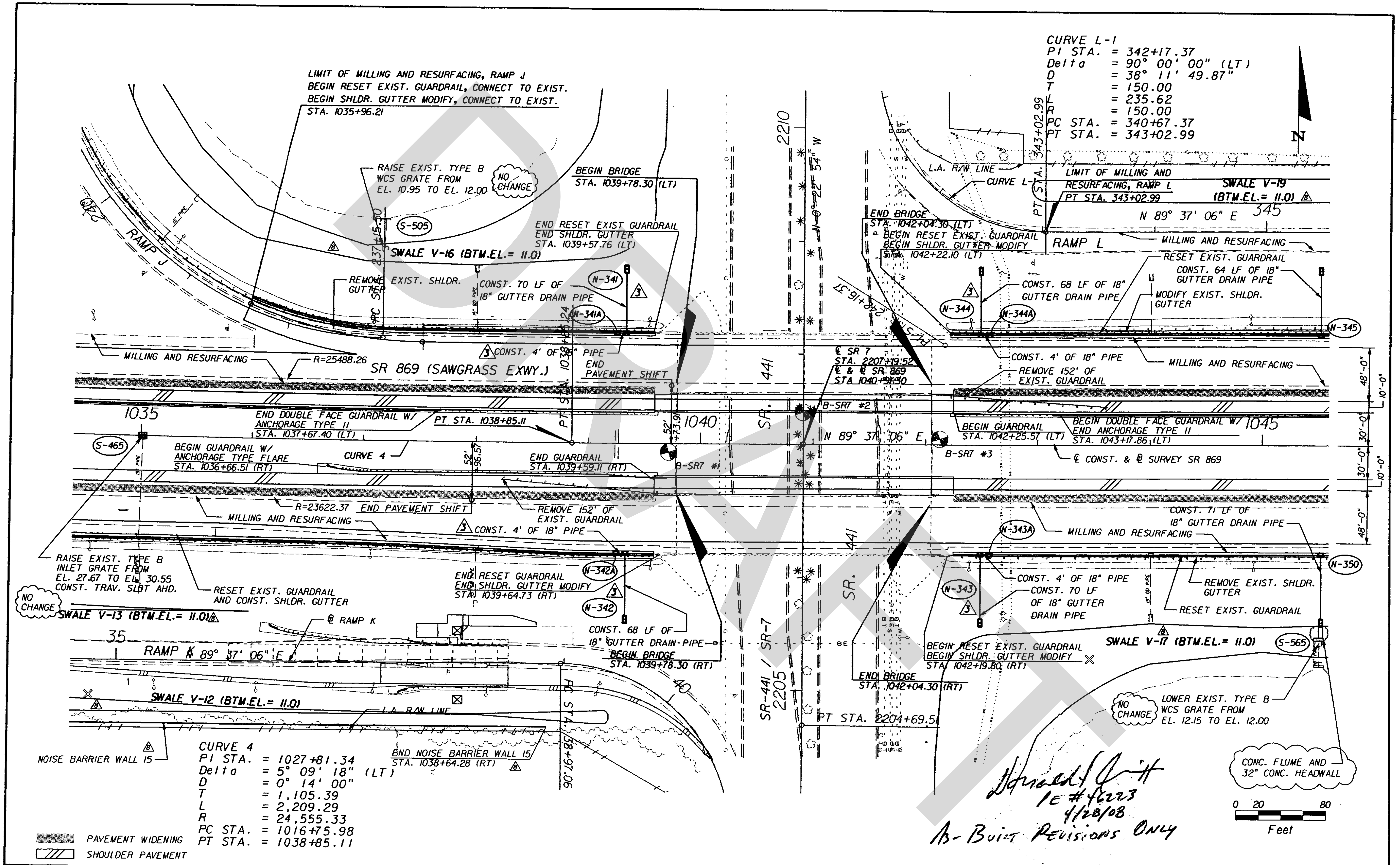
EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 53



REVISIONS		
DATE	BY	DESCRIPTION
08-31-05	TJG	3 ADDED N-341, N-341A, N-342, N-342A, N-343, N-343A, N-344, & N-344A.
08-18-06	DFW	B REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALL 15

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 54

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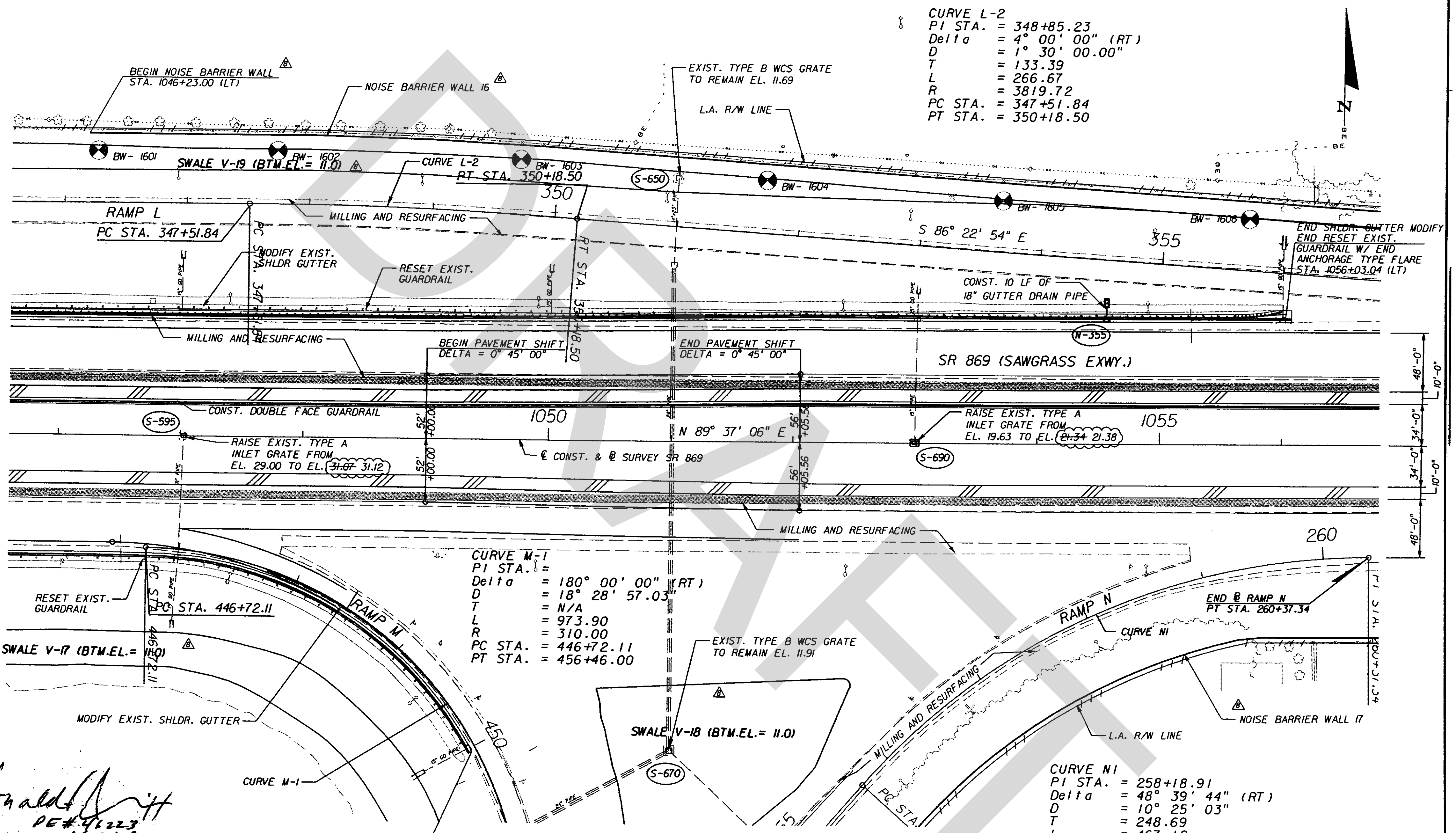

Donald [signature]
PE# 41223
4/28/08
As Built Revisions Only

PAVEMENT WIDENING
SHOULDER PAVEMENT

REVISIONS		
DATE	BY	DESCRIPTION
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALLS 16 & 17

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 55

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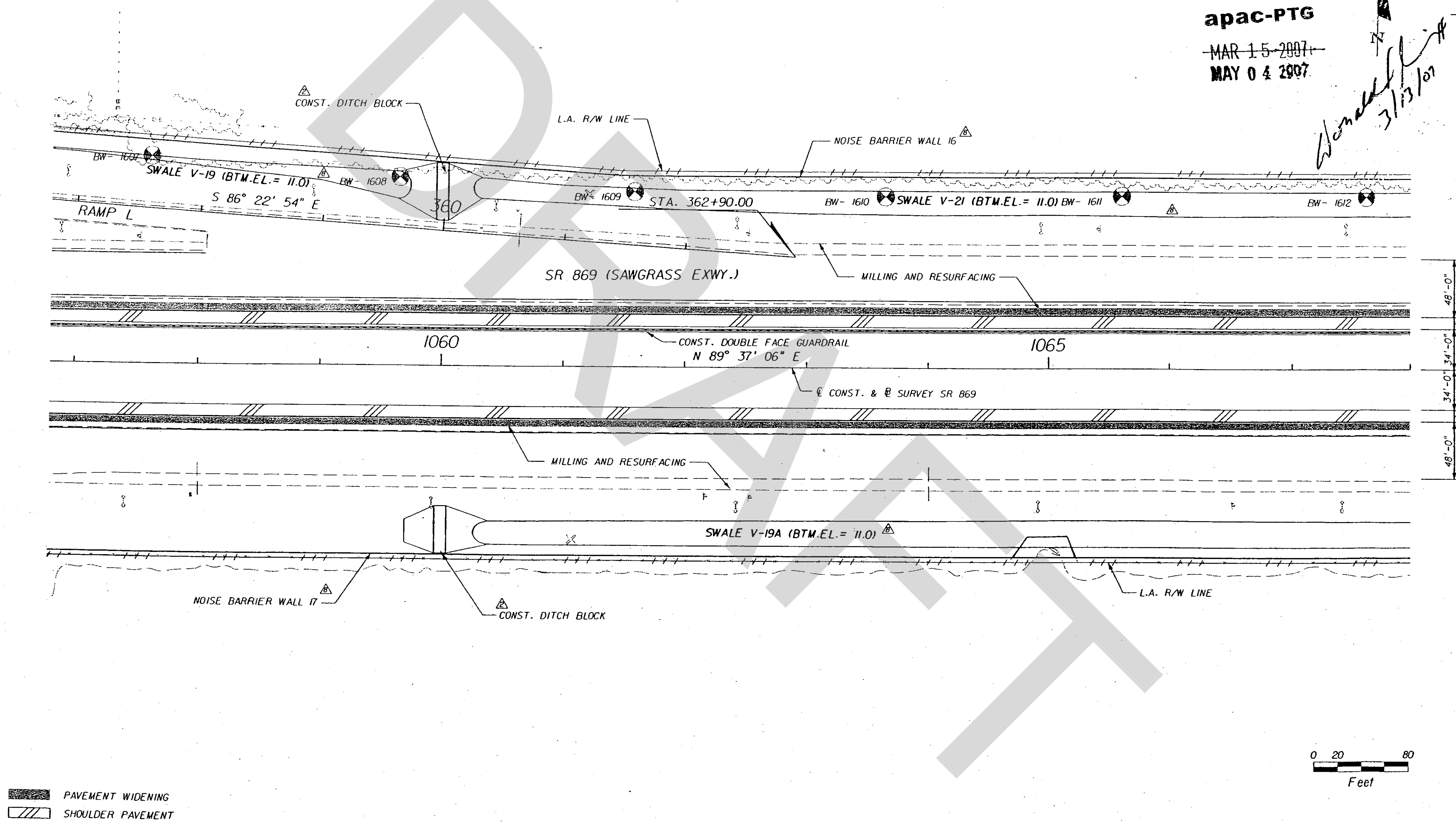
apac-PTG
~~MAR 15 2007~~
MAY 04 2007



REVISIONS		
DATE	BY	DESCRIPTION
08-11-05	LDO	⚠ ADDED DITCH BLOCK NOTE.
08-18-06	DFW	⚠ REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALLS 16 & 17

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

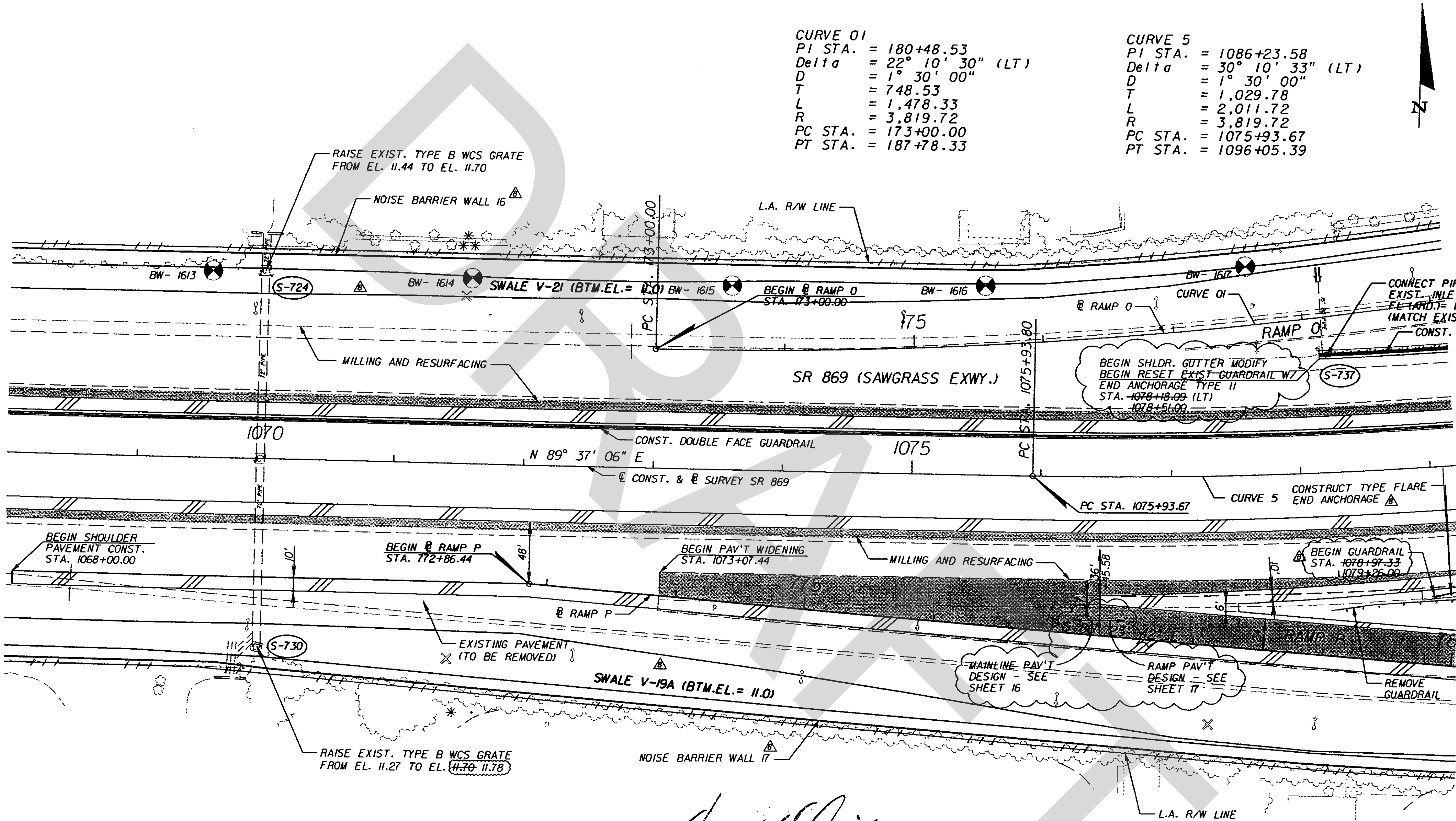
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
56

CURVE 01
PI STA. = 180+48.53
Delta = 22° 10' 30" (LT)
D = 1° 30' 00"
T = 748.53
L = 1,478.33
R = 3,819.72
PC STA. = 173+00.00
PT STA. = 187+78.33

CURVE 5
PI STA. = 1086+23.58
Delta = 30° 10' 33" (LT)
D = 1° 30' 00"
T = 1,029.78
L = 2,011.72
R = 3,819.72
PC STA. = 1075+93.67
PT STA. = 1096+05.39



Donald [illegible]
P.E. # 46223
4/28/08
As-Built Revisions Only

0 20 80
Feet

PAVEMENT WIDENING
SHOULDER PAVEMENT

REVISIONS

DATE	BY	DESCRIPTION
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALLS 16 & 17
08-18-06	DFW	CHANGE & RELOCATED TYPE FLARE END ANCHORAGE

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 57

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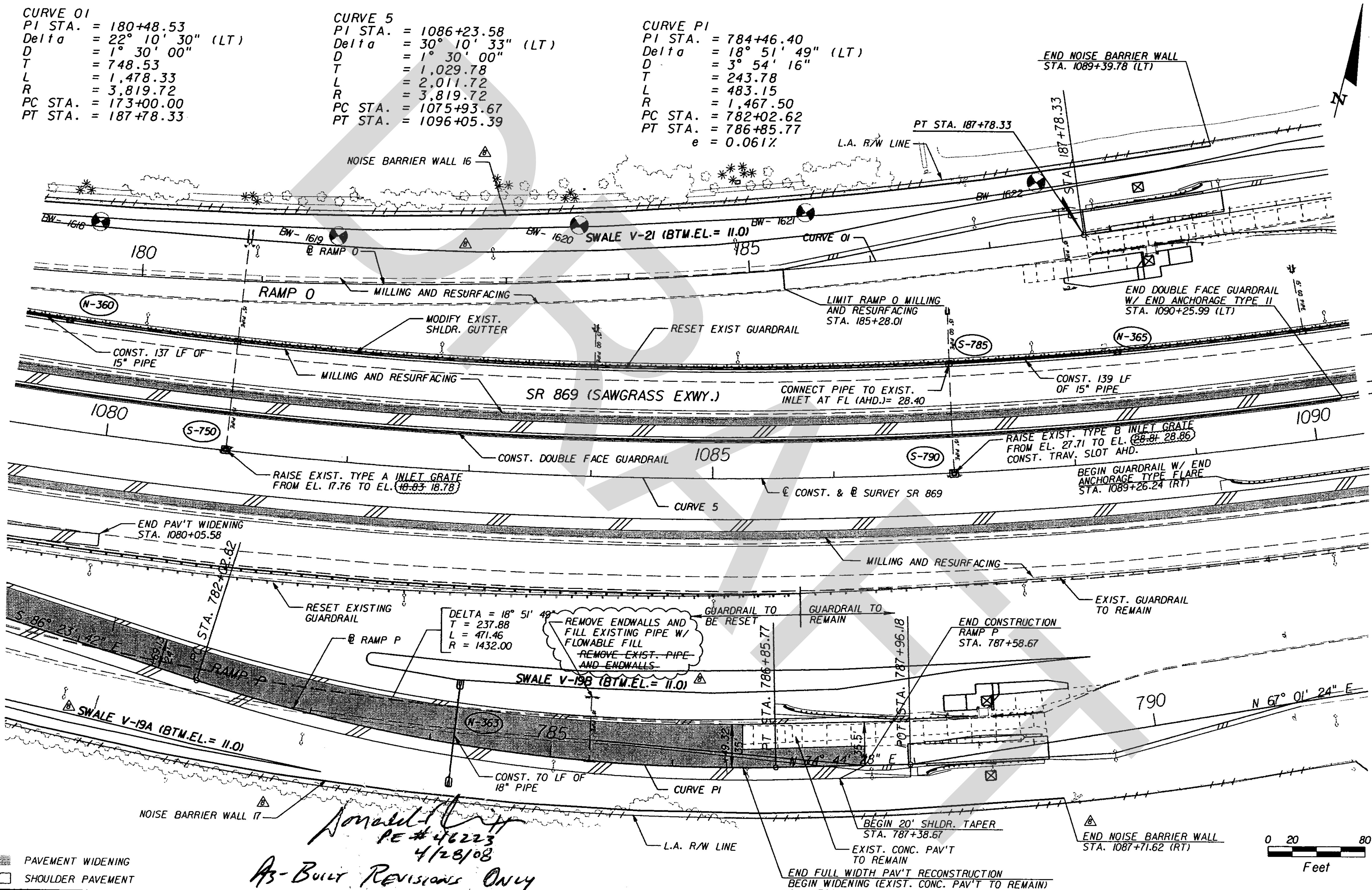
CURVE 01
PI STA. = 180+48.53
Delta = 22° 10' 30" (LT)
D = 1° 30' 00"
T = 748.53
L = 1,478.33
R = 3,819.72
PC STA. = 173+00.00
PT STA. = 187+78.33

CURVE 5
PI STA. = 1086+23.58
Delta = 30° 10' 33" (LT)
D = 1° 30' 00"
T = 1,029.78
L = 2,011.72
R = 3,819.72
PC STA. = 1075+93.67
PT STA. = 1096+05.39

CURVE PI
PI STA. = 784+46.40
Delta = 18° 51' 49" (LT)
D = 3° 54' 16"
T = 243.78
L = 483.15
R = 1,467.50
PC STA. = 782+02.62
PT STA. = 786+85.77
e = 0.061%



PAVEMENT WIDENING

SHOULDER PAVEMENT

Donald [signature] PE #46223 4/28/08

As-Built Revisions Only

REVISIONS

DATE	BY	DESCRIPTION
08-18-06	DFW	△B REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALLS 16 & 17

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 58

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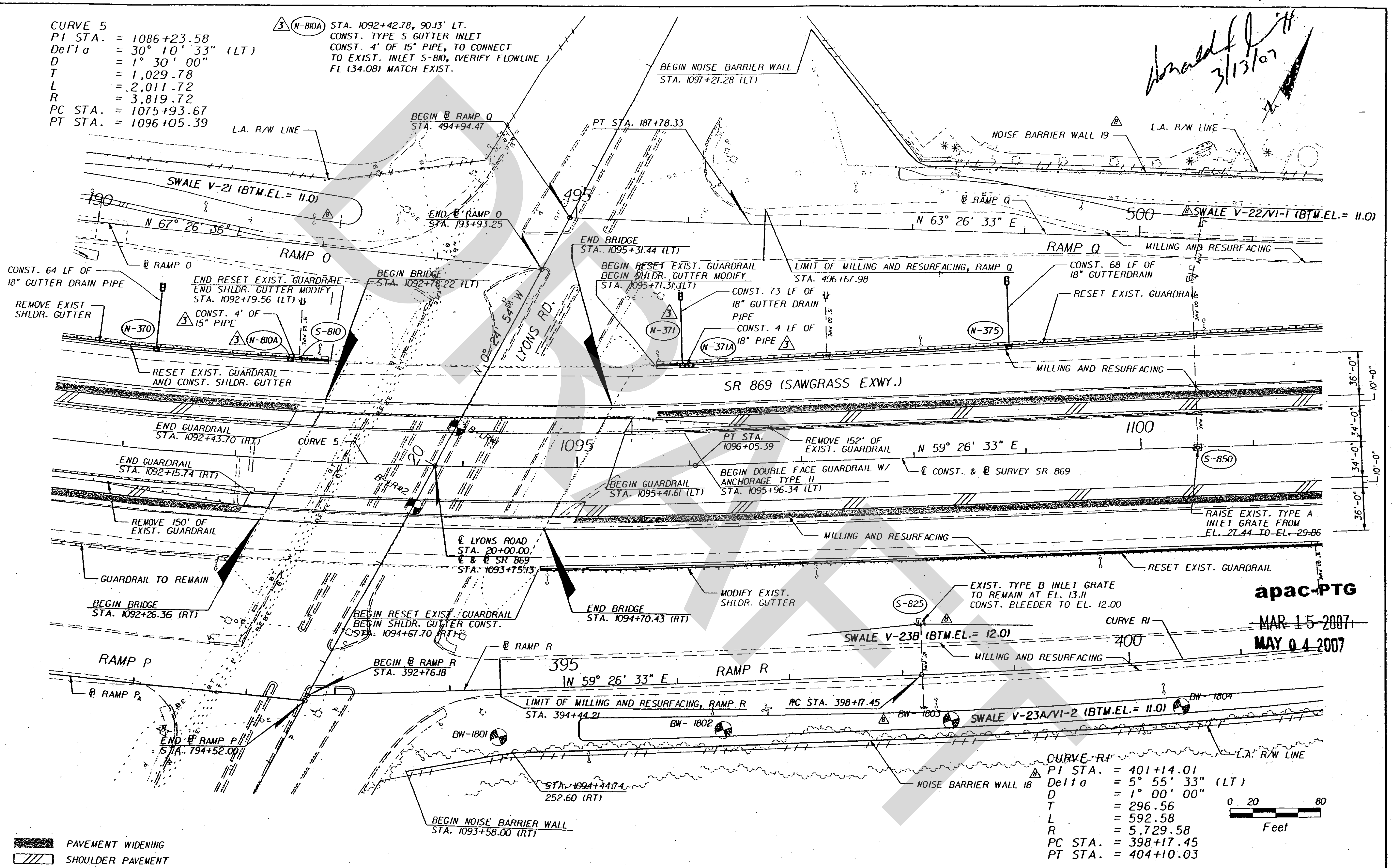


REVISIONS		
DATE	BY	DESCRIPTION
8-31-05	TJG	3 ADDED N-810A, N-371, & N-371A.
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALLS 18 & 19.

apac PARSONS

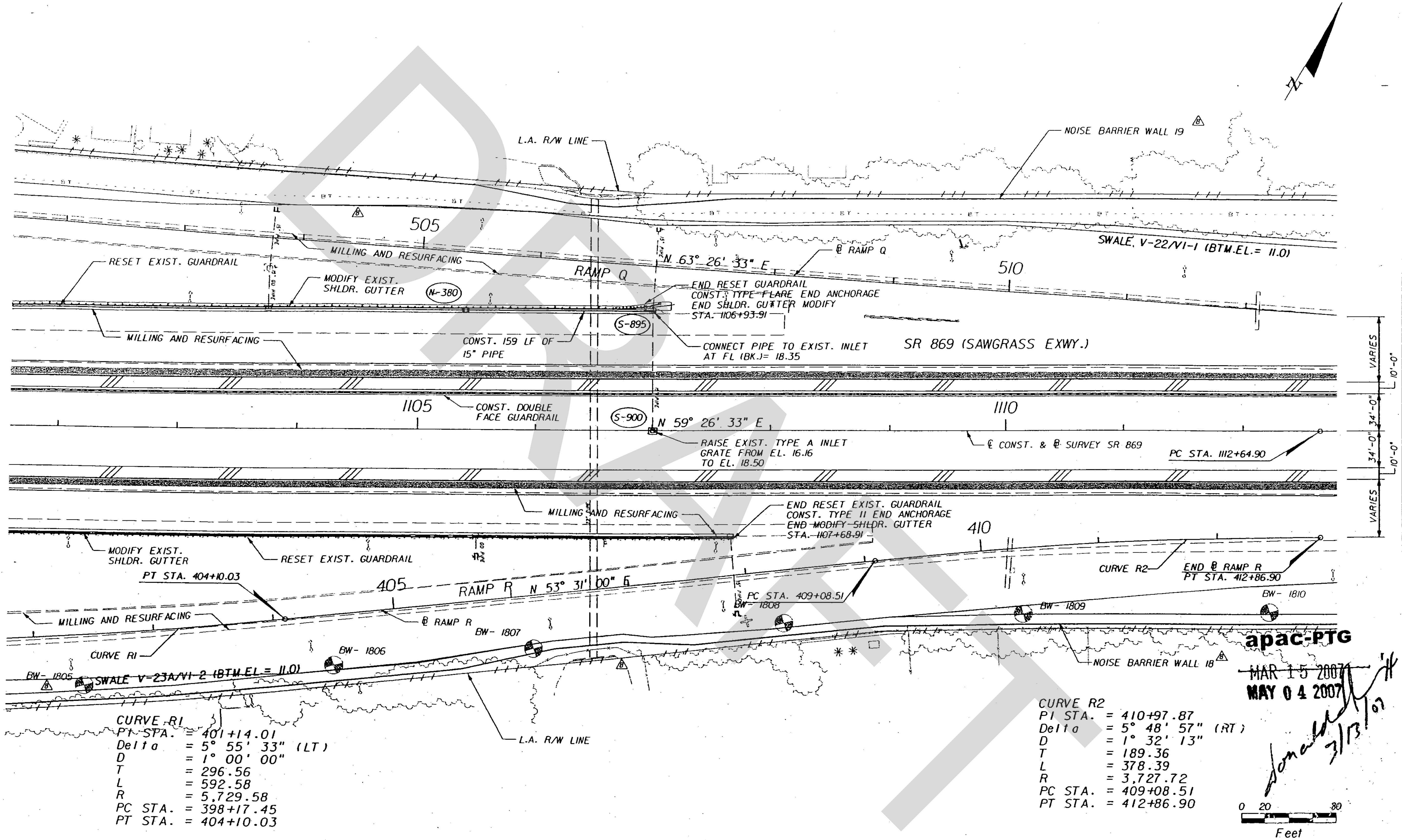
EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
59



PAVEMENT WIDENING

SHOULDER PAVEMENT

REVISIONS		
DATE	BY	DESCRIPTION
08-18-06	DFW	8 REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALLS 18 AND 19

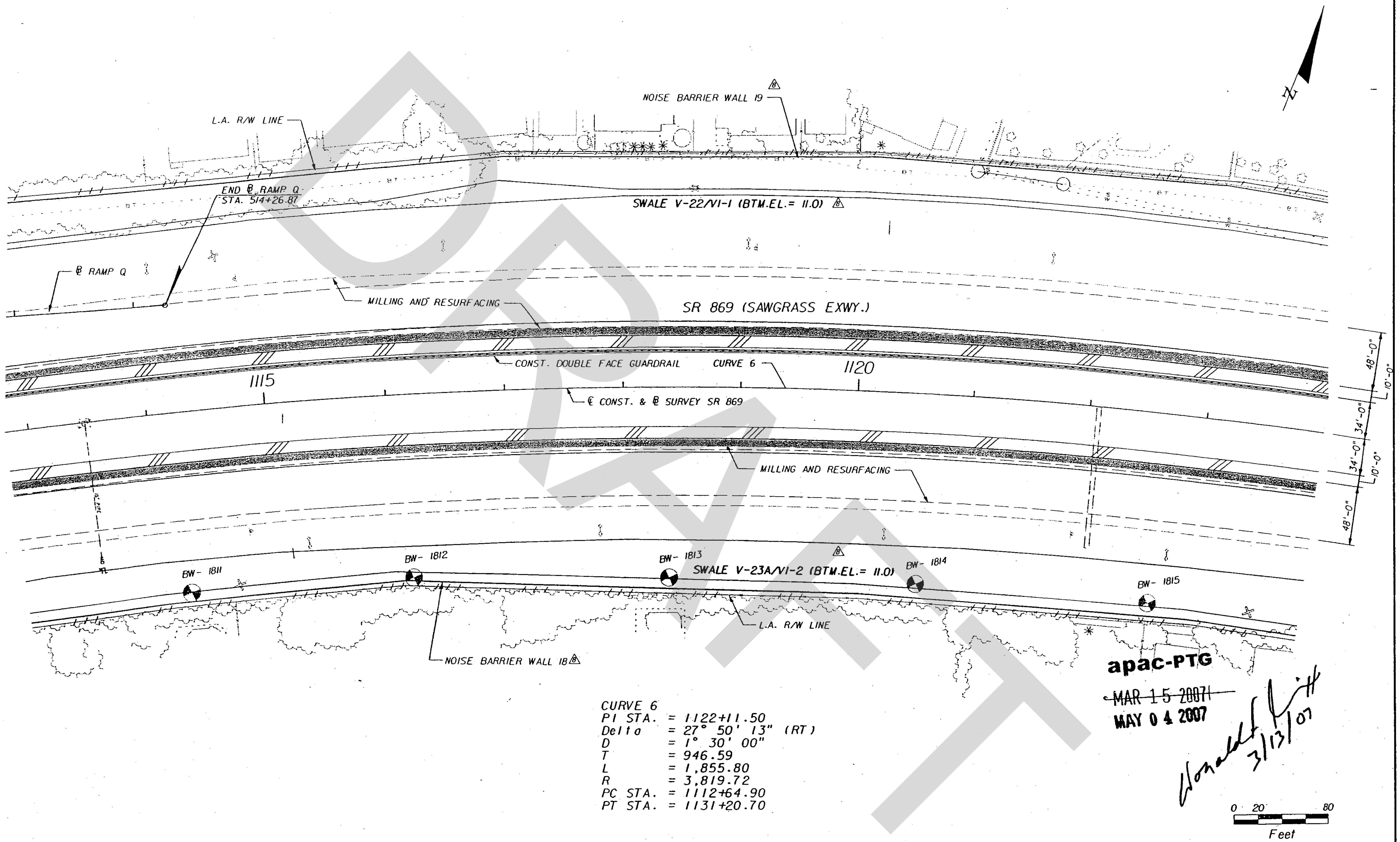
apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1970

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 60



PAVEMENT WIDENING

SHOULDER PAVEMENT

REVISIONS		
DATE	BY	DESCRIPTION
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALLS 18 & 19.

apac PARSONS

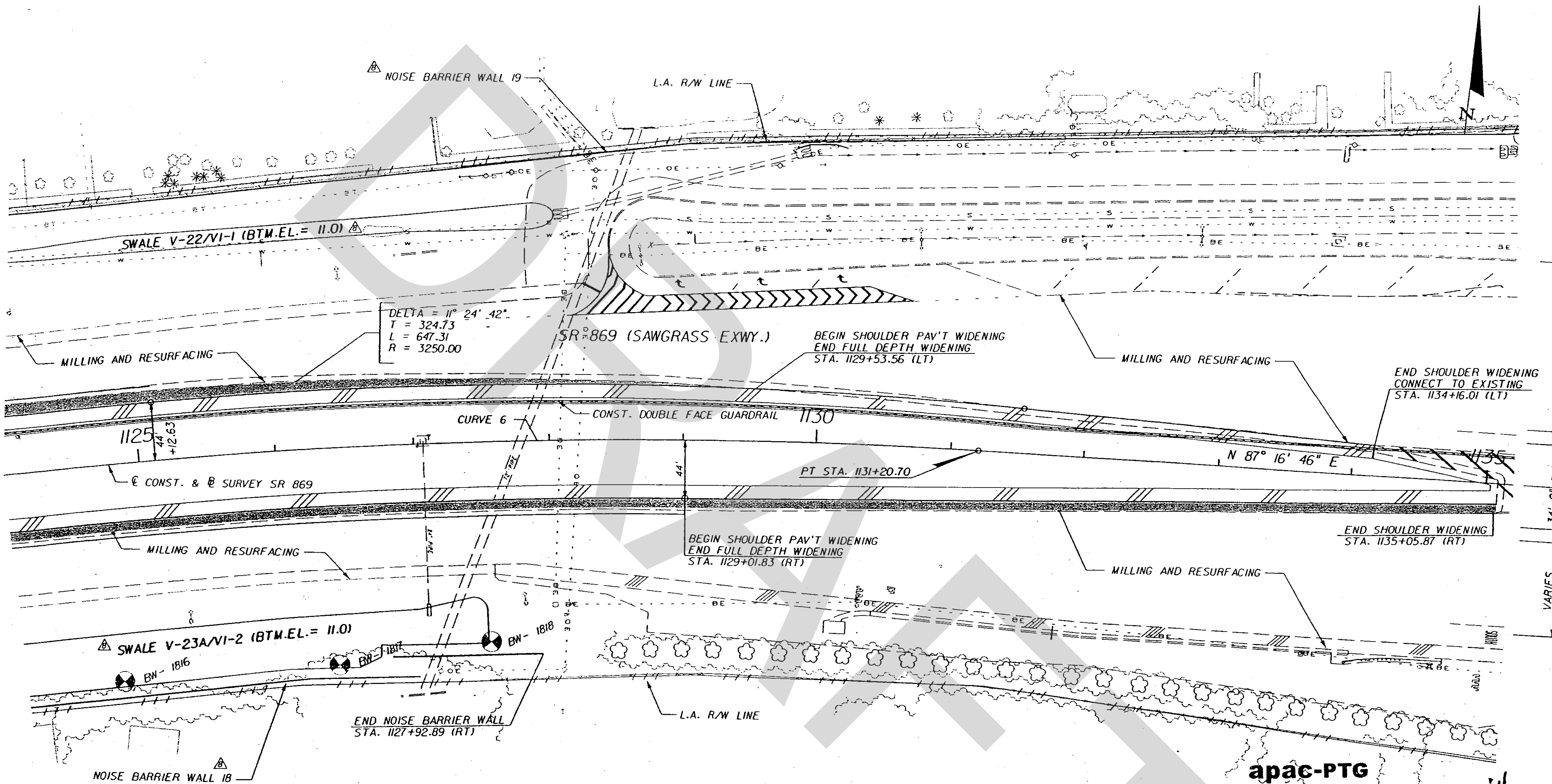
EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
61



CURVE 6
PI STA. = 1122+11.50
Delta = 27° 50' 13" (RT)
D = 1° 30' 00"
T = 946.59
L = 1,855.80
R = 3,819.72
PC STA. = 1112+64.90
PT STA. = 1131+20.70

apac-PTG
~~MAR 15 2007~~
MAY 04 2007

3/13/07

0 20 80
Feet

PAVEMENT WIDENING
SHOULDER PAVEMENT

REVISIONS		
DATE	BY	DESCRIPTION
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALLS 18 & 19. ADDED WALL 18 OVERLAP.

apac
PARSONS

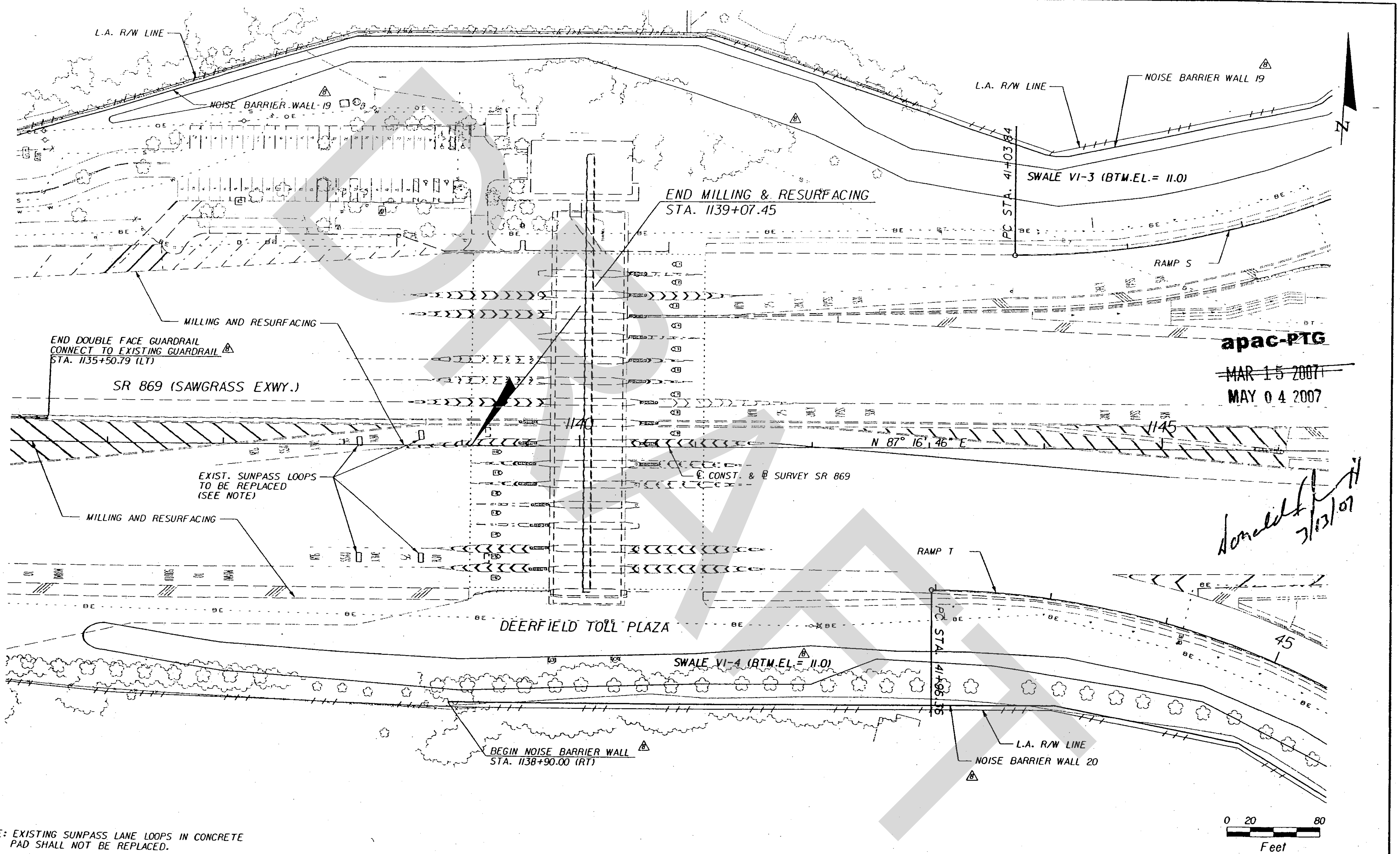
EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
62



NOTE: EXISTING SUNPASS LANE LOOPS IN CONCRETE PAD SHALL NOT BE REPLACED.

Donald [illegible] 7/13/07

REVISIONS		
DATE	BY	DESCRIPTION
08-18-06	DFW	REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALL 19 & 20. REVISED GUARDRAIL LABEL.

apac PARSONS

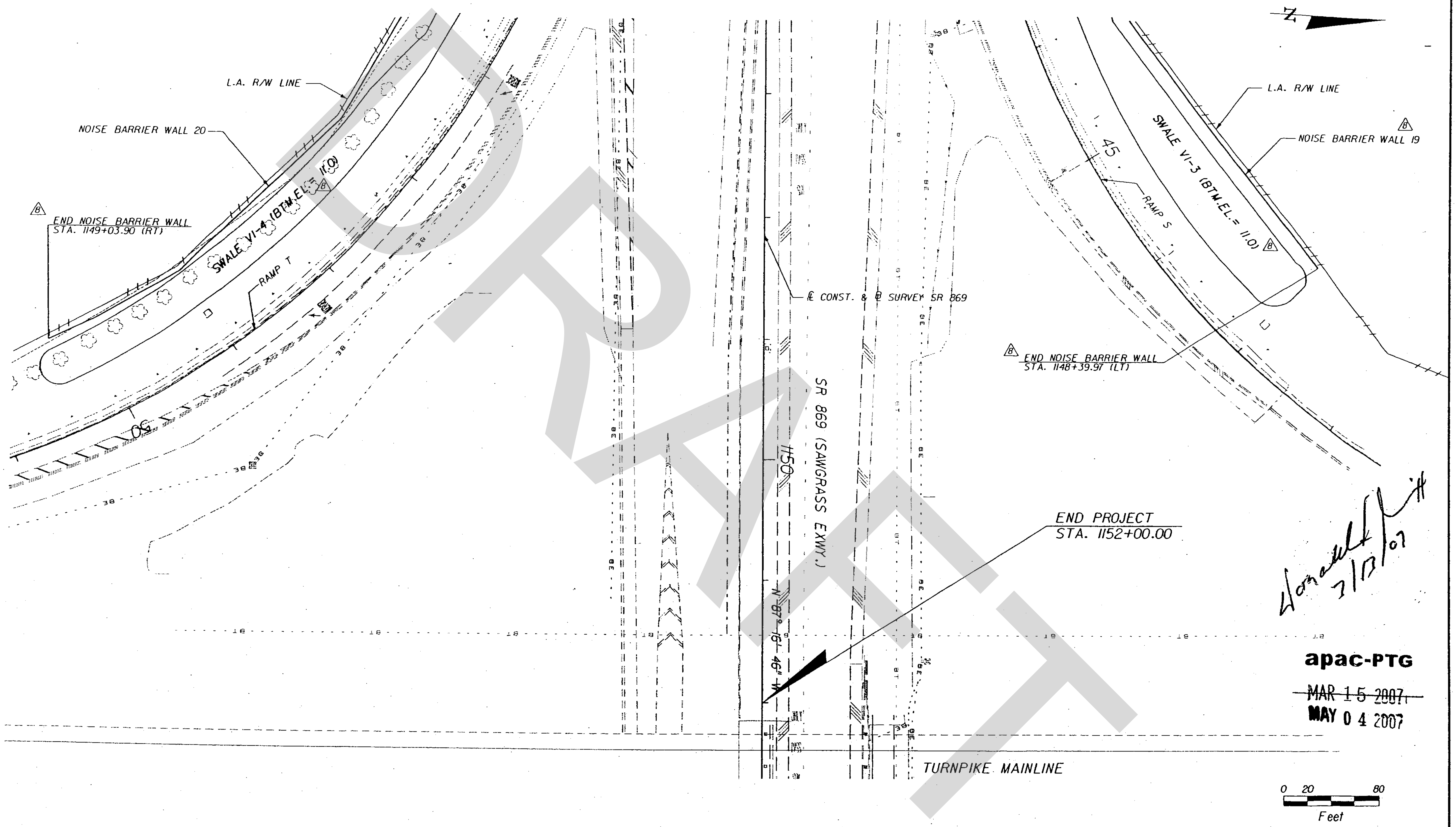
EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 63



REVISIONS		
DATE	BY	DESCRIPTION
08-18-06	DFW	B REVISED STORMWATER TREATMENT SWALES AND NOISE BARRIER WALL 19 & 20

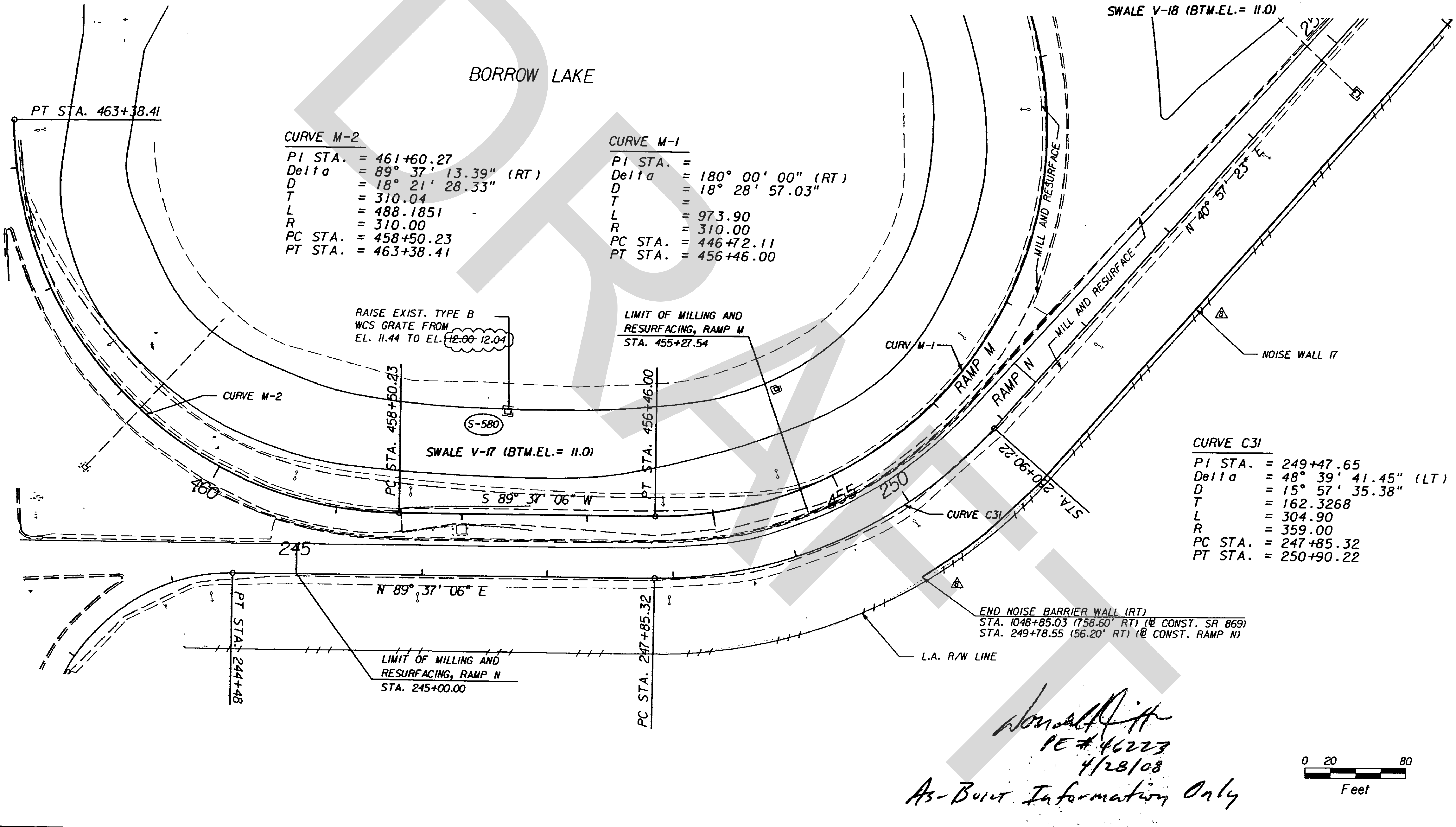
apac
PARSONS

EOR: DONALD OGDEN TTMANN
P.E. LICENSE NUMBER 58200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
64



REVISIONS		
DATE	BY	DESCRIPTION
5-10-06	DFW	REVISED LOCATION OF NOISE BARRIER NO.17

apac PARSONS

EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

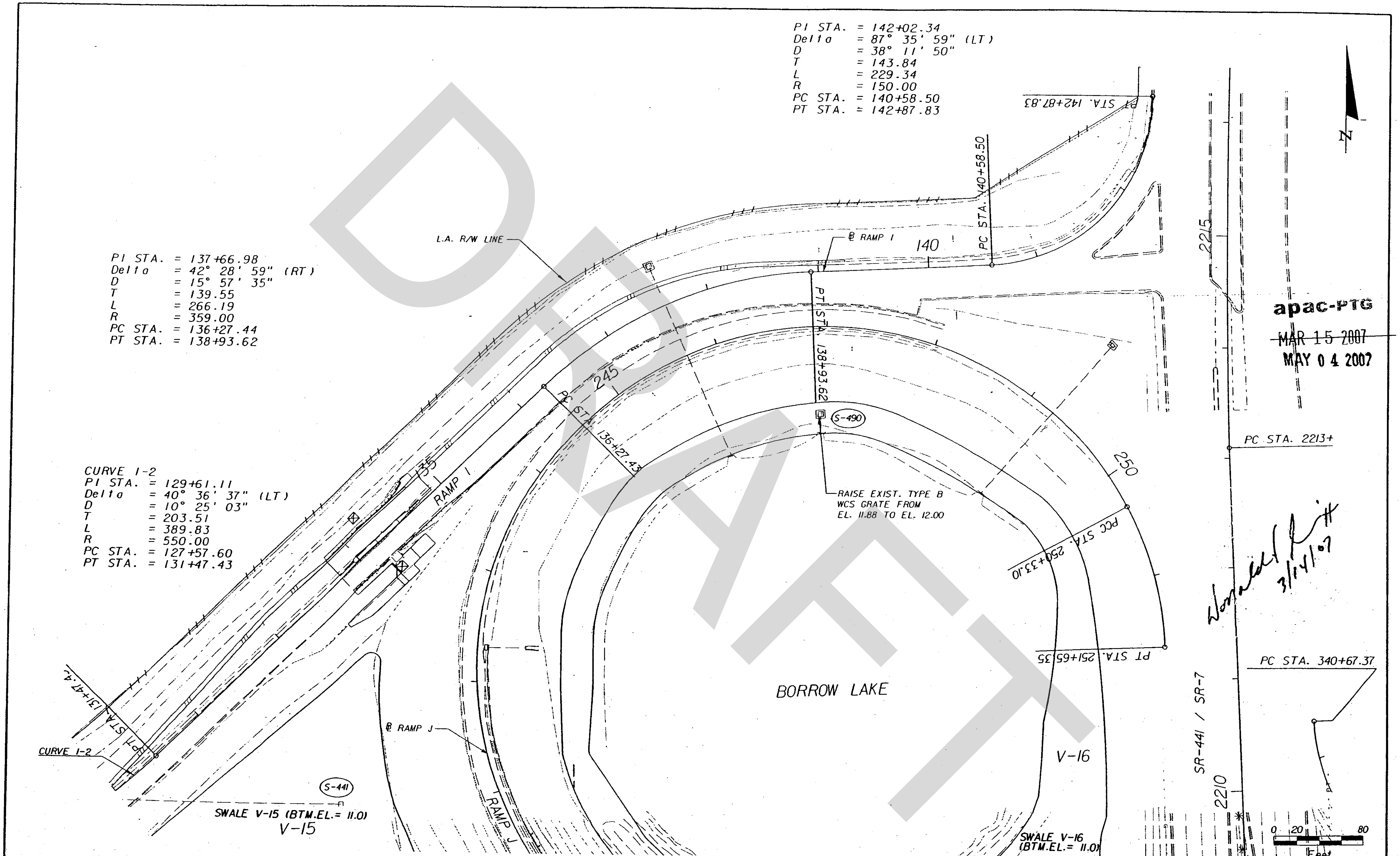
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 65

USER: p0024664 4/25/2008 1:05:22 PM P:\646334\40615315201\roadway\As_Builts\planrd34.dgn



REVISIONS		
DATE	BY	DESCRIPTION

APAC
PARSONS

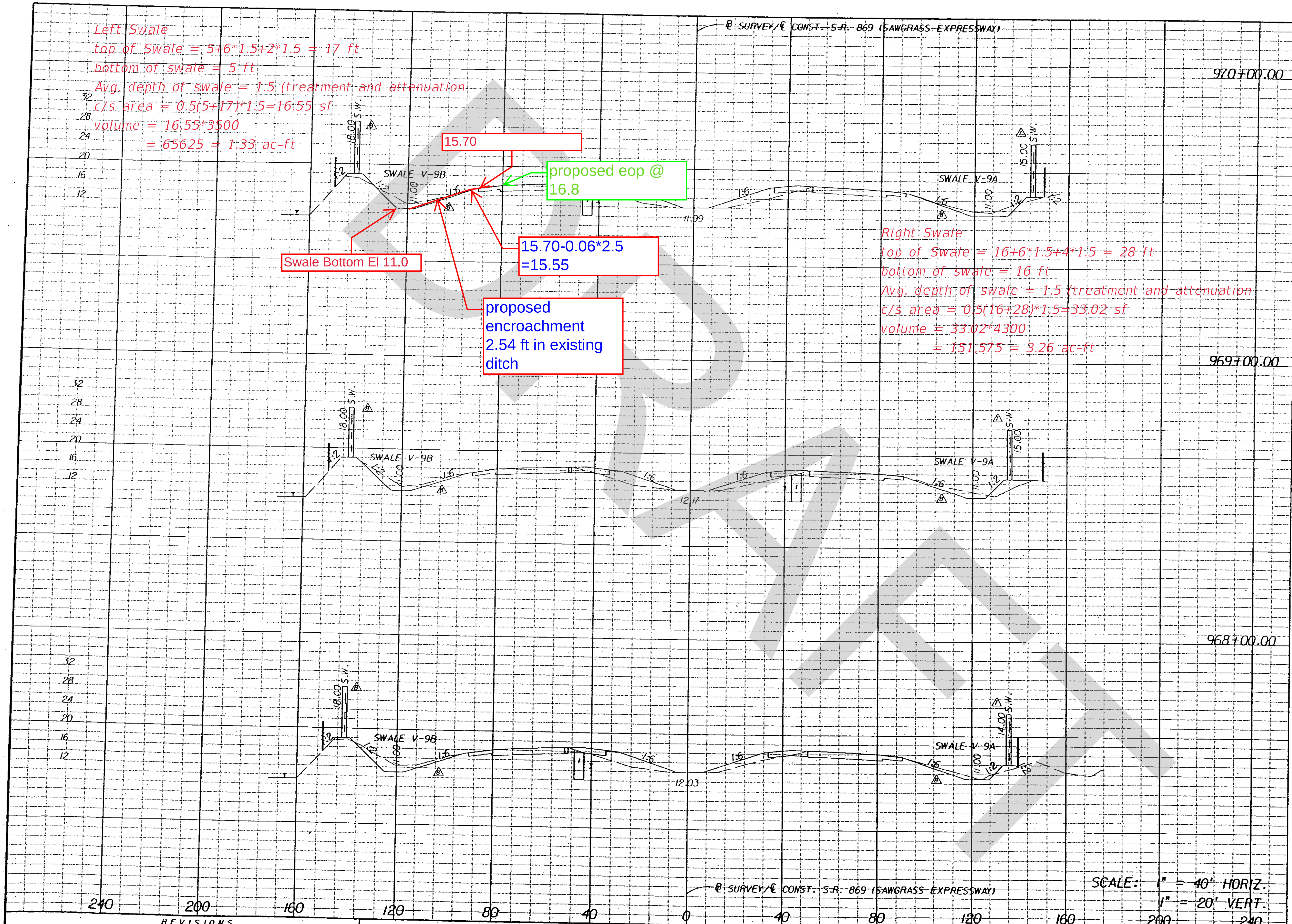
EOR: LON G. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

PLAN SHEET
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
66



Left Swale
top of Swale = 5+6*1.5+2*1.5 = 17 ft
bottom of swale = 5 ft
Avg. depth of swale = 1.5 (treatment and attenuation
c/s area = 0.5(5+17)*1.5=16.55 sf
volume = 16.55*3500
= 65625 = 1.33 ac-ft

Right Swale
top of Swale = 16+6*1.5+4*1.5 = 28 ft
bottom of swale = 16 ft
Avg. depth of swale = 1.5 (treatment and attenuation
c/s area = 0.5(16+28)*1.5=33.02 sf
volume = 33.02*4300
= 151,575 = 3.26 ac-ft

Regular Exc.		Embankment	
A	V	A	V

apac-PTG
~~MAR 15 2007~~
MAY 04 2007

3/8/07

REVISIONS		
DATE	BY	DESCRIPTION
8-31-05	LDO	3 ADDED AUGER BORING LOCATIONS AND SWALE BOTTOM DIMENSIONS. REVISED X-SECTION SHEET NUMBERS.
2-06-06	DFW	7 REVISED NOISE BARRIER NO. 13
8-18-06	DFW	8 ADJUSTED FRONT SLOPES AND SWALE BOTTOMS, REVISED NOISE

apac PARSONS

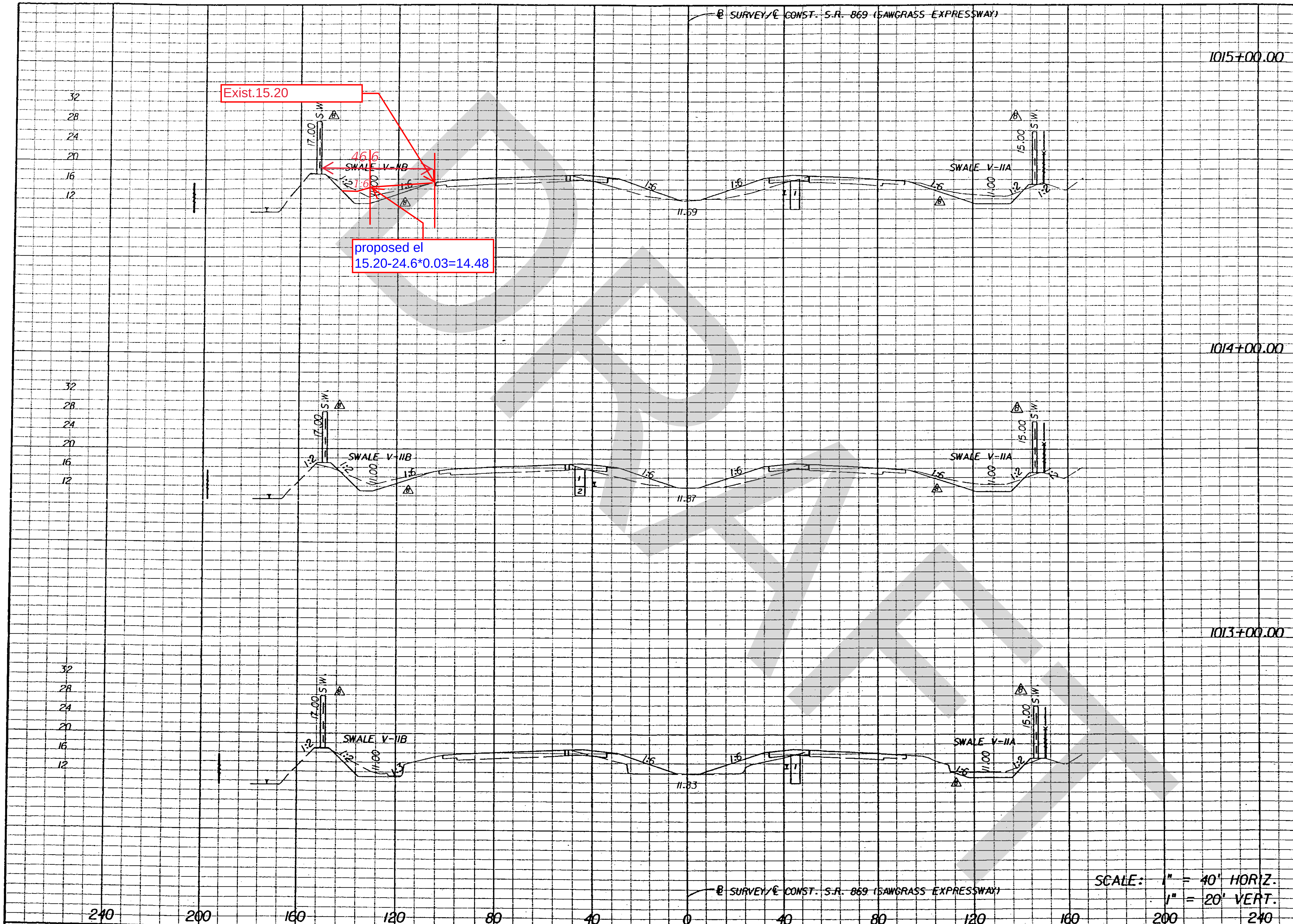
EOR: LON D. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

CROSS SECTIONS
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 203



Regular Exc.		Embankment	
A	V	A	V

Wonald [illegible] 3/10/07

apac-PTG

~~MAR 15 2007~~

MAY 04 2007

REVISIONS		
DATE	BY	DESCRIPTION
08-31-05	EDO	⚠3 ADDED AUGER BORING LOCATIONS AND SWALE BOTTOM DIMENSIONS. REVISED X-SECTION SHEET NUMBERS.
8-18-06	DFW	⚠8 ADJUSTED FRONT SLOPES AND SWALE BOTTOMS, REVISED NOISE BARRIER WALL 12 & 14 ALIGNMENTS.

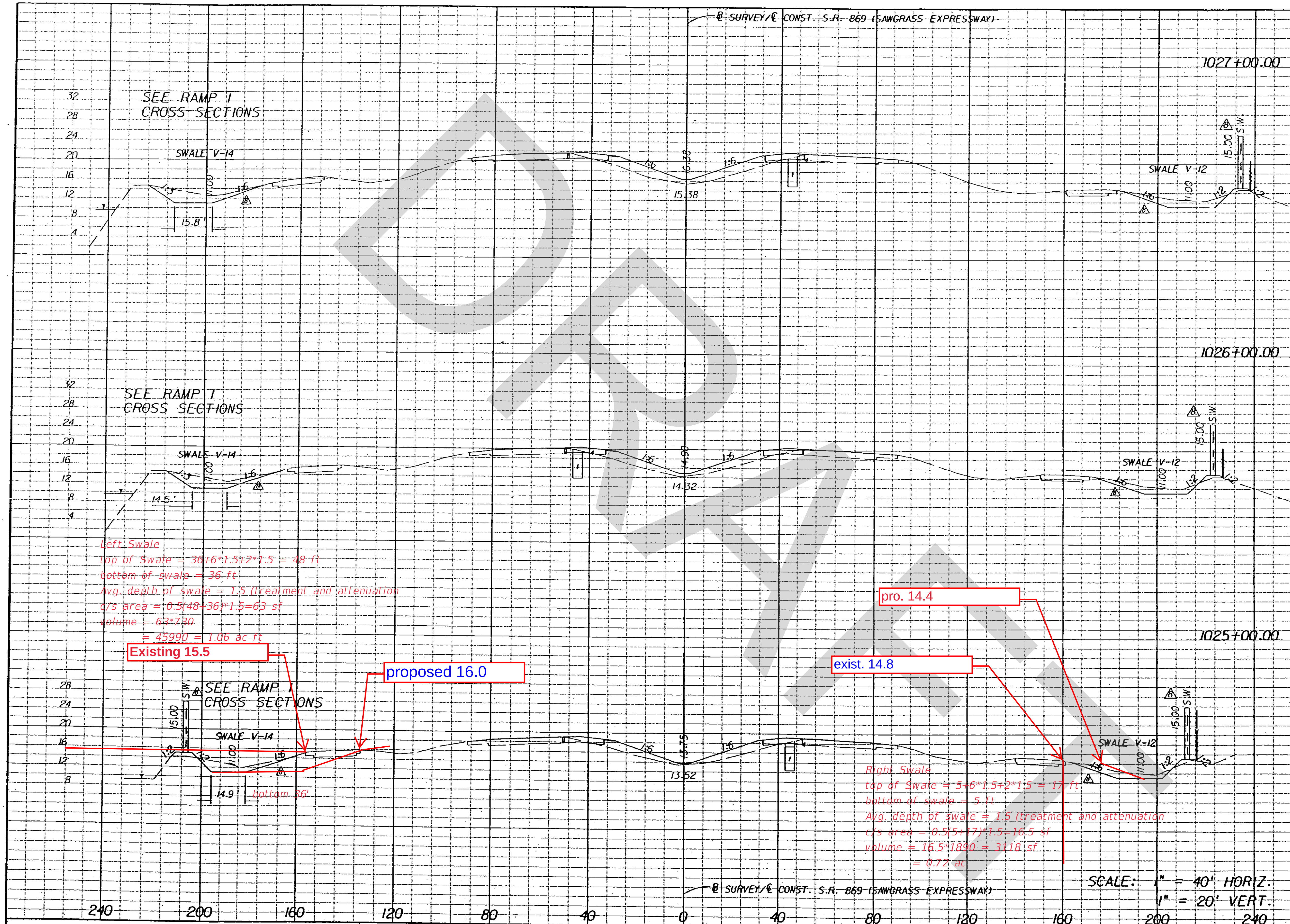
apac® PARSONS

EOR: LON D. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

CROSS SECTIONS
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
218



Regular Exc.		Embankment	
A	V	A	V

apac-PTG
~~MAR 15 2007~~
MAY 04 2007

3/8/07

REVISIONS

DATE	BY	DESCRIPTION
8-31-05	LDO	⚠ ADDED AUGER BORING LOCATIONS AND SWALE BOTTOM DIMENSIONS. REVISED X-SECTION SHEET NUMBERS.
8-18-06	DFW	⚠ ADJUSTED FRONT SLOPES AND SWALE BOTTOMS. REVISED NOISE WALL 12 & 14 ALIGNMENTS.

apac PARSONS

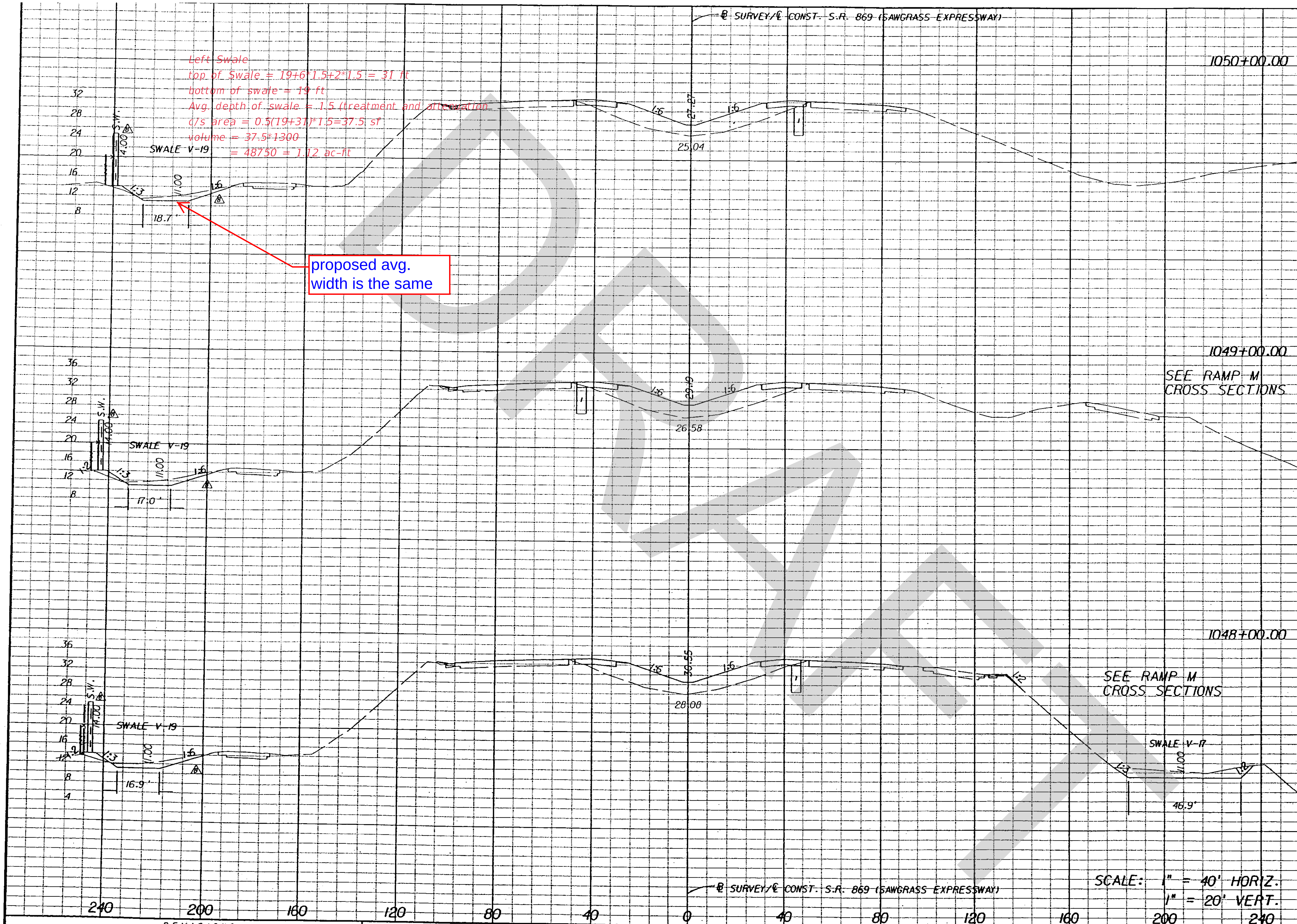
EOR: LON D. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

CROSS SECTIONS
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
222



Regular Exc.		Embankment	
A	V	A	V

Won ... 3/9/07

apac-PTG
MAR 15 2007
MAY 04 2007

REVISIONS		
DATE	BY	DESCRIPTION
8-31-05	LDO	⚠ ADDED AUGER BORING LOCATIONS AND SWALE BOTTOM DIMENSIONS. REVISED X-SECTION SHEET NUMBERS.
8-18-06	DFW	⚠ ADJUSTED FRONT SLOPES AND SWALE BOTTOMS, REVISED NOISE BARRIER WALL 16 ALIGNMENT.

apac PARSONS

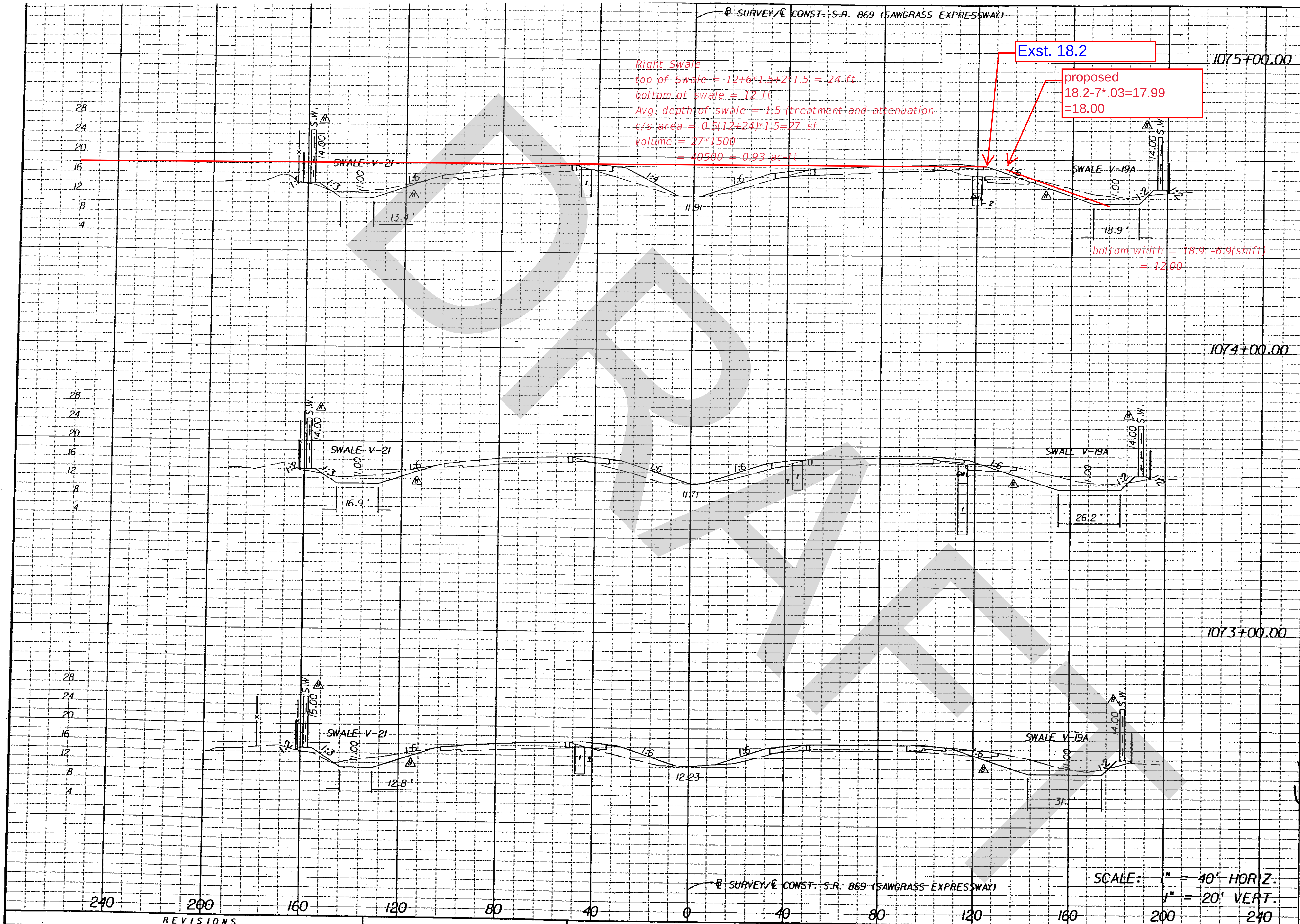
EOR: LON D. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

CROSS SECTIONS
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO. 230



Regular Exc.		Embankment	
A	V	A	V

apac-PTG
MAR 1 5 2007
MAY 0 4 2007

Donald 7/8/07

REVISIONS

DATE	BY	DESCRIPTION
8-31-05	LDO	⚠3 ADDED AUGER BORING LOCATIONS AND SWALE BOTTOM DIMENSIONS. REVISED X-SECTION SHEET NUMBERS.
8-18-06	DFW	⚠8 ADJUSTED FRONT SLOPES AND SWALE BOTTOMS, REVISED NOISE BARRIER WALL 16 & 17 ALIGNMENTS.

apac®
PARSONS

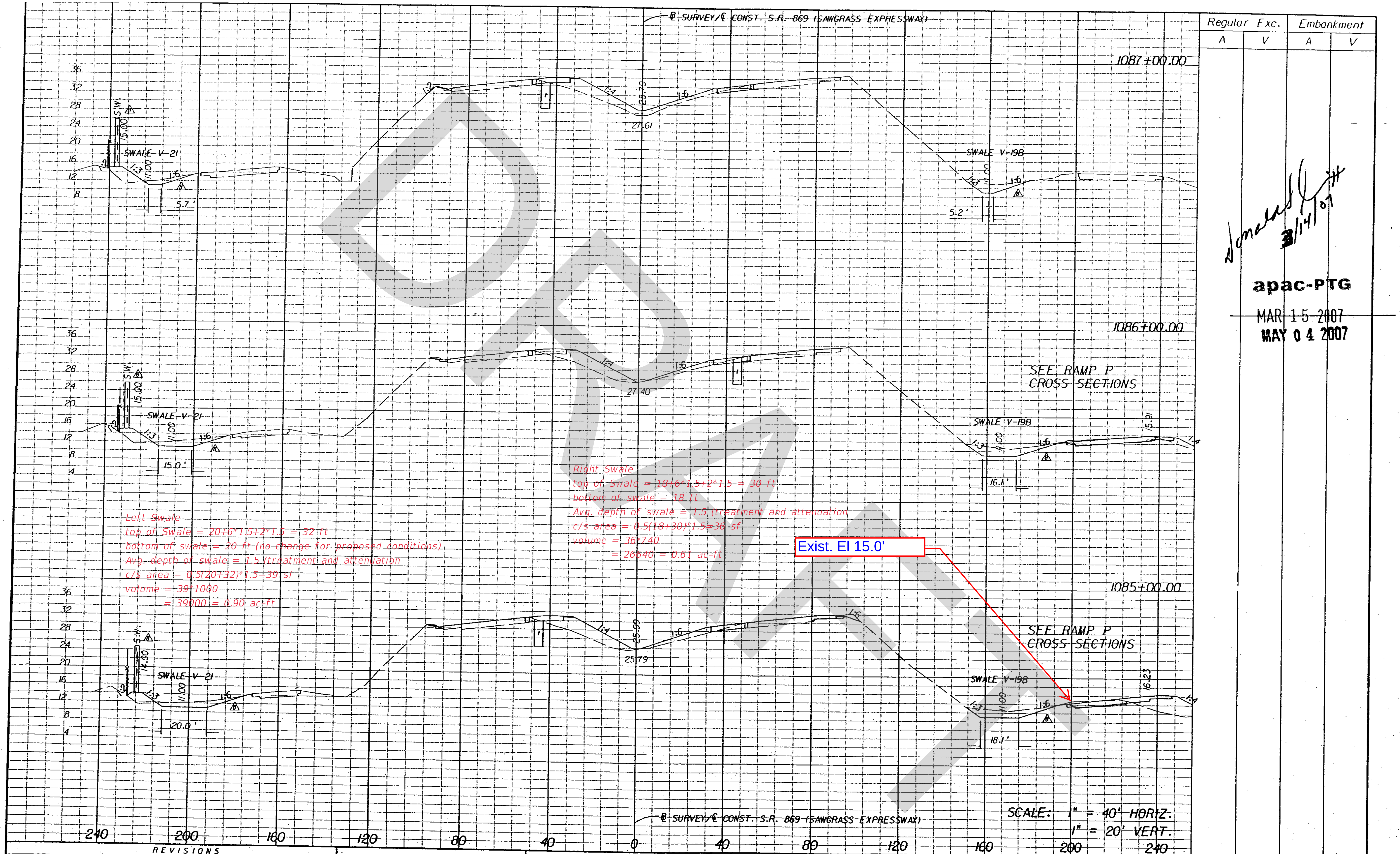
EOR: LON D. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

CROSS SECTIONS
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
238



REVISIONS

DATE	BY	DESCRIPTION
8-31-05	LDO	ADDED AUGER BORING LOCATIONS AND SWALE BOTTOM DIMENSIONS. REVISED X-SECTION SHEET NUMBERS.
8-18-06	DFW	ADJUSTED FRONT SLOPES AND SWALE BOTTOMS, REVISED NOISE BARRIER WALL 16 ALIGNMENT.

apac PARSONS

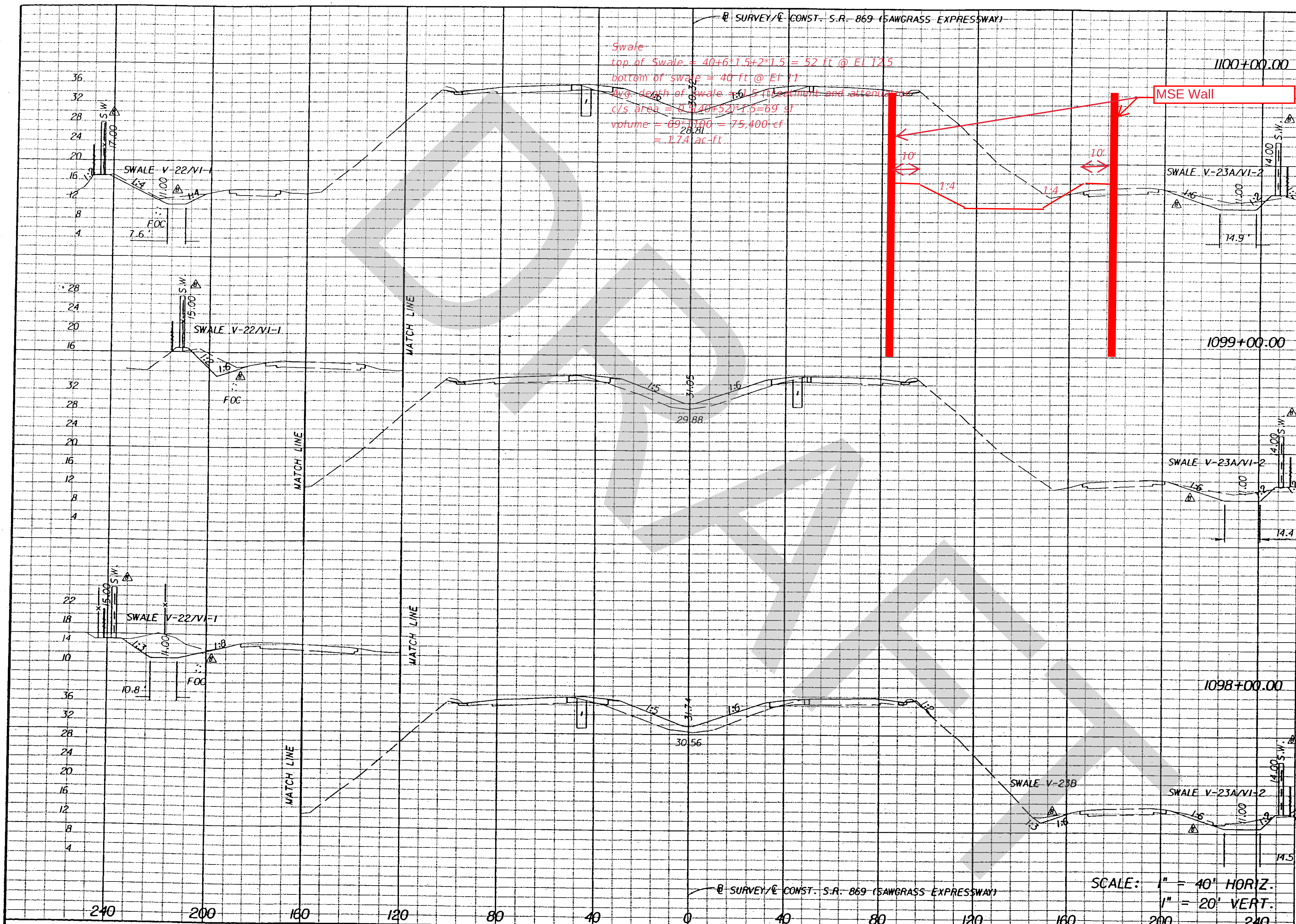
EOR: LON D. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

CROSS SECTIONS
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
242



Regular Exc.		Embankment	
A	V	A	V

apac-PTG

MAR 1 5 2007

MAY 0 4 2007

Donald J. [illegible] 3/8/07

REVISIONS

DATE	BY	DESCRIPTION
8-31-05	LDO	⚠3 ADDED AUGER BORING LOCATIONS AND SWALE BOTTOM DIMENSIONS. REVISED X-SECTION SHEET NUMBERS.
8-18-06	DFW	⚠8 ADJUSTED FRONT SLOPES AND SWALE BOTTOMS, REVISED NOISE BARRIER WALL 18 & 19 ALIGNMENTS.

apac PARSONS

EOR: LON D. OGDEN
P.E. LICENSE NUMBER 53200
PARSONS
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 1838

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	406153-1-52-01

CROSS SECTIONS
S.R. 869
(SAWGRASS EXPRESSWAY)

SHEET NO.
246

STATE PROJ. NO.	SHEET NO.
97861-3355	60

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

REVISIONS

	NAME	DATE		NAME	DATE
DESIGNED BY	L.T.	01-89	DRAWN BY	I.G.	01-89
CHECKED BY	J.G.	01-89	CHECKED BY	L.T.	01-89

SUPERVISED BY V. Benitez

FLORIDA DEPARTMENT OF TRANSPORTATION

APPROVED BY Victor Benitez DATE

METRIC ENGINEERING INC.
ENGINEERS • PLANNERS • SURVEYORS
MIAMI WEST PALM BEACH PANAMA CITY

CROSS SECTIONS

STA. 1290+00 TO STA. 1293+00

METRIC ENGINEERING, INC.
CONSULTING ENGINEERS
MIAMI - WEST PALM BEACH - PANAMA CITY

Application No.
Route No.
Original Platted by
Original Checked by
Template by
Area by
Finals Platted by
Finals Checked by
Area by
Area Checked by

STATE PROJ. NO.	SHEET NO.
97861-3355	65

METRIC ENGINEERING, INC.
CONSULTING ENGINEERS
MIAMI · WEST PALM BEACH · PANAMA CITY

Application No. ____
Route No. ____
Original Platted by ____
Original Checked by ____
Template by ____
Area by ____
Finals Platted by ____
Finals Checked by ____
Area by ____
Area Checked by ____

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

	NAME	DATE		NAME	DATE
DESIGNED BY	L.T.	01-89	DRAWN BY	I.G.	01-89
CHECKED BY	J.G.	01-89	CHECKED BY	L.T.	01-89

SUPERVISED BY V. Benitez

FLORIDA DEPARTMENT OF TRANSPORTATION
APPROVED BY Victor Benitez DATE

METRIC ENGINEERING INC.
ENGINEERS • PLANNERS • SURVEYORS
MIAMI WEST PALM BEACH PANAMA CITY

CROSS SECTIONS
STA. 1310+00 TO STA. 1313+00

STRUCTURE NO.	DESIGN FLOOD 10% PROP. 10 YR. FREQ.		BASE FLOOD 1% PROP. 100 YR. FREQ.	
	DISCHARGE	STAGE	DISCHARGE	STAGE
S-410	480	14.0	620	16.0

⑧ 36" CMP
N. F.L. = 8.55
S. F.L. = 8.22

⑨ 2-4' X4' BOX CULVERTS
NORTH BOX CULVERT
W.F.L. = 11.83
E.F.L. = 11.86
SOUTH BOX CULVERT
W.F.L. = 11.81
E.F.L. = 11.86

⑩ 36" CMP
N.F.L. = 13.14
S.F.L. = 12.28

LEGEND
- DITCH
- CULVERT
- (S-26) STRUCTURE NUMBER
- ② EXISTING CULVERT
- DRAINAGE BOUNDARY
- ℄ SAWGRASS EXPRESSWAY
- ⓧ EXISTING STRUCTURE IDENTIFICATION

NOTE: ALL PIPES 15" UNLESS OTHERWISE NOTED.

DESIGNED	DATE
J. BEASLEY	2-84
DRAWN	DATE
	5-84
CHECKED	DATE
T. Kalayci	9-84
APPROVED	DATE

NO.	DATE	BY / CHK	APP.	REVISIONS

BROWARD COUNTY EXPRESSWAY AUTHORITY

DESIGN CONSULTANT
KEITH AND SCHNARS, P.A.
1115 N.E. 4TH AVE.
FORT LAUDERDALE, FLORIDA

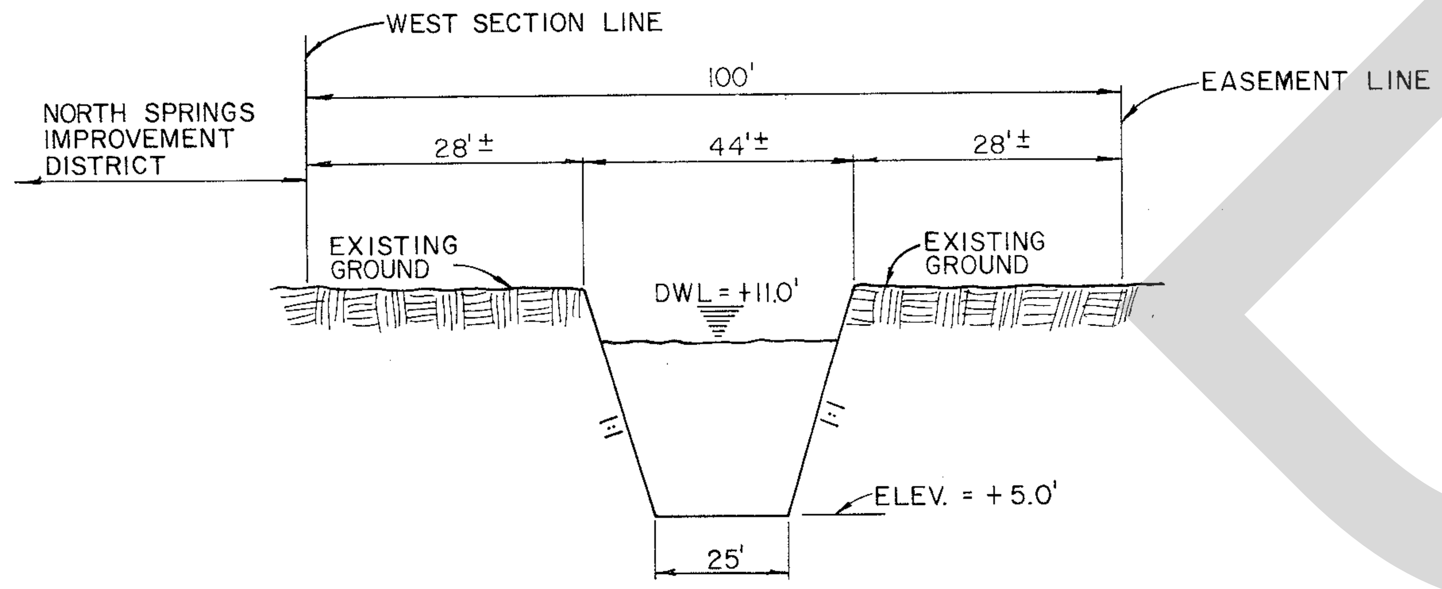
GENERAL CONSULTANT
PRC ENGINEERING, INC.
6300 N.E. FIRST AVENUE
FT. LAUDERDALE, FLA.

SAWGRASS/DEERFIELD EXPRESSWAY

DRAINAGE MAP

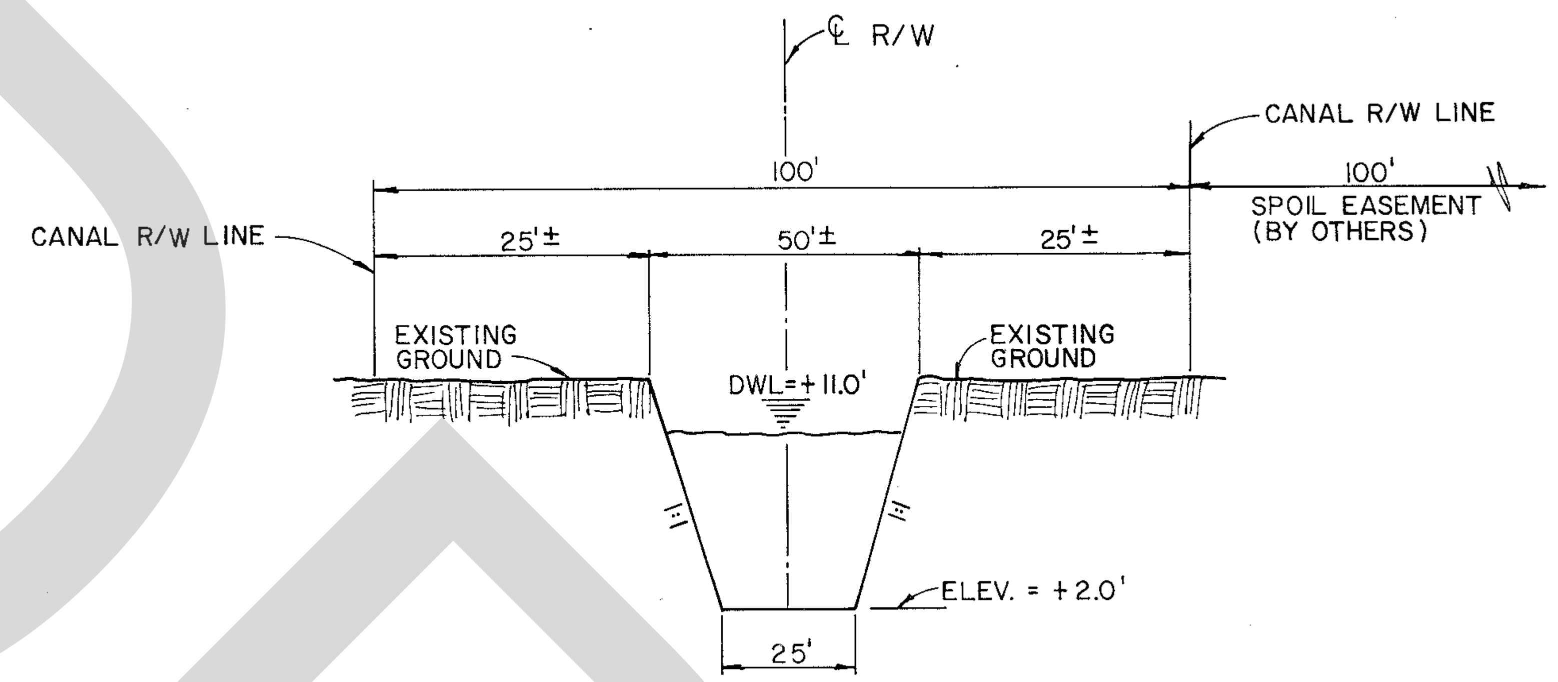
SCALE 1"=200' | PROJECT NO. SECTION V | SHEET NO. 4

K-46 MARKHURD AERIAL SURVEYS, INC.

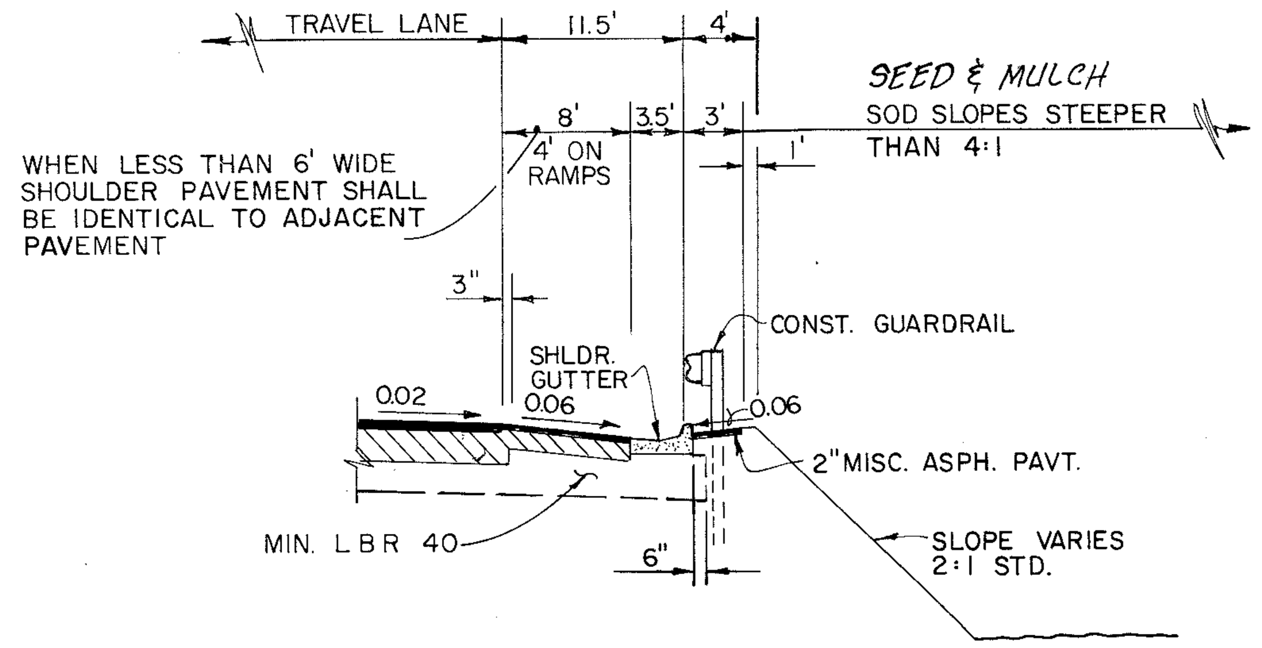


TYPICAL SECTION FOR
P.T.W.C.D. CANALS *

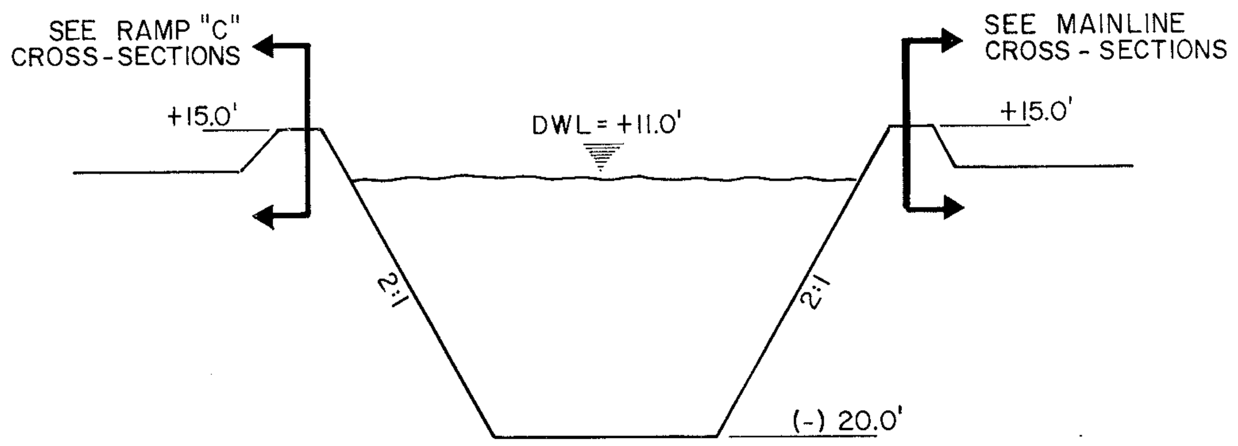
* LOCATED AS FOLLOWS :
100'± NORTH OF STRUCTURE S-187 (STA. 17+57± ACCESS ROAD "A")
90'± SOUTH OF STRUCTURE S-195 (STA. 936+67± MAINLINE)



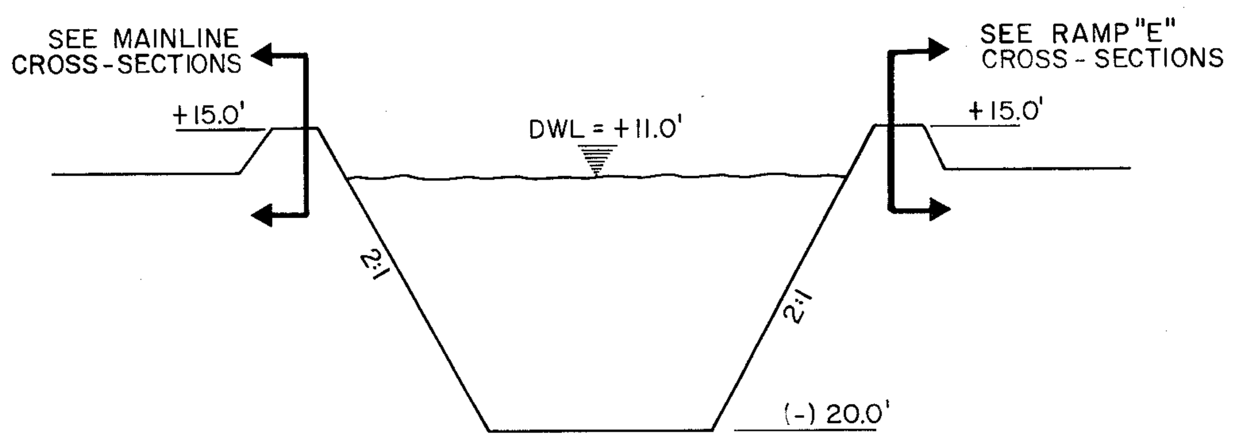
TYPICAL SECTION FOR CANAL
50'± South of Structure S-410
@ Sta. 1028+36±



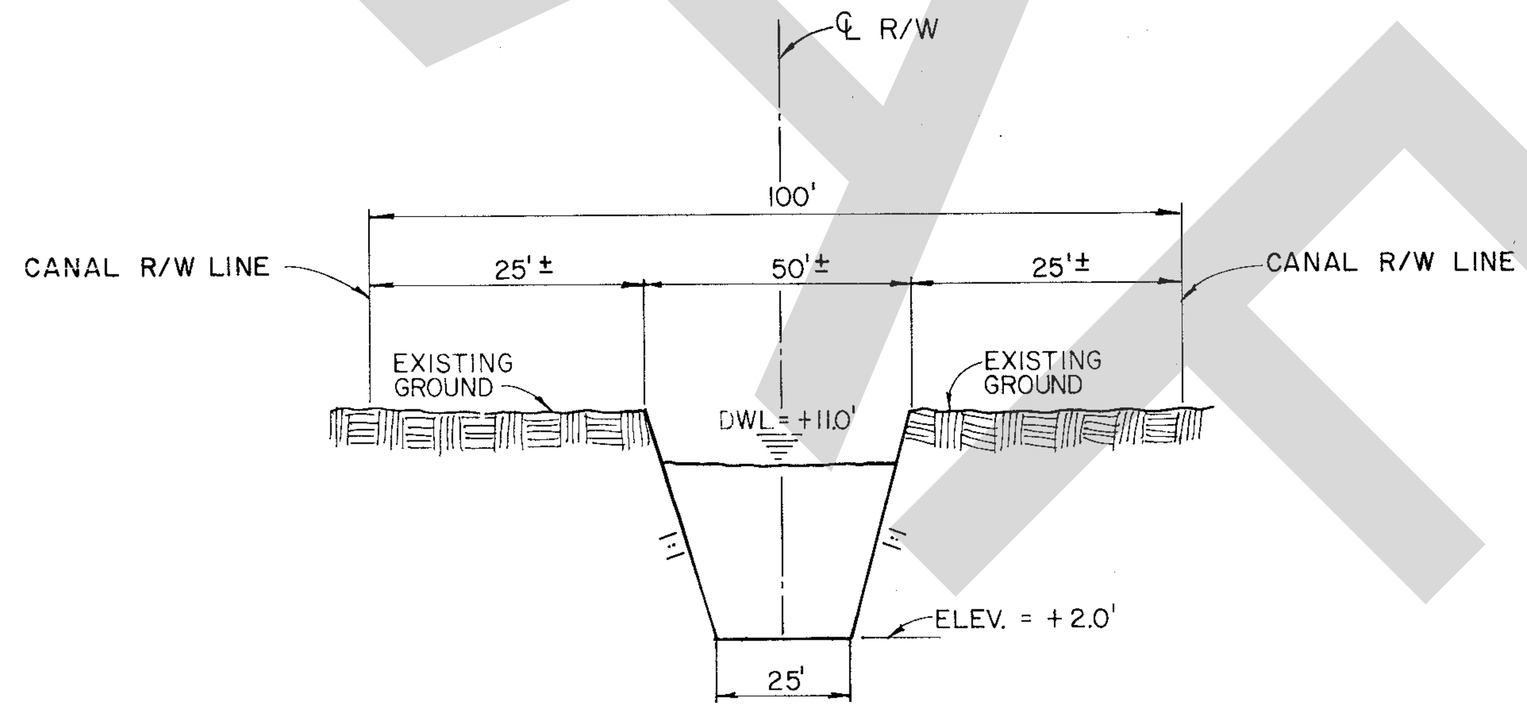
SHOULDER GUTTER
&
GUARDRAIL DETAIL
(MAINLINE)
&
RAMPS



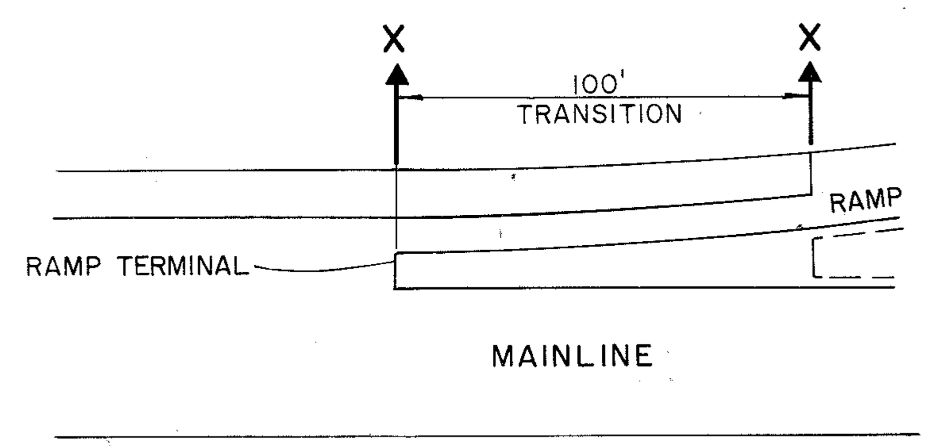
BORROW LAKE "A"
STA. 1037+15± (402' LT.)
N.T.S.



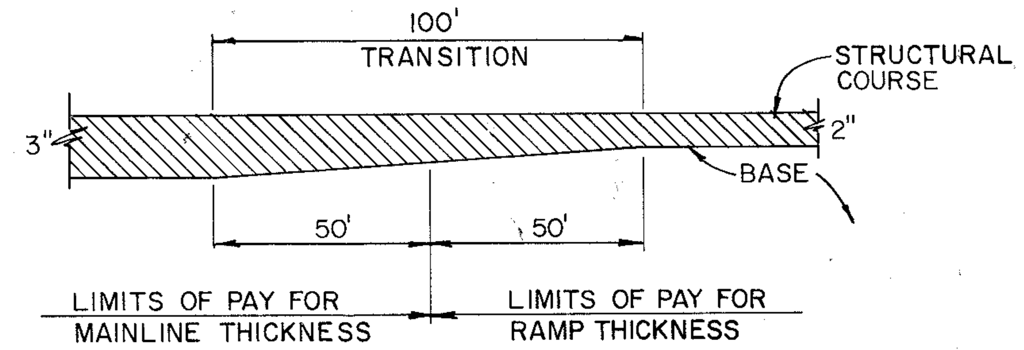
BORROW LAKE "B"
STA. 1045+70± (402' RT.)
N.T.S.



CANAL TYPICAL SECTION
@ Sta. 1069+76.46 STRUCTURE S-715 & S-720
90'± North and 280'± South of R/W LINE



PLAN VIEW



PROFILE X-X

MAINLINE TO RAMP OR RAMP TO MAINLINE
PAVEMENT THICKNESS TRANSITION

G. WEED	12-83					
DESIGNED	DATE					
E. OSGOOD	2-84					
DRAWN	DATE					
H. HIGGINBOTHAM	5-84					
CHECKED	DATE					
T. Kalayci	9-84					
APPROVED	DATE	NO.	DATE	BY / CHK	APP.	REVISIONS

T. H. Kalayci

BROWARD COUNTY EXPRESSWAY AUTHORITY

DESIGN CONSULTANT
KEITH AND SCHNARS, P.A.
1115 N.E. 4TH AVE.
FORT LAUDERDALE, FLORIDA

GENERAL CONSULTANT
PRC ENGINEERING, INC.
6300 N. E. FIRST AVENUE
FT. LAUDERDALE, FLA.

SAWGRASS/DEERFIELD EXPRESSWAY

TYPICAL SECTIONS

SCALE NOT TO SCALE | PROJECT NO. SECTION V | SHEET NO. 8

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
FINAL "AS BUILT" PLANS
~~CONTRACT PLANS~~

FINANCIAL PROJECT ID 420289-6-52-01
BROWARD COUNTY (86472)
STATE ROAD NO. 869
SAWGRASS EXPRESSWAY DEERFIELD TOLL PLAZA MODIFICATIONS

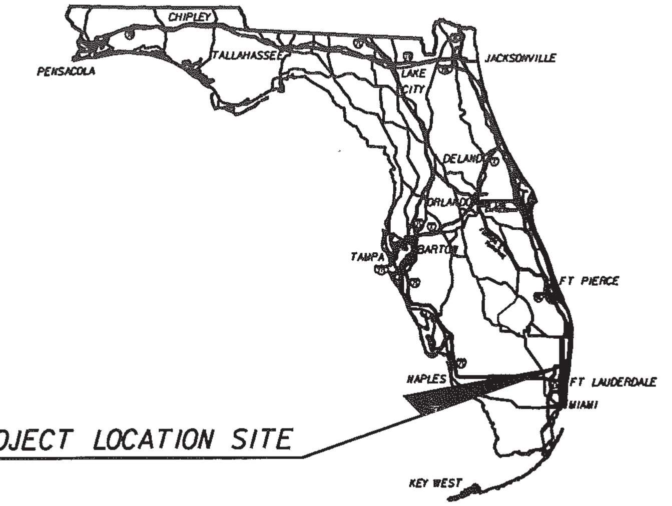
COMPONENTS OF CONTRACT PLANS SET

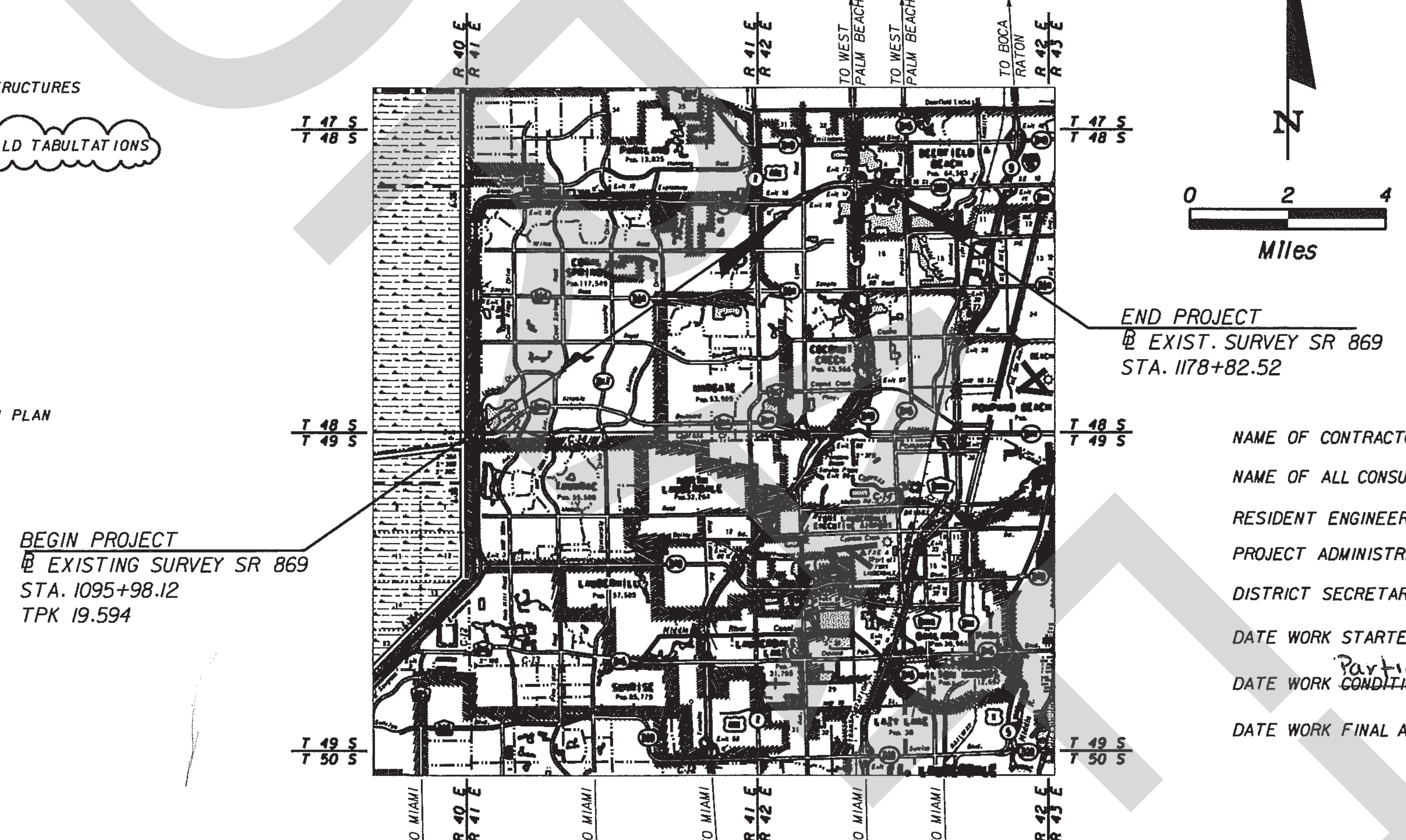
ROADWAY PLANS
SIGNING AND PAVEMENT MARKING PLANS
LIGHTING PLANS
ITS RELOCATION PLANS
WALL PLANS
GANTRY PLANS
TOLL PLAZA MODIFICATION PLANS
LANDSCAPE PLANS

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH COMPONENT

INDEX OF ROADWAY PLANS

* TCP SUBMITTED SEPARATELY





ROADWAY SHOP DRAWINGS TO BE SUBMITTED TO:
RENATO MARRERO, P.E.
JACOBS
3750 N.W. 87th Avenue, Suite 750
Miami, FL. 33178
Tel. (305) 718-0599

PLANS PREPARED BY:
JACOBS
3750 N.W. 87th Avenue, Suite 750
Miami, Florida 33178 U.S.A.
Tel. (305) 718-0599
Contract No. E-8H59
Vendor No. 43-1621641

CERTIFICATE OF AUTHORIZATION NO. 6572

NAME OF CONTRACTOR Community Asphalt Corp.
NAME OF ALL CONSULTANTS INVOLVED ConsulTech Enterprises INC.
RESIDENT ENGINEER Felix Vergara, P.E.
PROJECT ADMINISTRATOR Mauricio Arze, P.E.
DISTRICT SECRETARY Jim Ely, P.E.
DATE WORK STARTED 7-01-2007
DATE WORK ~~CONDITIONALLY~~ Partial ACCEPTED 6-03-2009
DATE WORK FINAL ACCEPTANCE OR COMPLETED 6-19-2009

THIS PROJECT WAS CONSTRUCTED IN SUBSTANTIAL COMPLIANCE WITH THESE PLANS AS PROVIDED BY THE ENGINEER OF RECORD. IF CHANGES WERE MADE, THOSE CHANGES ARE INDICATED BY BLACK INK REVISION AND BEAR THE SEAL, SIGNATURE AND DATE OF THE RESPONSIBLE ENGINEER.

THIS PROJECT WAS CONSTRUCTED IN SUBSTANTIAL COMPLIANCE WITH THESE PLANS AS PROVIDED BY THE ENGINEER OF RECORD. THESE PLANS REFLECT "AS-BUILT" CONDITIONS AND NO CHANGES WERE MADE TO THE PLAN SHEETS.

RESIDENT ENGINEER DATE

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

(THIS PROJECT IS DESIGNED TO NAVD 1988 DATUM)

PROJECT LENGTH IS BASED ON ℄ EXIST. SURVEY SR 869

LENGTH OF PROJECT		
	LINEAR FEET	MILES
ROADWAY	8284.40	1.569
BRIDGES		
NET LENGTH OF PROJECT	8284.40	1.569
EXCEPTIONS		
GROSS LENGTH OF PROJECT	8284.40	1.569

KEY SHEET REVISIONS

DATE	BY	DESCRIPTION
5/22/08	RM	1 ADDED SHEET 1A, 90A & 90B
6/27/08	RM	2 ADDED SHEET 91A
2/7/09	RM	3 RECORD SET BASED ON FIELD CONDITIONS

GOVERNING STANDARDS AND SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION, DESIGN STANDARDS DATED 2006, AND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 2004, AS AMENDED BY CONTRACT DOCUMENTS.

APPICABLE DESIGN STANDARDS MODIFICATIONS: 01-01-07

REVISIONS: SEE KEY SHEET 1A

FDOT PROJECT MANAGER: WILLIAM F. SLOUP, P.E. / GEC PROJECT MANAGER: JAMES "BO" SANCHEZ, P.E.

ROADWAY PLANS ENGINEER OF RECORD: RENATO MARRERO, P.E.
5/7/2009
P.E. NO.: 59411

FISCAL YEAR	SHEET NO.
07	1

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

CONTRACT PLANS

FINANCIAL PROJECT ID 420289-6-52-01
BROWARD COUNTY (86472)
STATE ROAD NO. 869

REVISIONS

1. ROADWAY PLANS: 2, 5, 11, 19, 32 THRU 37, 39, 81 THRU 86, 93, 98, 118, 119
   128, 132 184, 189, 191, 204, & 205 (REVISED 10/23/07)
   TC-7, TC-25A, TC-25B AND TC-25C (REVISED 11/14/07)
2. ROADWAY PLANS: TC-22A AND TC-103 (REVISED 12/04/07)
3. ROADWAY PLANS: 14, 15, 37, 38, 89, 189, 190, 210, 211, TC-120, TC-156, TC-172 (REVISED 12/14/07)
   LIGHTING PLANS: L-13 & L-14 (REVISED 12/14/07)
   GANTRY PLANS: GC-1 (REVISED 12/14/07)
   TOLL PLAZA MODIFICATION PLANS: E-3 (REVISED 12/14/07)
4. ROADWAY PLANS: TC-62A, TC-63A, TC-64A, TC-145A & TC-146A (REVISED 1/10/08)
5. ROADWAY PLANS: 13, 14, 16 THRU 21 (REVISED 12/19/07)
   TOLL PLAZA MODIFICATION PLANS: AL-4.5 & AL-6.2 (REVISED 1/15/08)
6. ROADWAY PLANS: 5, 33, 37, 189 & 210 (REVISED 1/23/08)
   TOLL PLAZA MODIFICATION PLANS: SL-3, SL-3.2 & SL-3.3 (REVISED 1/23/08)
7. ROADWAY PLANS: TC-1, TC-25A, TC-25B, AND TC-26 THRU TC-29 (REVISED 02/12/08)
   30, AND 140 THRU 162 (REVISED 02/15/08)
8. ROADWAY PLANS: TC-33A, TC-33B AND TC-100A (REVISED 02/19/08)
9. ROADWAY PLANS: 210, TC-6, TC-17 THRU TC-19, TC-33C, TC-74A THRU TC-74C, TC-130,
   TC-132 AND TC-139 (REVISED 03/13/08)
   LIGHTING PLANS: L-5, L-7, L-10 THRU L-14, L-16 THRU L-21 AND L-23 (REVISED 02/21/08)
   TOLL PLAZA MODIFICATION PLANS: E-10 (REVISED 03/10/08)
10. ROADWAY PLANS: TC-117 THRU TC-120 (REVISED 05/20/08)
    LIGHTING PLANS: L-5, L-13 & L-15 (REVISED 05/15/08)
11. ROADWAY PLANS: 1A, 36, 39, 87, 90A & 90B (REVISED 05/22/08)
    TOLL PLAZA MODIFICATION PLANS: AL-3.1 (REVISED 07/10/08)
    TOLL PLAZA MODIFICATION PLANS: PL-1.1 & PL-2.1 (REVISED 04/07/08)
12. TOLL PLAZA MODIFICATION PLANS: SL-3.2 (REVISED 05/29/08)
    GANTRY PLANS: GA-0.2 AND GF-2 THRU GF-4 (REVISED 05/29/08)
13. ROADWAY PLANS: 1, 37 & 91A (REVISED 06/27/08)
    LIGHTING PLANS: L-13 AND L-14 (REVISED 06/11/08)
14. ROADWAY PLANS: 4, 5, 15, 36, 37, 56, 57, 89, 108-118, 155-159, 188, 189, 209,
    210, TC-120, TC-121, TC-127, TC-129, TC-132, TC-139, TC-143, TC-156,
    TC-157, TC-164, TC-165, TC-172, TC-173 AND TC-179 (REVISED 07/01/08)
    SIGNING & PAVEMENT MARKINGS: S-11 THRU S-13 (REVISED 07/01/08)
    LIGHTING PLANS: L-12 THRU L-16 & L-18 (REVISED 07/01/08)
    TOLL PLAZA MODIFICATION PLANS: E-17 (REVISED 07/01/08)
15. ROADWAY PLANS: 89, TC-142A, TC-142B & TC-142C (REVISED 08/12/08)
    TC-4 THRU TC-6, TC-11, TC-12, TC-14 THRU TC-16, TC-18,
    TC-19, TC-121, TC-129, TC-139 THRU TC-145, TC-157 THRU TC-159,
    TC-173 THRU TC-175, TC-179 AND TC-180 (REVISED 08/19/08)
    GANTRY PLANS: GF-1 AND GF-5 (REVISED 08/26/08)
    TOLL PLAZA MODIFICATION PLANS: AL-2.3 (REVISED 07/21/08)
    TOLL PLAZA MODIFICATION PLANS: SL-3.4 (REVISED 09/29/08)
    TOLL PLAZA MODIFICATION PLANS: L-31 (REVISED 08/21/08)
    TOLL PLAZA MODIFICATION PLANS: SL-4.5 (REVISED 08/28/08)
    GANTRY PLANS: GF-2 THRU GF-4 (REVISED 09/29/08)
    TOLL PLAZA MODIFICATION PLANS: SL-2.7 (REVISED 09/29/08)
16. ROADWAY PLANS: TC-129 & TC-130 (REVISED 09/09/08)
17. ROADWAY PLANS: TC-129 & TC-130 (REVISED 09/16/08)
    ROADWAY PLANS: 38, 89, 112, & 157 (REVISED 09/18/08)
18. SIGNING & PAVEMENT MARKING PLANS: S-55 (REVISED 09/17/08)
    SIGNING & PAVEMENT MARKING PLANS: S-22, S-23, S-27, S-30 THRU S-32,
    S-35, S-70, S-72 THRU S-77 (REVISED 10/06/08)
    SIGNING & PAVEMENT MARKING PLANS: S-84 (SS-3) (REVISED 11/06/08)
    TOLL PLAZA MODIFICATION PLANS: SL-3.5 (REVISED 09/24/08)
    TOLL PLAZA MODIFICATION PLANS: AL-6.2 (REVISED 09/30/08)
    TOLL PLAZA MODIFICATION PLANS: SL-3.6 THRU SL-3.8 (REVISED 11/06/08)
19. VOID
20. ROADWAY PLANS: TC-15, TC-142A, TC-142B, TC-142C, TC-143 AND TC-144 (REVISED 10/14/08)
    TOLL PLAZA MODIFICATION PLANS: SL-3.5 & SL-3.9 (REVISED 10/15/08)
21. TOLL PLAZA MODIFICATION PLANS: SL-2.1 THRU SL-2.3 (REVISED 10/27/08)
    TOLL PLAZA MODIFICATION PLANS: SL-3.1 (REVISED 10/28/08)
22. VOID
23. ROADWAY PLANS: 40, 87 & TC-25D (REVISED 11/07/08)
    LIGHTING PLANS: L-12 THRU L-16 & L-18 (REVISED 11/03/08)
    TOLL PLAZA MODIFICATION PLANS: E-16 THRU E-21 (REVISED 11/03/08)
24. ROADWAY PLANS: TC-16 & TC-153 THRU TC-159 (REVISED 11/11/08)
25. ROADWAY PLANS: 43 AND 168 THRU 170 (REVISED 11/15/08)
    SIGNING & PAVEMENT MARKINGS PLANS: S-87 (SS-6) (REVISED 11/18/08)
26. SIGNING & PAVEMENT MARKINGS PLANS: S-87 (SS-6) & S-87A (SS-6A) (REVISED 12/8/08)
    TOLL PLAZA MODIFICATION PLANS: SL-3.1, SL-4 THRU SL-4.4 & SW-1 (REVISED 12/8/08)
27. VOID
28. GANTRY PLANS (URS): GB-13, GB-16 & GB-31 (REVISED 12/24/08)
29. TOLL PLAZA MODIFICATION PLANS: AL-6.1 & AL-6.2 (REVISED 01/21/09)
30. SIGNING & PAVEMENT MARKINGS PLANS: S-86 (SS-5) & S-87 (SS-6) (REVISED 01/06/09)
    TOLL PLAZA MODIFICATION PLANS: TCW-5 (97) (REVISED 01/08/09)
31. ROADWAY PLANS: TC-16 & TC-157 THRU TC-159 (REVISED 01/08/09)
32. ROADWAY PLANS: 39, 40, 160 & 161 (REVISED 01/20/09)
    GANTRY PLANS: SW-7 THRU SW-9 (REVISED 01/20/09)
33. ROADWAY PLANS: 30 (REVISED 2/2/09)
    GANTRY PLANS: GA-0.2 (REVISED 2/2/09)
34. * ROADWAY PLANS: 1, 13, 14, 16, 17 THRU 20, 22, 25A, 33, 35 THRU 37, 39 THRU 44, 46, 47, 48, 87, 89,
    90B, 91A, 171 THRU 178, & 206 THRU 210 (REVISED 02/7/09)
    SIGNING & PAVEMENT MARKINGS PLANS: S-1, S-4 THRU S-15, S-18 THRU S-27, S-30 THRU S-35A, S-36, S-37,
    S-39, S-43, S-45 THRU S-48, S-50, S-51, S-54, S-56, S-57, S-62,
    S-65, S-66, S-70, S-71, S-77, S-78 & S-83 (REVISED 02/11/09)
    SIGNING & PAVEMENT MARKINGS PLANS: S-84 THRU S-88 (REVISED 03/31/09)
    LIGHTING PLANS: L-29 (REVISED 03/31/09)
    LIGHTING PLANS: L-1, L-5 THRU L-9, L-11 THRU L-16, L-18, L-20, L-21, L-23 THRU L-26 (REVISED 04/01/09)
    LIGHTING PLANS: L-4 (REVISED 05/13/09)
    LIGHTING PLANS: L-10 & L-19 (REVISED 05/20/09)
    LIGHTING PLANS: L-17 (REVISED 05/26/09)
    TOLL PLAZA MODIFICATION PLANS: BW-6.2 (REVISED 02/24/09)
    TOLL PLAZA MODIFICATION PLANS: AL-1.1, AL-1.2, AL-6.1, AL-6.3, AW-2 (REVISED 03/30/09)
    TOLL PLAZA MODIFICATION PLANS: AL-6.2, AL-6.4, SL-2, SL-2.4, SL-2.6, SL-3.2, SL-3.9,
    SL-4.1, SL-4.2, SL-4.4, SW-9, BW-1, BW-2, BW-3, BW-4, BW-5, BW-6,
    BW-6.1, TCW-1, TCW-2, TCW-3 (REVISED 03/31/09)
    TOLL PLAZA MODIFICATION PLANS: E-5, E-8, E-9, E-10, E-11, E-12, E-15, E-19 (REVISED 04/01/09)
    TOLL PLAZA MODIFICATION PLANS: E-3 & E-3B (REVISED 05/21/09)
    GANTRY PLANS: GC-2 (REVISED 03/11/09)
    GANTRY PLANS: GE-4 & GE-10B (REVISED 03/27/09)
    GANTRY PLANS: GF-6 (REVISED 03/31/09)
    GANTRY PLANS: GC-1, GA-1 (REVISED 04/14/09)
    GANTRY PLANS: GB-2 THRU GB-15, GB-44 (REVISED 04/15/09)
    GANTRY PLANS: GB-34 & GB-35 (REVISED 04/24/09)
    GANTRY PLANS: GM-2 (REVISED 04/29/09)
    LANDSCAPING PLANS: LD-2 & LD-3 (REVISED 05/14/09)
    ITS RELOCATION PLANS: IT-14 & IT-22 (REVISED 05/26/09)

* RECORD SET

KEY SHEET REVISIONS		
DATE	BY	DESCRIPTION

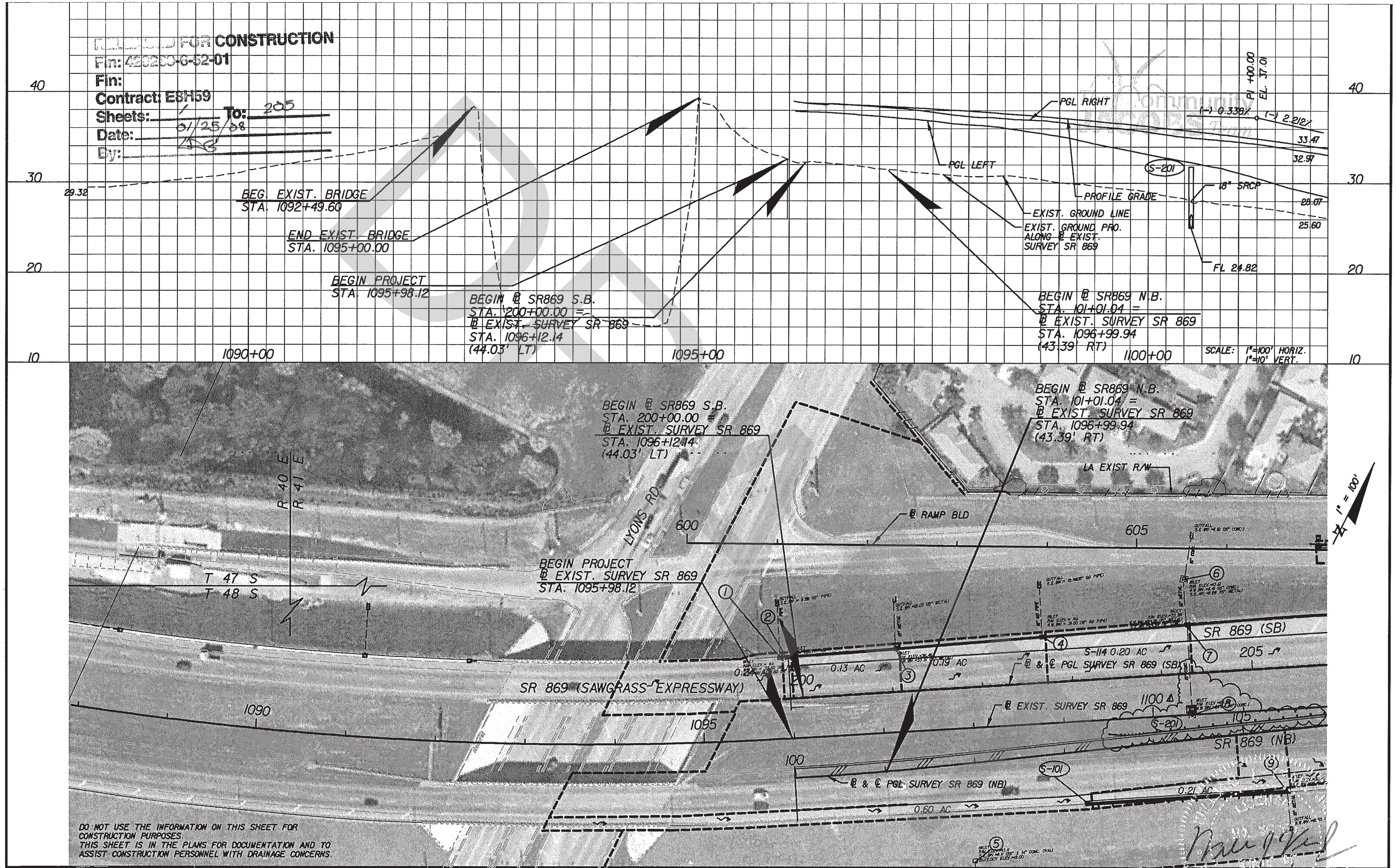
6/15/2009

ROADWAY PLANS
ENGINEER OF RECORD: RENATO MARRERO, P.E.

P.E. NO.: 59411

FISCAL YEAR	SHEET NO.
07	1A

FDOT PROJECT MANAGER: WILLIAM F. SLOUP, P.E. / GEC PROJECT MANAGER: JAMES "BO" SANCHEZ, P.E.



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
10-23-07	NS	Δ S-201 RELOCATED, EXIST. PIPE SIZE FROM S-201 CORRECTED, GUARDRAIL UPDATED			

JACOBS
3750 N.W. 87th Avenue, Suite 750
Miami, FL. 33178
Tel. (305) 718-0599

CERTIFICATE OF AUTHORIZATION NO. 6572
ENGINEER OF RECORD:
WILLIAM J. VEON JR. P.E. No. 35650

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	420289-6-52-01

DRAINAGE MAP (1)

SHEET NO. 2

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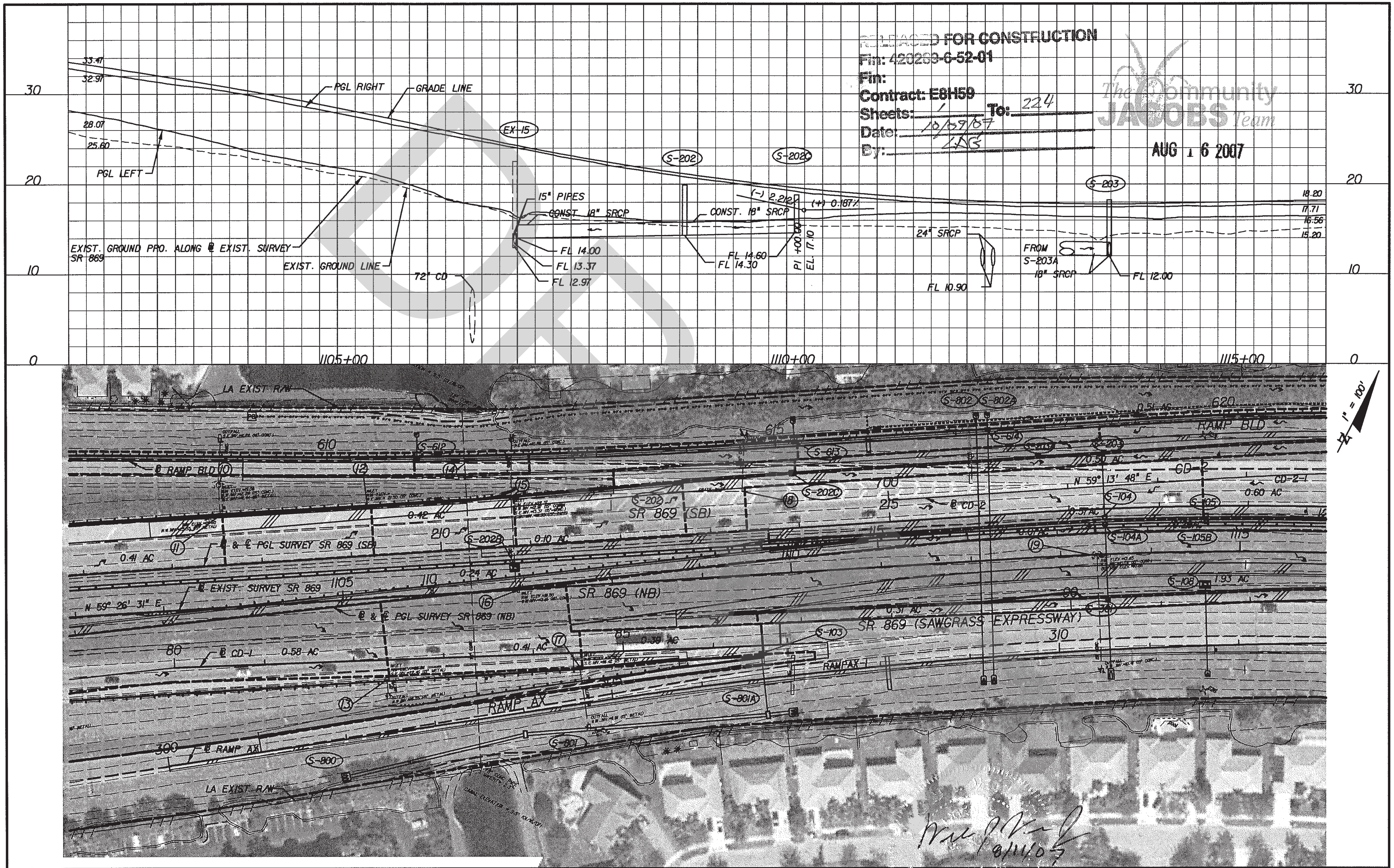

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

JACOBS
3750 N.W. 87th Avenue, Suite 750
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Tel. (305) 718-0599

CERTIFICATE OF AUTHORIZATION NO. 6572
ENGINEER OF RECORD:
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	420289-6-52-01

DRAINAGE MAP (2)

SHEET NO. 3

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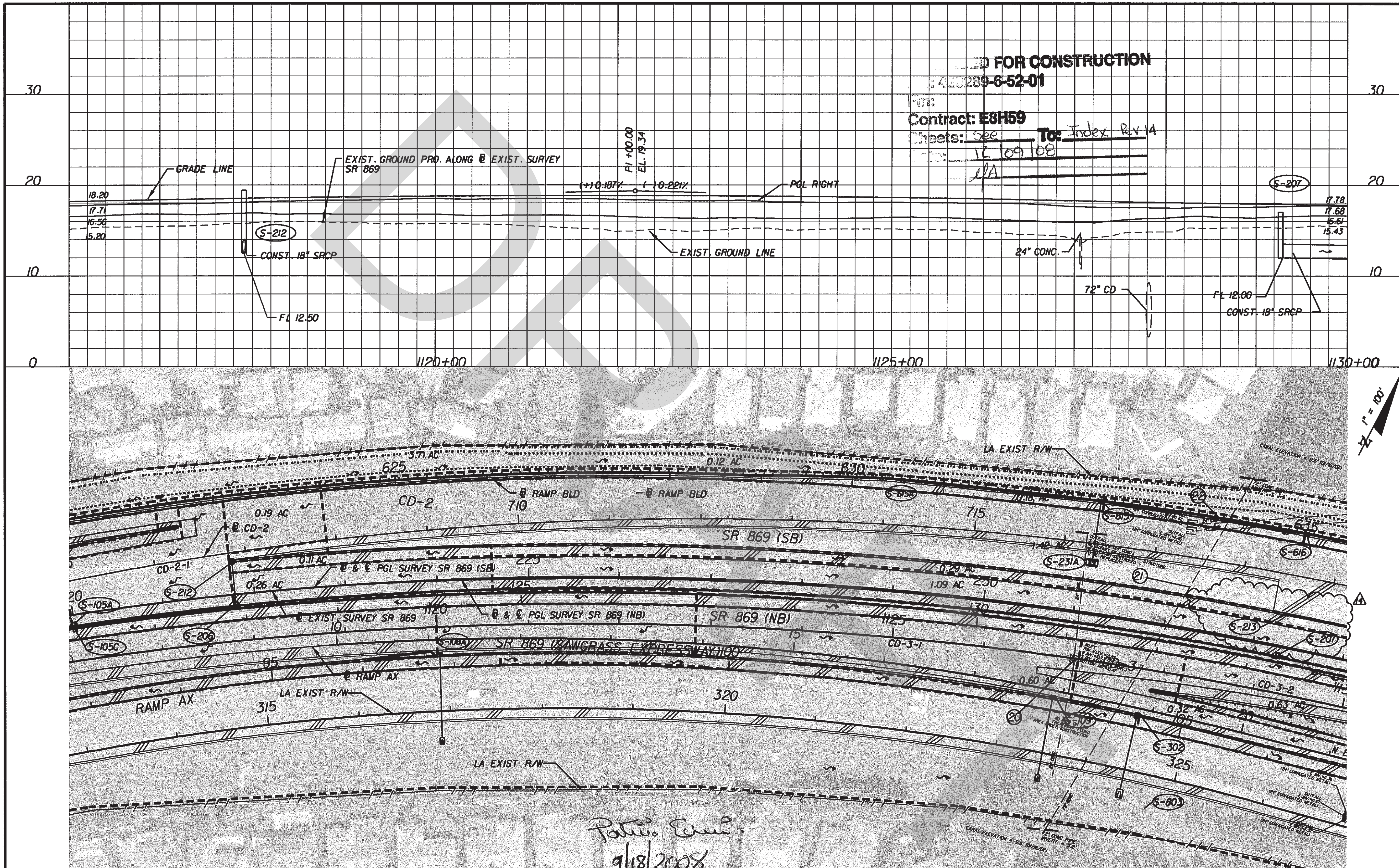

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07-01-08	WJV	14 NEW LANE DROP.			

JACOBS
3750 N.W. 87th Avenue, Suite 750
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Tel. (305) 718-0599

CERTIFICATE OF AUTHORIZATION NO. 6572
ENGINEER OF RECORD:
PATRICIA ECHEVERRI P.E. No. 57432

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

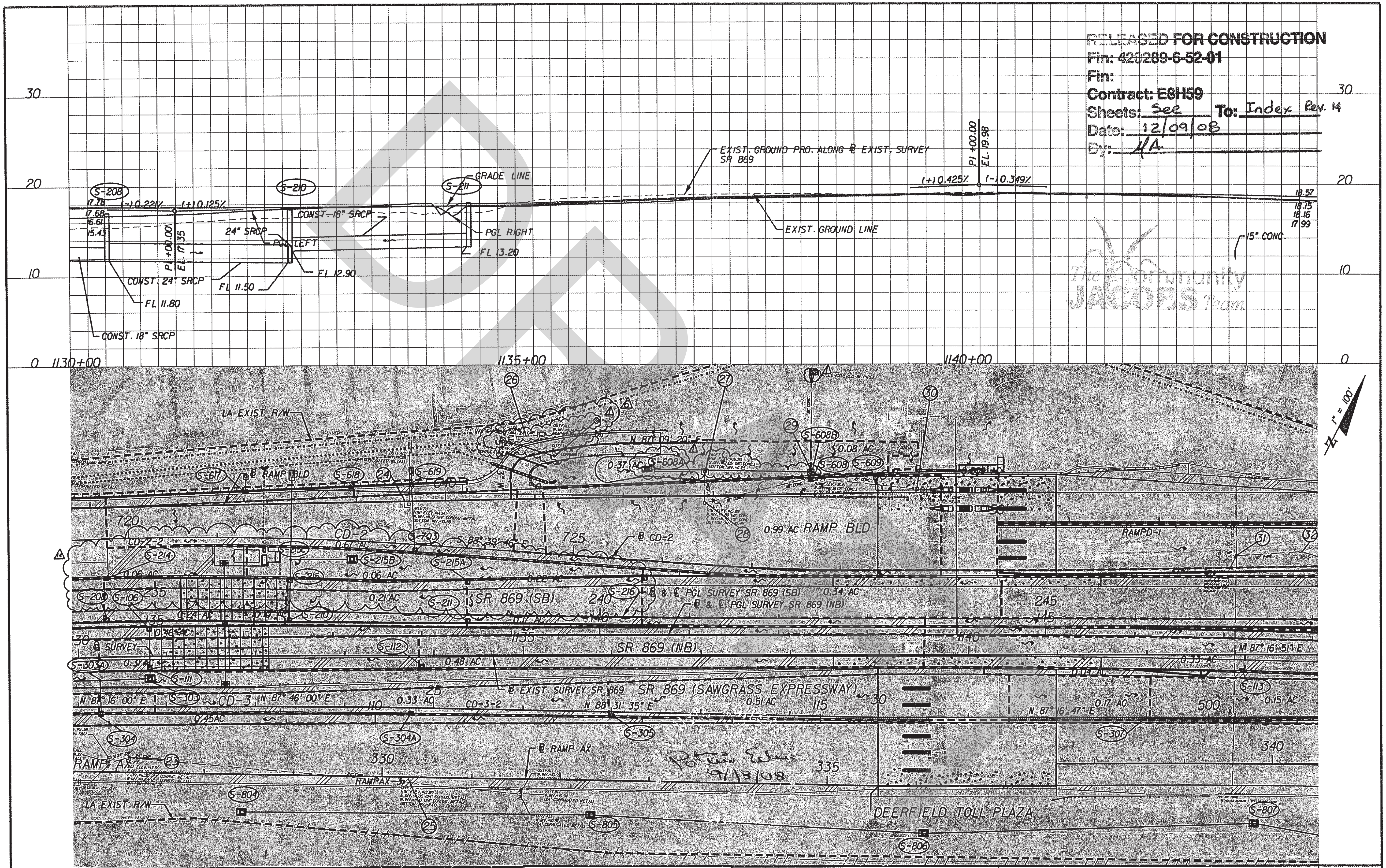
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	420289-6-52-01

DRAINAGE MAP (3)

SHEET NO. 4

1\drmprd03.dgn

RELEASED FOR CONSTRUCTION
Fin: 420289-6-52-01
Fin:
Contract: E8H59
Sheets: See To: Index Rev. 14
Date: 12/09/08
By: MA



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
10-23-07	WS	1 11 OF 12 24" SIDEDRAINS & MES DELETED S-608A OUTFALL PIPE DELETED PROPOSED NEW PIPE FROM S-608A TO S-608B, RUBBLE RIPRAP ADDED	1-23-08	NS	2 REALIGN SIDE DRAIN BETWEEN STA 238+87.00 & 239+92.00 (RT SR 869 (SB)) TO AVOID CONFLICT WITH WM
			7-01-08	WJV	3 NEW LANE DROP

JACOBS
3750 N.W. 87th Avenue, Suite 750
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Tel.(305)718-0599
CERTIFICATE OF AUTHORIZATION NO. 6572
ENGINEER OF RECORD:
PATRICIA ECHEVERRI P.E. No. 57432

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	420289-6-52-01

DRAINAGE MAP (4)

SHEET NO. 5

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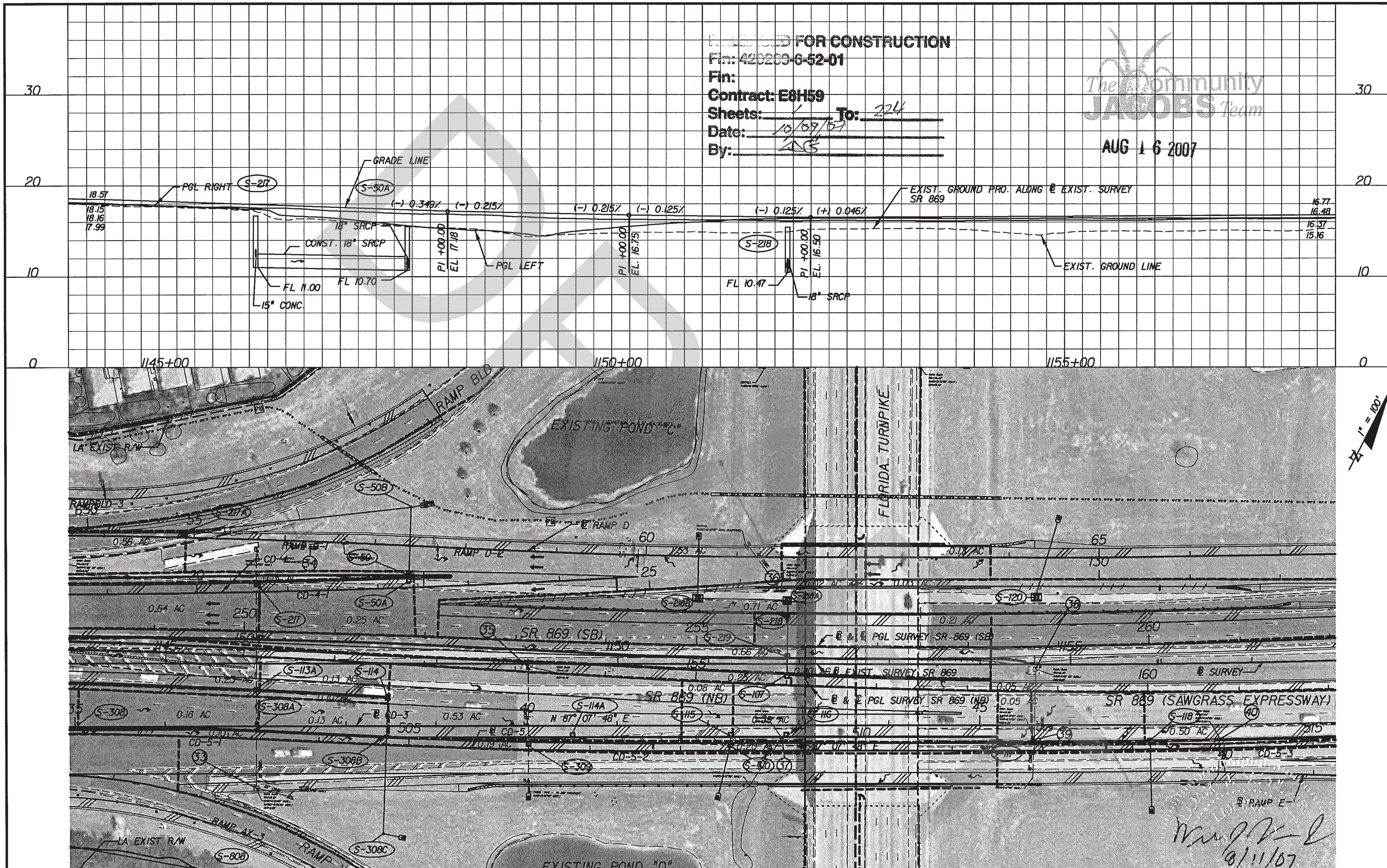

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

JACOBS
3750 N.W. 87th Avenue, Suite 750
Miami, FL. 33178
Tel. (305) 718-0599

CERTIFICATE OF AUTHORIZATION NO. 6572
ENGINEER OF RECORD:
WILLIAM J. VEON JR. P.E. No. 35650

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	420289-6-52-01

DRAINAGE MAP (5)

SHEET NO. 6

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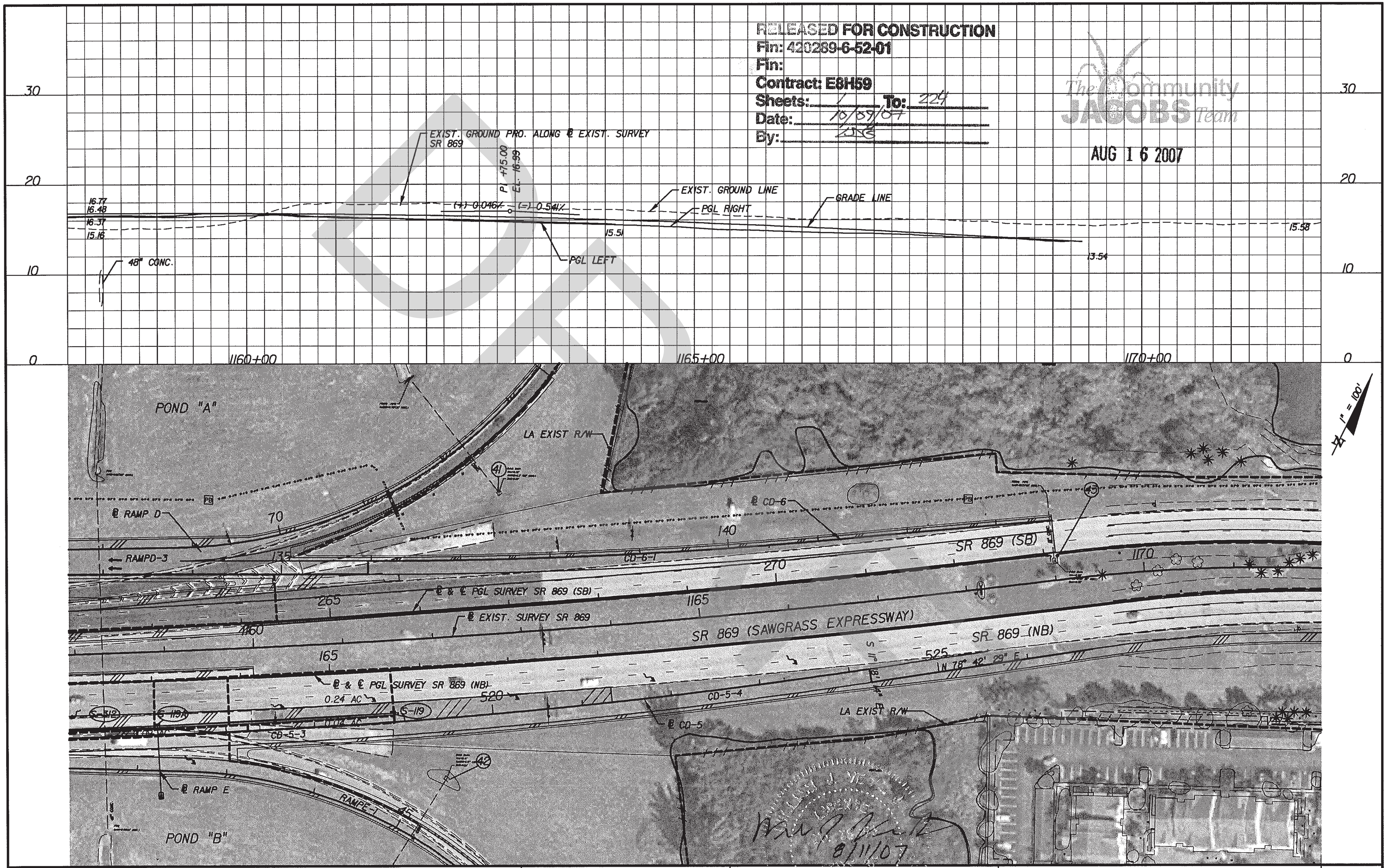

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

JACOBS
3750 N.W. 87th Avenue, Suite 750
Miami, FL 33178
Tel.(305)718-0599

CERTIFICATE OF AUTHORIZATION NO. 6572
ENGINEER OF RECORD:
WILLIAM J. VEON JR. P.E. No. 35650

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	420289-6-52-01

DRAINAGE MAP (6)

SHEET NO.
7

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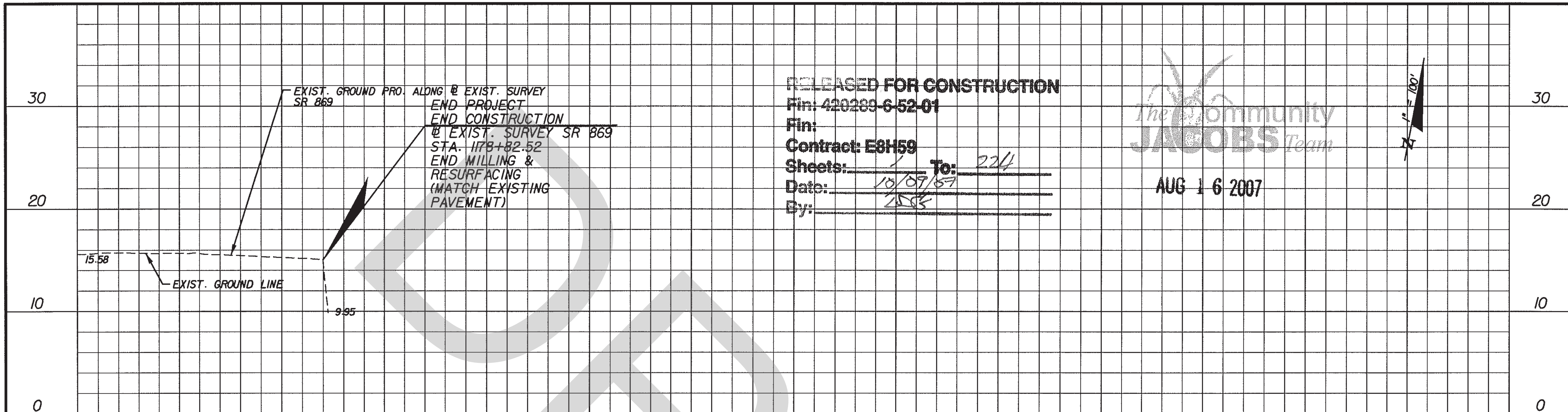
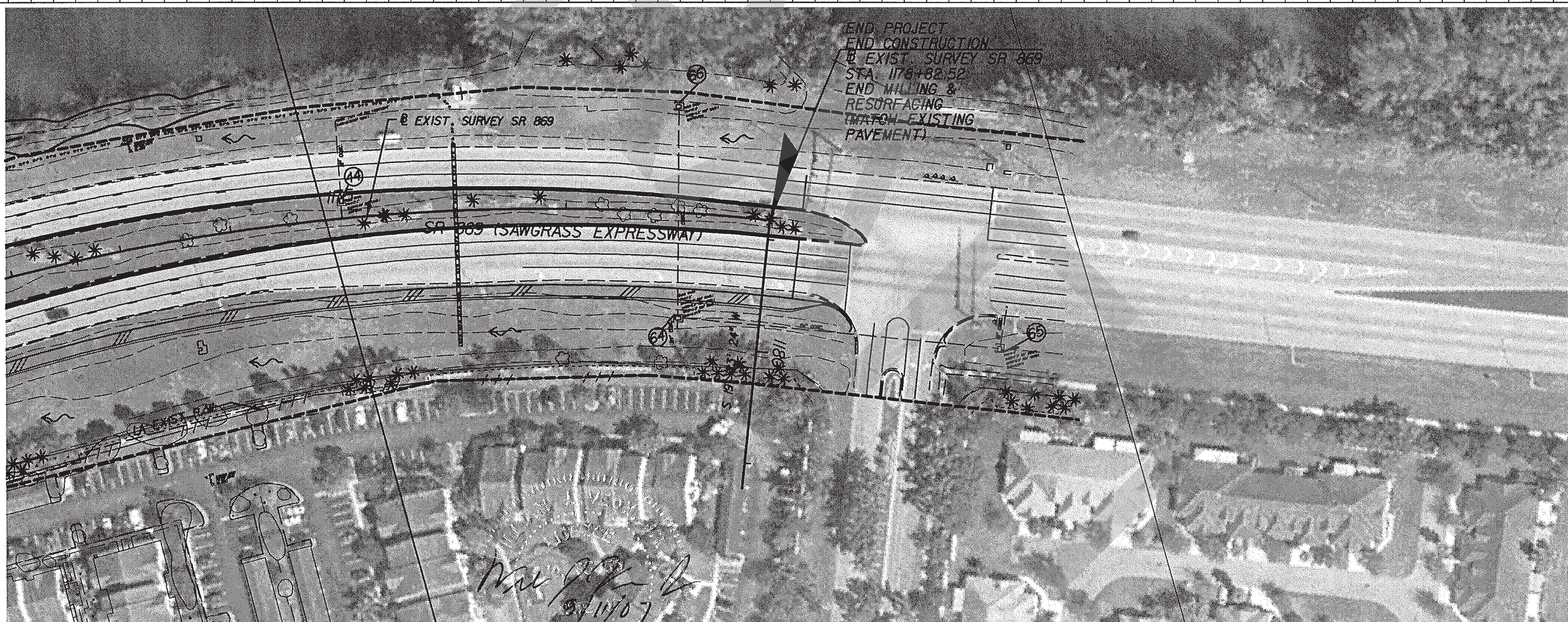


RELEASED FOR CONSTRUCTION
Fin: 420289-6-52-01
Fin:
Contract: E8H59
Sheets: 1 To: 224
Date: 10/09/07
By:

The Community JACOBS Team

AUG 1 6 2007



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

JACOBS
3750 N.W. 87th Avenue, Suite 750
Miami, FL 33178
Tel. (305) 718-0599
CERTIFICATE OF AUTHORIZATION NO. 6572
ENGINEER OF RECORD:
WILLIAM J. VEON JR. P.E. No. 35650

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	420289-6-52-01

DRAINAGE MAP (7)

SHEET NO. 8

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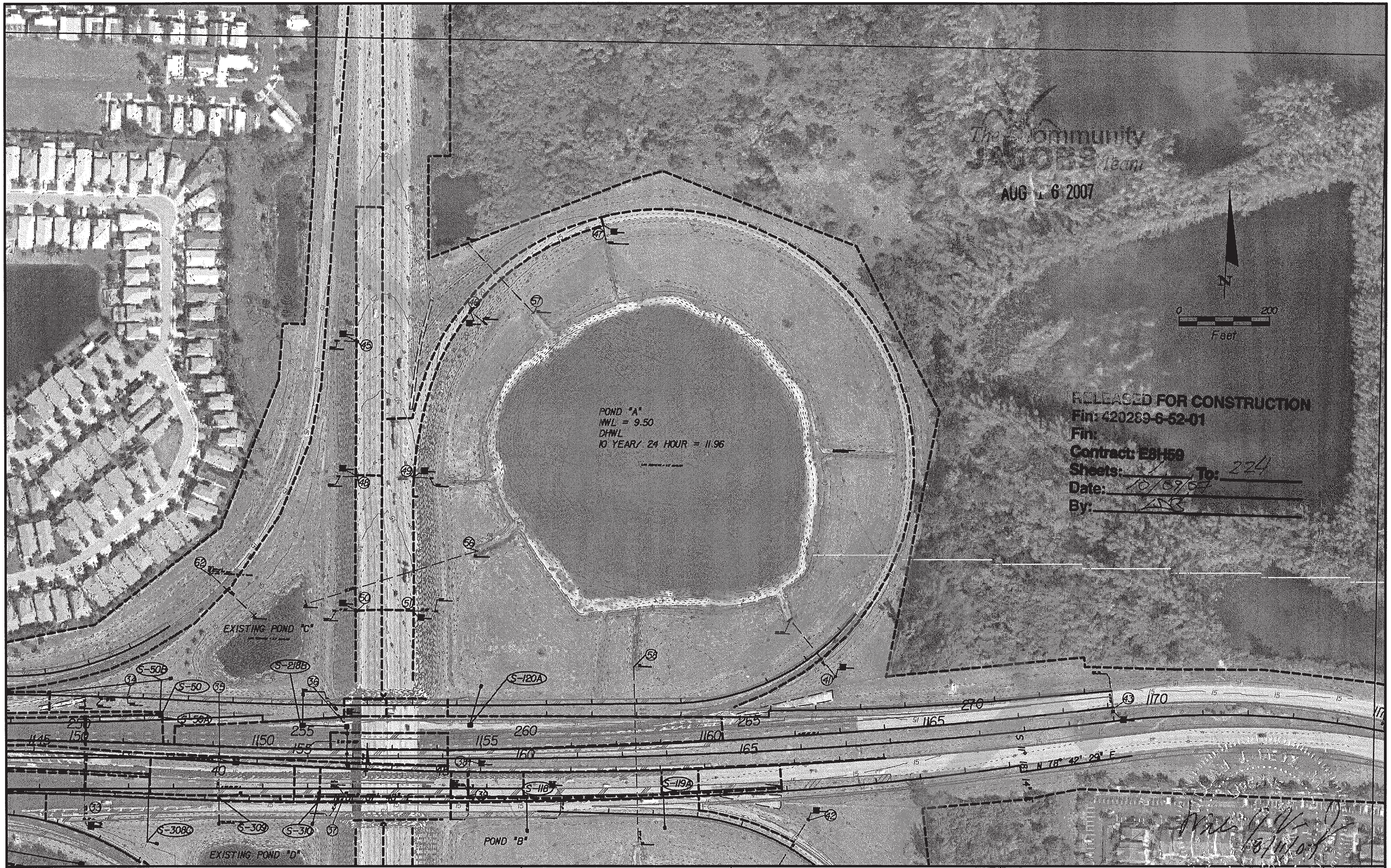

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

JACOBS
3750 N.W. 87th Avenue, Suite 750
Miami, FL 33178
Tel.(305)718-0599

CERTIFICATE OF AUTHORIZATION NO. 6572
ENGINEER OF RECORD:
WILLIAM J. VEON JR. P.E. No. 35650

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	420289-6-52-01

INTERCHANGE DRAINAGE MAP (1)

SHEET NO. 9

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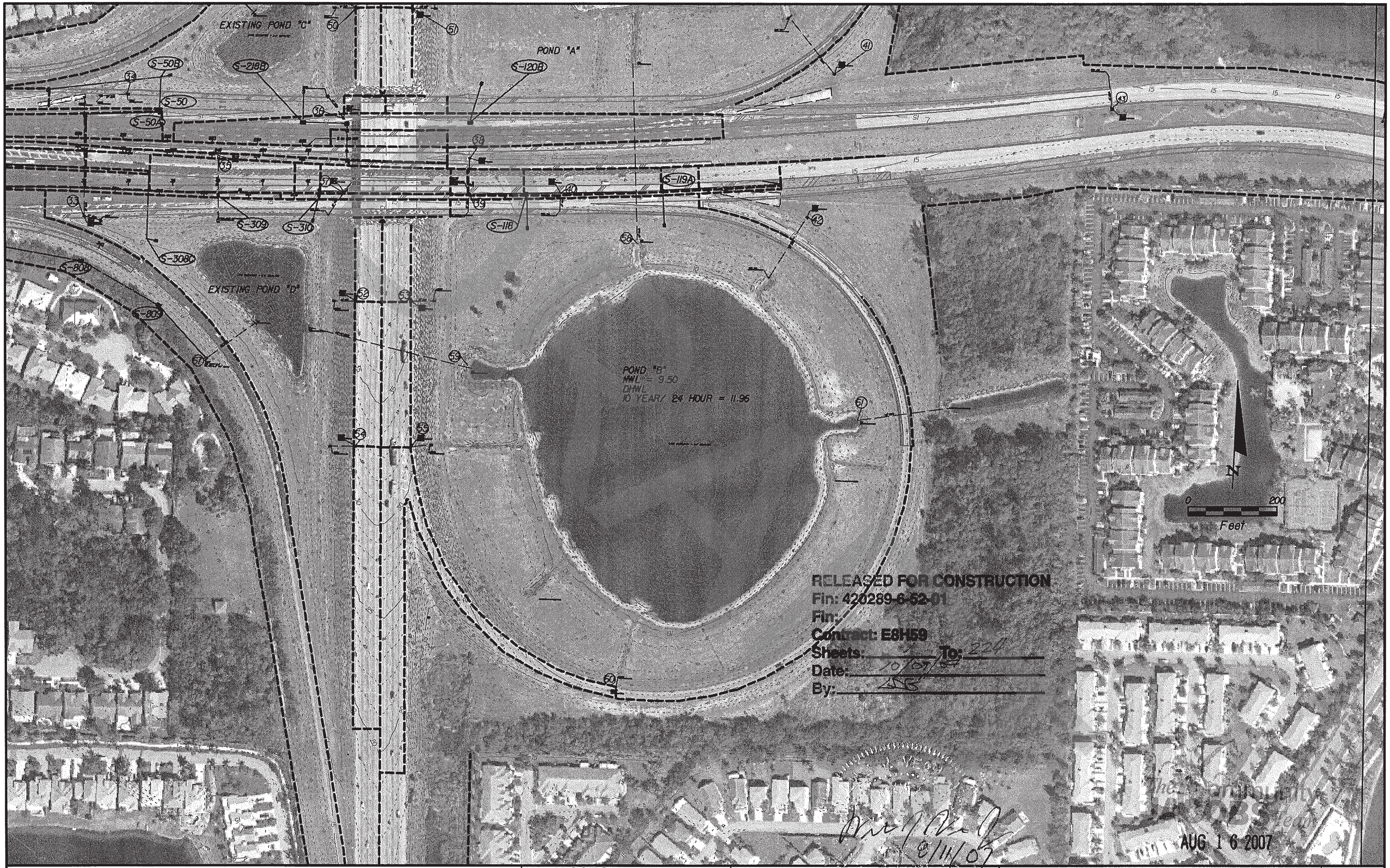

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

JACOBS
3750 N.W. 87th Avenue, Suite 750
Miami, FL. 33178
Tel. (305) 718-0599

CERTIFICATE OF AUTHORIZATION NO. 6572
ENGINEER OF RECORD:
WILLIAM J. VEON JR. P.E. No. 35650

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	420289-6-52-01

INTERCHANGE DRAINAGE MAP (2)

SHEET NO. 10

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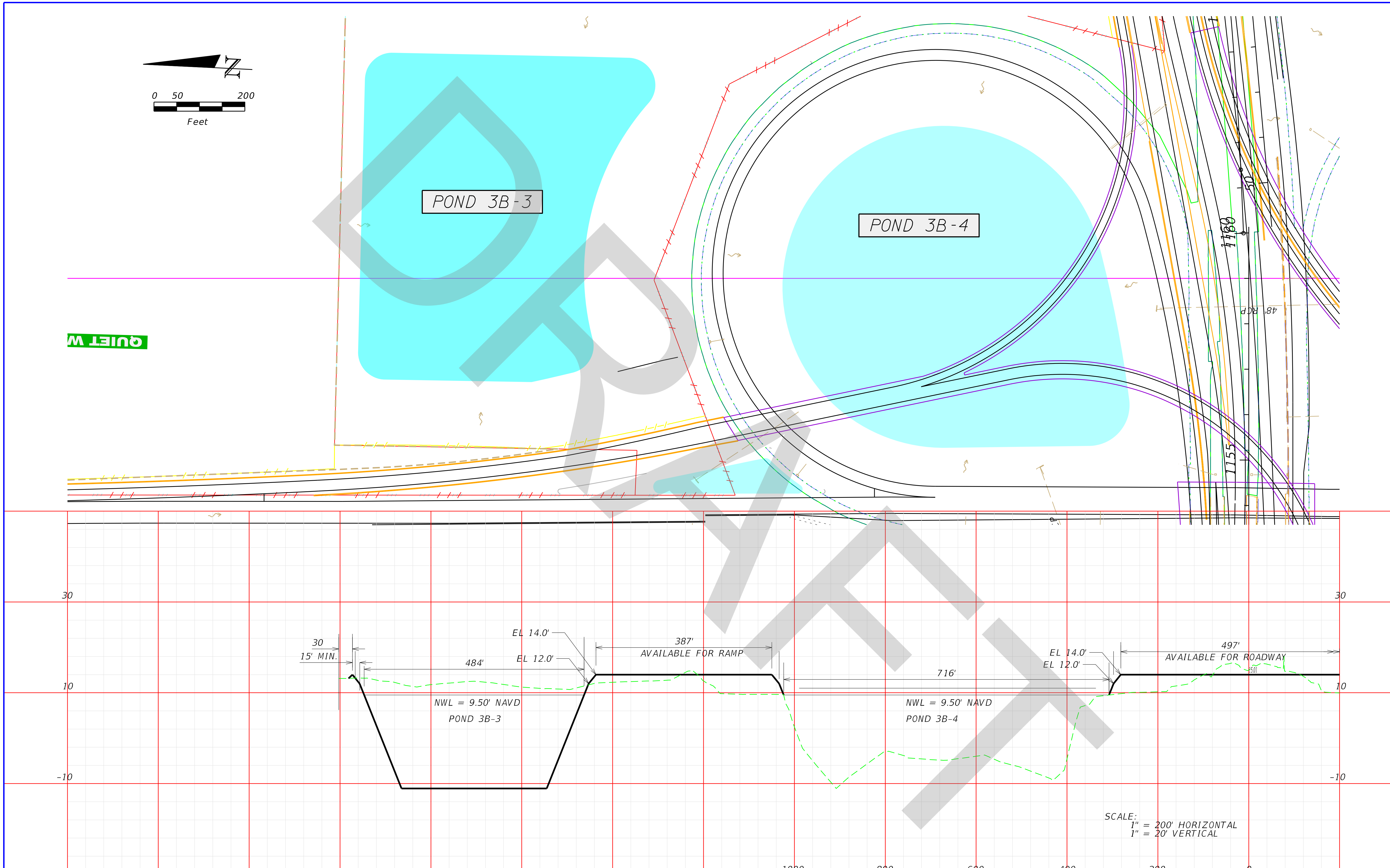
CONCEPTUAL POND DETAIL SHEET POND 3B-3, 3B-4 and 3B-5



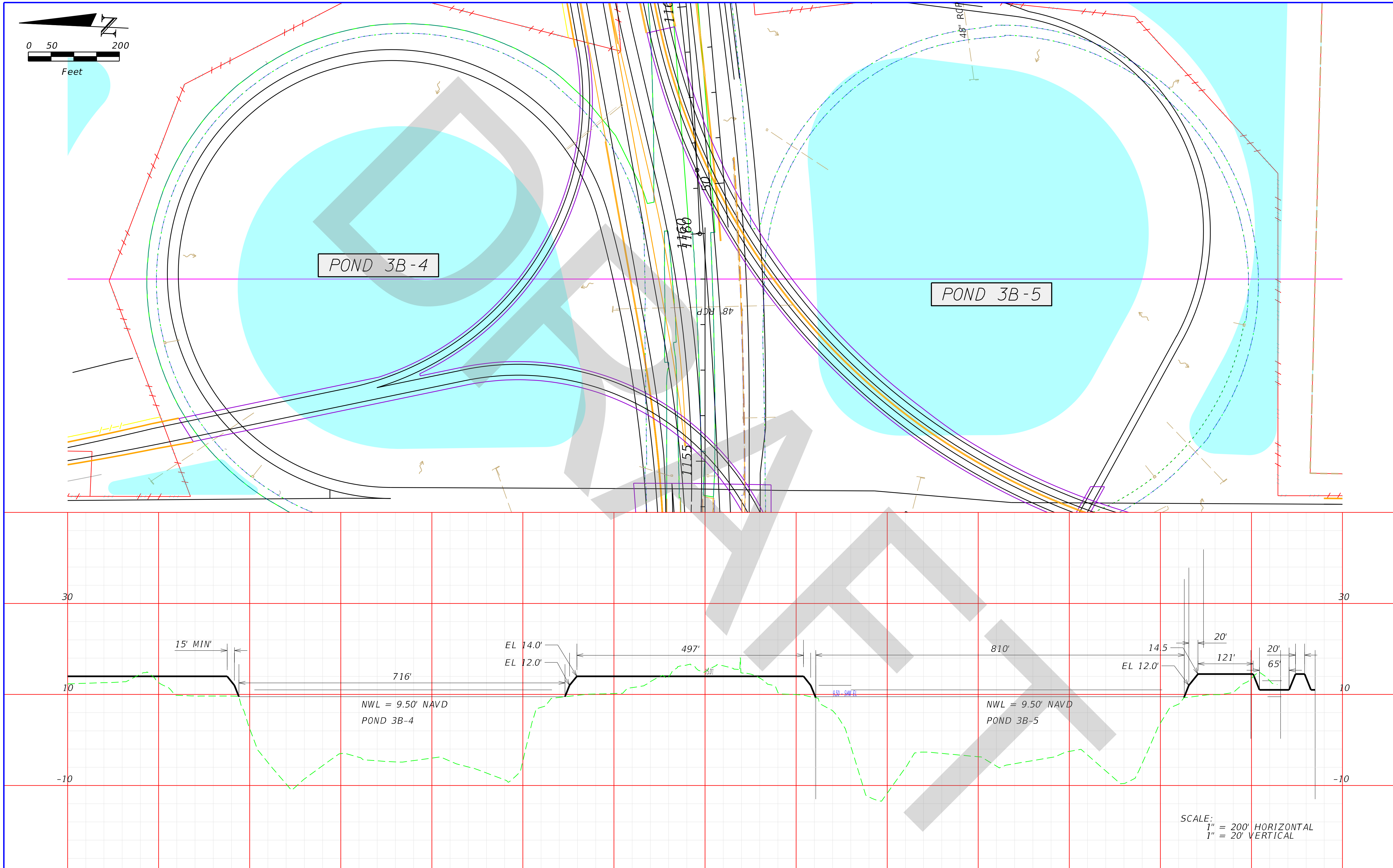
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	437153-1-22-01

POND DETAIL EXHIBIT

SHEET NO.
1



DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 869	BROWARD	437153-1-22-01

POND DETAIL EXHIBIT

SHEET NO. 2

HYDRAULIC EVALUATION OF CONCEPTUAL STORMSEWER SYSTEM TRUNKLINE DISCHARGING TO WET DETENTION PONDS

HYDRAULIC EVALUATION OF STORM SEWER SYSTEM

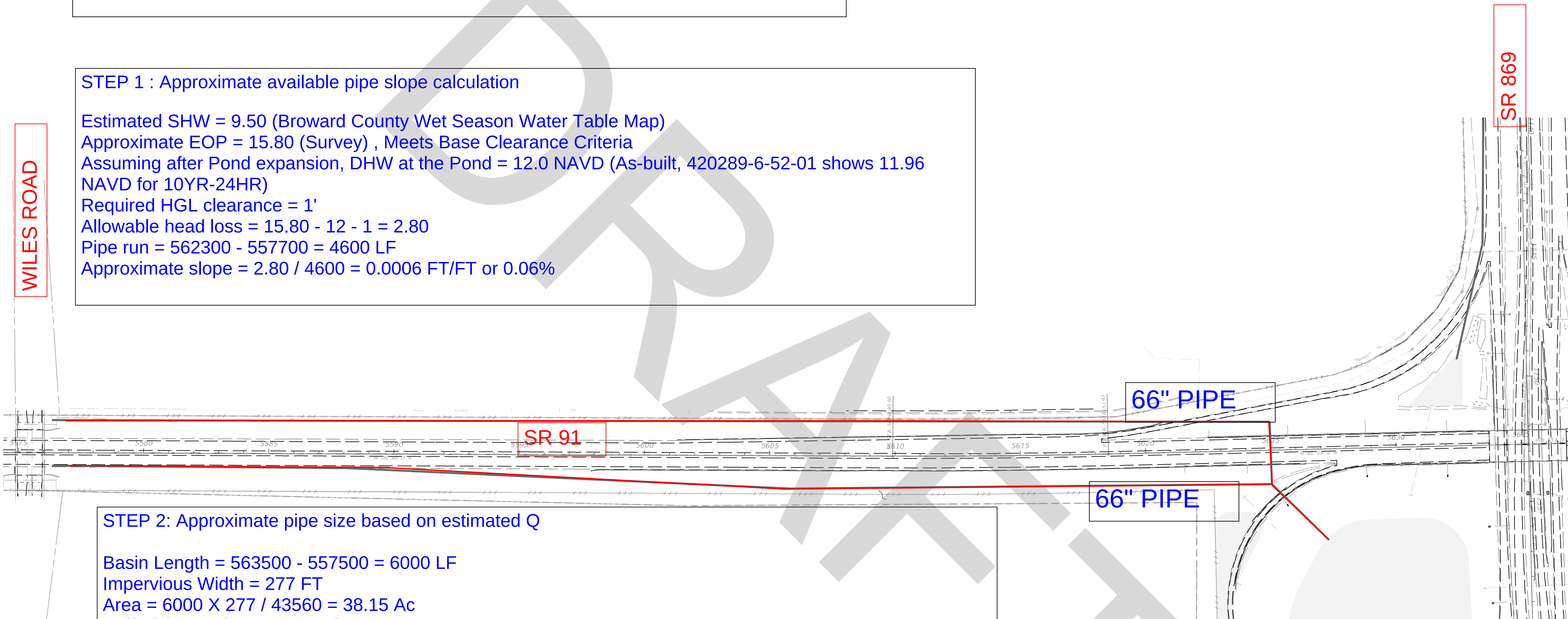
Basin and Location	**Storm Sewer Trunkline Run**		**Length**	**Average Approx. pipe Slope in percent**	**Hydraulic Fall**	**DHW EL**	**Min. Hydraulic Clearance Required for farthest inlet**	**Minimum Required EOP elevation**	**Approximate existing EOP elevation**	**Wet Season Water Table**	**Assumed Pavement Thickness**	**Proposed Base clearance**	**Remarks**
	From Station	To Station	ft-NAVD	%	ft-NAVD	ft-NAVD	ft-NAVD	ft-NAVD	ft-NAVD	ft-NAVD	ft	ft	
3B, FTE-South	557700	562300	4600	0.07%	3.22	12	1	16.22	15.80	9.5	1.5	5.22	EOP to be raised by 0.42 ft (5 inch)
3B, FTE-North	565900	568000	2100	0.10%	2.10	12	1	15.10	15.80	9.5	1.5	4.10	
4, SR 869 East of Interchange	116500	120800	4300	0.07%	3.01	12	1	16.01	13.20	9.5	1.5	5.01	EOP to be raised by 2.81 ft
3B, SR 869 West of Interchange	111300	115000	3700	0.07%	2.59	12	1	15.59	16.00	9.5	1.5	4.59	

CONCEPTUAL PIPE SIZING CALCULATION ALONG TURNPIKE

STORMSEWER PIPE SIZE CALCULATION (CONCEPTUAL)

STEP 1 : Approximate available pipe slope calculation

Estimated SHW = 9.50 (Broward County Wet Season Water Table Map)
Approximate EOP = 15.80 (Survey) , Meets Base Clearance Criteria
Assuming after Pond expansion, DHW at the Pond = 12.0 NAVD (As-built, 420289-6-52-01 shows 11.96 NAVD for 10YR-24HR)
Required HGL clearance = 1'
Allowable head loss = 15.80 - 12 - 1 = 2.80
Pipe run = 562300 - 557700 = 4600 LF
Approximate slope = 2.80 / 4600 = 0.0006 FT/FT or 0.06%

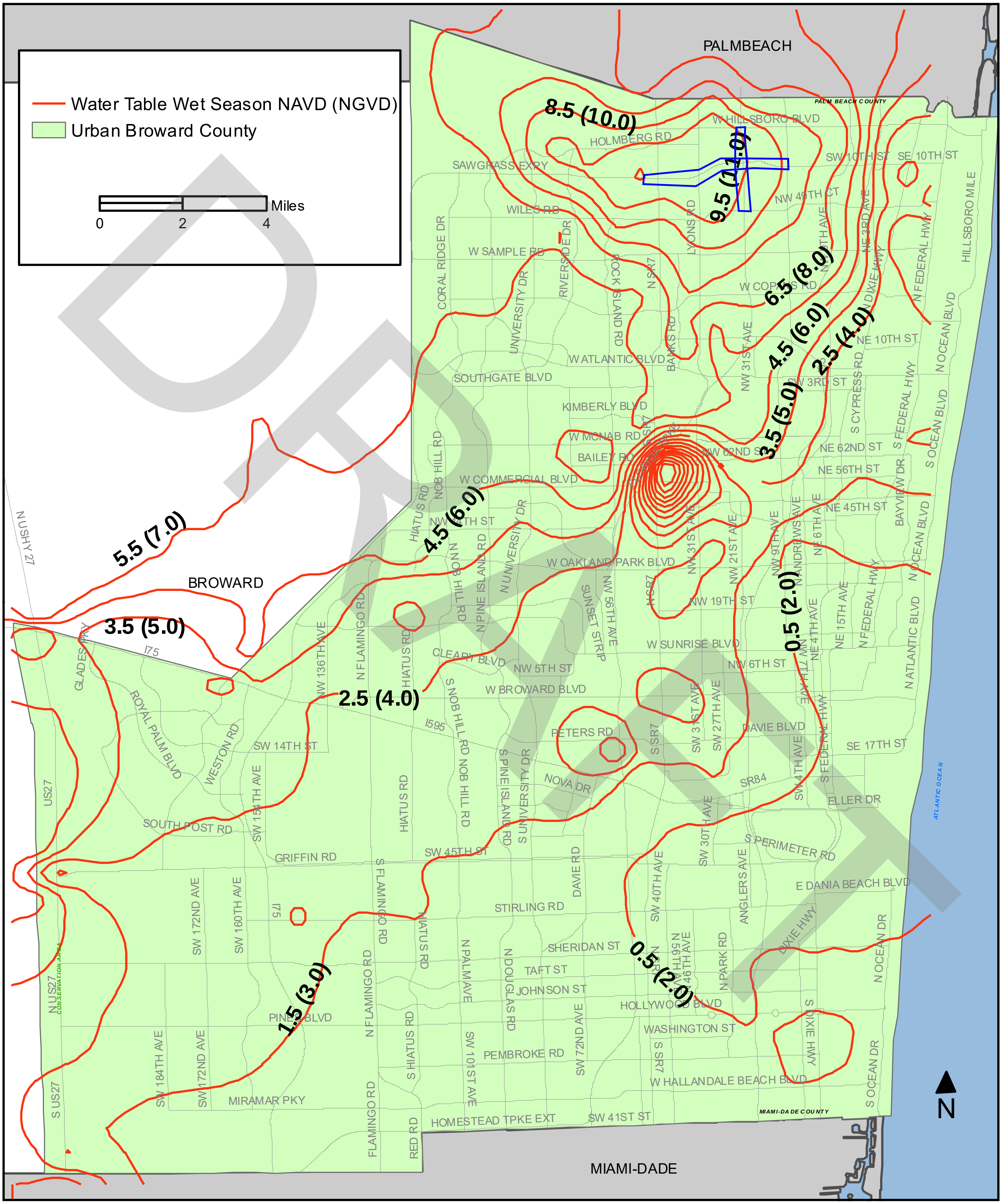


STEP 2: Approximate pipe size based on estimated Q

Basin Length = 563500 - 557500 = 6000 LF
Impervious Width = 277 FT
Area = 6000 X 277 / 43560 = 38.15 Ac
Half of the roadway = 38.15 / 2 = 19.08 Ac
Estimated Tc = L / 60V = 5000 / (60 x 2.5 fps) = 33.33 min
Total Tc = 10 + 33.33 = 43.33 min
From IDF curve of zone 10, 10 Year, i = 4.4 in/hr
Discharge Q = 0.95 x 4.4 x 19.08 = 80 cfs
From Hydraulic Calculator, for pipe flowing full with Q = 80 cfs, required friction slope for a 66" pipe is approximately 0.05 %

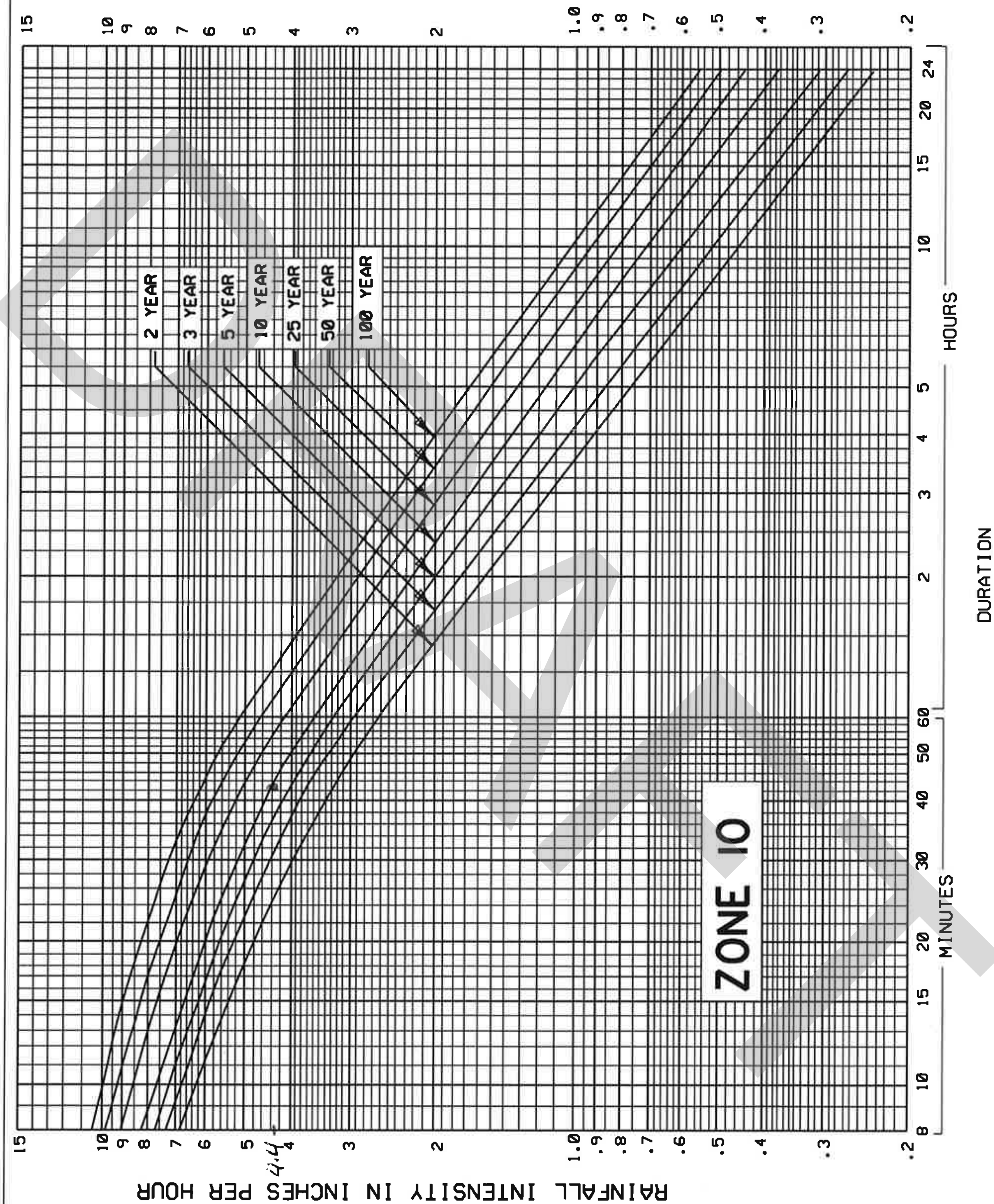
CONCLUSION:
Comparing the results from STEP 1 and STEP 2, approximately maximum 66" pipe will be required to carry runoff from each side of Turnpike.

WATER TABLE MAP - AVERAGE WET SEASON

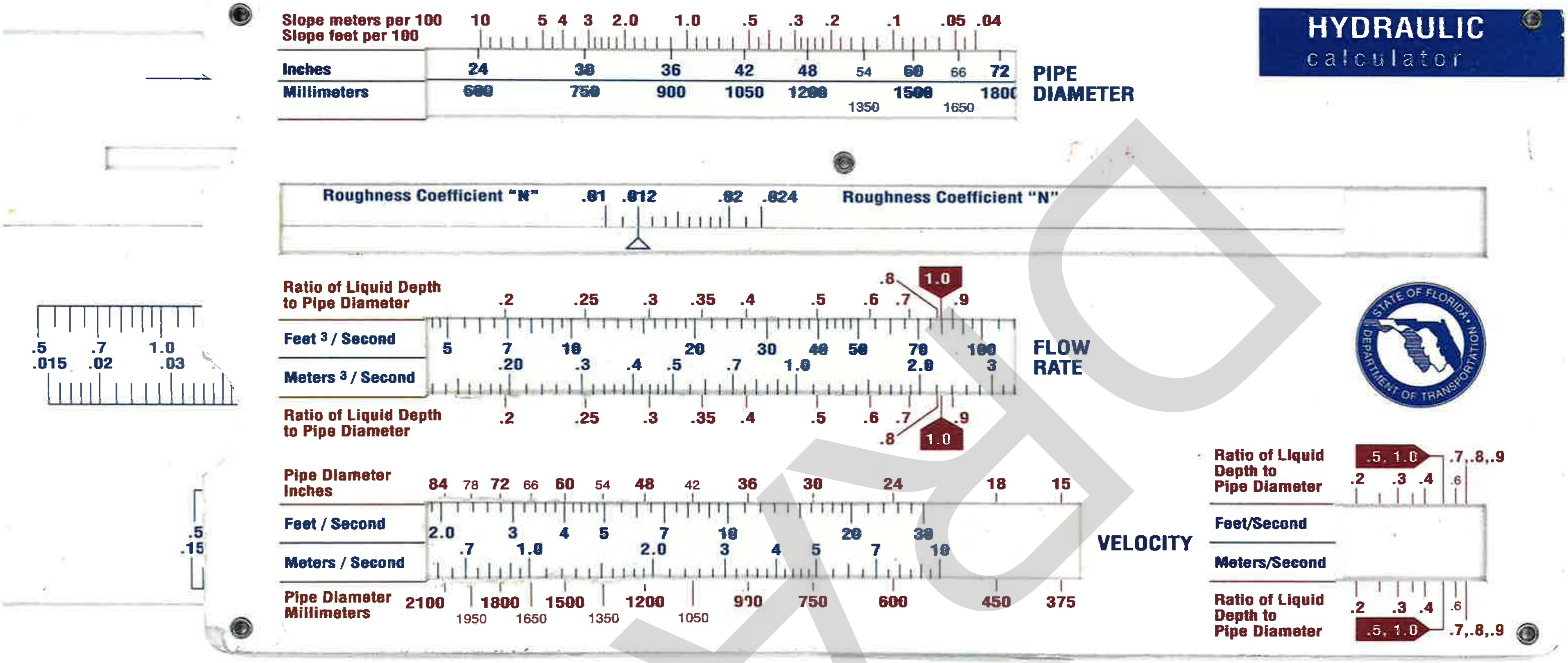


Division Name: Planning and Environmental Regulation
Department Name: Environmental Protection and Growth Management

This map is for conceptual purposes only and should not be used for legal boundary determinations.
Elevation converted from NGDV to NAVD using the FEMA approved conversion factor for Broward County of (-) 1.5



RAINFALL INTENSITY-DURATION-FREQUENCY CURVES
ZONE 10



HYDRAULIC
calculator
Slope meters per 100
Slope feet per 100
Inches
Millimeters
PIPE DIAMETER
Roughness Coefficient "N"
Ratio of Liquid Depth to Pipe Diameter
Feet 3 / Second
Meters 3 / Second
FLOW RATE
Pipe Diameter Inches
Feet / Second
Meters / Second
Pipe Diameter Millimeters
VELOCITY
Ratio of Liquid Depth to Pipe Diameter
Feet/Second
Meters/Second
STATE OF FLORIDA • DEPARTMENT OF TRANSPORTATION

APPENDIX H

Design Aids

NOAA Atlas 14, Volume 9, Version 2
Location name: Pompano Beach, Florida, USA*
Latitude: 26.3002°, Longitude: -80.1947°
Elevation: 16 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.563 (0.444-0.717)	0.645 (0.508-0.822)	0.779 (0.612-0.996)	0.891 (0.696-1.15)	1.05 (0.793-1.39)	1.17 (0.866-1.57)	1.29 (0.926-1.79)	1.41 (0.977-2.02)	1.57 (1.05-2.32)	1.69 (1.11-2.55)
10-min	0.824 (0.650-1.05)	0.944 (0.744-1.20)	1.14 (0.896-1.46)	1.31 (1.02-1.68)	1.53 (1.16-2.03)	1.71 (1.27-2.31)	1.88 (1.36-2.62)	2.06 (1.43-2.95)	2.30 (1.54-3.40)	2.48 (1.63-3.74)
15-min	1.00 (0.793-1.28)	1.15 (0.907-1.47)	1.39 (1.09-1.78)	1.59 (1.24-2.04)	1.87 (1.42-2.48)	2.08 (1.55-2.81)	2.30 (1.65-3.19)	2.51 (1.75-3.60)	2.80 (1.88-4.15)	3.02 (1.98-4.56)
30-min	1.58 (1.25-2.01)	1.82 (1.43-2.32)	2.21 (1.73-2.82)	2.53 (1.98-3.25)	2.98 (2.26-3.96)	3.32 (2.47-4.49)	3.67 (2.64-5.10)	4.02 (2.79-5.76)	4.49 (3.01-6.64)	4.84 (3.17-7.30)
60-min	2.16 (1.70-2.75)	2.47 (1.94-3.14)	2.99 (2.35-3.82)	3.45 (2.69-4.43)	4.11 (3.13-5.50)	4.64 (3.46-6.31)	5.20 (3.76-7.27)	5.79 (4.03-8.34)	6.61 (4.44-9.82)	7.25 (4.75-10.9)
2-hr	2.74 (2.18-3.47)	3.12 (2.47-3.94)	3.77 (2.98-4.79)	4.36 (3.43-5.57)	5.24 (4.03-7.00)	5.96 (4.48-8.08)	6.73 (4.91-9.38)	7.56 (5.31-10.9)	8.73 (5.92-12.9)	9.66 (6.38-14.5)
3-hr	3.07 (2.45-3.87)	3.48 (2.77-4.39)	4.24 (3.36-5.36)	4.93 (3.89-6.27)	6.00 (4.65-8.03)	6.91 (5.23-9.37)	7.89 (5.79-11.0)	8.97 (6.34-12.9)	10.5 (7.17-15.5)	11.8 (7.79-17.5)
6-hr	3.58 (2.87-4.47)	4.12 (3.30-5.15)	5.12 (4.09-6.43)	6.07 (4.83-7.67)	7.56 (5.92-10.1)	8.85 (6.75-12.0)	10.3 (7.59-14.2)	11.8 (8.41-16.9)	14.0 (9.66-20.7)	15.9 (10.6-23.5)
12-hr	4.02 (3.25-5.00)	4.77 (3.84-5.93)	6.15 (4.94-7.67)	7.44 (5.95-9.33)	9.44 (7.44-12.6)	11.2 (8.57-15.0)	13.0 (9.70-18.0)	15.1 (10.8-21.4)	18.0 (12.5-26.4)	20.4 (13.8-30.1)
24-hr	4.58 (3.72-5.65)	5.49 (4.45-6.78)	7.16 (5.79-8.87)	8.72 (7.02-10.9)	11.1 (8.84-14.7)	13.2 (10.2-17.6)	15.5 (11.6-21.2)	17.9 (13.0-25.3)	21.5 (15.0-31.2)	24.4 (16.5-35.7)
2-day	5.40 (4.41-6.61)	6.33 (5.17-7.76)	8.07 (6.57-9.93)	9.73 (7.88-12.0)	12.3 (9.85-16.2)	14.6 (11.3-19.3)	17.0 (12.9-23.2)	19.7 (14.4-27.7)	23.6 (16.6-34.1)	26.8 (18.3-39.0)
3-day	5.99 (4.92-7.31)	6.92 (5.68-8.46)	8.68 (7.09-10.6)	10.3 (8.41-12.7)	13.0 (10.4-16.9)	15.2 (11.9-20.1)	17.7 (13.4-24.0)	20.5 (15.0-28.6)	24.4 (17.3-35.1)	27.7 (19.0-40.1)
4-day	6.53 (5.37-7.94)	7.42 (6.10-9.04)	9.13 (7.48-11.1)	10.8 (8.78-13.2)	13.3 (10.8-17.4)	15.6 (12.3-20.6)	18.1 (13.8-24.5)	20.8 (15.3-29.1)	24.9 (17.6-35.7)	28.2 (19.4-40.6)
7-day	7.95 (6.58-9.62)	8.69 (7.18-10.5)	10.2 (8.38-12.3)	11.7 (9.56-14.2)	14.1 (11.5-18.3)	16.3 (12.9-21.4)	18.8 (14.4-25.3)	21.6 (15.9-29.9)	25.7 (18.3-36.7)	29.1 (20.1-41.8)
10-day	9.09 (7.55-11.0)	9.83 (8.15-11.9)	11.3 (9.36-13.7)	12.8 (10.5-15.6)	15.3 (12.4-19.7)	17.5 (13.9-22.8)	20.0 (15.4-26.8)	22.7 (16.9-31.4)	26.8 (19.2-38.2)	30.3 (21.0-43.3)
20-day	11.9 (9.97-14.3)	13.2 (11.1-15.9)	15.5 (12.9-18.6)	17.5 (14.5-21.1)	20.4 (16.6-25.8)	22.9 (18.1-29.2)	25.4 (19.6-33.4)	28.1 (20.9-38.2)	31.9 (22.9-44.7)	34.9 (24.5-49.7)
30-day	14.4 (12.1-17.1)	16.1 (13.5-19.3)	19.1 (15.9-22.8)	21.5 (17.9-25.9)	24.8 (20.1-30.9)	27.4 (21.7-34.7)	30.0 (23.1-39.1)	32.6 (24.3-43.8)	36.1 (26.0-50.1)	38.7 (27.2-54.8)
45-day	17.7 (14.9-21.0)	19.9 (16.7-23.6)	23.4 (19.6-27.9)	26.2 (21.8-31.3)	29.8 (24.1-36.7)	32.5 (25.8-40.8)	35.1 (27.1-45.3)	37.6 (28.0-50.1)	40.8 (29.3-56.1)	43.0 (30.4-60.6)
60-day	20.7 (17.5-24.5)	23.1 (19.5-27.4)	26.8 (22.6-31.9)	29.8 (24.9-35.5)	33.5 (27.2-41.1)	36.3 (28.8-45.2)	38.8 (30.0-49.8)	41.2 (30.7-54.6)	44.1 (31.8-60.4)	46.1 (32.7-64.8)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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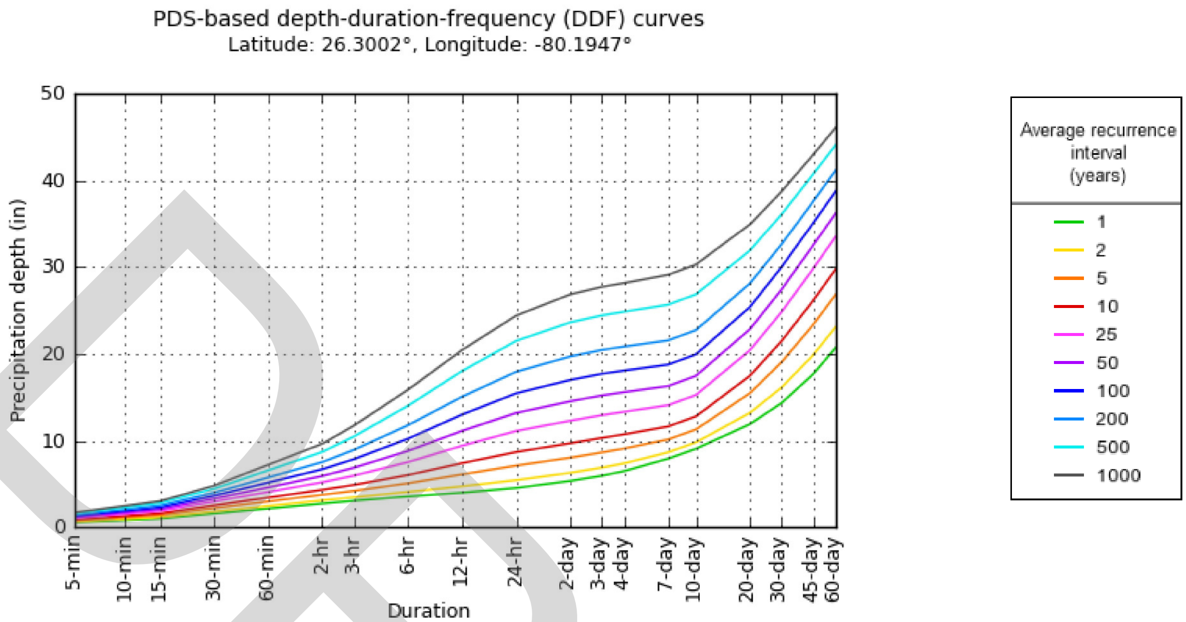
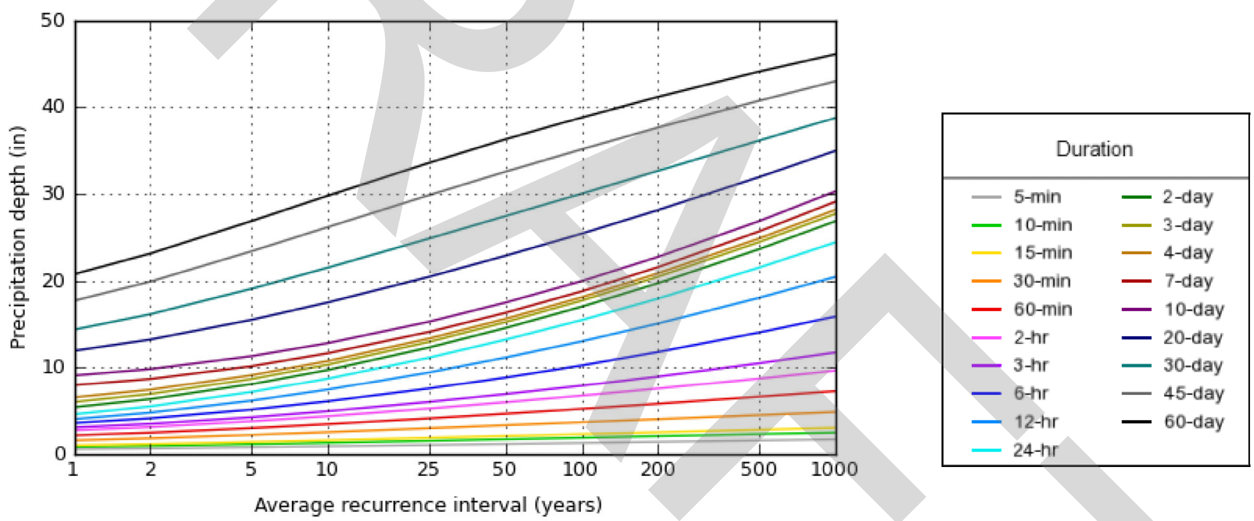
PF graphical





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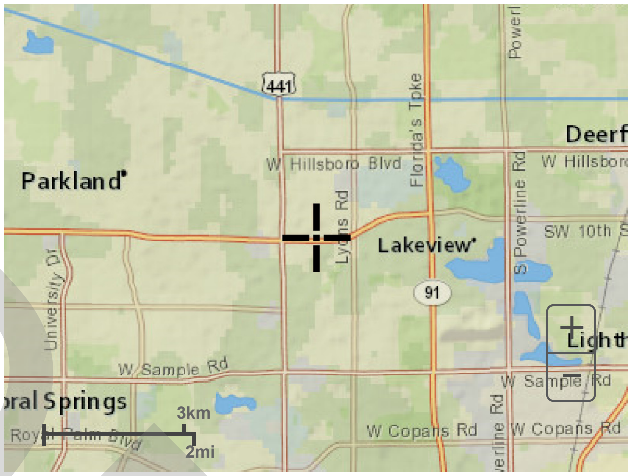
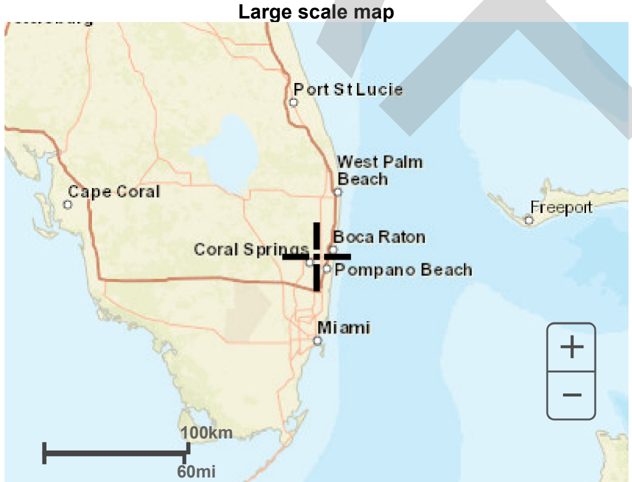
Maps & aerials

Small scale terrain

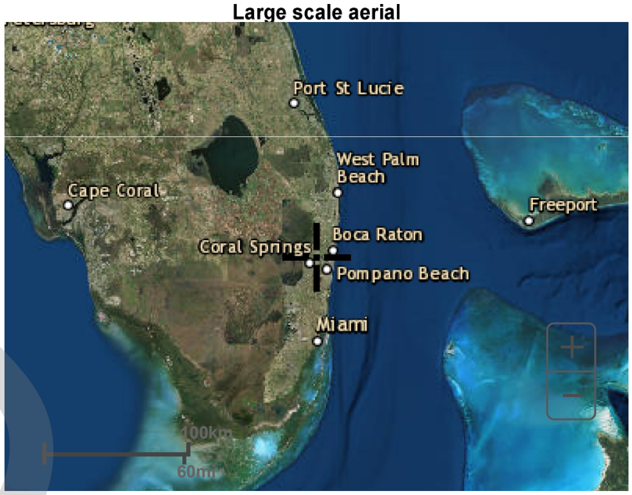


Large scale terrain

Large scale map



Large scale aerial



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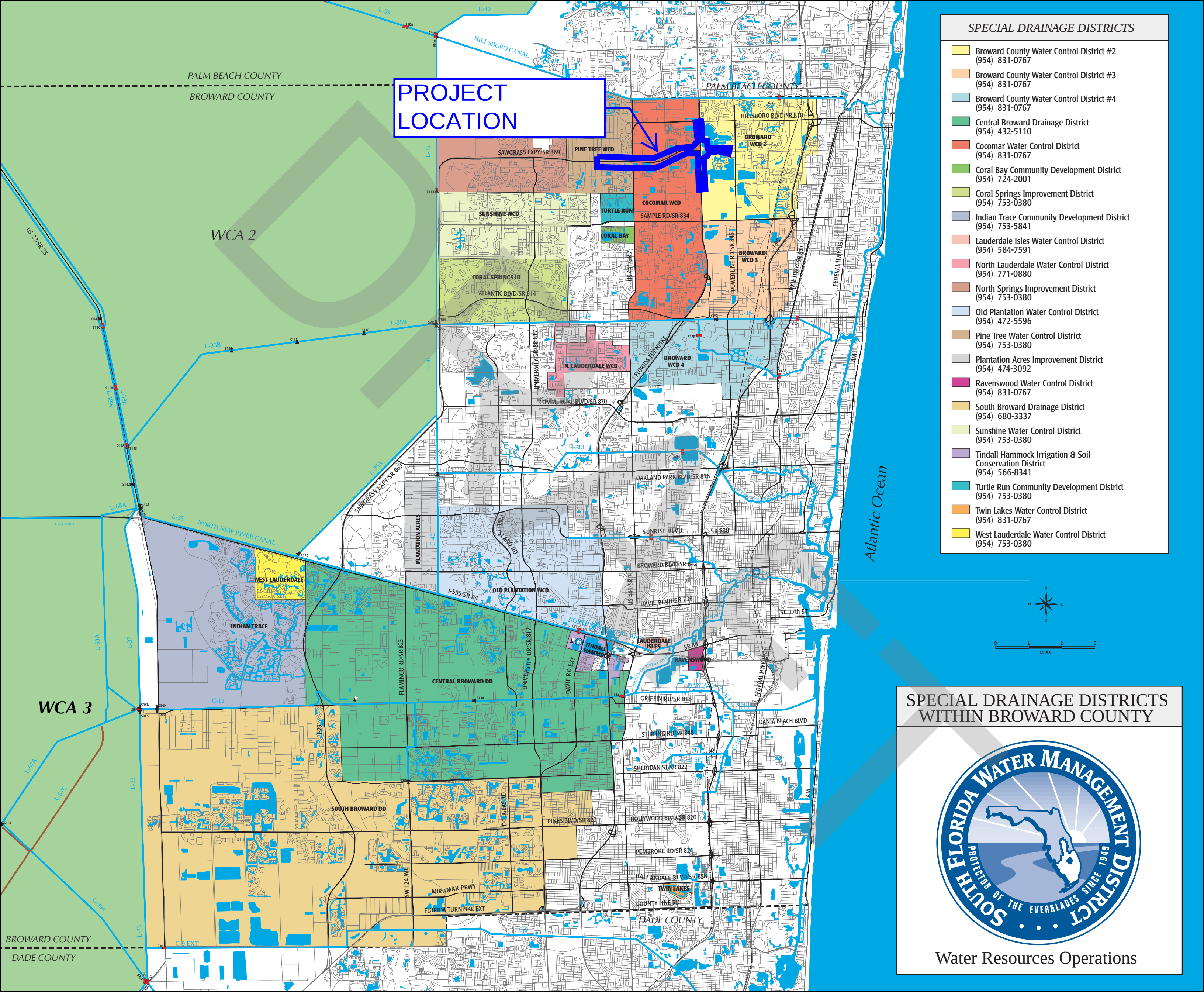
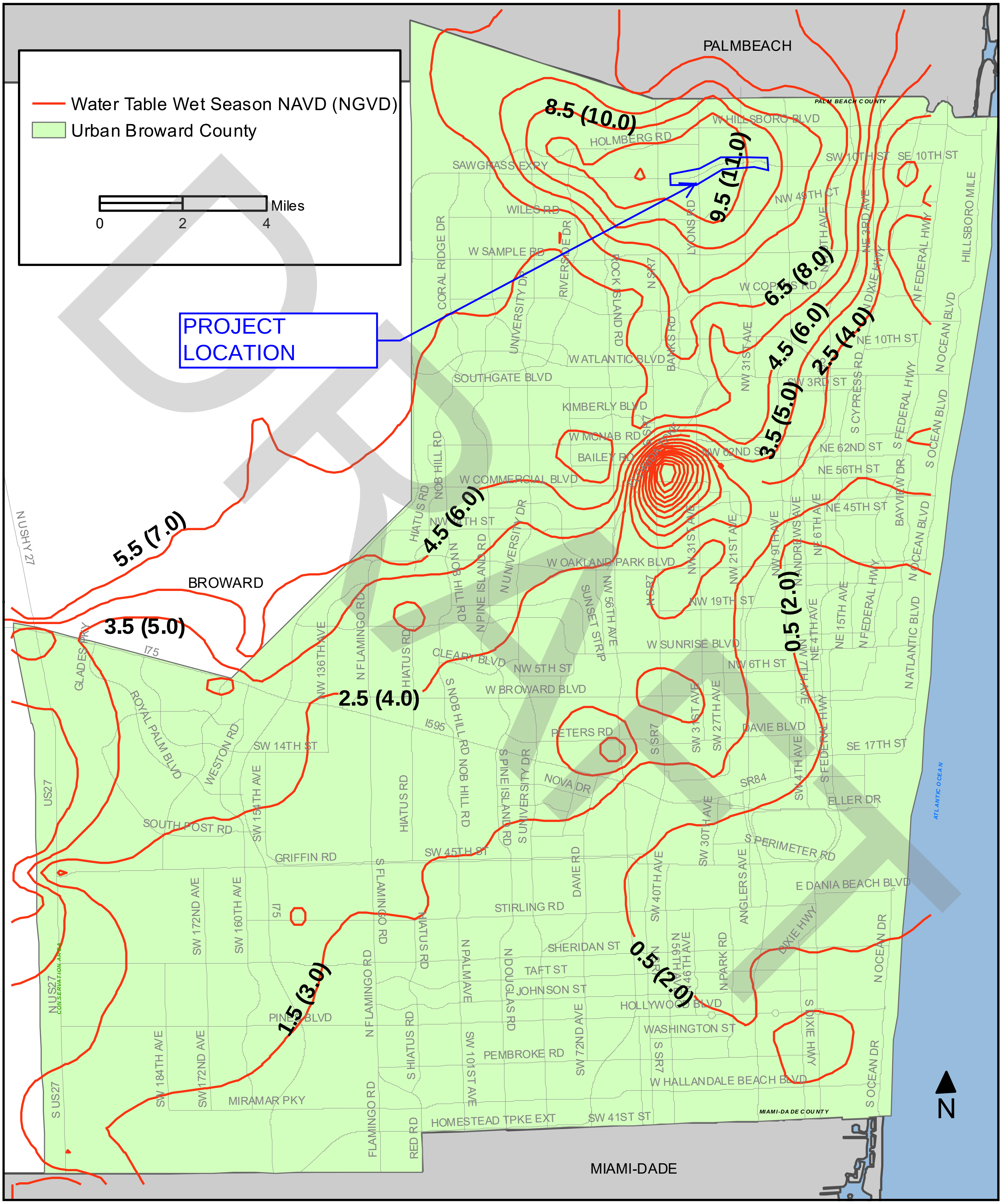
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov


SPECIAL DRAINAGE DISTRICTS WITHIN BROWARD COUNTY
Water Resources Operations
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
PROTECTOR OF THE EVERGLADES SINCE 1949
PROJECT LOCATION
SPECIAL DRAINAGE DISTRICTS
Broward County Water Control District #2 (954) 831-0767
Broward County Water Control District #3 (954) 831-0767
Broward County Water Control District #4 (954) 831-0767
Central Broward Drainage District (954) 432-5110
Cocomar Water Control District (954) 831-0767
Coral Bay Community Development District (954) 724-2001
Coral Springs Improvement District (954) 753-0380
Indian Trace Community Development District (954) 753-5841
Lauderdale Isles Water Control District (954) 584-7591
North Lauderdale Water Control District (954) 771-0880
North Springs Improvement District (954) 753-0380
Old Plantation Water Control District (954) 472-5596
Pine Tree Water Control District (954) 753-0380
Plantation Acres Improvement District (954) 474-3092
Ravenswood Water Control District (954) 831-0767
South Broward Drainage District (954) 680-3337
Sunshine Water Control District (954) 753-0380
Tindall Hammock Irrigation & Soil Conservation District (954) 566-8341
Turtle Run Community Development District (954) 753-0380
Twin Lakes Water Control District (954) 831-0767
West Lauderdale Water Control District (954) 753-0380
PALM BEACH COUNTY
BROWARD COUNTY
DADE COUNTY
WCA 2
WCA 3
Atlantic Ocean
HILLSBORO CANAL
NORTH NEW RIVER CANAL
PINE TREE WCD
TURTLE RUN
CORAL BAY
SUNSHINE WCD
CORAL SPRINGS ID
COCOMAR WCD
BROWARD WCD 2
BROWARD WCD 3
BROWARD WCD 4
N. LAUDERDALE WCD
PLANTATION ACRES
OLD PLANTATION WCD
WEST LAUDERDALE
INDIAN TRACE
CENTRAL BROWARD DD
TINDALL HAMMOCK
LAUDERDALE ISLES
RAVENSWOOD
SOUTH BROWARD DD
TWIN LAKES
SAWGRASS EXPY/SR 869
HILLSBORO BLVD/SR 810
SAMPLE RD/SR 834
ATLANTIC BLVD/SR 814
COMMERCIAL BLVD/SR 870
OAKLAND PARK BLVD/SR 816
SUNRISE BLVD
SR 838
BROWARD BLVD/SR 842
DAVIE BLVD/SR 736
SE 17th ST
I-595/SR 84
GRIFFIN RD/SR 818
DANIA BEACH BLVD
STIRLING RD/SR 848
SHERIDAN ST/SR 822
HOLLYWOOD BLVD/SR 820
PINES BLVD/SR 820
PEMBROKE RD/SR 824
HALLANDALE BLVD/SR 858
MIRAMAR PKWY
FLORIDA TURNPIKE EXT
COUNTY LINE RD
FLORIDA TURNPIKE
US 441/SR 7
UNIVERSITY DR/SR 817
POWERLINE RD/SR 845
DIXIE HWY/SR 811
FEDERAL HWY/US1
A1A
US 27/SR 25
FLAMINGO RD/SR 823
DAVIE RD EXT
DOUGLAS RD
SW 124 AVE
PINE ISLAND RD
I-75
Miles

BROWARD COUNTY FLORIDA

WATER TABLE MAP - AVERAGE WET SEASON



www.floridasturnpike.com/sawgrass