DRAFT LOCATION HYDRAULICS REPORT

Florida Department of Transportation

District Four
3400 W Commercial Blvd
Fort Lauderdale, FL 33309

Interstate 95 from SW 10th Street to Hillsboro Boulevard

Financial Management Number 436964-1-22-01
ETDM Number 14244

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

October 2019

Brian McCarthy, P.E.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1 Project Summary

1.1 Project Description and Location

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

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

This study evaluates alternatives for improvements to the I-95 partial cloverleaf interchanges at SW 10 Street and Hillsboro Boulevard and along I-95 from just south of the SW 10 Street interchange to just north of the Hillsboro Boulevard interchange. SW 10 Street provides a direct connection between I-95 and the Sawgrass Expressway. The study also evaluates improvements along both SW 10 Street and Hillsboro Boulevard near I-95.

This study evaluates alternatives to modify the existing merge and diverge ramp areas at the SW 10 Street and Hillsboro Boulevard interchanges, considers the replacement of the existing SW 10 Street bridge over I-95 and providing a grade separation at the existing at-grade railroad crossing at Hillsboro Boulevard.

The construction of express lanes on I-95 within the project area is also analyzed as part of this project.

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

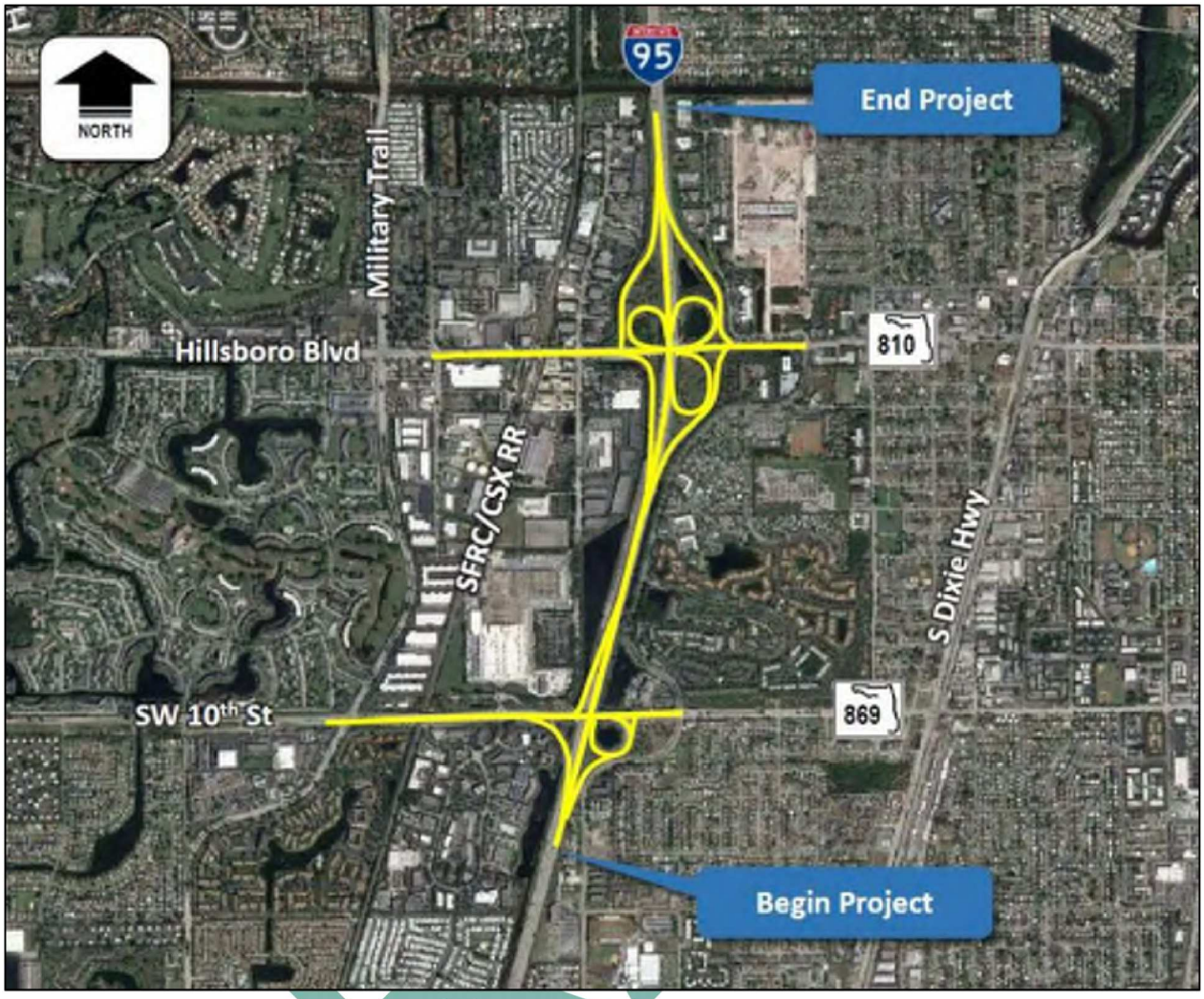


Figure 1-1 Project Study Area

1.2 Purpose and Need

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

1.2.1 Capacity/Operational Deficiencies

FDOT has identified the need to improve traffic operations along I-95 between the SW 10 Street and Hillsboro Boulevard interchanges, especially at existing merge and

diverge ramps that are the sources of traffic turbulence and collisions. The mainline directional volumes range from 4,400 to 5,850 vehicles per hour (vph) with ramp volumes from 800 to 1,250 vph at SW 10 Street and 400 to 1,000 vph at Hillsboro Boulevard.

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

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

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

1.2.2 Safety

A need exists to resolve safety issues within the project limits along I-95 as well as SW 10 Street and Hillsboro Boulevard. Crash analyses for the years 2008 through 2012 reveal that the I-95 segment within the Hillsboro Boulevard interchange area is classified as a high crash segment for four of the five study years. It should also

be noted that the existing interchanges are closely located together and have short weave distances. Crash rates along SW 10 Street in the vicinity of I-95 exceed the statewide average for similar facilities for all five study years, but the segment along Hillsboro Boulevard in the vicinity of I-95 does not. Field observations indicate that the number of crashes along the Hillsboro Boulevard project segment may be influenced by queues extending from the railroad crossing into this area.

1.2.3 Evacuation and Emergency Services

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

1.2.4 Transportation Demand

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

1.2.5 System Linkage

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

1.2.6 Modal Interrelationships

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

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

1.2.7 Social Demands and Economic Development

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

1.3 Description of Preferred Alternative

This project and the recommended improvements were closely coordinated with the SW 10 Street Connector PD&E Study Project (FM 439891-1) which is studying the feasibility of connecting the existing Sawgrass Expressway with the proposed connector lanes along SW 10 Street. An Alternatives Analysis Memorandum documenting the development and screening of various alternatives including No-Build, Partial Build and Build concepts was submitted to FDOT District 4 on June 29, 2018 and is included in Appendix I of the Systems Interchange Modification Report (SIMR) prepared for this PD&E Study.

The preferred alternative for the I-95 corridor is Build Alternative 2. Build Alternative 2 proposes to add one tolled express lane in each direction in the median along I-95 while maintaining the existing access points south of the SW 10 Street interchange and north of the Hillsboro Boulevard interchange. The existing number of general-purpose lanes throughout the I-95 corridor will be maintained and the express lanes

will be separated from the general-purpose lanes with tubular markers and a 4-ft wide buffer. A Collector-Distributer (CD) road and braided ramps are proposed on the east side of I-95 for the NB traffic and a separate CD road on the west side of I-95 is proposed for the SB traffic.

The preferred alternative for SW 10 Street is the modified north alignment alternative. This alternative provides three 11-ft lanes with 7-ft buffered bike lanes and 6-ft sidewalks in each direction for the SW 10 Street local traffic. Additionally, two 12-ft elevated connector lanes are provided in each direction with direct connect ramps to/from the I-95 express lanes providing regional connectivity to the express lanes network. A WB ingress ramp is proposed west of the Newport Center Drive intersection that provides access from the SW 10 Street WB local lanes to the connector lanes. In the EB direction along the connector lanes an egress ramp departs from the connector lanes west of the Military Trail intersection braiding over the EB SW 10 Street local lanes connecting along the outside. The egress ramp allows access to the Newport Center and to ramps to NB and SB I-95.

On SW 10 Street at the NB and SB legs of the East Newport Center Drive intersection triple right turn lanes and no left turn or through lanes are provided. In addition, dual left turn lanes and exclusive right turn lanes are provided for the EB and WB movements at this intersection. This configuration allows improved operations and mitigates congestion for the intersection, the interchange ramp intersections and along SW 10 Street.

A roundabout is provided at the intersection of West and East Newport Center Drive to improve left turn movements at the Newport Center. A loop ramp is provided along SW 12 Avenue that connects directly to the SW 10 Street connector lanes to improve operations of the East Newport Center Drive intersection with SW 10 Street by allowing WB traffic making a right turn to bypass the signal.

The NB exit ramp terminal will be widened to accommodate triple left and triple right turn lanes. The intersection at Natura Boulevard is expanded to accommodate double left and single right turn lanes on all intersection approaches.

Alternatives 1 and 2 along Hillsboro Boulevard which evaluated a depressed profile under the South Florida Rail Corridor (SFRC) and a grade separation over the railroad tracks were considered non-viable due to significant impacts to property access, right of way, utilities, and major temporary traffic control impacts for both the railroad tracks and Hillsboro Boulevard. Therefore, the proposed improvements along

Hillsboro Boulevard are limited to the ramp terminals. The improvements include an additional left turn movement for the NB egress ramp terminal while maintaining the dual right turn movement which resulted in the elimination of the NB off-ramp loop to WB Hillsboro Boulevard. In addition, the NB on-ramp from WB Hillsboro Blvd was realigned to be within the proximity of I-95. Moreover, a new configuration was proposed for the WB to NB on-ramp and the WB to SB on-ramp to minimize the weaving maneuvers within the interchange area. Additionally, a new bridge is proposed to be constructed on the west side of the I-95 mainline, due to the existing vertical clearance above Hillsboro Boulevard.

2 Data Collection

The following sources were used to evaluate the project:

- Florida Department of Transportation (FDOT) Drainage Manual (January 2017)
- FDOT Drainage Design Guide (January 2017)
- FDOT PD&E Manual, Part 2, Chapter 13 – Floodplains (June 2017)
- South Florida Water Management District (SFWMD) Environmental Resource Permit (ERP) Applicant's Handbook Volume II (May 2016)
- SFWMD Permit Documents and Permitted Plans
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM)
- United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey
- NOAA LiDAR Contours
- Microstation survey files from I-95 Express Lanes 3A2 Design-Build project
- Straight Line Diagrams (**Appendix F**)

3 Existing Conditions

3.1 Drainage Patterns

The project discharges into the Broward County Water Control District (BCWCD) #2 C-1 and C-2 canals. SR 869 (SW 10th Street), west of the railroad tracks, sheet flows into the BCWCD#2 C-2 canal. SR 810 (Hillsboro Boulevard), west of the railroad tracks, discharges into the BCWCD#2 C-2 canal via a closed storm drain system. East of the railroad tracks along SW 10th Street and Hillsboro Boulevard as well as SR 9 (I-95), the project discharges to BCWCD#2 C-1 canal via sheet flow or through closed storm drain systems. The BCWCD#2 C-1 and C-2 canals discharge north to the Hillsboro canal. There are 13 cross drains within the project limits along SW 10th Street, Hillsboro Boulevard and I-95 and **Table 3-1** shows a summary of the existing cross drains.

Table 3-1 Summary of Cross Drains

Cross Drain	Station (CL I-95)	Description
CD - 1	1333+50	1 - 36" RCP
CD - 2	1346+13	1 - 18" RCP
CD - 3	1352+15	1 - 72" RCP
CD - 4	1360+00	3 - 66" RCP*
CD - 5	1368+14	1 - 18" RCP
CD - 6	1383+16	2 - 66" RCP
CD - 7	1396+34	1 - 18" RCP
CD - 8	1406+13	1 - 36" RCP
CD - 9	1410+37	2 - 8' x 8' box culvert*
CD - 10	1422+14	1 - 18" RCP
CD - 11	1428+13	1 - 18" RCP
CD - 12	1434+13	1 - 72" RCP
CD - 13	1441+14	1 - 18" RCP

* BCWCD#2 control structures

There has been no documented history of flooding in the project area based on correspondence with FDOT Broward Operations Center, SFWMD and the BCWCD#2.

3.2 Environmental Characteristics

The project is located within the Hillsboro and El Rio Canals waterbody (Waterbody ID# 3226F5). The project is not within a verified impaired waterbody. At the time of final design, a review of the impaired water bodies should be performed.

In separate documents, a Cultural Resource Assessment Survey (CRAS), a Wetland Evaluation and Biological Assessment Report (WEBAR) and a Contamination Screening Evaluation Report (CSER) were prepared during this PD&E study. Information regarding historical and archeological impacts from this project can be found in the CRAS. Information regarding wetland and species impacts from this project can be found in the WEBAR. Information regarding known and/or potential contamination sites near this project can be found in the CSER.

3.3 Land Uses

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

3.4 Soil Types

A soil survey report from United States Department of Agriculture (USDA) was reviewed for the project area. According to the report, there are 10 soil types around the project area. The depth to water table varied between 0.0 to more than 80 inches. A summary of the USDA soil survey report is found in **Table 3-2**. Refer to **Appendix C** for the full report.

Table 3-2 Summary of USDA NRCS Soil Survey Report

USDA Soil No.	USDA Soil Name	Depth to Water Table (feet)	Hydrologic Soil Group
15	Immokalee fine sand, 0 to 2 percent slopes	0.5 - 1.5	B/D
17	Immokalee-Urban land complex	0.5 - 1.5	B/D
19	Margate fine sand, occasionally ponded 0 to 1 percent slopes	0.0 - 1.5	A/D
23	Paola-Urban land complex	> 6.7	A
28	Pomello fine sand, 0 to 2 percent slopes	1.5 - 3.5	A
29	Pomello fine sand, 0 to 2 percent slopes	0.25 - 1.5	A/D
33	Sanibel muck	0.0	A/D
34	St. Lucie fine sand, 0 to 2 percent slopes	> 6.7	A
36	Udorthents	> 6.7	A
38	Udorthents, shaped	2.0 - 4.0	A

3.5 Permits

Existing SFWMD permits were obtained and reviewed within the project area. Permits reviewed can be found in **Table 3-3**.

Table 3-3 Summary of Applicable SFWMD Permits

ERP #	Application No.	Year	Project Description
88-00040	04297-1	1988	I-95 and SW 10th St (New Interchange)
	140919-16	2014	I-95 and SW 10th St Operational Improvements
	150507-14	2015	I-95 and SW 10th St Operational Improvements (Minor Modification)
06-01465	160620-2	2016	I-95 Express Lanes Phase 3B (Conceptual Permit)
	161013-5	2016	I-95 Express Lanes Phase 3B (Minor Modification)
	171117-5	2017	I-95 Express Lanes Phase 3B (Minor Modification)
	180222-16	2018	I-95 Express Phase 3B-1 Segment 1
	180531-3	2018	I-95 Express Phase 3B-1 Segment 2
06-00426	09291-C	1982	Newport Center Master Plan

3.6 Project Datum

The vertical datum for this project and in this report is the North American Vertical Datum of 1988 (NAVD 88). Elevations can be converted from NAVD 88 to the National Geodetic Vertical Datum of 1929 (NGVD 29) by adding a conversion factor of 1.57 feet (NAVD 88 + 1.57 feet = NGVD 29).

3.7 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) were used to evaluate the 100-year floodplain encroachment. The project area is located within four FEMA FIRM panels; 12011C0159H, 12011C0167H, 12011C0178H, 12011C0186H (effective August 2014). A letter of map revision determination updated FEMA FIRM panel 12011C0186H (effective March 2017). The floodplain encroachments are within the zones AE and AH with Base Flood Elevations (BFE) ranging from 12 to 16 feet (NAVD 88). See **Appendix B** for applicable FEMA FIRM.

4 Proposed Conditions

4.1 Drainage Patterns

With the exception of SW 10th Street west of the railroad tracks towards west of Military Trail, the project will to discharge to the BCWCD#2 C-1 canal. Along SW 10th Street, Hillsboro Boulevard, and portions of I-95, the discharge will be through a closed storm drain system. The remain portions of I-95 will sheet flow and discharge directly into the BCWCD#2 C-1 canal. Proposed wet and dry stormwater management facilities will provide the required attenuation and water quality treatment per the SFWMD (2016) and FDOT (2017) standards (refer to **Chapter 2** for references). Proposed floodplain compensation sites will provide floodplain storage due to floodplain encroachment. For more information, please refer to the Interstate 95 from SW 10th Street to Hillsboro Boulevard Pond Siting Report.

Due to the roadway widening, existing cross drains will be extended or replaced. CD-4 and CD-9 contains a canal control structure owned and managed by BCWCD#2. Coordination for relocation of any control structure and boat ramp access will be determined in the design phase. Location and size for all other cross drains will be determined in the design phase.

4.2 Floodplain Impact and Level of Encroachment

This project will impact the 100-year floodplain in two ways:

1. Longitudinal impacts resulting from filling the floodplain areas associated with proposed roadway widening with the project limits.
2. Transverse impacts resulting from extension or replacement of existing cross drains.

The longitudinal impacts cannot be avoided since widening will occur to the outside of I-95 and SW 10th Street. Floodplain impacts were quantified according to the 100-year base flood elevation per the FEMA FIRMs. The depth of impact was calculated using the difference between the floodplain and the existing ground or seasonal highwater table depending upon the location. To help minimize the floodplain impacts, retaining walls and 1:2 slopes along the C-1 canal are suggested. During the design phase, every effort should be taken to minimize floodplain impacts.

The transverse impacts resulting from extending or replacing the existing cross drains should be minimized during the design phase. The proposed cross drains or structures

should perform in the same manner or better when compared to the existing hydraulic conditions.

Floodplain impacts and compensation were calculated by two different methods. First was an estimation with excel and the second was with the Microstation Digital Terrain Model (DTM) tools. Refer to **Appendix D** for floodplain impact calculations.

Because of the volume of impacts, floodplain compensation sites are needed. This report utilized the "cup for cup" (volume for volume) approach where fill volume was compensated with a cut from the existing ground within or adjacent to the floodplain. In the design phase, if preferred, watershed modeling is also an acceptable method of to determine floodplain impacts. **Table 4-1** summarizes the floodplain impacts and compensation volume for the project. The project has minimal encroachments to the floodplain because of the floodplain compensation provided.

Table 4-1 Summary of Floodplain Calculations

Description	Impacts Volume (ac-ft)	Compensation Volume (ac-ft)	Difference Volume (ac-ft)
Basin 2	4.89	0.88	4.02
Basin 25	10.21	1.33	8.88
Basin 26	42.02	41.80	0.22
Basin 27	3.76	21.56	-17.80
Total	60.88	65.57	-4.69

Since Basins 2, 25, 26 and 27 discharge to the BCWCD#2 C-1 canal, it's assumed that the basins are hydraulically connect. Basin 27 provides additional floodplain compensation to offset the impacts in Basins 2, 25 and 26 because of the limited right-of-way.

4.3 Risk Evaluation

As mentioned previously, the project has minimal encroachments on the floodplain. There is no change in risk as the proposed drainage system follows FDOT drainage criteria. Furthermore, the project minimizes the impact to the floodplain by utilizing retaining walls and providing floodplain compensation. Because of these actions, no additional risk is anticipated to transportation infrastructure, highway users or residents.

4.4 PD&E Requirements

Per FDOT PD&E Manual, Part 2, Chapter 24 Floodplains, if a project has minimal impacts due to the floodplain encroachments, then the Location Hydraulics Report should discuss the following items:

A. *General description of the project including location, length, existing and proposed typical sections, drainage basins and cross drains.*

Refer to Interstate 95 from SW 10th Street to Hillsboro Boulevard Pond Siting Report and Locations Hydraulic Report for a general description of the project.

B. *Determination of whether the proposed action is in the base floodplain.*

Refer to Interstate 95 from SW 10th Street to Hillsboro Boulevard Locations Hydraulic Report, **Appendix B**.

C. *The history of flooding of the existing facilities and/or measures to minimize any impacts due to the proposed improvements.*

As discussed with FDOT Broward Operations Center, SFWMD, and BCWCD#2, there has been no known history of flooding in the project area. Any proposed impact to the floodplain has been compensated "cup for cup" within the project area.

D. *Determination of whether the encroachment is longitudinal or transverse, and if it is a longitudinal encroachment, an evaluation and discussion of practicable avoidance alternatives.*

This project will introduce longitudinal and transverse encroachment to the floodplain. Longitudinal encroachment is due to roadway widening. Existing cross drains will also be extended. Retaining walls and the maximum allowable embankment slope along the BCWCD#2 C-1 canal will be utilized to minimize floodplain impacts.

E. *The practicability of avoidance alternatives and/or measures to minimize impacts.*

Floodplain impacts were minimized by utilizing retaining walls and maximum allowable embankment slope. Floodplain compensation sites and the removal of existing impervious and embankment areas along the interstate ramps will offset unavoidable impacts to the floodplain.

F. *Impact of the project on emergency services and evacuation.*

Emergency services and evacuation routes will not be impacted. Proposed cross drain extensions will continue to perform equal to or better than existing drainage conditions, resulting in no increase of flood risk.

G. *Impacts of the project on the base flood, likelihood of flood risk, overtopping, location of overtopping, backwater.*

No overtopping will occur. Proposed cross drains will be extended, replaced or upsized and will continue to perform equal to or better than existing drainage conditions, resulting in no increase of flood risk. This will be determined in the design phase.

H. *Determination of the impact of the project on regulatory floodways, if any, and documentation of coordination with FEMA and local agencies to determine the requirements for the project to be developed consistent with the regulatory floodway.*

There are no regulatory floodways within the project limits.

I. *The impacts on natural and beneficial floodplain values, and measures to restore and preserve these values (this information may also be addressed as part of the wetland impact evaluation and recommendations).*

Refer to the Interstate 95 from SW 10th Street to Hillsboro Boulevard Natural Resource Evaluation.

J. *Consistency of the project with the local floodplain development plan or the land use elements in the Local Government Comprehensive Plan (LGCP), and the potential of encouraging development in the base floodplain.*

This project remains consistent with local floodplain development plans as it will at a minimum, maintain existing drainage conditions. This project doesn't change the potential of encouraging development within the base floodplain as it will at a minimum, maintain existing drainage conditions.

K. *Measures to minimize floodplain impacts associated with the project, and measures to restore and preserve the natural and beneficial floodplain values impacted by the project.*

Floodplain impacts were minimized by utilizing retaining walls and maximum allowable embankment slope. Floodplain compensation sites and the removal of

existing impervious areas along the interstate ramps will offset unavoidable impacts to the floodplain.

L. A map showing project, location and impacted floodplains. A FIRM Map should be used if available.

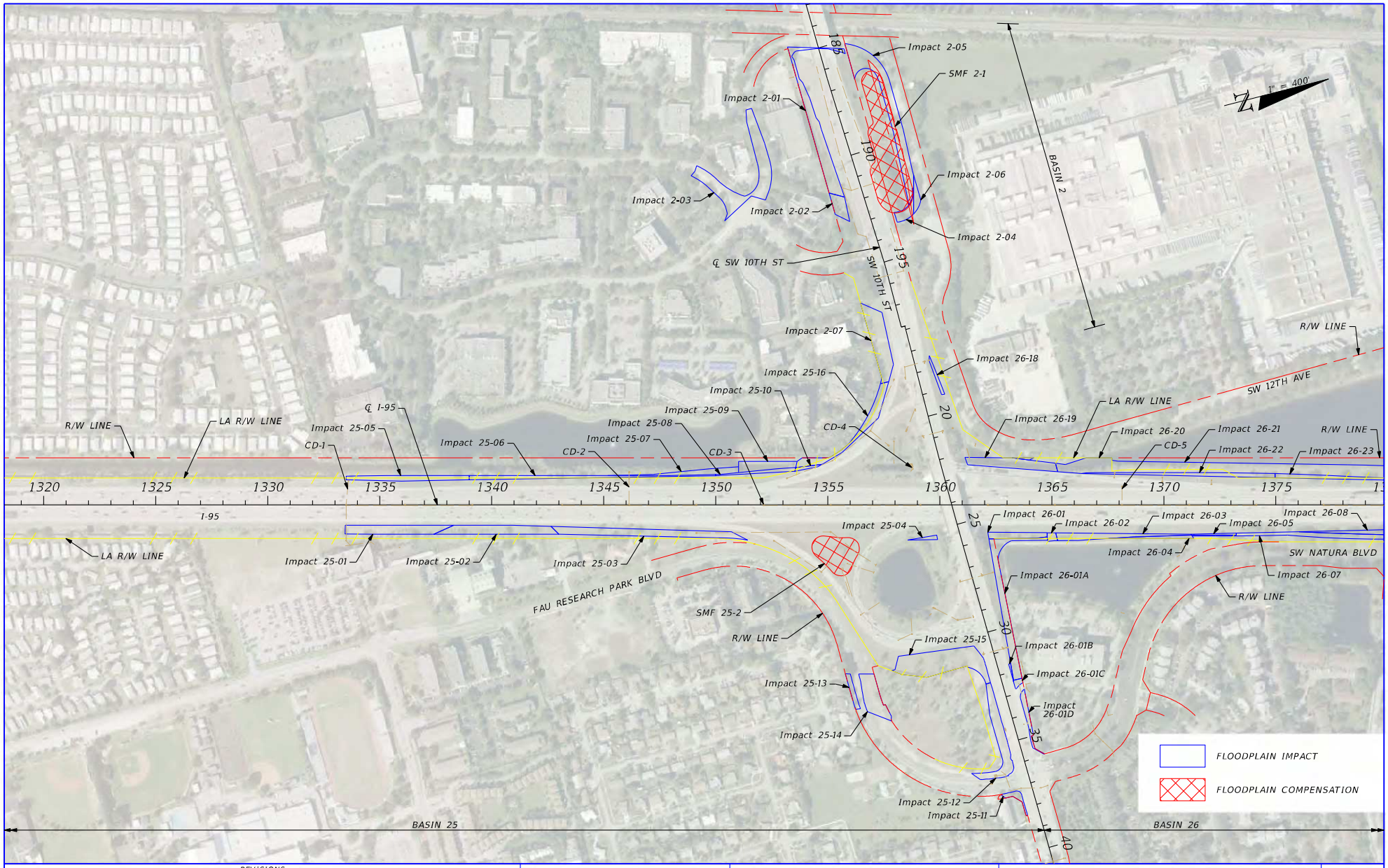
Refer to **Appendix B** for FIRM Map.

M. Results of any risk assessment performed.

Proposed drainage conditions will perform equal to or better than existing drainage conditions, resulting in no increase of flood risk.

APPENDIX A:

Exhibits



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 SR 810 SR 869	BROWARD	436964-1-22-01

FLOODPLAIN IMPACTS (1)

SHEET NO. A-1

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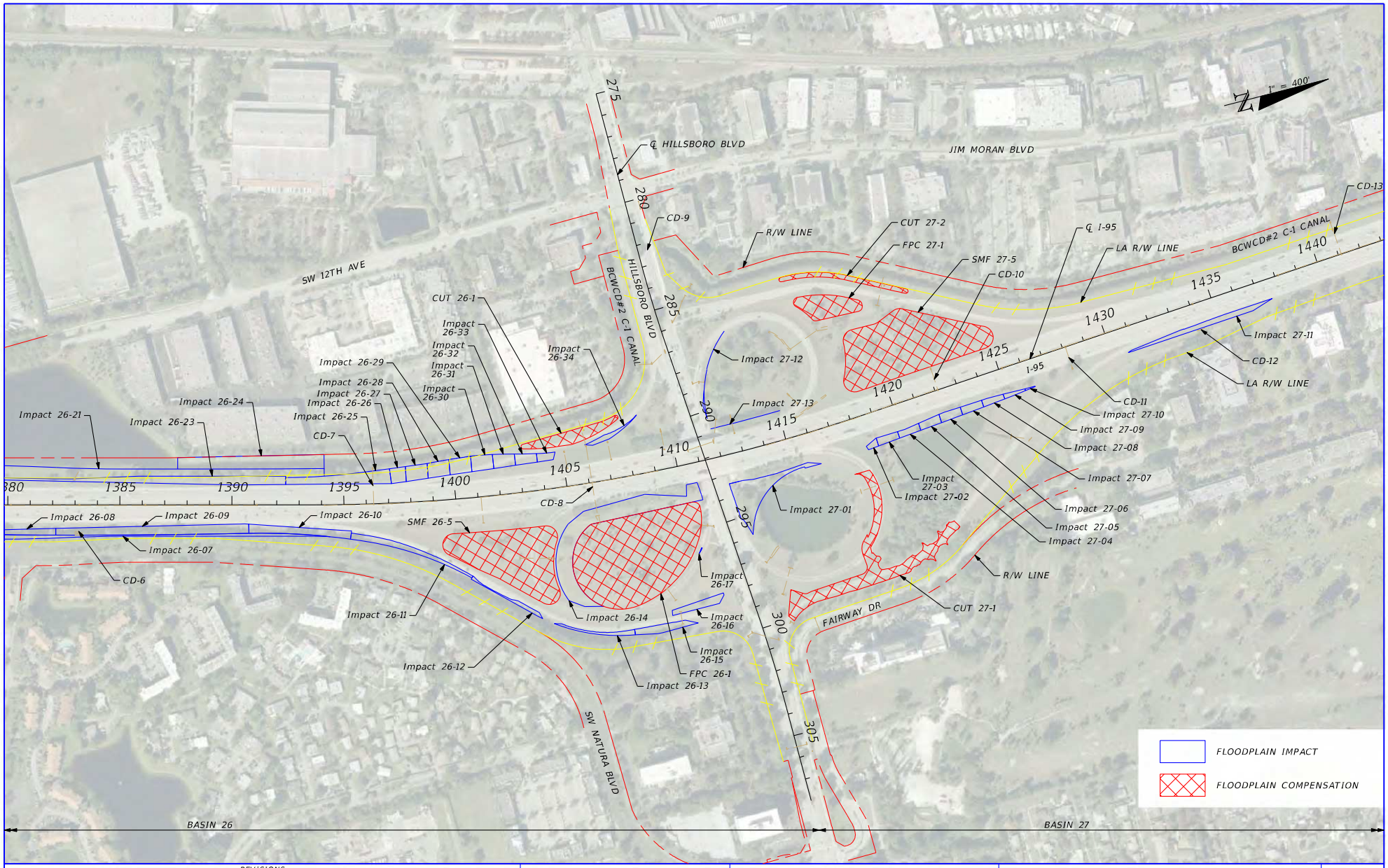

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9 SR 810 SR 869	BROWARD	436964-1-22-01

FLOODPLAIN IMPACTS (2)

SHEET NO. A-2

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APPENDIX B:

FEMA FIRM

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.ngs.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/.

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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.

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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

ZONE A — No Base Flood Elevations determined.

ZONE AE — Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

OTHER AREAS

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

MAP REPOSITORIES

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

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

MAP SCALE 1" = 500'

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0159H

FIRM

FLOOD INSURANCE RATE MAP

BROWARD COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 159 OF 751

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

MAP NUMBER 12011C0159H

EFFECTIVE DATE AUGUST 18, 2014

Federal Emergency Management Agency

B-1

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 whole-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.

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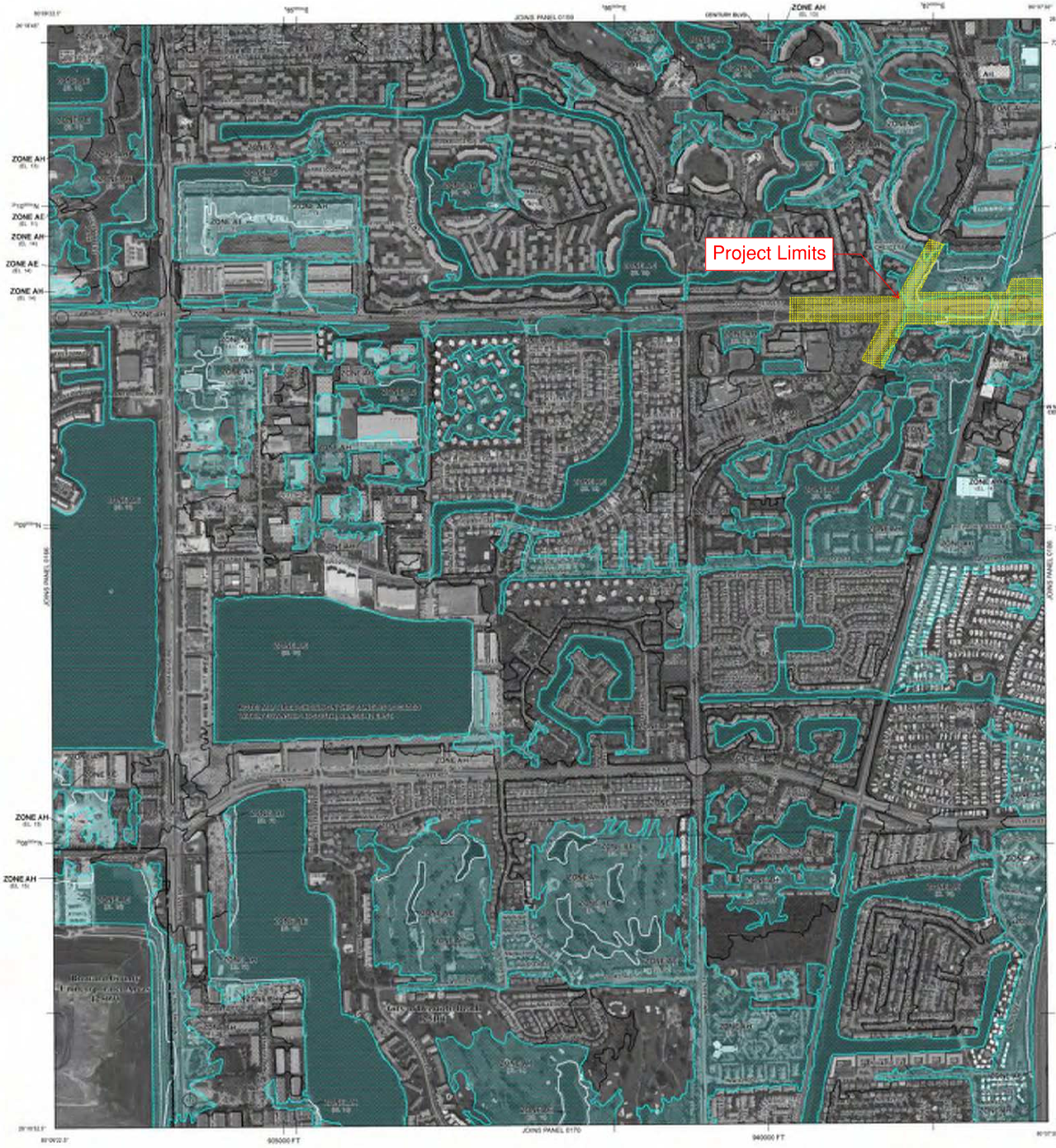

LEGEND

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 — Area 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 (EL 987) — Base Flood Elevation line and value; elevation in feet*
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
1000-meter Universal Transverse Mercator grid ticks, zone 17
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)
M5.5 — 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'

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

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	120034	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

NOTES TO USERS

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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.

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

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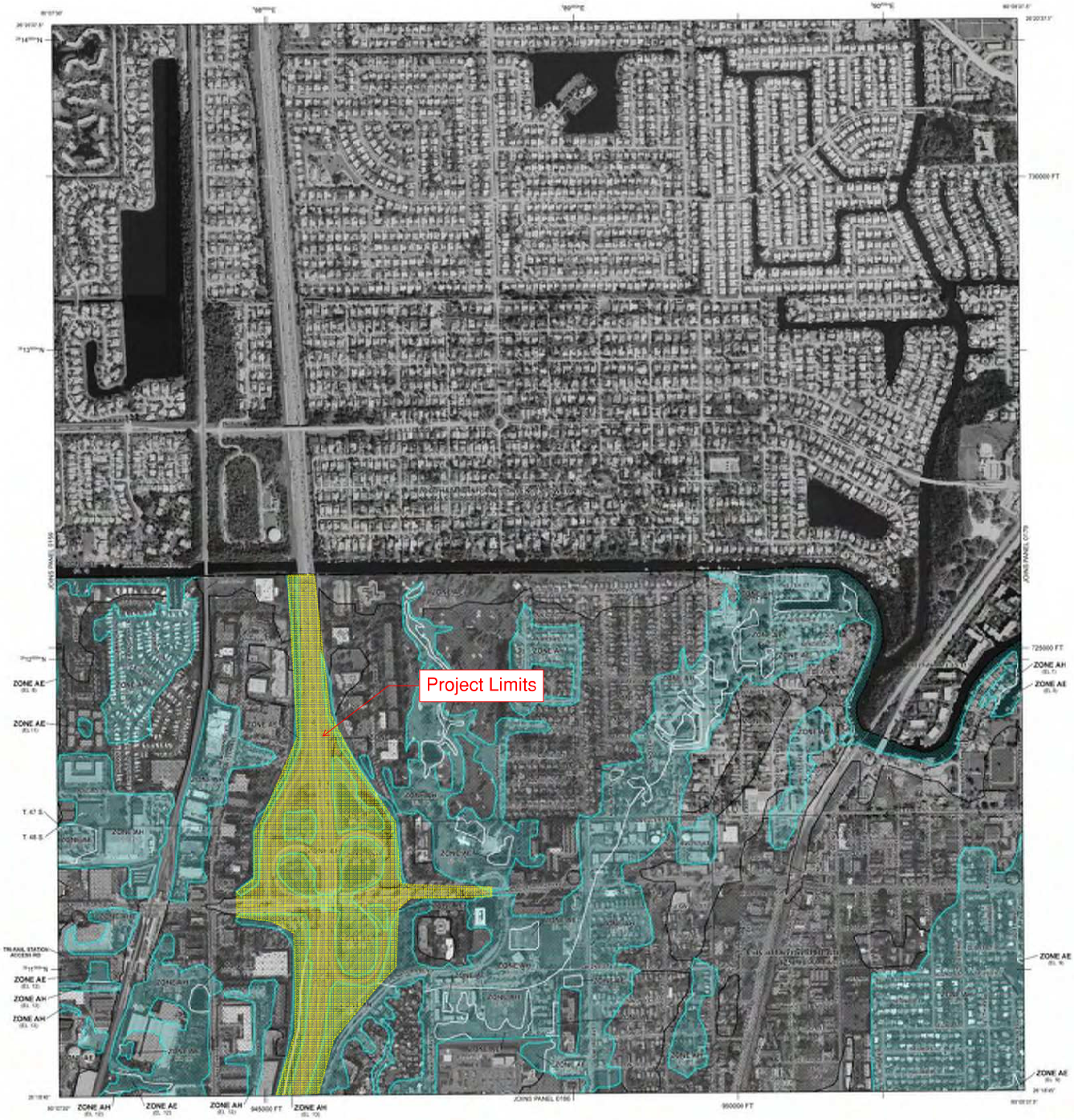

LEGEND

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.

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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 — Area 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 (EL 987) — Base Flood Elevation line and value; elevation in feet*
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
1000-meter Universal Transverse Mercator grid ticks, zone 17
5000-foot grid values: Florida State Plane coordinate system, East Zone (FIPSZONE = 0901), Transverse Mercator projection
DX510 — 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

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MAP SCALE 1" = 500'

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0178H

FIRM

FLOOD INSURANCE RATE MAP
BROWARD COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 178 OF 751
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DEERFIELD BEACH, CITY OF	120031	0178	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
12011C0178H

EFFECTIVE DATE
AUGUST 18, 2014

Federal Emergency Management Agency

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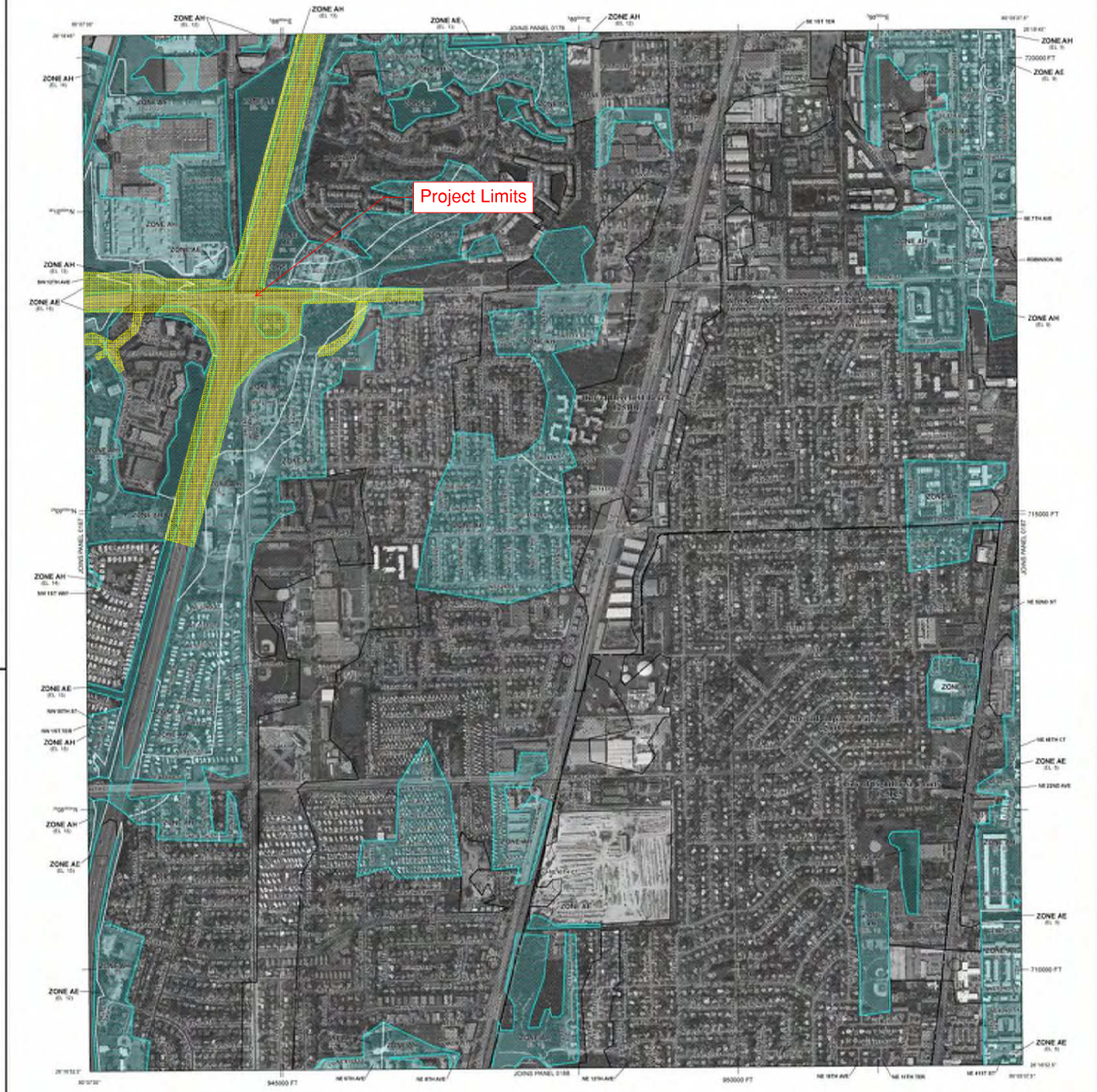

LEGEND

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

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ZONE AE — Base Flood Elevations determined.

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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 — Area 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 (EL 987) — Base Flood Elevation line and value; elevation in feet*
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
1000-meter Universal Transverse Mercator grid ticks; zone 17
5000-foot grid values: Florida State Plane coordinate system, East zone (FIPSZONE = 0901), Transverse Mercator projection
Bench mark (see explanation in Notes to Users section of this FIRM panel)
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'

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0186H

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

PANEL 186 OF 751
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DEERFIELD BEACH, CITY OF	125101	0186	H
LAUDERDALE-BY-THE-SEA, CITY OF	125109	0186	H
POMPANO BEACH, CITY OF	125105	0186	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 communities.

MAP NUMBER
12011C0186H

EFFECTIVE DATE
AUGUST 18, 2014

Federal Emergency Management Agency

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	City of Deerfield Beach Broward County Florida	NO PROJECT	HYDRAULIC ANALYSIS UPDATED TOPOGRAPHIC DATA
	COMMUNITY NO.: 125101		
IDENTIFIER	Deerfield Beach LOMR	APPROXIMATE LATITUDE AND LONGITUDE: 26.300, -80.119 SOURCE: USGS QUADRANGLE DATUM: NAD 83	

ANNOTATED MAPPING ENCLOSURE	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO.: 12011C0186H DATE: August 18, 2014	NO REVISION TO THE FLOOD INSURANCE STUDY REPORT

Enclosures reflect changes to flooding sources affected by this revision.
* FIRM - Flood Insurance Rate Map

FLOODING SOURCE AND REVISED REACH

Storage131 – area centered approximately 900 feet southeast of the intersection of State Highway 869 and Interstate 95

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Storage131	Zone AE	Zone AE	YES	YES
	BFEs*	BFEs	YES	YES
	Zone X (unshaded)	Zone AE	YES	NONE

* BFEs - Base Flood Elevations

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on our website at http://www.fema.gov/national-flood-insurance-program.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance flood discharges computed in the FIS for your community without considering subsequent changes in watershed characteristics that could increase flood discharges. Future development of projects upstream could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges subsequent to the publication of the FIS report for your community and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on our website at http://www.fema.gov/national-flood-insurance-program.

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Engineering Services Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Jesse Munoz
Director, Mitigation Division
Federal Emergency Management Agency, Region IV
Koger Center - Rutgers Building, 3003 Chamblee Tucker Road
Atlanta, GA 30341
(770) 220-5400

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on our website at http://www.fema.gov/national-flood-insurance-program.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

A notice of changes will be published in the *Federal Register*. This information also will be published in your local newspaper on or about the dates listed below, and through FEMA's Flood Hazard Mapping website at https://www.floodmaps.fema.gov/fhm/bfe_status/bfe_main.asp.

LOCAL NEWSPAPER

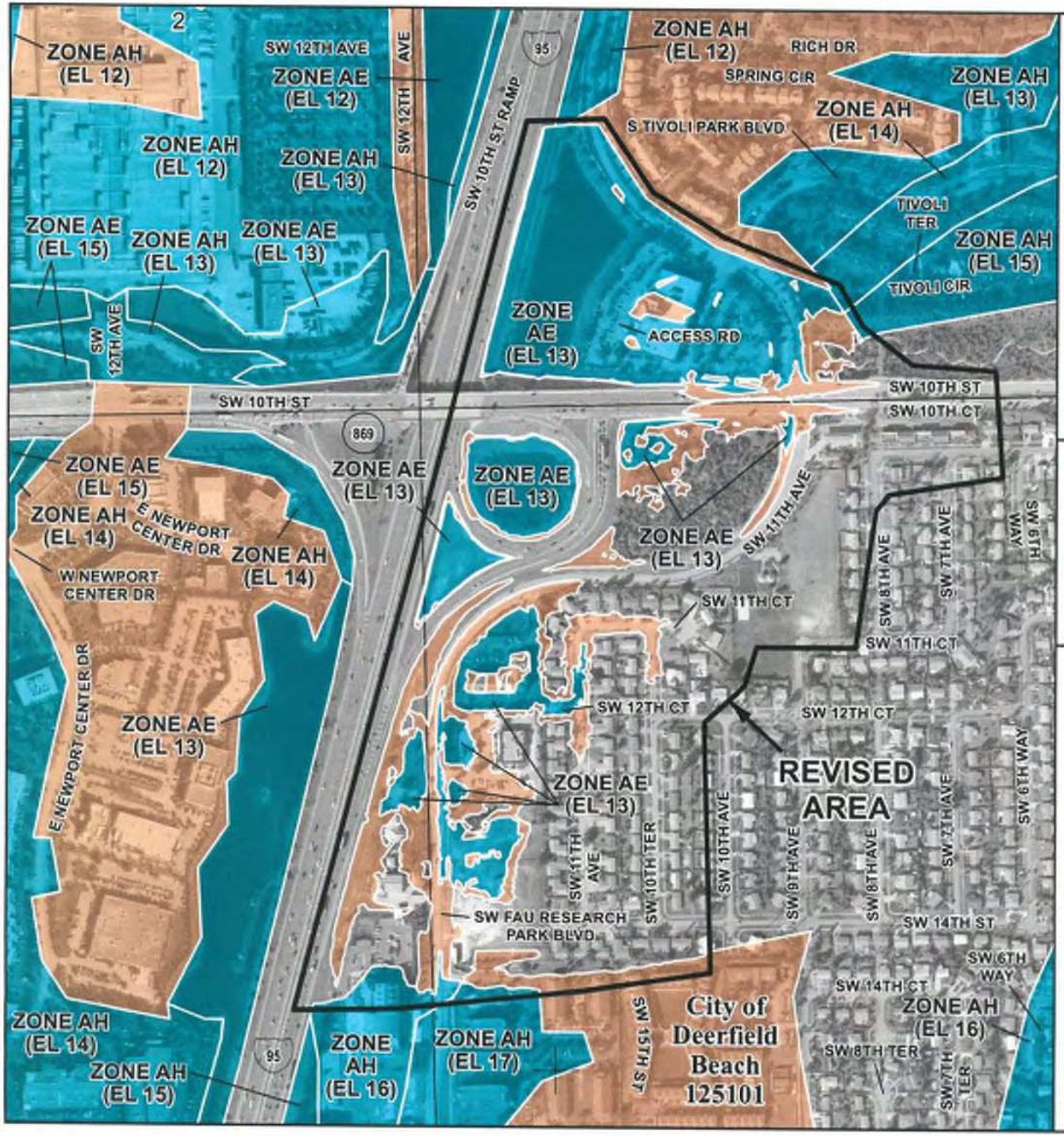
Name: *Sun-Sentinel*

Dates: November 21, 2016 and November 28, 2016

Within 90 days of the second publication in the local newspaper, any interested party may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. Therefore, this letter will be effective only after the 90-day appeal period has elapsed and we have resolved any appeals that we receive during this appeal period. Until this LOMR is effective, the revised flood hazard determination presented in this LOMR may be changed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on our website at http://www.fema.gov/national-flood-insurance-program.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration



SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes. Zone X

SCALE

N

Map Projection:
NAD 1983 StatePlane Florida East FIPS 0901 Feet
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 1,000 Feet

0 75 150 300 Meters

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

BROWARD COUNTY, FLORIDA
and Incorporated Areas

PANEL 186 OF 751

COMMUNITY	NUMBER	PANEL	SUFFIX
DEERFIELD BEACH, CITY OF	125101	0186	H
LIGHTHOUSE POINT, CITY OF	125125	0186	H
POMPANO BEACH, CITY OF	120055	0186	H

REVISED TO REFLECT LOMR EFFECTIVE: March 28, 2017

VERSION NUMBER
2.1.3.0

MAP NUMBER
12011C0186H

EFFECTIVE DATE
AUGUST 18, 2014

APPENDIX C:

USDA Soil Report

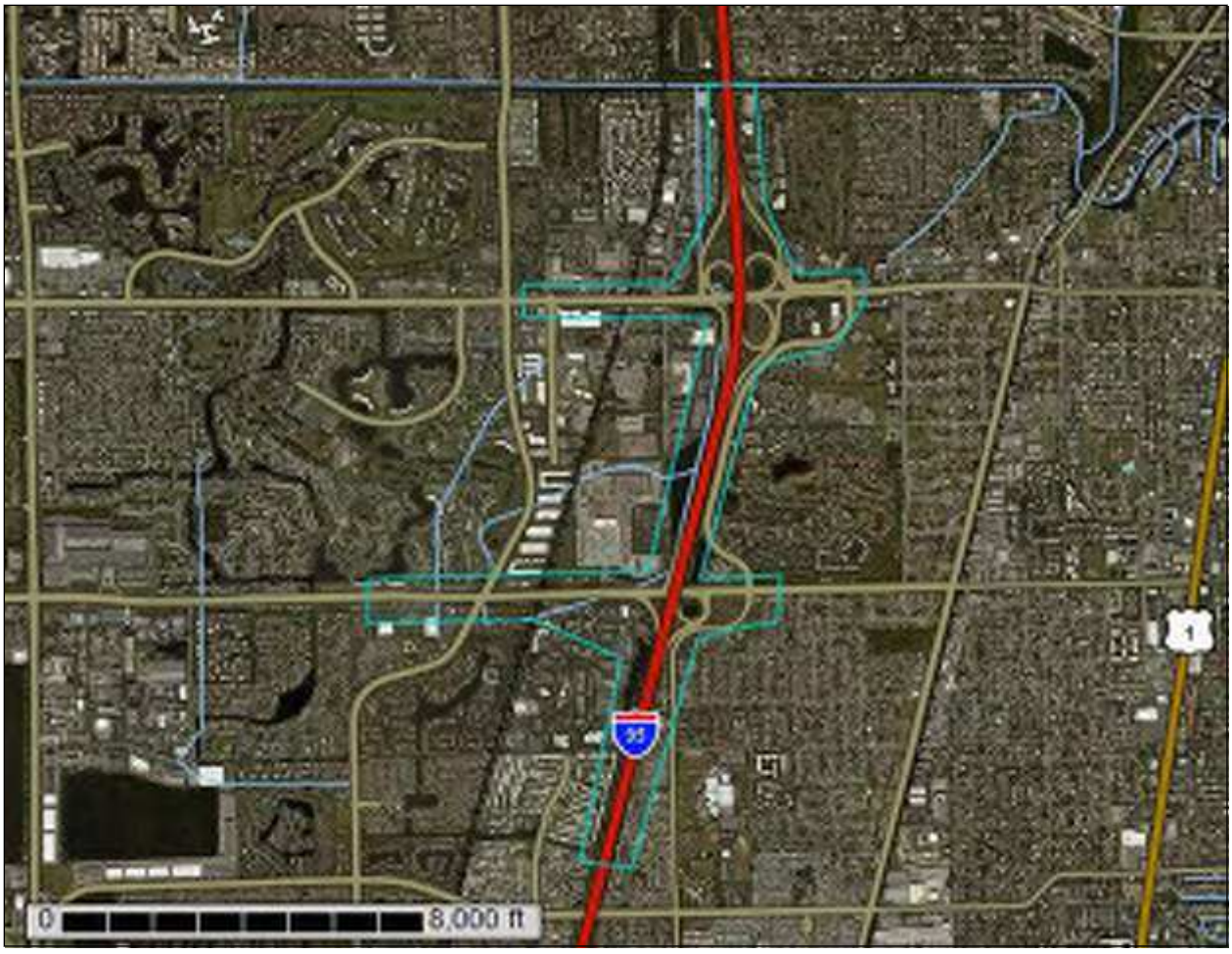
United States Department of Agriculture

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



January 9, 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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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.

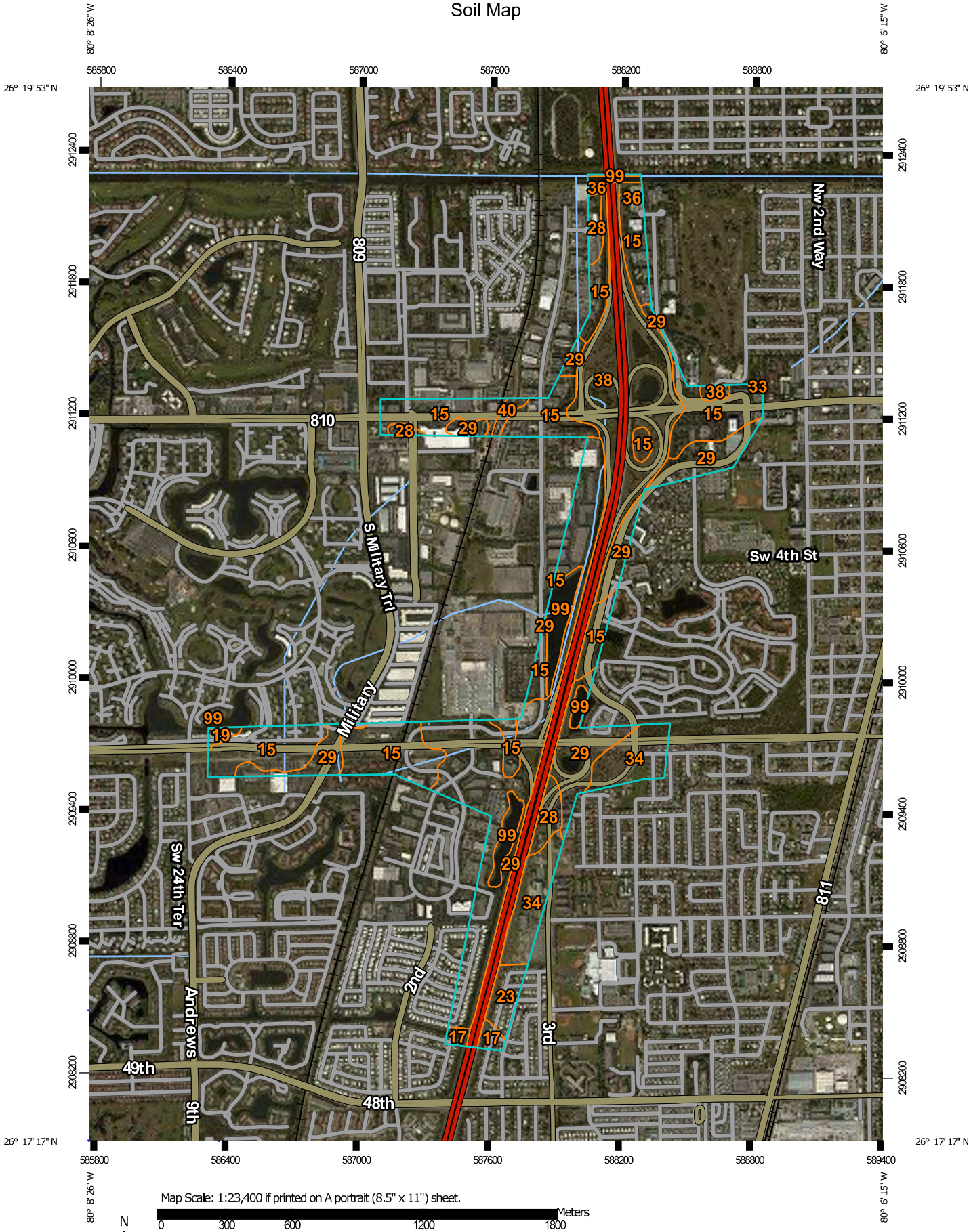
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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 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
15	Immokalee fine sand, 0 to 2 percent slopes	146.7	28.1%
17	Immokalee-Urban land complex	4.9	0.9%
19	Margate fine sand, occasionally ponded, 0 to 1 percent slopes	2.0	0.4%
23	Paola-Urban land complex	9.2	1.8%
28	Pomello fine sand, 0 to 2 percent slopes	13.4	2.6%
29	Pompano fine sand, 0 to 2 percent slopes	158.2	30.4%
33	Sanibel muck	0.4	0.1%
34	St. Lucie fine sand, 0 to 2 percent slopes	37.3	7.2%
36	Udorthents	2.5	0.5%
38	Udorthents, shaped	122.0	23.4%
40	Urban land, 0 to 2 percent slopes	2.7	0.5%
99	Water	21.5	4.1%
Subtotals for Soil Survey Area		**520.8**	**99.9%**
Totals for Area of Interest		**521.3**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
99	Water	0.5	0.1%
Subtotals for Soil Survey Area		**0.5**	**0.1%**
Totals for Area of Interest		**521.3**	**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

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

17—Immokalee-Urban land complex

Map Unit Setting

National map unit symbol: 1hn8x
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 and similar soils: 45 percent
Urban land: 45 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): Talf
Down-slope shape: Convex
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 72 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: 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 5.3 inches)

Interpretive groups

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

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

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

23—Paola-Urban land complex

Map Unit Setting

National map unit symbol: 1hn93
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

Paola and similar soils: 55 percent
Urban land: 40 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paola

Setting

Landform: Flats on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 25 inches: fine sand
B/C - 25 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 5 percent

Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 39.96 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 1.8 inches)

Interpretive groups

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

St. lucie

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

Pomello

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

28—Pomello fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tzw1

Elevation: 0 to 110 feet
Mean annual precipitation: 42 to 60 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

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

Description of Pomello

Setting

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
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 42 inches: fine sand
Bh - 42 to 54 inches: fine sand
B/C - 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: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 18 to 42 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 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: Sand Pine Scrub (R155XY001FL)
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Minor Components

Duette

Percent of map unit: 5 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
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Immokalee

Percent of map unit: 5 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

Jonathan

Percent of map unit: 3 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, tread, rise
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Tavares

Percent of map unit: 2 percent
Landform: Ridges on marine terraces, knolls on marine terraces, hills on marine terraces, flatwoods on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope, interfluve, tread, rise
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Longleaf Pine-Turkey Oak Hills (R155XY002FL)
Hydric soil rating: No

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

33—Sanibel muck

Map Unit Setting

National map unit symbol: 1hn9f
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

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

Description of Sanibel, Drained

Setting

Landform: Marshes on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Thin organic material over sandy marine deposits

Typical profile

Oa - 0 to 9 inches: muck
A - 9 to 10 inches: fine sand
C - 10 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly 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: 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: Moderate (about 7.9 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

Minor Components

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

Dania

Percent of map unit: 2 percent
Landform: Marshes on marine terraces
Landform position (three-dimensional): Dip

Down-slope shape: Concave
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

Plantation

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

Okeelanta

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

34—St. Lucie fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tzwr
Elevation: 0 to 130 feet
Mean annual precipitation: 46 to 68 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

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

Description of St. Lucie

Setting

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: Convex, linear
Across-slope shape: Linear

Parent material: Eolian or 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: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 39.96 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: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Hydric soil rating: No

Minor Components

Pomello

Percent of map unit: 5 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
Ecological site: Sand Pine Scrub (R155XY001FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

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

Paola

Percent of map unit: 2 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

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

38—Udorthents, shaped

Map Unit Setting

National map unit symbol: 1hn9l
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, shaped and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Shaped

Setting

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

Typical profile

C1 - 0 to 30 inches: gravelly sand
C2 - 30 to 50 inches: sand
2R - 50 to 54 inches: weathered bedrock

Properties and qualities

Slope: 0 to 45 percent
Depth to restrictive feature: 40 to 72 inches to paralithic bedrock
Natural drainage class: Somewhat poorly drained
Runoff class: Low
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 24 to 48 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 2.2 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

Udorthents

Percent of map unit: 10 percent
Landform: Marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
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

99—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

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APPENDIX D:

Floodplain Calculations

HNTB

By:	BTM/HTC	7/16/2019		FPID:	436964-1-22-02
Checked By:	CK	7/17/2019	Updated By: BTM	7/23/2019	Job No.: 65674
Back-Checked By:	BTM	7/22/2019	Verified By: CK	7/24/2019	Office No.: 82

Basin	Impact IDs	Roadway	Est. Begin STA.	Side	Impact Length (LF)	Tie-Down Slope (1V:#H)	Impact Area					FP EL. (NAVD 88)	Prop. Grd. EL. (NAVD 88)	Exist. Grd. EL. (NAVD 88)	Impact Volume (ac-ft)
							Prop. ≥ FP			Prop. < FP					
							Prop.	Tie-Down Prop. to FP	Tie-Down FP to Exist.	Prop.	Tie-Down Prop. To Exist.				
25	25-01	I-95	1333+45	RT.	397	6	0.41	0.08	0.10			15.0	16.5	13.1	0.64
	25-02	I-95	1337+42	RT.	558	6	0.45	0.04	0.25			16.0	16.5	12.8	1.23
	25-03	I-95	1343+00	RT.	839	6	0.59	0.17	0.27			15.0	16.5	12.7	1.38
	25-04	I-95	1358+59	RT.	132	6	0.03	0.01	0.09			15.0	15.5	10.0	0.35
	25-05	I-95	1333+50	LT.	550	6	0.27	0.25	0.08			13.0	16.3	12.0	0.42
	25-06	I-95	1339+00	LT.	1101	0	0.26					13.0	15.8	10.5	0.32
	25-08	I-95	1350+00	LT.	359	0	0.09					13.0	14.5	7.0	0.28
	25-10	I-95	1353+57	LT.	119	0	0.03					14.0	14.5	9.6	0.07
26	26-01	I-95	1362+14	RT.	261	0	0.16					13.0	15.3	9.6	0.27
	26-02	I-95	1364+79	RT.	66	0	0.04					13.0	15.3	7.4	0.10
	26-03	I-95	1365+18	RT.	599	0	0.26					12.0	15.3	7.6	0.58
	26-05	I-95	1371+22	RT.	200	0	0.03					12.0	15.0	7.7	0.06
	26-08	I-95	1376+04	RT.	611	0	0.25					12.0	15.0	8.0	0.50
	26-09	I-95	1382+14	RT.	864	0	0.75					12.0	15.0	9.0	1.13
	26-10	I-95	1390+76	RT.	455	6	0.34	0.18	0.16			12.0	14.8	9.5	1.06
	26-11	I-95	1395+31	RT.	512	6	0.27	0.18	0.14			12.0	14.5	10.0	0.76
	26-12	I-95	1400+47	RT.	282	6	0.09	0.10	0.08			12.0	14.5	10.0	0.36
	26-13	I-95	1404+06	RT.	324	6	0.10	0.11	0.04			11.0	13.4	10.0	0.18
	26-15	I-95	1406+88	RT.	261	6	0.19	0.06	0.09			11.0	12.6	8.5	0.49
	26-16	I-95	1408+53	RT.	211	6	0.17	0.05	0.07			11.0	12.6	8.5	0.42
	26-17	I-95	1410+13	RT.	18	6	0.00				0.00	11.0	10.0	9.5	0.00
	26-22	I-95	1366+34	LT.	843	0	0.25					13.0	15.3	8.0	0.63
	26-23	I-95	1374+96	LT.	1746	0	0.92					13.0	15.0	8.5	2.06
	26-25	I-95	1392+41	LT.	465	0	0.47					13.0	14.5	9.5	0.82
	26-26	I-95	1397+16	LT.	73	0	0.11					13.0	14.8	9.3	0.20
	26-27	I-95	1397+84	LT.	99	0	0.15					13.0	15.3	9.2	0.28
	26-28	I-95	1398+84	LT.	99	0	0.15					13.0	16.2	9.6	0.26
	26-29	I-95	1399+84	LT.	98	0	0.16					13.0	17.4	10.0	0.23
	26-30	I-95	1400+84	LT.	98	0	0.15					13.0	19.1	9.1	0.29
	26-31	I-95	1401+84	LT.	98	0	0.13					13.0	20.9	9.1	0.25
	26-32	I-95	1402+84	LT.	99	0	0.10					13.0	23.3	10.6	0.12
	26-33	I-95	1403+84	LT.	84	0	0.06					13.0	24.8	11.3	0.05
	26-34	I-95	1406+08	LT.	258	6	0.08	0.42	0.06			13.0	24.8	11.3	0.83
27	27-02	I-95	1418+36	RT.	48	0	0.03					11.0	25.0	9.0	0.03
	27-03	I-95	1418+84	RT.	100	0	0.08					11.0	23.5	7.5	0.14
	27-04	I-95	1419+84	RT.	100	0	0.07					11.0	21.0	7.1	0.14
	27-05	I-95	1420+84	RT.	100	0	0.08					11.0	18.5	6.3	0.19
	27-06	I-95	1421+84	RT.	100	0	0.09					11.0	16.5	6.3	0.20
	27-07	I-95	1422+84	RT.	100	0	0.08					11.0	14.9	7.1	0.15
	27-08	I-95	1423+84	RT.	100	0	0.06					11.0	13.7	7.2	0.12
	27-09	I-95	1424+84	RT.	100	6	0.03	0.03	0.05			11.0	12.9	7.2	0.27
	27-10	I-95	1425+84	RT.	47	6	0.01	0.01	0.02			11.0	12.5	7.5	0.08
	27-11	I-95	1430+73	RT.	589	6	0.27	0.01	0.32			11.0	11.1	7.0	1.22
	27-12	I-95	1411+80	LT.	18	6	0.01	0.00	0.01			11.0	11.4	7.4	0.04
	27-13	I-95	1411+84	LT.	320	2		0.31	0.01			11.0	32.0	10.0	0.32

HNTB

By:	BTM	7/16/2019				*FPID:*	436964-1-22-02
Checked By:	CK	7/17/2019	*Updated By:*	BTM	7/23/2019	*Job No.:*	65674
Back-Checked By:	BTM	7/22/2019	*Verified By:*	CK	7/24/2019	*Office No.:*	82

Basin	Impact IDs	Floodplain EL (NAVD 88)	Floodplain Impact (ac-ft)
2	2-01	15	2.16
	2-02	14	0.28
	2-03	14	0.44
	2-04	15	0.60
	2-05	15	0.45
	2-06	13	0.03
	2-07	14	0.94
25	25-07	13	1.56
	25-09	13	0.81
	25-11	16	0.11
	25-12	16	0.10
	25-13	16	0.02
	25-14	16	0.24
	25-15	16	2.32
	25-16	14	0.34
26	26-01A	13	1.30
	26-01B	16	0.01
	26-01C	15	0.06
	26-01D	15	0.14
	26-04	12	0.22
	26-07	12	1.24
	26-14	11	2.22
	26-18	13	0.04
	26-19	13	2.92
	26-20	12	0.02
	26-21	12	15.43
	26-24	12	6.47
27	27-01	11	1.22

Floodplain impacts determined with Microstation DTM tools.

HNTB

By:	BTM	7/16/2019				*FPID:*	436964-1-22-02
Checked By:	CK	7/17/2019	*Updated By:*	BTM	7/23/2019	*Job No.:*	65674
Back-Checked By:	BTM	7/22/2019	*Verified By:*	CK	7/24/2019	*Office No.:*	82

Basin	ID	SHW EL (NAVD 88)	Existing Ground EL (NAVD 88)	Floodplain EL (NAVD 88)	Floodplain Compensation (ac-ft)	Total (ac-ft)
2	SMF 2-1	6.5	Varies from 6.5 to 15	15	0.88	0.88
25	SMF 25-2	6.5	Varies from 6.5 to 13	13	1.33	1.33
26	SMF 26-5	3.43	Varies from 3.43 to 12	12	13.26	41.80
	FPC 26-1	3.43	Varies from 3.43 to 11	11	24.00	
	Cut 26-1	3.43	Varies from 3.43 to 12	12	4.55	
27	SMF 27-5	3.43	Varies from 3.43 to 11	11	15.06	21.56
	FPC 27-1	3.43	Varies from 3.43 to 11	11	2.44	
	Cut 27-1	3.43	Varies from 3.43 to 11	11	3.86	
	Cut 27-2	3.43	Varies from 3.43 to 10	10	0.20	

Floodplain compensation determined with Microstation DTM tools.

APPENDIX E:

Correspondence

RECORD OF TELEPHONE CALL

Job #	65674	**Date**	October 9, 2018
Call From	Brian McCarthy, Hong Ting (Sam) Chiu	**Of**	HNTB Corporation
Call To	Carl Archie, Johana Narvaez	**Of**	Broward County Water Control District #2
By	Brian McCarthy		

Subject Discussed

This telephone call with Broward County Water Control District (BCWCD) #2 was to discuss the potential impacts to the BCWCD #2 C-1 canal from the Florida Department of Transportation (FDOT) SR-9 (I-95) SW 10th St to Hillsboro Blvd PD&E Study. Figures were emailed in advanced of the telephone call to facilitate discussion and are attached to this record.

- Brian provided a general overview of the project. Along I-95, the project extends from south of SW 10th St to north of Hillsboro Blvd and includes capacity and safety improvements. Along SW 10th St, the project extends from east of FAU Research Park Blvd to west of Military Trail and proposes elevated express lanes to connect I-95 and the Turnpike.
- Brian asked about how the BCWCD #2 C-1 canal functions. Carl stated in the 1970s, Broward County and FDOT entered into an agreement where FDOT owns the property and Broward County maintains the C-1 canal. The canal acts as conveyance to the Hillsboro Canal and prevents saltwater intrusion into the wellfields west of I-95. Along the C-1 canal and within the project limits, there are 3 control structures that step down in elevation. The SW 10th St structure provides impoundment and storage and is maintained at a higher elevation. Vertical gates allow BCWCD #2 the ability to adjust the water elevation as needed. Access is gained by a boat ramp at SW 10th St. The Hillsboro Blvd structure also has vertical gates to adjust the water elevation and is accessed by a boat ramp at Hillsboro Blvd. The final structure is a weir with no adjustable gates at the Hillsboro Canal.
- Sam asked what the degree of accuracy is required to show no rise within the C-1 canal. Carl stated that should be discussed with the City of Deerfield's Floodplain Manager.
- Brian mentioned that there would be a proposed pond within the wellfield's zone of influence along SW 10th St. Johana stated that no wet ponds are permitted within the wellfield's zone of influence. If a dry pond is proposed, then 1 foot above the seasonal high water table is sufficient.

This is our understanding of the topics discussed.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	ALTERNATIVE 2 EXPRESS DIRECT CONNECT	SHEET NO.
SR 9	BROWARD			


LA R/W
R/W
I-95
LA R/W
NE 48th St
FAU Research Park Blvd
2695
2700
2705
2710
2715
2720
1" = 200'

Figure 1

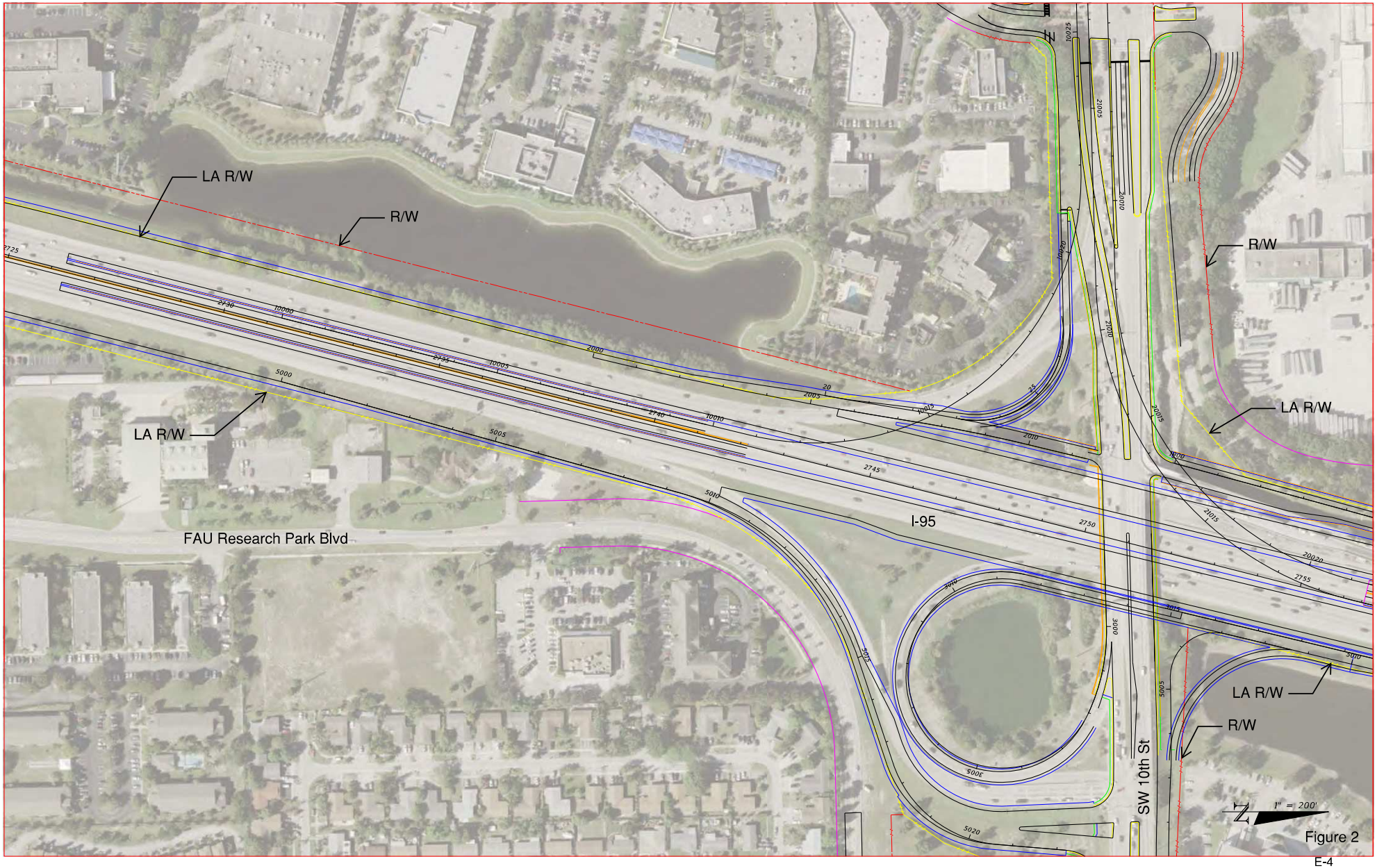

LA R/W
R/W
LA R/W
FAU Research Park Blvd
I-95
R/W
LA R/W
SW 10th St
LA R/W
R/W
1" = 200'

Figure 2

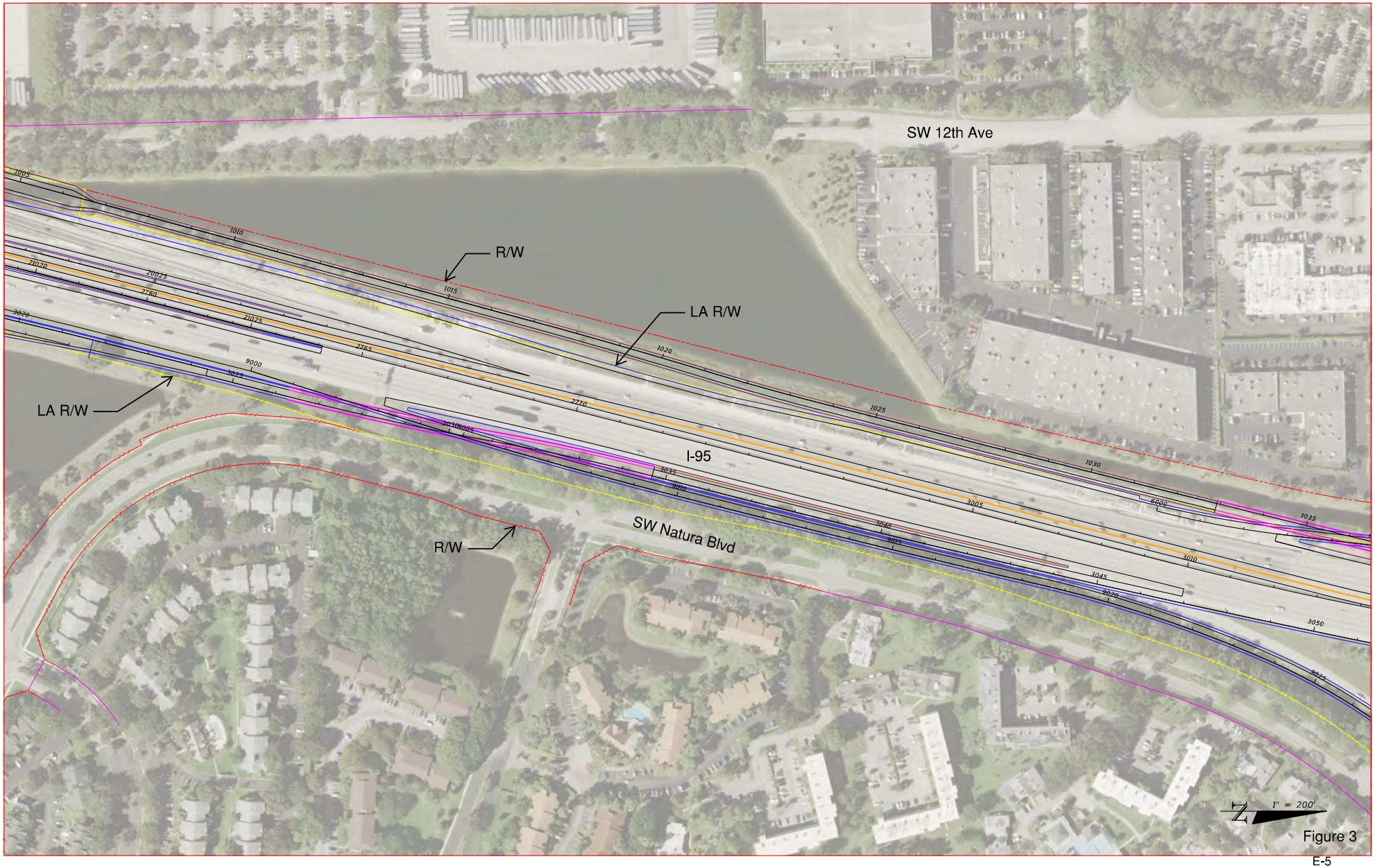


Figure 3

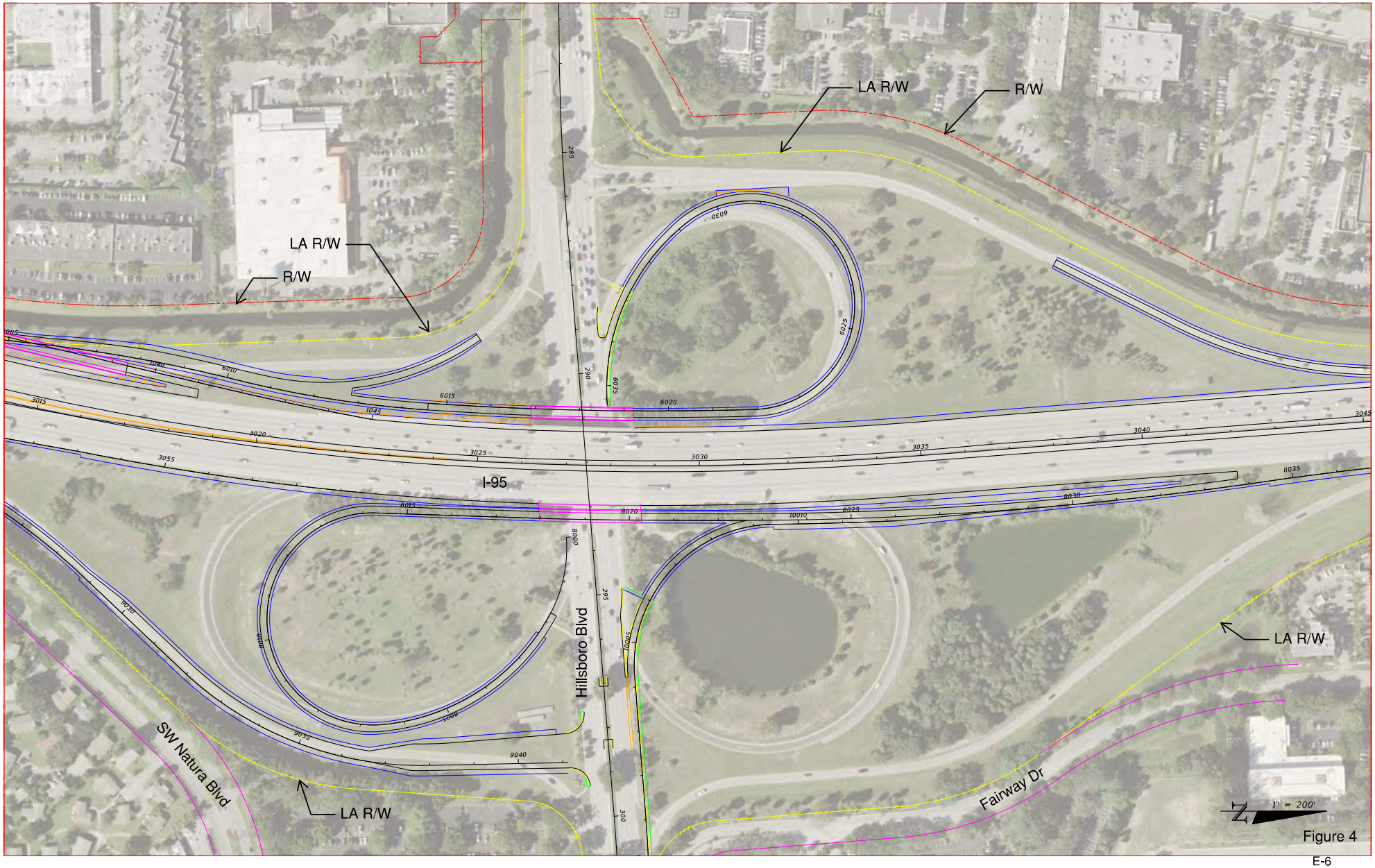

LA R/W
R/W
LA R/W
R/W
I-95
Hillsboro Blvd
SW Natura Blvd
Fairway Dr
LA R/W
LA R/W
1" = 200'

Figure 4


R/W
LA R/W
3050
3055
3060
3065
3070
3075
I-95
LA R/W
Hillsboro Canal
1" = 200'

Figure 5

HNTB Corporation
The HNTB Companies
Infrastructure Solution

201 N. Franklin Street
Suite 1200
Tampa, FL 33602

Telephone (813) 402-4150
www.hntb.com

Project Name
I-95 from south of SW 10th St to north of Hillsboro Blvd
FPID 436964-1

Date of Meeting
October 15, 2018
October 16, 2018 (follow-up)

HNTB Project #
65674

Location
Teleconference
850-414-4972 Code 490513

Purpose of Meeting
Pond Siting Meeting #3

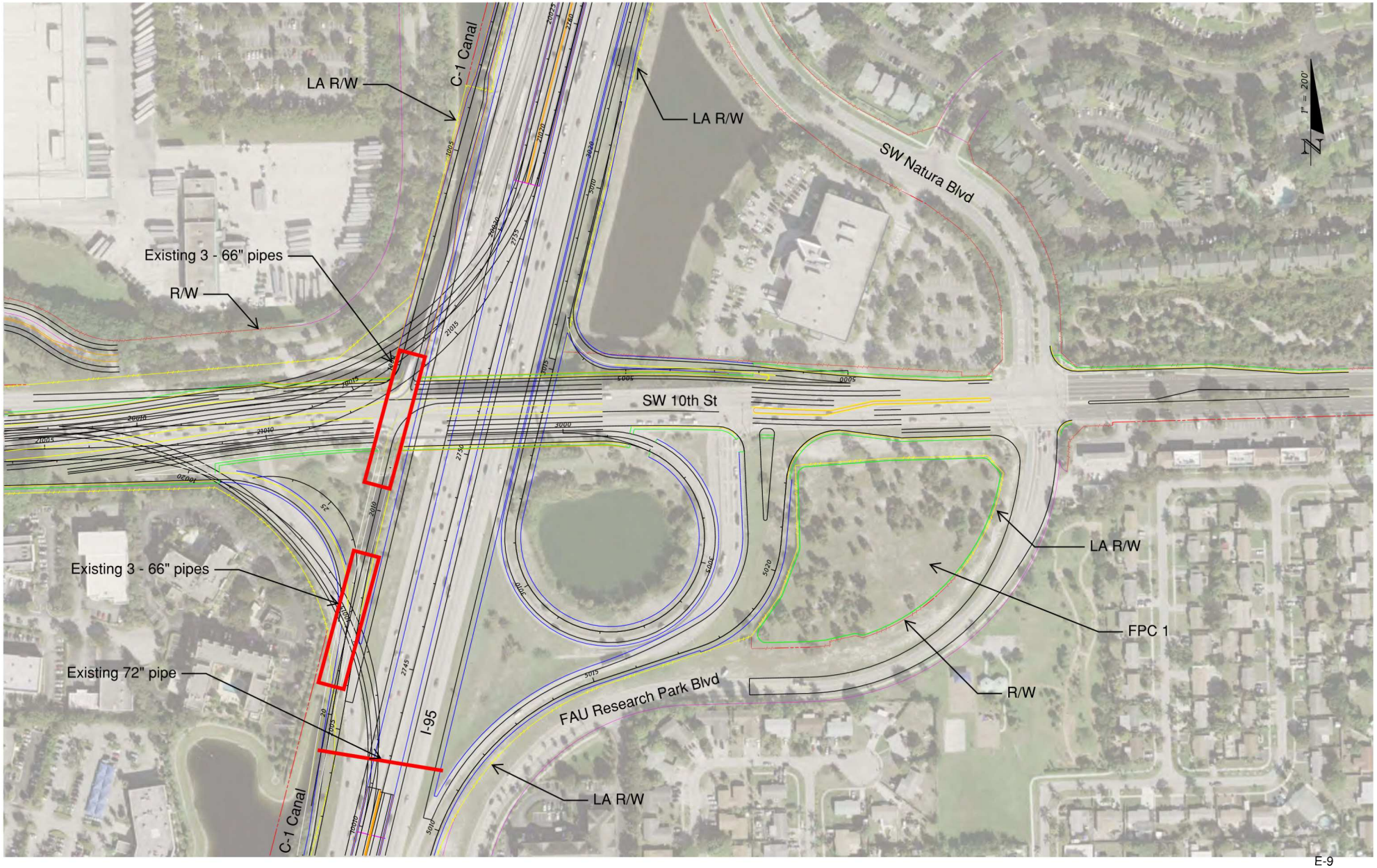
Time
3:00 pm – 4:30 pm

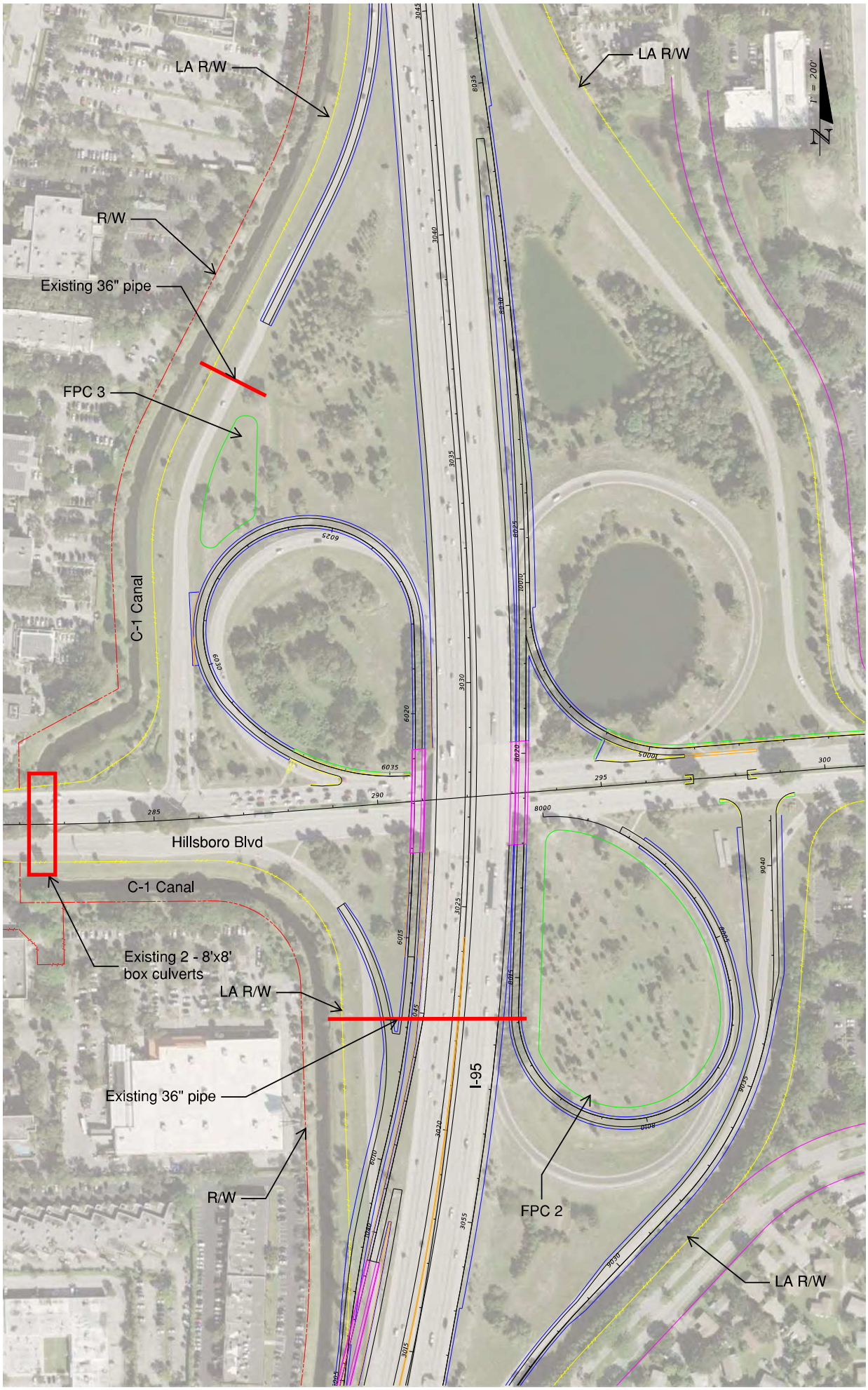
Participants
FDOT D4
RS&H
Vilma Croft (HNTB)
Brian McCarthy (HNTB)
Sam Chiu (HNTB)

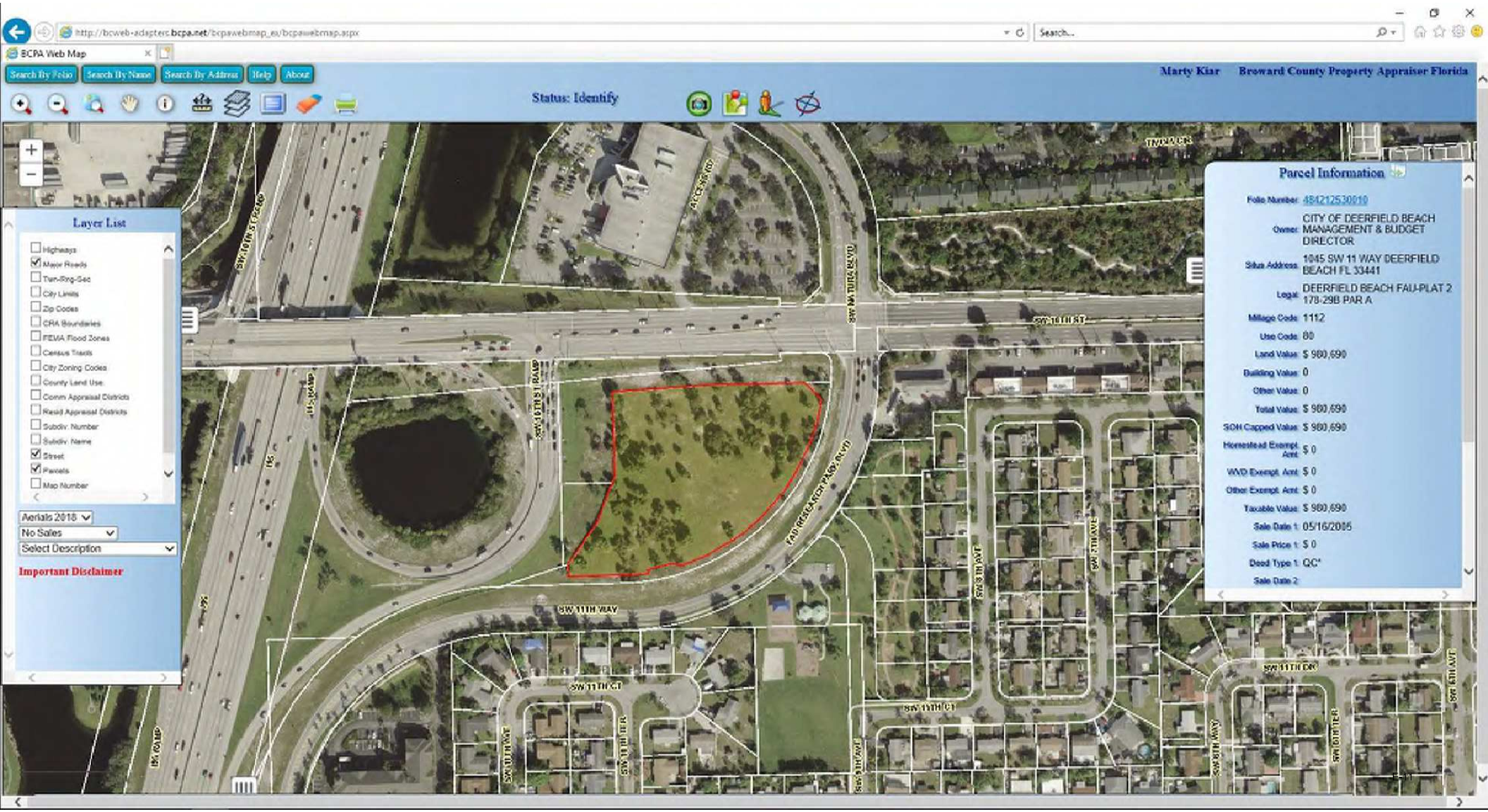
MEETING MINUTES

The following relates to HNTB's portion of the SW 10th St connector project.

- Off-site right-of-way needs
    - Brian told FDOT that the calculations from the floodplain impacts indicate that the project will need an offsite parcel. The only vacant parcel available within the floodplain and large enough to accommodate the necessary impacts was at the southeast corner of the I-95 and SW 10th St.
        - According the Broward County Property Appraiser's website, the parcel is owned by the City of Deerfield.
        - FDOT believed that FDOT previously owned the parcel or had the right to deny any development by the City.
        - Further review by FDOT was required.
- SW 10th St at Military Trail
    - Brian asked Chris Jackson (RS&H) if their drainage calculations include HNTB's portion that discharge to the BCWCD#2 C-2 canal. Chris said from the high point at the railroad tracks west, RS&H has accounted for the HNTB impacts.
- Follow-up phone conversation (October 16)
    - After the teleconference on October 15, a discussion took place with FDOT leadership regarding the parcel's ownership. The parcel was originally owned FDOT, but loaned to FAU and that any potential project would also provide an opportunity for public use. No project was developed, and the parcel was returned to FDOT. At some point, FDOT gave the parcel to the City of Deerfield without the rights to develop it. However, sometime this year, the FDOT D4 Secretary granted the City of Deerfield the right to develop it. This parcel is no longer available for FPC use.


LA R/W
C-1 Canal
LA R/W
SW Natura Blvd
1" = 200'
Existing 3 - 66" pipes
R/W
SW 10th St
LA R/W
Existing 3 - 66" pipes
FPC 1
Existing 72" pipe
R/W
FAU Research Park Blvd
I-95
LA R/W
C-1 Canal


LA R/W
LA R/W
1" = 200'
R/W
Existing 36" pipe
FPC 3
C-1 Canal
Hillsboro Blvd
C-1 Canal
Existing 2 - 8'x8'
box culverts
LA R/W
Existing 36" pipe
R/W
I-95
FPC 2
LA R/W


BCPA Web Map
Search By Folio
Search By Name
Search By Address
Help
About
Marty Kiar
Broward County Property Appraiser Florida
Status: Identify
Layer List
Highways
Major Roads
Twn-Rng-Sec
City Limits
Zip Codes
CRA Boundaries
FEMA Flood Zones
Census Tracts
City Zoning Codes
County Land Use
Comm Appraisal Districts
Resid Appraisal Districts
Subdiv. Number
Subdiv. Name
Street
Parcels
Map Number
Aerials 2018
No Sales
Select Description
Important Disclaimer
Parcel Information
Folio Number: 484212530010
Owner: CITY OF DEERFIELD BEACH MANAGEMENT & BUDGET DIRECTOR
Situs Address: 1045 SW 11 WAY DEERFIELD BEACH FL 33441
Legal: DEERFIELD BEACH FAU-PLAT 2 178-29B PAR A
Millage Code: 1112
Use Code: 80
Land Value: $ 980,690
Building Value: 0
Other Value: 0
Total Value: $ 980,690
SOH Capped Value: $ 980,690
Homestead Exempt. Amt: $ 0
WVD Exempt. Amt: $ 0
Other Exempt. Amt: $ 0
Taxable Value: $ 980,690
Sale Date 1: 05/16/2005
Sale Price 1: $ 0
Deed Type 1: QC*
Sale Date 2:
SW 11TH WAY
SW 11TH CT
SW 10TH ST RAMP
SW 10TH ST
FAU RESEARCH PARK BLVD

HNTB Corporation
The HNTB Companies
Infrastructure Solution

201 N. Franklin Street
Suite 1200
Tampa, FL 33602

Telephone (813) 402-4150
www.hntb.com

Project Name
I-95 from south of SW 10th St to north of Hillsboro Blvd
FPID 436964-1

Date of Meeting
November 14, 2018

HNTB Project #
65674

Location
Teleconference
855-797-9485 Code 740-384-270

Purpose of Meeting
SFWMD Coordination Meeting

Time
9:00 am – 9:30 am

Participants
Kenson Coupet (SFWMD)
Carlos De Rojas (SFWMD)
Vilma Croft (HNTB)
Brian McCarthy (HNTB)
Sam Chiu (HNTB)

MEETING MINUTES

1. Brian McCarthy (HNTB) provided a general project description of the project. Along I-95, the project extends from south of SW 10th St to north of Hillsboro Blvd and includes capacity and safety improvements. Along SW 10th St, the project extends from east of FAU Research Park Blvd to west of Military Trail and proposes elevated express lanes to connect I-95 and the Turnpike.
2. Brian stated that all roadway improvements, west of the railroad tracks along SW 10th St, flow to the Broward County Water Control District #2 (BCWCD#2) C-2 canal. The adjacent FDOT project (SW 10th St Connector; FPID 439891-1) will accommodate the treatment and attenuation needs in their project. Carlos De Rojas (SFWMD) asked if the connector project will be constructed first or concurrently to ours. Sam Chiu (HNTB) stated that since both projects are still in the Project Development & Environment Phase, the construction schedule has been not determined. HNTB will inform FDOT of the need that the this project will need to have the stormwater improvements from the connector project built before or concurrently to ours.
3. Carlos asked if FDOT plans on submitting a conceptual permit for this project. Sam stated that FDOT typically obtains an individual permit for each project; however, FDOT will determine the permitting approach/type at a later date.
4. Brian asked if SFWMD was aware of any known flooding issues. Carlos wasn't aware of any flooding issues but that we should verify with FDOT and Broward County. Sam added that Broward County wasn't aware of any flooding issues from the previous coordination call.
5. Kenson Coupet (SFWMD) asked if FDOT will have acquired all offsite parcels prior to submitting a permit application. Sam stated that according to FDOT's typical right-of-way acquisition schedule, FDOT generally does not acquired all the necessary parcels by the time of permitting, given the State is an entity having the power of eminent domain and condemnation authority. If there are changes due to right-of-way acquisition after the permit issuance, FDOT typically would apply for a permit modification. Carlos stated a special condition could be added to the permit if the offsite parcels weren't acquired by permit issuance.
6. Brian asked if SFWMD would allow the majority of treatment for the project to occur in the Hillsboro Blvd interchange since there was limited space available in the SW 10th St interchange. Also, Brian mentioned the plan was to pursue compensatory treatment for the new impervious area along the areas of I-95 that

wasn't being treated. Carlos mentioned it would be okay, but to maximize the treatment as much as possible in the SW 10th St interchange. Also, Carlos emphasized that if pursuing compensatory treatment, to ensure that the impervious area hasn't already been treated in another project.

Brian McCarthy

From: de Rojas, Carlos <cderojas@sfwmd.gov>
Sent: Monday, February 18, 2019 10:37 AM
To: Brian McCarthy
Cc: Vilma Croft; Hong Chiu
Subject: RE: 436964-1 SFWMD Floodplain Compensation

Hi Brian,

Yes as to what you describe. As discussed treatment and attenuation ponds can count towards the floodplain compensation.

Thanks

Carlos

Carlos de Rojas, P.E.
Section Leader
Environmental Resource Bureau
South Florida Water Management District
561-682-6505

From: Brian McCarthy <btmccarthy@HNTB.com>
Sent: Monday, February 18, 2019 8:09 AM
To: de Rojas, Carlos <cderojas@sfwmd.gov>
Cc: Vilma Croft <vcroft@HNTB.com>; Hong Chiu <htchiu@HNTB.com>
Subject: 436964-1 SFWMD Floodplain Compensation

Hi Carlos,

Thank you for speaking with me on Friday.

HNTB is working with FDOT on a project in Broward County along I-95 from SW 10th St to the Hillsboro Canal (FPID# 436964-1).

To recap our conversation, removing existing ground for a treatment/attenuation pond can also be counted toward floodplain compensation. Essentially, we can "double dip" for 1 pond. For instance, if the SHW is at elevation 5 ft and the existing ground is at elevation 10 ft and if we're proposing a storm water treatment/attenuation pond that has pond bottom at elevation 5 ft and a top of berm of elevation 10 ft, then the 5 ft of excavation (cut) to generate the pond's treatment/attenuation volume can also be counted toward (double dip) floodplain compensation volume.

Please let me know if I have said anything incorrectly.

Thanks again for your time,
Brian

Brian McCarthy, PE
Stormwater Engineer
Drainage
Tel (813) 498-5160 **Email** btmccarthy@hntb.com

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APPENDIX F:

STRAIGHT LINE DIAGRAMS

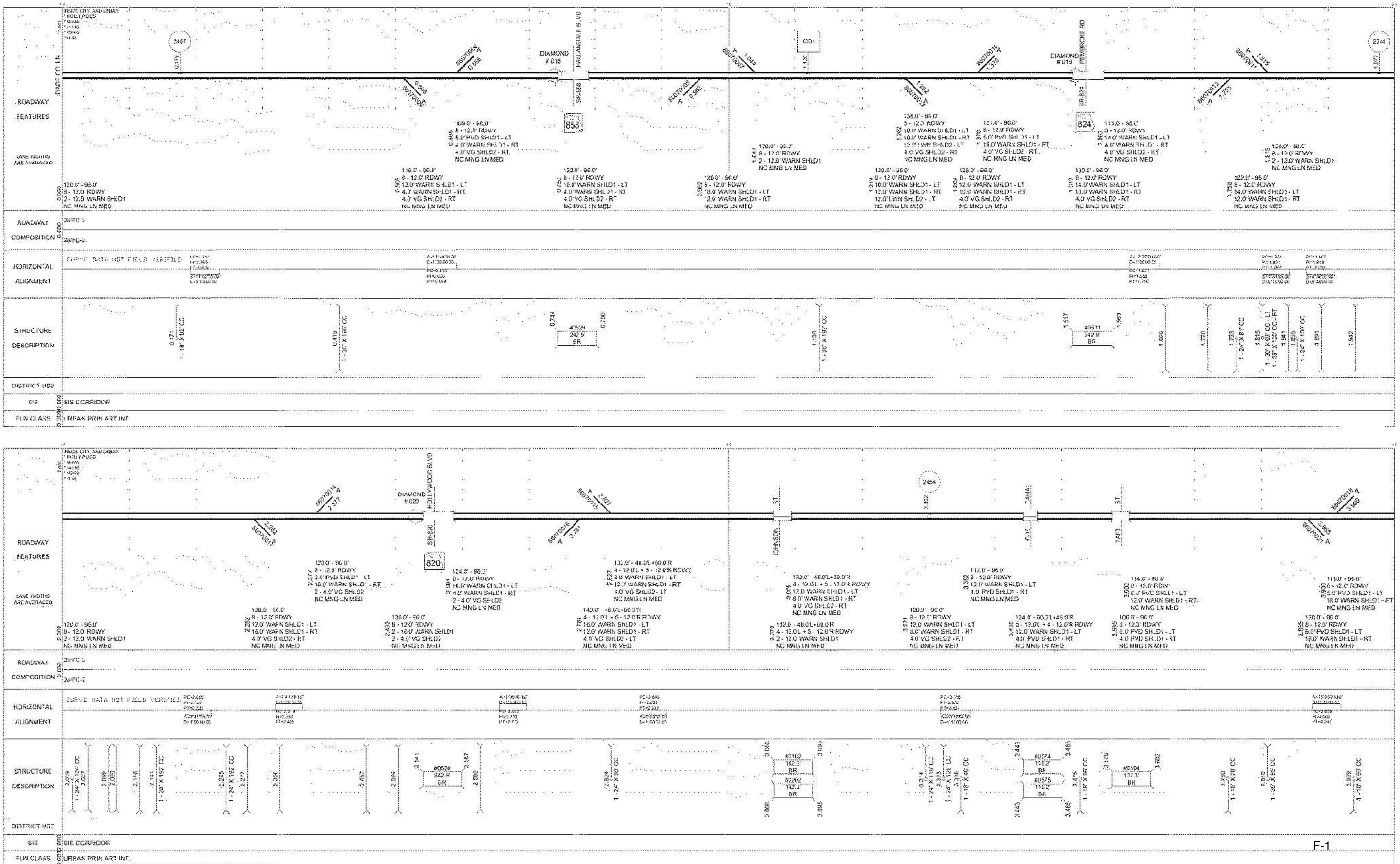
FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

	TV INV	SLD REV
DATE	10/03/2014	10/17/2014
BY	CTS	CTS

BMP	EMP	INV	SLD REV
000.000	008.105	03/06/2017 FTE	03/23/2017 FTE
010.370	050.578	09/30/2016 TDOT-04	09/30/2016 TDOT-04
013.892	015.284	06/02/2016 DOE 2016 PT	06/02/2016 CTS

SECTION STATUS	INT. / US ROUTE NO	STATE ROAD NO	COUNTY	DISTRICT	ROADWAY ID	SHEET NO
02	I 95	SR 9	BROWARD	04	86070000	1 OF 7



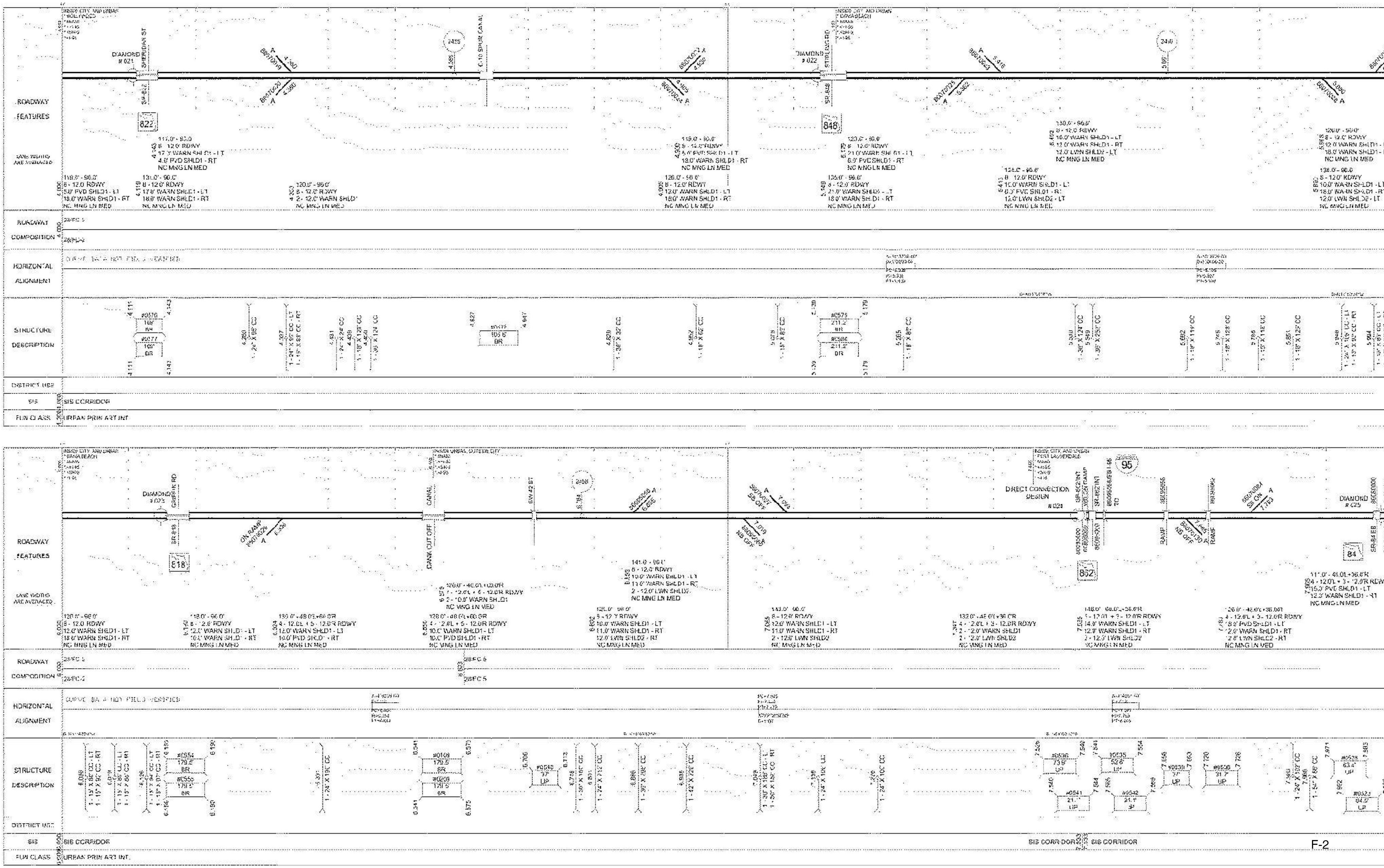
Version: 1.4.2.24 03/23/2017

	EXTR INV	RD INV	BMP	EMP	INV	RD HIST
DATE	10/03/2014	10/07/2014	000.000	006.105	03/06/2017 FTE	03/23/2017 FTE
BY	CTS	CTS	010.578	015.578	09/30/2016 FDOT	09/30/2016 FDOT
			013.892	015.284	08/02/2016 DOE 2016	08/02/2016 CTS

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT / US ROUTE NO	STATE ROAD NO	COUNTY	DISTRICT	ROADWAY ID	SHEET NO
02	I 95	SR 9	BROWARD	04	86070000	2 OF 7



Version: 1.4.2.24 03/23/2017

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. & US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO.
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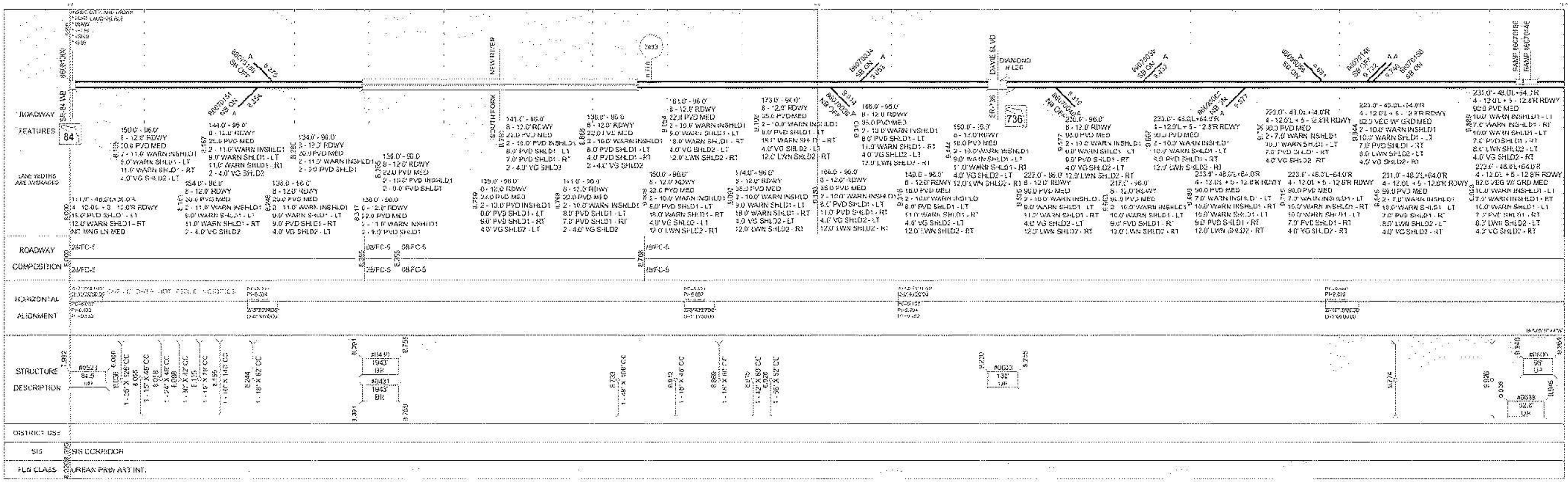
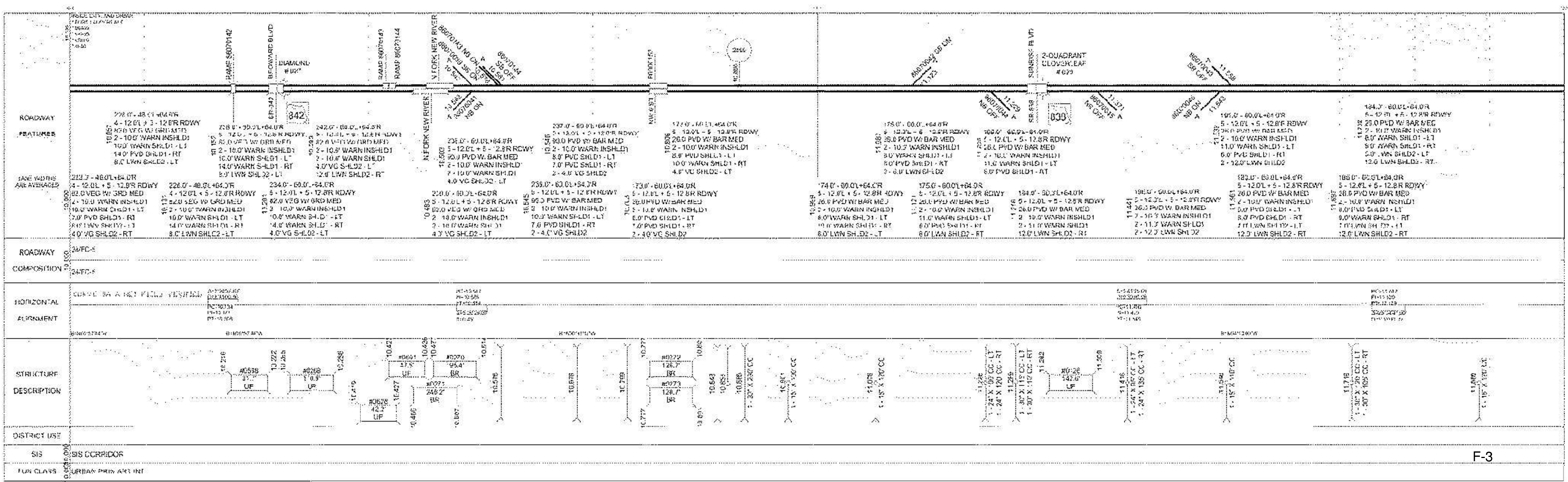
	CREATED	UPDATED
DATE	10/03/2014	10/17/2014
BY	CTS	CTS





F-3

Version: 1.4.2.24 03/23/2017

FLORIDA DEPARTMENT OF TRANSPORTATION
STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT or US ROUTE NO	STATE ROAD NO	COUNTY	DISTRICT	ROADWAY ID	SHEET NO
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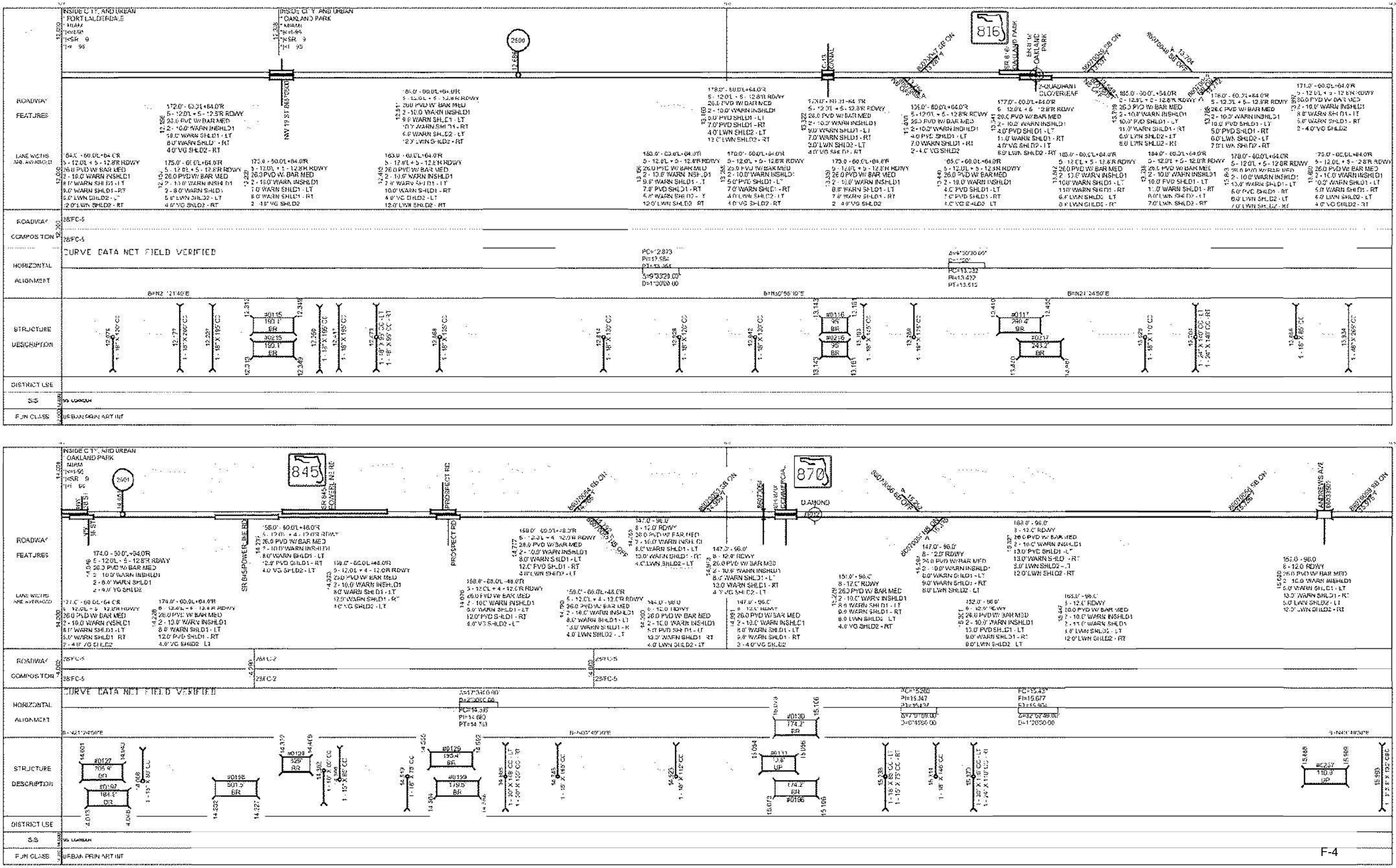
	SYS INV	SLD REV
DATE	10/02/2014	10/17/2014
BY	CTS	CTS



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DATE	10/03/2014	10/17/2014
BY	CTS	CTS

BMP	EMP	INV	SLD REV
0.000	025.334	FFC-121/124	03/04/2015 FDOT-D4
020.500	025.334	12/16/2014 FDOT-D4	12/16/2014 fdot-d4

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
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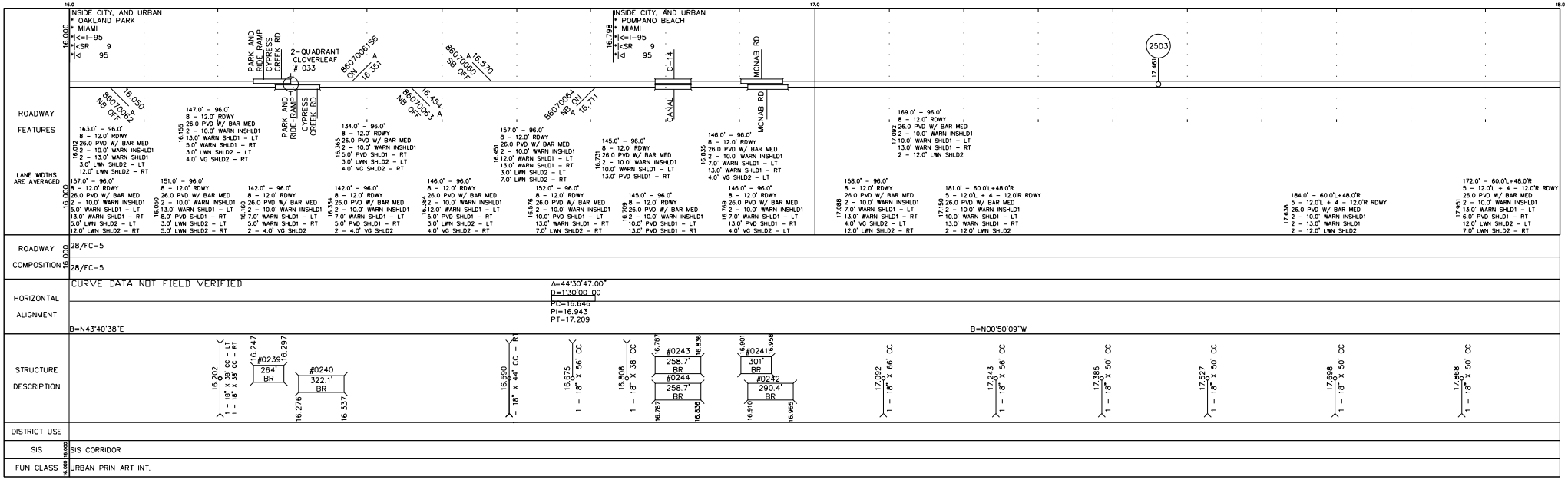

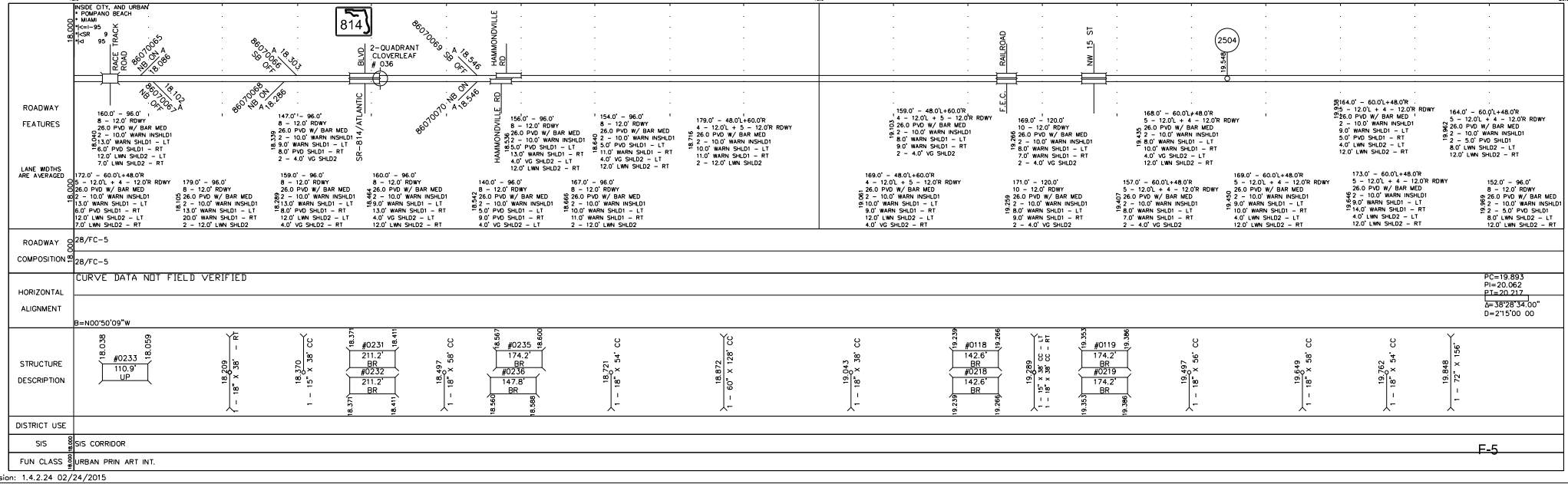

Version: 1.4.2.24 02/24/2015

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DATE	10/03/2014	10/17/2014
BY	CTS	CTS

BMP	EMP	INV	SLD REV
020.508	024.272	06/25/2015 FDOT-D4	06/25/2015 FDOT-D4
0.000	025.334	FFC-121/124	03/04/2015 FDOT-D4
020.500	025.334	12/16/2014 fdot-d4	12/16/2014 fdot-d4

FLORIDA DEPARTMENT OF TRANSPORTATION

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SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
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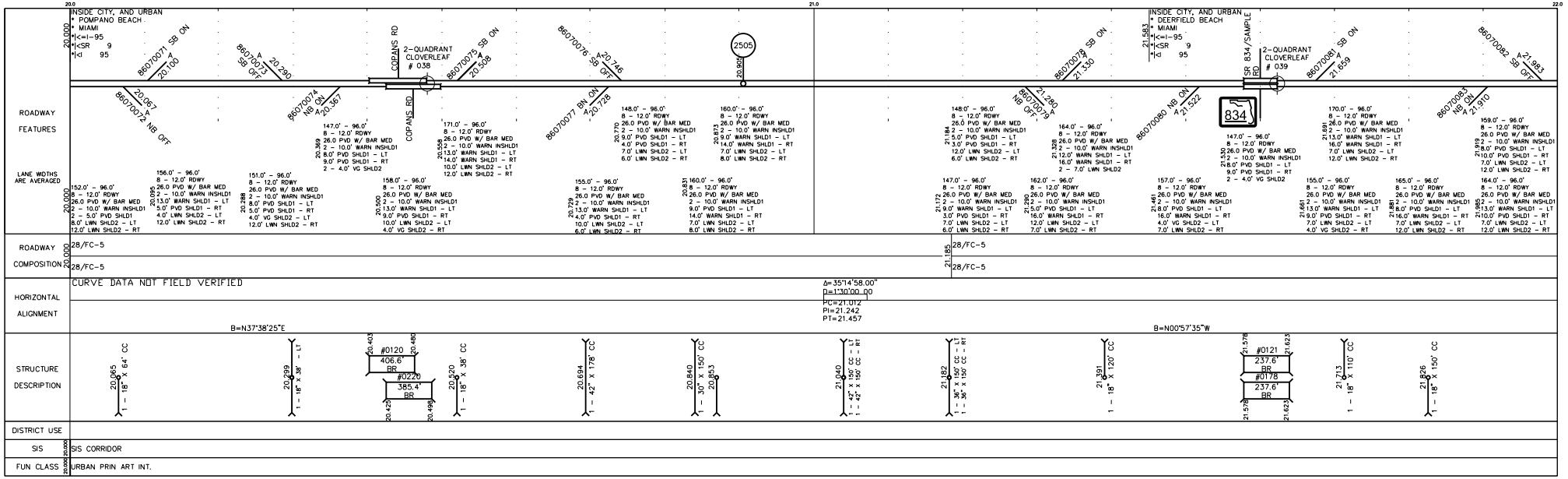

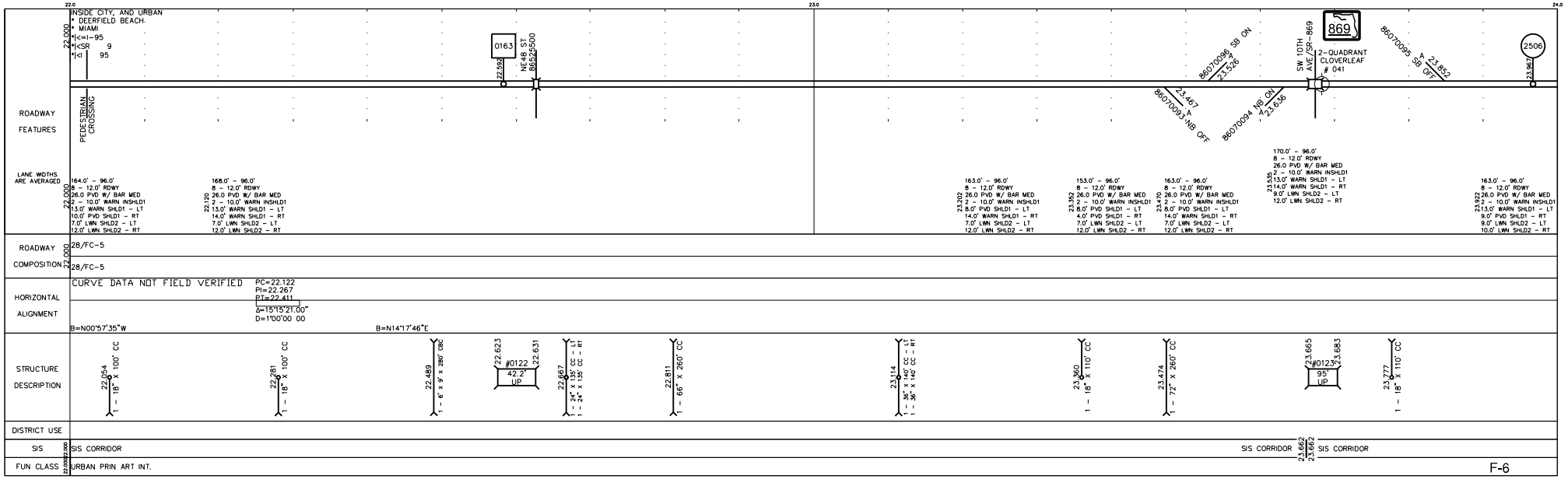

Version: 1.4.2.24 02/24/2015

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BY	CTS	CTS	0.000	025.334	FFC-121/124	03/04/2015 FDOT-D4
			020.500	025.334	12/16/2014 fdot-d4	12/16/2014 fdot-d4

FLORIDA DEPARTMENT OF TRANSPORTATION

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SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
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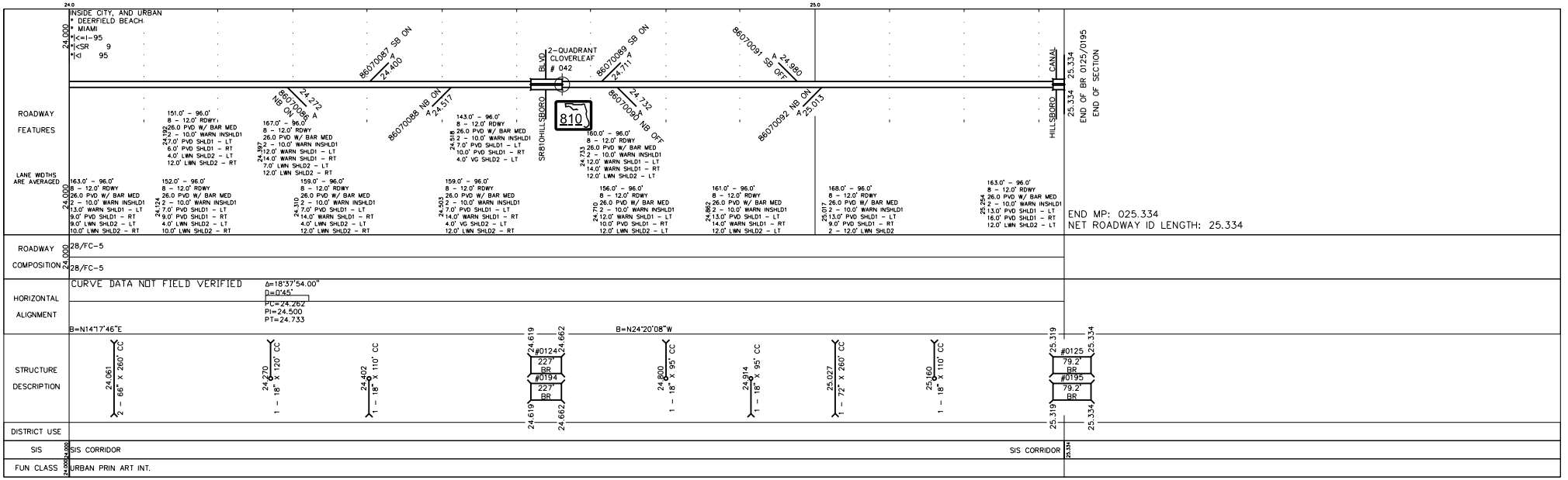

Version: 1.4.2.24 02/24/2015

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BY	CALTRAN	CALTRAN				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
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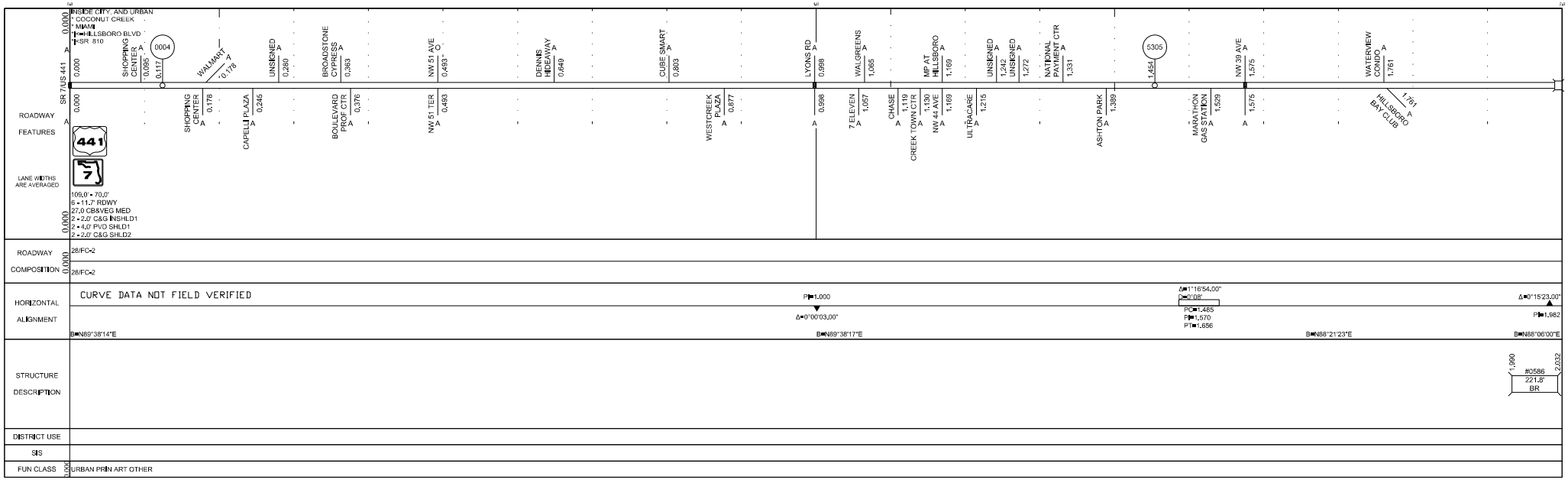

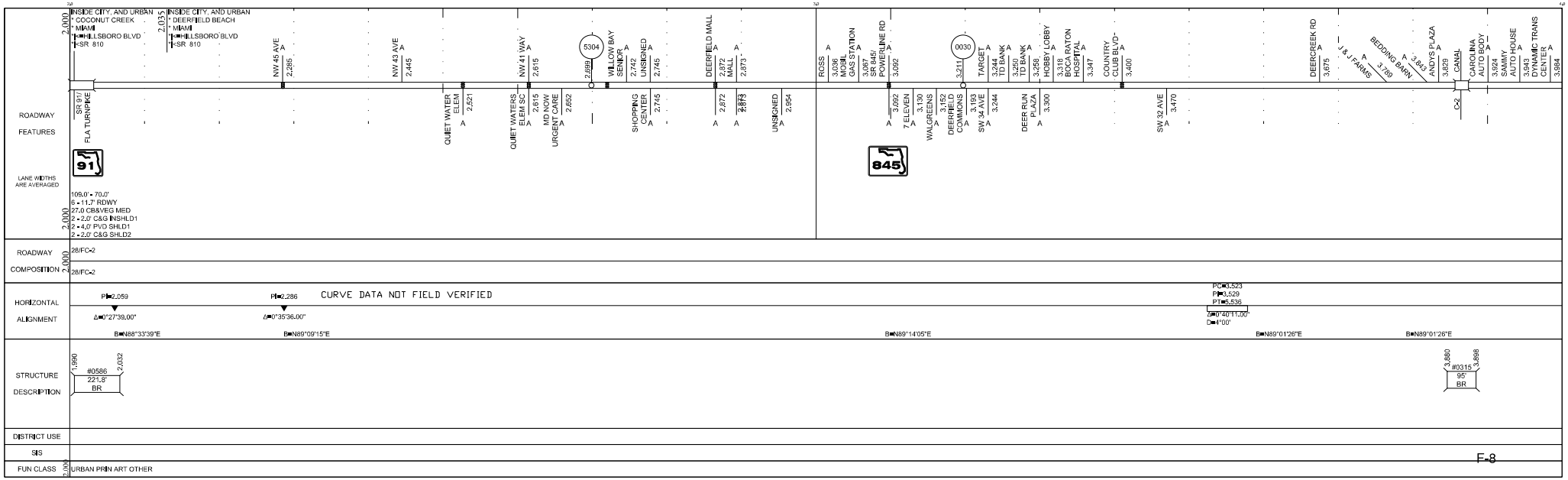

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BY	CALTRAN	CALTRAN

BMP	EMP	INV	SLD REV
004.635	006.955	07/31/2018 FRA	08/24/2018 FRA
006.525	006.541	08/21/2018 FDOT D4	08/21/2018 FDOT D4
000.000	007.823	06/12/2018 CALTRAN	06/12/2018 CALTRAN

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

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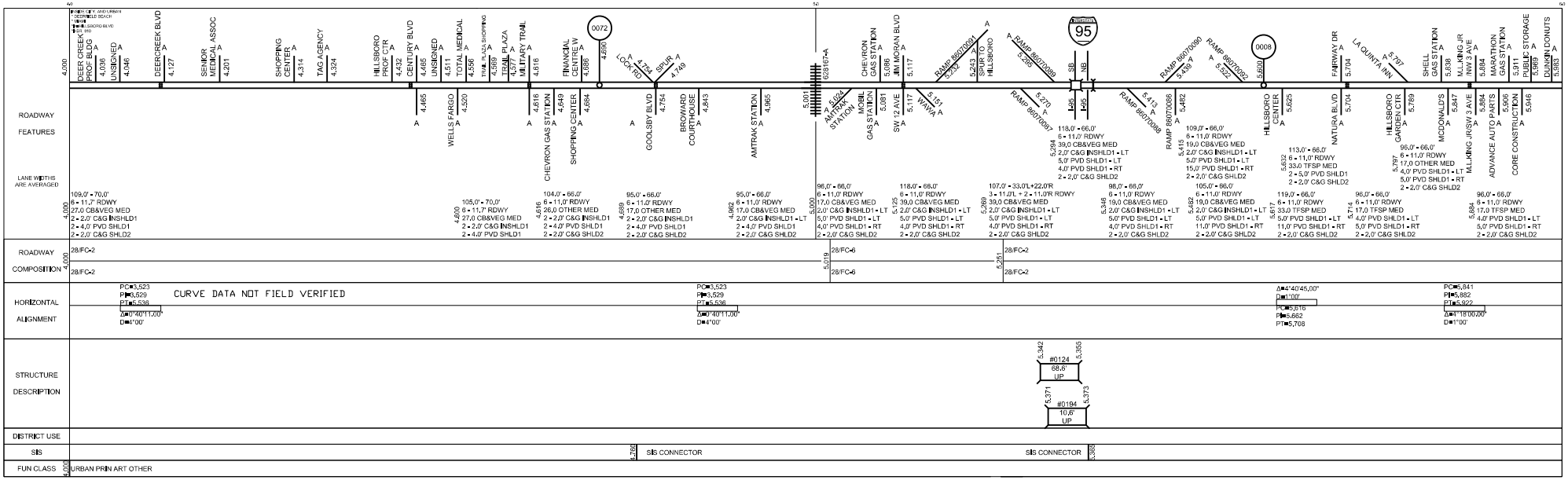

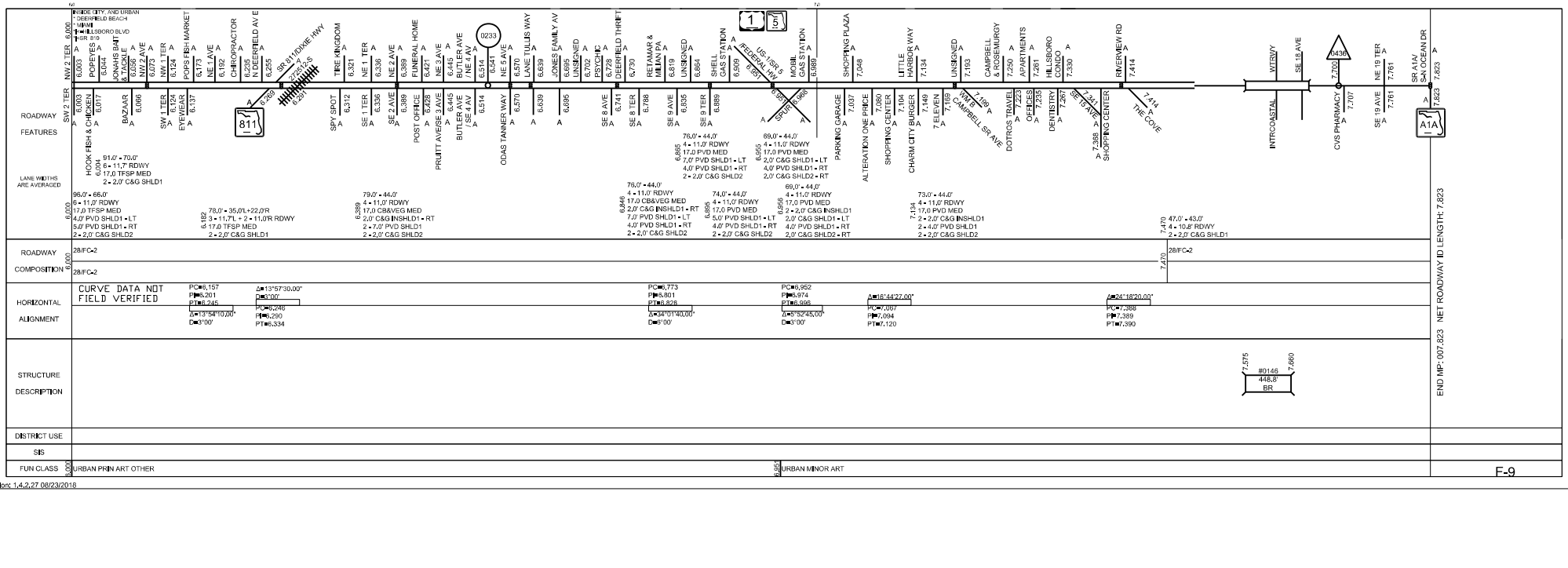

Version: 1.4.2.27 08/23/2018

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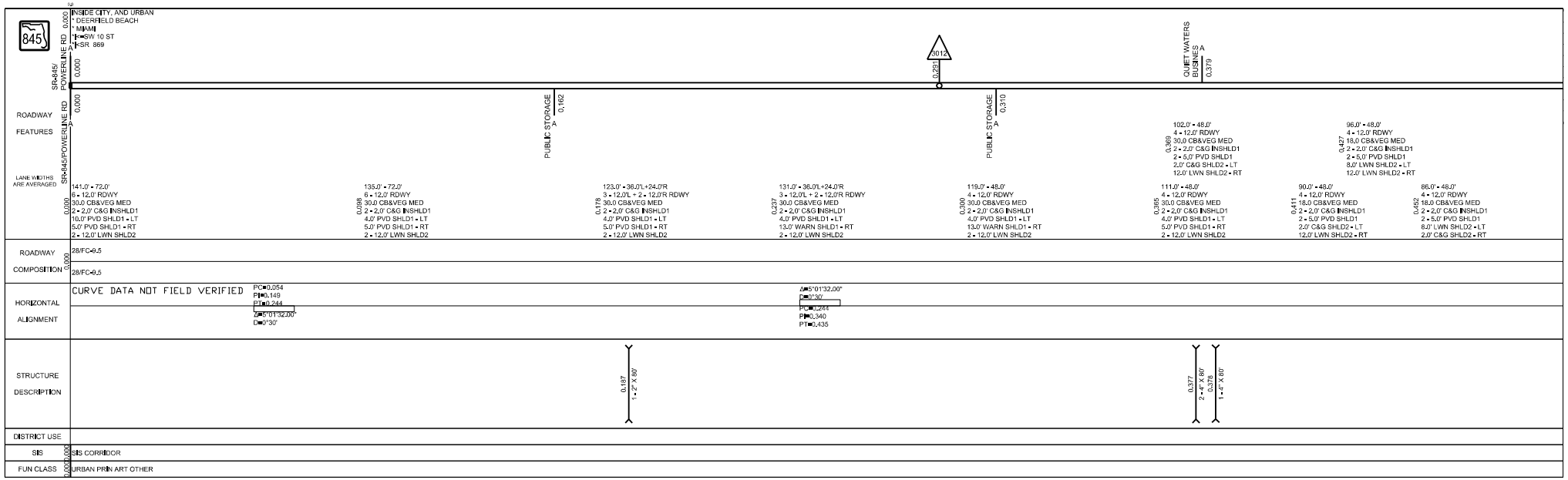
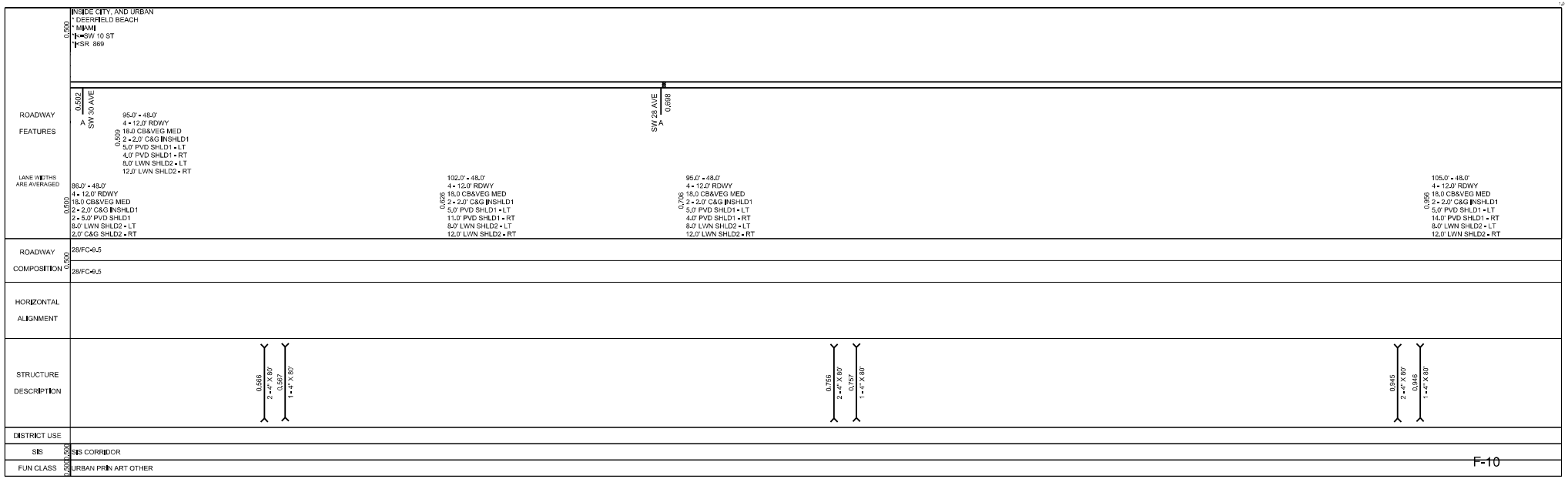
DATE	10/19/2018	11/13/2018				
BY	CTS Engineering	CTS Engineering				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO.
12		SR 869	BROWARD	04	86012000	1 OF 3





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DATE	10/19/2018	11/13/2018				
BY	CTS Engineering	CTS Engineering				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
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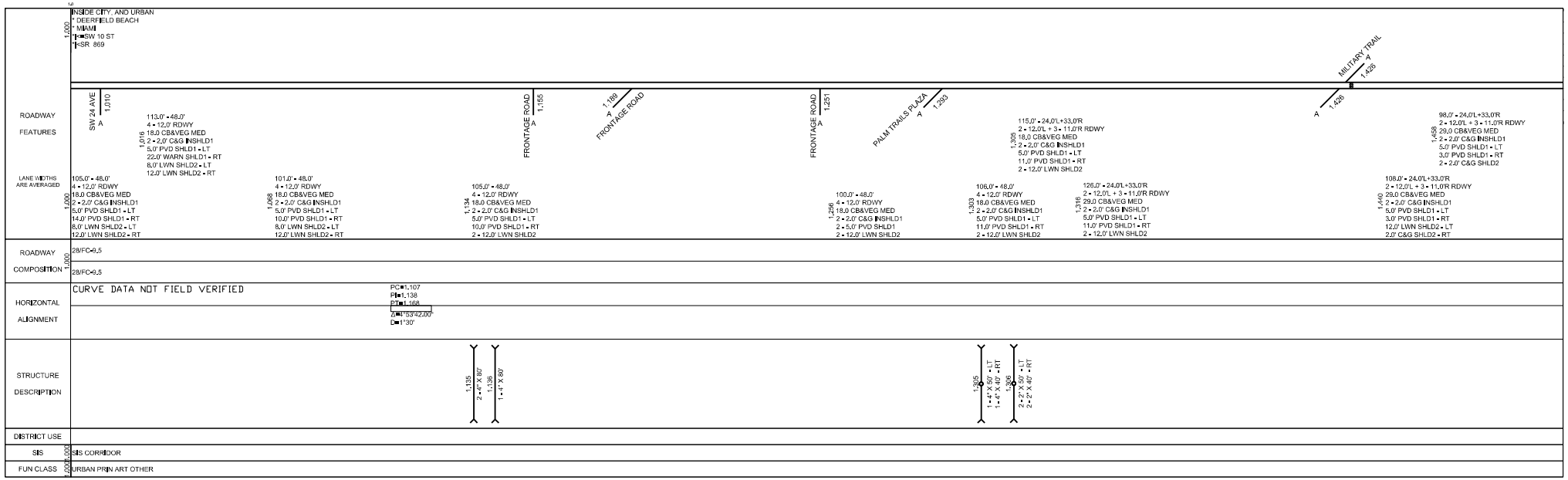

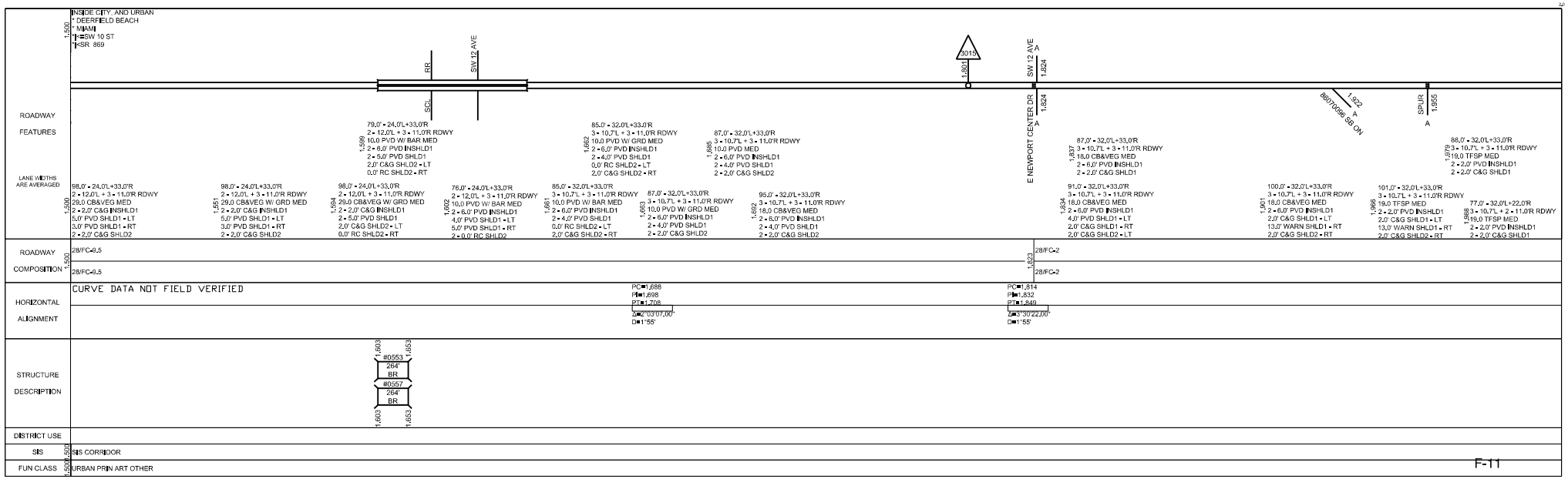

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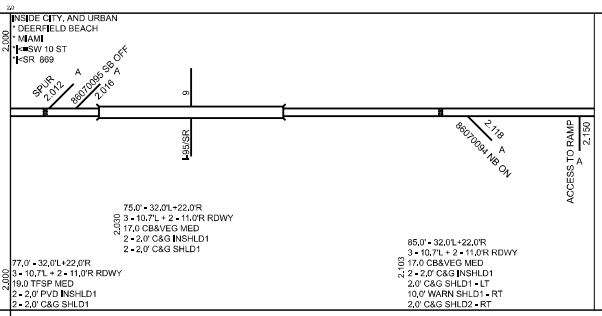
DATE	10/19/2018	11/13/2018				
BY	CTS Engineering	CTS Engineering				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
12		SR 869	BROWARD	04	86012000	3 OF 3

ROADWAY FEATURES



ACTIVE OFF THE SHS
(MP 2.152 TO MP 2.540)

ROADWAY COMPOSITION

2.000 28/FC-2

28/FC-2

HORIZONTAL ALIGNMENT

STRUCTURE DESCRIPTION

DISTRICT USE

SIS

2.000 SIS CORRIDOR SIS CORRIDOR 2.061

FUN CLASS

2.000 URBAN PRIN ART OTHER

ROADWAY FEATURES

ACTIVE OFF THE SHS
(MP 2.152 TO MP 2.540)

END MP: 002.540
NET ROADWAY ID LENGTH: 2.152

ROADWAY COMPOSITION

HORIZONTAL ALIGNMENT

STRUCTURE DESCRIPTION

DISTRICT USE

SIS

FUN CLASS

Version: 1.4.2.27 11/13/2018