



March 2025

LOCATION HYDRAULICS REPORT

I-95/State Road (SR) 9 Project Development and Environment (PD&E) Study
From South of SR 860/Miami Gardens Drive to North of Broward County Line
Miami-Dade County, Florida

Financial Management Number: 414964-1-22-01
Federal Aid Project Number: N/A
Efficient Transportation Decision Making (ETDM): 14419

DISTRICT VI



The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022 and executed by the Federal Highway Administration and FDOT.

Location Hydraulics Report

Florida Department of Transportation

District Six

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1 INTRODUCTION

This roadway project entails providing additional express and general-use lanes on I-95/SR 9 from south of SR 860/Miami Gardens Drive (MGD) to north of the Broward County Line and implementing interchange improvements at SR 860/Miami Gardens Drive and CR 854/Ives Dairy Road (IDR) within Miami-Dade County. The project study area is shown on the project location map (see **Figure 1**).

The improvements proposed as part of the project stem from the Refined Build Concept that was developed as part of the Interstate 95 Corridor Planning Study, conducted by the FDOT in May 2019, that assessed enhancements along the length of the I-95/SR 9 corridor within Miami-Dade County from US 1/SR 5 (Mile Post 0.000) to the Broward County Line. As such, this project is part of a larger effort to improve the I-95/SR 9 corridor within Miami-Dade County and regionally within Broward and Palm Beach Counties.

Within the project limits, I-95/SR 9 is classified as 'Urban Principal Arterial Interstate' and consists of six to eight general use lanes and two to four express lanes; the typical section varies throughout the project segment. This particular section of the corridor is located north of the Golden Glades Interchange (GGI) in northern Miami-Dade County and traverses five U.S. Census Designated Places, including North Miami Beach, Ojus, Ives Estates, Pembroke Park, and Hallandale Beach. It connects to SR 860/Miami Gardens Drive, an important east-west facility within northern Miami-Dade County.

It should be noted that the greater I-95/SR 9 corridor is part of Florida's Strategic Intermodal System (SIS) highway network and is a designated state hurricane evacuation route. In addition, I-95/SR 9 serves a critical role in facilitating the north-south movement of traffic in southeast Florida as one of two major expressways (Florida's Turnpike being the other) that connect the major employment centers and residential areas between Miami-Dade, Broward, and Palm Beach Counties. The corridor traverses dense urban areas with predominantly commercial and residential uses, including downtown Miami.

Overall, the project will offer enhanced mobility options for motorists and transit users as it will provide additional capacity along the I-95/SR 9 corridor throughout northern Miami-Dade County. Consistent with the existing managed lanes system on I-95/SR 9, the additional express lanes are anticipated to operate using variable toll pricing based on congestion to optimize traffic flow.

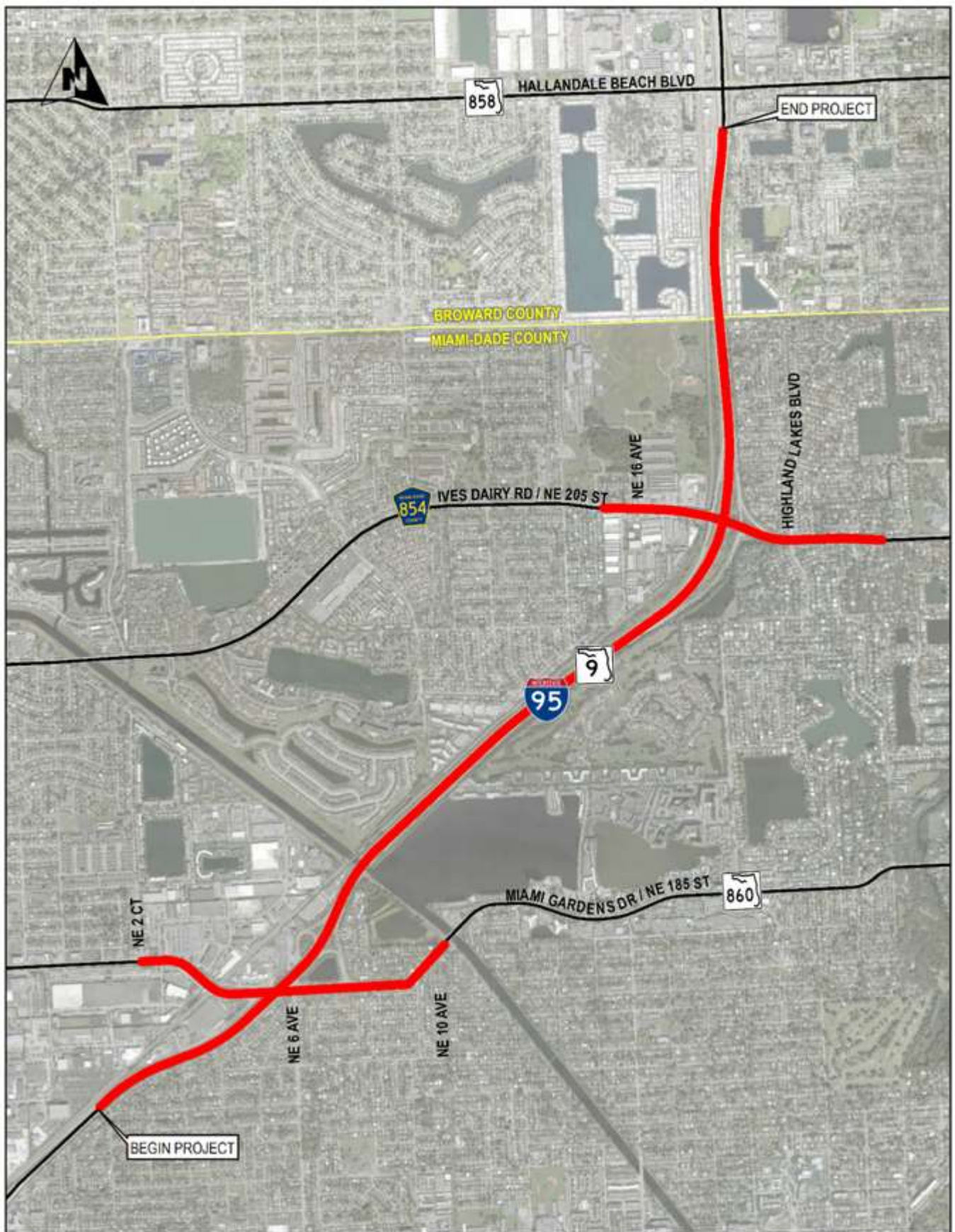


Figure 1: Project Location Map

1.1 Purpose and Scope

The following supports the Purpose and Need for this study, which was screened through the FDOT projects ETDM Programming tool:

- Address the deficient operational capacity and relieve existing/future congestion along the I-95/SR 9 corridor
- Preserve the operational integrity and regional functionality of I-95/SR 9 (and, therefore, the regional transportation network) by complementing similar corridor improvements throughout Miami-Dade, Broward, and Palm Beach Counties
- Enhance emergency evacuation and response times

1.2 Drainage Basin

This bridge replacement project is located within the C-9 Basin. This drainage basin has a drainage area of approximately 98 square miles, and it can be divided into two sub-basins, which are the C-9 East Basin and the C-9 West Basin. The SFWMD Basin Map for the sub-basins is provided in Appendix A. The C-9 Canal drains into Dumbfoundling Bay approximately 3 miles downstream of the proposed I-95 Bridge over C-9 Canal project location. The land use for the C-9 Basin is mostly developed urban area. The I-95 bridge over the C-9 Canal is located between two control structures. S-29 is a gated spillway located downstream of the project just east of US 1. A headwater stage of 2.0 feet is maintained at S-29. S-30 is located upstream of the project, which is a gated spillway located west of US 27. A location map presented in Appendix A of this report shows the locations of the proposed bridge crossing as well as the locations of structures S-29 and S-30.

2 Project Alternatives

2.1 No-Build Alternative

The No-Build Alternative proposes to keep the existing corridor into the future without other improvements, except for routine maintenance. Planned and approved adjacent projects in the area (both to the south at the Golden Glades Interchange and to the north in Broward County) are considered, without any proposed changes within the limits of this project. No traffic capacity, operation, safety, mobility, or evacuation improvements would be implemented to the I-95 mainline, the Express Lanes, or the two arterials within the study area. The effect of the No-Build Alternative includes the continuation of existing delays and congested traffic conditions. Also, since travel demand and truck traffic are projected to increase over the next 20 years, given the continued growth expected in this area of Miami-Dade County, under this alternative,

congestion and delay will worsen; levels of service on the arterials will deteriorate; and no related environmental impacts, such as traffic noise levels, will be addressed. The No-Build Alternative will not require any acquisition of right-of-way and it will not impact any parks or trail access. This alternative is considered to be a viable alternative to serve as a baseline comparison against the proposed Build Alternatives.

2.2 Build Alternatives

Build Alternative #1 will provide two express lanes throughout the entire corridor; will add one additional general use lane in each direction; will reconfigure the SR 860/Miami Gardens Drive interchange; will provide a Diverging Diamond Interchange configuration at CR 854/Ives Dairy Road; will maintain at-grade access to I-95 from SR 860/Miami Gardens Drive; will add bicycle lanes and sidewalks along SR 860/Miami Gardens Drive; and will add an eastbound through lane, bicycle lanes, and one sidewalk along CR 854/Ives Dairy Road.

Build Alternative #2 will provide two express lanes throughout the entire corridor; will add one additional general use lane in each direction; will introduce braided ramp bridge access for the express lanes; will reconfigure the SR 860/Miami Gardens Drive interchange, including the addition of second level bridges; will provide a Single Point Urban Interchange configuration at CR 854/Ives Dairy Road; will provide grade-separated bridge access to I-95 from SR 860/Miami Gardens Drive; will add bicycle lanes and sidewalks along SR 860/Miami Gardens Drive; and will add an eastbound through lane, bicycle lanes, and two sidewalks along CR 854/Ives Dairy Road.

Build Alternative #3 will provide two express lanes throughout the entire corridor; will add one additional general use lane in each direction; will introduce braided ramp bridge access for the express lanes; will reconfigure the SR 860/Miami Gardens Drive interchange; will provide a Diverging Diamond Interchange configuration at CR 854/Ives Dairy Road; will provide grade-separated bridge access to I-95 from SR 860/Miami Gardens Drive; will add bicycle lanes and sidewalks along SR 860/Miami Gardens Drive; and will add an eastbound through lane, bicycle lanes, and one sidewalk along CR 854/Ives Dairy Road.

3 DRAINAGE SYSTEM IMPROVEMENTS

The project is mostly located in unincorporated Miami-Dade County with smaller portions located in the City of North Miami Beach, City of Hallandale Beach, and the Town of Pembroke Park, the latter two of which are municipalities within Broward County. The project is also within the jurisdictional boundary of the South Florida Water Management District (SFWMD), Miami-Dade County Department of Regulatory and Economic Resources (DRER), and Broward County Environmental Protection and Growth Management Department (EPGMD).

SFWMD, DRER, and EPGMD have established several criteria for water quality, depending on the proposed type of stormwater treatment facility. Existing facilities provide water quality treatment and attenuation of roadway runoff via dry and wet detention/retention ponds. All proposed stormwater management facilities will provide the necessary water quality treatment volume and limit the post-development peak discharge rate into the Biscayne Canal (C-8), Snake Creek Canal (C-9), the Oleta River, and the Intracoastal Waterway to the pre-development peak discharge rate. Water quality treatment and discharge attenuation will be provided via existing and proposed dry and wet detention/retention ponds, French Drains, and EcoVault Structures (or approved equal). EcoVault Structures (or approved equal) are required to supplement the provided water quality treatment due to the limited right-of-way within the project limits available for retention areas, and any areas of poor soil infiltration rates for any proposed French drains.

Based on the conceptual drainage design evaluation for the proposed improvements, the stormwater management facilities [including swales, detention/retention areas and ponds, French drains, and EcoVault Structures (or approved equal)] will meet FDOT drainage criteria as well as SFWMD permit criteria. The improvements will have no negative drainage impacts to the surrounding areas and the proposed stormwater management facilities will have the capacity to adequately treat and attenuate roadway runoff within the project limits. Therefore, water quality impacts to downstream receiving waters are not anticipated to occur.

3.1 Description of Drainage Systems

System 1 – I-95/SR 9 From the Begin Project to Approx. 200' South of Miami Gardens Dr.

Stormwater runoff will be directed towards the south via a closed storm sewer network and into the Golden Glades Interchange drainage systems, which are currently being proposed for improvement and are to be constructed prior to this subject project. The Golden Glades Interchange drainage systems will consist of interconnected dry retention ponds and French drains, with an emergency overflow into the SFWMD Biscayne Canal (C-8). All water quality and pre-post attenuation criteria requirements are being designed into the Golden Glades Interchange drainage systems, and will be provided entirely within the interconnected dry retention ponds and French drains within the interchange itself. This drainage system is located within the SFWMD C-8 Drainage Basin (see Appendix C).

System 2 – I-95/SR9 From Approx. 200' South of Miami Gardens Dr. to Miami Gardens Dr.

Stormwater runoff from this drainage system will be routed into a series of proposed French drains and EcoVault Structures (or approved equal) for both water quality and pre-post attenuation. The proposed French drain and EcoVault Structures (or approved equal) will be designed to be able to handle 100% of the stormwater runoff with no emergency overflow provided. There is no physical room with the right-of-way for any wet or dry retention ponds or swales and as such, French drains are the only viable method for disposal of the stormwater

runoff. This drainage system is located within the SFWMD C-9 East Drainage Basin (see Appendix C).

System 3 – I-95/SR9 From Miami Gardens Dr. to Snake Creek Canal (C-9)

Stormwater runoff will be directed towards the infield areas within the I-95/Miami Gardens Drive Interchange, which will act as dry retention ponds and be able to provide for the required water quality and pre-post attenuation prior to discharge through an EcoVault Structure (or approved equal) and over an emergency overflow weir into the SFWMD Snake Creek Canal (C-9). In addition, the capacity of the interchange infield areas will be increased through the use of proposed French drains in spot areas in order to ensure that all of the water quality and pre-post attenuation criteria are adhered to. This drainage system is located within the SFWMD C-9 East Drainage Basin (see Appendix C).

System 4 – I-95/SR9 From Snake Creek Canal (C-9) to Ives Dairy Rd.

Stormwater runoff will be routed into roadside swales and dry retention interchange infield areas within the Ives Dairy Road Interchange for water quality and stormwater attenuation treatment. The capacity of these roadside swales and interchange infield areas will need to be supplemented by proposed French drain and EcoVault Structures (or approved equal) in order to be able to meet the applicable water quality and attenuation criteria. An emergency outfall into the existing lake located in the southeast quadrant of the I-95/Ives Dairy Road Interchange will be provided for disposition of the excess stormwater runoff. This drainage system is located within the SFWMD C-9 East Drainage Basin (see Appendix C).

System 5 – I-95/SR9 From Ives Dairy Rd. to the End Project

Stormwater runoff will be routed directly onto swales adjacent to I-95 which will act as dry retention areas for the treatment of water quality and pre-post attenuation. In addition, due to limited right-of-way, proposed French drain and EcoVault Structures (or approved equal) will be added in order to supplement the capacity of the roadside swales and be able to meet all water quality and pre-post attenuation requirements. No emergency outfall will be provided for this drainage system. This drainage system is located within the SFWMD C-9 East Drainage Basin (see Appendix C)

3.2 FEMA Floodplain Compensation

The Federal Emergency Management Agency (FEMA) has produced Flood Insurance Rate Maps (FIRM) showing the locations of floodplains throughout the United States. A copy of the FIRM for the project areas are included in Appendix A of this report. In order to ensure that proposed developments do not adversely affect the flood levels of adjacent properties, it is required to compensate for any reduction in the storage capacity of the Base Floodplain (100 year floodplain) with an equivalent amount of storage elsewhere within the same floodplain.

The project lies within FEMA 100-year floodplain, within Zones AE, AH, and X with base flood elevations. Given the significant increase in storage within the corridor for stormwater management, there is no anticipated adverse floodplain impacts associated with this project. The modifications to the drainage systems due to this project are not anticipated to result in a significant change in capacity to carry floodwater, with minimal to no increase in flood heights and flood limits. Floodplain compensation analysis is included in Appendix B of this report.

There are no regulatory floodways within the PD&E study project limits and therefore no impacts to regulatory floodways are anticipated as a result of the project.

4 RISK ASSESSMENT

The project will result in only minimal encroachments to floodplains. These encroachments will be constrained to the limits described in Section 3 above. Encroachments resulting from the construction of the preferred alternative will be fully compensated within the proposed drainage systems to ensure there will be no increase or significant change to FEMA flood elevations and/or limits.

The proposed drainage systems will perform hydraulically in a manner equal to or greater than the existing systems, and floodplain surface elevations are not expected to increase. Thus, there will be no significant adverse impacts on natural and beneficial floodplain values. There will be no significant change in flood risk, and there will not be a significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that the encroachment is not significant. Floodplain area limits and calculations have been provided in Appendix B of this document.

APPENDIX A

SFWMD Drainage Basin Map

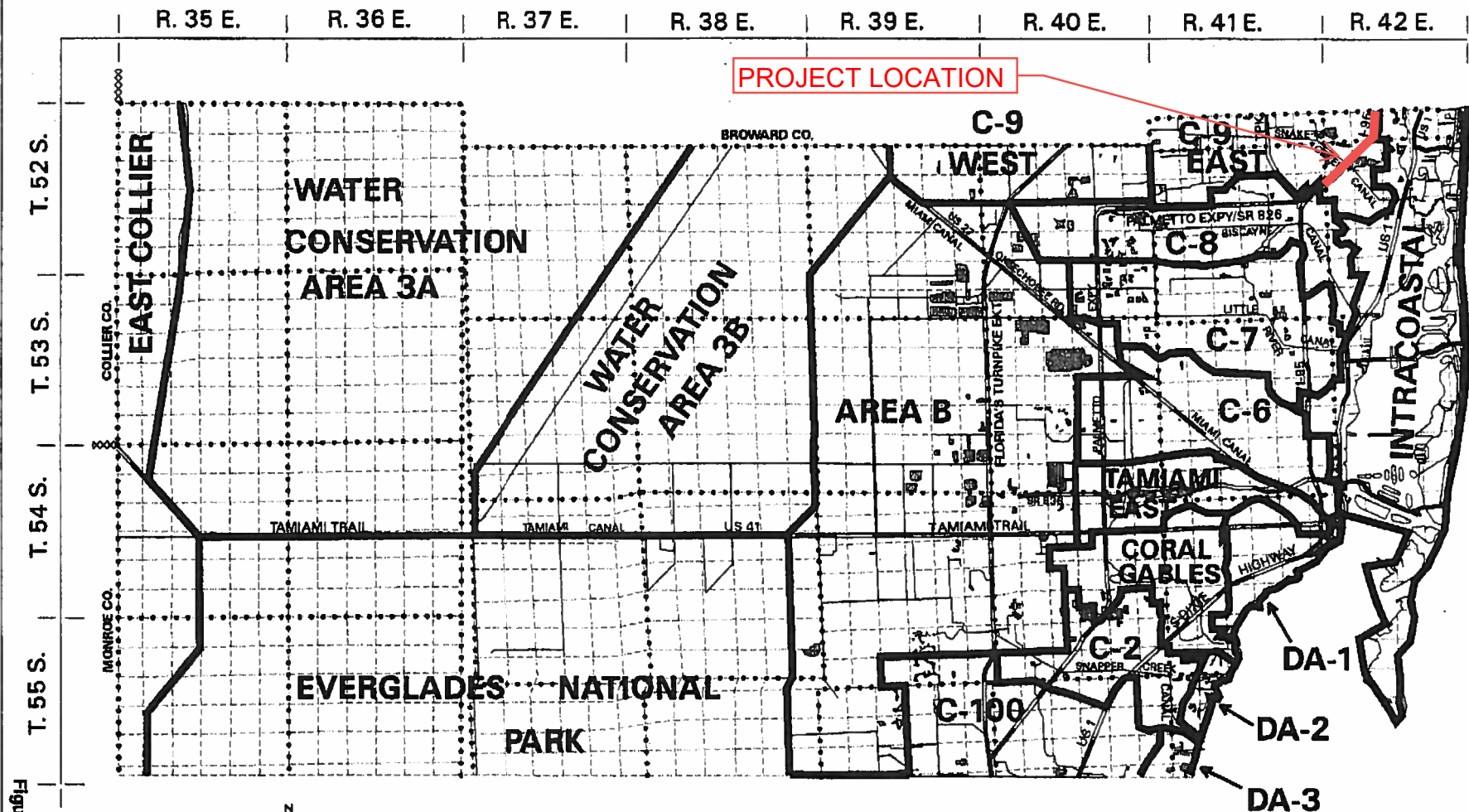
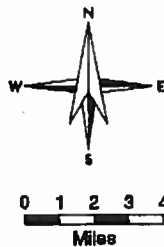


Figure B-11



DRAINAGE BASINS for NORTHERN MIAMI-DADE COUNTY, FL.



PORTION OF
MIAMI-DADE COUNTY
REPRESENTED ON MAP.



APPENDIX B

FEMA FIRM Maps

PROJECT ALIGNMENT



2 Federal Emergency Management Agency

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 **Readings** 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 report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent model-estimated elevations. These BFEs are intended for purposes of rating purposes only and should not be used as the source of flood elevation information. Accordingly, flood elevation data presented in the FIRM report should be utilized in conjunction with the FIRM for purposes of construction and floodplain management.

Coastal Base Flood Elevations shown on this map apply only to beachfront of 0.2 National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and 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 the preparation of this map was Florida State Plane east zone (FIPSZONE 9901). The horizontal datum was NAD 83, GRS80 spheroid. Differences in geographic projection or State Plane zones used in the production of FIMs 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 National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at sgs.noaa.gov/NGVD2011 or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NGS-12
National Geodetic Survey
SSAC-3, #9002
1305 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 benths.noaa.gov/benchmarks.

Base map information shown on this FIRM was provided in digital format by the Miami-Dade County Information Technology Department. These data were compiled at a scale of 1:3,000 from digital orthophotography dated 2001. Additional base map information was provided by the Cities of Aventura, Coral Gables, and Hialeah, the Town of Doral, and Miami-Dade County.

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

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

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

Contact the **FEMA Map Service Center** at 1-800-354-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-354-9627 and its website at flood.com/fema.gov.

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at www.fema.gov.

LEGEND

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

The 1% annual 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 Zone A, AE, AH, X, 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 Elevation determined.
- ZONE AH** Flood depths of 1 to 3 feet (localities areas of standing, Base Flood Elevation determined).
- ZONE AO** Flood depths of 1 to 3 feet (localities areas of standing, Base Flood Elevation determined).
- ZONE AV** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a levee system that is no longer functional. Users are encouraged to consult the Flood Insurance Study report for this jurisdiction for information on the status of the levee system.
- ZONE AW** Areas to be protected from 1% annual chance flood by a National Flood Protection System under construction; no Base Flood Elevation determined.
- ZONE V** Coastal flood zone with velocity based (wave action); no Base Flood Elevation determined.
- ZONE VE** Coastal flood zone with velocity based (wave action); no Base Flood Elevation determined.

FLOODWAY AREAS IN ZONE AE

Floodway areas in the channel of a stream are an adjacent floodplain area that must be kept free of encroachments to the 1% annual chance flood can be carried without unduly increasing the water height.

OTHER FLOOD AREAS

ZONE A 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 100 acres; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

Areas determined to be suitable for the 0.2% annual chance flood.

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.

PROPERTY BOUNDARY

Floodway boundary

Zone A boundary

CBRS and OPA boundary

Boundary during Special Flood Hazard Area study and boundary during Special Flood Hazard Area study of adjacent Base Flood Elevation; flood depths or wave action.

Base Flood Elevation and water elevation in feet

Base Flood Elevation value where within water area; elevation in feet

Refer to the National Geodetic Vertical Datum of 1929

Cross section line

Transect line

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83); UTM coordinates

100-meter Universal Transverse Mercator grid values; zone 17

100-foot grid scale; Florida State Plane coordinate system; Base zone (FIPSZONE 9901); Transverse Mercator projection

Bench mark data explanation in Notes to Users section of this FIRM panel

Kilometer scale

MAP REPOSITORY

Refer to listing of Map Repository in Notes to Users

EFFECTIVE DATE OF COUNTRYWIDE FLOOD INSURANCE RATE MAP

January 15, 1993

EFFECTIVE DATES OF REVISIONS TO THIS PANEL

March 2, 1994; May 19, 1994; July 19, 1994; No description of revision; see Notes to Users page in the Flood Insurance Study report

Revisions 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Revisions to this map are indicated by a number in the Community Map Index 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 1-800-354-9616.

MAP SCALE 1" = 500'

200 400 600 800 1000 FEET

200 400 600 800 1000 METERS

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

MIAMI-DADE COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 129 OF 1031

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITIES

MIAMI-DADE COUNTY

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**Miami - Dade County
Unincorporated Areas
120635**

City of
Miami Beach
120686

NATIONAL FLOOD INSURANCE PROGRAM	FIRM	PANEL 9133L		
	FLOOD INSURANCE RATE MAP			
	MIAMI-DADE COUNTY, FLORIDA AND INCORPORATED AREAS			
	PANEL 133 OF 1031			
	(SEE MAP INDEX FOR FIRM PANEL LAYOUT)			
	<u>CONTENTS</u>			
	COUNTY	SHEETED	TOTAL	DATES
	MAYE DADE COUNTY	1-0000	9-10	L
	EAST-MAYE BEACH CITY			
	OF			
<p>Notes to User: The Map Number shown below should be used when ordering map orders. The Community Number shown above should be used when ordering the Community Map.</p>				
		MAP NUMBER 12086C0133L		
		MAP REVISED SEPTEMBER 11, 1989		
Federal Emergency Management Agency				

NATIONAL FLOOD INSURANCE PROGRAM	NFIP		PANEL 0133L	
	FIRM			
	FLOOD INSURANCE RATE MAP			
	MIAMI-DADE COUNTY, FLORIDA AND INCORPORATED AREAS			
	PANEL 133 OF 1031			
	(SEE MAP INDEX FOR FIRM PANEL LAYOUT)			
	CONTAINS			
	COMMUNITY			
	NAME: MIAMI COUNTY NORTH MIAMI BEACH CITY OF		NUMBER 0000 0100	
			PANEL 0100 0100	
		SHEET 0100 0100		

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



MAP NUMBER

12086C0133L

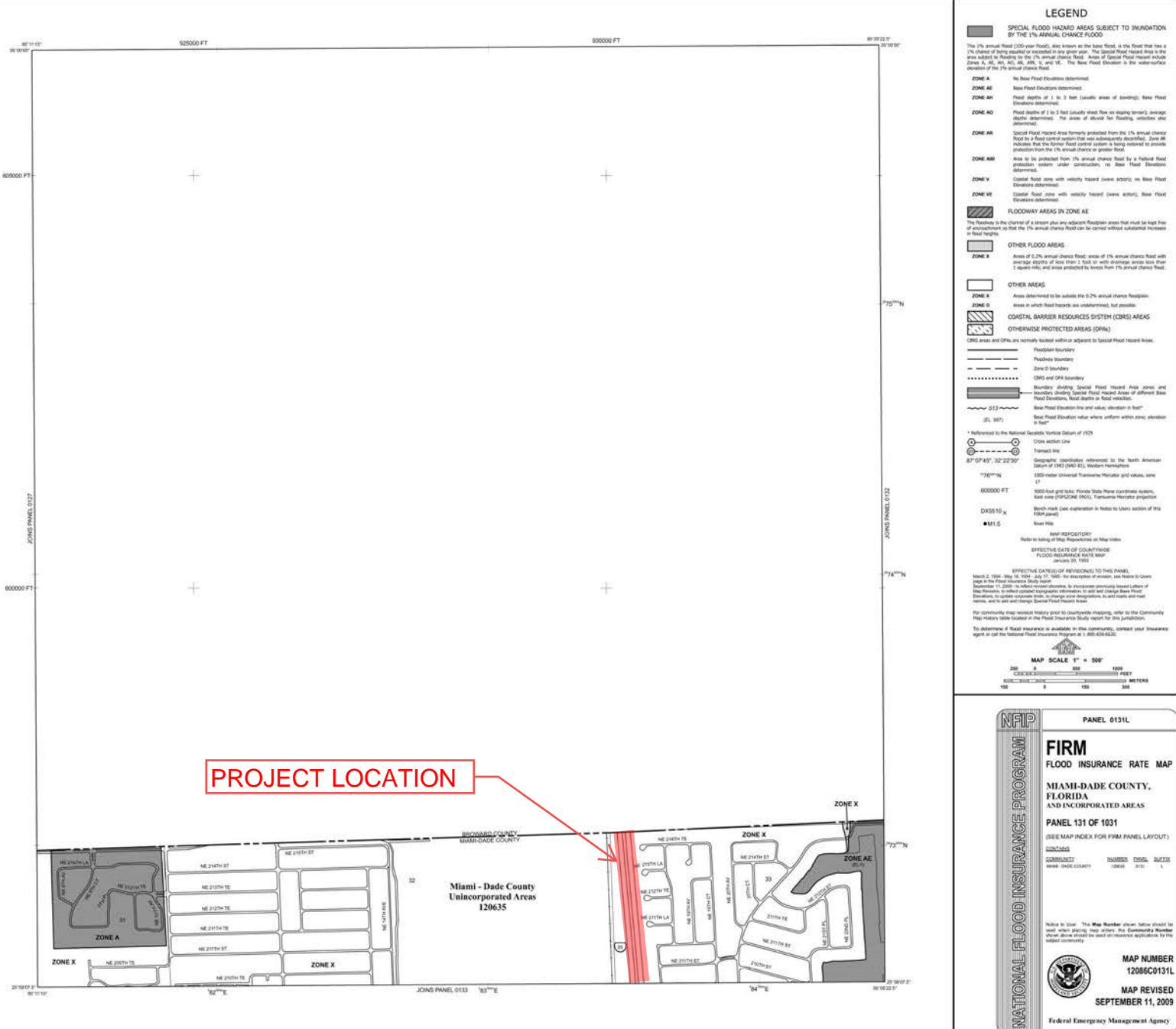
MAP REVISED

SEPTEMBER 11, 2009

Federal Emergency Management Agency

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.

PROJECT LOCATION



APPENDIX C

Floodplain Compensation Calculations

BUILD ALTERNATIVE #1

VOLUME AVAILABLE FOR FLOODPLAIN COMPENSATION

POND	AREA AT POND BOTTOM (= ELEV. 1.92 NAVD) (ACRES)	*AREA AT ELEV. 4.42 NAVD (ACRES)	STORAGE VOLUME (AC.-FT.)
2 (PARTIAL)	0.161	0.279	0.550
5	0.111	0.563	0.843
6	0.046	0.238	0.355
7 (PARTIAL)	0.304	1.527	2.289
8	0.068	0.347	0.519
9 (PARTIAL)	0.092	0.465	0.696

*Assume 1:4 Side Slopes

TOTAL: 5.251

From Approximately Station 582+30.00 to Approximately Station 622+00.00, the project is location within Zone AE with a Base Flood Elevation of 6.00 NGVD (= 4.42 NAVD)

BUILD ALTERNATIVE #2

VOLUME AVAILABLE FOR FLOODPLAIN COMPENSATION

POND	AREA AT POND BOTTOM (= ELEV. 1.92 NAVD) (ACRES)	*AREA AT ELEV. 4.42 NAVD (ACRES)	STORAGE VOLUME (AC.-FT.)
5 (PARTIAL)	0.071	0.150	0.276
6 (PARTIAL)	0.304	1.528	2.290

*Assume 1:4 Side Slopes

TOTAL: 2.566

From Approximately Station 582+30.00 to Approximately Station 622+00.00, the project is location within Zone AE with a Base Flood Elevation of 6.00 NGVD (= 4.42 NAVD)

BUILD ALTERNATIVE #3

VOLUME AVAILABLE FOR FLOODPLAIN COMPENSATION

POND	AREA AT POND BOTTOM (= ELEV. 1.92 NAVD) (ACRES)	*AREA AT ELEV. 4.42 NAVD (ACRES)	STORAGE VOLUME (AC.-FT.)
7 (PARTIAL)	0.093	0.210	0.379
8 (PARTIAL)	0.300	1.505	2.256

*Assume 1:4 Side Slopes

TOTAL: 2.635

From Approximately Station 582+30.00 to Approximately Station 622+00.00, the project is location within Zone AE with a Base Flood Elevation of 6.00 NGVD (= 4.42 NAVD)

APPENDIX D

Build Alternative #1 – Drainage Maps



MATCH LINE STA. 535+77.20

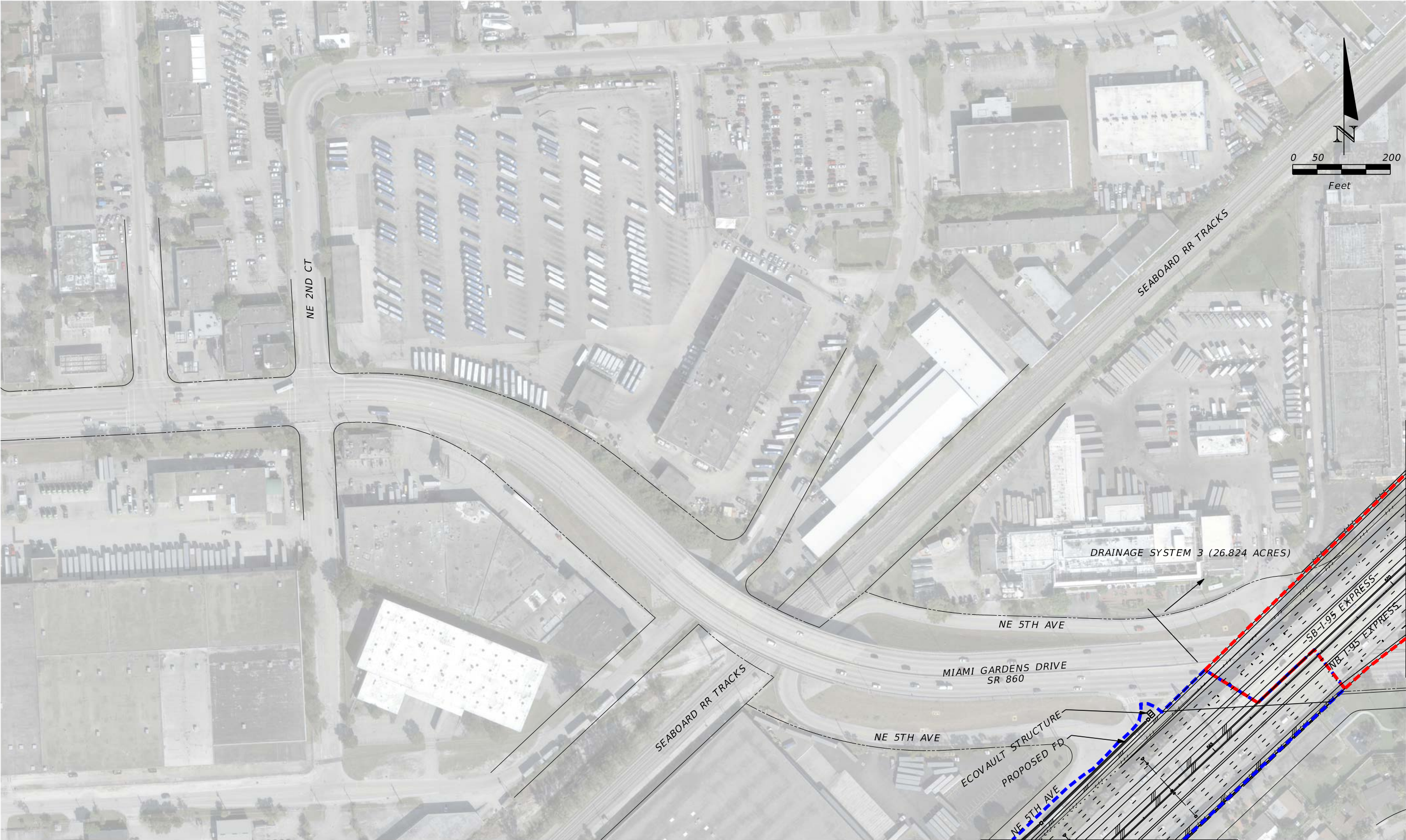
DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES. THIS SHEET IS IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.

REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 1		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION							
					ROAD NO.	COUNTY	FINANCIAL PROJECT ID			
										1



DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES. THIS SHEET IS IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.

REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 1	SHEET NO.
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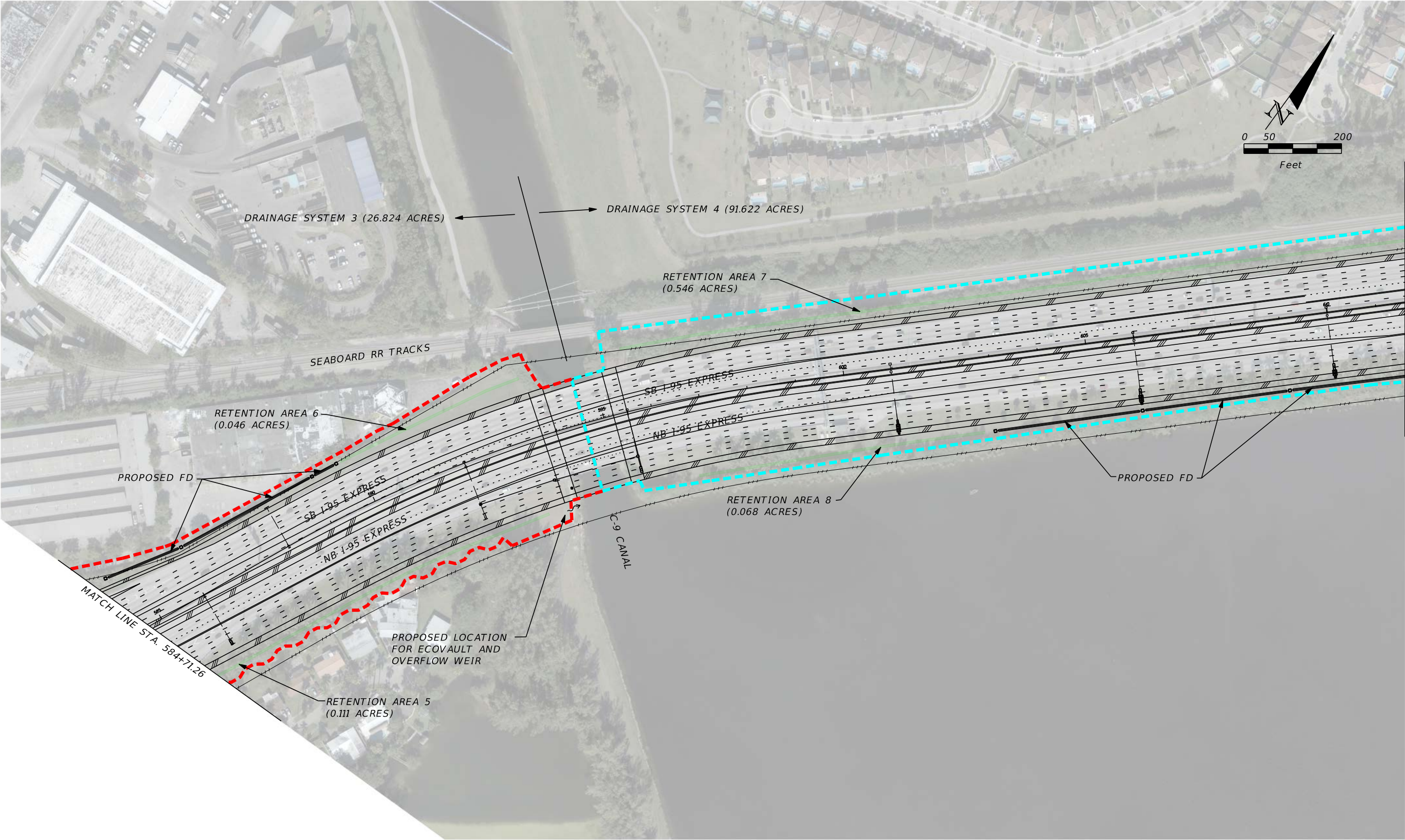
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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 1		SHEET NO.
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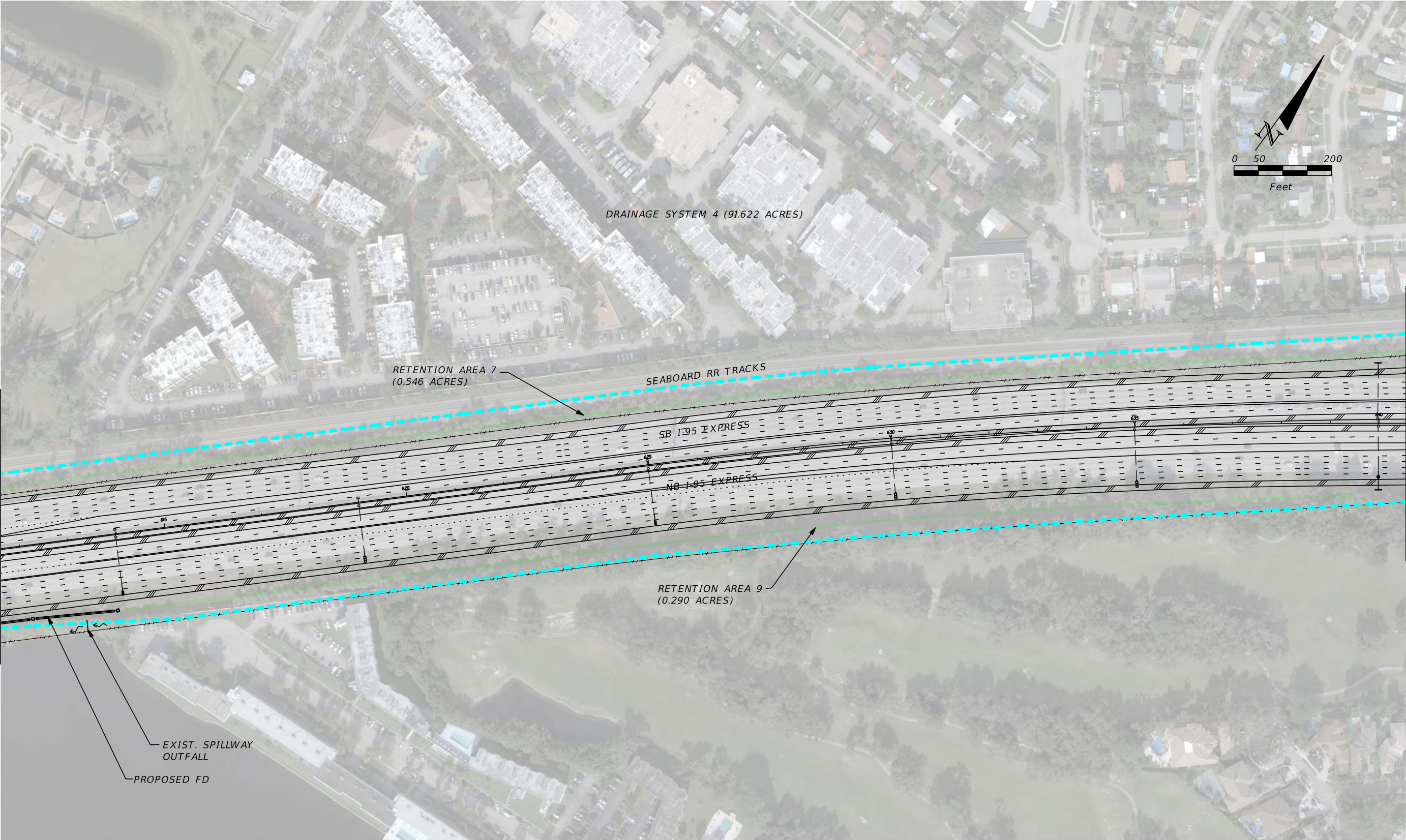
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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 1	SHEET NO.
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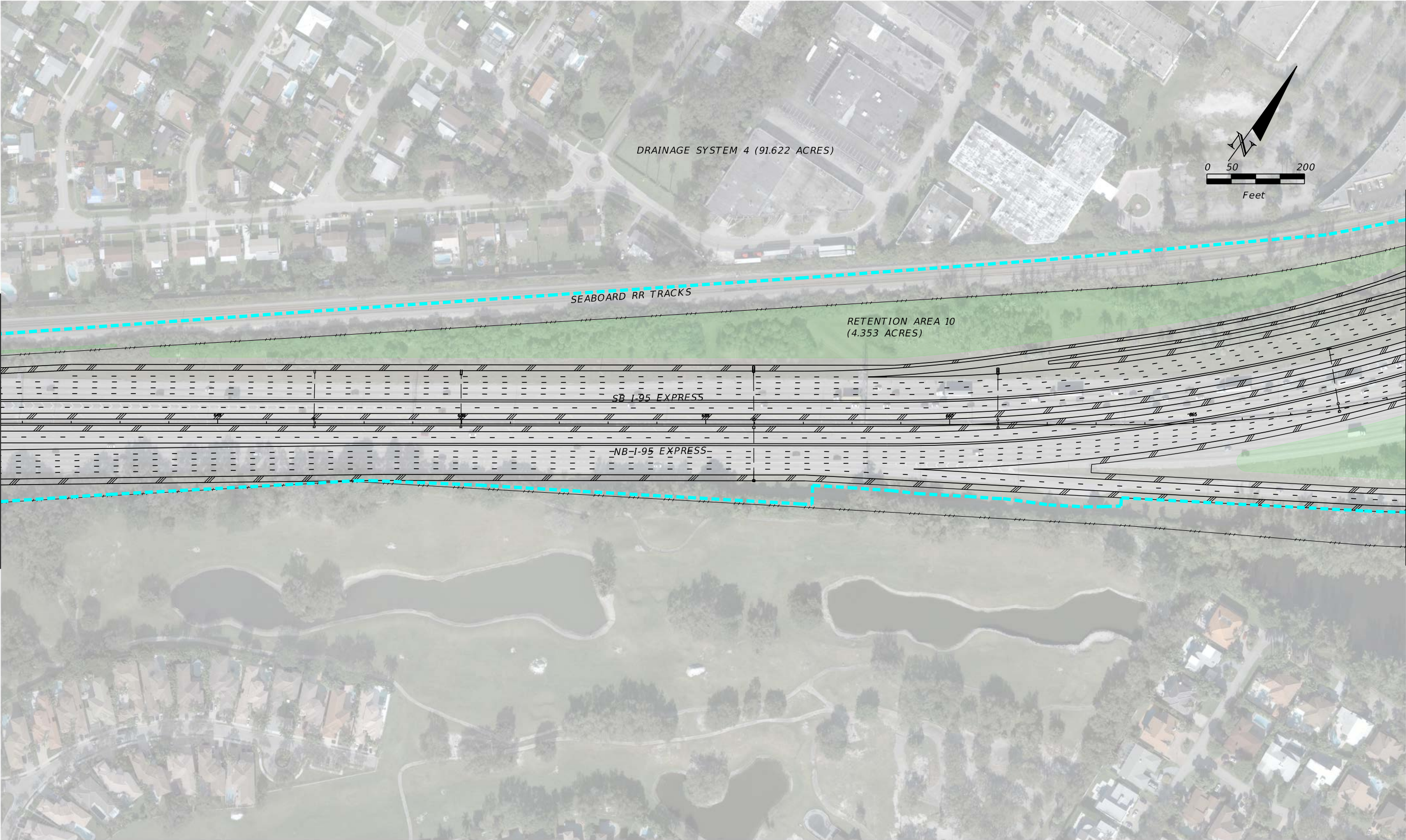
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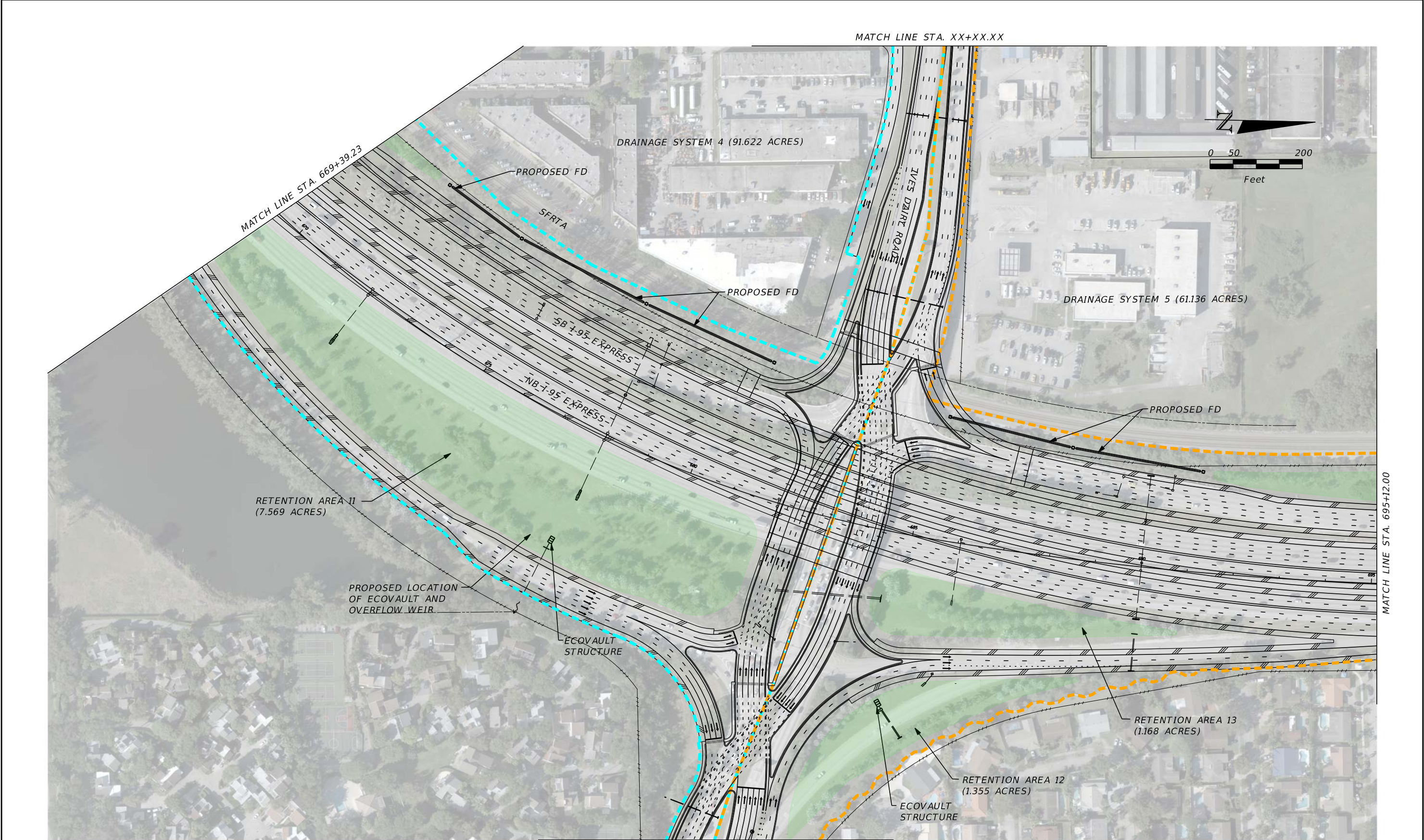
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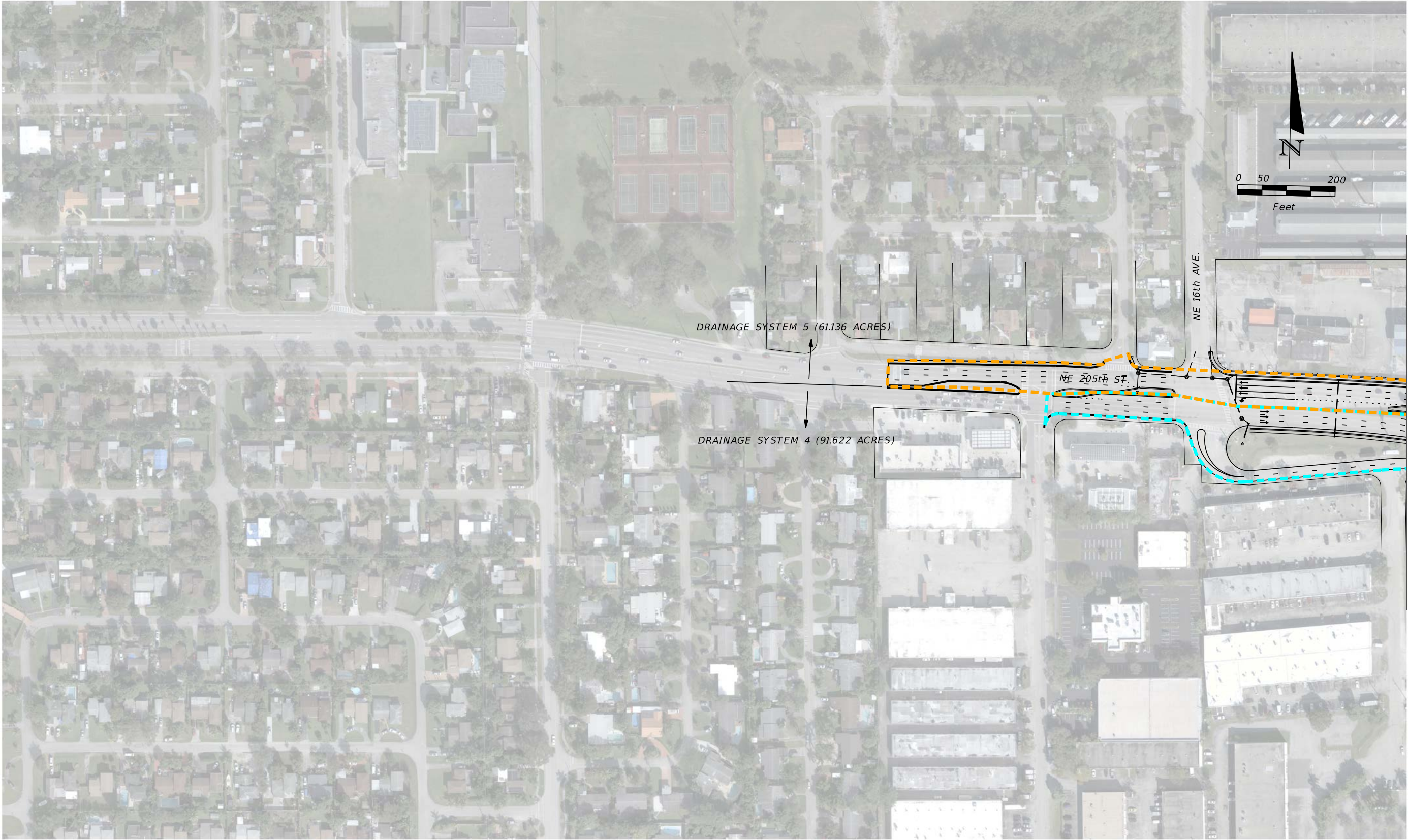
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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 1		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION							
					ROAD NO.	COUNTY	FINANCIAL PROJECT ID			
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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 1	SHEET NO. 8
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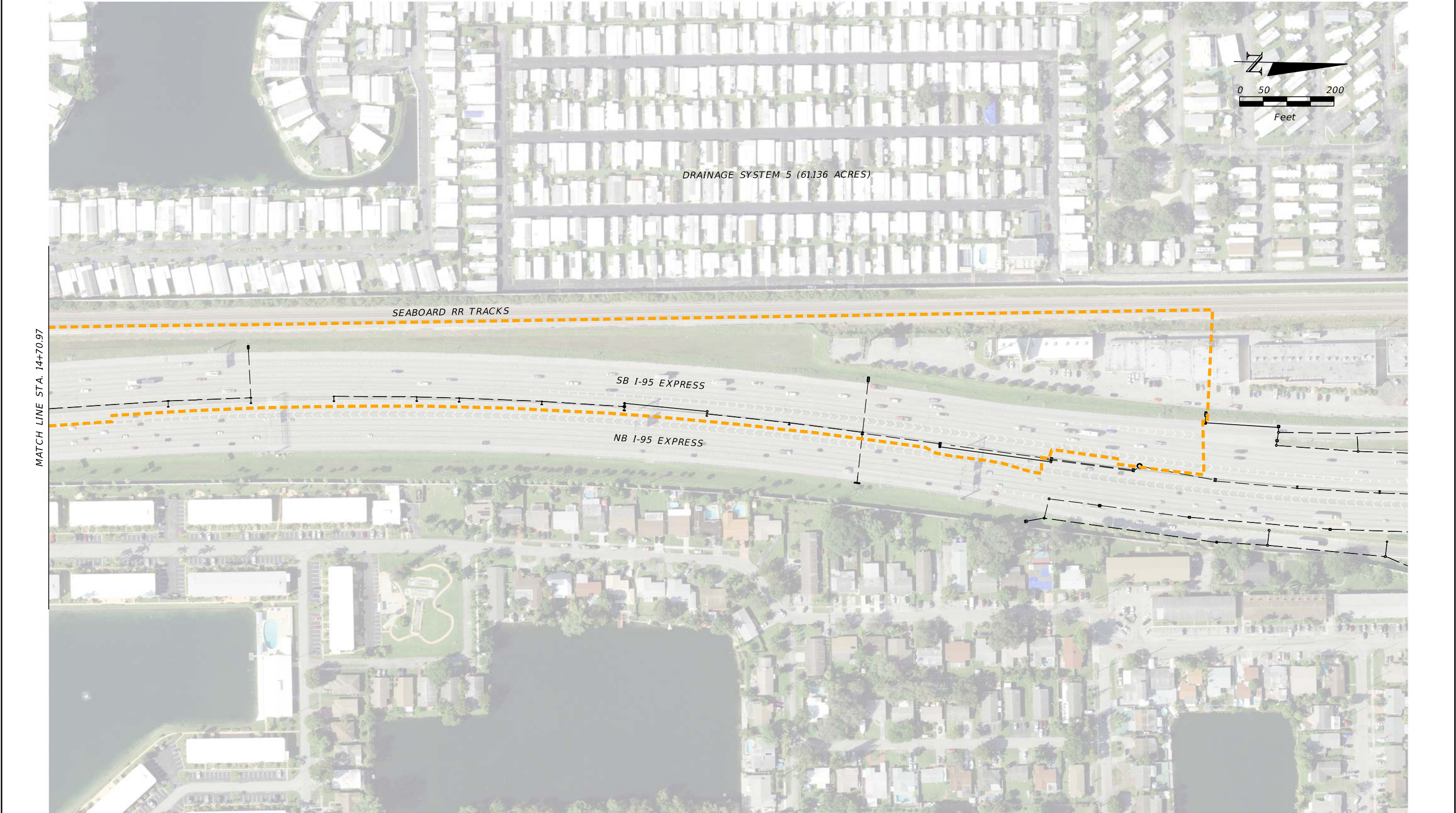
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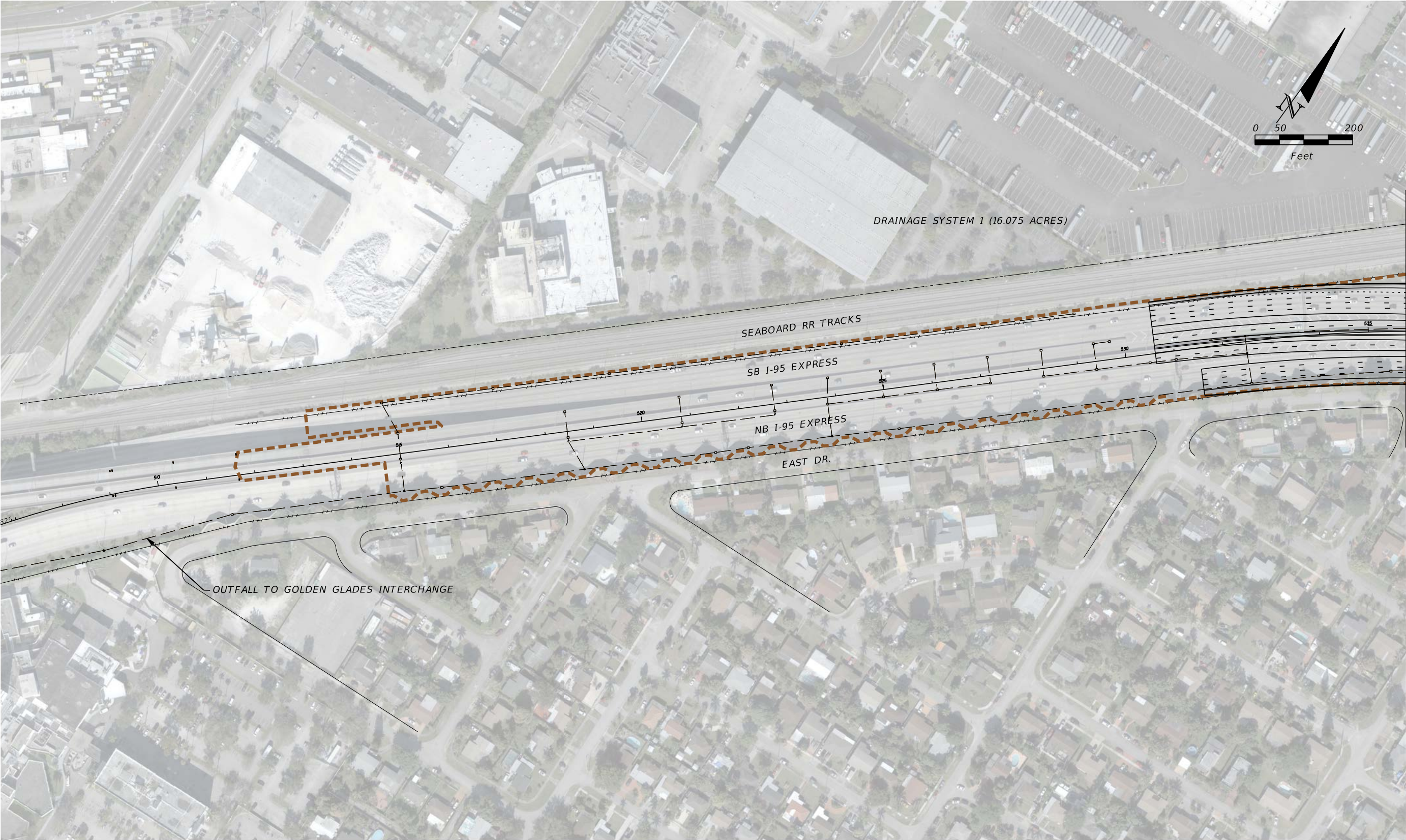


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APPENDIX E

Build Alternative #2 – Drainage Maps



MATCH LINE STA. 535+77.20

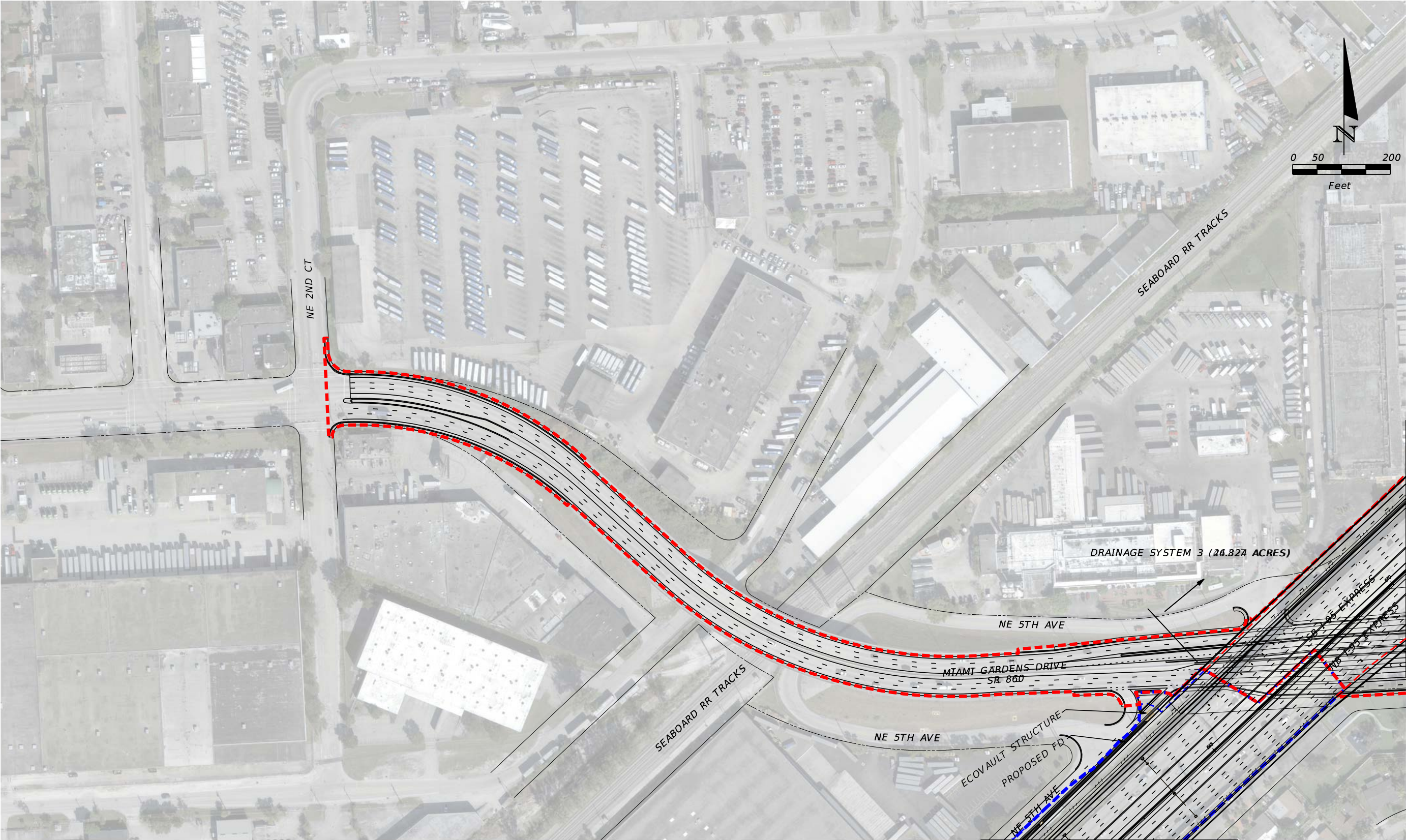
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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 2	SHEET NO.
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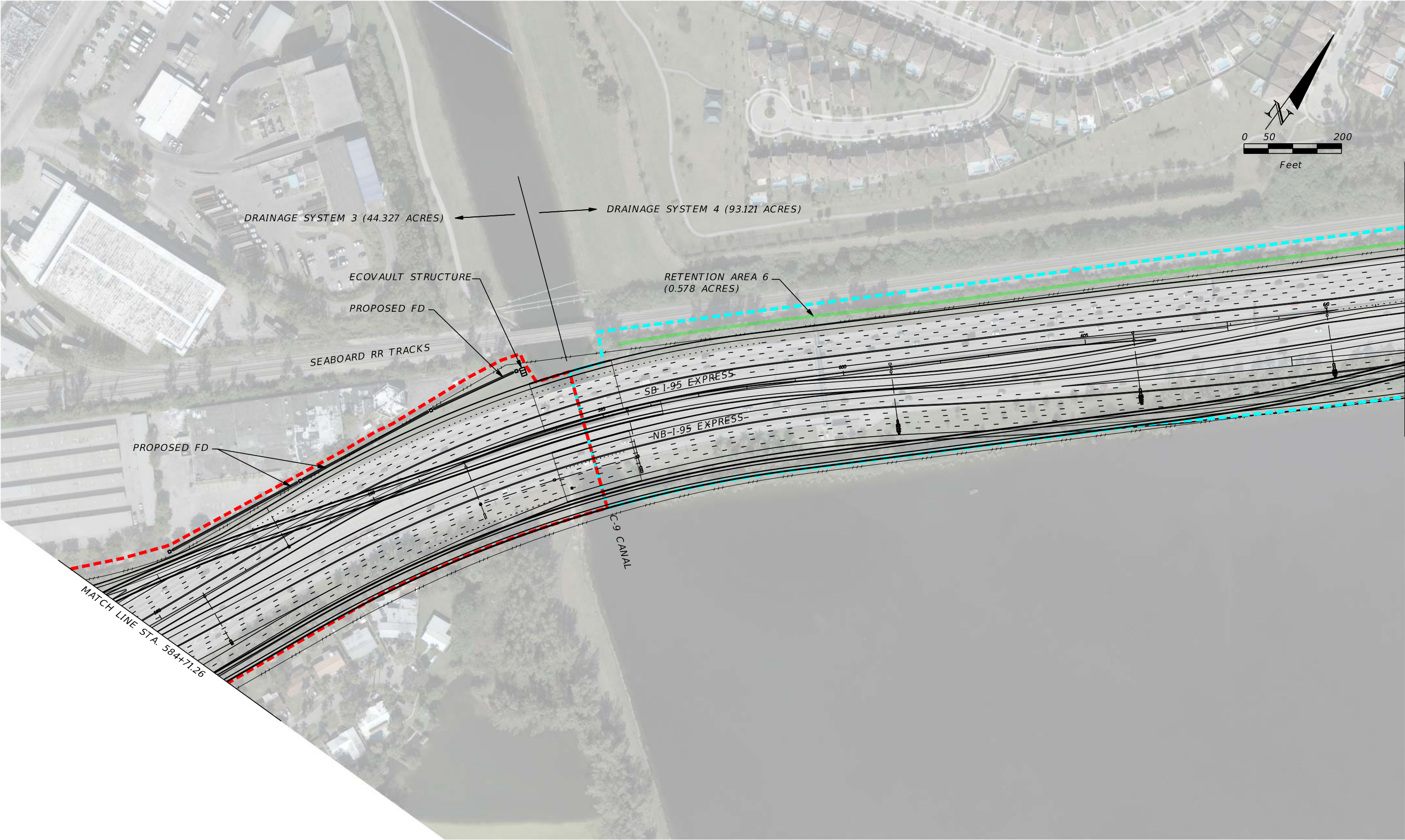
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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 2		SHEET NO.
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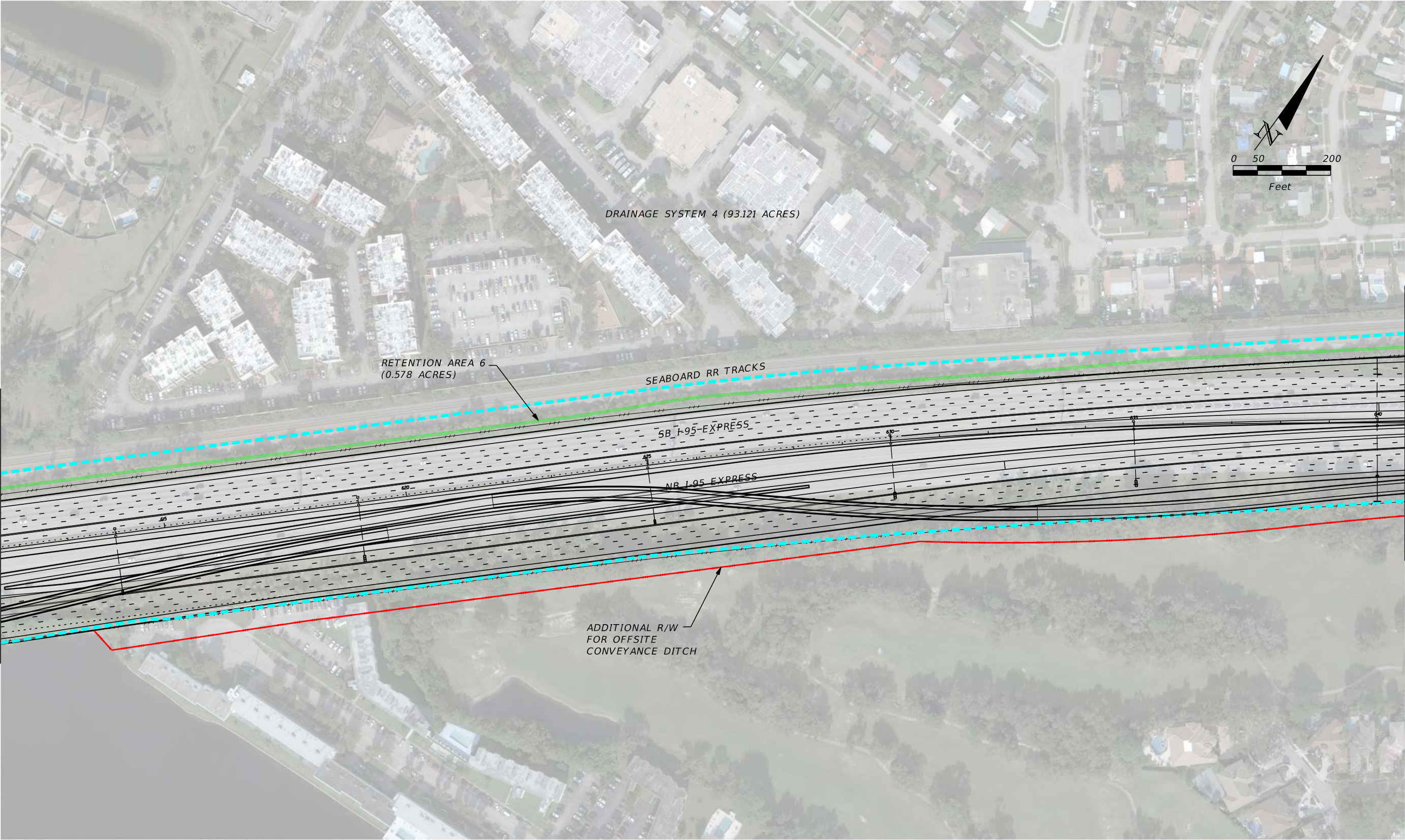
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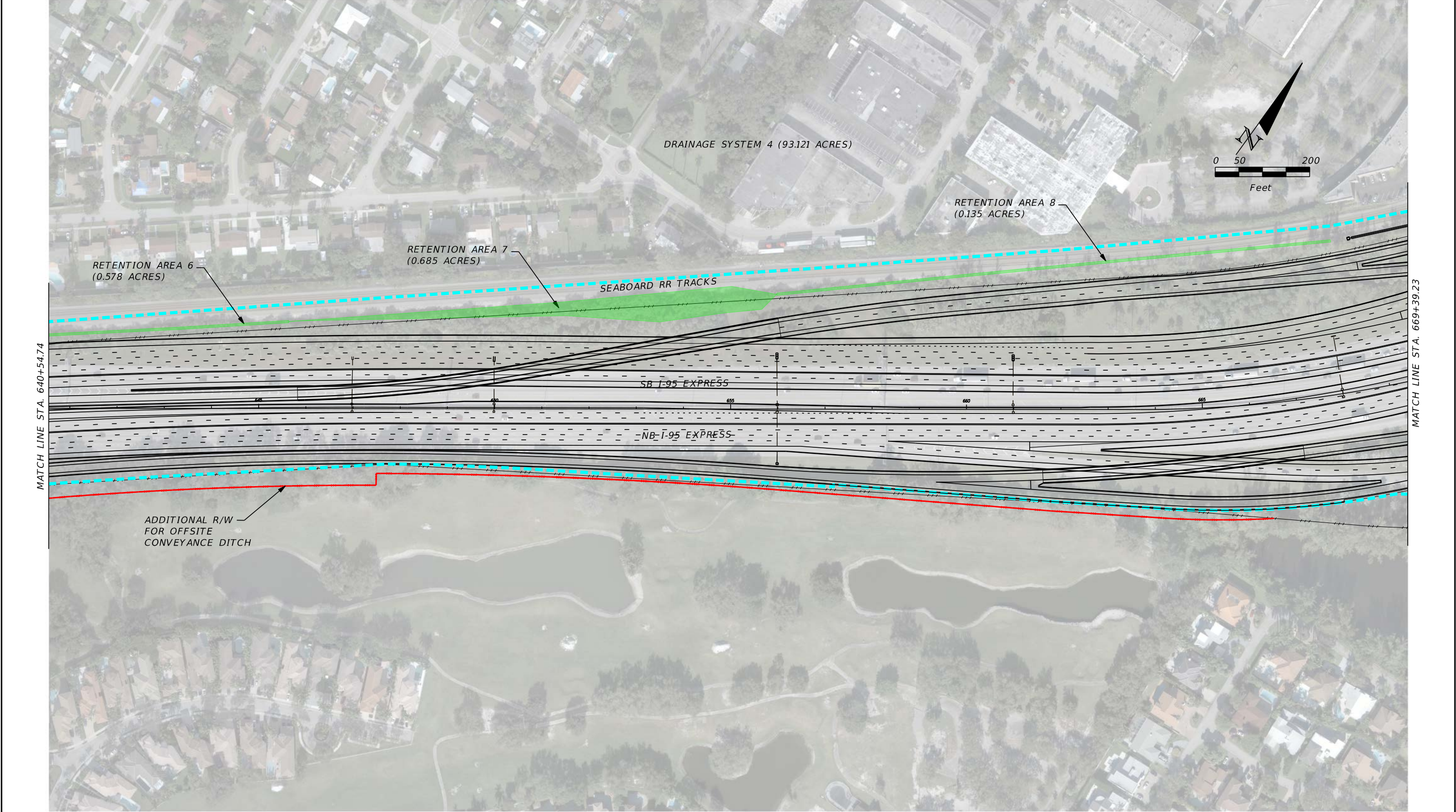
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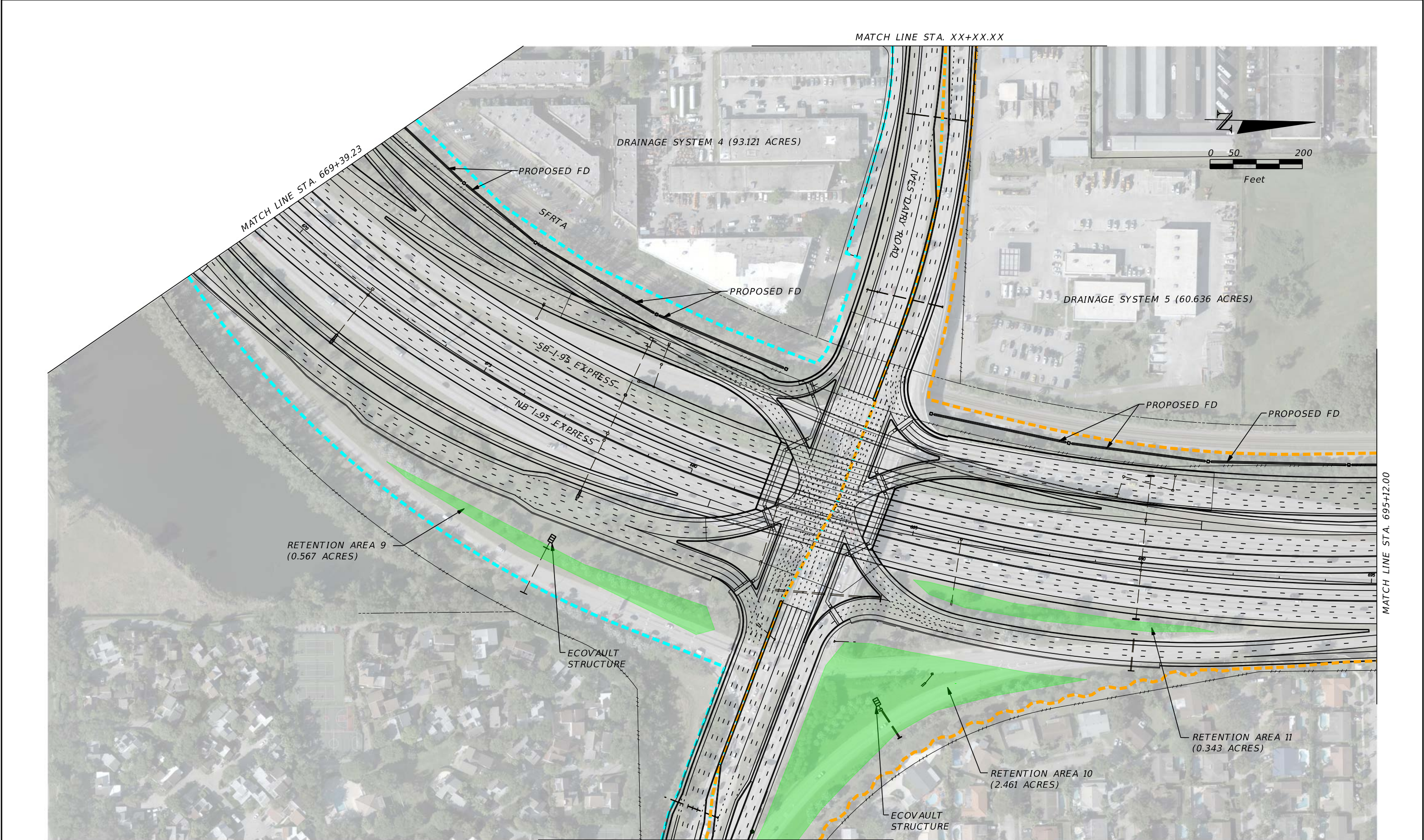
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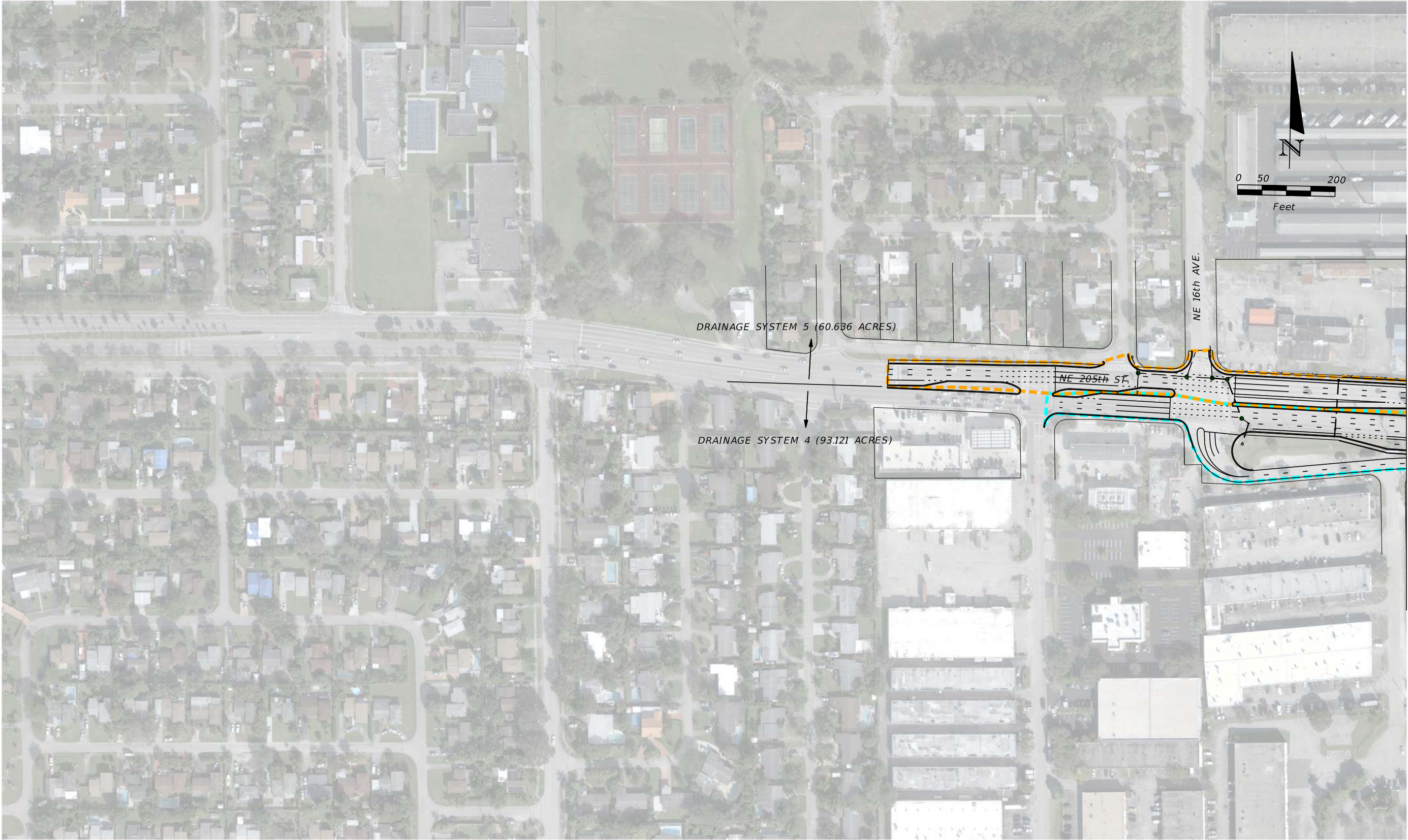
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DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES. THIS SHEET IS IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.

REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 2	SHEET NO.
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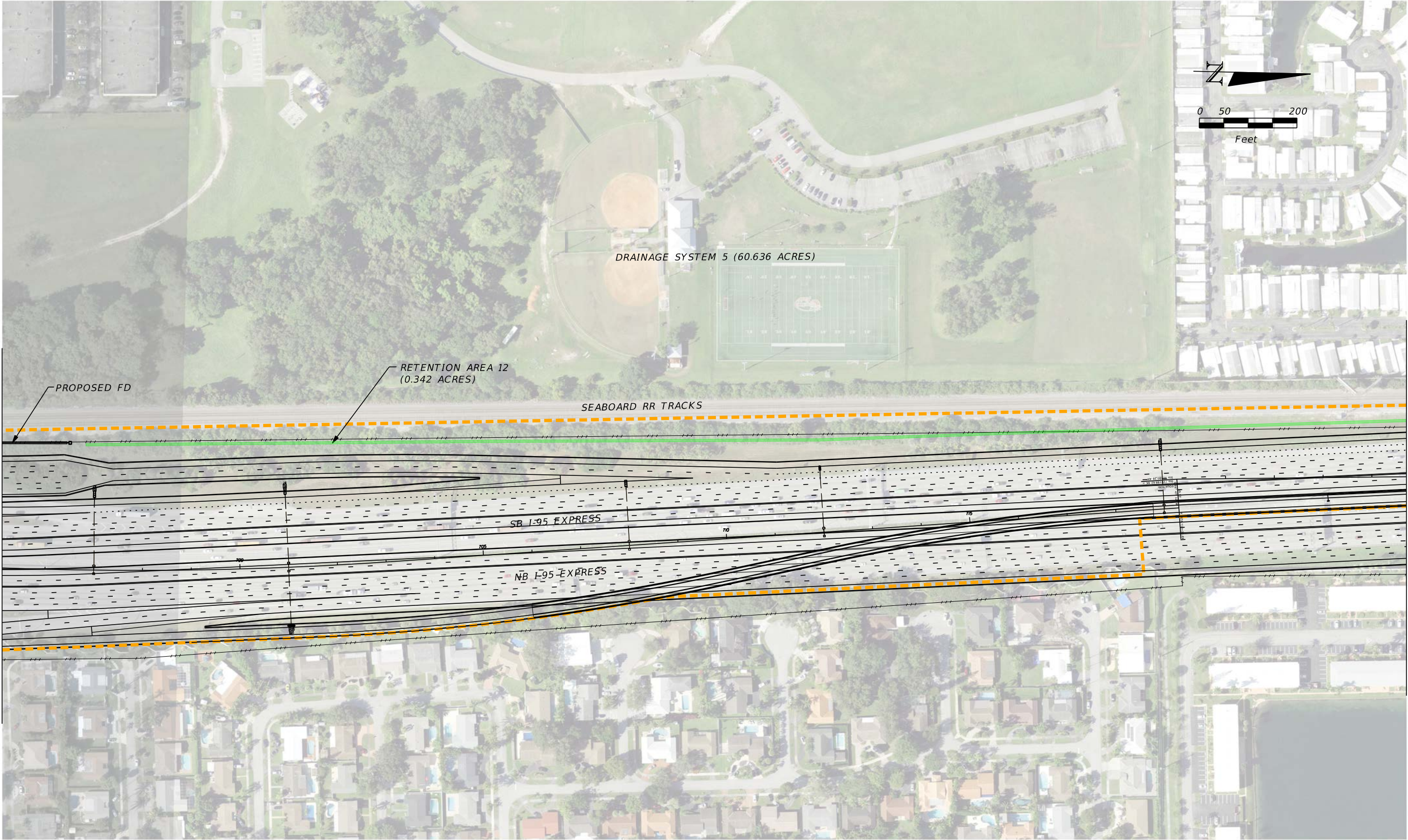
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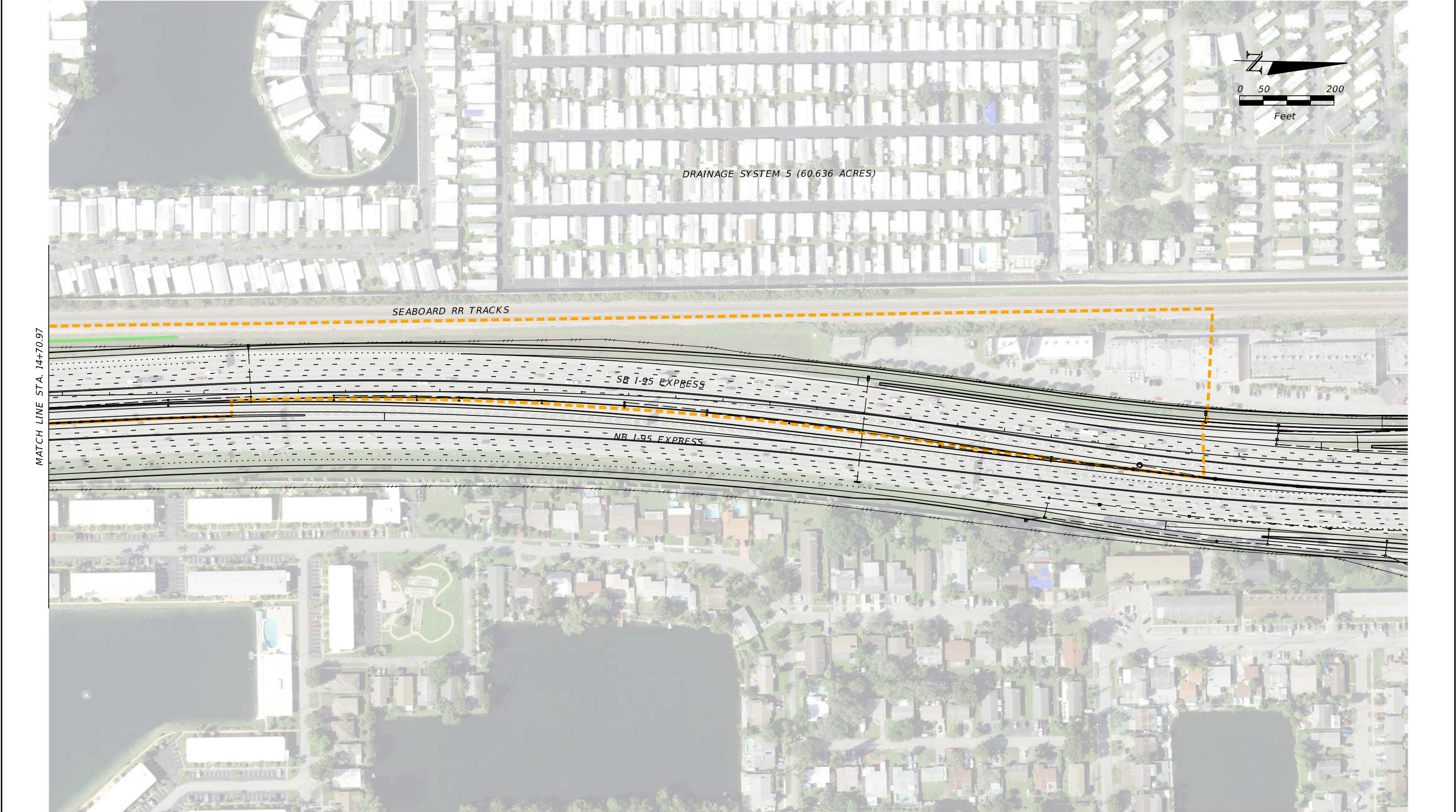
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DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES. THIS SHEET IS IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.

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DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES. THIS SHEET IS IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.

REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 2	SHEET NO.
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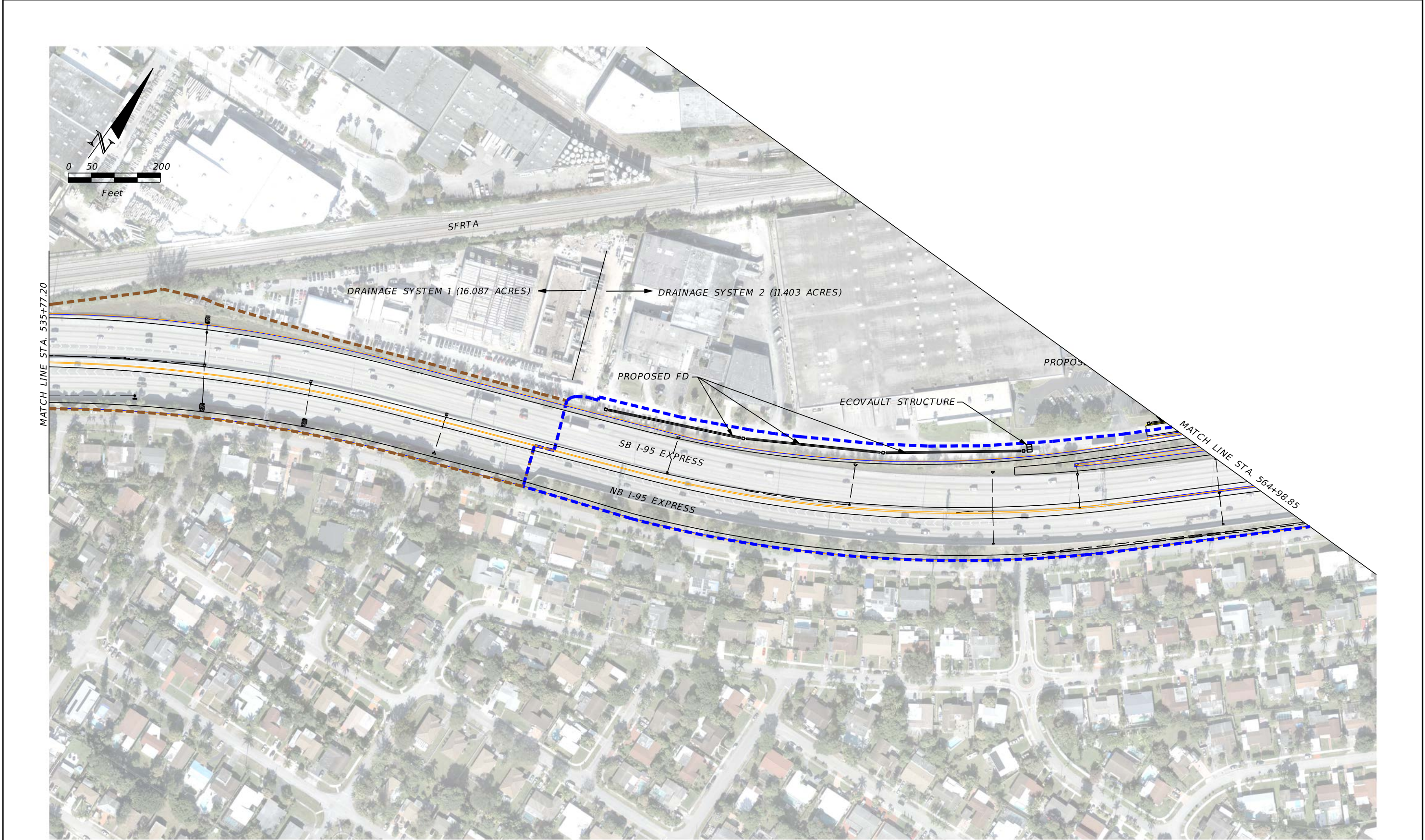
APPENDIX F

Build Alternative #3 – Drainage Maps



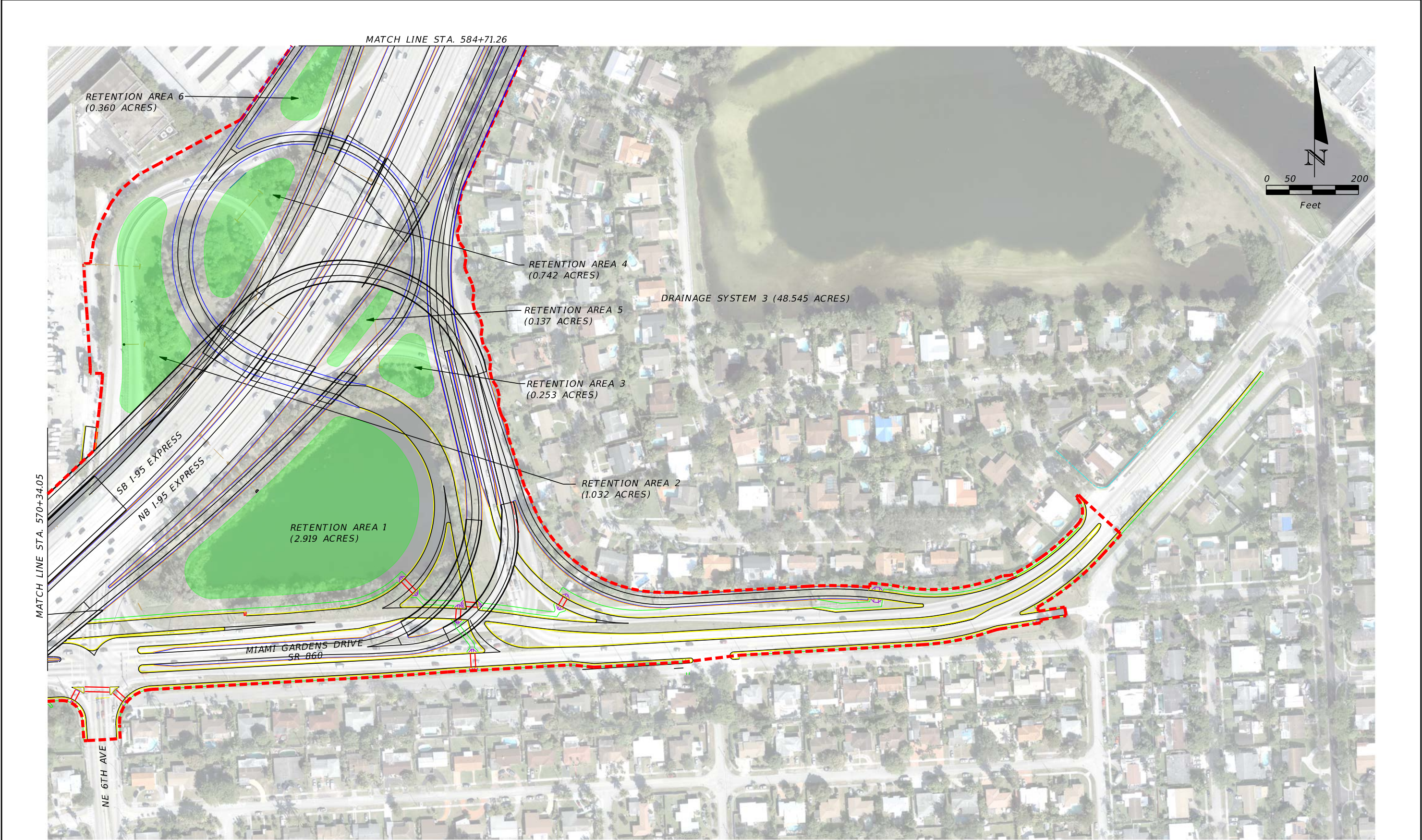
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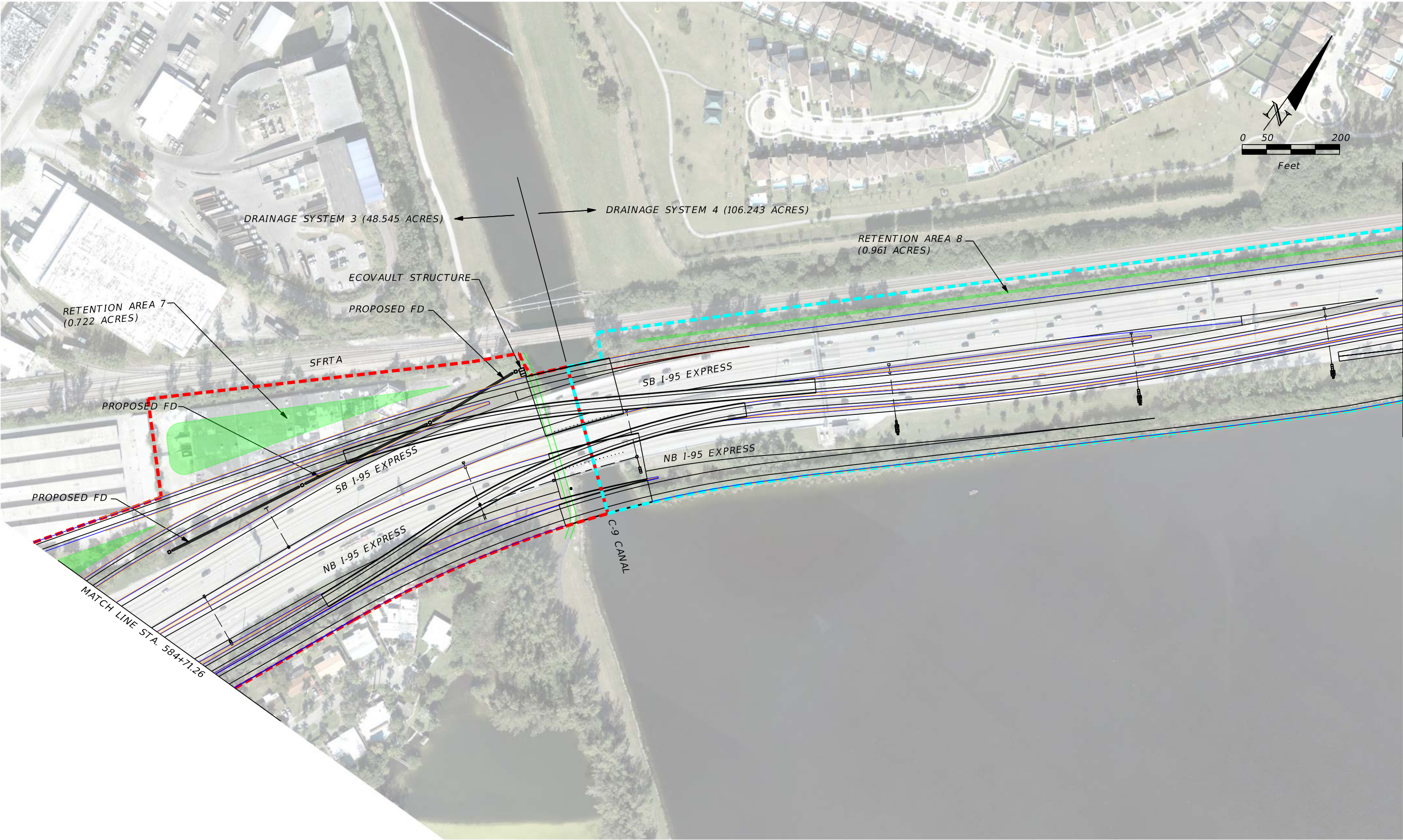
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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 3		SHEET NO.
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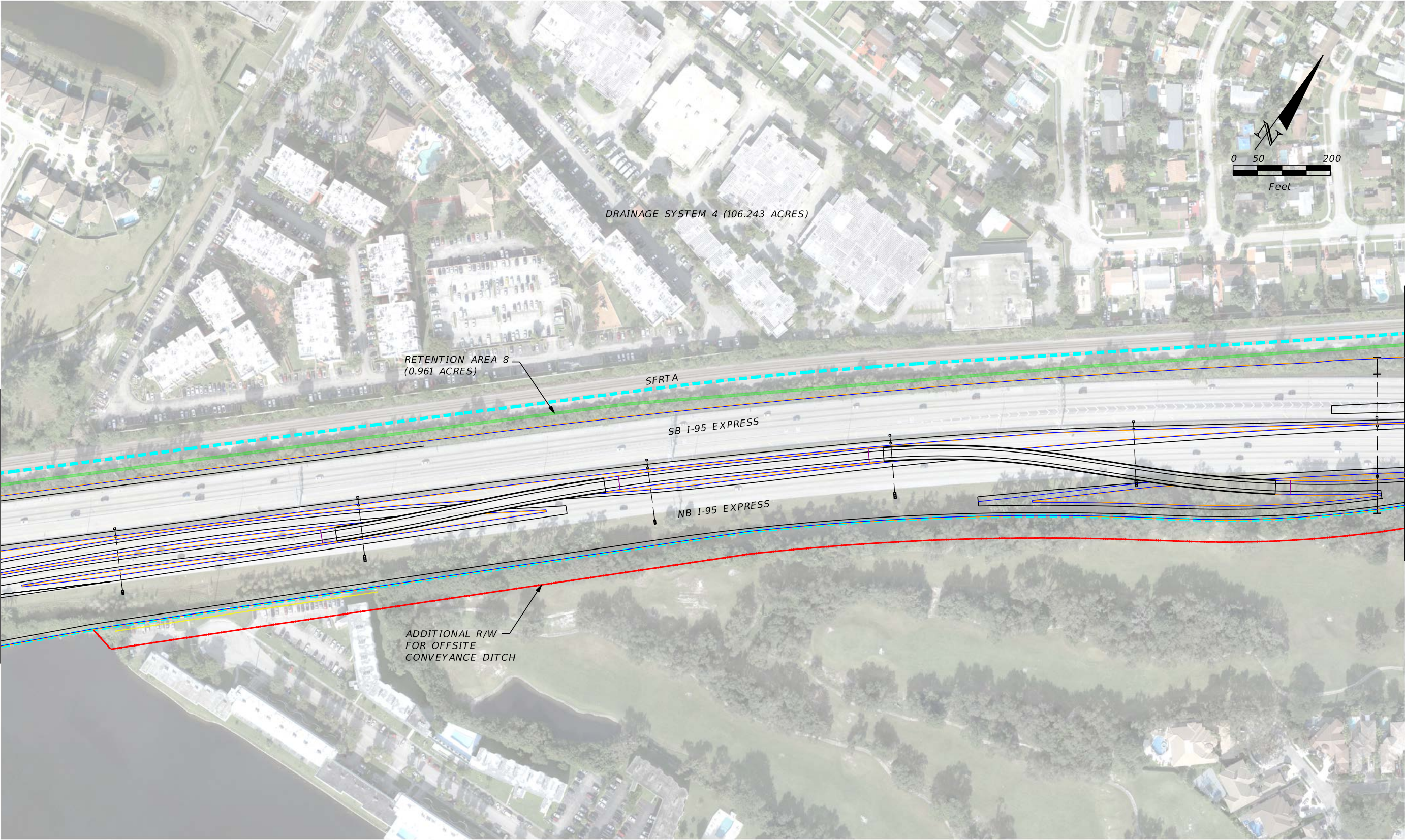
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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 3	SHEET NO.
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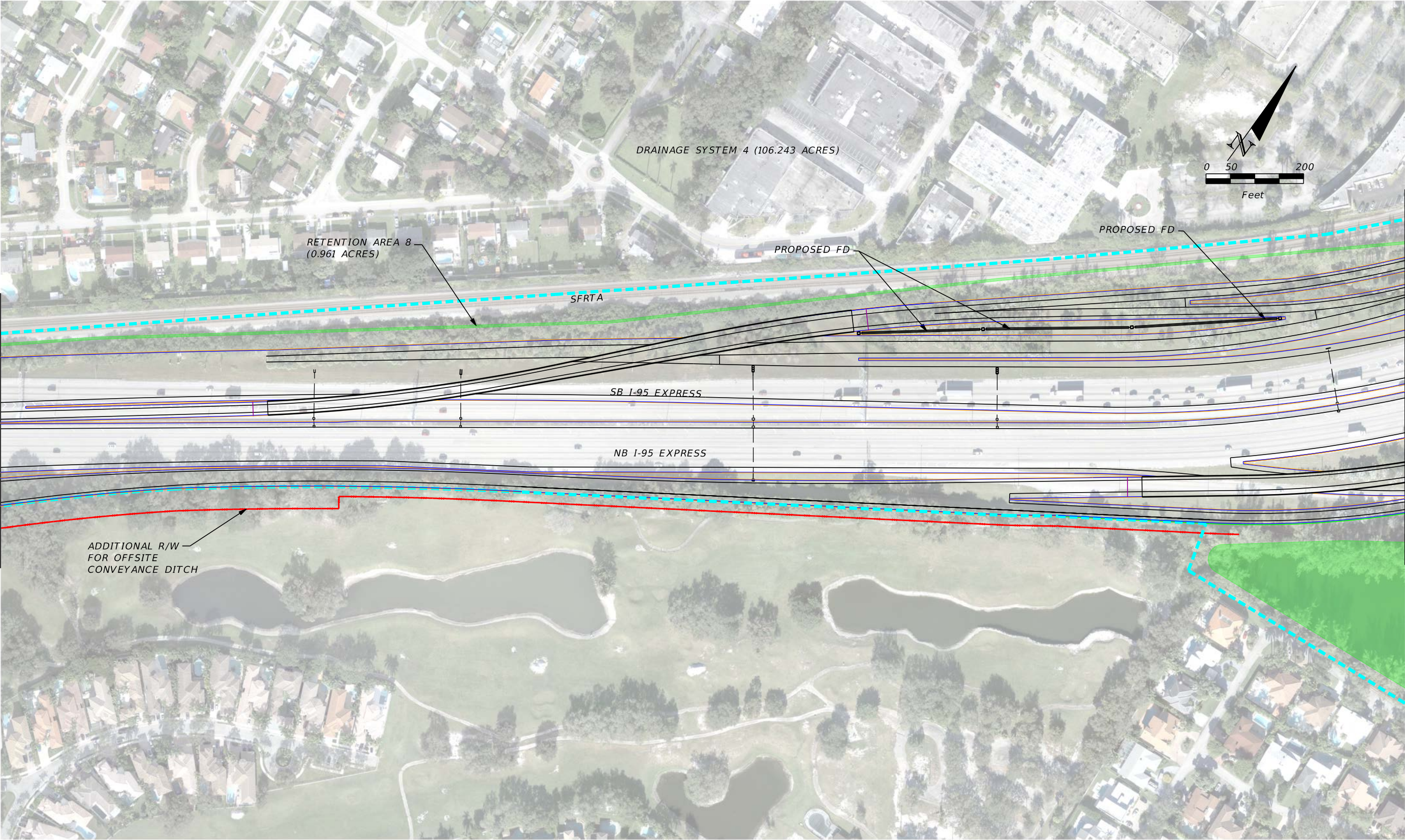
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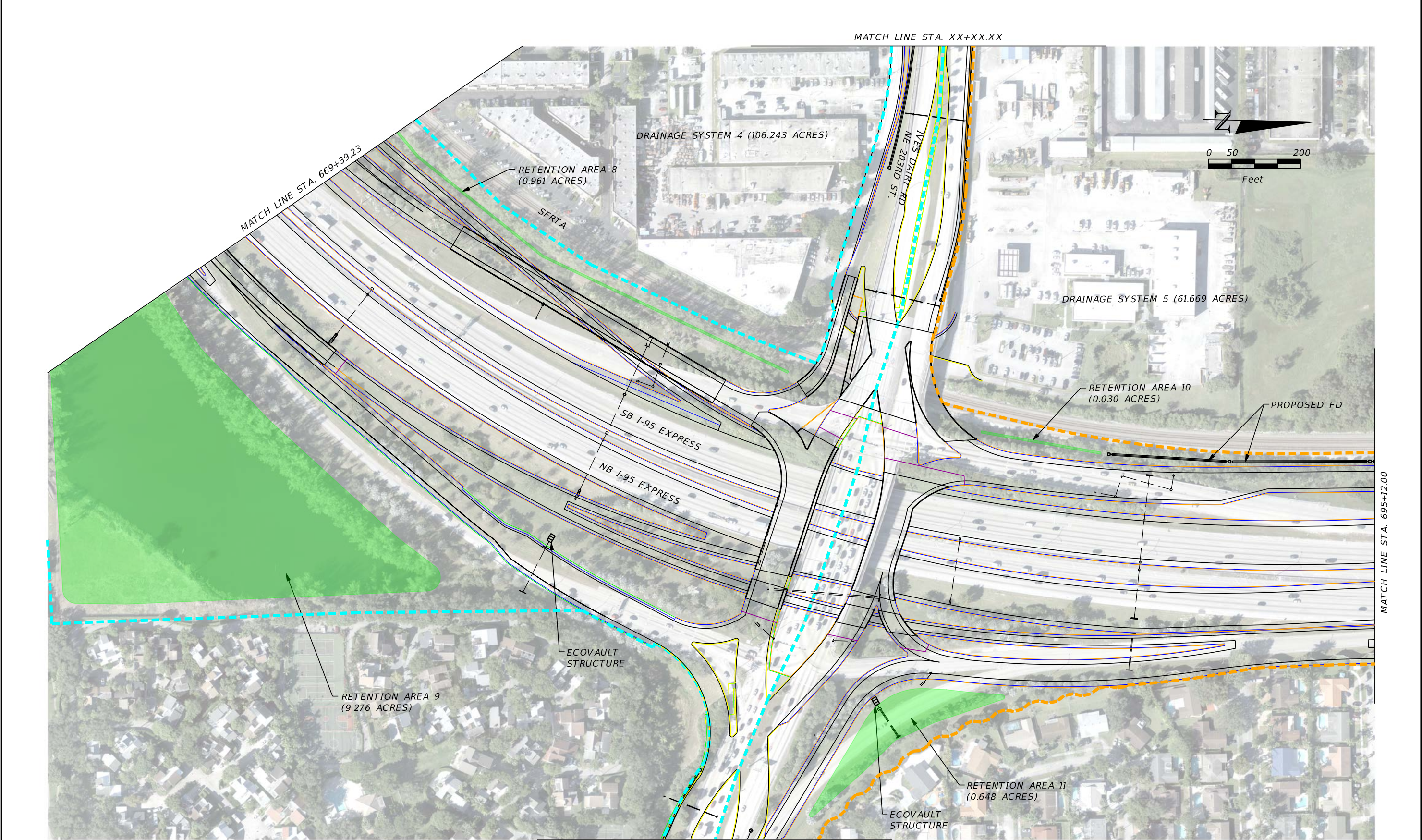
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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 3	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		6



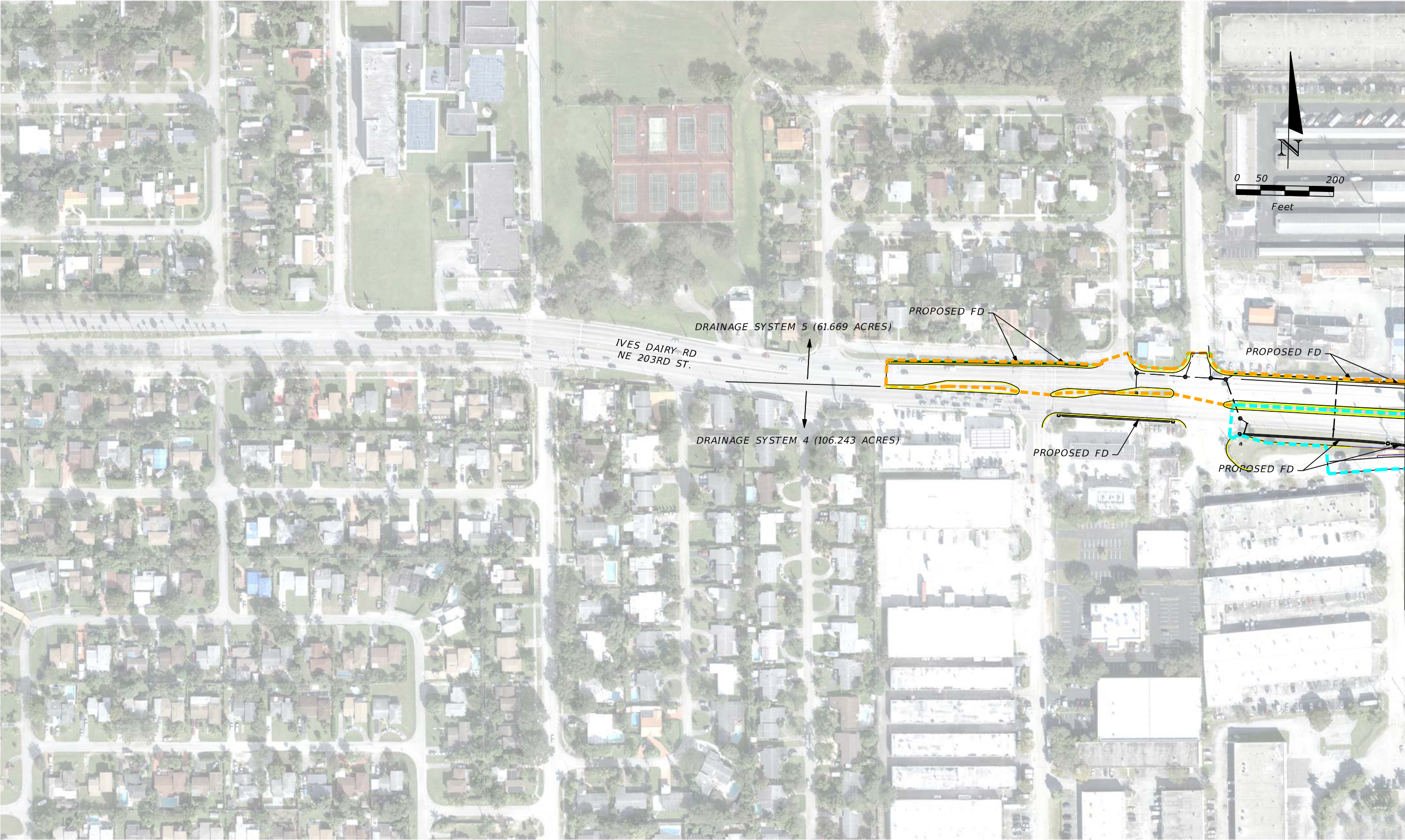
DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES. THIS SHEET IS IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.

REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 3	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		7



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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 3	SHEET NO. 8
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		



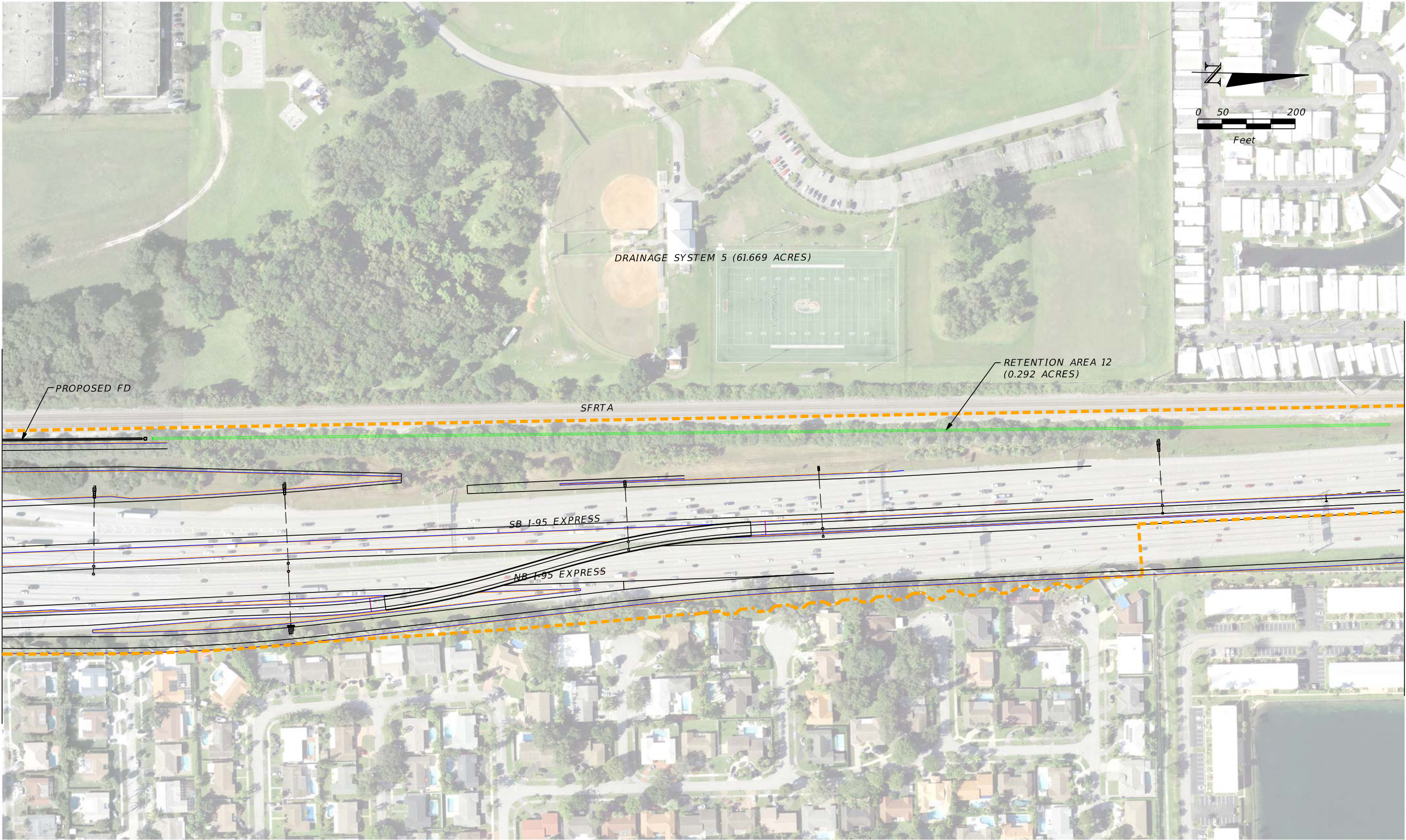
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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 3	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		9



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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 3		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID			10



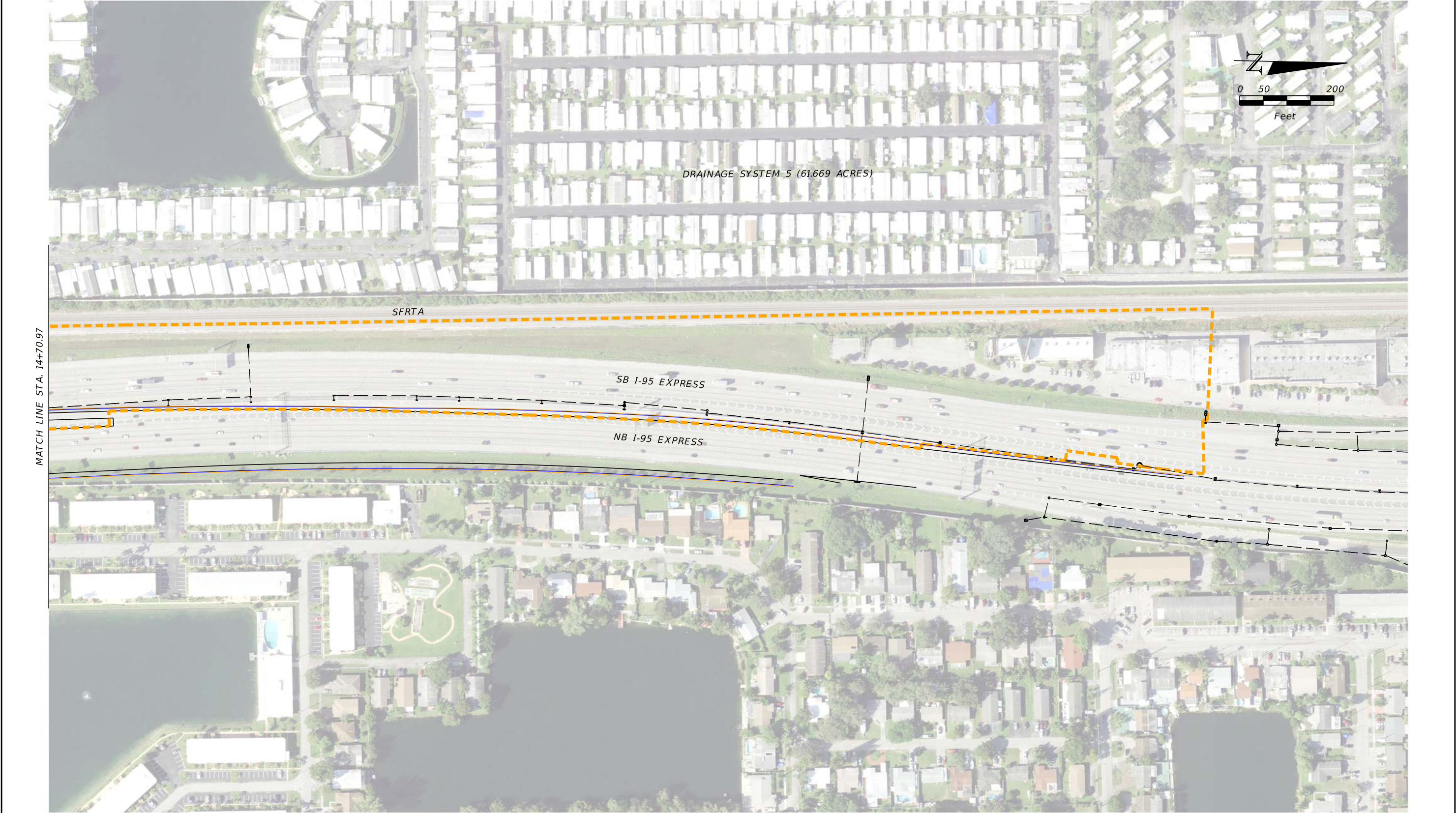
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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 3	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		11

\$USERS\$

\$DATES\$ \$TIMES\$ \$MODELNAME\$

\$FILES\$



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REVISIONS				JUAN C. GARCIA, P.E. P.E. No.: 46597 AECOM TECHNICAL SERVICES, INC 2 ALHAMBRA PLAZA, SUITE 900 CORAL GABLES, FL 33134	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP ALTERNATIVE 3	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		12