Florida Department of
TRANSPORTATION

PRELIMINARY DRAINAGE REPORT

Florida Department of Transportation

District 4

Atlantic Avenue (SR 806) Project Development and Environment (PD&E) Study

Limits of Project: From Florida's Turnpike (M.P. 1.748) to Jog Road (M.P. 3.560)

Palm Beach County, Florida

Financial Management Number: 440575-3-22-02

Efficient Transportation Decision Making (ETDM) Number: 14423

Date: May 2023

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.

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1. INTRODUCTION

This preliminary drainage report has been completed to support the Project Development and Environment (PD&E) Study prepared for the proposed Atlantic Avenue (SR 806) widening. This report documents the preliminary stormwater management systems required to meet stormwater quality and quantity criteria and include a summary of data collected and basin information. Finally, this report documents existing and proposed South Florida Water Management District (SFWMD) and Lake Worth Drainage District (LWDD) permits and provides a recommended permitting approach that can be used when this project goes to final design.

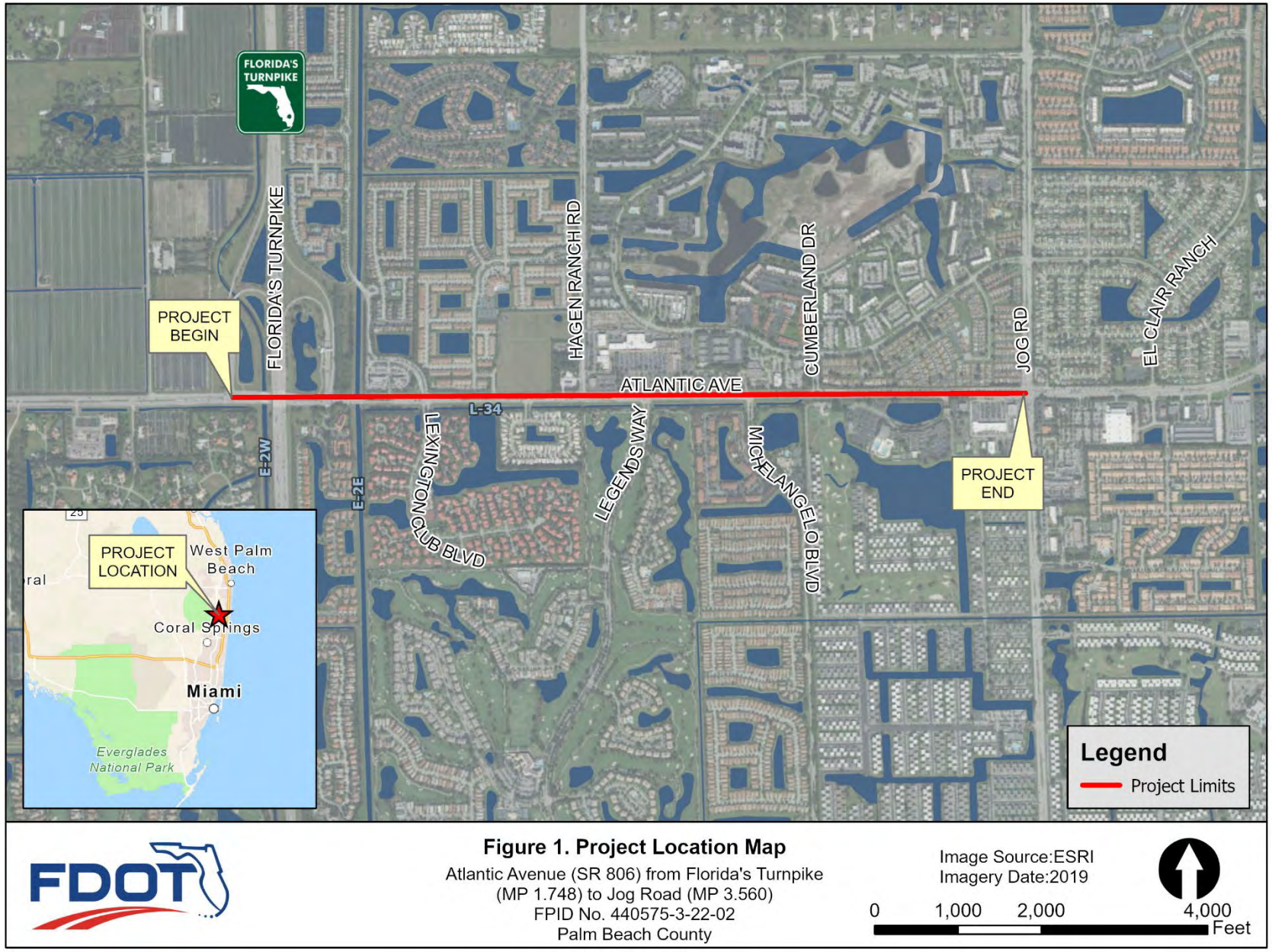
1.1 PROJECT DESCRIPTION

The project involves widening a 1.8-mile segment of Atlantic Avenue from the Florida's Turnpike to east of Jog Road in unincorporated Palm Beach County. The proposed project would widen the existing four-lane roadway to a six-lane roadway with upgraded bicycle and pedestrian facilities. Additionally, stormwater management facilities will be evaluated within the study area to assess the need for replacement of current treatment. See **Appendix B** for the roadway typical sections being proposed for this project.

1.2 PROJECT LOCATION

This project is in unincorporated Palm Beach County, Florida, in Sections 15, 16, 17, 20, 21, and 22 in Township 46 S and Range 42 E. The project involves a 1.8-mile segment of Atlantic Avenue that extends from Florida's Turnpike (M.P. 1.748) to Jog Road (M.P. 3.560). The limits of the project can be seen in **Figure 1-3: Project Location Map.**

Figure 1-1: Project Location Map



2. DATA COLLECTION

2.1 VERTICAL DATUM

The vertical datum referenced in this report will be NAVD 88. This vertical datum will be used in calculations and referenced in most of the existing data collected. A datum shift table has been provided in **Table 2-1** below to convert elevations values in NGVD 29 to NAVD 88. The latitude/longitude of the datum shift point was taken as the approximate centroid of the project limits.

Table 2-1: Datum Conversion from NGVD 29 to NAVD 88

Location	Latitude	Longitude	Shift (Ft.) (NAVD 88-NGVD 29)
Atlantic Avenue	26° 27’ 13.0”	80°-09’-40”	-1.499 feet

2.2 REGIONAL WATERSHEDS AND RECEIVING WATER BODIES

The project study limits fall within the jurisdictional boundaries of South Florida Water Management District (SFWMD), specifically the C-15 Basin and the Lake Worth Drainage District (LWDD) E-2E, E-3, and L-34 basins. Refer to **Appendix A** for a map of the watershed. The major receiving water bodies for the area is the Lake Worth Drainage District’s (LWDD) L-34 Canal on the south side of Atlantic Avenue, which conveys stormwater from east to west, ultimately outfalling into LWDD’s Canal E-2E through a 72-inch pipe. East of Jog Road, Canal L-34 drains to Canal E-3 and outfalls through a 48-inch pipe into Canal E-3.

2.3 SEASONAL HIGH GROUNDWATER TABLE

The seasonal high groundwater table (SHGWT) was obtained from the Roadway Soil Survey Report Dated November 17, 2020, and completed by Tierra South Florida, Inc. (TSF) The estimated SHGWT is expected to be at an elevation of +12.5 feet (NAVD). The estimated elevation is based on the Altitude of Water Table, Surficial Aquifer, Shallow Zone, in Eastern Palm Beach County, Florida, May 16-19, 1988, published by USGS. An excerpt of the Roadway Soil Survey is also included in **Appendix E.**

2.4 SOIL PROPERTIES

Based on the NRCS Soil Survey, the near surface soils in the project area are Myakka fine sands, 0 to 2 percent slopes, and Quartzipsamments, shaped, 0 to 5 percent slopes. An excerpt from the NRCS Soil Survey is included in **Appendix A.** Soil borings were also taken as part of the Roadway Soil Survey Report completed by TSF, Inc. The results of the soil classification completed by a Geotechnical engineer are summarized in **Table 2-2** and an excerpt is included in **Appendix E.** Environmental corrosion tests were performed on select soil samples. These laboratory test results were used to determine the environmental classification in accordance with FDOT Structures Design Guidelines. Based on the laboratory test results, the environmental classification is moderately aggressive

for steel and concrete substructures. A summary of the corrosion test results can be seen in **Table 2-3** and excerpt of the Environmental Corrosion Tests performed are included in **Appendix E**.

Table 2-2: General Soil Conditions

Stratum Number	Typical Soil Description	AASHTO Classification	FDOT Soil Designation
1	Topsoil	A-8	Unsuitable
2	Light brown to brown to dark brown slightly silty sand	A-3	Select
3	Light brown sandy limerock	A-1-b	Select
4	Brown silty sand	A-2-4	Select

Table 2-3: Summary of Corrosion Test Results

SUMMARY OF CORROSION TEST RESULTS

Atlantic Ave. PD&E
Palm Beach County, Florida
TSF Project No. 7111-20-119

Boring Number	Depth (ft)	pH (FM 5-550)	Resistivity (ohm-cm) (FM 5-551)	Chlorides (ppm) (FM 5-552)	Sulfates (ppm) (FM 5-553)	Environmental Classification* (Soil)	
						Steel	Concrete
B-4	8.0 - 10.0	8.1	18,000	45	87.0	Slightly Aggressive	Slightly Aggressive
B-9	6.0 - 8.0	7.0	2,800	30	0.0	Moderately Aggressive	Moderately Aggressive
B-14	6.0 - 8.0	7.6	5,100	45	0.0	Slightly Aggressive	Slightly Aggressive
B-17	6.0 - 8.0	7.0	12,000	30	228.0	Moderately Aggressive	Slightly Aggressive

* As per FDOT Structures Design Guidelines, Table 1.1, Updated January, 2019
** Any reading represented as "0.0" is below the detection limit of 4.8 ppm

2.5 WELLFIELDS

The project study is not located near a wellfield. The closest cone of influence is from Palm Beach County Wellfield ID 179 which is about 0.5 miles north of the project study. Palm Beach County Wellfield ID 5941 is about 1 mile south Atlantic Avenue and Palm Beach County Wellfield ID 5940 is slightly more than 1.5 miles east of the end of the project limits. An excerpt of the Palm Beach County Wellfield Map is included in **Appendix A.**

2.6 KNOWN CONTAMINATION SITES

According to the Scalar Contamination Screening Evaluation Report (CSER), a total of twenty-three (23) specific facility addresses were determined to have at least one type of contamination, as shown in **Figure 2-1 through 2-3**. Of those addresses, four (4) individual registered sites were determined to have a potential to impact the project**.** Based on the database searches and understanding of the existing conditions, no sites are rated as having a high

potential for impacting the project with contamination. There are four (4) Medium sites. Refer to the CSER for further details.

Figure 2-1: Contamination Map 1

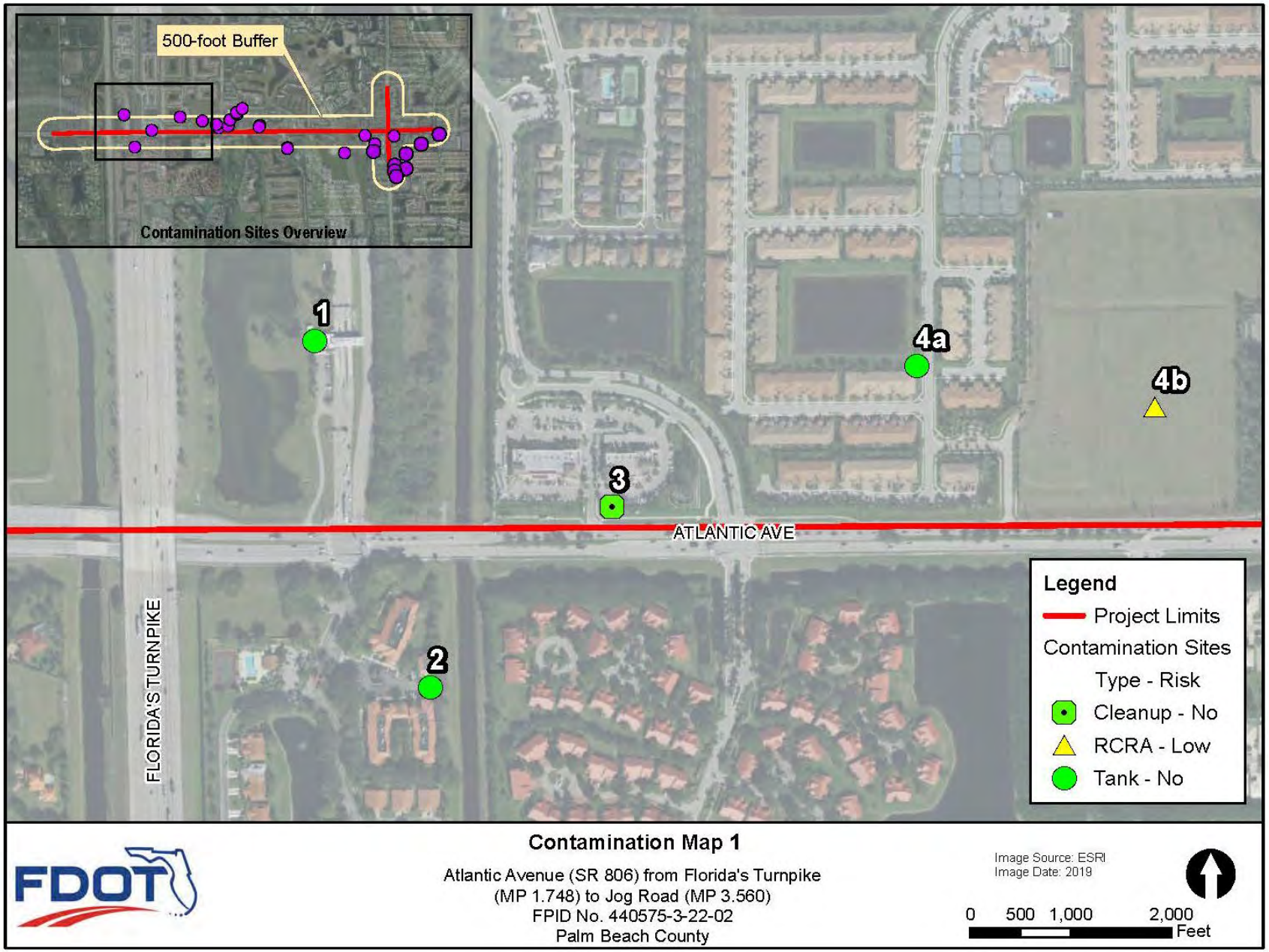


Figure 2-2: Contamination Map 2

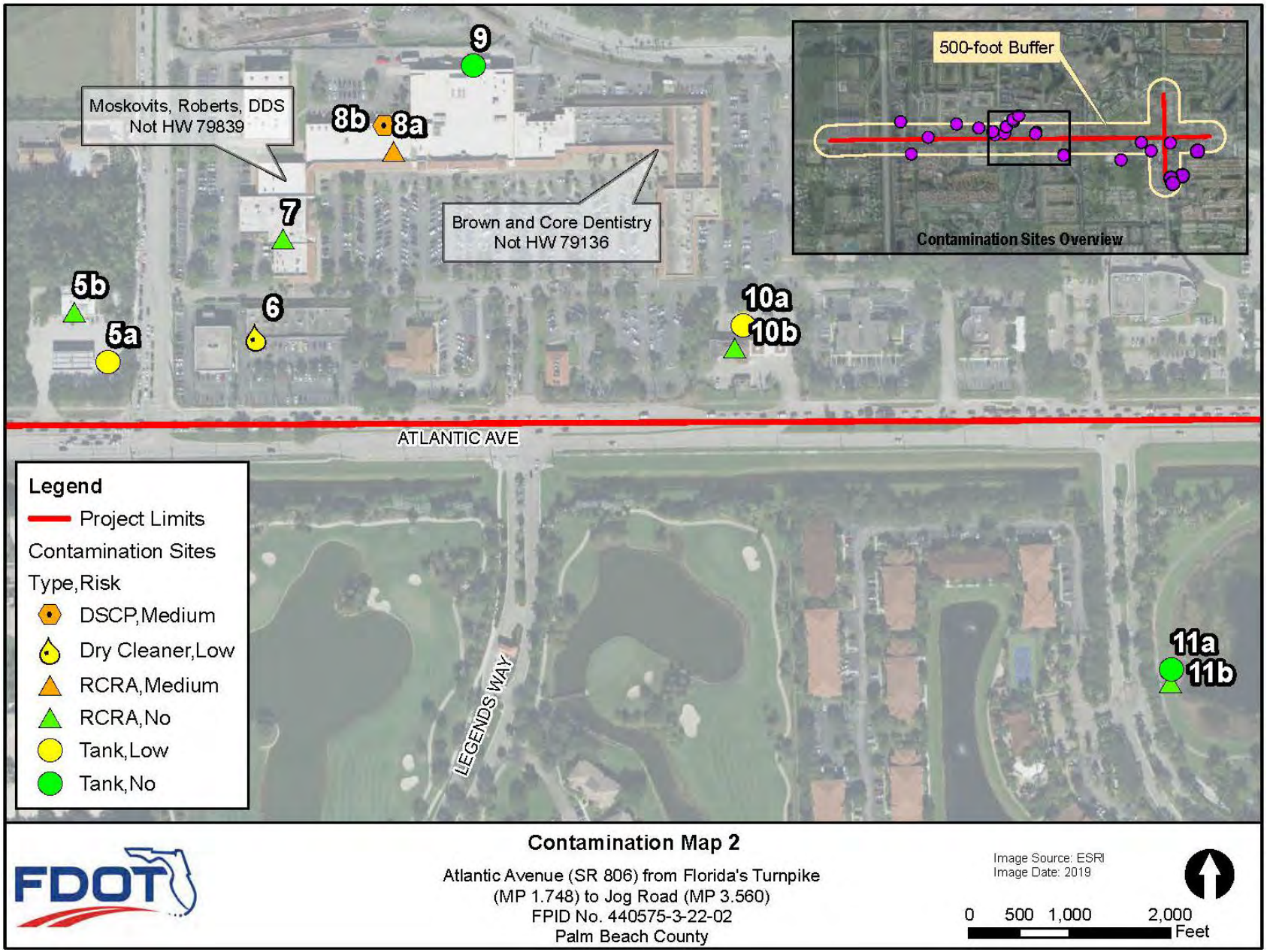


Figure 2-3: Contamination Map 3

3. DESIGN STANDARDS

3.1 STANDARDS

The drainage design and criteria for the proposed improvements will abide by FDOT Standards and local district requirements as summarized in **Table 3-1**.

Table 3-1: Design Criteria

Design Element	Criteria	Source
Design Frequency		
Storm Drains	3-Year design frequency standard (1, 8, 24-hour). Check 100-Year storm (1, 8, 24-hour).	D.M. Section 3.3
Outfalls or Canals	25-Year design frequency	D.M. Section 2.2
Cross Drains	50-Year design frequency	D.M. Section 4.3
Design Tailwater		
All Conditions	Conditions vary with outfall type.	D.M. Section 3.4
Time of Concentration (TOC)	Minimum TOC of 10 Minutes. Other TOC calculations to follow NRCS TR-55.	D.M. Section 3.5.1
Pipe Slopes		
Minimum	Min. slope to produce v = 2.5 ft./sec flowing full	D.M. Section 3.6.1
Manning's "n" Coefficient		
Pipes	0.012 (smooth pipes) 0.024 (corrugated pipe)	D.M. Section 3.6.4
Asphalt (rough texture)	0.016 Asphalt Pavement	D.D.G. Appendix B-2
Grades		
Longitudinal Gutter Grade	Minimum longitudinal gutter grade is 0.3%	D.M. Section 3.8.1
Spread Standards		
Design Speed ≤ 45	Keep ½ lane clear	D.M. Section 3.9.1
45 < Design Speed ≤ 55	Keep 8-ft. of lane clear	
Design Speed > 55	No encroachment	
Pipe Size and Length		
Trunk Line	18-in Minimum Diameter.	D.M. Section 3.10.1
Max Length Between Structure	18-in pipe = 300-ft. 24-in – 36-in pipe = 400-ft. >42-in pipe = 500-ft.	
Outfall Connection	18-in Minimum Diameter.	L.W.D.D. Section 3.5.5
Exfiltration trench		
Pipe Diameter	24-in minimum	D.M. Section 3.10.1

Design Element	Criteria	Source
Pipe Lengths (Exfiltration trenches)	Access through both ends: 300-ft. for 24-in to 30-in pipes; 400-ft. for 36-in and larger pipes. Access through only one end: 150-ft. for 24-in to 30-in pipes; 200-ft. for 36-in and larger pipes.	D.M. Section 3.10.1, D.M. Section 3.12.2, Standard Plans Index 443-001 – 443-002
Skimmers/Baffles	Required at each entrance to exfiltration trench	
Trench Width	Minimum 4-ft., maximum 8-ft.	
Trench Depth	Maximum of 20-ft.	
Freeboard		
Storm Drain	Hydraulic Grade line Minimum 1-ft. below theoretical gutter elevation. 1.13-ft. below E.O.P. for Types E & F curb and gutter. 1-ft. below grate elevation for inlets Standard Plans Index, 425-040 – 425-041, 425-050 – 425-055, 425-030 – 425-032.	D.D.G. Section 6.5
Ponds	Minimum 1-ft. above peak design stage, measured from the inside edge of the maintenance berm.	D.M. Section 2.4.5
Permanent Pool Pond Depth		
Wet Detention	5-ft. minimum depth, 8-ft. maximum depth.	D.D.G. Section 7.2.2.8, D.D.G. Section 9.2.1.1
Culvert		
Design	18-in minimum size. Culvert lengths greater than 200-ft require LWDD Board of Supervisors' approval and must be submitted to LWDD as a Piping of Canal proposal.	L.W.D.D. Section 3.4.6, Section 3.5.5
Stormwater Management System		
Water Quality	Water quality standards, as set forth in Chapter 62-4 and 62-302, Florida Administrative Code.	V - II Section 4.1.1
Discharge Limitations	Historic discharges rates, rates specified in District criteria, rates determined in prior Agency permit actions	V - II Section 3.2
Bridge Clearances		
Vertical	2-ft. minimum clearance between design flood stage and the low member of bridge to allow for debris passage. 6 ft. above Normal High Water for controlled canals.	F.D.M. 260.8.1

Abbreviations

- D.M. FDOT Drainage Manual; January 2022
- D.D.G. Drainage Design Guide; January 2022
- F.D.M. FDOT Design Manual, January 2021
- L.W.D.D. Lake Worth Drainage District Operating Policies
- V-II SFWMD Environmental Resource Permit Applicant's Handbook Volume II; May 2016

3.2 WATER QUALITY

The project is located within the Lake Worth Drainage District's (LWDD) E-2E, E-3, and L-34 basins and the South Florida Water Management District's (SFWMD) C-15 basin. The project is in Water Body Identification (WBID) number 3262 C, E-2 Canal, which is not impaired and WBID 3262 D, E-3 Canal, which is impaired for nutrients, specifically Chlorophyll-a. Therefore, an analysis of the pre- and post-pollutant loading conditions will be performed to demonstrate a net decrease in annual pollutant loading for the project area. There are no Total Maximum Daily Loads (TMDL's), Outstanding Florida Waters (OFWs), aquatic preserves, or Federal Emergency

Management Agency (FEMA) flood zone or floodways associated with the project. The project is located over the Biscayne Aquifer, a sole source aquifer. Refer to the WQIE and Sole Source Aquifer Checklist in **Appendix D.**

Historical drainage patterns are dictated by the canals in the area. The major conveyance for the area is the Lake Worth Drainage District's (LWDD) L-34 Canal on the south side of Atlantic Avenue, which conveys stormwater from east to west, ultimately outfalling into LWDD's Canal E-2E through a 72-inch pipe on the west-end and Canal E-3 through a 48-inch pipe on the east-end. The existing drainage systems provide treatment in swales, dry detention ponds and exfiltration trenches.

The proposed stormwater design will include, at a minimum, the water quantity requirements for water quality impacts as required by the SFWMD in Rules 62-4, 62-302, 62-330, 62-520, 62-550, 40E-1, 40E-2, 40E-4, 40E-40, and 40E-400 and as required by the LWDD in Chapter 3. According to the Lake Worth Drainage District Operating Policies, all waters discharged into the LWDD's canal system shall meet water quality standards in accordance with the laws of the State of Florida and the United States Federal Government.

3.3 WATER QUANTITY

3.3.1 SFWMD

The project is in the C-15 basin, which has a discharge limit for the 25-year event of 70.0 cubic feet per second (CFS) per square mile (CSM). Furthermore, the post-development off-site discharge rate is limited to the historic discharge rates in the pre-development condition. According to the SFWMD Environmental Resource Permit Information Manual Volume II, Section 3.2 & Section 3.3:

1. Off-site discharge rate is limited to rates not causing adverse impacts to existing off-site properties, and:
    (a) Historic discharge rates; or
    (b) Rates determined in previous Agency permit actions; or
    (c) Rates specified in District criteria (see Appendix A to this Volume).
2. Unless otherwise specified by previous Agency permits or criteria, a storm event of 3-day duration and 25-year return frequency shall be used in computing off-site discharge rates. Applicants are advised that local drainage districts or local governments may require more stringent design storm criteria. An applicant who demonstrates its project is subject to unusual site-specific conditions may, as a part of the permit application process, request an alternate discharge rate.

The above conditions will be satisfied using a storm event of 3-day duration and a 25-year frequency for computing off-site pre- post discharge rates in these limited basins.

4. PRELIMINARY DRAINAGE ANALYSIS

4.1 STORMWATER MANAGEMENT SYSTEMS

The preliminary drainage analysis preformed for this study included an existing conditions evaluation to determine the current stormwater treatment within the project corridor and the conveyance system from the project area to Lake Worth Drainage District (LWDD) Canals E-2E and E-3. A large aspect of this research is the existing permits for six adjacent private ponds requirement that provide treatment to the FDOT right-of-way (ROW), as well as existing treatment permits for roadway expansion within the FDOT ROW.

This section provides a summary of the preliminary drainage analysis. It follows the general format of identifying existing permit conditions and then recommending improvements that would be needed to direct runoff in the post development condition to the offsite ponds and propose treatment for areas unable to be included in the previous exercise. The analysis was conducted for the recommended alternative, as described in the Preliminary Engineering Report. In basins that require offsite ponds, multiple potential locations were identified. The pond siting process is described in **Section 5** of this report.

The project is divided into nine (9) drainage areas (Basins One through Nine) depicted in **Appendix A**. Basin numbers were assigned for each area per offsite permits to be utilized in the preferred design alternative as well as standalone areas with previous treatment being provided, and areas with no assigned treatment flowing directly into the L-34 Canal. These Basins have a combined area of 68.6 acres. The area of the corridor and ROW are approximately the same as that of the basin areas. The north side is bordered by either privacy fence, elevated landscaping, or a wall. In both the existing condition and the proposed condition, the roadway drainage patterns will remain divided by the boulevard islands and crown of the road. The existing drainage divides will remain intact. However, the north south running divides shift in the post conditions.

The existing roadway plans, and adjacent permits were examined to identify the current water quality provided in the project corridor, shown in **Appendix D**. The desktop review and field verification exercises confirmed the current flow patterns of the area, most importantly the north and south basin lines. This confirmed that most of the flow for the project area is roadway generated with small, planted areas on the north side of the road and large sloping grass areas on the south providing runoff to the system. A meeting with the LWDD provided direction to handle this offsite flow from the canal banks back into the FDOT ROW for the north side of the canal.

Three (3) different drainage methodologies are proposed for the corridor. The first is maintaining existing treatment and attenuation previously permitted, where possible. This includes existing treatment within the ROW which

consists of exfiltration trench and small roadside swales. The second is to utilize offsite ponds previously permitted for the FDOT ROW. The third is to continue to allow untreated areas that remain flowing directly into Canal L-34.

4.2 METHODOLOGY

The South Florida Water Management District (SFWMD) has previously permitted six offsite ponds to handle the bulk of the water quality for the project area from the Florida's Turnpike to east of Jog Road. To determine the best drainage treatment alternative, these ponds were considered for connection to the roadway drainage system to maximize the use of these previously permitted ponds. The area these offsite ponds were permitted for is 24.68 acres of impervious area and 5.6 acres of pervious area for a total area of 29.08 acres. All the permitted ponds are wet detention and have been constructed to include these offsite (roadway) flows. Noting that two of the permitted ponds would provide more than enough treatment for the project, SFWMD was contacted to inquire about compensatory treatment being utilized for this resurfacing and milling with widening to the outside project. This changed the process from pond siting to treatment accounting for the existing condition. The existing treatment provided in the two permits (number 50-07775-P and 50-08178-P, 10.64 acres of impervious area treated) would account for all the existing swale and exfiltration trench treatment provided in the project corridor and includes the lost volume in the ponds east of Jog Road. A map illustrating the Basins are found in **Appendix A.**

4.3 BASIN 1 (W. ATLANTIC SAFETY PERMIT 50-04083-P)

4.3.1 EXISTING CONDITION

Basin 1 extends from the Turnpike Southbound entrance ramp to the east of the Turnpike Northbound entrance ramp. This basin's water quality was approved under this permit and will continue to in the future widening. This closed drainage system flows north to a pond in the Florida Turnpike's ROW. The original treatment via 92 linear feet of exfiltration trench treats the roadway expansion and turn lanes.

4.3.2 PROPOSED CONDITION

In the proposed condition, some reworking of the eastern basin line will need to be examined for removal of the existing permit area from flow in the Turnpikes permitted pond. This area can be routed to the adjacent Basin 3 and allowed to flow directly into the E-2E Canal as the pre verses post attenuation and treatment volume requirements for the basin have been handled by sending water to the previously permitted ponds set aside for Basins 4 and 5. As mentioned in **Section 5**, the total of the stormwater treatment and the attenuation have been handled in the offsite ponds previously permitted for the Atlantic Avenue ROW.

4.4 BASIN 2 (W. ATLANTIC BRIDGE WIDENING PALM BEACH CO. PROJECT 2012501)

4.4.1 EXISTING CONDITION

The existing bridge in this section recently had an expansion to provide a 675 foot (+/-) turn lane from the Turnpike NB entrance to the Tuscany Shoppes driveway. Additionally, the improvements included a six-foot wide sidewalk, curb and gutter, and a seven-foot buffered bike lane on the north side, requiring widening of the existing bridge 28 feet to the north. The additional impervious area was routed into a roadside swale and an exfiltration trench providing 0.39 acre-inches treatment volume.

4.4.2 PROPOSED CONDITION

The proposed condition for this basin will incorporate widening of the bridge to the south. The proposed additional impervious area can be discharged into the E-2E Canal as the compensatory nature of the previously permitted ponds has satisfied the treatment for the entirety of the additional impervious areas as mentioned in **Section 5**.

4.5 BASIN 3 (DIRECT DISCHARGE TO E-2E CANAL)

4.5.1 EXISTING CONDITION

This basin is on the south side of the road, from Tranquility Lake Drive east to the E-2E Canal. This untreated 0.53-acre area of roadway currently discharges from the roadway rural cross section into the adjacent grassed low area on the south side of the road with no treatment or attenuation. The bridge portion of this basin drains directly through the bridge scuppers into E-2E Canal.

4.5.2 PROPOSED CONDITION

Runoff from this basin can be collected via a proposed pipe network being installed to carry runoff from the ROW directly into the E-2E Canal due to the previously permitted ponds in Basin 4 and 5 meeting the treatment and attenuation criteria for the entire project. This approach will eliminate the need to construct drainage pipes that cross the E-2E Canal with the bridge widening.

4.6 BASIN 4 (ATLANTIC COMMONS PERMIT NO. 50-08178-P)

4.6.1 EXISTING CONDITION

This north basin begins on the east side of Bridge 930032 and extends for approximately 1,550 feet to the east to Umberto Place. Currently, there is stormwater treatment in the area and all runoff flows through a small 18” linear collection system and into the LWDD Canal L-34 on the south side of the road which connects to LWDD Canal E-2E. In this basin, the impervious area is mostly untreated and discharges directly to the L-34 Canal.

4.6.2 PROPOSED CONDITION

The proposed condition for this basin will be a closed system that no longer outfalls into the L-34 Canal. Within this basin, most of the impervious area remains untreated, as less than an acre of treated impervious resides in this basin. This results in a net gain for the project in that more than 4.75 acres of previously untreated impervious area which discharged directly to the L-34 Canal will now be redirected into the previously constructed Atlantic Commons ponds. This will provide a net positive water quality result for the project.

4.7 BASIN 5 (VILLAGGIO ISLES PERMIT NO. 50-07775-P)

4.7.1 EXISTING CONDITION

This basin revises the existing condition basin break on the east end. Portioning the ROW in this manner allows the designer to predetermine the amount of impervious area that is permitted to be treated in Villaggio Isles in the post condition. Like Basin 4, this basin currently contains minor water quality within the ROW, accounting for less than an acre of impervious area for treatment in two separate water quality systems, which includes roadside swales and exfiltration trench. Currently, this basin has four systems outfalling directly to the L-34 Canal.

4.7.2 PROPOSED CONDITION

In the proposed condition, for the preferred alternative, this basin will have a completely redirected flow regime and will no longer outfall to the L-34 Canal, meaning all the existing outfalls, treatment swales and exfiltration trenches can be removed. This basin also has an easily accessible, previously permitted pond within an adjacent neighborhood known as Villaggio Isles. This permit allows for the total of the newly aligned basin to flow 6.22 acres of impervious area north to a wet detention facility for treatment and attenuation under permit number 50-07775-P. The existing exfiltration trench could be reused with J-bottom inlets to maintain the water quality if desired. However, it is not a requirement, as the offsite pond accounts for all treatment. This will provide a net positive water quality result for the project.

4.8 BASIN 6 (ATLANTIC AVENUE EAST OF LEGENDS WAY TO JOG ROAD PERMIT NO. 50-06865-P)

4.8.1 EXISTING CONDITION

This basin has been assigned based on the existing conditions at Jog Road and the new basin line established for Basin 5. This 12.5-acre basin has one exfiltration trench water quality element in the northeast Cumberland Drive intersection constructed as part of the EC Driver water quality project that accounted for approximately 0.27 acres of impervious area in total. A small portion of this basin is being treated under the same permit as Basins 7, 8 and 9 (50-06865-P). This treatment consists of exfiltration trench, which could potentially be repurposed. This Basin is interconnected to Basins 7 and 9 thought the 48-inch system that runs under the Jog Road intersection with Atlantic

Avenue. This 48-inch system provides the outfall for the three basins in both the east and west directions maintaining basin continuity with the L-34 Canal.

4.8.2 PROPOSED CONDITION

This basin will remain a largely untreated basin as the difficulty of outfalling to one of the previously permitted ponds would have to go down the singular ingress and egress corridor for the neighborhood on the southside of Canal L-34. This would cause traffic control issues for the project that simply don't need to be realized to accomplish the stormwater treatment and attenuation goals. Most of the 48-inch east west conveyance system, can be reused as it is in good alignment with the proposed southern edge of the roadway. Additionally, the current 48-inch outfall will need to be extended to the beginning of the larger portion of Canal L-34 just west of Cumberland Drive. The current lateral outfall locations can be reused as the northern edge of the roadway remains close enough for the potential use of J bottom boxes to adjust inlet locations. This realignment will most likely trigger the need for upsizing the lateral outfall on the south side of the road to accommodate the additional flow, but the system will still function in the same capacity as it does in the existing condition. See **Section 6.3** for details on the existing treatment requirements for the project and calculations for the proposed treatment volume.

4.9 BASIN 7 (JOG ROAD SOUTH OF ATLANTIC PERMIT NO. 50-06865-P)

4.9.1 EXISTING CONDITION

Located on the south side of Atlantic Avenue, this basin extends south approximately 900 feet. Currently, this system outfalls both to the east and west of Jog Road through the 48-inch storm sewer system that runs under Jog Road connecting the two segments of Canal L-34. This portion of the road also has treatment provided under Permit No. 50-06865-P, covering approximately a total of 0.27 acres of impervious area. The water quality treatment was provided for turn lanes at the Atlantic Avenue and Jog Road intersection through existing conveyance systems and the exfiltration trench system prior to ultimately discharging to Canal L-34 to the west. The exfiltration trench provides treatment for the widening on the northwest, southeast, and southwest segments at the Atlantic Avenue and Jog Road intersection due to the widening project covered under this permit.

4.9.2 PROPOSED CONDITION

The location of this basin does not change in the proposed conditions. This allows existing drainage to be reused with the use of J bottom boxes or extended pipe segments, to allow for the curb line to shift. The capacity of the existing storm sewer may need to be upgraded at the outfall to the west to maintain the pre-post rate for the overall basin, as all the water quality is being provided in that portion of the project. This means the rate will be appreciably lower than the existing condition, allowing for additional flow to the L-34 Canal. Refer to **Section 6.3** for details on the treatment volume calculations and treatment requirements for the project.

4.10 BASIN 8 (JOG ROAD NORTH OF ATLANTIC AVENUE PERMIT NO. 50-06865-P)

4.10.1 EXISTING CONDITIONS

The basin is located north of Atlantic Avenue and extends for approximately 1,160 feet to the north. This basin is treated as part of the total 0.27 acres of impervious needed to be treated for the turn lane expansion. This is a closed system that ultimately drains north to Canal L-33 and can remain largely intact.

4.10.2 PROPOSED CONDITIONS

The existing storm sewer system and treatment could potentially be reused using J bottom boxes or pipe extensions to reach the existing trunkline. This system will need to be evaluated to ensure that capacity and freeboard are still met. Helping to ensure this project will provide all additional impervious area, the basin will be directed to the west where the project enjoys the pre-post rate gap from sending 10.64 acres of impervious area to the two previously permitted offsite ponds for Atlantic Avenue. The existing treatment for the basin could potentially be reused. However, if it is determined to be difficult to incorporate this element into the final design, the treatment volume can be accounted for in the two offsite ponds. Refer to the project treatment requirements in **Section 6.3** which accounts for the existing water quality replacement within the project corridor.

4.11 BASIN 9 (ATLANTIC AVENUE EAST OF JOG ROAD TO EL CLAIR RANCH ROAD PERMIT NO. 50-02295-S)

4.11.1 EXISTING CONDITION

This basin begins approximately in the middle of the Jog Road Atlantic Avenue intersection and continues approximately 2,000 feet to the east. This portion of the project includes a 48-inch RCP storm sewer system outfalling to Canal L-34/E-2E to the east and Canal L-34/E-3 to the west. From Jog Road to east of El Clair Ranch Road the existing expanded impervious area is accounted for under permit number 50-02295-S. This permit provides for the treatment of 3.24 acres of impervious acres in the ponds located on the south side of Atlantic Avenue east of Jog Road. The existing outfall system extends back to the junction under Jog Road and connects to a headwall east of the project on the south side of Atlantic Avenue.

4.11.2 PROPOSED CONDITION

The basin area will remain the same. However, the turn lanes being incorporated in the preferred alternative will impact the dry detention ponds and therefore, impact the treatment provided in the permit. This will require re-shaping the pond slopes to attempt to salvage as much treatment volume as possible, while simply reusing the existing outfall structures. Preliminary investigation of the dry detention ponds cross sections shown in **Appendix B**, which show approximately 10% of the treatment volume being lost to the turn lane expansion for the displaced lefts and rights on the southeast side of the intersection if this alternative is selected. This level of loss can be handled in the offsite dry detention ponds. This existing system is well aligned for reuse. However, the system will need to

be modeled to ensure flow capacity and spread calculations are met in the proposed condition. **Section 6.3** accounts for the existing water quality replacement and the project treatment requirements within the project corridor.

5. POND SITING

5.1 OVERVIEW – METHODOLOGY

A review of the existing permits, as previously described, not only revealed that adjacent projects were required to provide treatment and attenuation for portions of Atlantic Avenue, two permits provided stub outs to connect the roadway drainage. An excerpt from the Atlantic Commons plans highlights the location of the 36-inch stub-out pipe is shown in **Figure 5-1**. An excerpt from the Villaggio Isles plans highlights the location of the 42-inch stub-out pipe is shown in **Figure 5-2**.

Figure 5-1: Atlantic Commons Stub Pipe Location

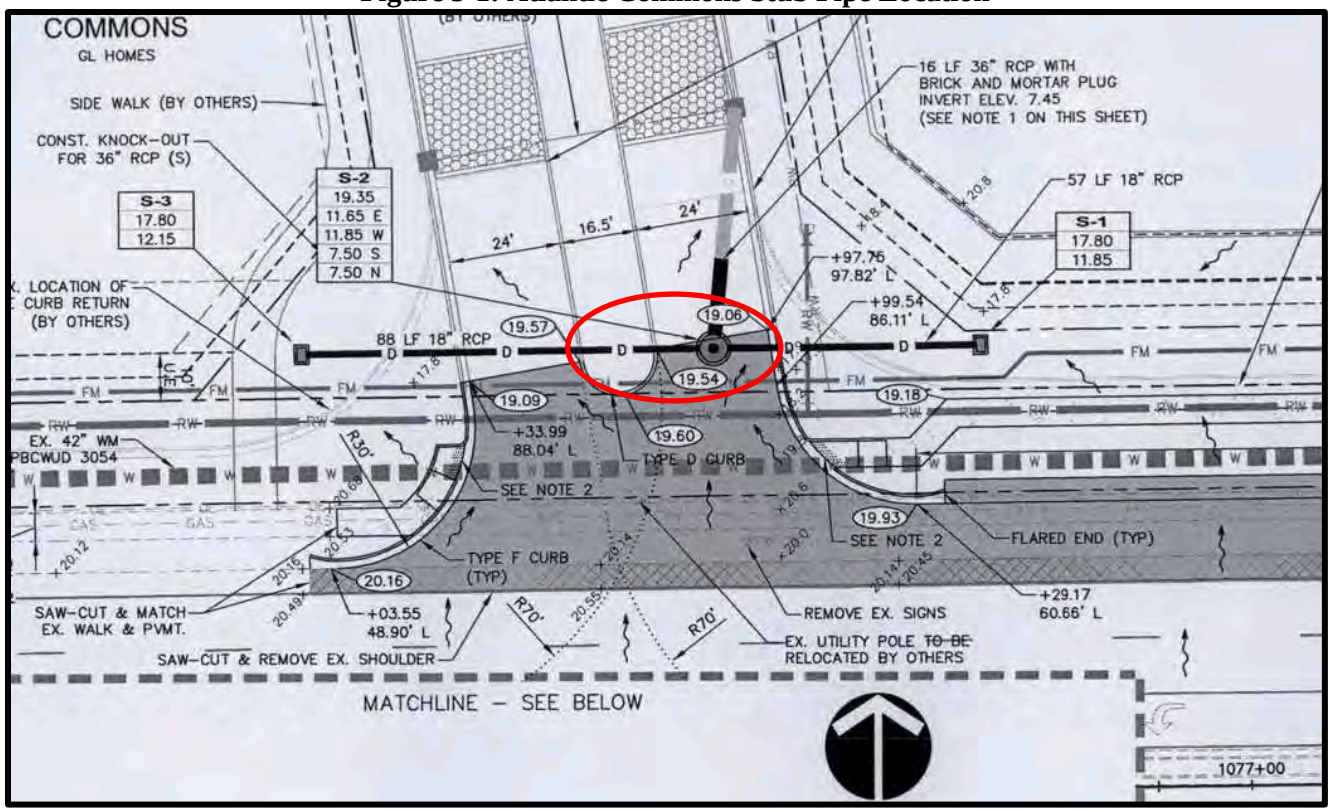
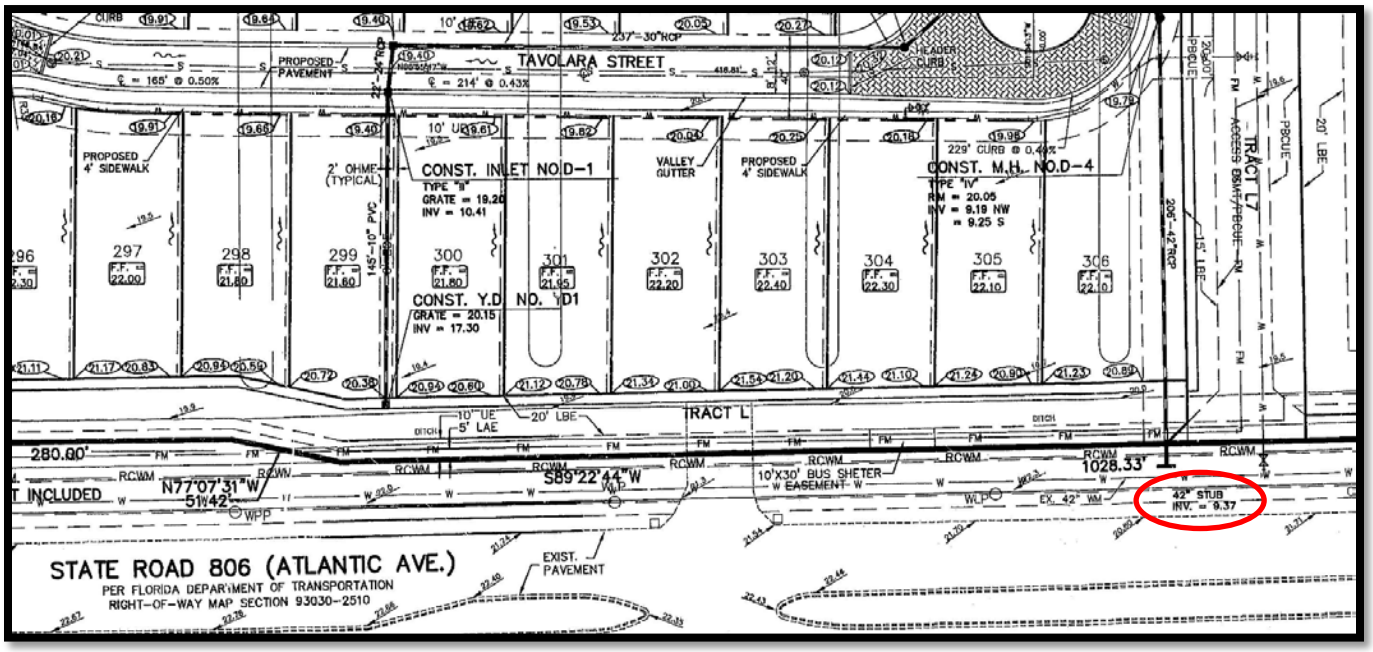


Figure 5-2: Villaggio Isles Stub Pipe Location



The pond siting process for this project was simplified by coordinating with SFWMD and demonstrating that the two existing permits cover all the treatment for the new impervious area for the project negating unnecessary construction on the adjacent ingress/egress of neighborhoods on the south side of the road as they had no stub out connection to easily hook up to. This would have required that the construction of conveyance pipes along the road that would connect to the permitted treatment and attenuation in the ponds of those neighborhoods. Refer to **Section 6.3** for additional treatment requirements and accounting of the existing water quality replacement within the project corridor.

5.2 POND SITING RESULTS

As a result of the previous permitting of the neighborhood ponds adjacent to the project, the water quality and quantity volumes available in the Villaggio Isles and Atlantic Commons neighborhood provide sufficient treatment volume, as shown in **Section 6.3.** The permits would be able to handle the new impervious area but also any water quality swales, exfiltration trench and dry treatment ponds in the ROW. Through conversations with the South Florida Water Management District, it was determined this was the best fit drainage solution for the project with the least amount of disruption to the traveling public.

6. PERMITTING

6.1 EXISTING ADJACENT PROPERTY PERMITS

A review of the available SFWMD permits shows 29.1 acres of Atlantic Avenue is proposed to be taken in by six developments along the corridor (SFWMD permits: 50-08178-P-Atlantic Commons, 50-07775-P-Villaggio Isles, 50-03863-P-Vizcaya, 50-02529-S-Turnberry Lakes, 50-04083-P Atlantic Safety, and 50-01538-S-Lexington Club), as shown in **Table 6-1**. Only Atlantic Commons and Villaggio Isles have stub out pipes for the future connection of Atlantic Avenue. The rest have permit provisions but no infrastructure for future connections. Connection to Turnberry Lakes, Lexington Club, and Vizcaya will have to cross the L-34 Canal, which may prohibit connection due to excessive construction.

Table 6-1: Summary of Existing Permits

Developments	SFWMD Permit No.	Atlantic Avenue Acreage	Atlantic Avenue Impervious Area
Turnberry Lakes	50-02529-S	1.80	1.18
W Atlantic Safety	50-04083-P	1.31	1.31
Lexington Club	50-01538-S	9.40	8.95
Villaggio Isles	**50-07775-P**	**7.13**	**6.22**
Atlantic Commons	**50-08178-P**	**5.75**	**4.42**
Upjohn PUD (Vizcaya)	50-03863-P	3.69	2.80
TOTAL AREA		29.08	24.68

There are six developments involved in permitted treatment of the ROW at buildout. These permits have apportioned varying amounts of the proposed project ROW acreage with predetermined amounts of impervious area which limits the amount of attenuation allowed in these private ponds.

6.2 EXISTING ATLANTIC AVENUE PERMITS

A review of the available SFWMD permits shows an approximate total of 6.10 acres in four stormwater management projects along the corridor (SFWMD permits: 50-04463-P-five exfiltration trenches, 50-06865-P-exfiltration trench, 50-04083-P-swales and exfiltration trench, 50-04507-P-three swales, and 50-02295-S-swales). The proposed improvements will impact the existing permits, which can be treated and replaced in kind, or abandoned. Further discussion on the existing and proposed water quality treatment is further discussed in Chapter 7. A permit modification to the SFWMD Environmental Resources Permit No. 50-06865-P will need to be acquired for the proposed project.

6.3 PROPOSED PERMITS

Canal impacts are anticipated on the south side of Atlantic Avenue for both the Best Fit Alignment and the South Alignment from the existing Turnpike bridge to Cumberland Drive. Therefore, the following permits will be required:

- Dredge and Fill permit (USACE or SFWMD)
- Right-of-Way Occupancy permit (LWDD)
- Irrigation Water Use permit (SFWMD)
- Dewatering permit (SFWMD)
- Drainage Outfall Connection Permit (LWDD)
- NPDES permit (FDEP)
- ERP Permit modification (50-06865-P)

7. STORMWATER TREATMENT & ATTENUATION

7.1 EXISTING TREATMENT REQUIREMENTS & ATTENUATION

Several areas within the current project corridor have water quality treatment that will need to be replaced in kind or maintained. For instance, the exfiltration trenches located in Basins 3, 4 and 5 account for 1.42 acres of impervious area within the project limits and will most likely be impacted with the new alignment. The existing detention ponds in Villaggio Isles (50-07775-P) and Atlantic Commons (50-08178-P) on the north side of the ROW are permitted for a total of 10.64 acres of impervious area from the Atlantic Avenue ROW. A summary table of the existing pond permits can be seen in **Table 7-1**.

Table 7-1: Permitted Off-Site Pond Capacity

Development	SFWMD Permit No.	Permitted Atlantic Ave Imp Area (ac)
Villaggio Isles	50-07775-P	6.22
Atlantic Commons	50-08178-P	4.42
TOTAL AREA:		**10.64**

West Atlantic Safety Project (50-04083-P) located on the north side of the road will remain unaffected after the construction of the project and does not require consideration for replacement or relocation. The stormwater management facilities in the form of exfiltration trench at the Atlantic Avenue and Jog Road (Permit No. 50-06865-P), five exfiltration trenches along the south side of Atlantic Avenue from Florida's Turnpike to King's Point (Permit No. 50-04463-P), the roadside swales and exfiltration trench from Atlantic Ave to Florida's Turnpike (Permit No. 50-04083-P), and the three swales from Atlantic Avenue to Florida's Turnpike (Permit No. 50-04507-P) currently provide for approximately 2.75 acres of treated impervious area within the project corridor. Since the West Atlantic Safety Project will not be impacted, the area that may be affected by the preferred alignment is 1.42 acres. **Table 7-2** summarizes the required impervious area to be treated along the project corridor.

Table 7-2: Permitted Treatment and Proposed Treatment

Development	SFWMD Permit No.	Permitted Imper. Area (ac)	Impacted Imper. Area (ac)
Atlantic Avenue from Florida's Turnpike to King's Point	50-04463-P	1.33	0
Turn Lane Improvements Atlantic Avenue & Jog Road	50-06865-P	0.52	0.52
Jog Road to El Clair Ranch Road	50-02295-S	3.74	0.37
W Atlantic Avenue & Florida's Turnpike	50-04083-P	0.38	0.38
W Atlantic Avenue & Hagen Ranch Road	50-04507-P	0.15	0.15
TOTAL AREA:			**1.42**

The pre-development water quantity that is being discharged was calculated based on the existing and impervious/pervious areas for each basin. The results show that 47.92 Ac-ft. of water is being discharged into the various canals within the project limits. The results for the existing volumes can be seen in **Table 7-4.**

7.2 REQUIRED TREATMENT AND ATTENUATION

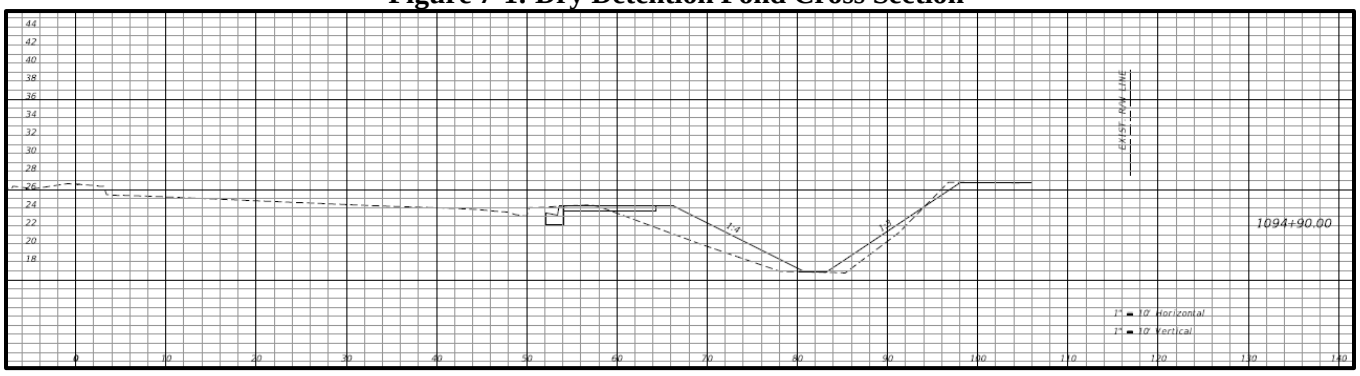
New impervious area for the Atlantic Avenue corridor is driven by SFWMD's requirement to provide treatment for the new impervious pavement in concert with the need to provide the public with the most cost-effective project solution. In an email correspondence, provided in **Appendix C**, with Dustin Wood of the South Florida Water Management District, it was agreed upon that the previously permitted ponds for both Villaggio Isles and Atlantic Commons would provide more than enough treatment for the entire project considering that the two permits allow for a combined treatment volume for 10.64 acres of impervious area, as shown in **Table 7-3**.

Table 7-3: Proposed New Impervious Area and Treatment Replacement Area

Atlantic Avenue PD&E									
Alternative	Existing Areas			Proposed Areas			Increase in Impervious Area (Ac)	Exist Treated Area to be Removed (Ac)	Total Impervious Area for Treatment (Ac)
	Impervious Area (Ac)	Pervious Area (Ac)	Total Area (Ac)	Impervious Area (Ac)	Pervious Area (Ac)	Total Area (Ac)			
1A	38.21	30.43	68.64	46.07	22.46	68.53	7.86	1.42	9.28
1B	38.21	30.43	68.64	45.48	23.07	68.55	7.27	1.42	8.69
1C	38.21	30.43	68.64	45.88	22.64	68.52	7.67	1.42	9.09
2A	38.21	30.43	68.64	46.06	22.45	68.51	7.85	1.42	9.27
2B	38.21	30.43	68.64	45.57	23.02	68.59	7.36	1.42	8.78
2C	38.21	30.43	68.64	45.96	22.57	68.53	7.75	1.42	9.17

The basins impacted by the proposed improvements will be discussed in this section and are further expanded on in **Section 4.3** through **Section 4.11**. **Figure 7-1** is an excerpt of the detention pond cross sections found in **Appendix B** from SFWMD Permit No. 50-02295-S and illustrates the proposed available capacity after improvement in the detention areas east of Jog Road. **Figure 7-1** shows that the proposed impacts create a minor reduction in volume. However, most of the capacity will be maintained.

Figure 7-1: Dry Detention Pond Cross Section



The alternative improvements impact four out of the five existing treatment sites along the project corridor, as shown in **Table 7-2**.

The post-development water quantity being discharged into the canals cannot exceed the historical pre-development quantity. Since the existing detention ponds in Villaggio Isles (50-07775-P) and Atlantic Commons (50-08178-P) on the north side of the ROW will remove some of the direct flows into the canals, the post-development flows show a net reduction when compared to the historical pre-development flows. In the worst-case scenario, a total of 26.95 Ac-Ft. of volume will be directly discharged. This accounts for a net reduction in flows for the entire project. A summary of the pre- and post-development flows can be seen in **Table 7-4**. The detailed analysis for each basin can be seen in **Appendix B.**

Table 7-4: Pre- and Post-Development Water Quantity

Atlantic Avenue PD&E			
Water Quantity Summary			
Alternative	Pre-Development Runoff Volume (Ac-Ft)	Post-Development Runoff Volume (Ac-Ft)	Change In Runoff Volume (Ac-Ft)
1A	47.92	27.06	-20.86
1B	47.92	27.00	-20.92
1C	47.92	26.99	-20.93
2A	47.92	26.94	-20.98
2B	47.92	26.99	-20.93
2C	47.92	27.08	-20.84

7.2.1 ATLANTIC AVENUE FROM TURNPIKE TO KING'S POINT (SFWMD PERMIT NO. 50-04463-P)

This permit treats 1.33 acres of impervious area in five exfiltration trenches along Atlantic Ave. This permit supplies existing treatment to Basins 1, 2, 3, 4, 5, and 6.

7.2.2 Turn Lane Improvements At Atlantic Avenue & Jog Road (SFWMD Permit No. 50-06865-P)

The 18-inch exfiltration trench that treats 0.52 acres of impervious area in Basins 6, 8 and 9 will be impacted.

7.2.3 W Atlantic Avenue & Florida's Turnpike (SFWMD Permit No. 50-04083-P)

Of those impacted, the treatment in the roadside detention swale and 24-inch exfiltration trench that treat 0.38 acres of impervious area will be eliminated.

7.2.4 W Atlantic Avenue & Hagen Ranch Road (SFWMD Permit No. 50-04507-P)

The three swales that treat 0.15 acres of impervious area in Basin 5 will also be impacted.

7.2.5 Jog Road to El Clair Ranch Road (SFWMD Permit No. 50-02295-S)

Of the 3.74 acres of treatment available, approximately 10%, or 0.37 acres, of the existing treatment will be lost due to the proposed widening, based on best available data.

7.3 Conclusion

As mentioned, the two previously permitted offsite ponds provide the needed treatment and attenuation for the entire project and allow the designer to utilize this volume rather than having to replace the water quality treatment in place. **Table 7-1** summarizes the existing permitted treatment volume in off-site ponds. **Tables 7-2** and **7-3** summarize the required impervious area to be treated along the project corridor. **Table 7-4** summarizes the pre- and post-development water quantity volumes. **Table 7.5 & 7.6** demonstrates that the existing ponds can address the proposed treatment & attenuation volume for the project corridor. As summarized in **Table 7-5**, by utilizing the permitted ponds to receive the required impervious area to be treated, an excess of 1.36 acres of treated impervious area will still be available. This is greater than the estimated 10% reduction of treatment proposed for potential offset turn lanes at Jog Road. Therefore, there is no net loss in storage along the project corridor. Furthermore, as summarized in Table 7.6, a net reduction of 20.84 Ac-Ft. in the water quantity for the project is also achieved by redirecting flows into the permitted ponds.

Table 7-5: Excess Treatment Available in Villaggio Isles and Atlantic Commons Detention Ponds

Permitted Pond Impervious Treatment Area (ac)	Worst Case Required Treatment Area (ac)	**Excess Treatment Area Available (ac)**
10.64	9.28	**1.36**

Table 7-6: Net Reduction in Discharge Volumes

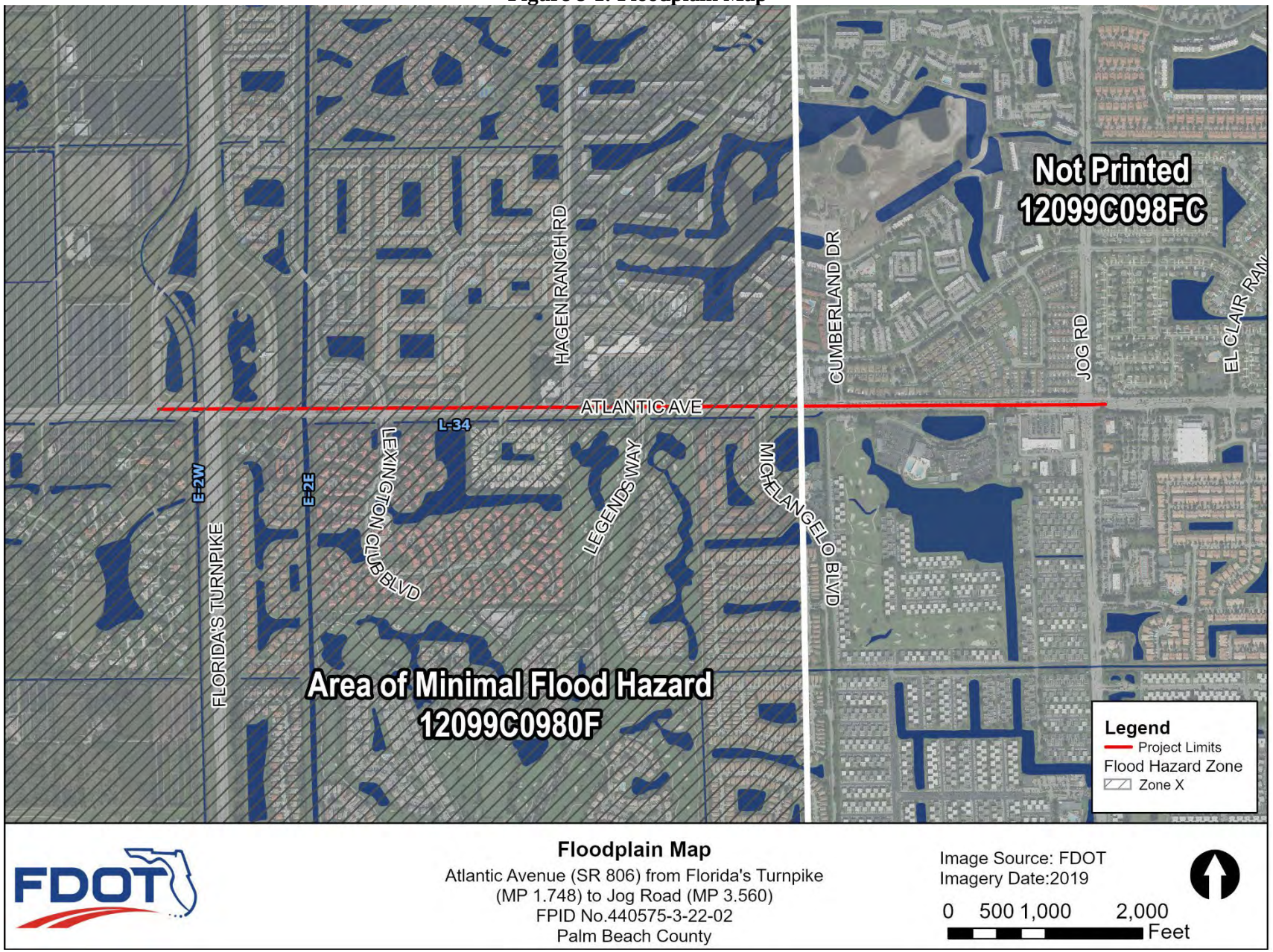
Pre-Development Runoff Volume (Ac-Ft)	Post-Development Runoff Volume (Ac-Ft) (Worst Case)	Change In Runoff Volume (Ac-Ft)
47.92	27.08	**-20.84**

8. FLOODPLAIN IMPACTS

The Federal Emergency Management Agency (FEMA) website was examined to locate the most up to date Floodplain Insurance Rate Map (FIRM) for the proposed project. The FIRM community show panel numbers 120099C0980F and 12099C0985F (not printed for this project) both dated October 5th, 2017. These panels demonstrate a Flood Zone X, an area of minimal flood hazard. As seen within and adjacent to the project, no 100-year (base) floodplain has been established, meaning no floodplain impacts will be encountered for this project. This reduces the pond envelopes required to construct the entire project.

Potential fill impacts for the Canal L-34 will need to be considered. However, the project location is not listed in a floodplain with a base flood elevation.

Figure 8-1: Floodplain Map



9. CANAL IMPACTS

In the existing condition, most of the project outfalls directly into Canal L-34, located south of Atlantic Avenue. Flow runs untreated from east to west, and ultimately outfalls into Canal E-2E through a 72-inch pipe and into Canal E-3 through a 48-inch pipe. The effect of the proposed improvements on the canal was analyzed. This included maintenance berm widths, channel cross sectional area, and channel capacity, discussed in the LWDD meeting on March 9, 2021. Further discussion emphasized the requirement for maintaining an approximate 1:2 slope, and 35-foot and 10-foot maintenance berms in the proposed conditions. As previously mentioned, the proposed canal improvements impact the existing outfalls within the canal limits from Atlantic Avenue. This will require a reduction in length and replacement of headwalls to provide for the realignment of the canal to the north. According to the facilities report provided by LWDD, the canal is designed to flow 30 cubic feet per second (cfs).

Several alternatives and iterations were proposed and review by LWDD included filling portions of the L-34 Canal with pipes ranging from 54" to dual 84" pipes. The result was a re-aligned canal and roadway where no additional piping is required. The L-34 Canal will be re-aligned and will maintain a minimum 10' access berm adjacent to the roadway, a 30' canal width (top of bank to top of bank) and a 35' maintenance berm on the south side of the canal. The canal itself will have a top of bank elevation of 20' NAVD, 1½:1 side slopes and a 6' bottom width. In areas where the right turn lanes squeeze into this canal R/W, a vertical bulkhead wall is proposed on the north side of the Canal. Canal typical sections are provided in **Appendix B**, along with copies of the technical memo documenting the analyses presented to LWDD.

At the LWDD Board Meeting on 3-15-23, it was agreed that all the existing driveway culverts within the L-34 canal from the E-2E Canal to just west of Michelangelo Boulevard will be replaced with dual 84" RCP Culverts. Vertical bulkhead walls will be installed for the right turn lane at Legends Way, and at Michelangelo Boulevard. The rest of the canal will meet the dimensional criteria detailed above between the E-2E Canal and the current end of the canal just west of Cumberland Drive.

10. LATERAL OUTFALLS AND BRIDGE CROSSINGS

10.1 LATERAL OUTFALLS

All existing lateral cross drains outfall to Canal L-34. The approximate locations and outfall pipe size are summarized in **Table 10-1**.

Table 10-1: Existing Lateral Outfall Locations and Sizes

Street Name Range	Approximate Station	Pipe Size
Eagle Point Drive to Legends Way	1028+69.00	18” RCP
	1034+70.00	24” RCP
Legends Way to Michelangelo Boulevard	1039+18.00	30” RCP
Michelangelo Boulevard to Cumberland Drive	1052+49.00	30” CMP
	1057+64.00	24” RCP
Cumberland Drive to Kings Point Entrance	1059+40.00	18” RCP
Jog Road to El Clair Ranch Road	1090+44.00	18” RCP
	1094+48.00	30” RCP
	1095+44.00	18” RCP
El Clair Ranch Road to Lakes of Delray Boulevard	1100+33.00	18” RCP
	1102+63.00	18” RCP

The proposed canal improvements require manholes to be installed to connect existing outfalls to the proposed closed drainage system. The proposed canal improvements require the cross drains to be inspected, shortened and with replaced headwalls. Additionally, carrying capacity will need to be examined to ensure inlet freeboard and velocity can be maintained at the required design level.

10.2 BRIDGE CROSSINGS

Bridge 930032 was expanded to the north in the existing condition for a previous safety project. As part of this project, the bridge deck needs to be widened to the south by a total of 15′-4⅛″± to accommodate an additional 11′-0″ lane, 8′-4″ buffered bicycle lane, single slope bridge railing (1′-4″ per Index 521-427), 11′-4″ shared use path, and pedestrian/bicycle railing- aluminum (9½″ per Index 515-061). The widening will follow the span arrangement of the existing bridge: 20′-0″ + 20′-0″ + 20′-0″ = 60′-0″. The existing bridge is not skewed, which will be maintained on the widened portion. The widening will require the removal of the articulated concrete block on the banks and the riprap will be replaced with the LWDD’s preferred bank hardening method of rock rubble rip rap as shown in **Appendix F**. A preliminary plan and profile view of the proposed widening of the existing bridge is also shown in **Appendix F**.

FDOT District Four Drainage Engineer, James Poole P.E., stated in an email provided in **Appendix C,** that on controlled canals a BHR will not be required. However, a Bridge Hydraulics memo will be needed. This memo simply states that the cross-sectional area of the canal flow way will not be reduced as the proposed bridge widening required piles will be in line with the current piles. The memo is provided in **Appendix F.**

11. CONCLUSION

Floodplain in the area is not of concern as the entire project is in a Zone X floodplain with no base elevation, meaning no compensation will be required. The canal in the proposed condition will be impacted due to the realignment made necessary by the maintenance berm requirements of the LWDD. The facilities report dictated that the canal be able to flow 30 cfs in the proposed condition and as shown this is the case for most of the canal. The exiting storm water sewer system was found to still be useful in most of the project. However, in many instances the realignment will preclude this. The carrying capacity of all systems along with the inlet spacing will need to be examined to ensure criteria is meet and no adverse spread impacts have occurred. In the areas where reusing the exfiltration trench treatment will most likely not be feasible, it will need to be accounted for in the off-site permitted ponds as there is an abundance of treatment volume available to the project in these two ponds. Swales in the project corridor will need to be accounted for in the off-site pond treatment volume as the realignment will fill these entities in completely. The treatment provided in the dry detention ponds east of Jog Road will be impacted at a rate of approximately ten percent and this volume can again be accounted for in the offsite pond treatment volume. The treatment and attenuation can be accounted for in the two permits (50-08178-P and 50-0775-P) for the entire project, providing a net water quality benefit to the area and treating previously untreated impervious area through the off-site wet detention ponds through existing unused stub outs at the right of way. This streamlines the project and negates disruption to the adjacent homeowners by not requiring storm sewer to be installed in the singular ingress egress corridors to the south subdivisions.

This project should be permitted as a milling and resurfacing with widening to the outside, which requires treatment of only the new impervious area, as this is a capacity project. Using existing permits, this treatment can be provided in a less disruptive manner to the traveling public and accomplish the water quality goals of the state while providing for the expansion of the area.

APPENDIX A

Figures and Maps

EXIST. LA R/W LINE

FLORIDA'S TURNPIKE EXIT

FLORIDA'S TURNPIKE ENTRANCE

1"=50'

EXIST. R/W LINE

EXIST. LA R/W LINE

BEGIN PROJECT STA. 982+00.00
MATCH FPID 440575-2-52-01
PROJECT LIMITS

ONLY

ONLY

ONLY

SR 806

984

985

986

987

988

989

990

991

N89°39'13"E

℄ CONST. SR 806

MATCHLINE STA. 991+20.00

EXIST. R/W LINE

EXIST. R/W LINE

EXIST. CANAL R/W LINE

EXIST. LA R/W LINE

LEGEND:

- PROPOSED CORRIDOR IMPROVEMENTS
- PROPOSED SIDEWALK
- TRAFFIC SEPARATOR
- SOD
- EXISTING SIGNALIZED INTERSECTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

5/5/2023 3:56:56 PM USER: cfillyaw
P:\FL20005.00 Atlantic Avenue PD&E Study\44057532202\Roadway\PLANRD01C.dgn

EXIST. LA R/W LINE

FLORIDA'S TURNPIKE

1"=50'

N

ONLY

ONLY

ONLY

SR 806

992

993

994

995

996

997

998

S86°8'7"E

S89°24'15"E

ONLY

ONLY

ONLY

ONLY

℄ CONST. SR 806

MATCHLINE STA. 991+20.00

MATCHLINE STA. 998+40.00

EXIST. LA R/W LINE

EXIST. R/W LINE

PROP. R/W LINE

EXIST. LA R/W LINE

LEGEND:

- PROPOSED CORRIDOR IMPROVEMENTS
- PROPOSED SIDEWALK
- TRAFFIC SEPARATOR
- SOD
- EXISTING SIGNALIZED INTERSECTION

5/5/2023 3:56:58 PM USER: cfillyaw
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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

FLORIDA'S TURNPIKE EXIT

FLORIDA'S TURNPIKE ENTRANCE

TUSCANY SHOPPES

1"=50'

N

EXIST. R/W LINE

PROP. R/W LINE

SR 806

999

1000

1001

1002

1003

1004

1005

℄ CONST. SR 806

MATCHLINE STA. 998+40.00

MATCHLINE STA. 1005+60.00

PROP. R/W LINE

EXIST. R/W LINE

PROP. R/W LINE

REALIGNED CANAL

CHANCERY LINE

L.W.D.D. CANAL L-34 EASEMENT

BUFFER EASEMENT

EXIST. CANAL R/W LINE

EXIST. CANAL EASEMENT

SONATA ASSISTED LIVING

LEXINGTON CLUB

EXIST. CANAL R/W LINE

LEGEND:

- PROPOSED CORRIDOR IMPROVEMENTS
- PROPOSED SIDEWALK
- TRAFFIC SEPARATOR
- SOD
- EXISTING SIGNALIZED INTERSECTION

5/5/2023 3:57:00 PM USER: cfillyaw
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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

MATCHLINE STA. 1005+60.00

MATCHLINE STA. 1012+80.00

TUSCANY SHOPPES

PROP. R/W LINE

EXIST. R/W LINE

STONE QUARY BLVD.

STONE QUARY BLVD.

VILLAGGIO ISLES

1"=50'

N

PROP. R/W LINE

1006

1007

1008

1009

1010

1011

1012

SR 806

℄ CONST. SR 806

PROP. R/W LINE

REALIGNED CANAL

CHANCERY LINE

L.W.D.D. CANAL
L-34 EASEMENT

BUFFER
EASEMENT

EXIST. R/W LINE

REALIGNED CANAL

L.W.D.D. CANAL
L-34 EASEMENT

BUFFER
EASEMENT

LEXINGTON CLUB

LEXINGTON CLUB BLVD.

LEGEND:

- PROPOSED CORRIDOR IMPROVEMENTS
- PROPOSED SIDEWALK
- SOD
- EXISTING SIGNALIZED INTERSECTION

5/5/2023 3:57:02 PM USER: cfillyaw
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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

VILLAGGIO ISLES

UMBERTO PL.

1"=50'

N

PROP. R/W LINE

EXIST. R/W LINE

PROP. R/W LINE

SR 806

1013 1014 1015 1016 1017 1018 1019 1020

℄ CONST. SR 806

MATCHLINE STA. 1012+80.00

MATCHLINE STA. 1020+00.00

EXIST. R/W LINE

REALIGNED CANAL

L.W.D.D. CANAL
L-34 EASEMENT

BUFFER
EASEMENT

LEXINGTON CLUB

LEGEND:

PROPOSED CORRIDOR IMPROVEMENTS

PROPOSED SIDEWALK

SOD

5/5/2023 3:57:04 PM USER: cfillyaw
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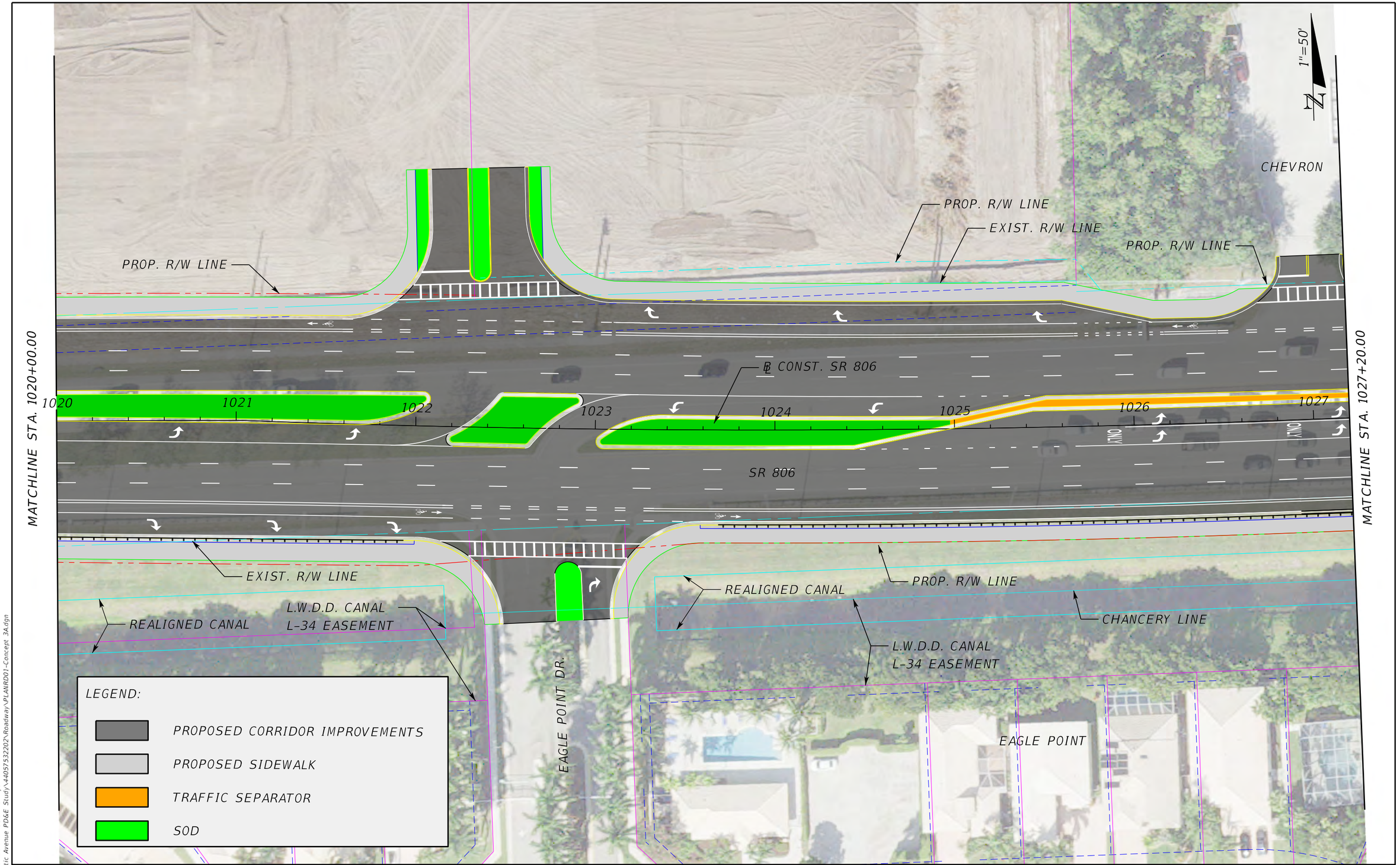
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	440057532202

CONCEPT PLANS

SHEET NO.

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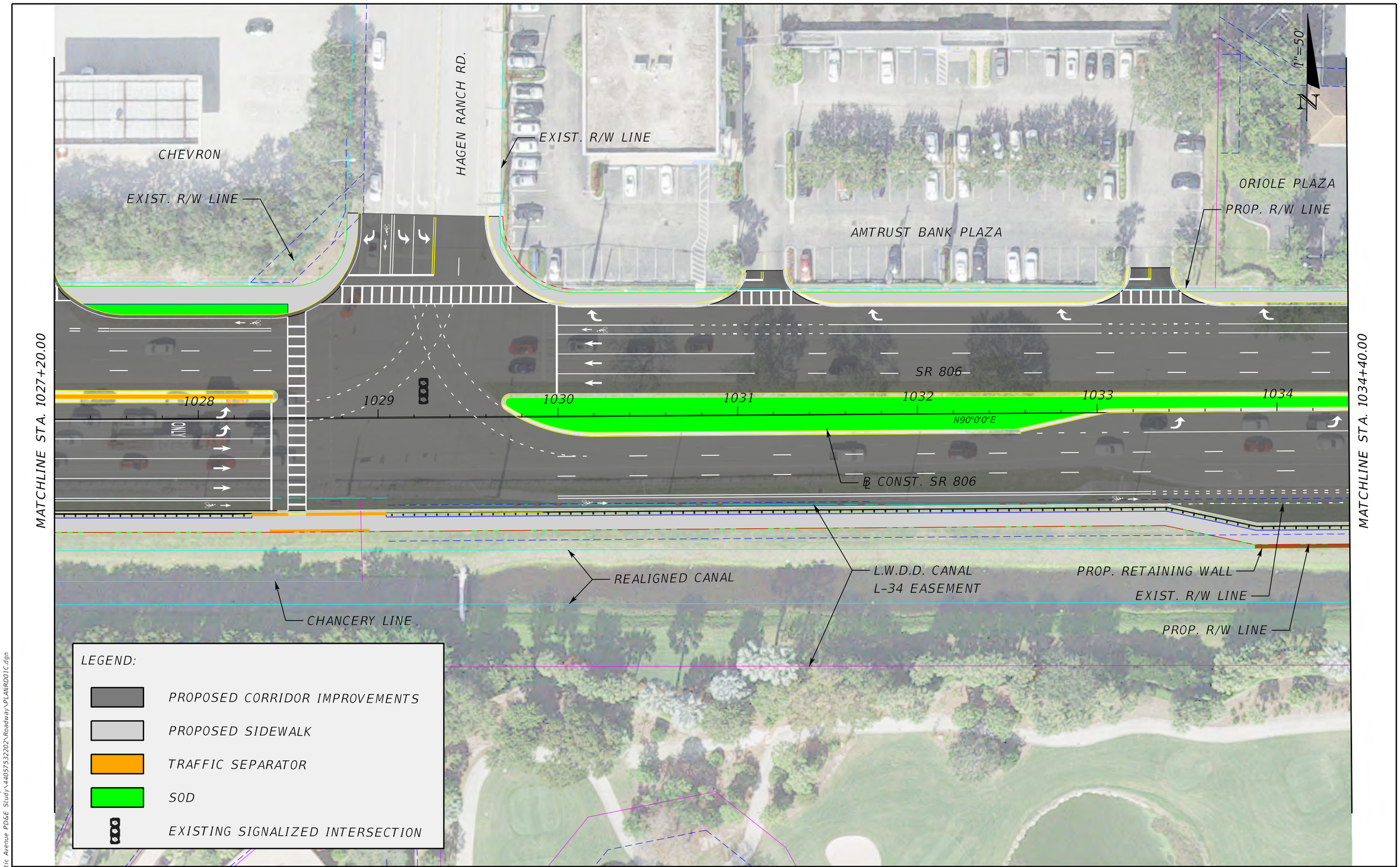

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				806	PALM BEACH	44057532202		

5/5/2023 3:57:08 PM USER: cfillyaw
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ORIOLE PLAZA

LEGENDS WAY

PROP. R/W LINE

EXIST. R/W LINE

ORIOLE PLAZA

1"=50'

N

MATCHLINE STA. 1034+40.00

1035

1036

1037

1038

1039

1040

1041

SR 806

℄ CONST. SR 806

MATCHLINE STA. 1041+60.00

PROP. RETAINING WALL

REALIGNED CANAL

L.W.D.D. CANAL
L-34 EASEMENT

EXIST. CANAL R/W LINE

LEGENDS WAY

PROP. R/W LINE

EXIST. R/W LINE

EXIST. CANAL R/W LINE

L.W.D.D. CANAL
L-34 EASEMENT

REALIGNED CANAL

LEGEND:

- PROPOSED CORRIDOR IMPROVEMENTS
- PROPOSED SIDEWALK
- SOD
- EXISTING SIGNALIZED INTERSECTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

5/5/2023 3:57:10 PM USER: cfillyaw
P:\FL20005.00 Atlantic Avenue PD&E Study\44057532202\Roadway\PLANRD01C.dgn

1"=50'

RIVERSIDE-STANETSKY
MEMORIAL CHAPELS

PROP. R/W LINE

EXIST. R/W LINE

SR 806

1042 1043 1044 1045 1046 1047 1048

℄ CONST. SR 806

MATCHLINE STA. 1041+60.00

MATCHLINE STA. 1048+80.00

EXIST. R/W LINE

PROP. R/W LINE

EXIST. CANAL R/W LINE

REALIGNED CANAL

EXIST. CANAL R/W LINE

PROP. RETAINING WALL

L.W.D.D. CANAL
L-34 EASEMENT

MURANO OF DELRAY BEACH

LEGEND:

PROPOSED CORRIDOR IMPROVEMENTS

PROPOSED SIDEWALK

SOD

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

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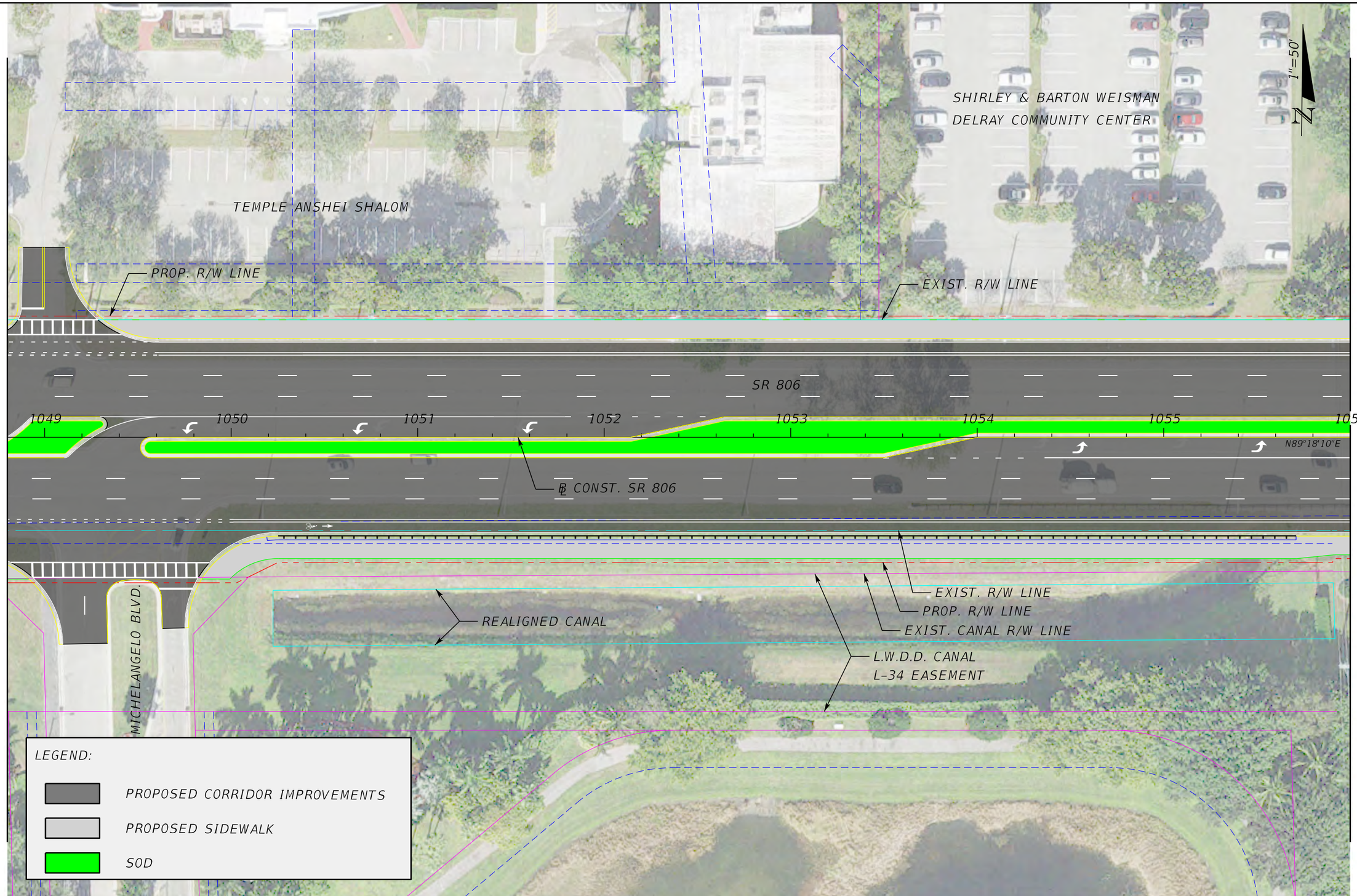

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

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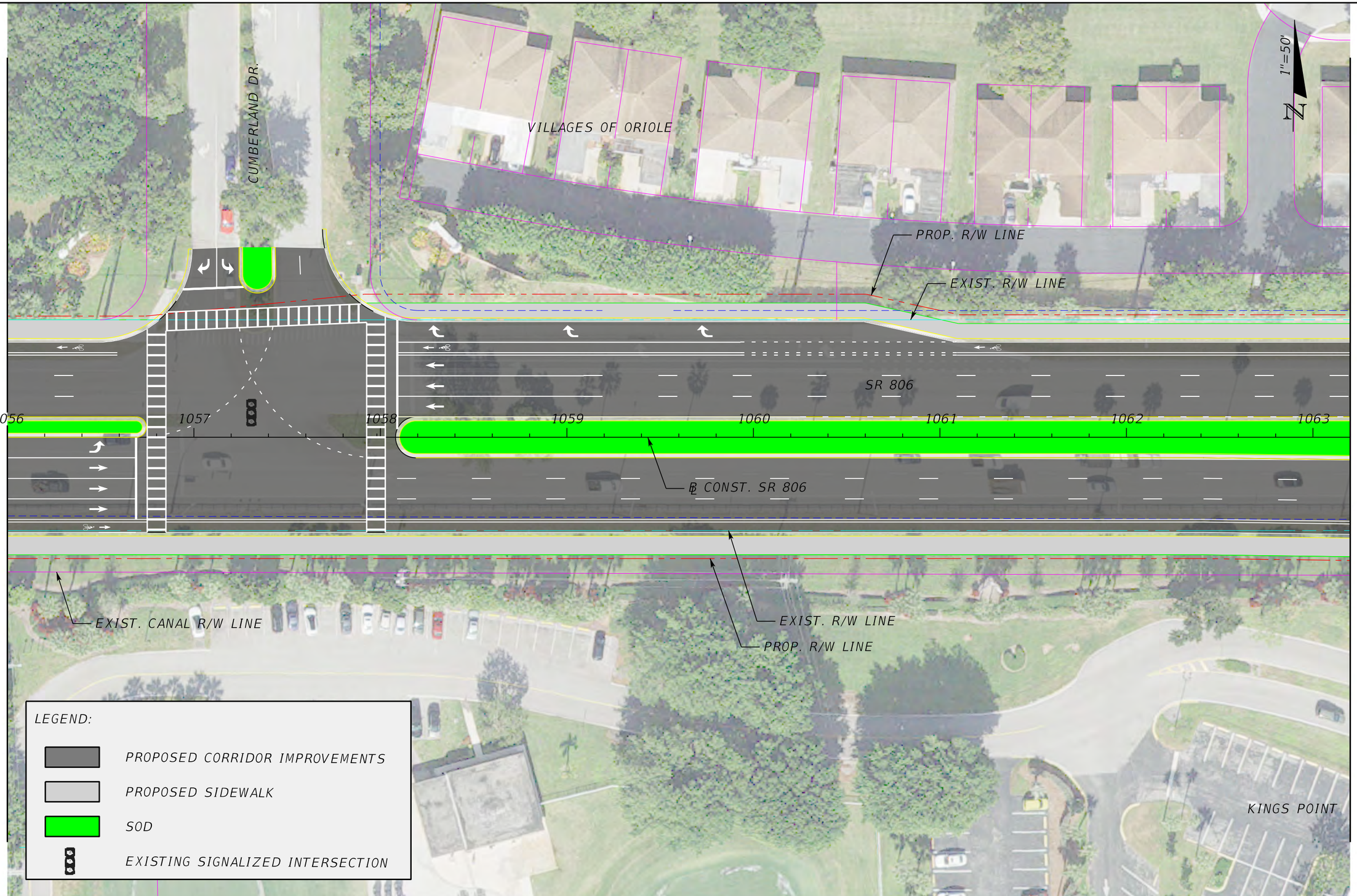

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

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MATCHLINE STA. 1063+20.00

VILLAGES OF ORIOLE

EXIST. R/W LINE

PROP. R/W LINE

℄ CONST. SR 806

SR 806

1064 1065 1066 1067 1068 1069 1070

1"=50'

MATCHLINE STA. 1070+40.00

EXIST. R/W LINE

PROP. R/W LINE

LEGEND:

- PROPOSED CORRIDOR IMPROVEMENTS
- PROPOSED SIDEWALK
- SOD

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

5/5/2023 3:57:18 PM USER: cfillyaw
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MATCHLINE STA. 1070+40.00

MATCHLINE STA. 1077+60.00

1"=50'

VILLAGES OF ORIOLE

PROP. R/W LINE

EXIST. R/W LINE

℄ CONST. SR 806

SR 806

1071

1072

N88°33'10"E

1073

1074

1075

1076

1077

EXIST. R/W LINE

PROP. R/W LINE

EXIST. CANAL R/W LINE

SEVILLE TER.

LEGEND:

PROPOSED CORRIDOR IMPROVEMENTS

PROPOSED SIDEWALK

SOD

EXISTING SIGNALIZED INTERSECTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

5/5/2023 3:57:19 PM USER: cfillyaw
P:\FL20006.00 Atlantic Avenue PD&E Study\44057532202\Roadway\PLANRD01C.dgn

MATCHLINE STA. 120+40.00

LEGEND:

- PROPOSED CORRIDOR IMPROVEMENTS
- PROPOSED SIDEWALK
- TRAFFIC SEPARATOR
- SOD
- EXISTING SIGNALIZED INTERSECTION

VILLAGES OF ORIOLE

EXIST. R/W LINE

PROP. R/W LINE

JOG RD.

120

119

118

117

116

EXIST. R/W LINE

TRUIST

1"=50'

℄ CONST. JOG ROAD

PROP. R/W LINE

1078 1079 1080 1081 1082 1083 1084

N89°18'10"E

℄ CONST. SR 806

EXIST. R/W LINE

SR 806

MATCHLINE STA. 1077+60.00

MATCHLINE STA. 1084+80.00

EXIST. R/W LINE

PROP. R/W LINE

KING'S POINT
SHOPPING CENTER

WALGREENS

JOG RD.

PROP. R/W LINE

EXIST. R/W LINE

CVS PHARMACY

MATCHLINE STA. 115+80.00

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

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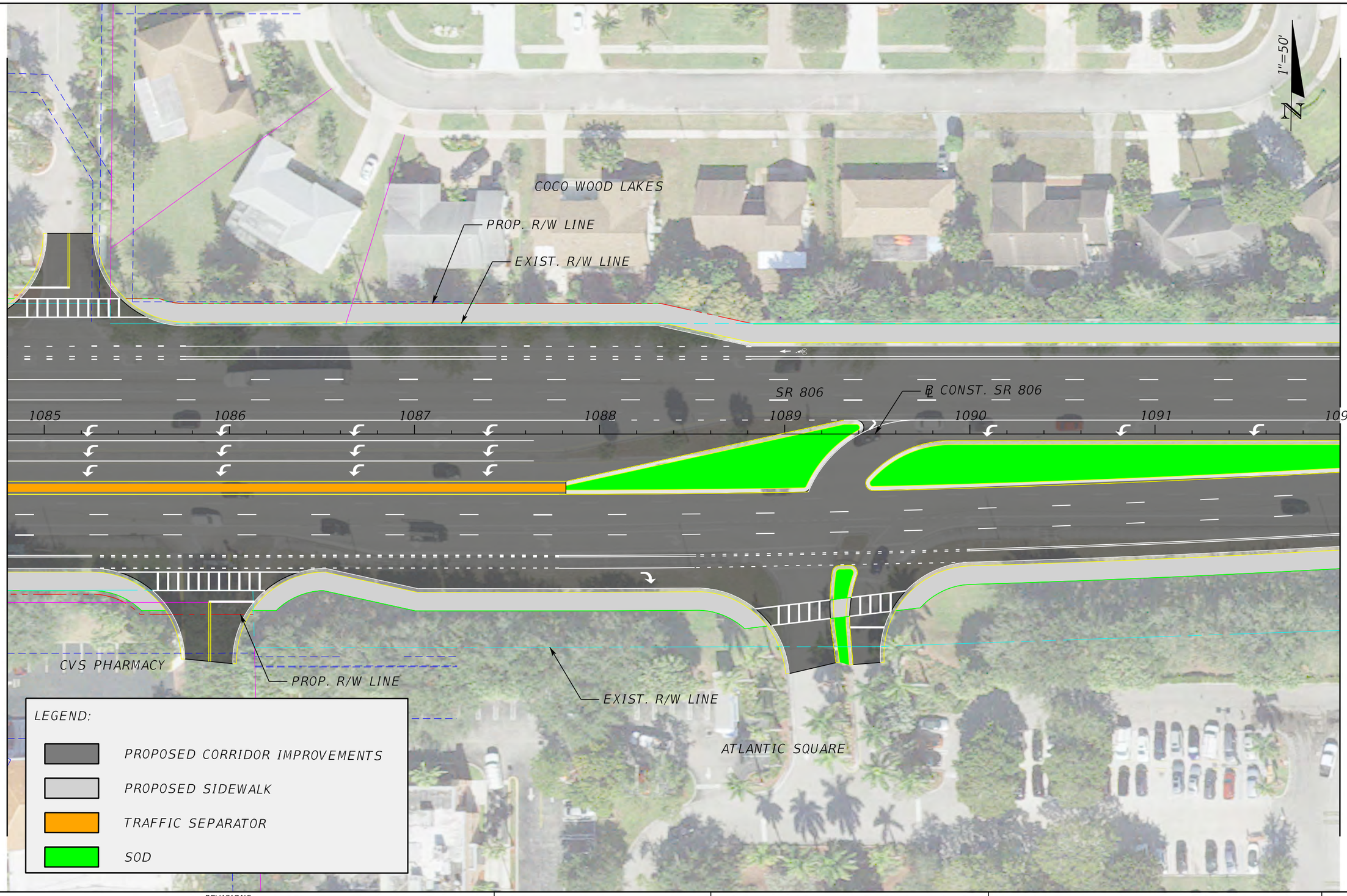

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

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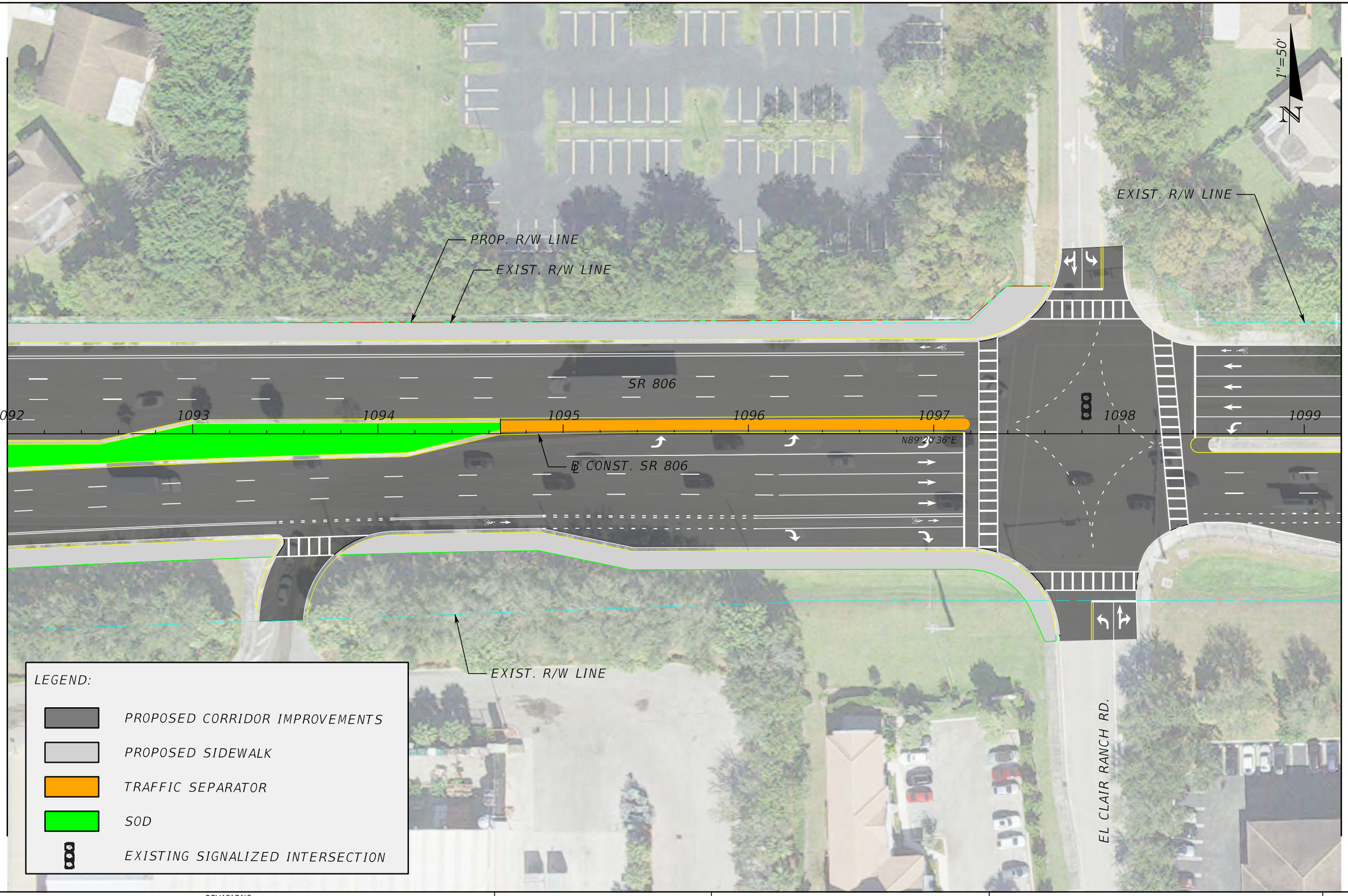

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
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				806	PALM BEACH	44057532202		

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REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	CONCEPT PLANS	
					806	PALM BEACH	44057532202		

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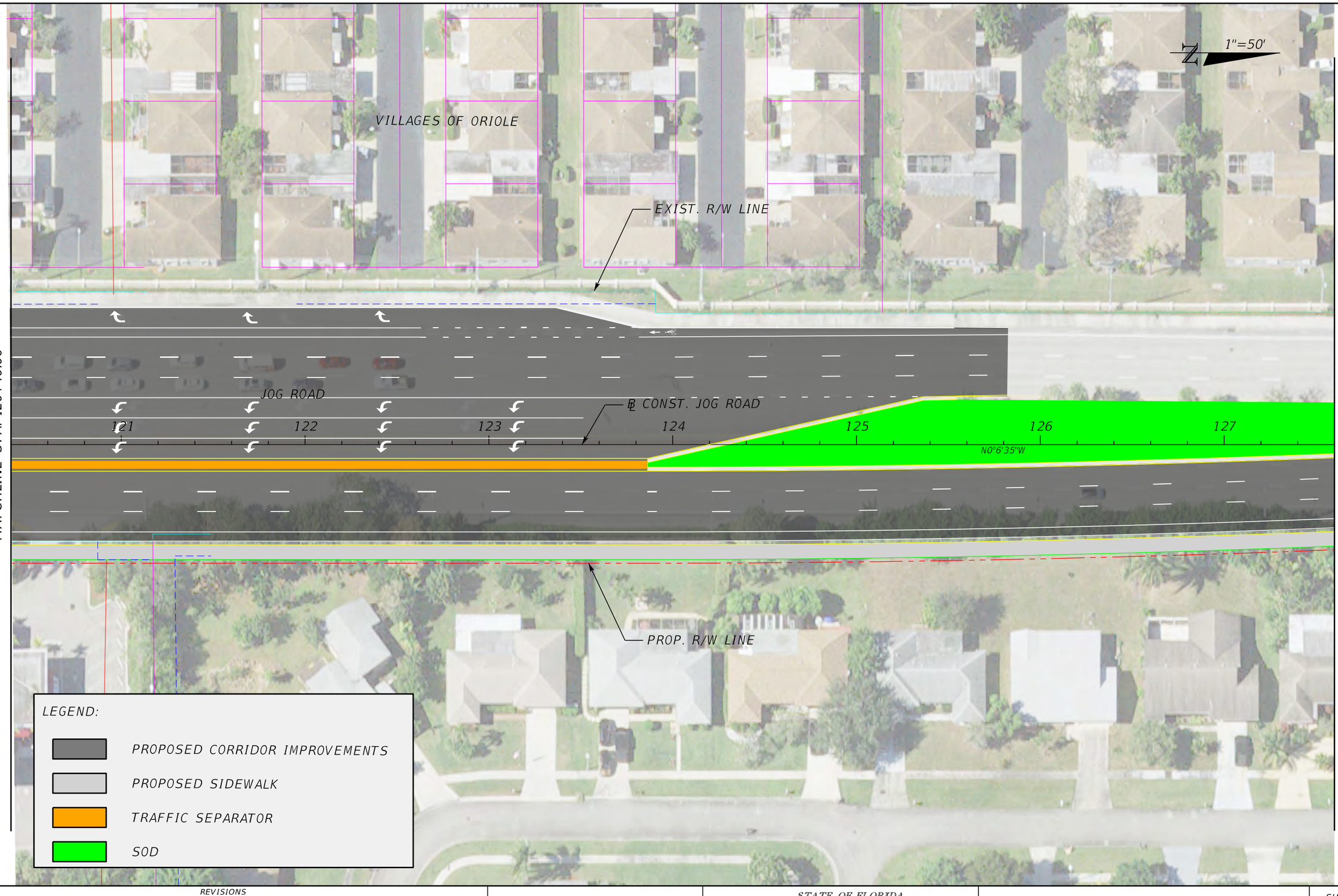

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

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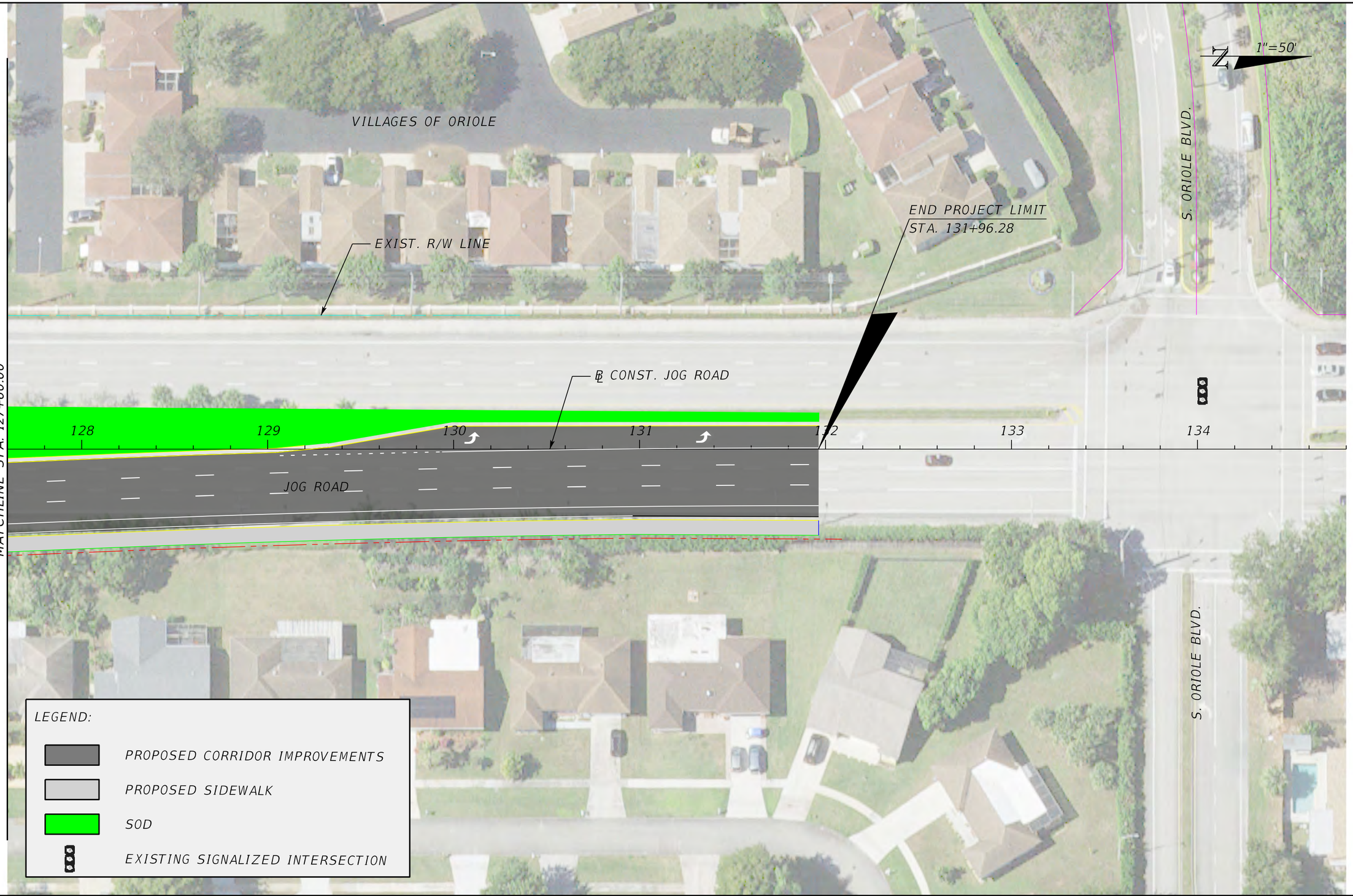

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

5/5/2023 3:57:32 PM USER: cfillyaw
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1"=50'

SEVILLE E

SEVILLE C

BEGIN PROJECT LIMIT
STA. 103+80.87

102 103 104 105 106 107 108

N2°10'47"W

JOG ROAD

℄ CONST. JOG ROAD

MATCHLINE STA. 108+60.00

LEGEND:

PROPOSED CORRIDOR IMPROVEMENTS

PROPOSED SIDEWALK

SOD

ATLANTIC PLAZA
SHOPPING PLAZA

5/5/2023 3:57:34 PM USER: cfillyaw
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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

1"=50'

SEVILLE TERRACE

KING'S POINT
PROFESSIONAL BUILDING

EXIST. R/W LINE

MATCHLINE STA. 108+60.00

MATCHLINE STA. 115+80.00

109 110 111 112 113 114 115

JOG ROAD

℄ CONST. JOG ROAD

PROP. R/W LINE

EXIST. R/W LINE

PROP. R/W LINE

LEGEND:

- PROPOSED CORRIDOR IMPROVEMENTS
- PROPOSED SIDEWALK
- TRAFFIC SEPARATOR
- SOD

APPLEBEE'S

THIRD FEDERAL
SAVINGS & LOAN

CVS PHARMACY

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
806	PALM BEACH	44057532202

CONCEPT PLANS

SHEET NO.

5/5/2023 3:57:36 PM USER: cfillyaw
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NRCS Soil Survey Map

Custom Soil Resource Report
Soil Map

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
21	Myakka fine sand, 0 to 2 percent slopes	110.1	93.2%
35	Quartzipsamments, shaped, 0 to 5 percent slopes	6.5	5.5%
99	Water	1.4	1.2%
Totals for Area of Interest		**118.1**	**100.0%**

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.

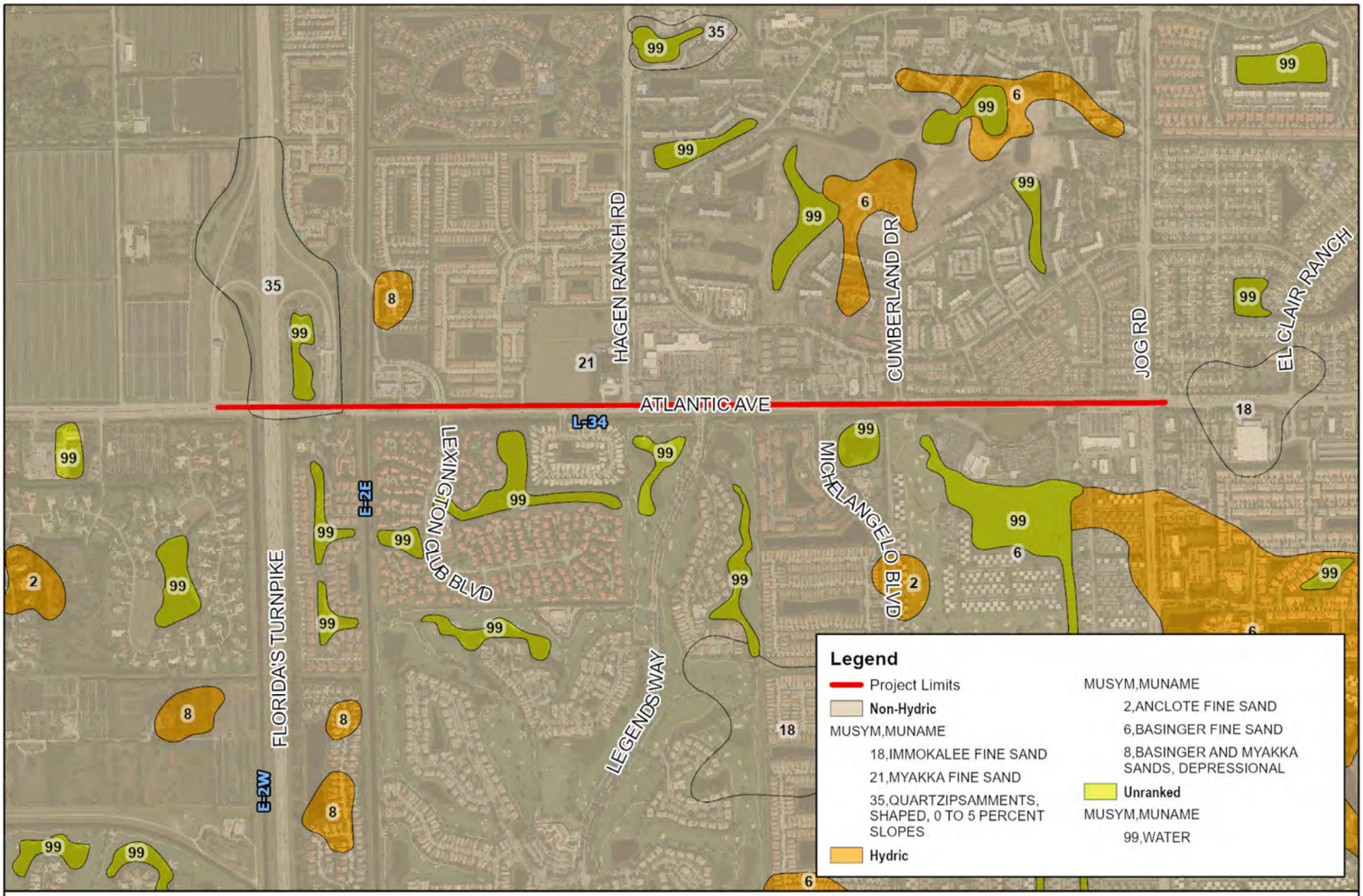
This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Palm Beach County Area, Florida
Survey Area Data: Version 16, Feb 3, 2020

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

Date(s) aerial images were photographed: Dec 5, 2018—Jan 9, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



FDOT

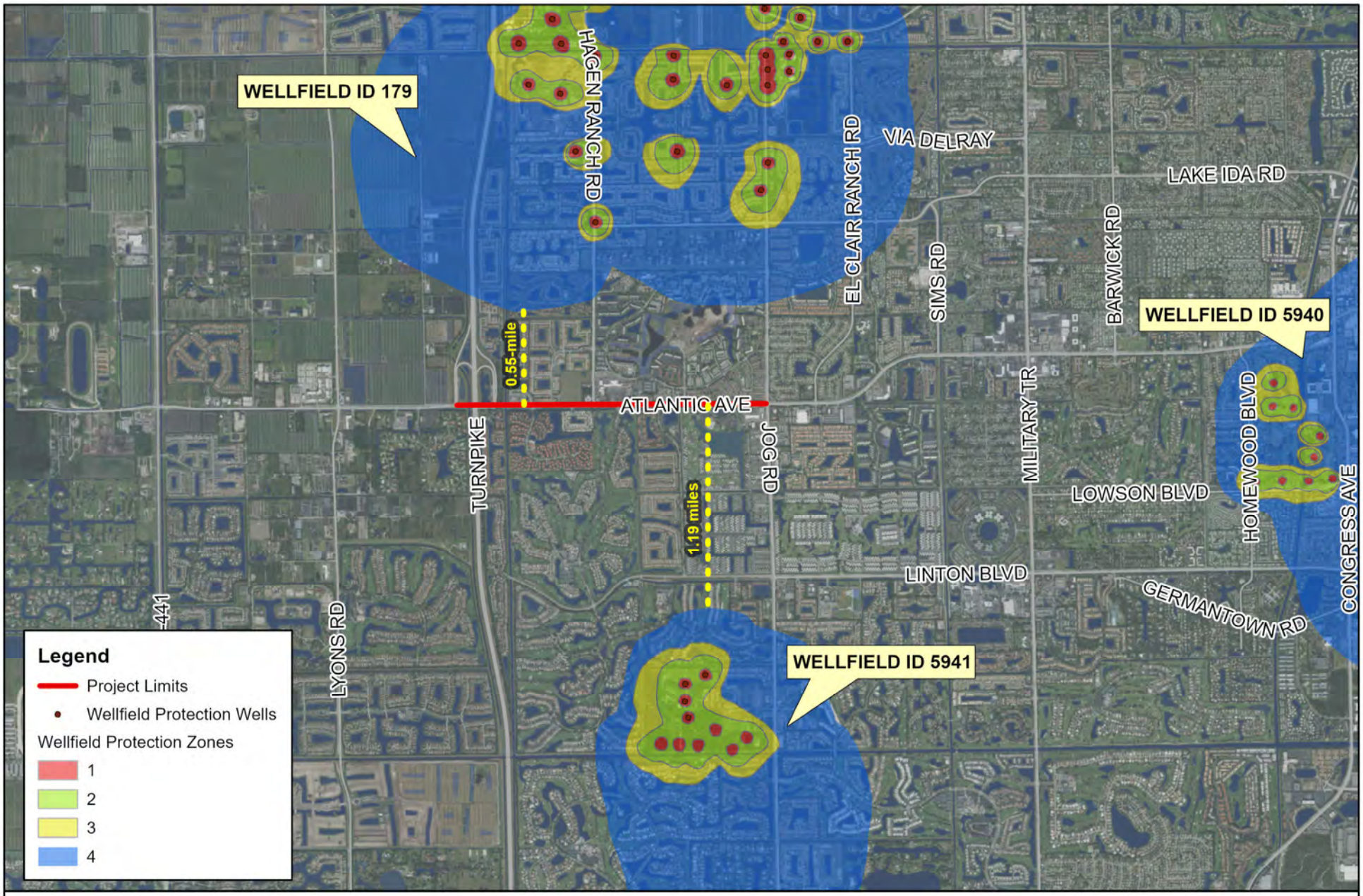
NRCS Soil Map

Atlantic Avenue (SR 806) from Florida's Turnpike
(MP 1.748) to Jog Road (MP 3.560)
FPID No.440575-3-22-02
Palm Beach County

Image Source: FDOT
Imagery Date:2019

0 500 1,000 2,000
Feet

Palm Beach County Wellfield Zones Map



FDOT

Wellfield Zones Map

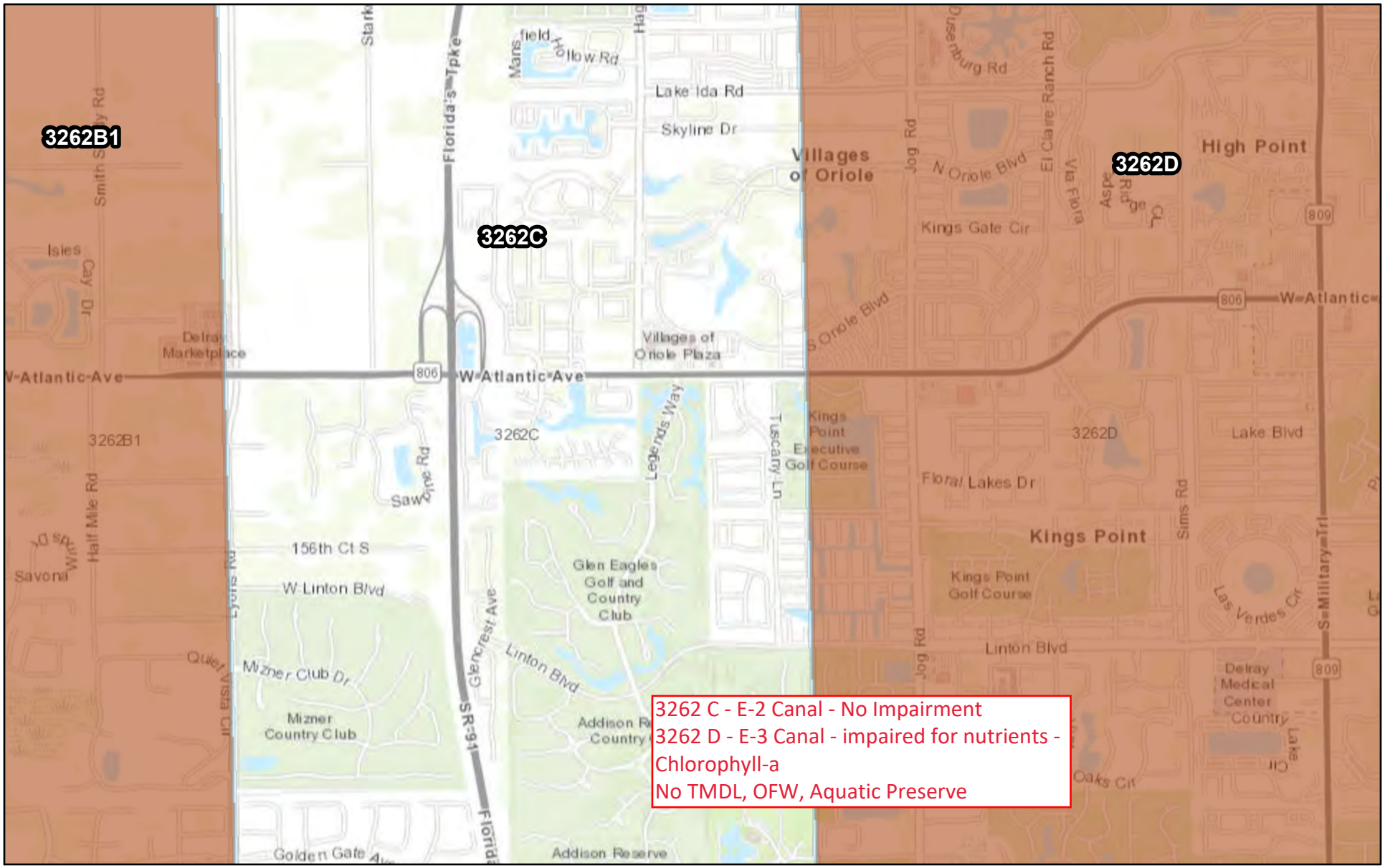
Atlantic Avenue (SR 806) from Florida's Turnpike
(MP 1.748) to Jog Road (MP 3.560)
FPID No.440575-3-22-02
Palm Beach County

Image Source: ESRI
Imagery Date:2019

0 0.3 0.6 1.2 Miles

Waterbody IDs Map

Verified List WBIDs



September 27, 2019

Waterbody IDs (WBIDs)

Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | Verified List WBIDs

1:36,112

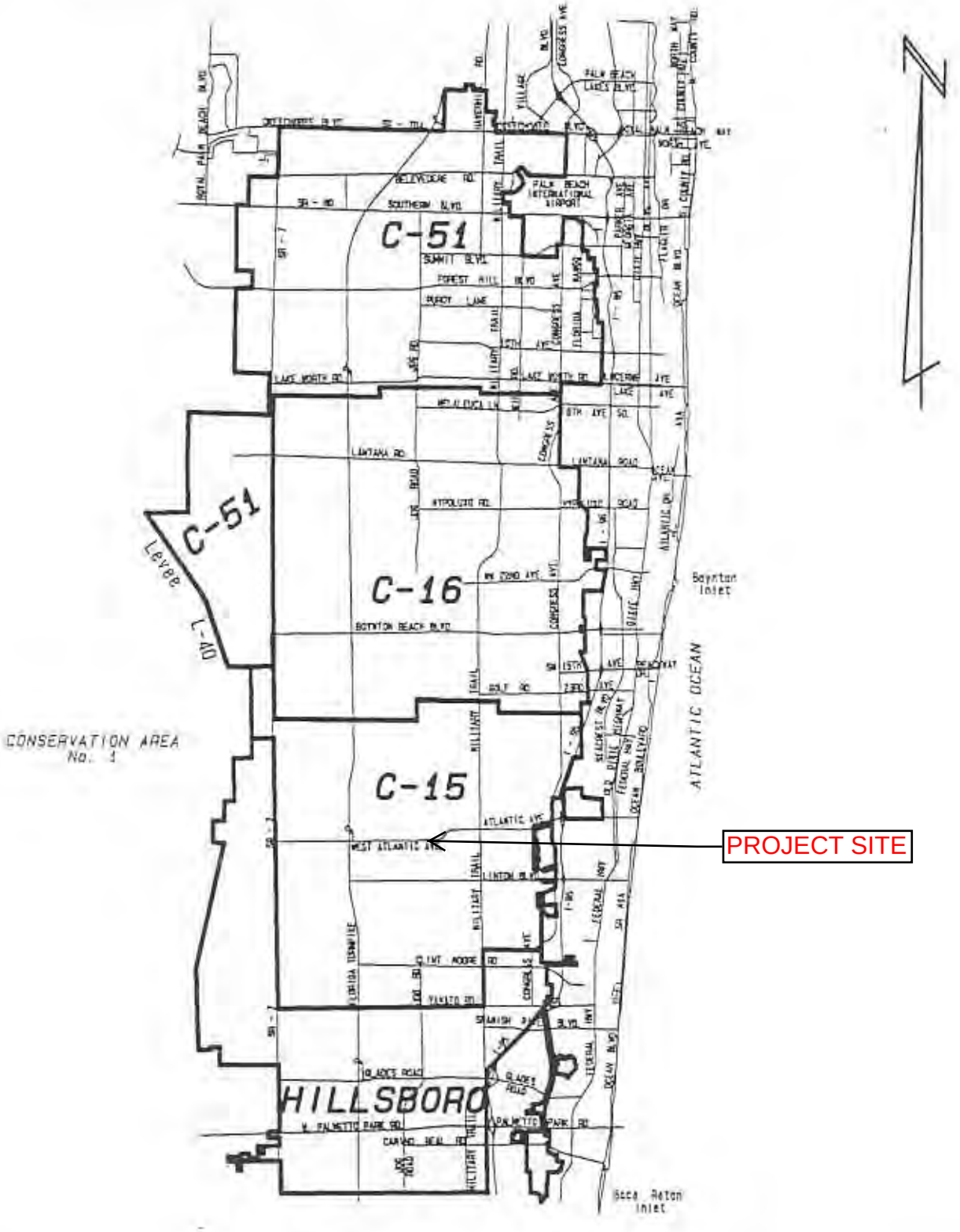
0 0.28 0.55 1.1 mi

0 0.42 0.85 1.7 km

FDEP, DEAR, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL,

Map created by Map Direct, powered by ESRI.

LWDD Jurisdictional Basin Map



MOCK, ROOS & ASSOCIATES, INC.
ENGINEERS • SURVEYORS • PLANNERS
5720 CORPORATE WAY
WEST PALM BEACH, FLORIDA 33407
Phone: 407 683-3113 Fax: 407 478-7248

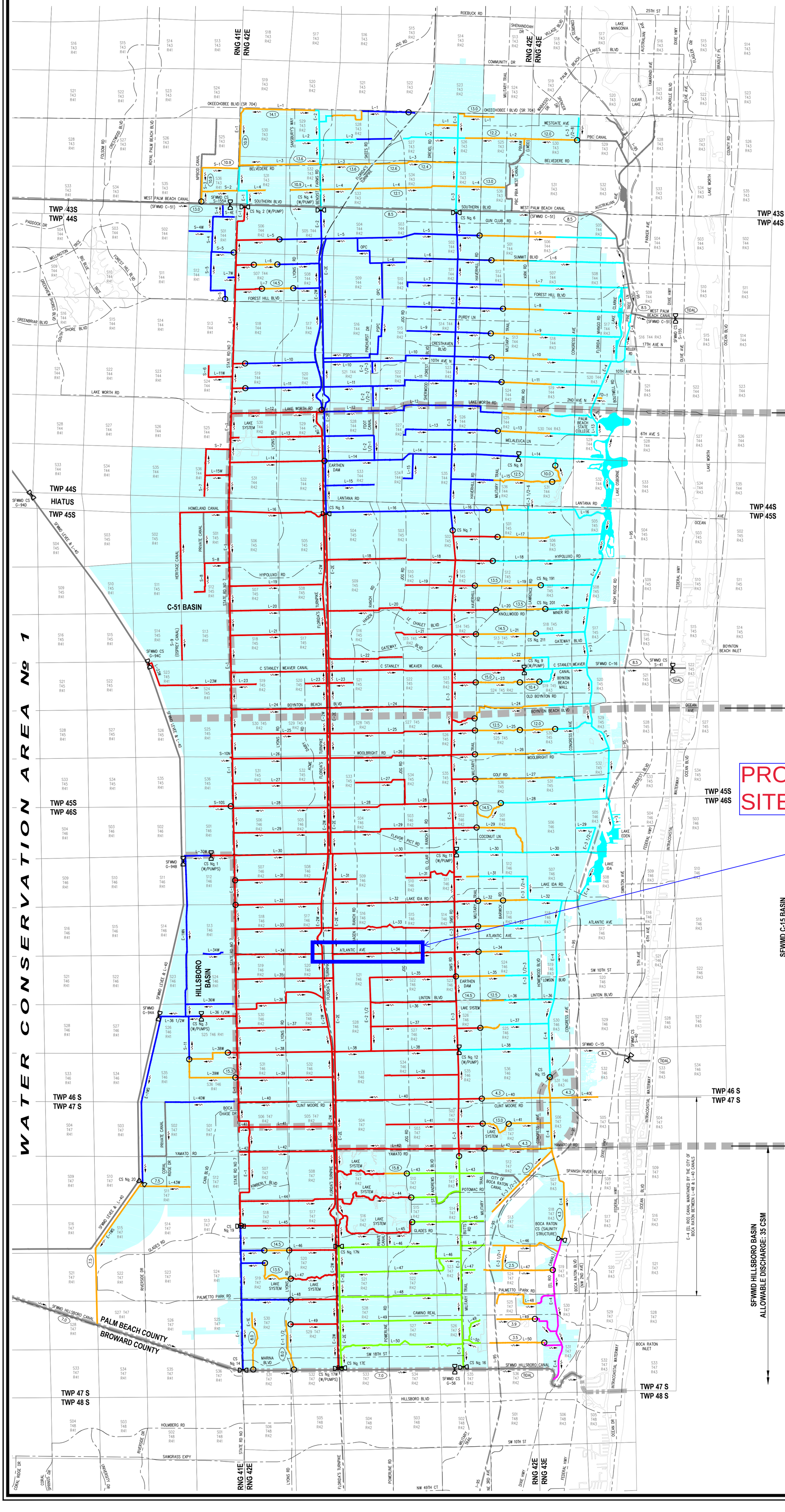
LAKE WORTH DRAINAGE DISTRICT
MAJOR DRAINAGE BASIN BOUNDARIES

FIGURE No. 3

LWDD Maintained Canal Elevations Map

LAKE WORTH DRAINAGE DISTRICT

MAINTAINED CANAL ELEVATIONS MAP



NOTES:

1. MAINTENANCE ELEVATION OF THE CONTROL STRUCTURE AND NOT NECESSARILY THE CANAL WATER SURFACE ELEVATION. ACTUAL WATER ELEVATION IN THE CANAL WILL VARY.

2. IF UNSPECIFIED, THE MAINTENANCE ELEVATIONS IN THESE AREAS ARE DEPENDENT ON CANAL BOTTOM ELEVATIONS, CULVERT INVERT ELEVATIONS OR GROUNDWATER INTRUSION.

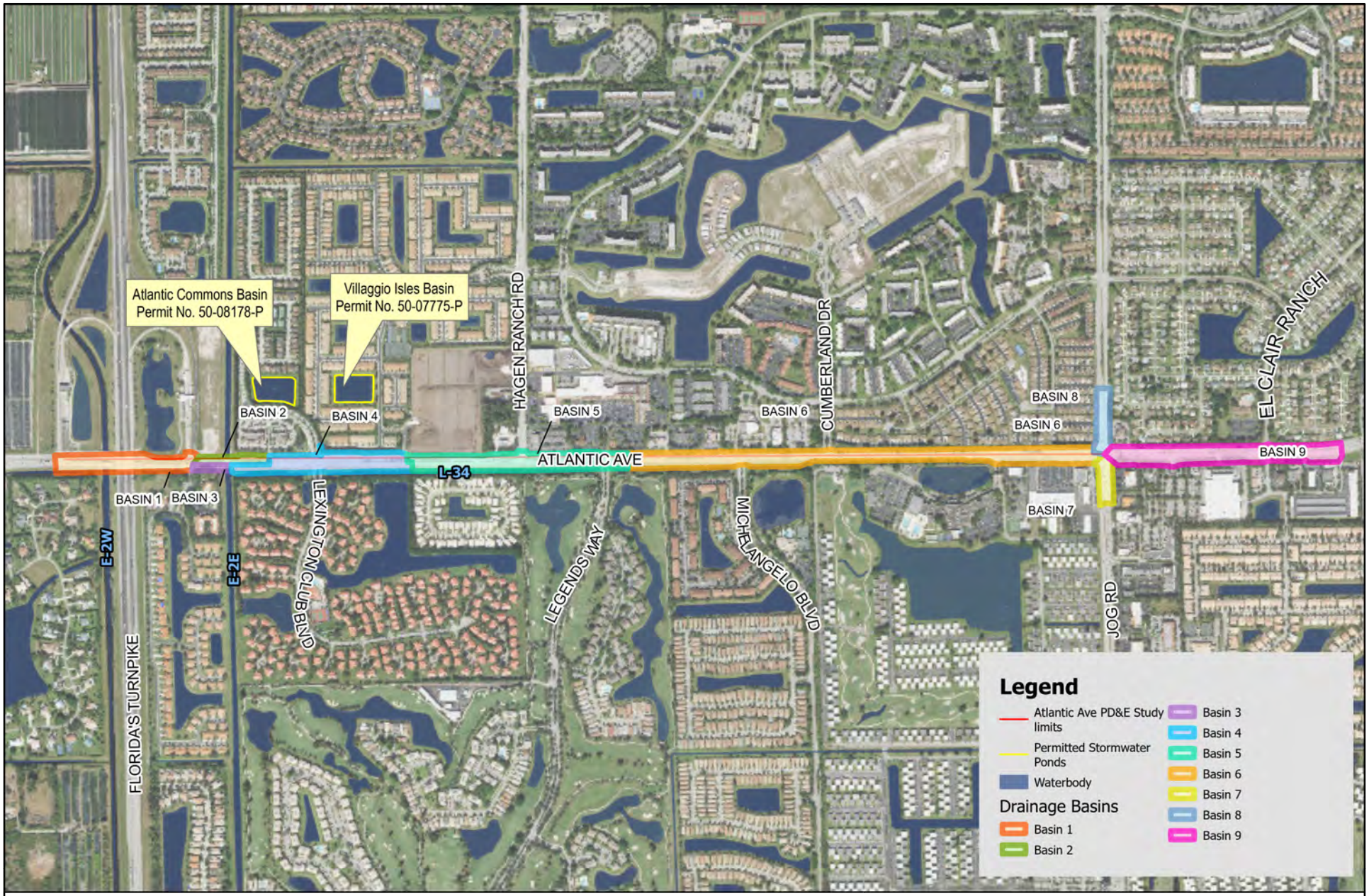
3. ALL ELEVATIONS ARE SUBJECT TO VERIFICATION BY A CURRENT CANAL CROSS SECTION(S) TO LWDD SPECIFICATIONS.

DISCLAIMER:

THIS MAP SHOWS THE MAINTAINED ELEVATIONS OF LWDD CANALS AND IS TO BE USED FOR INFORMATIONAL PURPOSES ONLY. FOR SPECIFIC DESIGN REQUIREMENTS, PLEASE CONTACT THE LWDD ENGINEERING DEPARTMENT DIRECTLY. CANAL RIGHT-OF-WAY INFORMATION IS NOT SHOWN ON THIS MAP. ALSO, THIS MAP DOES NOT DISTINGUISH CONVEYANCE METHODS BETWEEN OPEN CHANNEL FLOW OR FLOW THROUGH CLOSED CULVERTS.

MAP CREATED BY: RMW • MAP CHECKED BY: JWF • MAP UPDATED: FEBRUARY 2014 • CAD FILE: LWDD_CANAL_MAINT_ELEV_MAP.DWG

Basin Maps

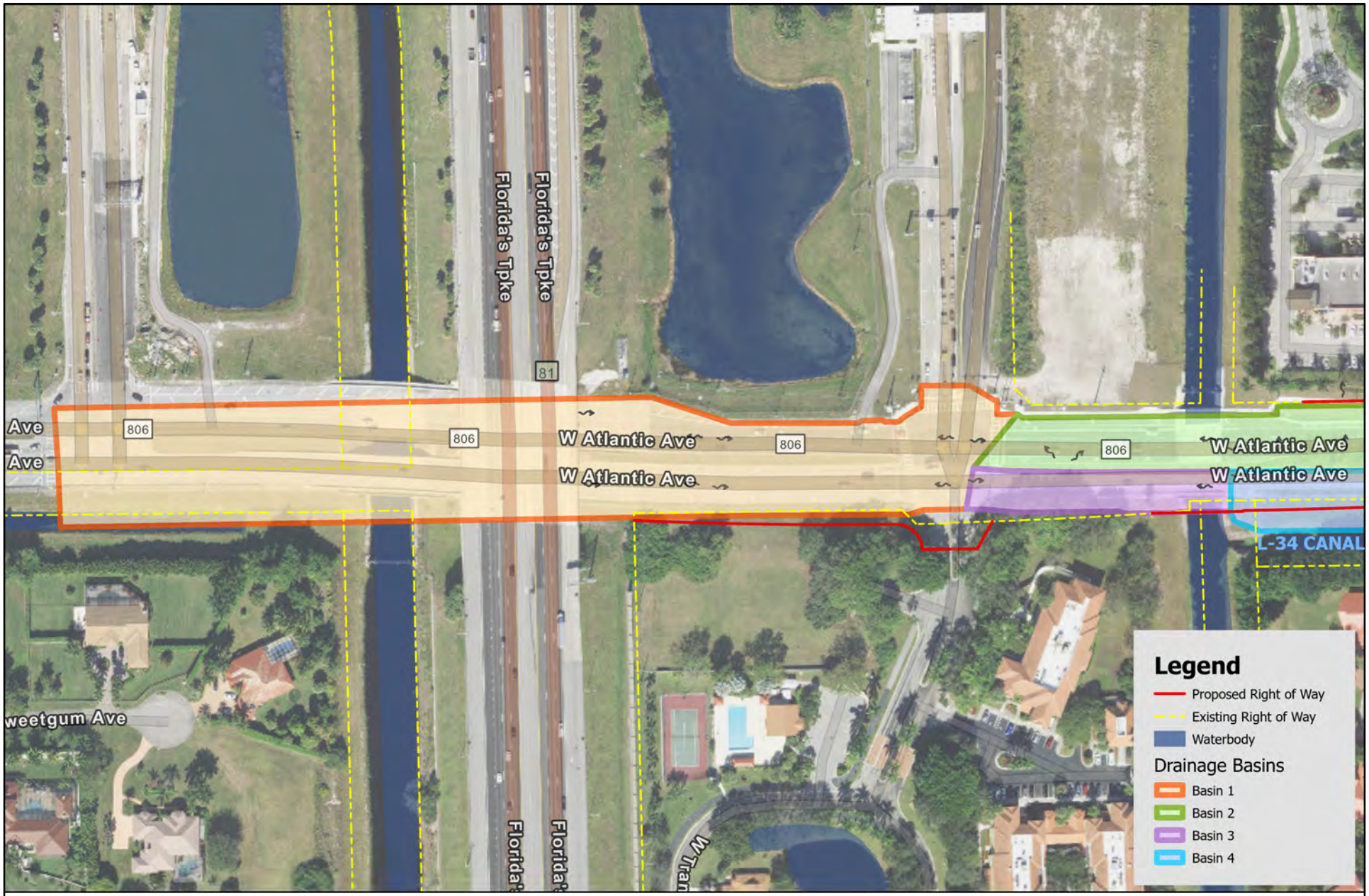


Drainage Basins Map

Atlantic Avenue (SR 806) from Florida's Turnpike
(MP 1.748) to Jog Road (MP 3.560)
FPID No.440575-3-22-02
Palm Beach County

Image Source: FDOT
Imagery Date:2019

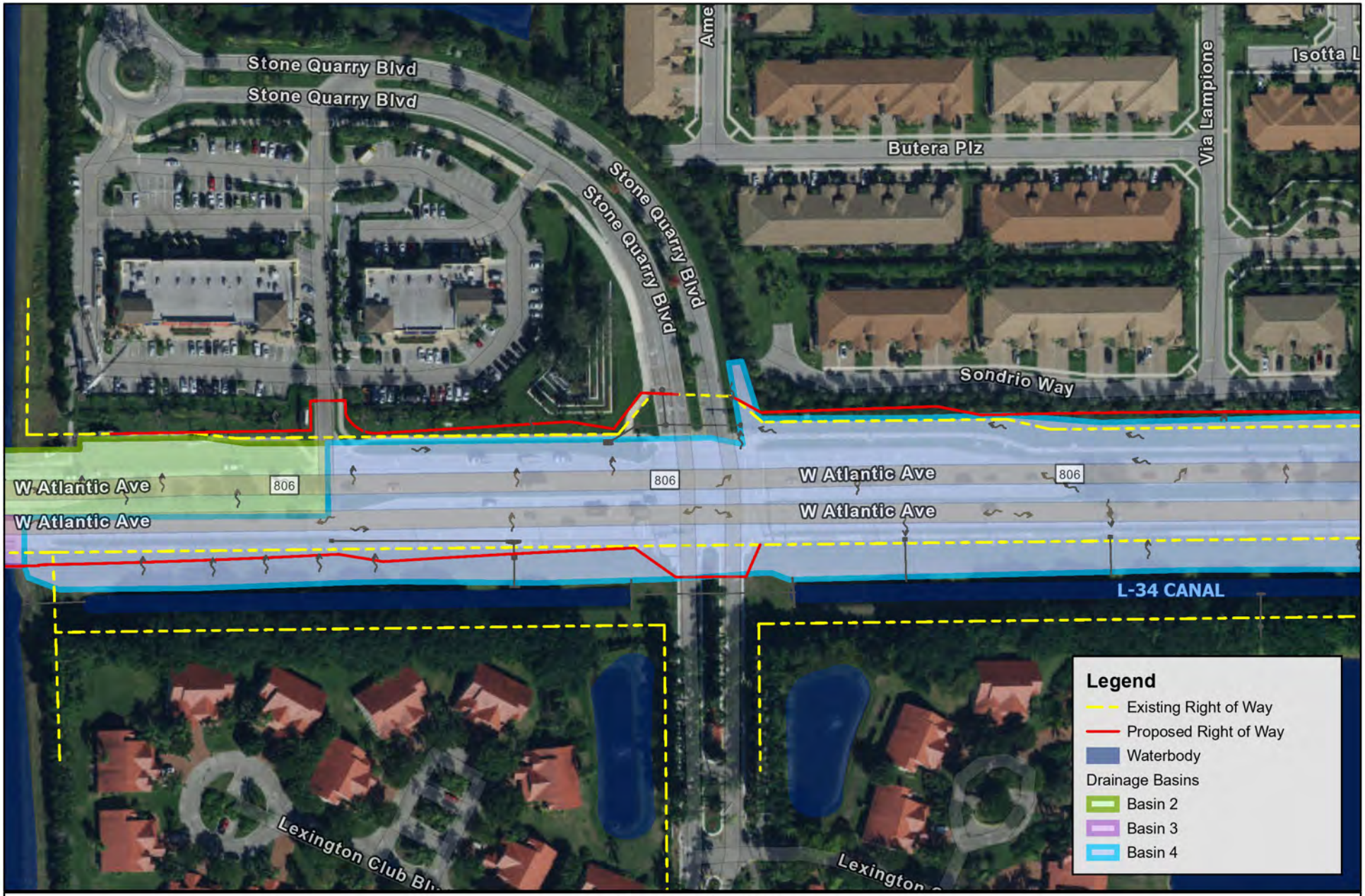
0 0.13 0.25 0.5 Miles



Existing Drainage Basin Map
Sheet 1 of 10
Atlantic Avenue (SR 806) from Florida's Turnpike
(MP 1.748) to Jog Road (MP 3.560)
FPID No.440575-3-22-02
Palm Beach County

Image Source: FDOT
Imagery Date:2019

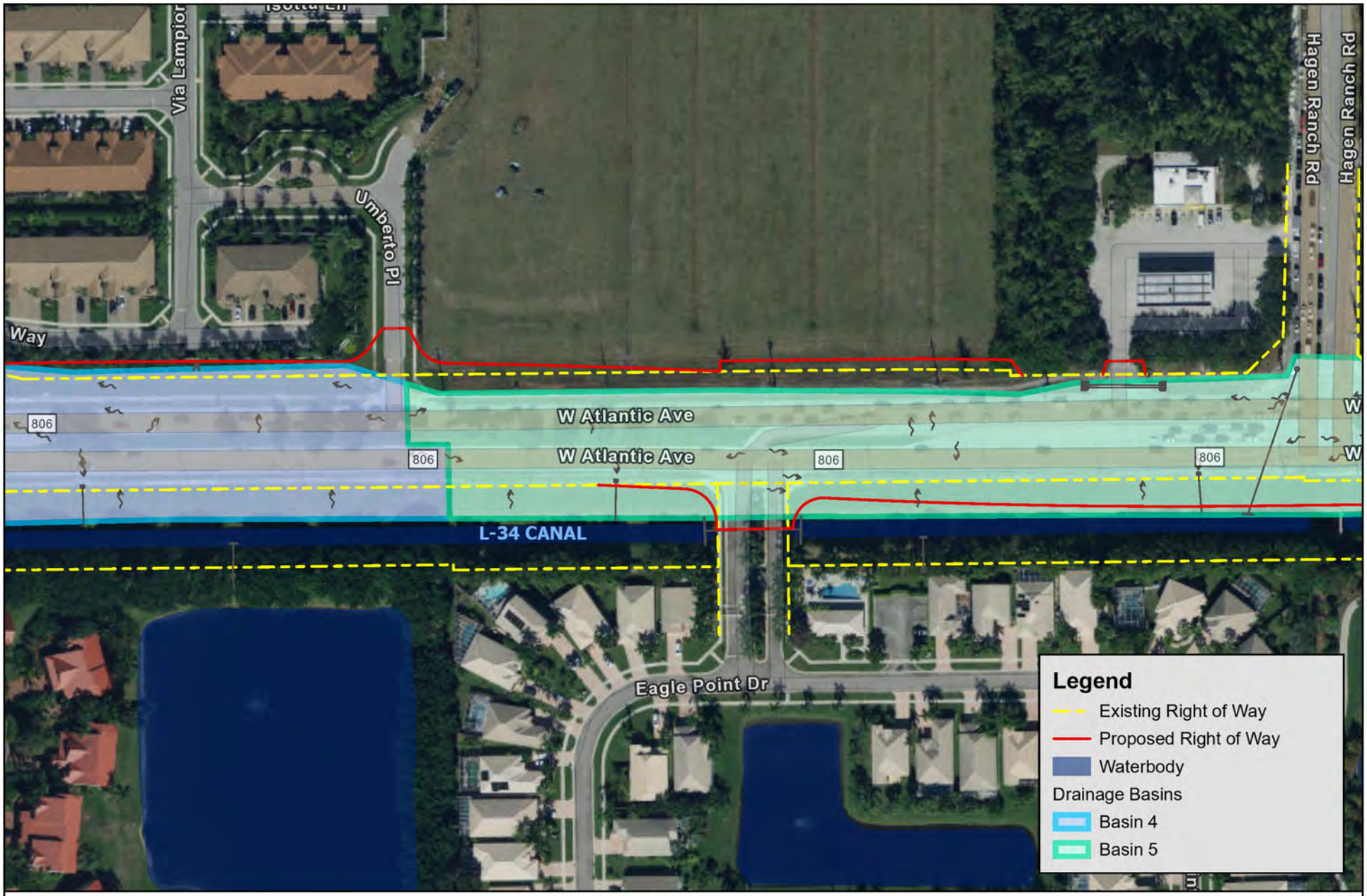
0 0.02 0.04 0.07
Miles



Existing Drainage Basin Map
Sheet 2 of 10
Atlantic Avenue (SR 806) from Florida's Turnpike
(MP 1.748) to Jog Road (MP 3.560)
FPID No.440575-3-22-02
Palm Beach County

Image Source: FDOT
Imagery Date:2019

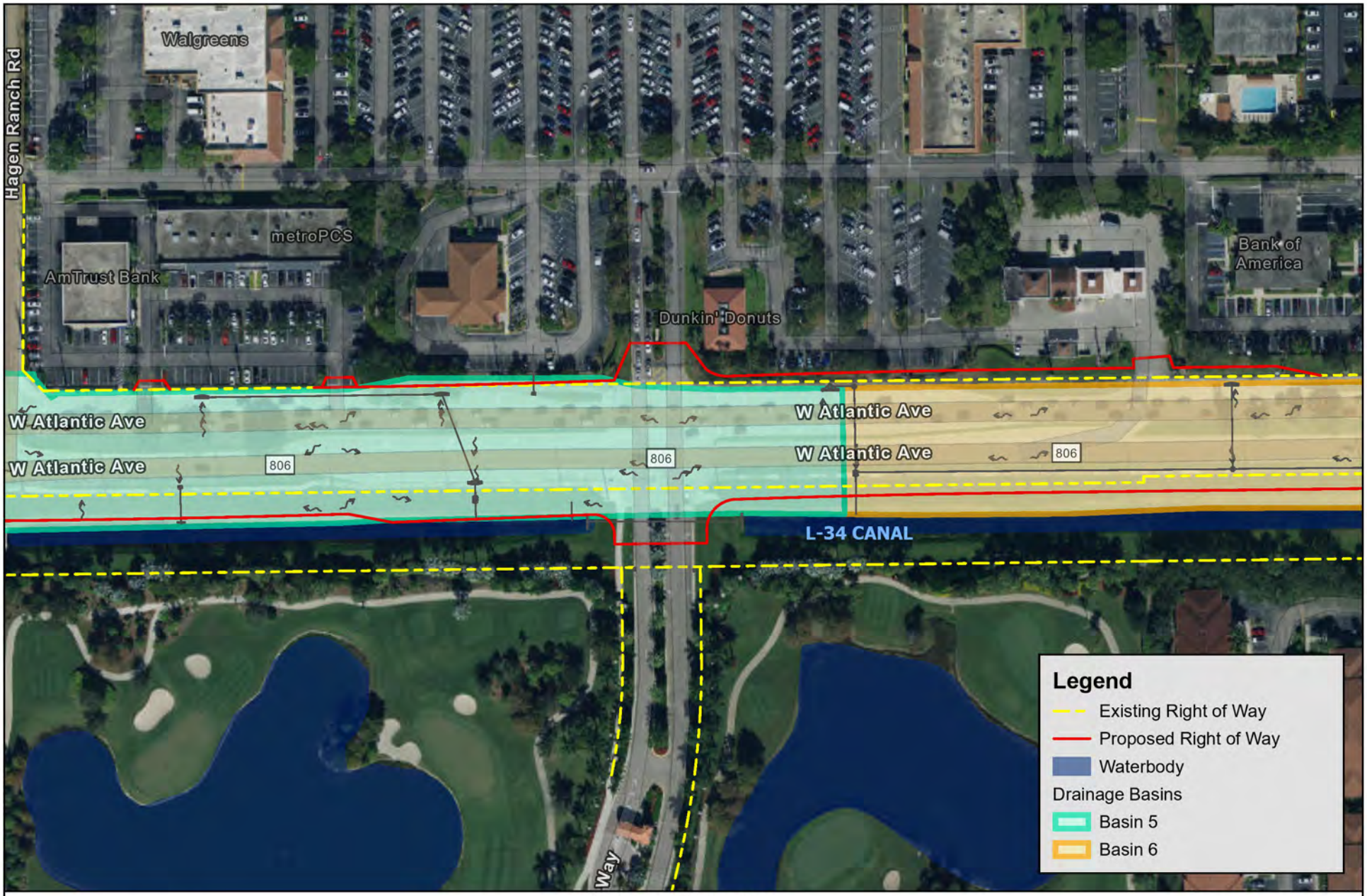
0 0.01 0.03 0.06
Miles



Existing Drainage Basin Map
Sheet 3 of 10
Atlantic Avenue (SR 806) from Florida's Turnpike
(MP 1.748) to Jog Road (MP 3.560)
FPID No.440575-3-22-02
Palm Beach County

Image Source: FDOT
Imagery Date:2019

0 0.01 0.03 0.06
Miles



Existing Drainage Basin Map
Sheet 4 of 10
Atlantic Avenue (SR 806) from Florida's Turnpike
(MP 1.748) to Jog Road (MP 3.560)
FPID No.440575-3-22-02
Palm Beach County

Image Source: FDOT
Imagery Date:2019

0 0.01 0.03 0.06
Miles

Existing Drainage Basin Map
Sheet 5 of 10
Atlantic Avenue (SR 806) from Florida's Turnpike
(MP 1.748) to Jog Road (MP 3.560)
FPID No.440575-3-22-02
Palm Beach County

Image Source: FDOT
Imagery Date:2019

0 0.01 0.03 0.06
Miles

Existing Drainage Basin Map
Sheet 6 of 10
Atlantic Avenue (SR 806) from Florida's Turnpike
(MP 1.748) to Jog Road (MP 3.560)
FPID No.440575-3-22-02
Palm Beach County

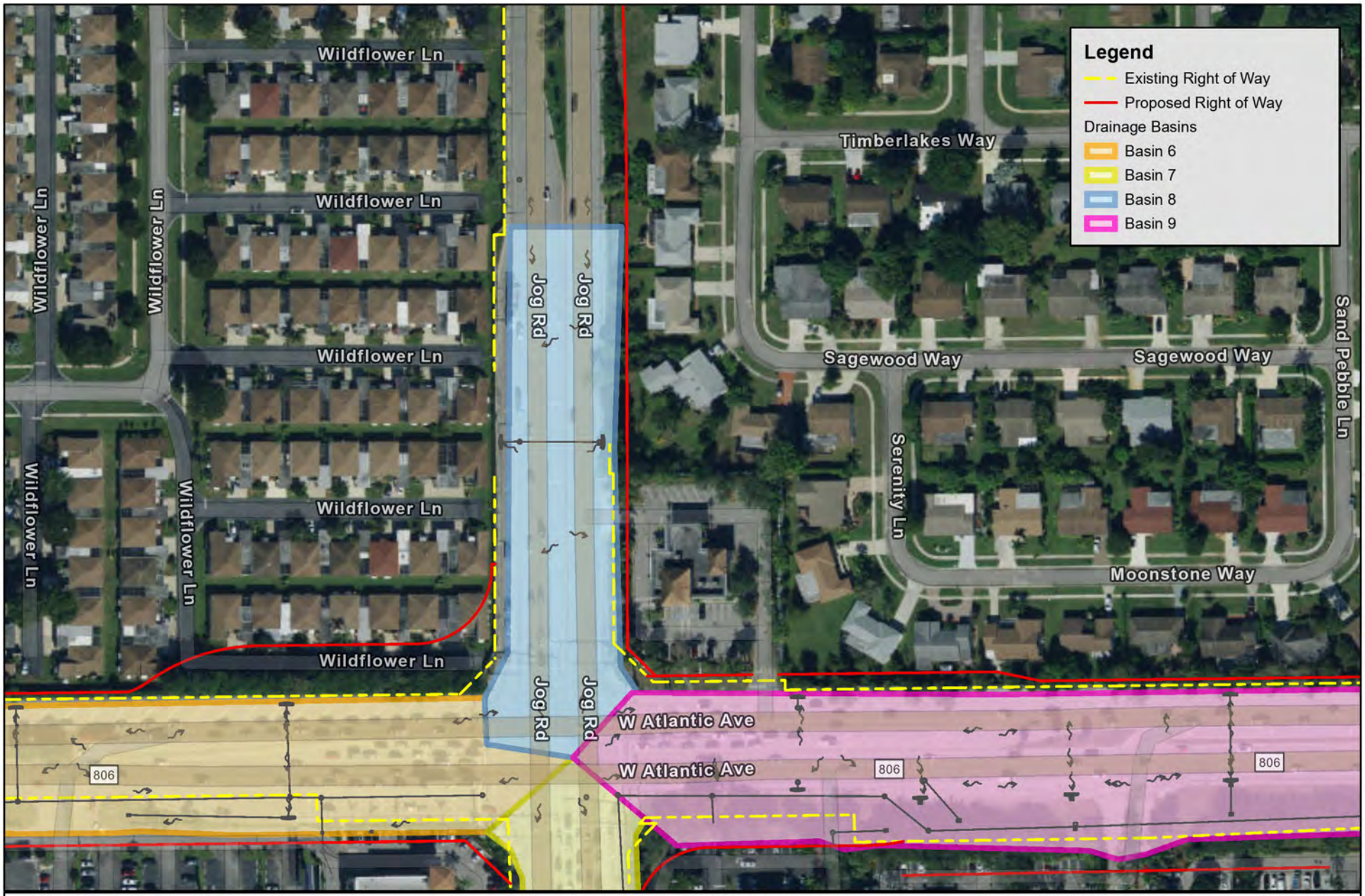
Image Source: FDOT
Imagery Date:2019

0 0.01 0.03 0.06
Miles

Existing Drainage Basin Map
Sheet 7 of 10
Atlantic Avenue (SR 806) from Florida's Turnpike
(MP 1.748) to Jog Road (MP 3.560)
FPID No.440575-3-22-02
Palm Beach County

Image Source: FDOT
Imagery Date:2019

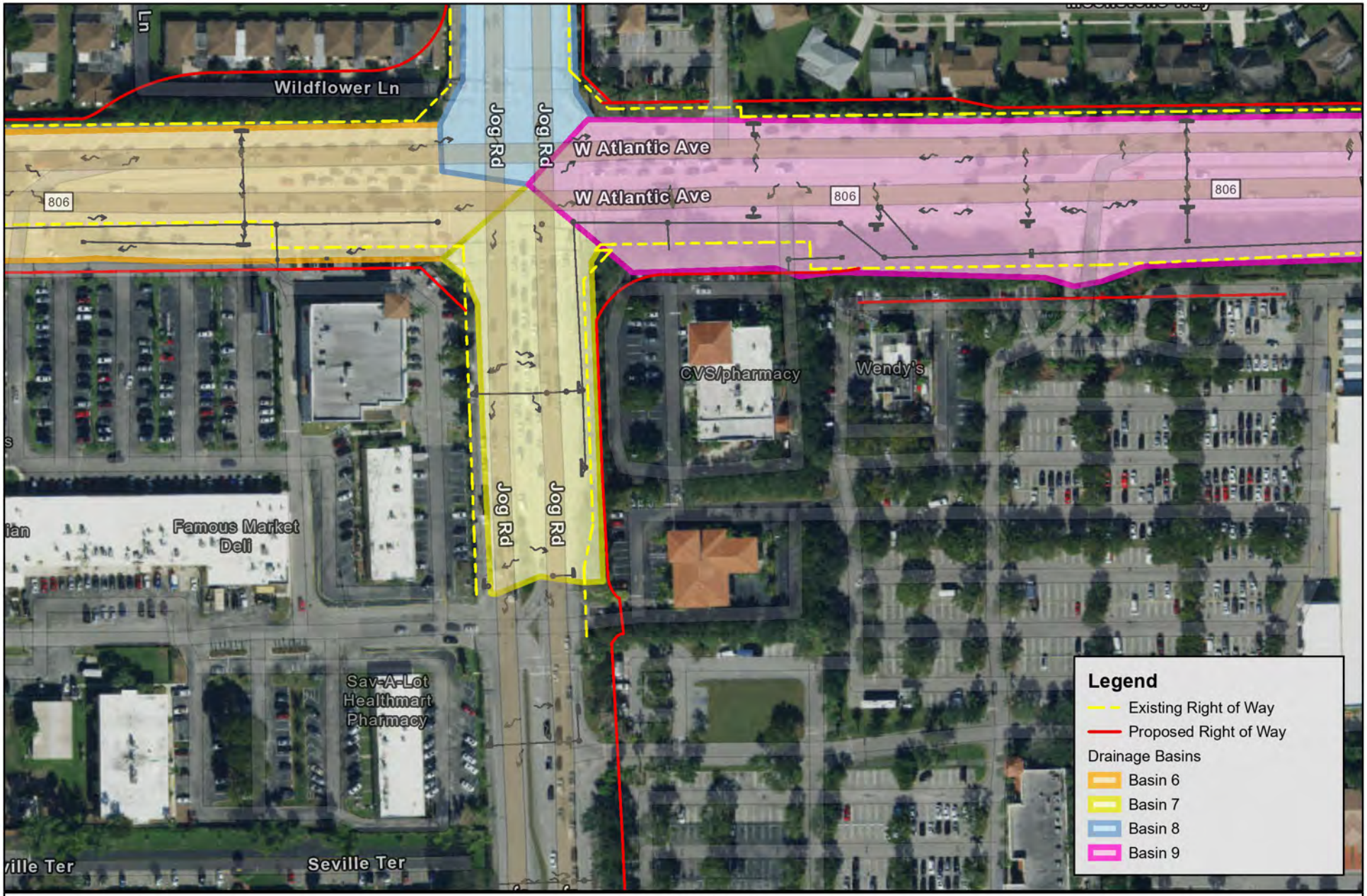
0 0.01 0.03 0.05 Miles



Existing Drainage Basin Map
Sheet 8 of 10
Atlantic Avenue (SR 806) from Florida's Turnpike
(MP 1.748) to Jog Road (MP 3.560)
FPID No.440575-3-22-02
Palm Beach County

Image Source: FDOT
Imagery Date:2019

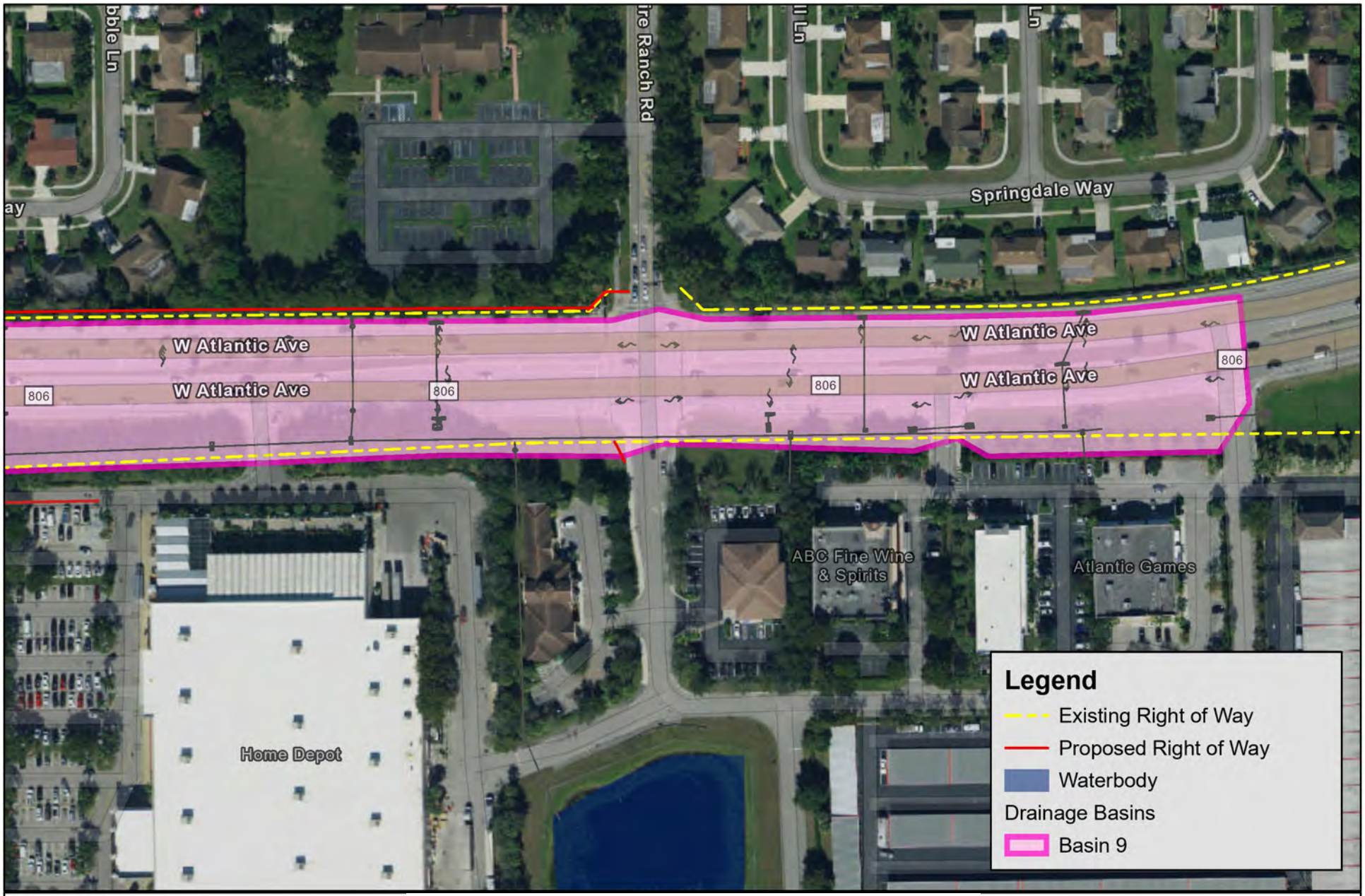
0 0.01 0.03 0.06
Miles



Existing Drainage Basin Map
Sheet 9 of 10
Atlantic Avenue (SR 806) from Florida's Turnpike
(MP 1.748) to Jog Road (MP 3.560)
FPID No.440575-3-22-02
Palm Beach County

Image Source: FDOT
Imagery Date:2019

0 0.01 0.03 0.06
Miles



Existing Drainage Basin Map
Sheet 10 of 10
Atlantic Avenue (SR 806) from Florida's Turnpike
(MP 1.748) to Jog Road (MP 3.560)
FPID No.440575-3-22-02
Palm Beach County

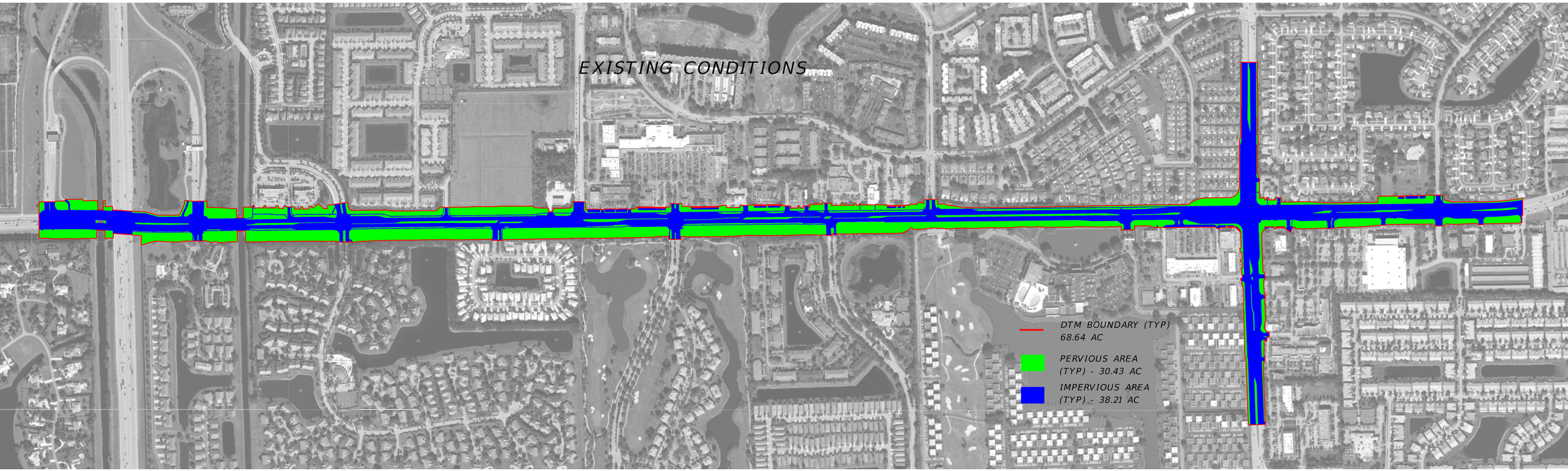
Image Source: FDOT
Imagery Date:2019

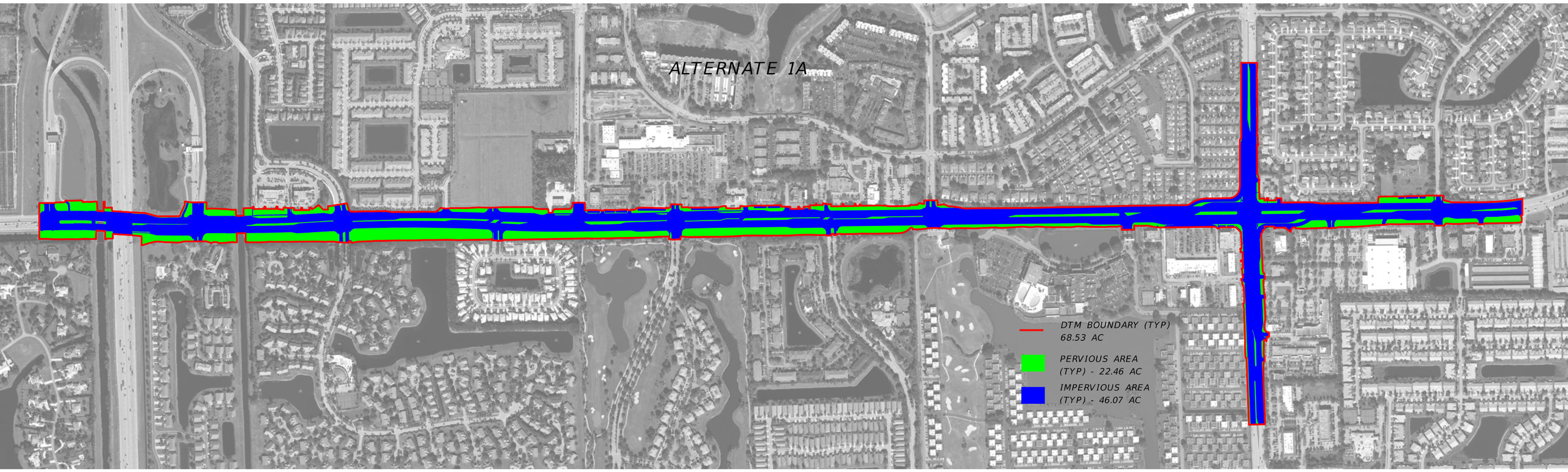
0 0.01 0.03 0.06
Miles

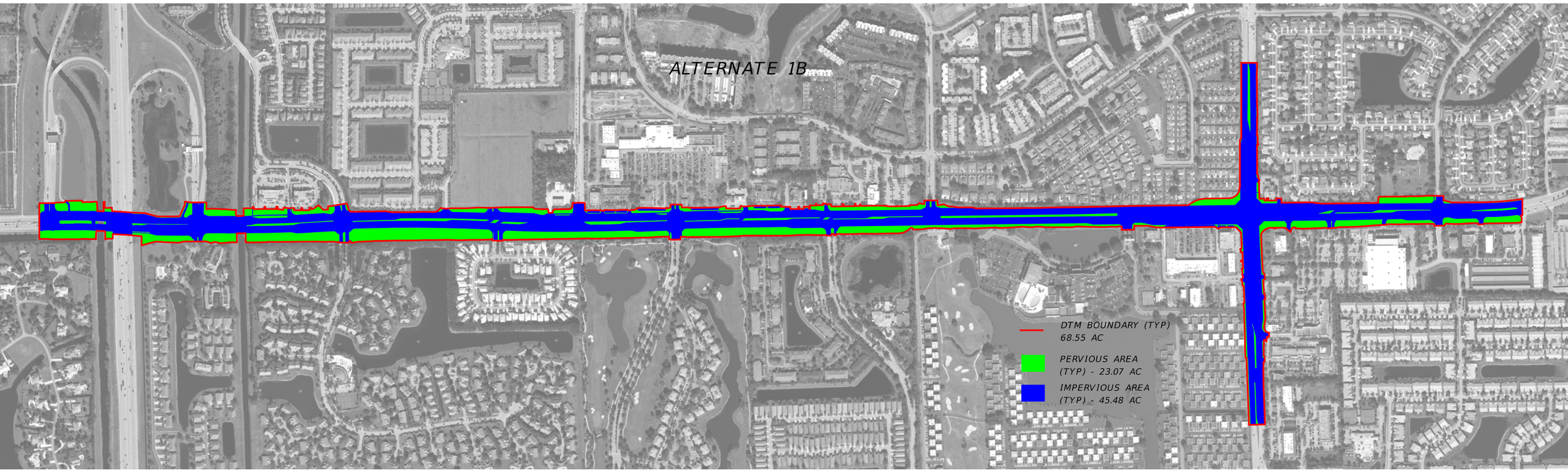
APPENDIX B

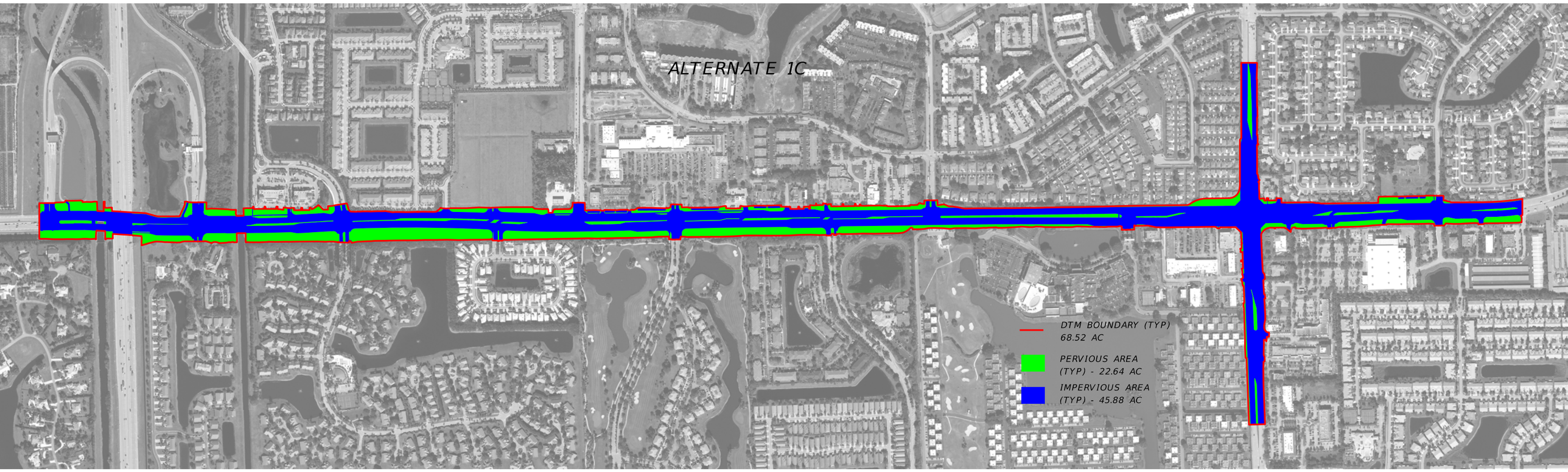
Calculations, Canal Cross Sections and Typical Sections

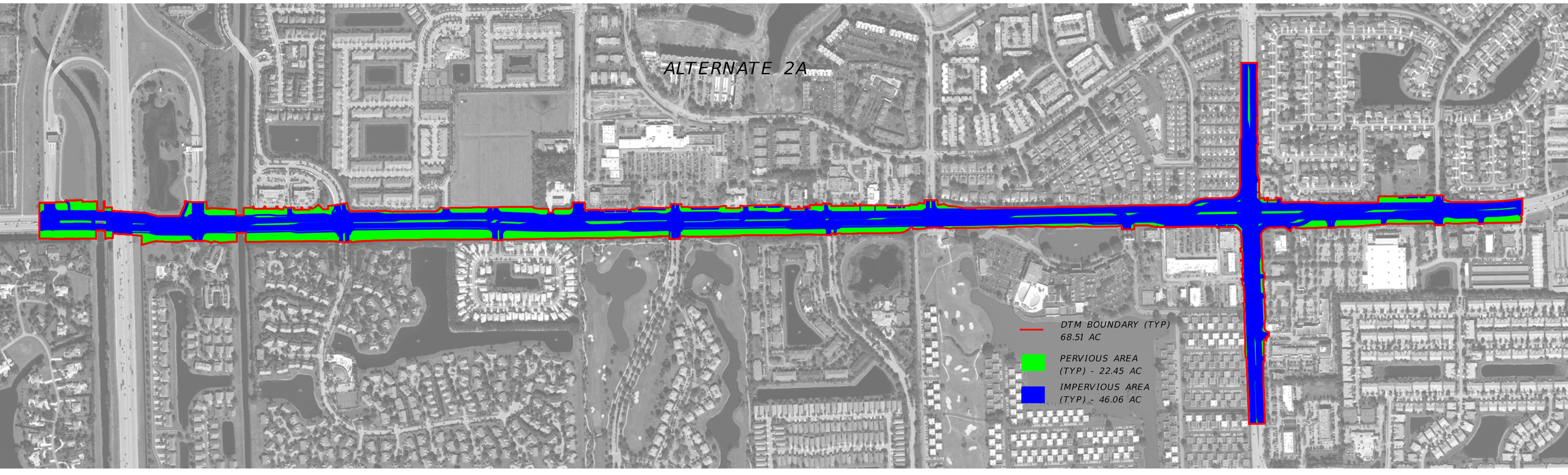
Water Quality Tabulation

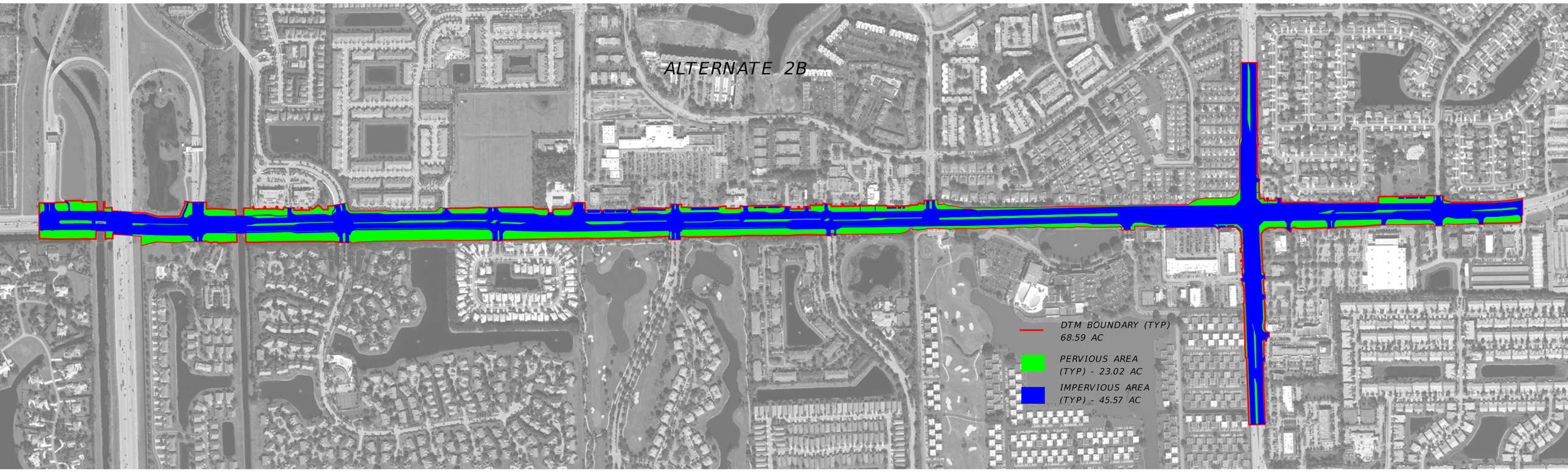

EXISTING CONDITIONS
DTM BOUNDARY (TYP)
68.64 AC
PERVIOUS AREA
(TYP) - 30.43 AC
IMPERVIOUS AREA
(TYP) - 38.21 AC

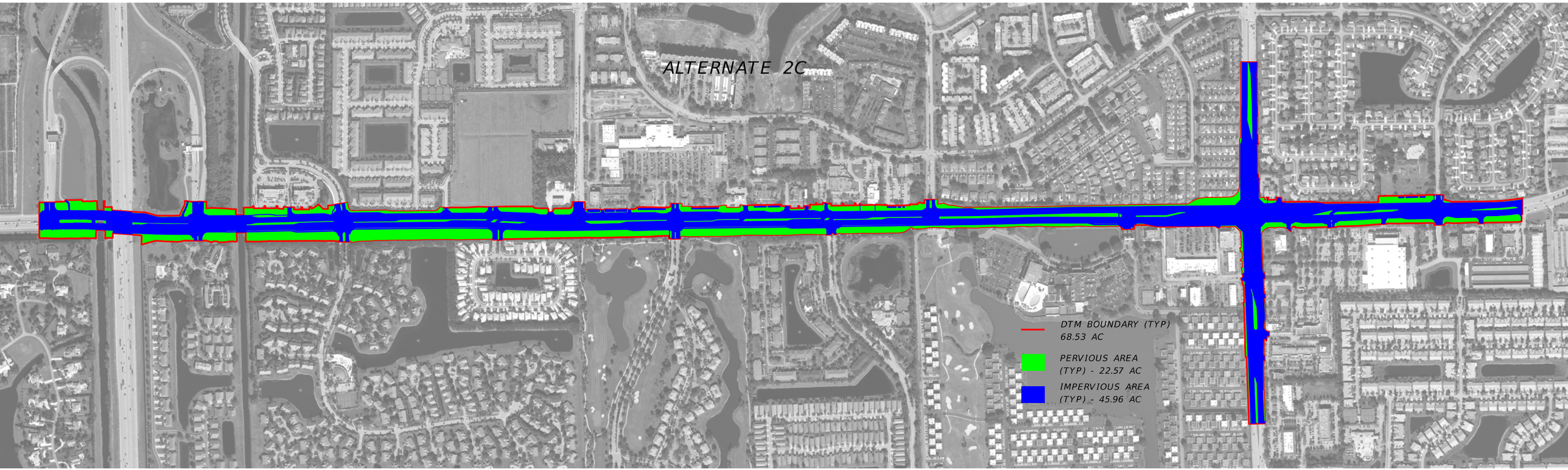

ALTERNATE 1A
DTM BOUNDARY (TYP)
68.53 AC
PERVIOUS AREA
(TYP) - 22.46 AC
IMPERVIOUS AREA
(TYP) - 46.07 AC


ALTERNATE 1B
DTM BOUNDARY (TYP)
68.55 AC
PERVIOUS AREA
(TYP) - 23.07 AC
IMPERVIOUS AREA
(TYP) - 45.48 AC


ALTERNATE 1C
DTM BOUNDARY (TYP)
68.52 AC
PERVIOUS AREA
(TYP) - 22.64 AC
IMPERVIOUS AREA
(TYP) - 45.88 AC


ALTERNATE 2A
DTM BOUNDARY (TYP)
68.51 AC
PERVIOUS AREA
(TYP) - 22.45 AC
IMPERVIOUS AREA
(TYP) - 46.06 AC


ALTERNATE 2B
DTM BOUNDARY (TYP)
68.59 AC
PERVIOUS AREA
(TYP) - 23.02 AC
IMPERVIOUS AREA
(TYP) - 45.57 AC


ALTERNATE 2C
DTM BOUNDARY (TYP)
68.53 AC
PERVIOUS AREA
(TYP) - 22.57 AC
IMPERVIOUS AREA
(TYP) - 45.96 AC

Atlantic Avenue PD&E									
Water Quality Summary									
Alternative	Existing Areas			Proposed Areas			Increase In Impervious Area	Exist Impervious Treated Area to be Removed	Total Impervious Area for Treatment
	Impervious	Pervious	Total	Impervious	Pervious	Total			
1A	38.21	30.43	68.64	46.07	22.46	68.53	7.86	1.42	9.28
1B	38.21	30.43	68.64	45.48	23.07	68.55	7.27	1.42	8.69
1C	38.21	30.43	68.64	45.88	22.64	68.52	7.67	1.42	9.09
2A	38.21	30.43	68.64	46.06	22.45	68.51	7.85	1.42	9.27
2B	38.21	30.43	68.64	45.57	23.02	68.59	7.36	1.42	8.78
2C	38.21	30.43	68.64	45.96	22.57	68.53	7.75	1.42	9.17

Atlantic Avenue PD&E			
Water Quantity Summary			
Alternative	Pre-Development Runoff Volume (Ac-Ft)	Post-Development Runoff Volume (Ac-Ft)	Change In Runoff Volume (Ac-Ft)
1A	47.92	27.06	-20.86
1B	47.92	27.00	-20.92
1C	47.92	26.99	-20.93
2A	47.92	26.94	-20.98
2B	47.92	26.99	-20.93
2C	47.92	27.08	-20.84

ATLANTIC AVE. DRAINAGE CALCULATIONS
PRE-DEVELOPMENT LAND-USE

Alternative	TOTAL AREA (Ac.)	IMPERVIOUS AREA (Ac.)	PERVIOUS AREA (Ac.)	HSG	PERVIOUS CN	IMPERVIOUS CN	CURVE NUMBER	SOIL STORAGE (in)	OUTFALL	25 YR-72 HR TOTAL RAINFALL (P) (IN)	25 YR-72 HR TOTAL RUNOFF (Q) (cfs)	25 YR-72 HR TOTAL RUNOFF VOLUME (AC-FT)	CANAL DISCHARGE TOTAL (Q) (cfs)	CANAL RUNOFF VOLUME (AC-FT)
Basin 1	**6.59**	3.71	2.88	A	39	98	**72.22**	**3.85**	TURNPIKE POND	15.0	11.20	6.152	0	0
Basin 2	**1.95**	0.78	1.17	A	39	98	**62.60**	**5.97**	E-2E	15.0	9.64	1.57	9.64	1.57
Basin 3	**0.90**	0.35	0.55	A	39	98	**61.94**	**6.14**	E-2E	15.0	9.52	0.71	9.52	0.71
Basin 4	**9.52**	4.54	4.98	A	39	98	**67.14**	**4.90**	L-34	15.0	10.39	8.24	10.39	8.24
Basin 5	**11.19**	5.3	5.89	A	39	98	**66.94**	**4.94**	L-34	15.0	10.36	9.66	10.36	9.66
Basin 6	**19.34**	9.8	9.54	A	39	98	**68.90**	**4.51**	L-34	15.0	10.68	17.21	10.68	17.21
Basin 7	**5.75**	**4.42**	1.33	A	39	98	**84.35**	**1.85**	L-34	15.0	12.98	6.22	12.98	6.22
Basin 8	**3.80**	**3.21**	0.59	A	39	98	**88.84**	**1.26**	L-33	15.0	13.59	4.30	13.59	4.30
Basin 9	**9.60**	**6.10**	3.50	A	39	98	**76.49**	**3.07**	TREATMENT POND	15.0	11.85	9.48	0	0
Project Total	**68.64**	**38.21**	**30.43**								**100.22**	**63.55**	**77.16**	**47.92**

Section 3.3

c = **0.52**

62.05 **34.50** **27.55**

Soil Capacity (S) = $\frac{1000}{CN} - 10$

Direct Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$

Total Runoff (R_t) = A*Q/12

ATLANTIC AVE. DRAINAGE CALCULATIONS
POST-DEVELOPMENT LAND-USE (1A)

Alternative	TOTAL AREA (Ac.)	IMPERVIOUS AREA (Ac.)	PERVIOUS AREA (Ac.)	CANAL DISCHARGE IMPERVIOUS AREA (Ac.)	CANAL DISCHARGE PERVIOUS AREA (Ac.)	HSG	PERVIOUS CN	IMPERVIOUS CN	CURVE NUMBER	SOIL STORAGE (in)	OUTFALL	25 YR-72 HR TOTAL RAINFALL (P) (IN)	25 YR-72 HR TOTAL RUNOFF (Q) (cfs)	25 YR-72 HR TOTAL RUNOFF VOLUME (AC-FT)
Basin 1	**6.48**	5.10	1.38	1.391	0	A	39	98	21.04	37.54	TURNPIKE POND & E-2E	15.0	1.25	0.1445
Basin 2	1.95	1.13	0.82	0.35	0.00	A	39	98	17.59	46.85	E-2E	15.0	0.60	0.0176
Basin 3	0.90	0.47	0.43	0.47	0.43	A	39	98	69.81	4.32	E-2E	15.0	10.82	0.8118
Basin 4	9.52	4.38	5.14	0	0	A	39	98	N/A	N/A	ATLANTIC COMMONS POND	15.0	0.00	0.0000
Basin 5	11.19	6.84	4.35	0	0	A	39	98	N/A	N/A	VILLAGGIO ISLES POND	15.0	0.00	0.0000
Basin 6	19.34	13.53	5.81	13.12	6.21	A	39	98	79.00	2.66	L-34	15.0	12.22	19.6898
Basin 7	5.75	4.71	1.04	4.78	0.93	A	39	98	87.78	1.39	L-34	15.0	13.45	6.3996
Basin 8	3.80	3.26	0.54	0	0	A	39	98	N/A	N/A	L-33	15.0	0.00	0.0000
Basin 9	9.60	6.65	2.95	0	0	A	39	98	0.00	0.00	TREATMENT POND	15.0	0.00	0.0000
Project Total	**68.53**	**46.07**	**22.46**										**38.35**	**27.06**

Section 3.3

c = **0.62**

62.05 **40.97** **21.08**

Soil Capacity (S) = $\frac{1000}{CN} - 10$

Direct Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$

Total Runoff (R_t) = A*Q/12

ATLANTIC AVE. DRAINAGE CALCULATIONS
POST-DEVELOPMENT LAND-USE (1B)

Alternative	TOTAL AREA (Ac.)	IMPERVIOUS AREA (Ac.)	PERVIOUS AREA (Ac.)	CANAL DISCHARGE IMPERVIOUS AREA (Ac.)	CANAL DISCHARGE PERVIOUS AREA (Ac.)	HSG	PERVIOUS CN	IMPERVIOUS CN	CURVE NUMBER	SOIL STORAGE (in)	OUTFALL	25 YR-72 HR TOTAL RAINFALL (P) (IN)	25 YR-72 HR TOTAL RUNOFF (Q) (cfs)	25 YR-72 HR TOTAL RUNOFF VOLUME (AC-FT)
Basin 1	**6.50**	4.97	1.53	1.26	0	A	39	98	19.00	42.64	TURNPIKE POND & E-2E	15.0	0.85	0.0896
Basin 2	1.95	1.08	0.87	0.3	0.00	A	39	98	15.08	56.33	E-2E	15.0	0.23	0.0058
Basin 3	0.90	0.47	0.43	0.47	0.43	A	39	98	69.81	4.32	E-2E	15.0	10.82	0.8118
Basin 4	9.52	4.42	5.10	0	0	A	39	98	N/A	N/A	ATLANTIC COMMONS POND	15.0	0.00	0.0000
Basin 5	11.19	7	4.19	0	0	A	39	98	N/A	N/A	VILLAGGIO ISLES POND	15.0	0.00	0.0000
Basin 6	19.34	13.14	6.20	13.12	6.21	A	39	98	79.00	2.66	L-34	15.0	12.22	19.6898
Basin 7	5.75	4.76	0.99	4.78	0.93	A	39	98	87.78	1.39	L-34	15.0	13.45	6.3996
Basin 8	3.80	3.23	0.57	0	0	A	39	98	N/A	N/A	L-33	15.0	0.00	0.0000
Basin 9	9.60	6.41	3.19	0	0	A	39	98	0.00	0.00	TREATMENT POND	15.0	0.00	0.0000
Project Total	**68.55**	**45.48**	**23.07**										**37.58**	**27.00**

Section 3.3

c = **0.62**

62.05 **40.51** **21.54**

Soil Capacity (S) = $\frac{1000}{CN} - 10$

Direct Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$

Total Runoff (R_t) = A*Q/12

ATLANTIC AVE. DRAINAGE CALCULATIONS
POST-DEVELOPMENT LAND-USE (1C)

Alternative	TOTAL AREA (Ac.)	IMPERVIOUS AREA (Ac.)	PERVIOUS AREA (Ac.)	CANAL DISCHARGE IMPERVIOUS AREA (Ac.)	CANAL DISCHARGE PERVIOUS AREA (Ac.)	HSG	PERVIOUS CN	IMPERVIOUS CN	CURVE NUMBER	SOIL STORAGE (in)	OUTFALL	25 YR-72 HR TOTAL RAINFALL (P) (IN)	25 YR-72 HR TOTAL RUNOFF (Q) (cfs)	25 YR-72 HR TOTAL RUNOFF VOLUME (AC-FT)
Basin 1	**6.47**	4.96	1.51	1.25	0	A	39	98	18.93	42.82	TURNPIKE POND & E-2E	15.0	0.84	0.0876
Basin 2	1.95	1.08	0.87	0.3	0.00	A	39	98	15.08	56.33	E-2E	15.0	0.23	0.0058
Basin 3	0.90	0.47	0.43	0.47	0.43	A	39	98	69.81	4.32	E-2E	15.0	10.82	0.8118
Basin 4	9.52	4.38	5.14	0	0	A	39	98	N/A	N/A	ATLANTIC COMMONS POND	15.0	0.00	0.0000
Basin 5	11.19	7.02	4.17	0	0	A	39	98	N/A	N/A	VILLAGGIO ISLES POND	15.0	0.00	0.0000
Basin 6	19.34	13.03	6.31	13.12	6.21	A	39	98	79.00	2.66	L-34	15.0	12.22	19.6898
Basin 7	5.75	4.94	0.81	4.78	0.93	A	39	98	87.78	1.39	L-34	15.0	13.45	6.3996
Basin 8	3.80	3.30	0.50	0	0	A	39	98	N/A	N/A	L-33	15.0	0.00	0.0000
Basin 9	9.60	6.70	2.90	0	0	A	39	98	0.00	0.00	TREATMENT POND	15.0	0.00	0.0000
Project Total	**68.52**	**45.88**	**22.64**										**37.57**	**26.99**

Section 3.3

c = **0.62**

62.05 **40.92** **21.13**

Soil Capacity (S) = $\frac{1000}{CN} - 10$

Direct Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$

Total Runoff (R_t) = A*Q/12

ATLANTIC AVE. DRAINAGE CALCULATIONS
POST-DEVELOPMENT LAND-USE (2A)

Alternative	TOTAL AREA (Ac.)	IMPERVIOUS AREA (Ac.)	PERVIOUS AREA (Ac.)	CANAL DISCHARGE IMPERVIOUS AREA (Ac.)	CANAL DISCHARGE PERVIOUS AREA (Ac.)	HSG	PERVIOUS CN	IMPERVIOUS CN	CURVE NUMBER	SOIL STORAGE (in)	OUTFALL	25 YR-72 HR TOTAL RAINFALL (P) (IN)	25 YR-72 HR TOTAL RUNOFF (Q) (cfs)	25 YR-72 HR TOTAL RUNOFF VOLUME (AC-FT)
Basin 1	**6.46**	4.78	1.69	1.07	0	A	39	98	16.23	51.61	TURNPIKE POND & E-2E	15.0	0.39	0.0347
Basin 2	1.95	1.06	0.89	0.28	0.00	A	39	98	14.07	61.06	E-2E	15.0	0.12	0.0028
Basin 3	0.90	0.47	0.43	0.47	0.43	A	39	98	69.81	4.32	E-2E	15.0	10.82	0.8118
Basin 4	9.52	4.45	5.07	0	0	A	39	98	N/A	N/A	ATLANTIC COMMONS POND	15.0	0.00	0.0000
Basin 5	11.19	6.94	4.25	0	0	A	39	98	N/A	N/A	VILLAGGIO ISLES POND	15.0	0.00	0.0000
Basin 6	19.34	13.55	5.79	13.12	6.21	A	39	98	79.00	2.66	L-34	15.0	12.22	19.6898
Basin 7	5.75	4.73	1.02	4.78	0.93	A	39	98	87.78	1.39	L-34	15.0	13.45	6.3996
Basin 8	3.80	3.41	0.39	0	0	A	39	98	N/A	N/A	L-33	15.0	0.00	0.0000
Basin 9	9.60	6.67	2.93	0	0	A	39	98	0.00	0.00	TREATMENT POND	15.0	0.00	0.0000
Project Total	**68.51**	**46.06**	**22.46**										**37.01**	**26.94**

Section 3.3

c = **0.62**

62.05 **41.28** **20.77**

Soil Capacity (S) = $\frac{1000}{CN} - 10$

Direct Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$

Total Runoff (R_t) = A*Q/12

ATLANTIC AVE. DRAINAGE CALCULATIONS
POST-DEVELOPMENT LAND-USE (2B)

Alternative	TOTAL AREA (Ac.)	IMPERVIOUS AREA (Ac.)	PERVIOUS AREA (Ac.)	CANAL DISCHARGE IMPERVIOUS AREA (Ac.)	CANAL DISCHARGE PERVIOUS AREA (Ac.)	HSG	PERVIOUS CN	IMPERVIOUS CN	CURVE NUMBER	SOIL STORAGE (in)	OUTFALL	25 YR-72 HR TOTAL RAINFALL (P) (IN)	25 YR-72 HR TOTAL RUNOFF (Q) (cfs)	25 YR-72 HR TOTAL RUNOFF VOLUME (AC-FT)
Basin 1	**6.54**	4.96	1.58	1.25	0	A	39	98	18.73	43.39	TURNPIKE POND & E-2E	15.0	0.80	0.0838
Basin 2	1.95	1.06	0.89	0.28	0.00	A	39	98	14.07	61.06	E-2E	15.0	0.12	0.0028
Basin 3	0.90	0.47	0.43	0.47	0.43	A	39	98	69.81	4.32	E-2E	15.0	10.82	0.8118
Basin 4	9.52	4.45	5.07	0	0	A	39	98	N/A	N/A	ATLANTIC COMMONS POND	15.0	0.00	0.0000
Basin 5	11.19	6.94	4.25	0	0	A	39	98	N/A	N/A	VILLAGGIO ISLES POND	15.0	0.00	0.0000
Basin 6	19.34	13.34	6.00	13.12	6.21	A	39	98	79.00	2.66	L-34	15.0	12.22	19.6898
Basin 7	5.75	4.68	1.07	4.78	0.93	A	39	98	87.78	1.39	L-34	15.0	13.45	6.3996
Basin 8	3.80	3.22	0.58	0	0	A	39	98	N/A	N/A	L-33	15.0	0.00	0.0000
Basin 9	9.60	6.45	3.15	0	0	A	39	98	0.00	0.00	TREATMENT POND	15.0	0.00	0.0000
Project Total	**68.59**	**45.57**	**23.02**										**37.42**	**26.99**

Section 3.3

c = **0.62**

62.05 **40.61** **21.44**

Soil Capacity (S) = $\frac{1000}{CN} - 10$

Direct Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$

Total Runoff (R_t) = A*Q/12

ATLANTIC AVE. DRAINAGE CALCULATIONS
POST-DEVELOPMENT LAND-USE (2C)

Alternative	TOTAL AREA (Ac.)	IMPERVIOUS AREA (Ac.)	PERVIOUS AREA (Ac.)	CANAL DISCHARGE IMPERVIOUS AREA (Ac.)	CANAL DISCHARGE PERVIOUS AREA (Ac.)	HSG	PERVIOUS CN	IMPERVIOUS CN	CURVE NUMBER	SOIL STORAGE (in)	OUTFALL	25 YR-72 HR TOTAL RAINFALL (P) (IN)	25 YR-72 HR TOTAL RUNOFF (Q) (cfs)	25 YR-72 HR TOTAL RUNOFF VOLUME (AC-FT)
Basin 1	**6.48**	5.13	1.35	1.42	0	A	39	98	21.48	36.57	TURNPIKE POND & E-2E	15.0	1.34	0.1580
Basin 2	1.95	1.13	0.82	0.35	0.00	A	39	98	17.59	46.85	E-2E	15.0	0.60	0.0176
Basin 3	0.90	0.47	0.43	0.47	0.43	A	39	98	69.81	4.32	E-2E	15.0	10.82	0.8118
Basin 4	9.52	4.41	5.11	0	0	A	39	98	N/A	N/A	ATLANTIC COMMONS POND	15.0	0.00	0.0000
Basin 5	11.19	6.92	4.27	0	0	A	39	98	N/A	N/A	VILLAGGIO ISLES POND	15.0	0.00	0.0000
Basin 6	19.34	13.12	6.22	13.12	6.21	A	39	98	79.00	2.66	L-34	15.0	12.22	19.6898
Basin 7	5.75	4.78	0.97	4.78	0.93	A	39	98	87.78	1.39	L-34	15.0	13.45	6.3996
Basin 8	3.80	3.30	0.50	0	0	A	39	98	N/A	N/A	L-33	15.0	0.00	0.0000
Basin 9	9.60	6.70	2.90	0	0	A	39	98	0.00	0.00	TREATMENT POND	15.0	0.00	0.0000
Project Total	**68.53**	**45.96**	**22.57**										**38.44**	**27.08**

Section 3.3

c = **0.62**

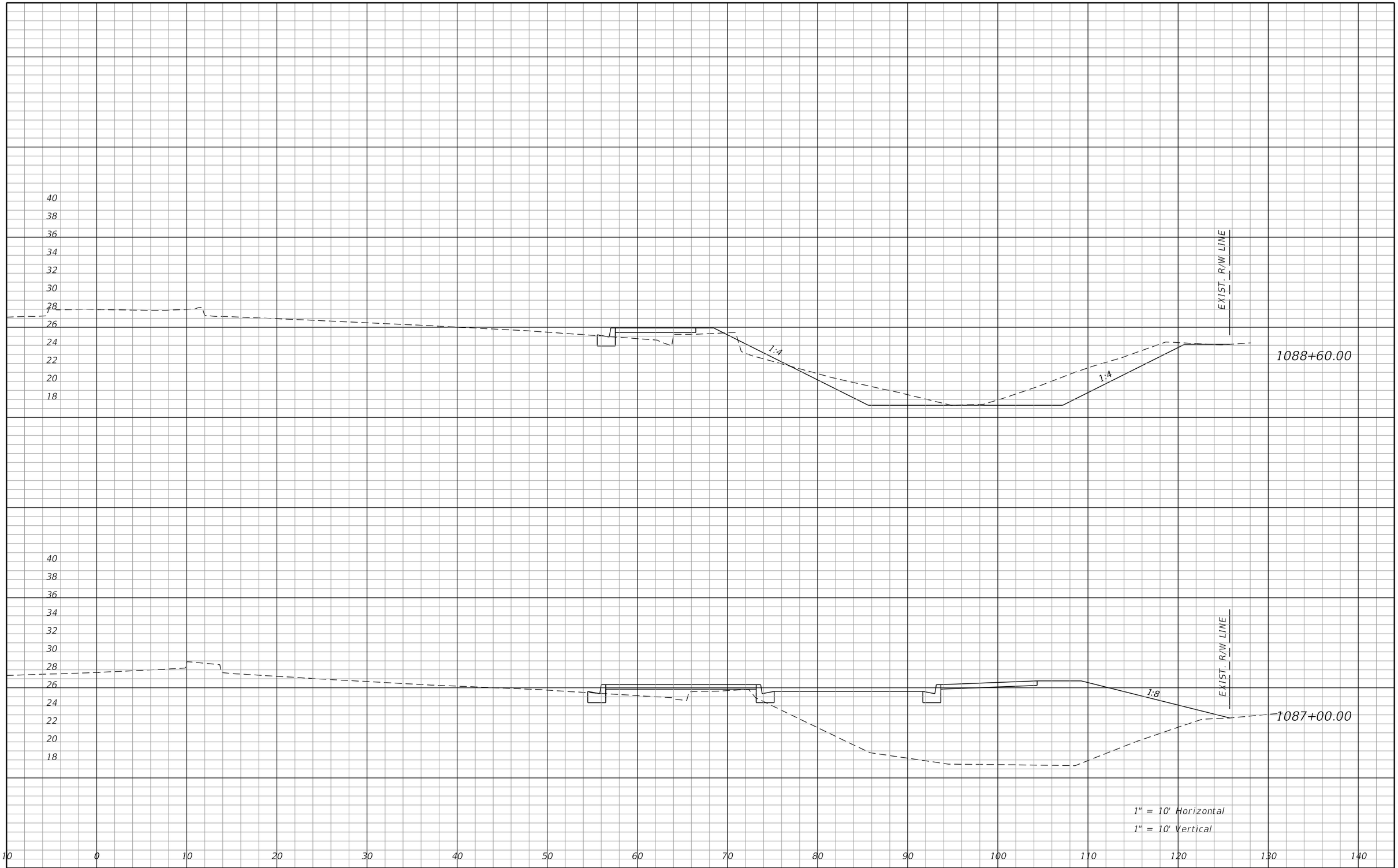
62.05 **40.83** **21.22**

Soil Capacity (S) = $\frac{1000}{CN} - 10$

Direct Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$

Total Runoff (R_t) = A*Q/12

Preliminary Jog Road Pond Cross Sections



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

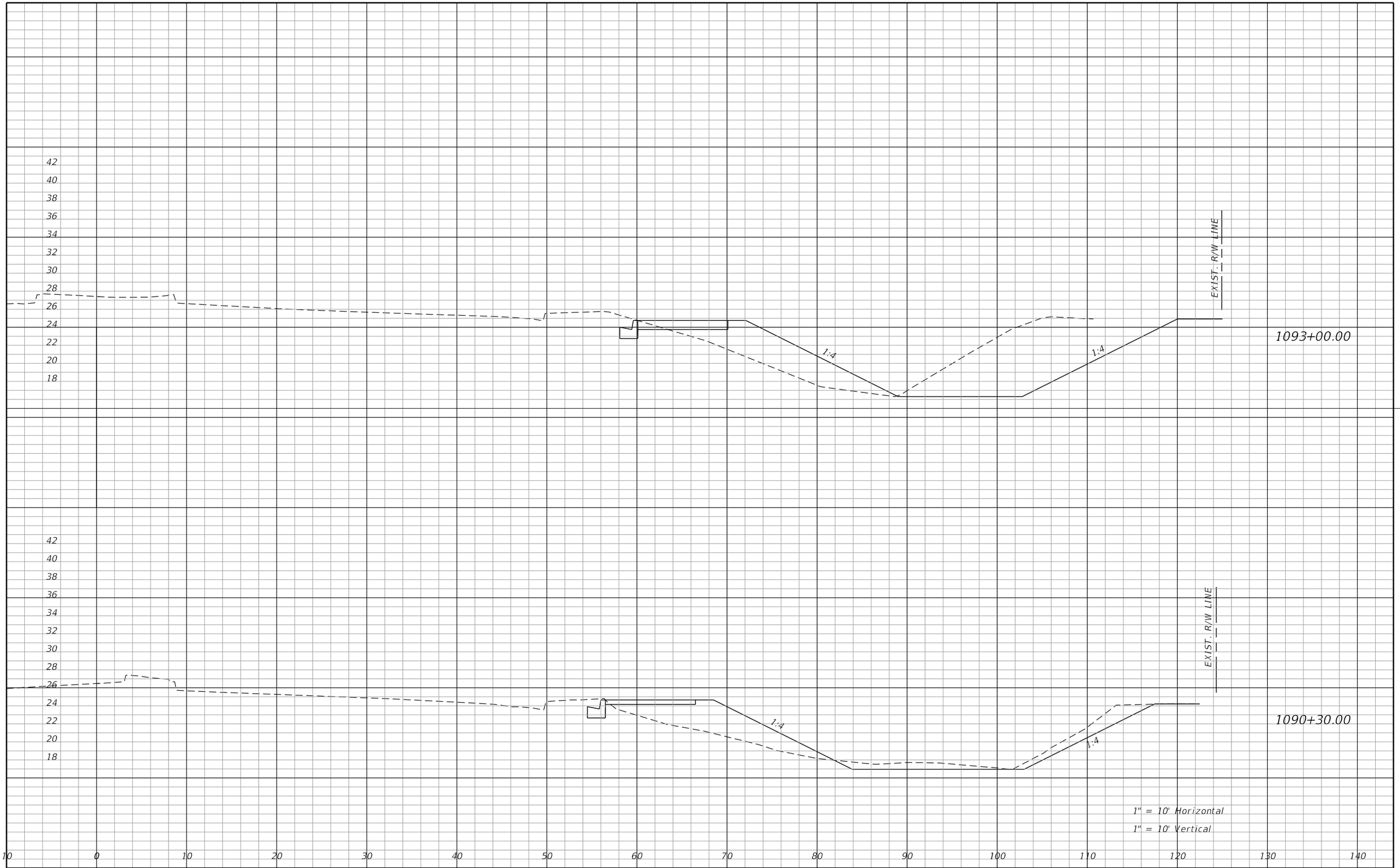
BRENT ALAN MORRIS, P.E.
P.E. LICENSE NUMBER 68233
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 806	PALM BEACH	440575-3-22-02

POND CROSS SECTIONS (1)

SHEET NO. 1



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

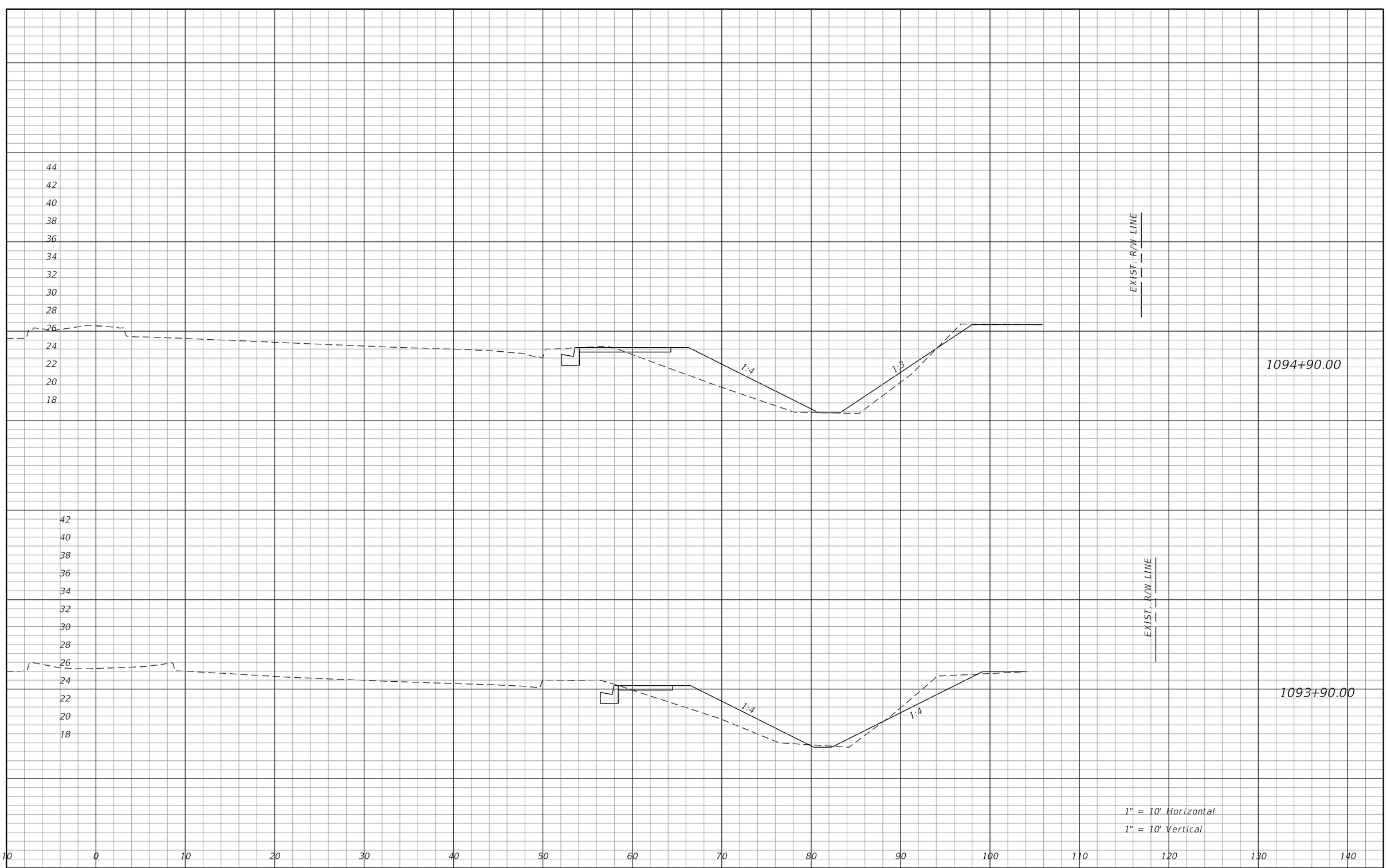
BRENT ALAN MORRIS, P.E.
P.E. LICENSE NUMBER 68233
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 806	PALM BEACH	440575-3-22-02

POND CROSS SECTIONS (2)

SHEET NO. 2



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

BRENT ALAN MORRIS, P.E.
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SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
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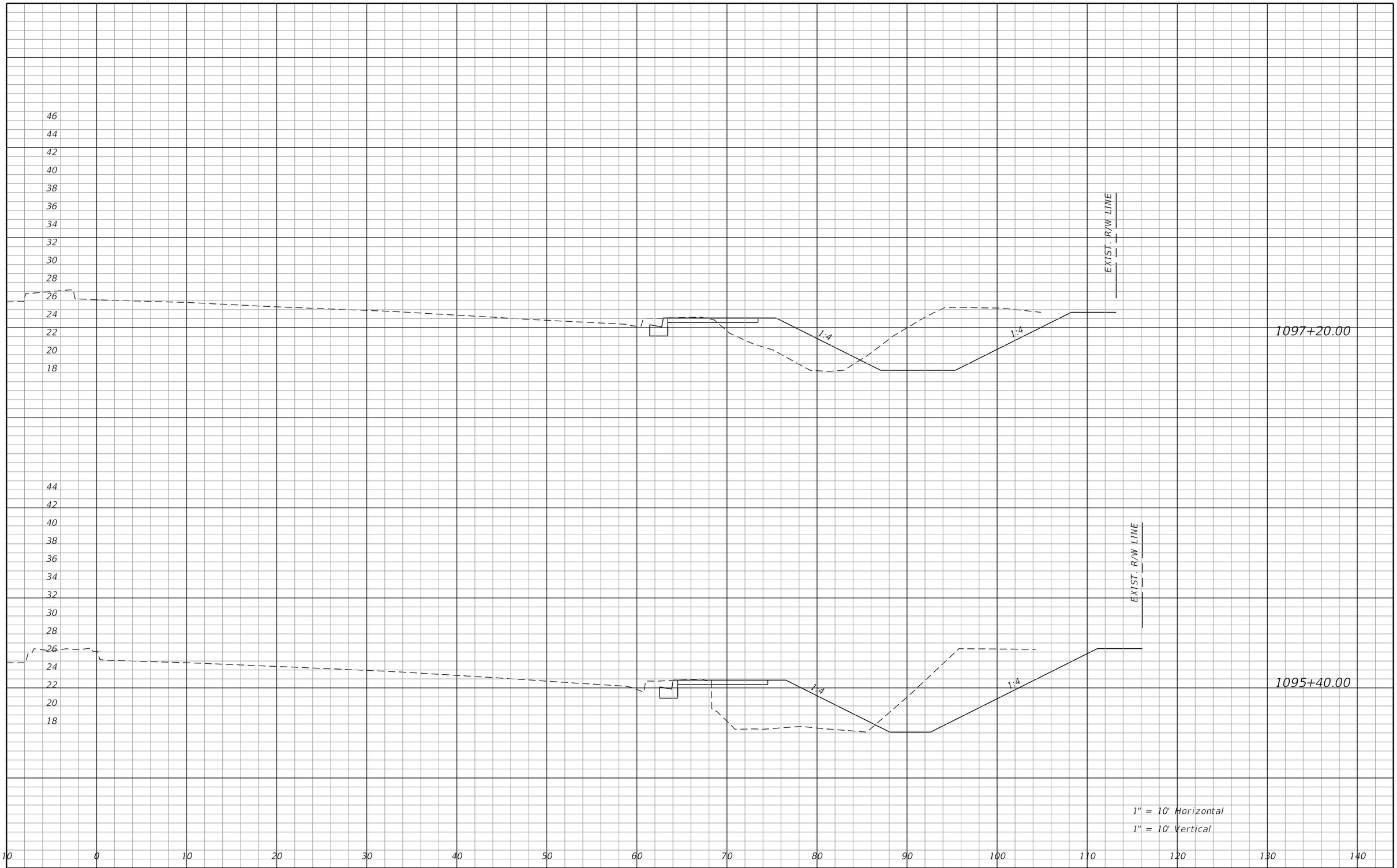
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 806	PALM BEACH	440575-3-22-02

POND CROSS SECTIONS (3)

SHEET NO. 3



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

BRENT ALAN MORRIS, P.E.
P.E. LICENSE NUMBER 68233
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 806	PALM BEACH	440575-3-22-02

POND CROSS SECTIONS (4)

SHEET NO. 4

Canal Culvert Sizing Memorandum and Data

DRAINAGE DOCMENTATION MEMORANDUM

Date: September 27, 2022

To: Tommy Strowd, PE, LWDD Executive Director/District Engineer

From: David M. Boyer, PE, CFM, Scalar Drainage Engineer

Reference: Atlantic Avenue PD&E from Florida's Turnpike to Jog Road, Palm Beach County
FM No. 440575-3-22-02
Scalar Project No. FL20006.00

CC: Project File

The project involves widening a 1.8-mile segment of Atlantic Avenue from the Florida's Turnpike to east of Jog Road in unincorporated Palm Beach County. The proposed project would widen the existing four-lane roadway to a six-lane roadway with upgraded bicycle and pedestrian facilities. Impacts to LWDD Canal L-34 are required to provide for the proposed typical section. Portions of the canal will be culverted. This memo demonstrates that the proposed culverts meet the hydraulic requirements specified by LWDD.

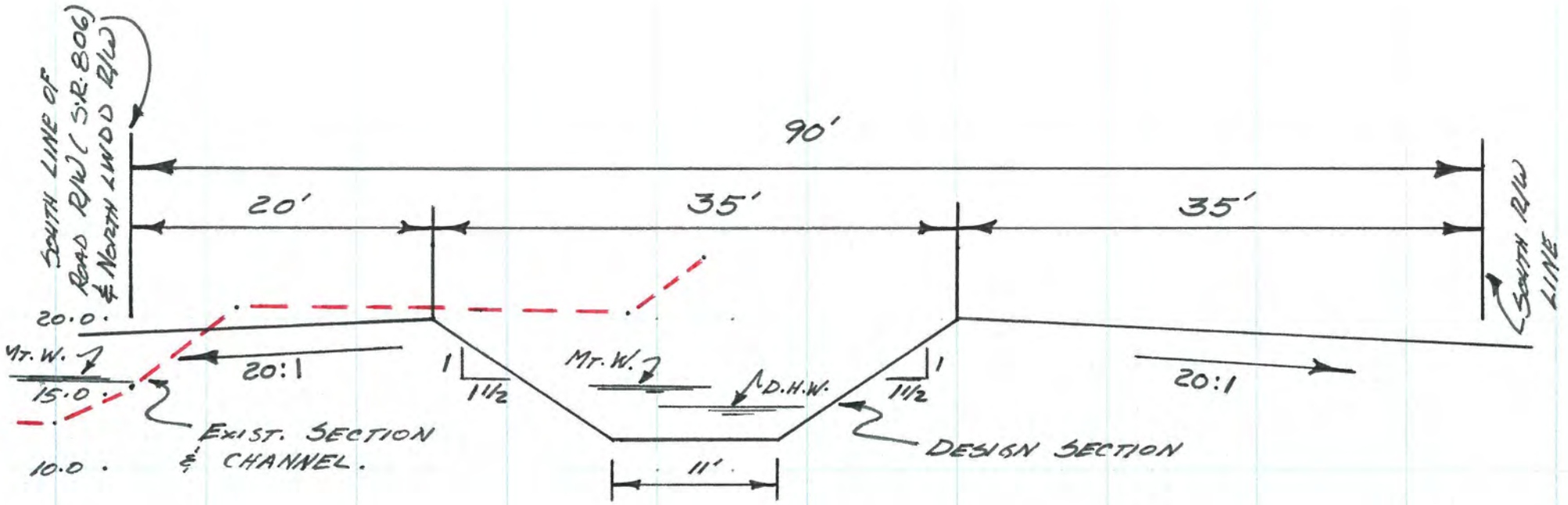
As described in the Preliminary Drainage Report, the canal impacts involve shifting the canal and, in some places, culverting the canal for short stretches. From approximately station 1022+20 to station 1037+85 the channel will be filled by a double 84" culvert. Also, from 1045+75 to about station 1050+20, and the channel will be filled by a double 78" culvert. Both culverts exceed the existing design of 30 cfs. To demonstrate the hydraulic capacity of the proposed culverts, an HY-8 analysis was performed and submitted to LWDD for review.

The response from LWDD indicated their concerns regarding the potential for reduced hydraulic capacity when converting from an open channel (trapezoidal cross-sectional area) to a piped cross-sectional area (enclosed cross-sectional area). In other words, the existing open channel provides significantly more conveyance capacity (due to larger cross-sectional area) than what is required to pass the typical design flow (open channel results in a much larger factor of safety) used in a more conventional modeling approach.

Based on this, and the design section and analysis provided by LWDD, the culverts were re-analyzed to address LWDD's concerns. First, the canal typical section at the LWDD provided has a bottom width of eleven feet and 1.5 to 1 side slopes with a four-foot stage at elevation 16.0 NGVD. A flow depth curve was generated based on a Manning's roughness of 0.035 and the data matched the flow curve from LWDD. The design stage for this canal is 16.3 NGVD with a design flow of 30 cfs based on data from the LWDD Facilities Report. The flow depth curve shows the open channel capacity at 63.8 cfs at 16.3 NGVD, which is more than double the design flow.

The previous results showed that a the double 84" and double 78" culverts passed the 63.8 cfs flow with less than 0.1' rise in the headwater.

Another analysis was conducted, where vertical walls were installed in the reduced right-of-way (R/W) areas. Two typical sections were analyzed, the first with the north side of the canal being a vertical wall, with a 20’ bottom width at elevation 12 NGVD and 1.5:1 south side slope. This section leaves a 35’ maintenance area south of the canal top of bank and the south LWDD R/W. At the design stage of 16.3, this section will pass 88.3 cfs, much greater than the original channel. Another analysis looked at 2 vertical walls, with a bottom with of 30’ (assumes 1’ walls). This section leaves a 35’ maintenance area south of the canal top of bank and the south LWDD R/W. This section passes 122.4 cfs, much greater than the original channel. **Both alternatives would provide greater capacity than the dual culverts.**

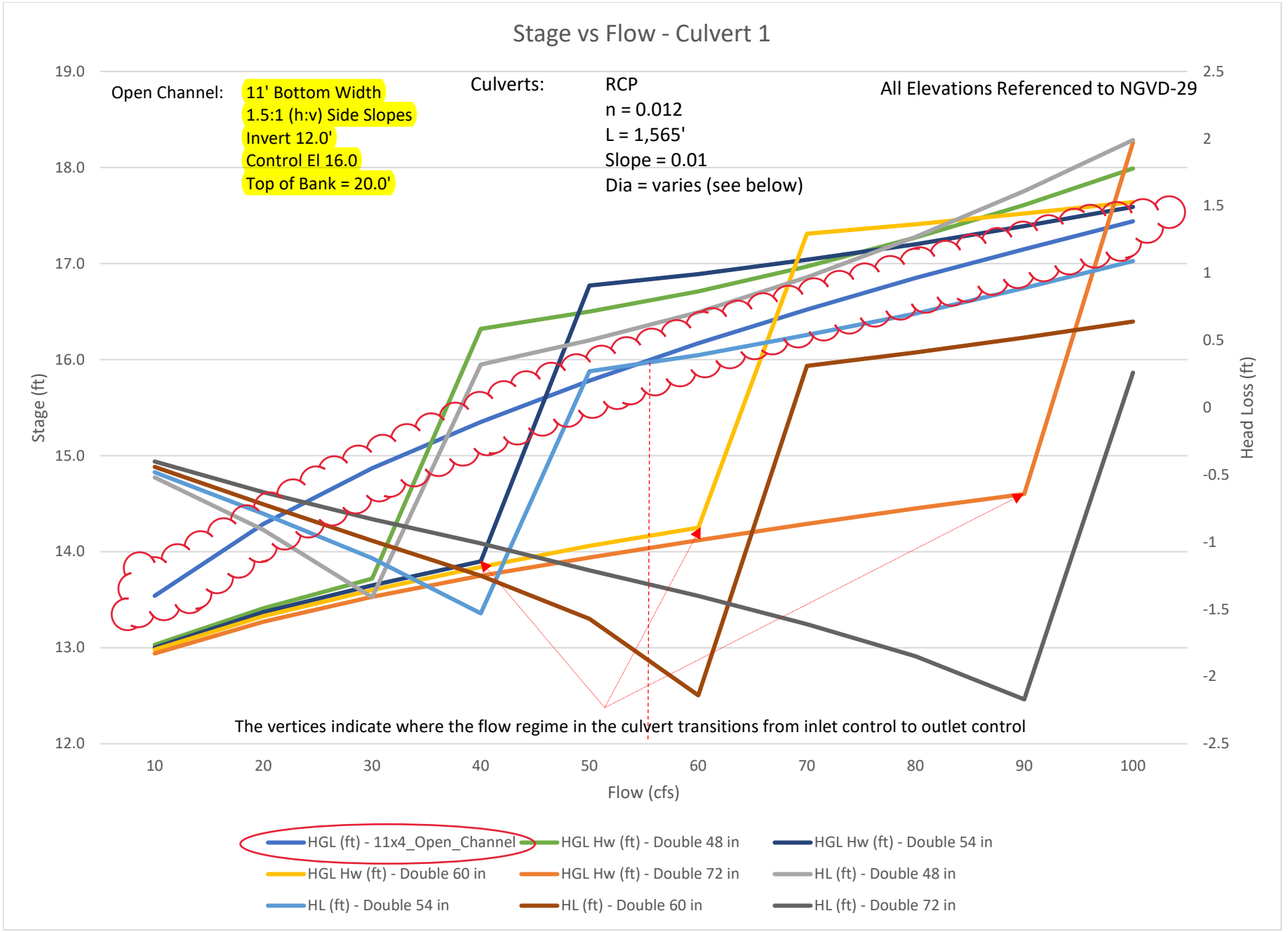


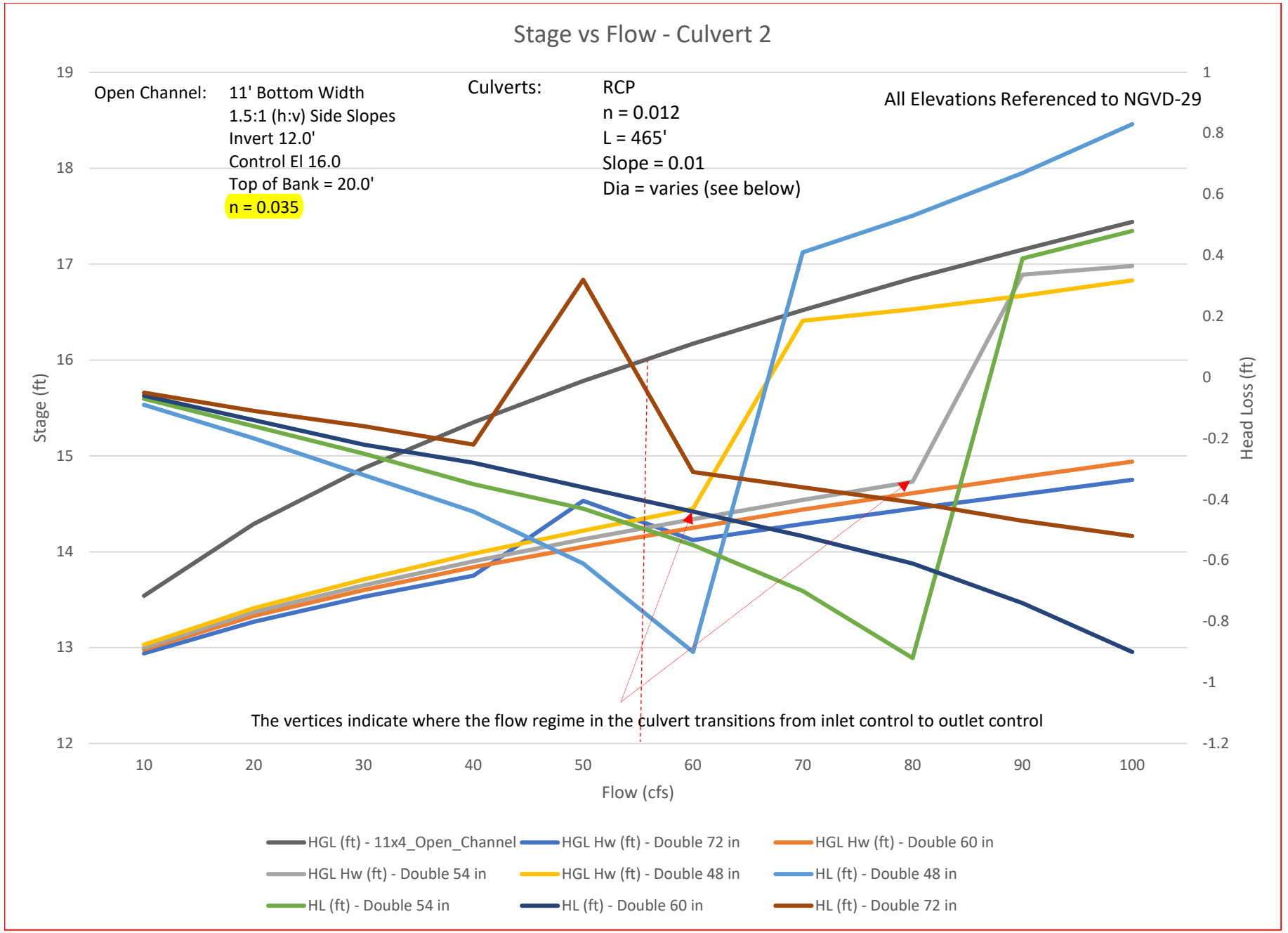
LATERAL CANAL No. 34

(JOG/POWERLINE TO E-2-E)

SEC. No. 194

DATE: 4/30/84


Stage vs Flow - Culvert 1
Open Channel:
11' Bottom Width
1.5:1 (h:v) Side Slopes
Invert 12.0'
Control El 16.0
Top of Bank = 20.0'
Culverts:
RCP
n = 0.012
L = 1,565'
Slope = 0.01
Dia = varies (see below)
All Elevations Referenced to NGVD-29
Stage (ft)
Head Loss (ft)
Flow (cfs)
The vertices indicate where the flow regime in the culvert transitions from inlet control to outlet control
HGL (ft) - 11x4_Open_Channel
HGL Hw (ft) - Double 48 in
HGL Hw (ft) - Double 54 in
HGL Hw (ft) - Double 60 in
HGL Hw (ft) - Double 72 in
HL (ft) - Double 48 in
HL (ft) - Double 54 in
HL (ft) - Double 60 in
HL (ft) - Double 72 in


Stage vs Flow - Culvert 2
Open Channel:
11' Bottom Width
1.5:1 (h:v) Side Slopes
Invert 12.0'
Control El 16.0
Top of Bank = 20.0'
n = 0.035
Culverts:
RCP
n = 0.012
L = 465'
Slope = 0.01
Dia = varies (see below)
All Elevations Referenced to NGVD-29
Stage (ft)
Head Loss (ft)
Flow (cfs)
The vertices indicate where the flow regime in the culvert transitions from inlet control to outlet control
HGL (ft) - 11x4_Open_Channel
HGL Hw (ft) - Double 72 in
HGL Hw (ft) - Double 60 in
HGL Hw (ft) - Double 54 in
HGL Hw (ft) - Double 48 in
HL (ft) - Double 48 in
HL (ft) - Double 54 in
HL (ft) - Double 60 in
HL (ft) - Double 72 in

Ditch Capacity Calculator

using Manning's Formula

Data Entry (fill in underlined blanks)

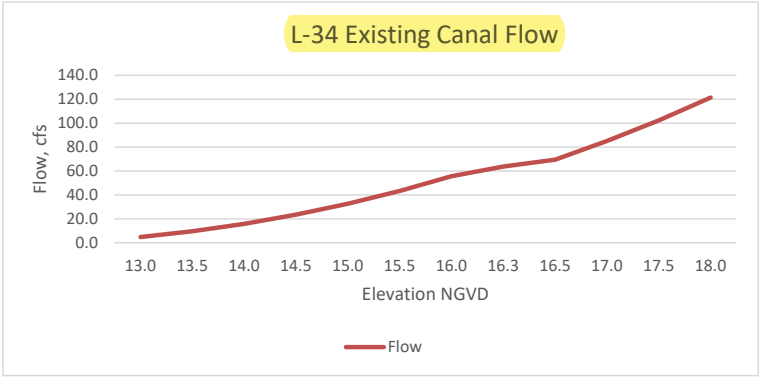
Top Width =	23.9 feet	11' Bottom and 1.5:1 side slopes	
Bottom Width =	11 feet		
Depth =	4.3 feet		
Fall =	0.01 feet	per 100	feet of distance
Grade =	0.0001 , or	0.01%	
n Factor =	0.035		

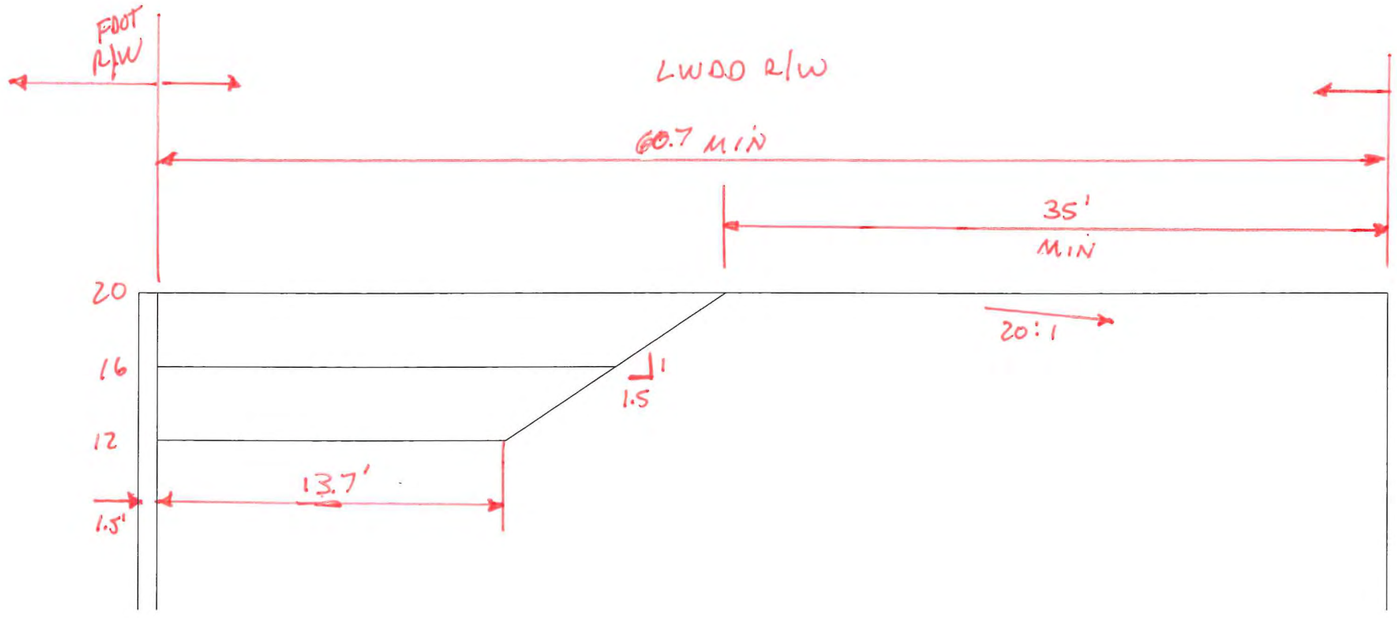
Results calculated

Area of cross-section =	75.04	square feet
Wetted Perimeter =	26.50387	feet
Hydraulic Radius =	2.831096	
Velocity =	0.850	feet per second

Calculated Ditch Capacity = 63.756 cubic feet per second

L-34 Canal Data		
Depth	Elevation	Flow
1.0	13.0	4.8
1.5	13.5	9.6
2.0	14.0	15.8
2.5	14.5	23.5
3.0	15.0	32.7
3.5	15.5	43.4
4.0	16.0	55.6
4.3	16.3	63.8
4.5	16.5	69.5
5.0	17.0	85.0
5.5	17.5	102.3
6.0	18.0	121.4





ORIGINAL CANAL FLOW @ DESIGN STAGE
= 63.8 cfs

1 VERTICAL WALL FLOW @ Design Stage
= 63.94 cfs
With 13.7' Bottom Width

Ditch Capacity Calculator

using Manning's Formula

Data Entry (fill in underlined blanks)

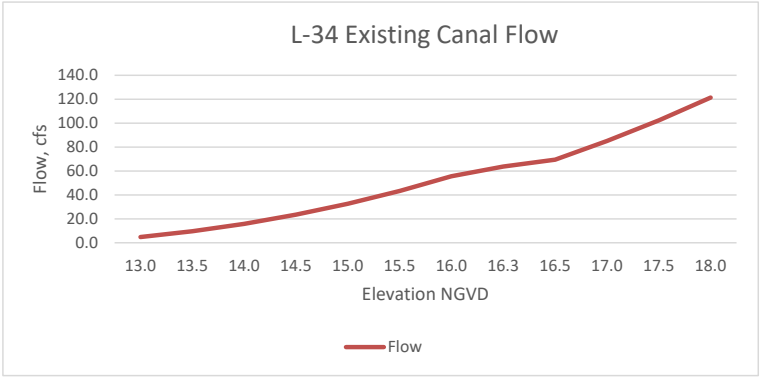
Top Width =	23.9 feet	11' Bottom and 1.5:1 side slopes	
Bottom Width =	11 feet		
Depth =	4.3 feet		
Fall =	0.01 feet	per 100	feet of distance
Grade =	0.0001 , or	0.01%	
n Factor =	0.035		

Results calculated

Area of cross-section =	75.04	square feet
Wetted Perimeter =	26.50387	feet
Hydraulic Radius =	2.831096	
Velocity =	0.850	feet per second

Calculated Ditch Capacity = 63.756 cubic feet per second

L-34 Canal Data		
Depth	Elevation	Flow
1.0	13.0	4.8
1.5	13.5	9.6
2.0	14.0	15.8
2.5	14.5	23.5
3.0	15.0	32.7
3.5	15.5	43.4
4.0	16.0	55.6
4.3	16.3	63.8
4.5	16.5	69.5
5.0	17.0	85.0
5.5	17.5	102.3
6.0	18.0	121.4



Ditch Capacity Calculator

using Manning's Formula

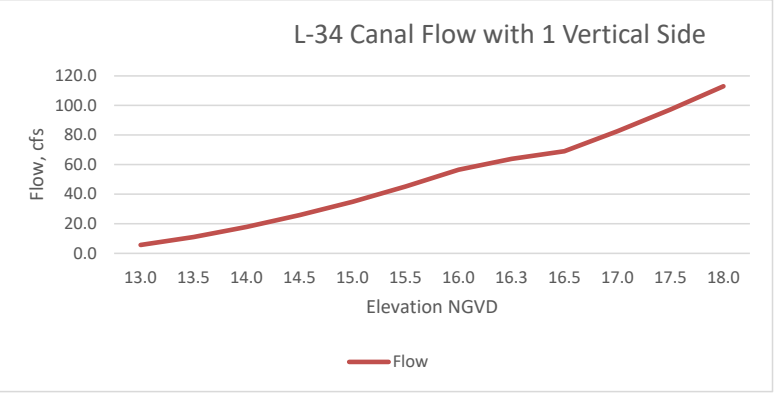
Data Entry (fill in underlined blanks)

Top Width =	22.7 feet	1 vertical wall, 1.5:1 south side	
Bottom Width =	13.7 feet		
Depth =	6 feet		
Fall =	0.01 feet	per 100	feet of distance
Grade =	0.0001 , or	0.01%	
n Factor =	0.035		

Results calculated

Area of cross-section =	109.20	square feet
Wetted Perimeter =	28.7	feet
Hydraulic Radius =	3.80487805	
Velocity =	1.035	feet per second
Calculated Ditch Capacity =	**112.998**	**cubic feet per second**

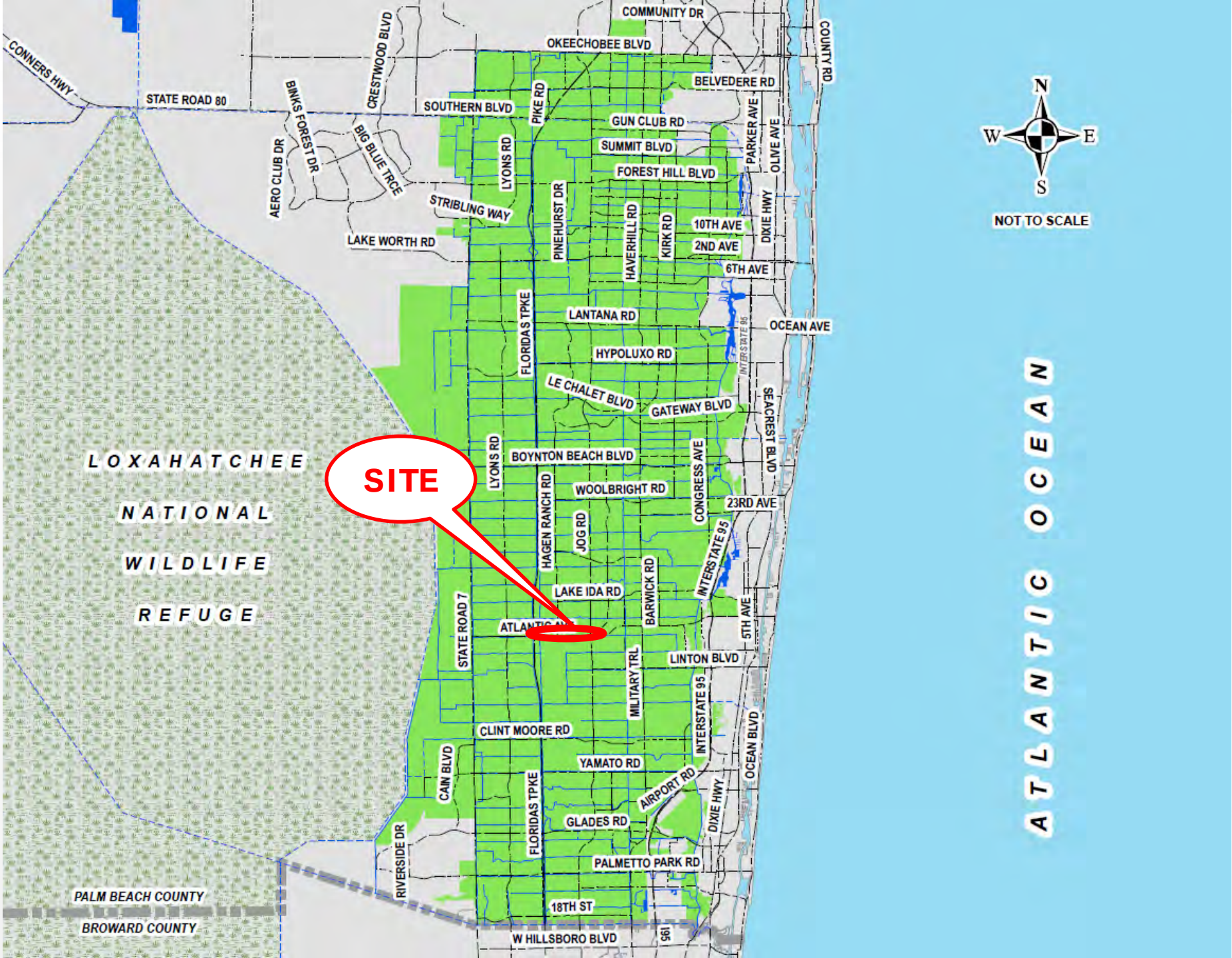
L-34 Canal Data		
Depth	Elevation	Flow
1.0	13.0	5.7
1.5	13.5	11.1
2.0	14.0	17.8
2.5	14.5	25.8
3.0	15.0	35.0
3.5	15.5	45.2
4.0	16.0	56.6
4.3	16.3	63.9
4.5	16.5	69.1
5.0	17.0	82.6
5.5	17.5	97.3
6.0	18.0	113.0



FDOT Revised Conceptual Design for Atlantic Avenue Roadway Widening and L-34 Canal Modifications Including Sale of Surplus & Reduction of Canal Right-of-Way from West of Florida's Turnpike to just East of Jog Road
(RI-19-0123)

David Bends, P.S.M., Right-of-Way Interest Supervisor
Governing Board Meeting – March 15, 2023
Agenda Item #8

LWDD
LAKE WORTH DRAINAGE DISTRICT


SITE
LOXAHATCHEE NATIONAL WILDLIFE REFUGE
ATLANTIC OCEAN
N
S
E
W
NOT TO SCALE
COMMUNITY DR
OKEECHOBEE BLVD
BELVEDERE RD
SOUTHERN BLVD
GUN CLUB RD
SUMMIT BLVD
FOREST HILL BLVD
10TH AVE
2ND AVE
6TH AVE
LANTANA RD
OCEAN AVE
HYPOLUXO RD
LE CHALET BLVD
GATEWAY BLVD
BOYNTON BEACH BLVD
WOOLBRIGHT RD
23RD AVE
LAKE IDA RD
5TH AVE
LINTON BLVD
CLINT MOORE RD
YAMATO RD
GLADES RD
PALMETTO PARK RD
18TH ST
W HILLSBORO BLVD
STATE ROAD 80
LAKE WORTH RD
STRIBLING WAY
CONNERS HWY
CRESTWOOD BLVD
BIMINI FOREST DR
BIG BLUE TRCE
AERO CLUB DR
PIKE RD
LYONS RD
PINEHURST DR
HAVERHILL RD
KIRK RD
PARKER AVE
OLIVE AVE
DIXIE HWY
FLORIDAS TPKE
INTERSTATE 95
SEACREST BLVD
CONGRESS AVE
HAGEN RANCH RD
JOG RD
BARWICK RD
STATE ROAD 7
MILITARY TRL
CAIN BLVD
RIVERSIDE DR
AIRPORT RD
OCEAN BLVD
COUNTY RD
PALM BEACH COUNTY
BROWARD COUNTY

West Atlantic Ave Project Limits

Background

- April 2022 – Motion for approval of conceptual design failed due to concerns regarding drainage impacts
  - Reduction in hydraulic capacity
  - Right-of-way necessary for canal maintenance and emergency operations
- July 2022 – TPA & FDOT presented same proposed design; Board motion to defer action and directed staffs to meet to address ongoing concerns

Background
LWDD Required Canal Cross Section

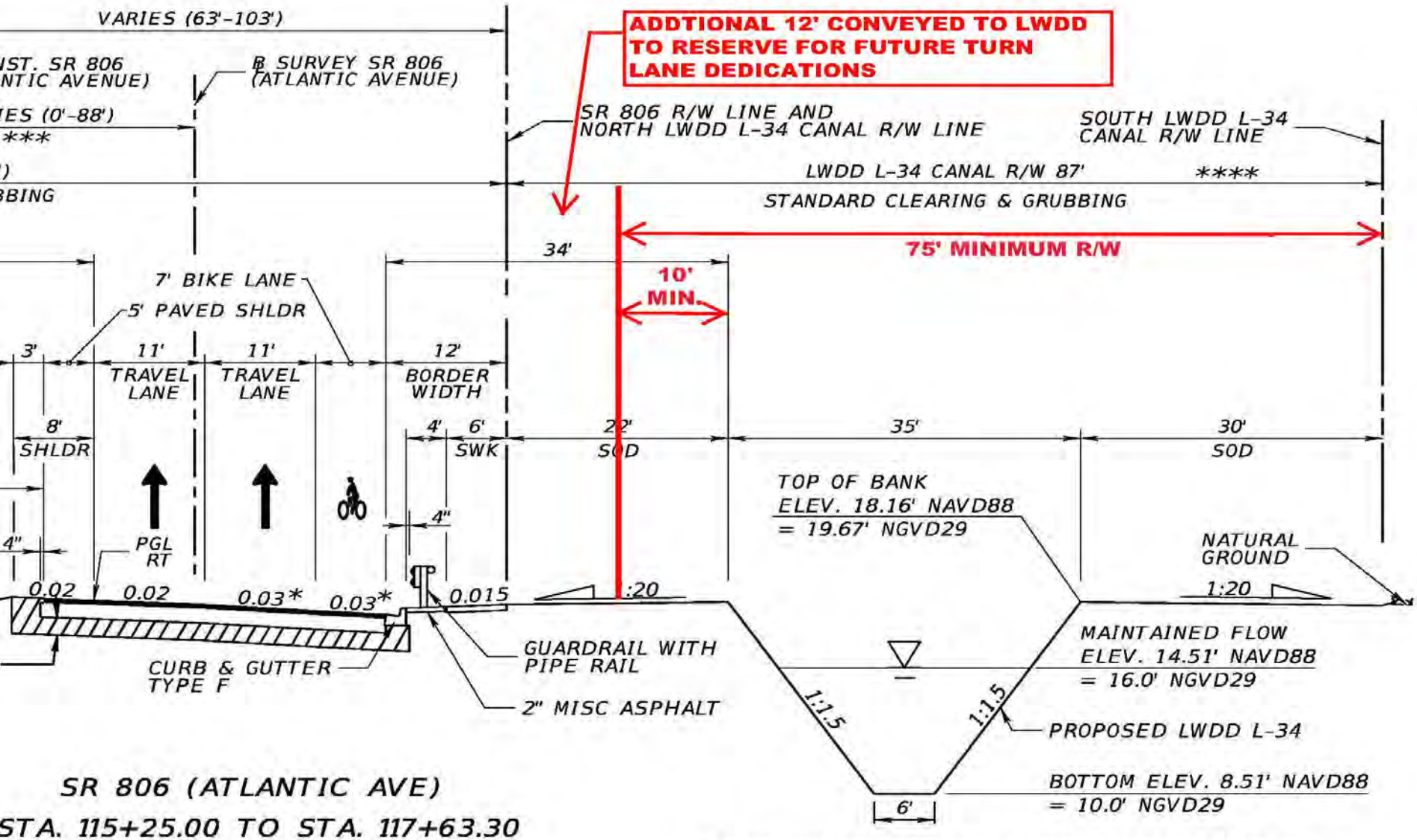
- LWDD & TPA staff met and discuss required canal cross section:
  - Open Channel
    - 80'+ right-of-way maintained
    - Minimum 75' minimum right-of-way accepted if border variation applied but unable to meet 80'
  - Piped Canal
    - Where 75' minimum right-of-way is not possible even with application of border variation, limited piping accepted; must maintain minimum 70' right-of-way

Revised Design

- FDOT reduced required border width from 14’ to 12’, and revised the conceptual design to provide a 75 ft minimum ROW from E-2E Canal to just west of Cumberland Drive
- Exception of two pinch points at Legends Way and Michelangelo Blvd to accommodate right turn lanes where the ROW will be reduced to 67-69 ft.
  - In these areas, FDOT proposing to construct bulkhead walls within their R/W rather than piping canal
    - Bulkhead walls are preferable alternative – maintains open channel for hydraulic capacity

Typical Section Previously approved by LWDD
West Atlantic Ave - S.R. 7 to Florida's Turnpike

LWDD
LAKE WORTH DRAINAGE DISTRICT



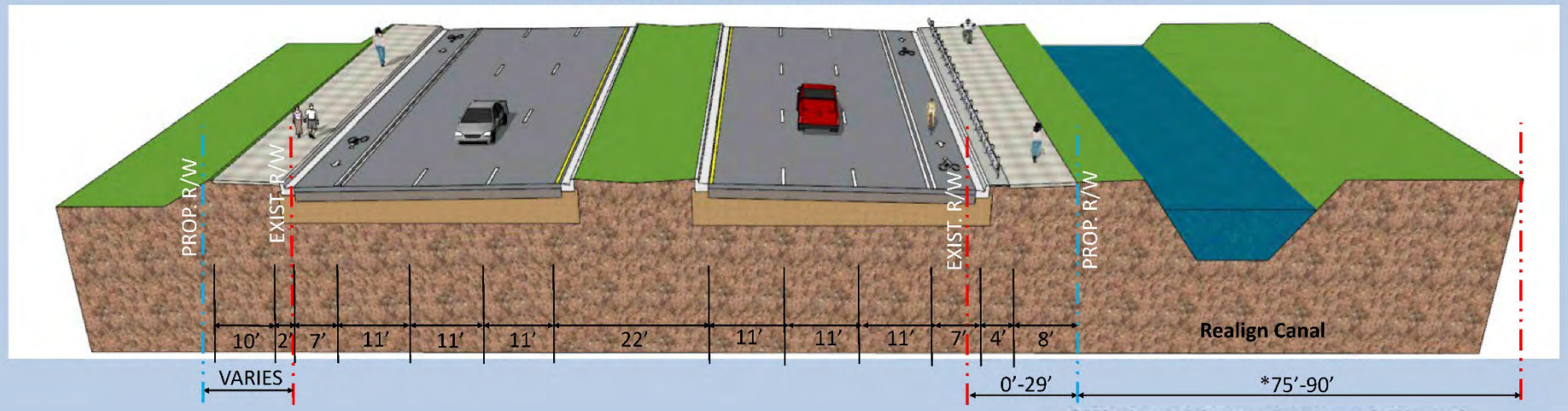
SR 806 (ATLANTIC AVE)
STA. 115+25.00 TO STA. 117+63.30
STA. 118+65.16 TO STA. 172+74.96

*PAVT. SLOPE BASED ON ACCOMMODATIONS IN THE MEDIAN FOR FUTURE ULTIMATE 6-LANE URBAN TYPICAL

FDOT Proposed Typical Cross Section

LAKE WORTH DRAINAGE DISTRICT

ATLANTIC AVENUE
E2-E CANAL TO CUMBERLAND DRIVE



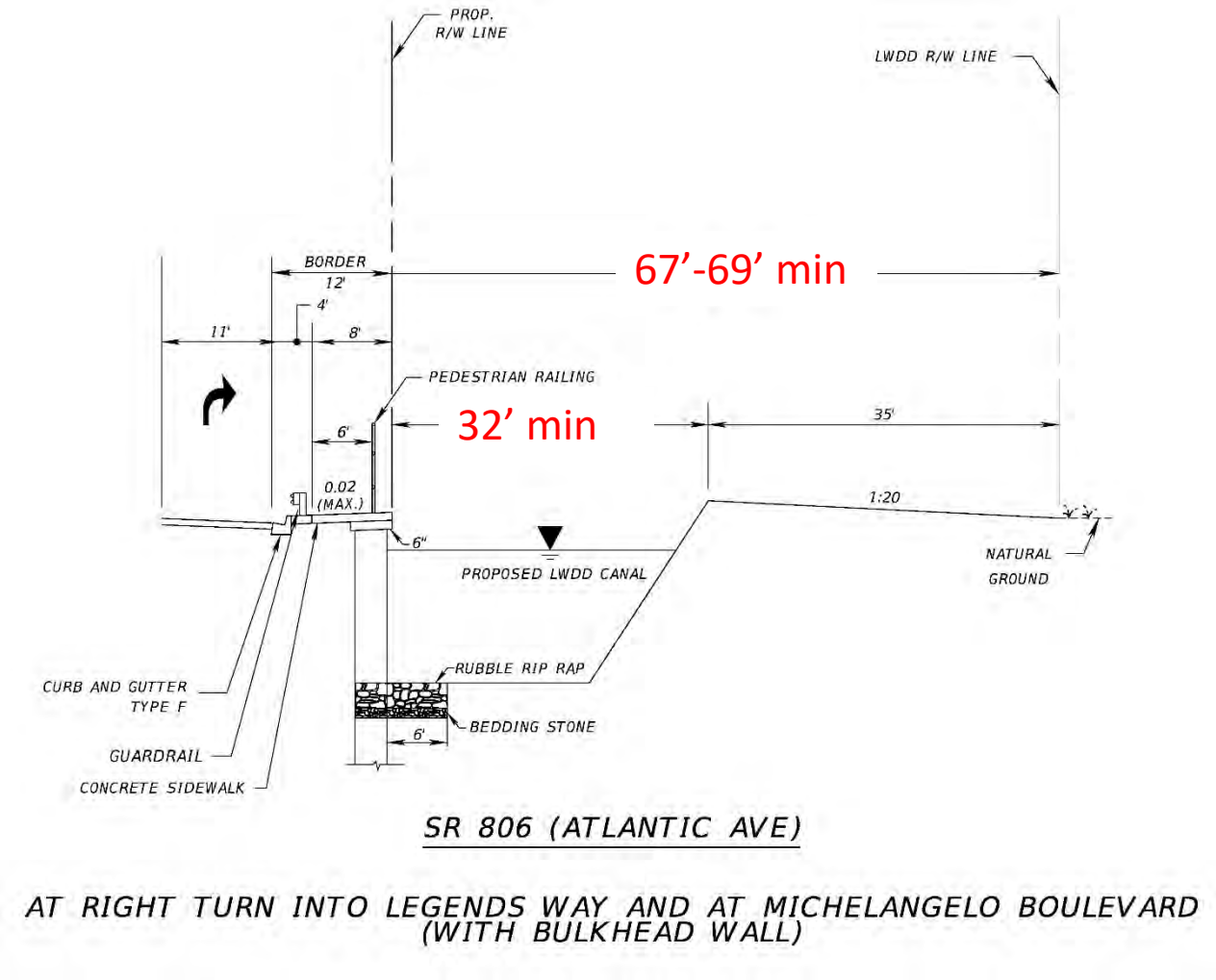
~~*65'~~ min. at right turns into Legends Way and Michelangelo Blvd. w/bulkhead walls (approximately 300' for each wall – to be maintained by FDOT)

BASED ON LWDD STAFF MEETING W/ FDOT and TPA:

1. **Border width reduced to 12-ft on south side to minimize R/W impacts to L-34 Canal**
2. **TPA Staff concurrence for reduction of sidewalk width**

67' – 69'min at right turn lanes as presented in FDOT plans submitted on January 30, 2023

Revised Design (Bulkhead Wall Detail)



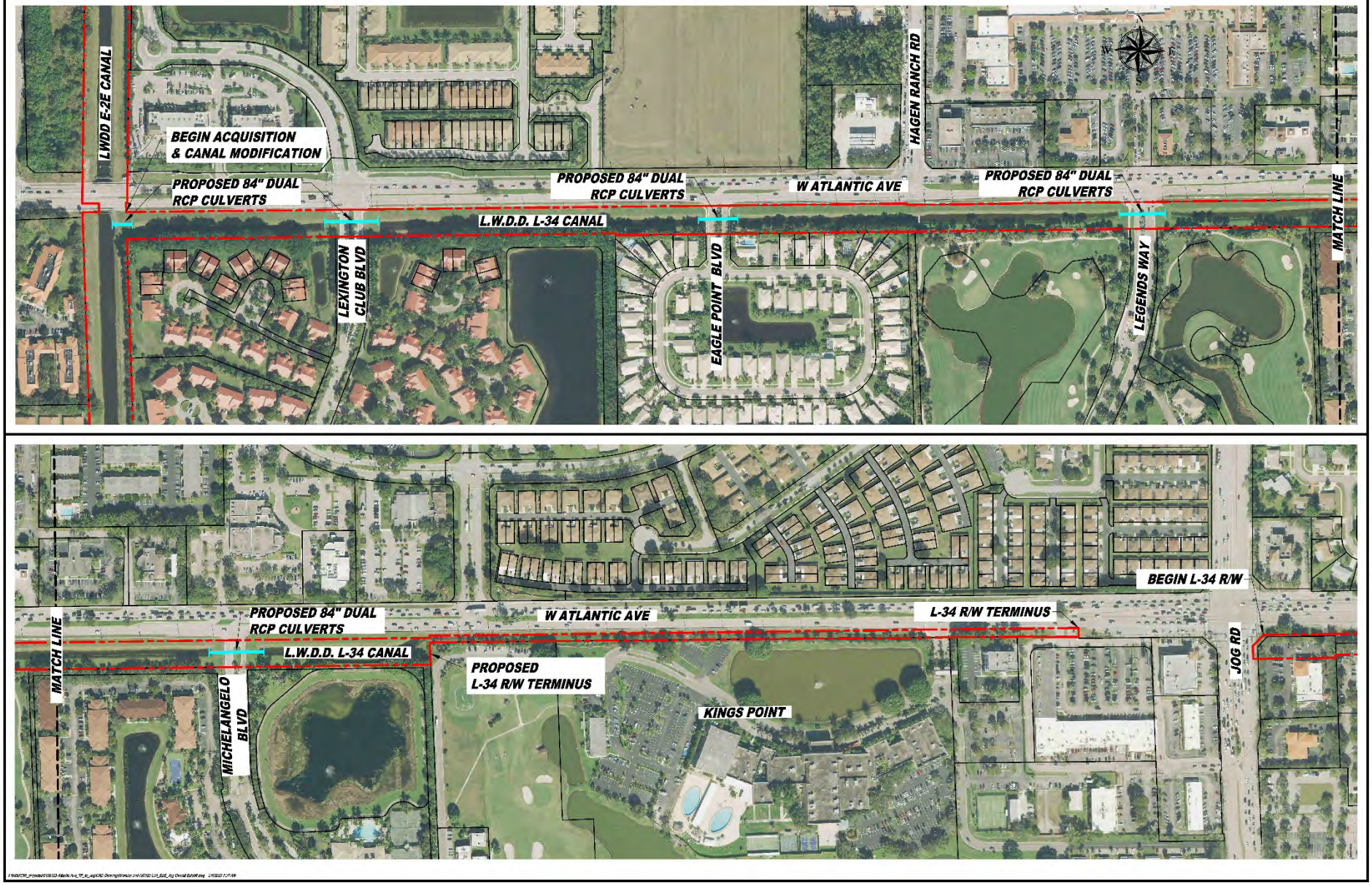
- FDOT to provide rubble rip rap at the base of the wall to prevent over-excavation and damage

Request

- Approval to surplus and sell a portion of the L-34 Canal right-of-way as presented for the roadway widening at fair market value from E-2E Canal to east of Jog Road, Containing 3.84 Acres, more/less
- Approval to abandon the L-34 Canal necessary for the roadway widening from the west line of King's Point Plat No. 1 to the eastern terminus of the L-34 Canal (500' west of Jog Road)
  - FDOT to assume ownership and all maintenance obligations of the existing culverts and drainage system and continue to accept existing drainage from surrounding properties.
  - FDOT & LWDD to extinguish Maintenance Agreement in ORB 11868, Page 301

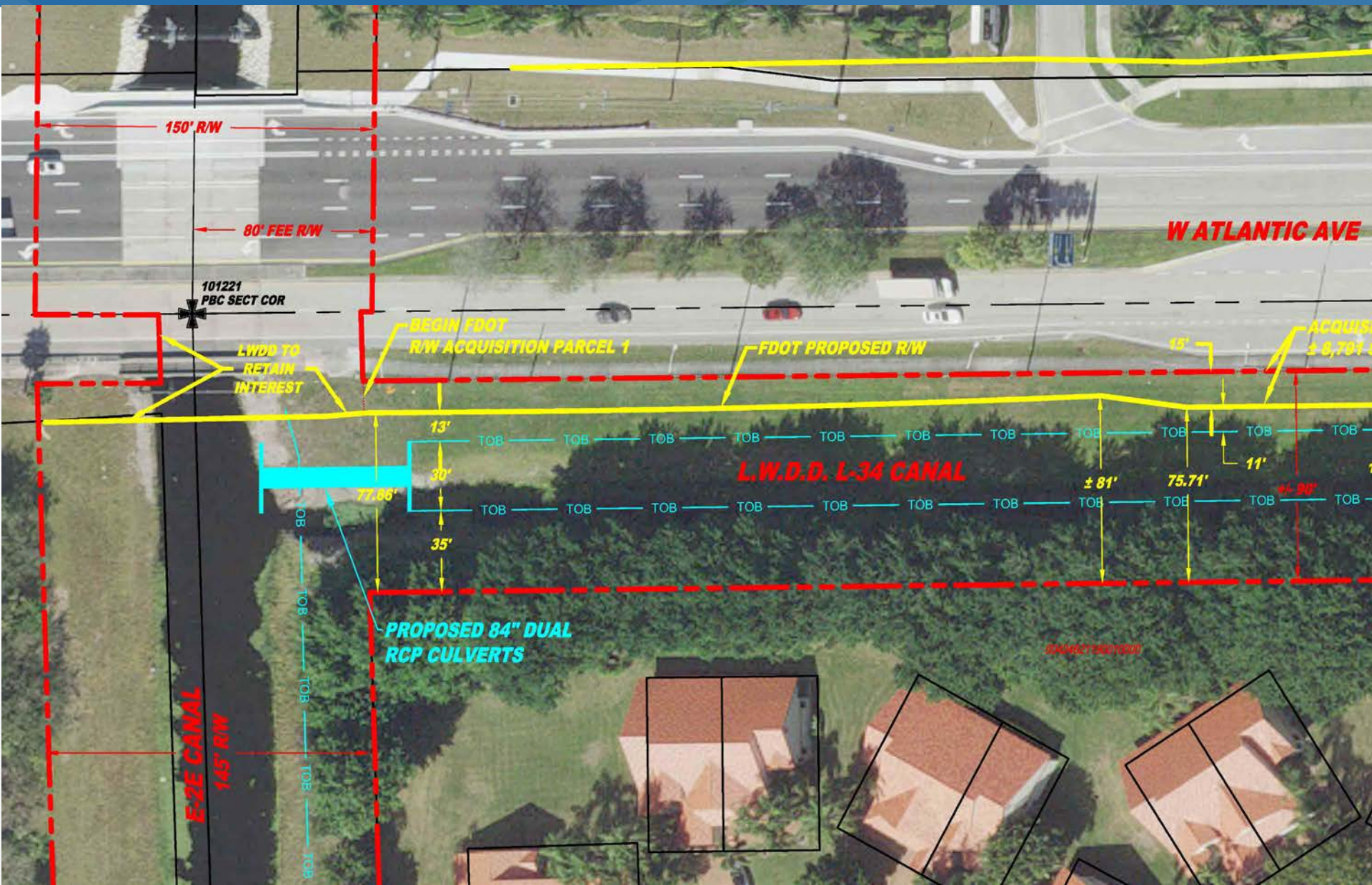
Overall Exhibit

LWDD
LAKE WORTH DRAINAGE DISTRICT



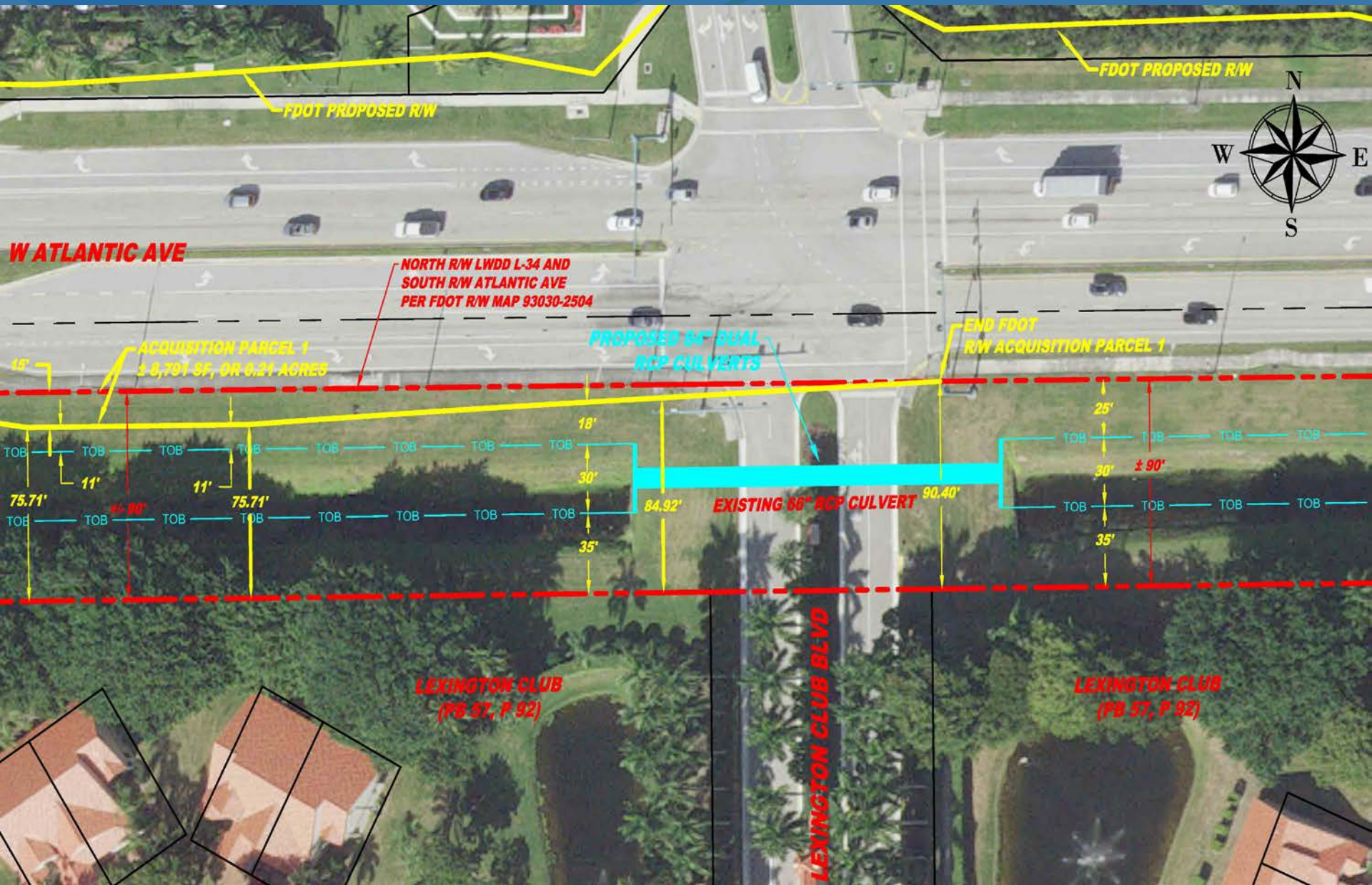
L-34 Canal @ E-3

LWDD
LAKE WORTH DRAINAGE DISTRICT



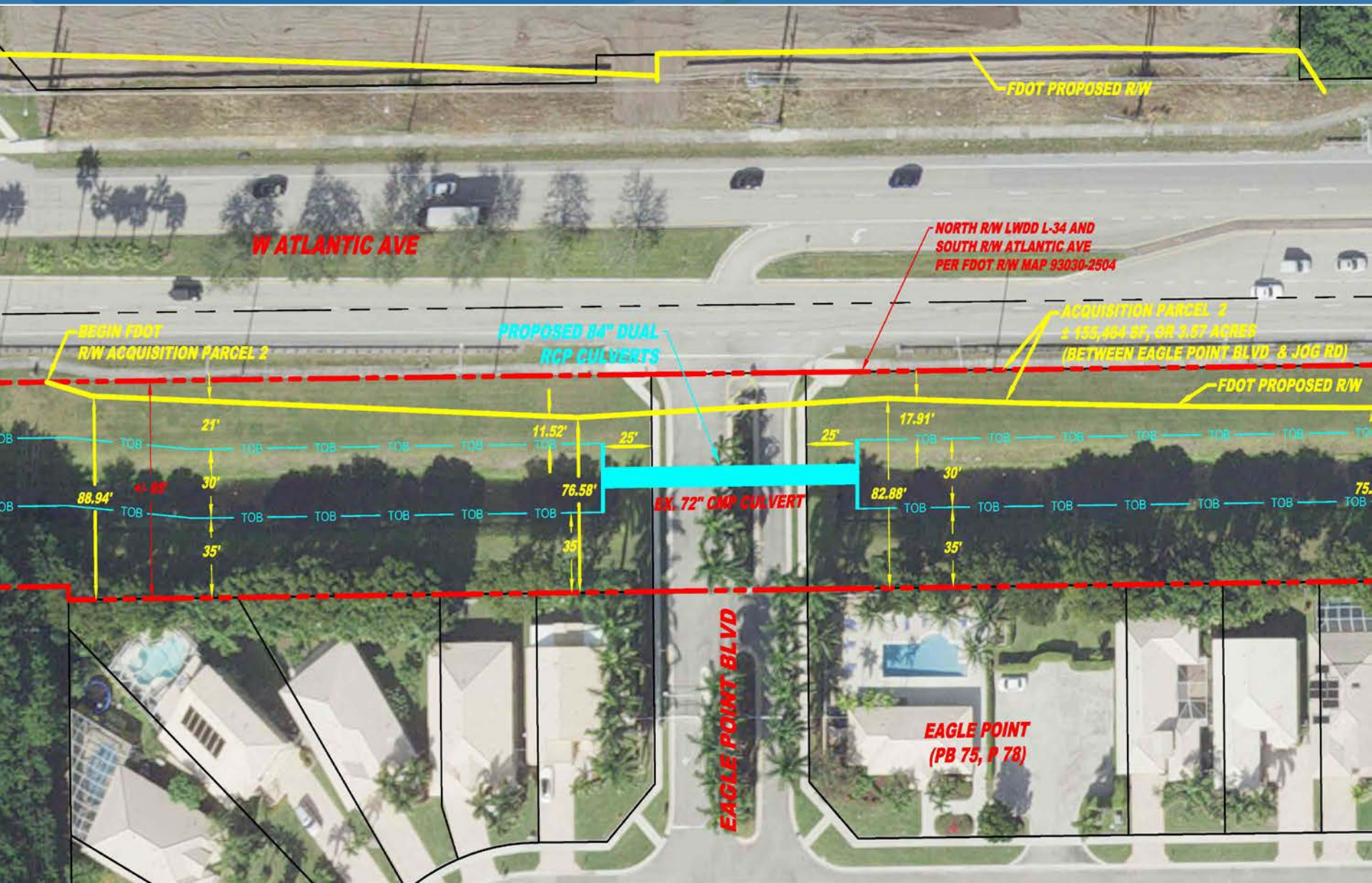
L-34 Canal @ Lexington Club Blvd

LWDD
LAKE WORTH DRAINAGE DISTRICT



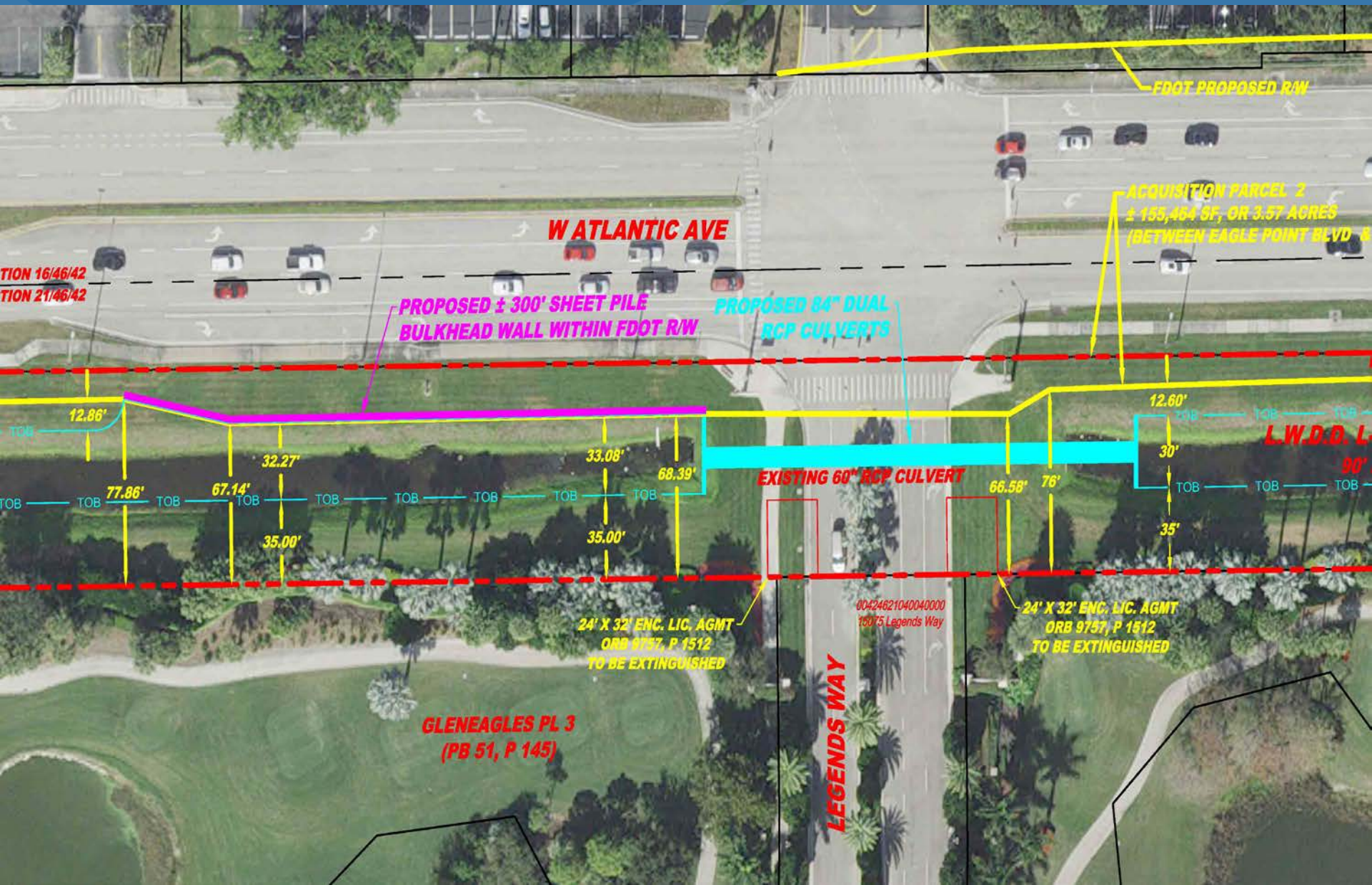
L-34 Canal @ Eagle Point Dr.

LWDD
LAKE WORTH DRAINAGE DISTRICT



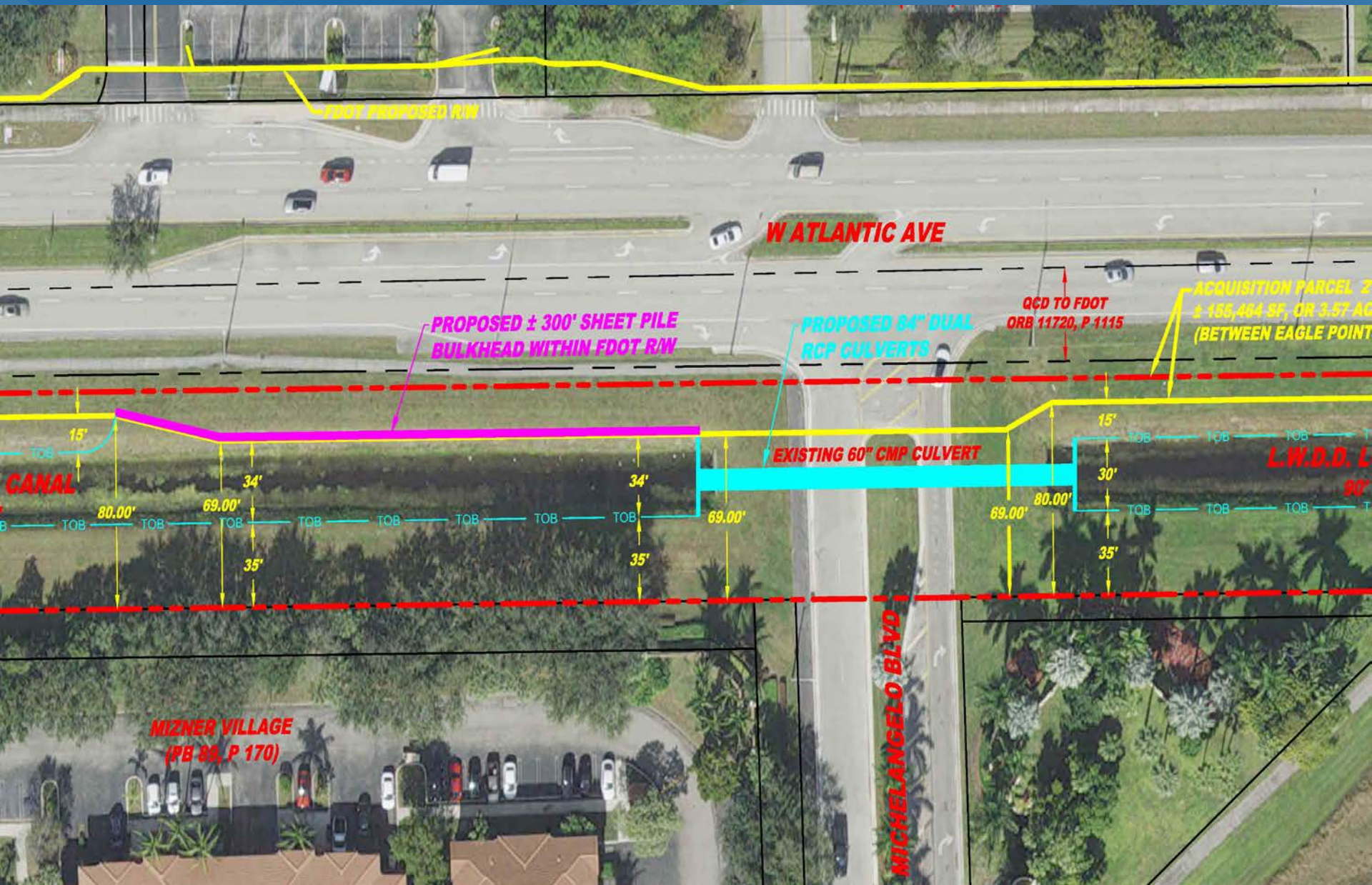
L-34 Canal @ Legends Way

LAKE WORTH DRAINAGE DISTRICT



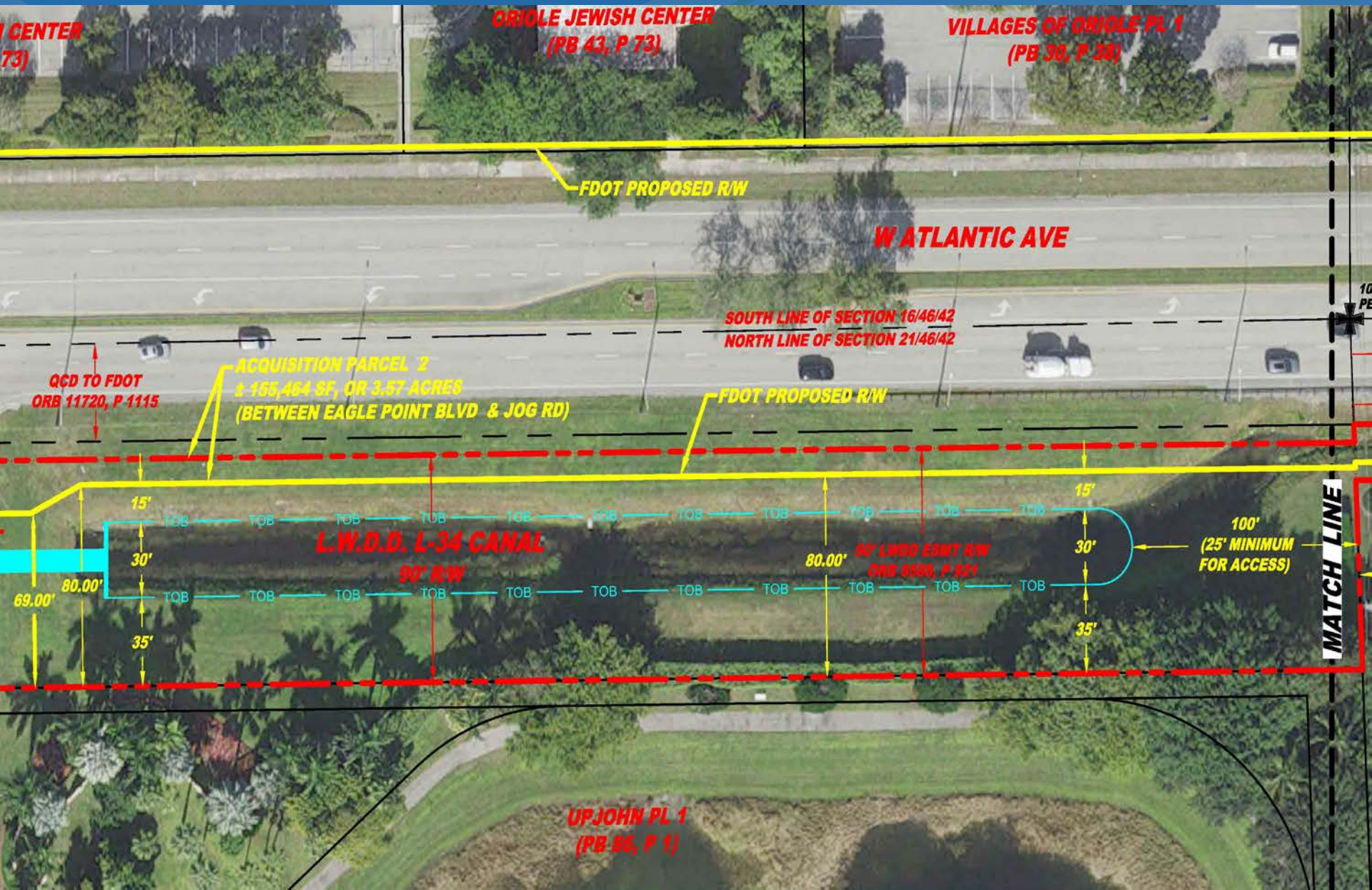
L-34 Canal @ Michelangelo Blvd

LAKE WORTH DRAINAGE DISTRICT



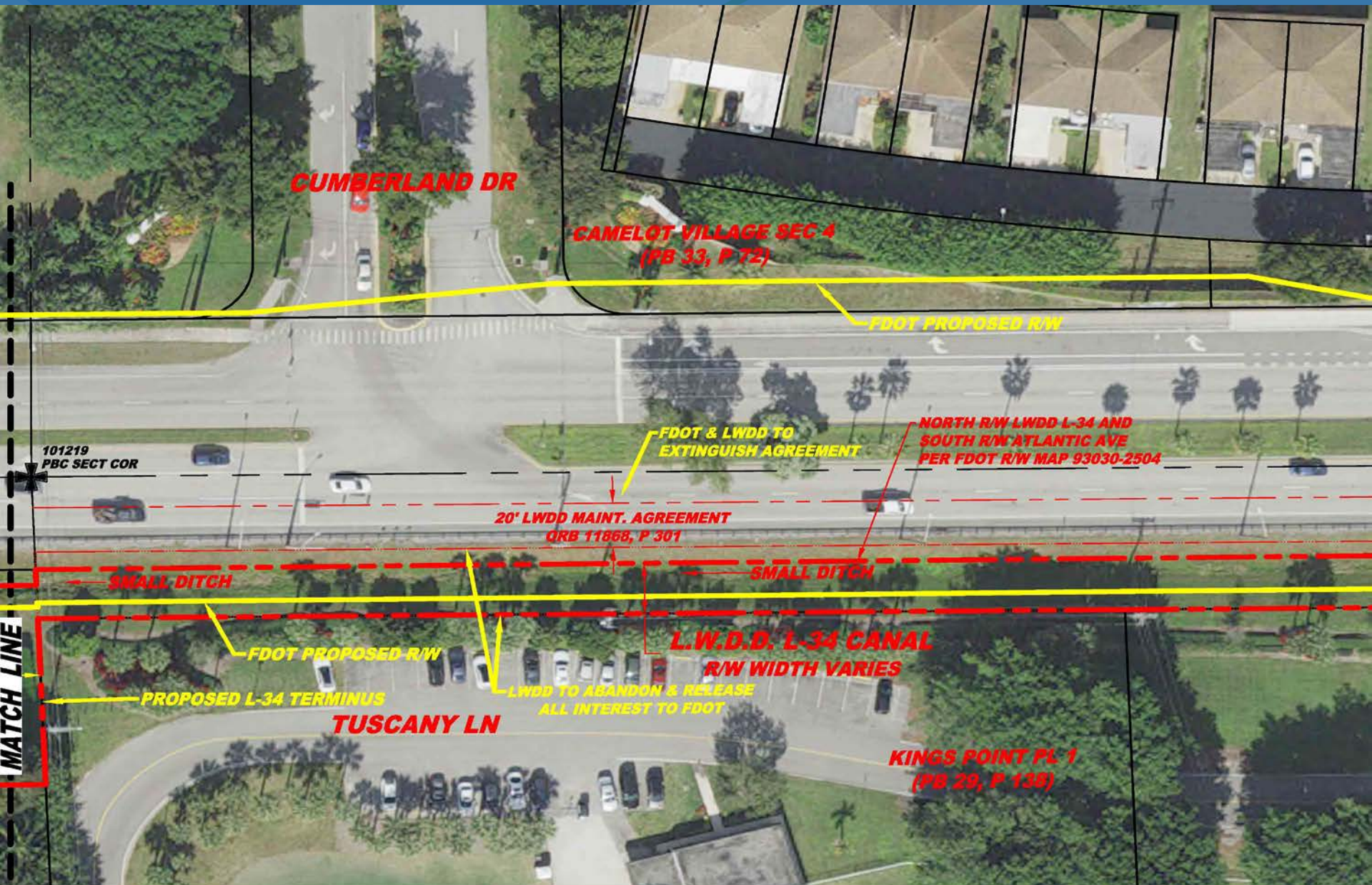
L-34 Canal @ Proposed East Terminus

LAKE WORTH DRAINAGE DISTRICT



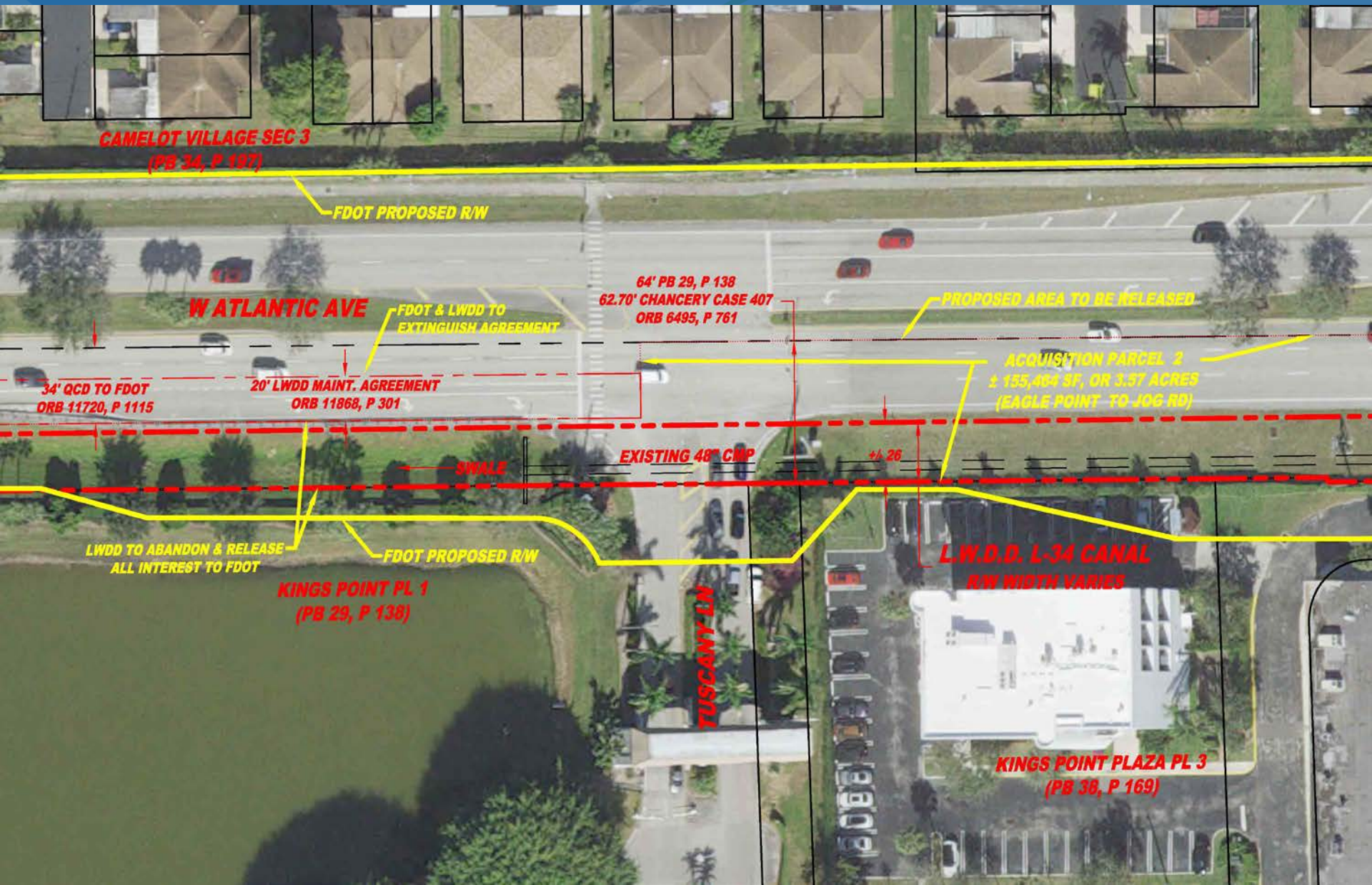
L-34 Canal adjacent to Kings Point

LWDD
LAKE WORTH DRAINAGE DISTRICT



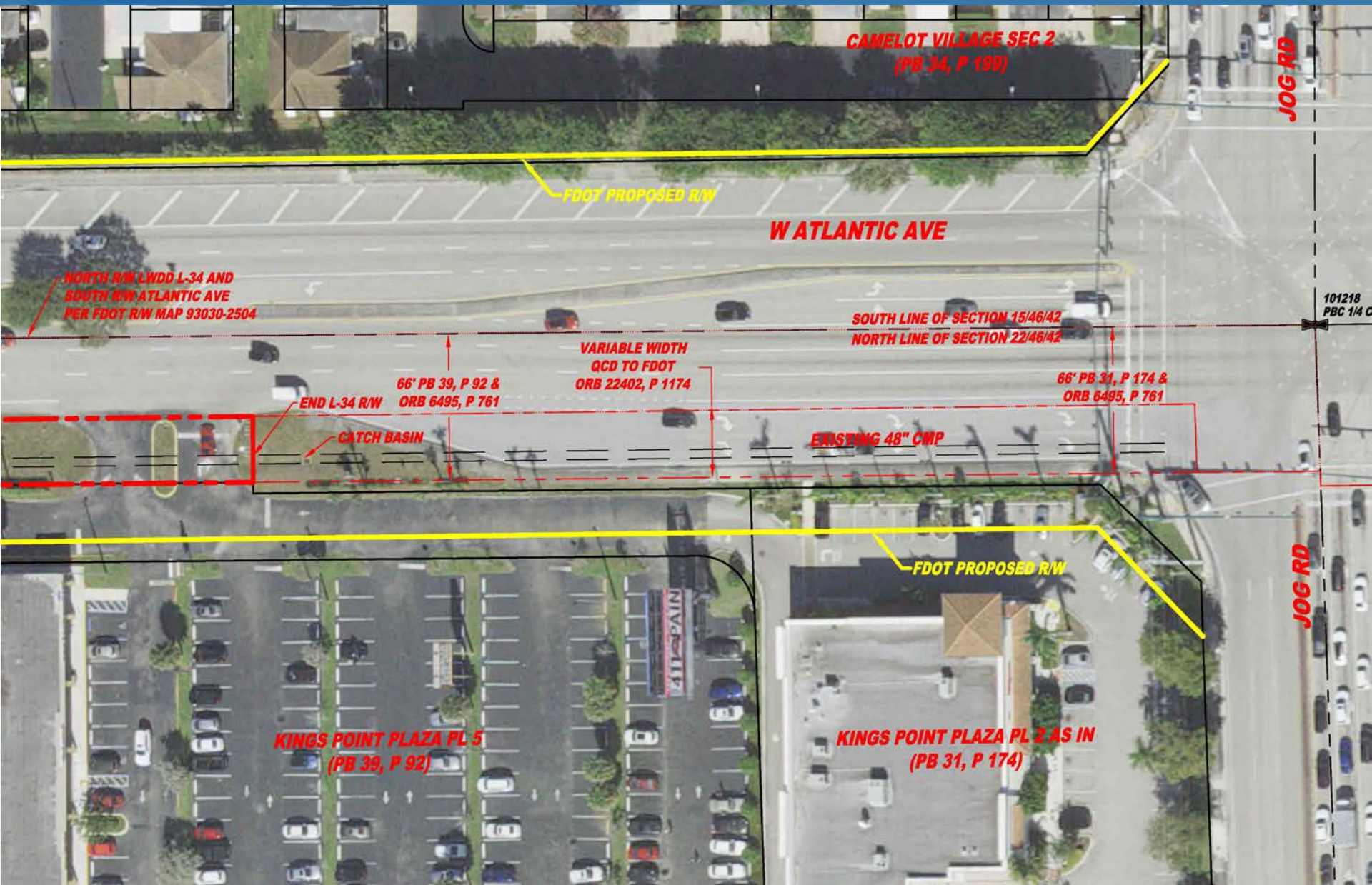
L-34 Canal @ Tuscany Lane

LWDD
LAKE WORTH DRAINAGE DISTRICT



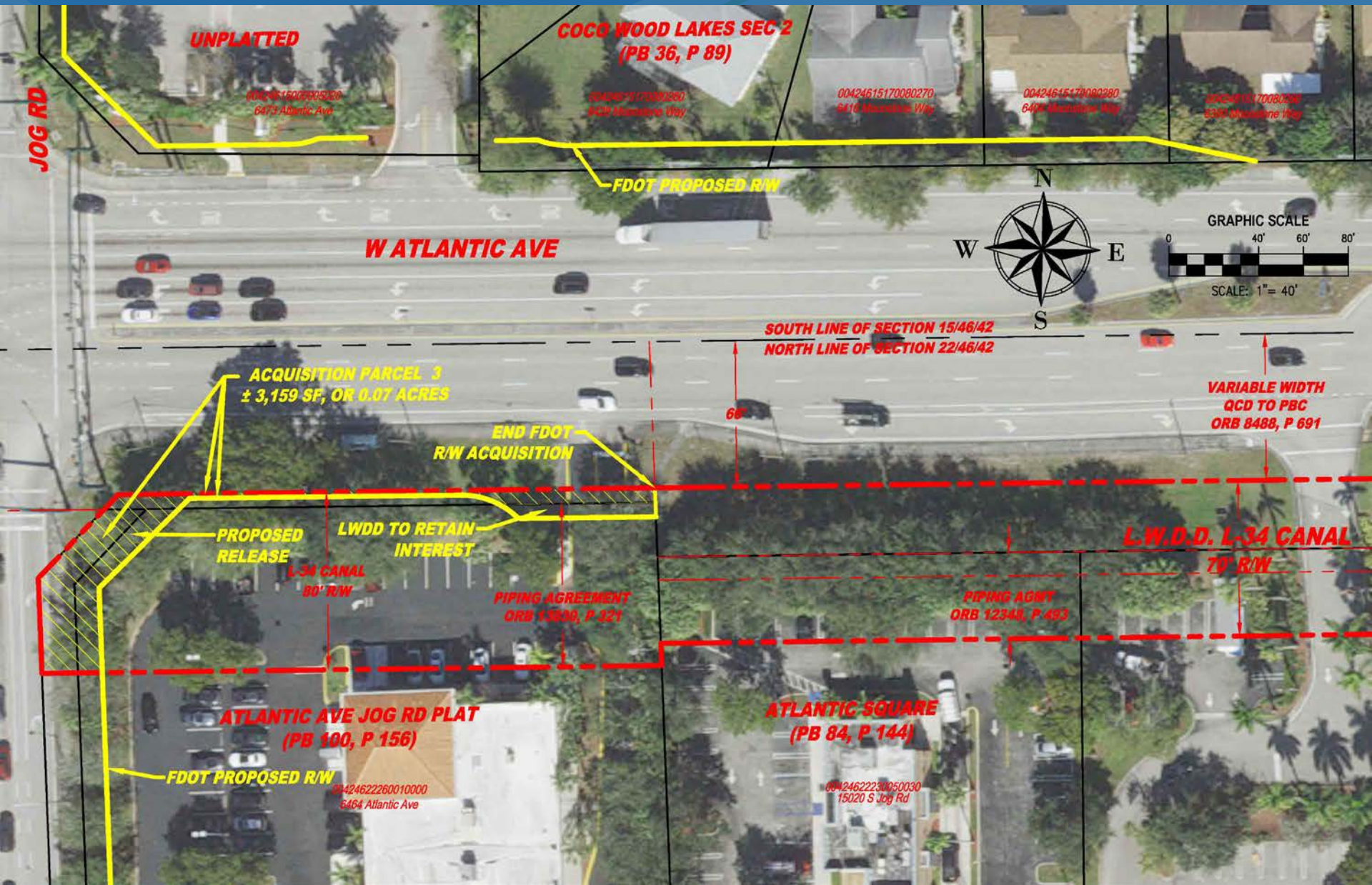
L-34 Canal West of Jog Rd

LWDD
LAKE WORTH DRAINAGE DISTRICT



L-34 Canal East of Jog Rd

LAKE WORTH DRAINAGE DISTRICT



FDOT Canal Modification Requirements

LAKE WORTH DRAINAGE DISTRICT

- Shift the heavy maintenance berm currently on the north side of the channel to the south side and provide a 35’ continuous maintenance berm
- Rip-Rap or other permitted material that may be required to armor the canal bank to prevent scour where the canal transitions and 25’ beyond headwalls
- Drop curb (14’ in width) centered on maintenance berms on north and south sides of canal at road crossings and through medians; sidewalks (6” thick) through canal right-of-way
- A minimum of 15’ clear unobstructed access at all four (4) quadrants of any crossing
- Vegetative side trimming (25-foot vertically) along the south canal right-of-way line and removal of all vegetation on the south side of the canal that may exist throughout the project limits to provide 35’ unencumbered access
- Removal of all above-ground encroachments on the south side of the canal that may exist to provide 35’ unencumbered access
- The existing utility transmission line and poles parallel with and adjacent to the existing north right-of-way line of the L-34 Canal will be required to be relocated within FDOT’s right-of-way for Atlantic Avenue
- At road crossings, culvert size and length to be approved by LWDD to ensure no impacts to drainage and sufficient access

Memorandum of Agreement

- FDOT and LWDD to enter into Memorandum of Agreement for construction coordination
  - FDOT shall control the L-34 Canal right-of-way during the construction of the Project
  - FDOT shall grant access to LWDD to maintain the canal in the event of an emergency
  - FDOT will include in the construction contract, the proposed permit to be issued by LWDD which contains conditions set forth in the agreement
  - LWDD shall execute conveyance and other documentation to transfer ownership of the canal right-of-way to FDOT prior to construction
  - The project shall be complete within 10 years of MOA execution, or as extended by the parties

Staff Recommendation

LAKE WORTH DRAINAGE DISTRICT

- Approval of FDOT's revised conceptual design for Atlantic Ave roadway widening and L-34 Canal modifications
- Approval to surplus and sell that portion of the L-34 Canal right-of-way for roadway widening at fair market value, containing approximately 3.84 acres, more/less, as specifically presented in plans submitted by FDOT on January 30, 2023
- Approval to abandon that portion of the L-34 Canal right-of-way (+/- 22' to 29' in width) from the west line of King's Point Plat No. One to the eastern terminus and turn over maintenance responsibilities to FDOT
- Approval for staff to formalize a Memorandum of Agreement (MOA) with the FDOT to be approved by the Board at a future date

Staff Recommendation

- Subject to:
  - Permittee shall be responsible for all costs associated with the proposed canal improvements and modifications
  - Board approval of Memorandum of Agreement and final design
  - Board approval of fair market value based on an appraisal to be provided by FDOT
  - An analysis confirming sufficient hydraulic capacity
  - FDOT and its consultants seeking approval from staff for all modifications within the approved canal right-of-way prior to the final design

Proposed Typical Sections

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
(X) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE
( ) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

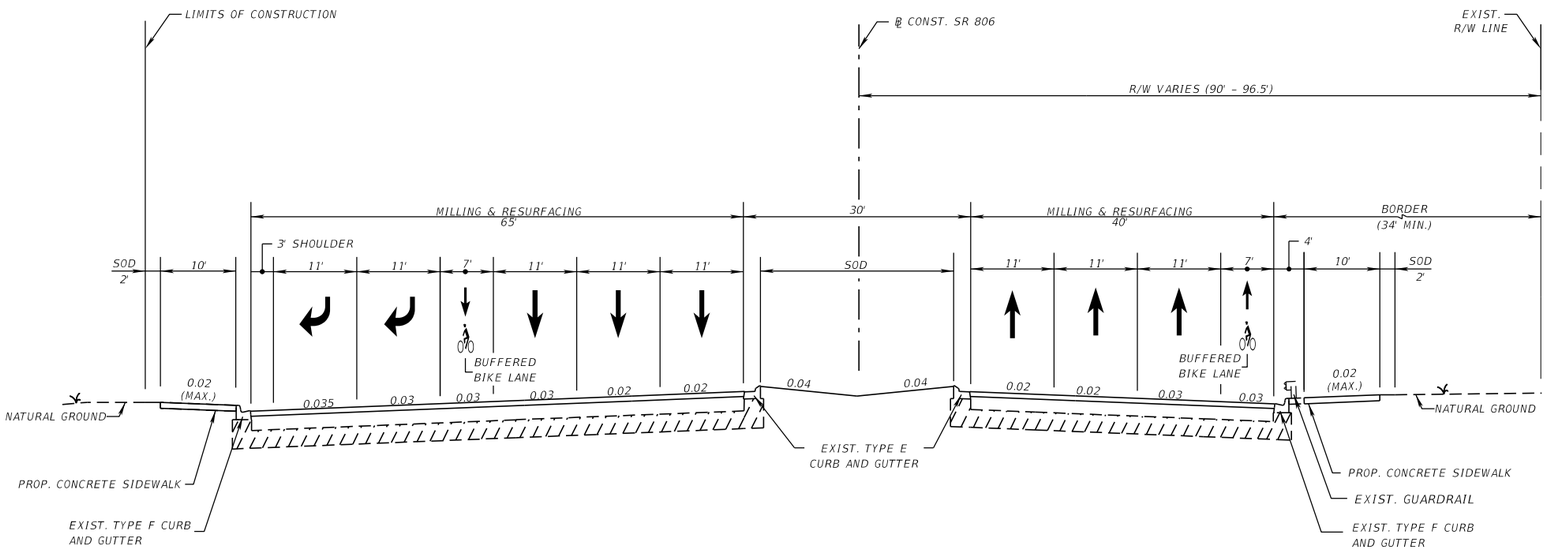
( ) 1 – FREEWAY
( ) 2 – RESTRICTIVE w/Service Roads
(X) 3 – RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 – NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 – RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 – NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 – BOTH MEDIAN TYPES

CRITERIA

( ) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
(X) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 1



SR 806 (ATLANTIC AVE)

ALTERNATIVE 3: BEST FIT ALIGNMENT

PROPOSED ROADWAY TYPICAL

SOUTHBOUND TURNPIKE INTERSECTION TO EAST OF LWDD E-2 CANAL

STA. 982+00.00 TO STA. 990+62.70

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 45,600
ESTIMATED OPENING YEAR = 2025 AADT = 30,500
ESTIMATED DESIGN YEAR = 2045 AADT = 38,500
K = 7.2 – 8.5 % D = 51.5 – 69.2 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 3.00 %
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
TARGET SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	

5/5/2023 3:59:07 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

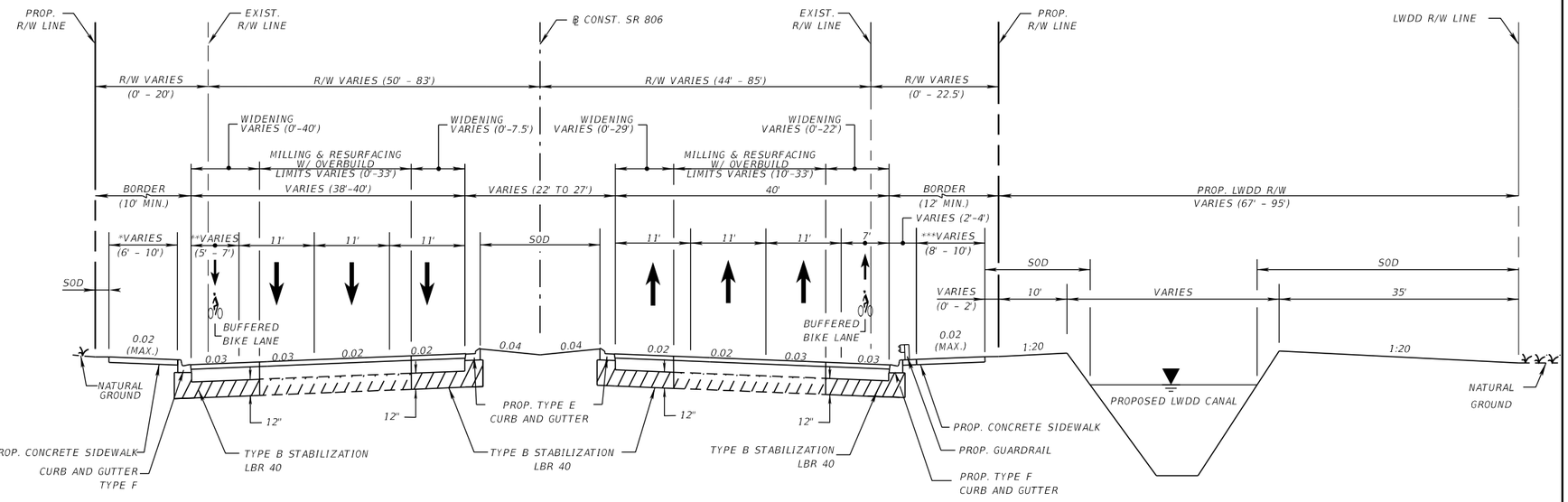
- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

CRITERIA

- ( ) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- (X) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 2



SR 806 (ATLANTIC AVE)

ALTERNATIVE 3: BEST FIT ALIGNMENT

PROPOSED ROADWAY TYPICAL

FROM EAST OF LWDD E-2 CANAL TO LEGENDS WAY

STA. 990+62.70 TO STA. 1037+00.00

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 45,600
ESTIMATED OPENING YEAR = 2025 AADT = 30,500
ESTIMATED DESIGN YEAR = 2045 AADT = 38,500
K = 7.2 - 8.5 % D = 51.5 - 69.2 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 3.00 %
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
TARGET SPEED = 45 MPH

NOT TO SCALE

* 6' SWK OCCURS FROM HAGEN RANCH ROAD TO LEGENDS WAY
** 5' BIKE LANE OCCURS FROM HAGEN RANCH ROAD TO LEGENDS WAY
*** 8' SWK OCCURS FROM EAGLE POINT DRIVE TO LEGENDS WAY

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

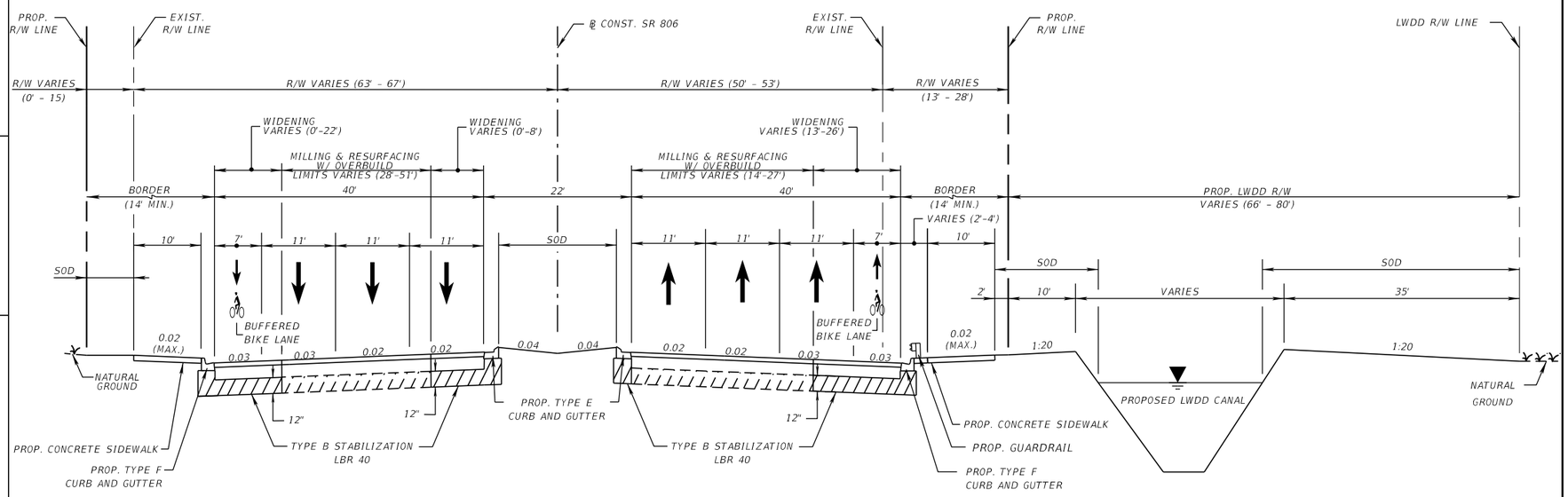
- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

CRITERIA

- ( ) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- (X) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 3



SR 806 (ATLANTIC AVE)

ALTERNATIVE 3: BEST FIT ALIGNMENT

PROPOSED ROADWAY TYPICAL

FROM LEGENDS WAY TO WEST OF CUMBERLAND DR

STA. 1037+00.00 TO STA. 1058+10.00

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 42,500
ESTIMATED OPENING YEAR = 2025 AADT = 30,500
ESTIMATED DESIGN YEAR = 2045 AADT = 38,500
K = 7.2 - 8.5 % D = 51.5 - 69.2 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 2.95 %
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
TARGET SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

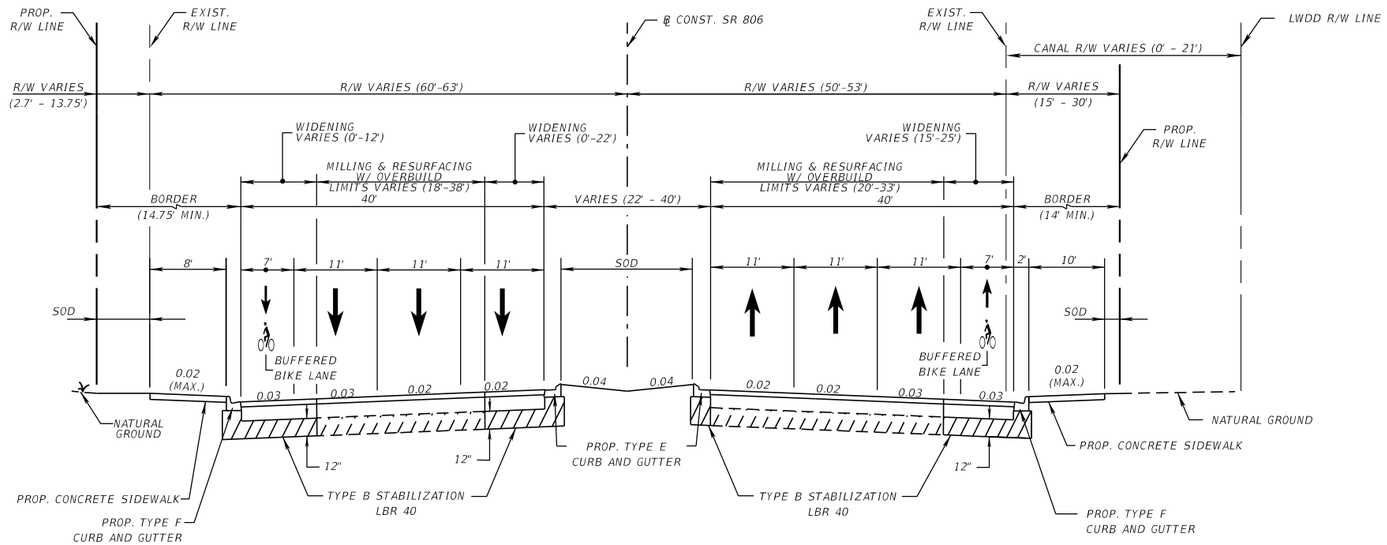
- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

CRITERIA

- ( ) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- (X) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 4



SR 806 (ATLANTIC AVE)

ALTERNATIVE 3: BEST FIT ALIGNMENT

PROPOSED ROADWAY TYPICAL

FROM WEST OF CUMBERLAND DR TO JOG RD

STA. 1058+10.00 TO STA. 1076+00.00
STA. 1089+40.00 TO STA. 1099+47.19

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 46,700
ESTIMATED OPENING YEAR = 2025 AADT = 30,500
ESTIMATED DESIGN YEAR = 2045 AADT = 38,500
K = 7.2 - 8.5 % D = 51.5 - 69.2 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 2.95 %
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
TARGET SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	

5/5/2023 3:59:11 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

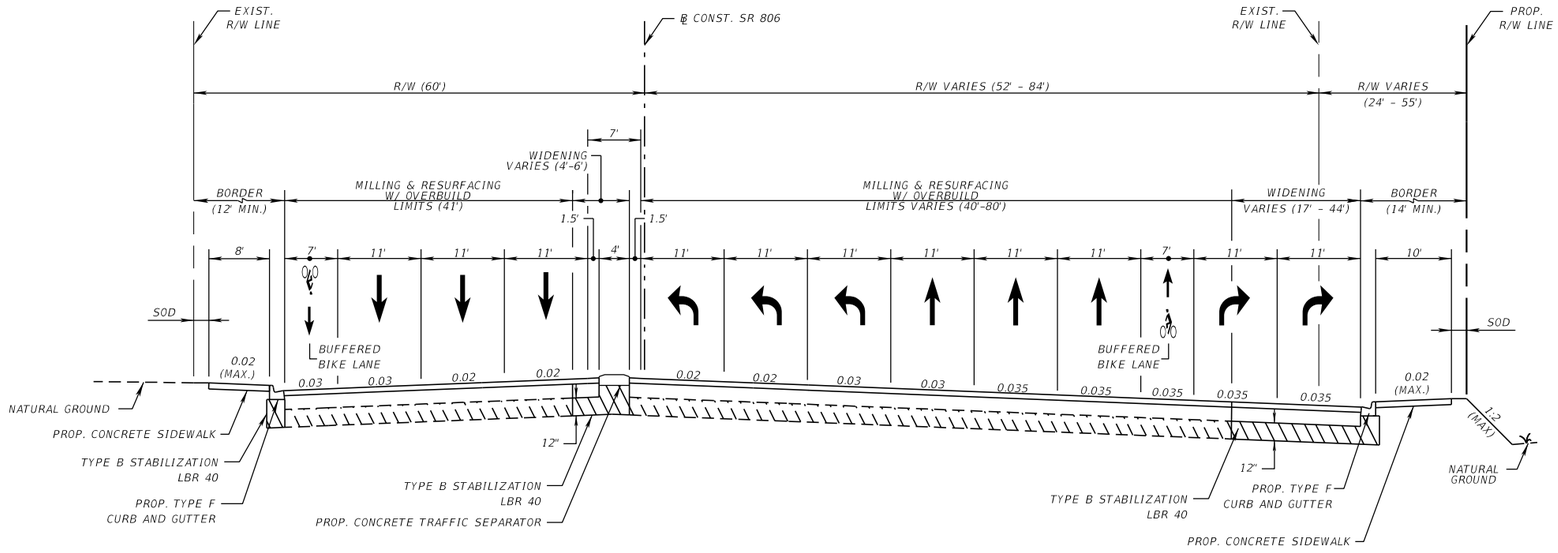
- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

CRITERIA

- ( ) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- (X) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 5



SR 806 (ATLANTIC AVE)

ALTERNATIVE B: TRIPLE LEFT TURNS
PROPOSED ROADWAY TYPICAL

WEST OF JOG RD

STA. 1076+00.00 TO STA. 1082+86.23

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 46,700
ESTIMATED OPENING YEAR = 2025 AADT = 30,500
ESTIMATED DESIGN YEAR = 2045 AADT = 38,500
K = 7.2 - 8.5 % D = 51.5 - 69.2 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 2.95 %
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
TARGET SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

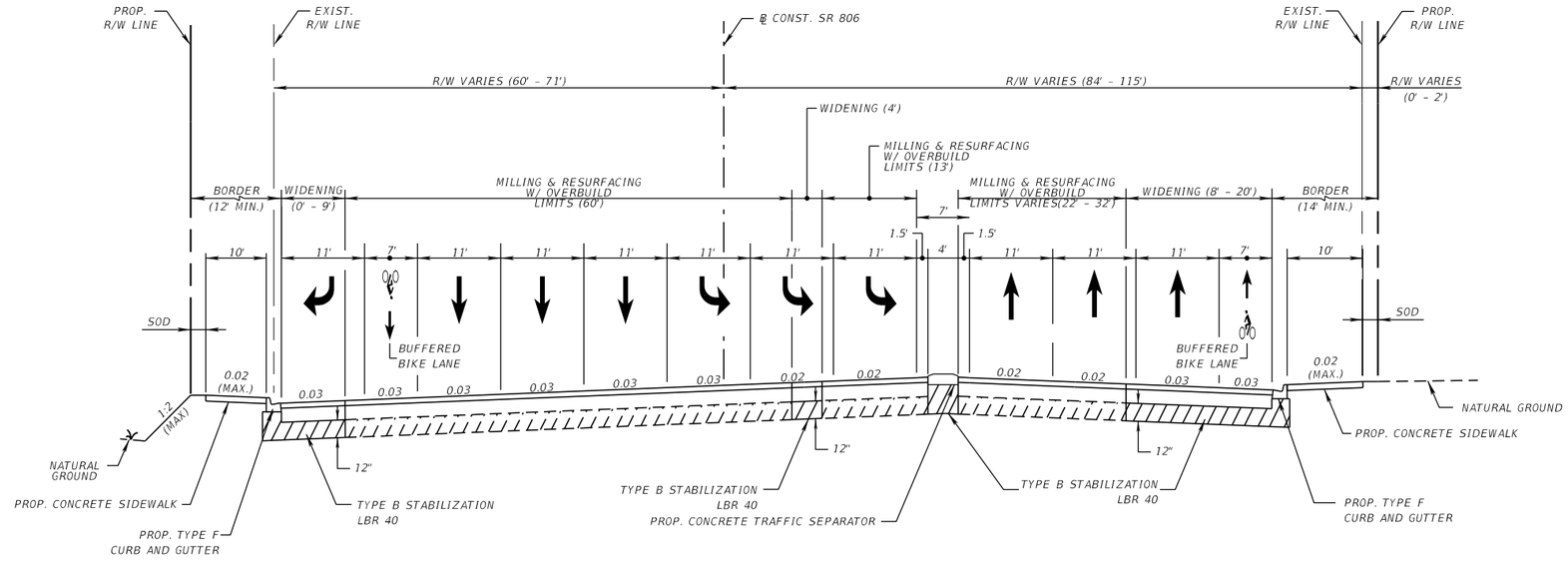
- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

CRITERIA

- ( ) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- (X) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 6



SR 806 (ATLANTIC AVE)

ALTERNATIVE B: TRIPLE LEFT TURNS
PROPOSED ROADWAY TYPICAL

EAST OF JOG RD

STA. 1082+86.23 TO STA. 1089+40.00

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 46,700
ESTIMATED OPENING YEAR = 2025 AADT = 30,500
ESTIMATED DESIGN YEAR = 2045 AADT = 38,500
K = 7.2 - 8.5 % D = 51.5 - 69.2 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 2.95 %
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
TARGET SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	

5/5/2023 3:59:12 PM

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( )	NATIONAL HIGHWAY SYSTEM
( )	STRATEGIC INTERMODAL SYSTEM
(X))	STATE HIGHWAY SYSTEM
(X))	OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

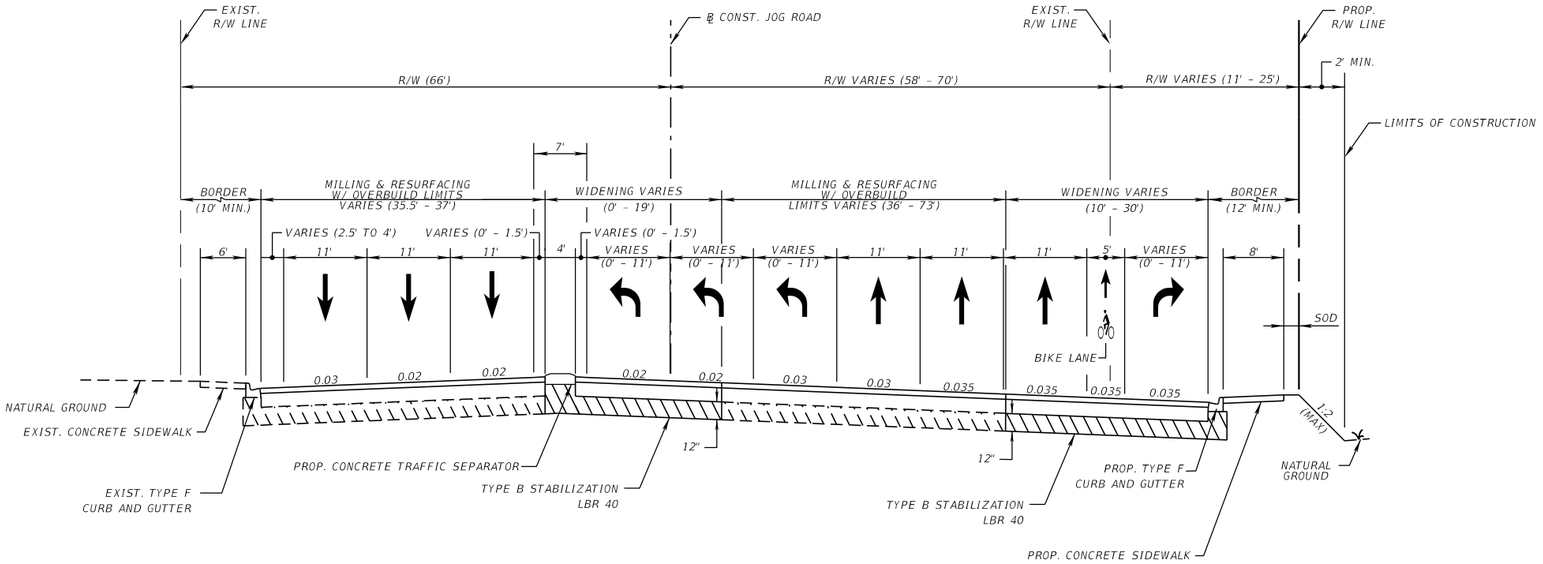
( )	1 - FREEWAY
( )	2 - RESTRICTIVE w/Service Roads
( )	3 - RESTRICTIVE w/660 ft. Connection Spacing
( )	4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X))	5 - RESTRICTIVE w/440 ft. Connection Spacing
( )	6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( )	7 - BOTH MEDIAN TYPES

CRITERIA

( )	NEW CONSTRUCTION / RECONSTRUCTION
( )	RESURFACING (LA FACILITIES)
(X)	RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 7



JOG RD

ALTERNATIVE 3: TRIPLE LEFT TURNS
PROPOSED ROADWAY TYPICAL

SOUTH OF ATLANTIC AVE

STA. 103+80.87 TO STA. 118+07.06

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 46,700
ESTIMATED OPENING YEAR = 2025 AADT = 30,500
ESTIMATED DESIGN YEAR = 2045 AADT = 38,500
K = 7.2 - 8.5 % D = 51.5 - 69.2 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 2.95 %
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
TARGET SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	

5/5/2023 3:59:11 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

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( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

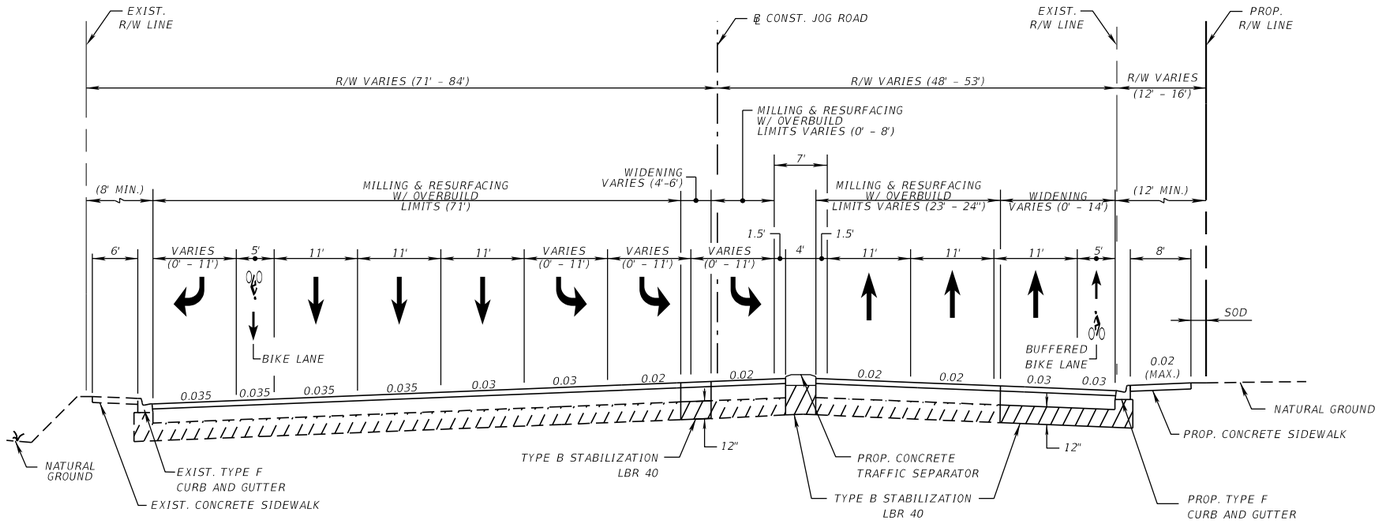
- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

CRITERIA

- ( ) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- (X) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 8



JOG RD

ALTERNATIVE 3: TRIPLE LEFT TURNS PROPOSED ROADWAY TYPICAL

NORTH OF ATLANTIC AVE

STA. 118+07.06 TO STA. 131+96.28

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 46,700
ESTIMATED OPENING YEAR = 2025 AADT = 30,500
ESTIMATED DESIGN YEAR = 2045 AADT = 38,500
K = 7.2 - 8.5 % D = 51.5 - 69.2 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 2.95 %
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
TARGET SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

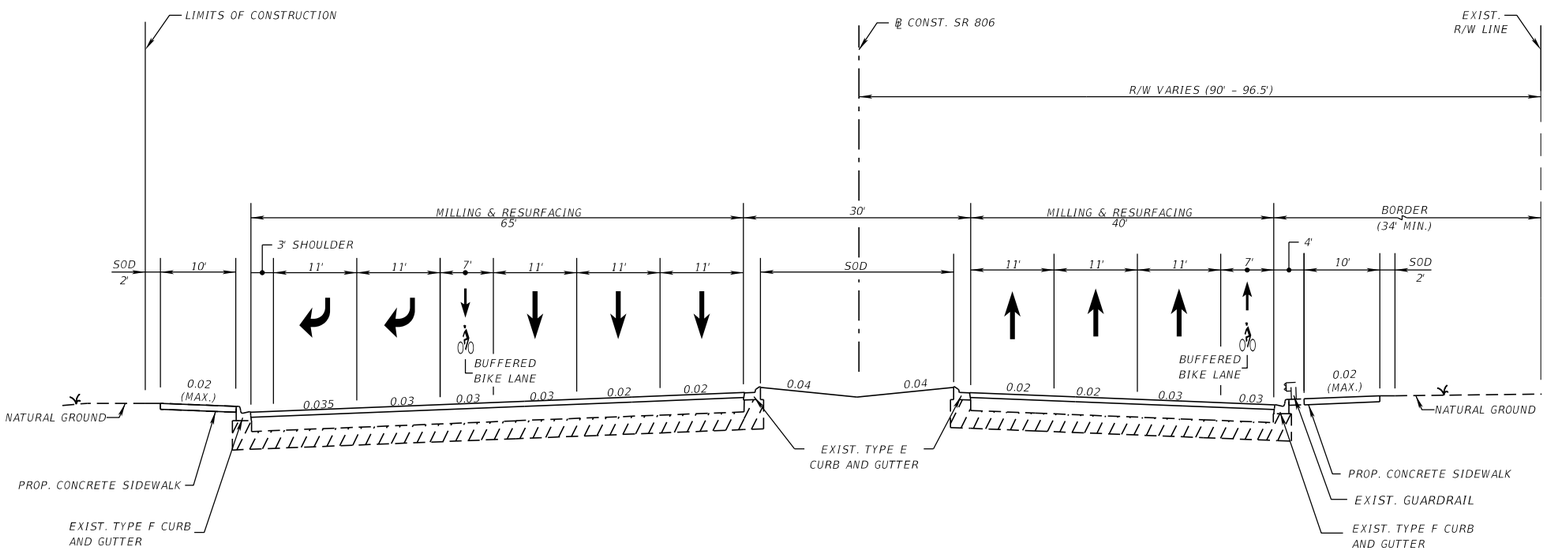
- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- (X) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- ( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

CRITERIA

- ( ) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- (X) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 1



SR 806 (ATLANTIC AVE)

ALTERNATIVE 3A: BEST FIT ALIGNMENT

PROPOSED ROADWAY TYPICAL

SOUTHBOUND TURNPIKE INTERSECTION TO EAST OF LWDD E-2 CANAL

STA. 982+00.00 TO STA. 990+62.70

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 45,600
ESTIMATED OPENING YEAR = 2025 AADT = 30,500
ESTIMATED DESIGN YEAR = 2045 AADT = 38,500
K = 7.2 - 8.5 % D = 51.5 - 69.2 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 3.00 %
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
TARGET SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( )	NATIONAL HIGHWAY SYSTEM
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(X)	STATE HIGHWAY SYSTEM
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ACCESS CLASSIFICATION

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CRITERIA

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( )	RESURFACING (LA FACILITIES)
(X)	RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

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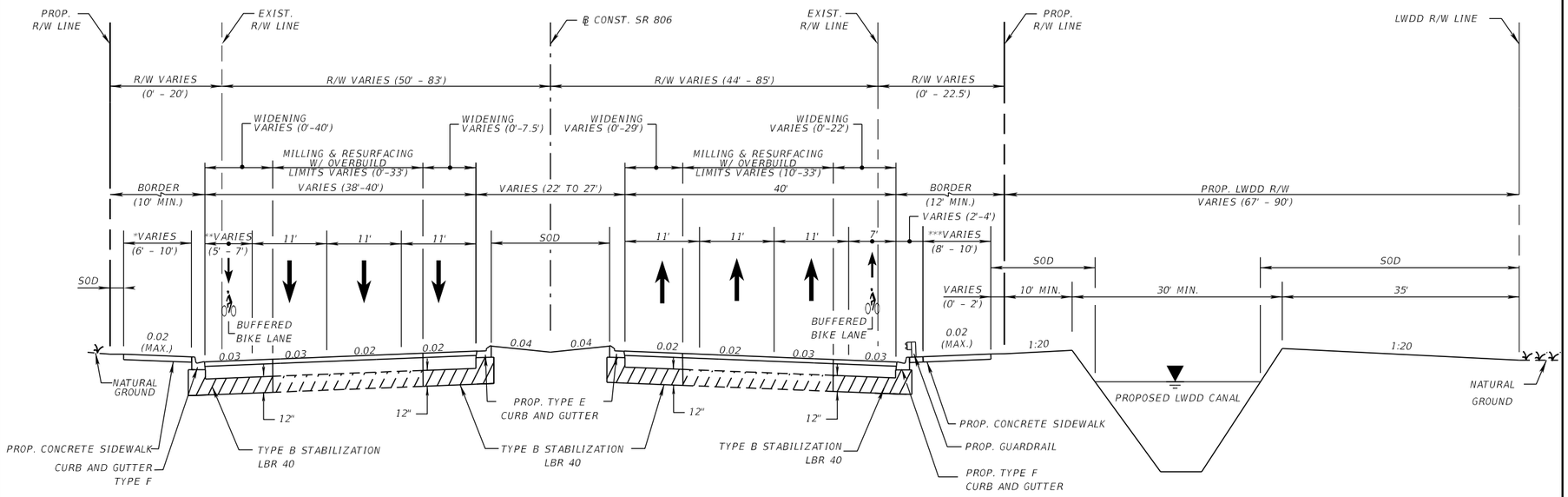

SR 806 (ATLANTIC AVE)

ALTERNATIVE 3A: BEST FIT ALIGNMENT

PROPOSED ROADWAY TYPICAL

FROM EAST OF LWDD E-2 CANAL TO LEGENDS WAY

STA. 990+62.70 TO STA. 1037+00.00

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 45,600
ESTIMATED OPENING YEAR = 2025 AADT = 30,500
ESTIMATED DESIGN YEAR = 2045 AADT = 38,500
K = 7.2 - 8.5 % D = 51.5 - 69.2 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 3.00 %
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
TARGET SPEED = 45 MPH

NOT TO SCALE

* 6' SWK OCCURS FROM HAGEN RANCH ROAD TO LEGENDS WAY
** 5' BIKE LANE OCCURS FROM HAGEN RANCH ROAD TO LEGENDS WAY
*** 8' SWK OCCURS FROM EAGLE POINT DRIVE TO LEGENDS WAY

FINANCIAL PROJECT ID	SHEET NO.
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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- ( ) 1 - FREEWAY
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- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

CRITERIA

- ( ) NEW CONSTRUCTION / RECONSTRUCTION
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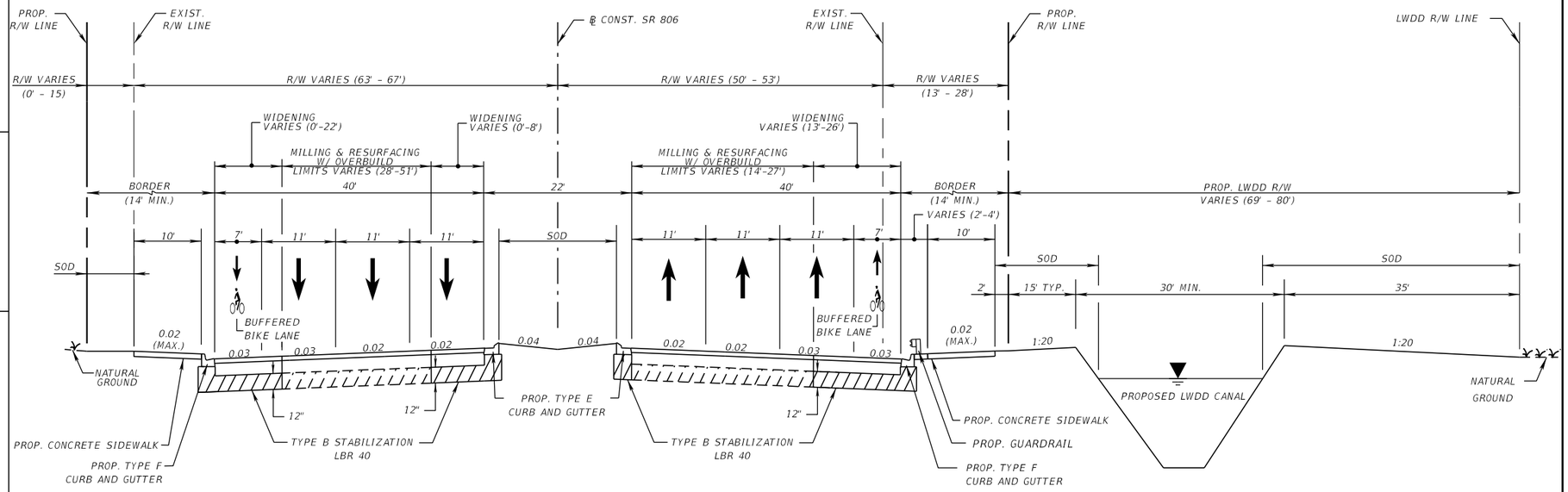
- (X) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 3



SR 806 (ATLANTIC AVE)

ALTERNATIVE 3A: BEST FIT ALIGNMENT

PROPOSED ROADWAY TYPICAL

FROM LEGENDS WAY TO WEST OF CUMBERLAND DR

STA. 1037+00.00 TO STA. 1058+10.00

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 42,500
ESTIMATED OPENING YEAR = 2025 AADT = 30,500
ESTIMATED DESIGN YEAR = 2045 AADT = 38,500
K = 7.2 - 8.5 % D = 51.5 - 69.2 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 2.95 %
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
TARGET SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	

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6/6/2023 2:47:37 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

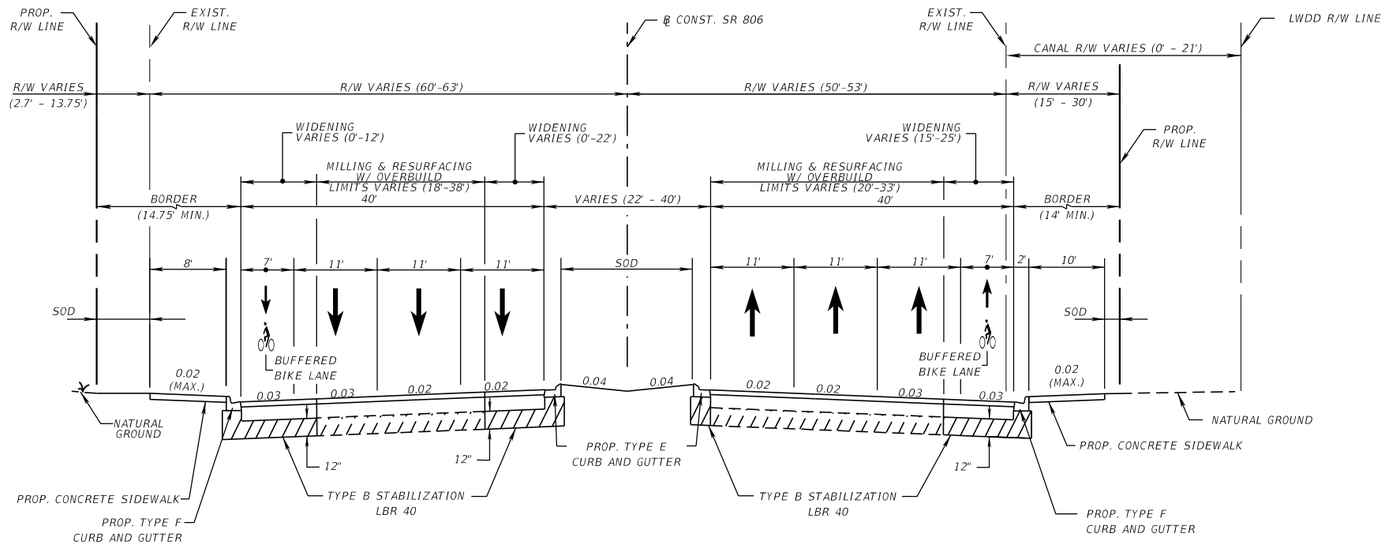
- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

CRITERIA

- ( ) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- (X) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 4



SR 806 (ATLANTIC AVE)

ALTERNATIVE 3A: BEST FIT ALIGNMENT

PROPOSED ROADWAY TYPICAL

FROM WEST OF CUMBERLAND DR TO JOG RD

STA. 1058+10.00 TO STA. 1076+00.00
STA. 1089+40.00 TO STA. 1099+47.19

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 46,700
ESTIMATED OPENING YEAR = 2025 AADT = 30,500
ESTIMATED DESIGN YEAR = 2045 AADT = 38,500
K = 7.2 - 8.5 % D = 51.5 - 69.2 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 2.95 %
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
TARGET SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	4

5/10/2023 9:57:18 AM

APPENDIX C

Meetings and Correspondence

LAKE WORTH DRAINAGE DISTRICT

13081 S. MILITARY TRAIL
DELRAY BEACH, FLORIDA 33484-1105

March 15, 2023

Delivered Via Email: thuc.le@dot.state.fl.us

Thuc H. Le, P.E.
Consultant Project Management - D4 Office
Florida Department of Transportation
3400 West Commercial Blvd.
Fort Lauderdale, FL 33309-3421

Dear Mr. Le:

Subject: Approval of FDOT Revised Conceptual Design for Atlantic Avenue Roadway Widening and L-34 Canal Modifications Including Sale of Surplus & Reduction of Canal Right-of-Way from West of Florida's Turnpike to East of Jog Road; LWDD Record No. RI-19-0123; LWDD Lateral No. 34 Canal

This letter confirms the decision of the Board of Supervisors of Lake Worth Drainage District (LWDD) at its meeting on March 15, 2023, wherein it approved the revised conceptual design for Atlantic Avenue Roadway Widening and L-34 Canal Modifications, as provided in the revised plans submitted on January 30, 2023.

Pursuant to the Board's decision, FDOT's approval is subject to the conditions and requirements outlined in the attached board presentation.

If you should have any questions, please do not hesitate to contact this office.

Sincerely,

David A. Bends

David A. Bends, P.S.M.
Right-of-Way Interest Supervisor

c: John Scarlatos, P.E. at jscarlatos@scalarinc.net
c: Aniruddha Gotmare, P.E. at agotmare@scalarinc.net

Attachment: LWDD Board Presentation, March 15, 2023

Florida Department of Transportation

RON DESANTIS
GOVERNOR

3400 West Commercial Boulevard
Fort Lauderdale, FL 33309

KEVIN J. THIBAULT, P.E.
SECRETARY

MEETING MINUTES
440575-X SR-806/ATLANTIC AVE FROM WEST OF LYONS RD TO JOG RD

Description: LWDD Coordination Meeting – LWDD Office

Date & Time: July 2, 2019, at 10:00 a.m

Location: Lake Worth Drainage District
13081 Military Trail
Delray Beach, FL 33484

Participants:

Name:	Representing:	Phone No. :	E-mail Address:
Alexander Estrada	FDOT	954.777.4319	Alexander.Estrada@dot.state.fl.us
James Poole	FDOT	954.777.4204	James.Poole@dot.state.fl.us
Henry Oaikhena	FDOT	954.777.4445	Henry.Oaikhena@dot.state.fl.us
Olivia Bonilla	FDOT	954.777.4134	Olivia.Bonilla@dot.state.fl.us
Christopher Comprosky	FDOT	954.958.7580	Christopher.Comprosky@dot.state.fl.us
Tommy Strowd	LWDD	561.722.4551	tstrowd@lwdd.net
Nicole Smith	LWDD	561.819.5578	nsmith@lwdd.net
David Bends	LWDD	561.819.5559	dbends@lwdd.net
Maria Clemente	LWDD	561.819.5579	mclemente@lwdd.net
David Varner	LWDD	561.819.5580	dvarner@lwdd.net

Meeting was held between Lake Worth Drainage District (LWDD) and Florida Department of Transportation (FDOT) to discuss potential impacts to the canal along SR-806/Atlantic Ave, particularly from Florida's Turnpike to Jog Rd.

Meeting began with brief introductions and discussion regarding the Right-of-Way (R/W). LWDD staff elaborated on their exclusive easement of the canal parcels. The location from west of Cumberland Dr to Jog Rd was identified as particularly constrained area where piping of the canal would be required.

LWDD staff is in favor of piping a portion of the canal at the constrained areas and will recommend this approach to the Board of Supervisors for further approval given the request.

For the areas where the canal is not piped a minimum of 75' width from R/W to R/W including the canal width is to be maintained for the purposes of canal maintenance, hydraulic model is to be provided, and as rule of thumb a 72" pipe may be required for the piped section. In areas with bulkhead a flat area of 35' is to be maintain. The backslope of 20:1 is to be maintained.

LWDD staff described the board approval process as it could take up to 2 months with a fee of $500. The permit to be issued within 1 year of the approval.

Meeting Minutes

Project:	FPID No. 440575-3-22-02 Atlantic Avenue (SR 806) PD&E Study from Turnpike to Jog Road
Subject:	Progress Meeting
Date and time:	July 14, 2020 2:30 PM
Meeting place:	Online Teams Meeting **Minutes by:** Scalar Consulting Group Inc.

Attendees:

Alexander Estrada – FDOT District Four; Alexander.Estrada@dot.state.fl.us
Georgi Celusnek – FDOT District Four; Georgi.Celusnek@dot.state.fl.us
Daniel Marwood – FDOT District Four; daniel.marwood@dot.state.fl.us
Olivia Bonilla – FDOT District Four; Olivia.bonilla@dot.state.fl.us
Aniruddha Gotmare – Scalar Consulting Group Inc.; agotmare@scalarinc.net
John Scarlatos – Scalar Consulting Group; jscarlatos@scalarinc.net
David Boyer – Scalar Consulting Group; dboyer@scalarinc.net
Denys Avila – Scalar Consulting Group; davila@scalarinc.net
David Varner – LWDD; dvarner@lwdd.net
David Bends – LWDD; dbends@lwdd.net

Key points discussed are provided below.

Alex and Rudy provided a brief overview of the project and explained that a typical section requiring 139-ft of right-of-way is currently being evaluated and that at intersections, additional right-of-way may be required to accommodate left-turn and right-turn lanes. The traffic analysis is currently underway to determine the intersection geometry that will be needed. An alignment which holds the north right-of-way line and a “best fit” alignment is being considered.

David Bends indicated the LWDD will likely object to a 22-ft wide median. Rudy explained that 22-ft is the standard median width for this type of facility. Rudy explained that to the west, there is more available right-of-way than east of Hagen Ranch. David Varner stated that LWDD does not object to piping the canal near Kings Point. Currently, maintenance of the canal is provided from both sides. The canal will require a minimum of 75-ft of right-of-way, consisting of 10-ft on the north side, 30-ft for the canal, and another 35-ft on the south side. David said LWDD would prefer bulkheading the north bank of the canal as opposed to piping or reducing the canal section. LWDD may be open to piping near the intersections where additional right-of-way may be needed but prefer the option of bulkheading. Piping will require going before the LWDD Board for approval which will also require a permit and annual fees. From the LWDD facilities report, the design discharges are low for the L-34 Canal.

LWDD will be willing to quitclaim the area in from of Kings Point and sell right-of-way which may be required for the rest of the project at fair market value as long as 75-ft of right-of-way is kept for the canal. David stated that LWDD is strongly opposed to having a pathway or sidewalk within the 75-ft of right-of-way for the canal. The next step will be to provide typical sections and concept plans to be presented to the LWDD Board. Daniel requested a MOU be entered into based on preliminary plans so FDOT can approach the HOA’s who own the underlying land. This will allow for a uniform front to start the R/W acquisition process. A MOA would be prepared by LWDD and would be prepared, and David stated that LWDD is open to having a MOA in place. Right of Way acquisition is scheduled for 2024.

Meeting Minutes

Project:	FPID No. 440575-3-22-02 Atlantic Avenue (SR 806) PD&E Study from Turnpike to Jog Road
Subject:	Palm Beach TPA Typical Section Review Meeting
Date and time:	September 28, 2020 2:00 PM
Meeting place:	Online Teams Meeting **Minutes by:** Scalar Consulting Group Inc.

Attendees:

Alexander Estrada – FDOT District Four; Alexander.Estrada@dot.state.fl.us
Aniruddha Gotmare – Scalar Consulting Group Inc.; agotmare@scalarinc.net
John Scarlatos – Scalar Consulting Group; jscarlatos@scalarinc.net
Ehsan Doustmohammadi – Scalar Consulting Group Inc.; edoustmohammadi@scalarinc.net
Andrew Uhlir – Palm Beach TPA; AUhlir@palmbeachtpa.org
Nick Uhren – Palm Beach TPA; NUhren@palmbeachtpa.org
Valerie Neilson – Palm Beach TPA; VNeilson@palmbeachtpa.org

The purpose of this meeting was to discuss several typical section alternatives with varying multimodal accommodations. It was explained that LWDD is requiring 75-ft minimum RW for the canal comprised of 35-ft south of the canal, 30-ft for the canal, and another 10-ft on the north side of the canal for maintenance purposes. LWDD will allow piping east of Cumberland Drive. The typical sections presented are attached and key points discussed at the meeting are provided below.

Typical Section #1: This typical section was presented which consists of a standard 6-lane urban typical section with 22-ft wide median, 7-ft wide buffered bicycle lanes, and six-ft wide sidewalks on both sides within 126-ft of R/W. Portions of this typical section will not allow for 75-ft minimum canal RW width.

Typical Section #2: This typical section is similar to Typical Section #1 except instead of providing a 6-ft wide sidewalk on the south side, it incorporates a 12-ft shared use path. Per FDM, a shared use path must have a minimum of 4-ft clear on each side. As such, this typical section has a wider footprint than Typical Section #1 and does not allow for a minimum of 75-ft of canal RW to maintained at all. Nick asked if LWDD will allow for the shared use path to be within the 75-ft minimum R/W canal width and Alex explained that this question was brought up to LWDD staff and they said they do not want any part of the facility within their R/W. Allowing the shared use path within the LWDD R/W will need to be discussed further.

Typical Section #3: This typical section is similar to Typical Section #2 except instead of providing a 12-ft shared use path (4-ft clearances on both sides), it incorporates a 12-ft sidewalk with no clearance requirement, thus reducing the R/W width required. Nick asked if there are differences in vertical clearance requirements for a shared use path as opposed to a sidewalk and it was explained that there are different criteria for the two. Portions of this typical section will not meet the 75-ft minimum RW requirement for the canal, particularly when considering turn lanes at intersections.

Typical Section #4: This typical section is similar to Typical Section #1 except instead of providing a 7-ft wide buffered bicycle lane on both sides, it incorporates a physical separation of the bike lanes from the travel lanes consisting of a 3-ft wide separation (2-ft of which is a physical traffic separator) between

the outside travel lanes and 6-ft wide bike lanes. This typical section reduces the typical section width by two-ft compared to Typical Section #3 but still requires more RW than Typical Section #1.

Typical Section #5: This typical section is similar to Typical Section #2 except instead of providing a 12-ft wide shared use path on the south side with 7-ft wide buffered bicycle lanes in each direction, it eliminates the bicycle lane on the south side. Nick asked if we can reduce the median width from 22-ft in all the typical sections and Alex explained that the 22-ft median is for accommodating turn lanes and that since RW acquisition is needed, reducing the median with a variation is not an option this early in the study. If reducing the median would eliminate the need for any RW acquisition, it would then be considered. Valerie stated eliminating the bicycle lane in one direction is not favored as it would be expected if provided on the opposite side. She emphasized placing priority on the shared use path and maintaining bicycle lanes in each direction. A 10-ft shared use path if needed to reduce R/W needs is still considered a shared use path by the TPA. She also asked to consider 8-ft sidewalks on the north side of Atlantic Avenue for all options.

Intersection of Atlantic Avenue and Jog Road: A brief discussion was held regarding options the Department is considering at the intersection of Atlantic Avenue and Jog Road to receive input from the TPA. A traditional at-grade expanded intersection is expected to produce LOS F in the design year 2045 based on project traffic. Therefore, other alternatives are being considered such as partial displaced left turns and grade separation. Both alternatives will produce the required minimum LOS D for this type of facility for the future design year. Nick mentioned that the extension of Flavor Pict Road is expected to alleviate some of the congestion at the intersection of Atlantic Avenue and Jog Road and to verify that Flavor Pict Road is shown in the model that was used for developing the traffic projections. Nick requested a copy of the Traffic Projections Report and the Typical Sections which was provided following the meeting. Nick stated that grade separation in this area will not be favored due to the nature of the area and that Maria Sachs will likely be the Palm Beach County commissioner for the area after Nov. 3rd which will be involved for improvements particularly at the intersection of Atlantic Avenue and Jog Road.

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
(X) C3R : SUBURBAN RES.
( ) N/A : L.A. FACILITY
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

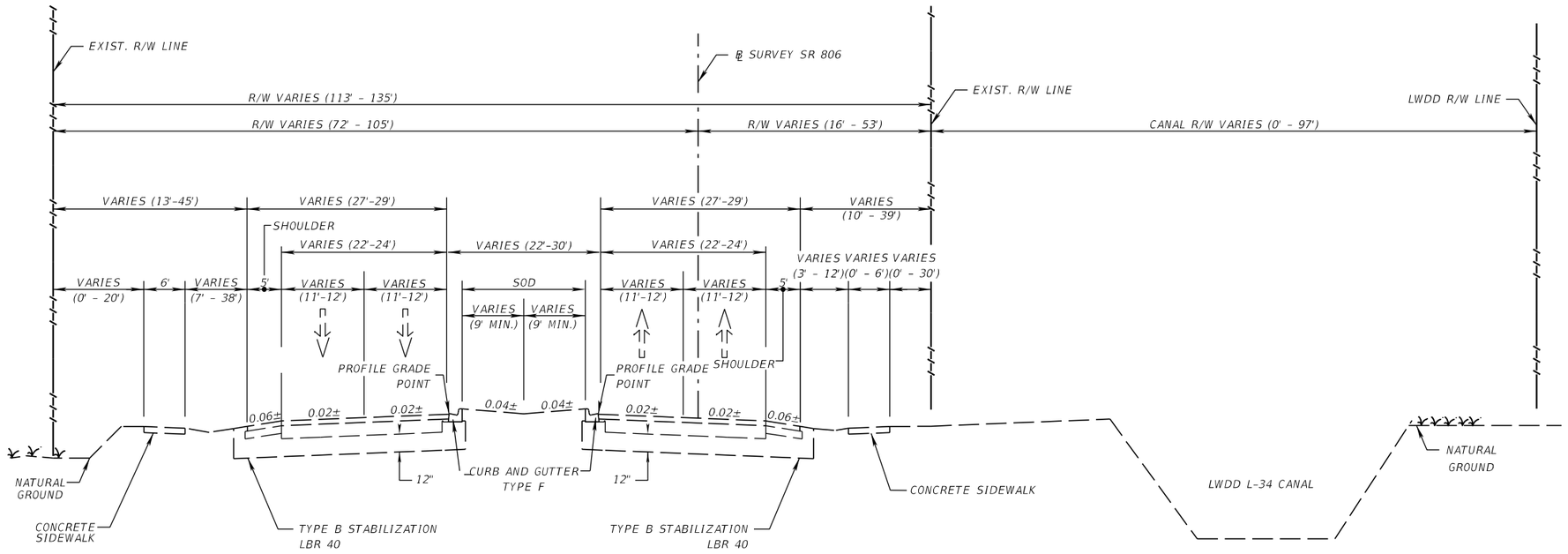
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

EXISTING TYPICAL SECTION 1



SR 806 (ATLANTIC AVENUE)

FROM EAST OF FLORIDA'S TURNPIKE TO WEST OF CUMBERLAND DRIVE

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	

9/28/2020 4:48:24 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
(X) C3R : SUBURBAN RES.
( ) N/A : L.A. FACILITY
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

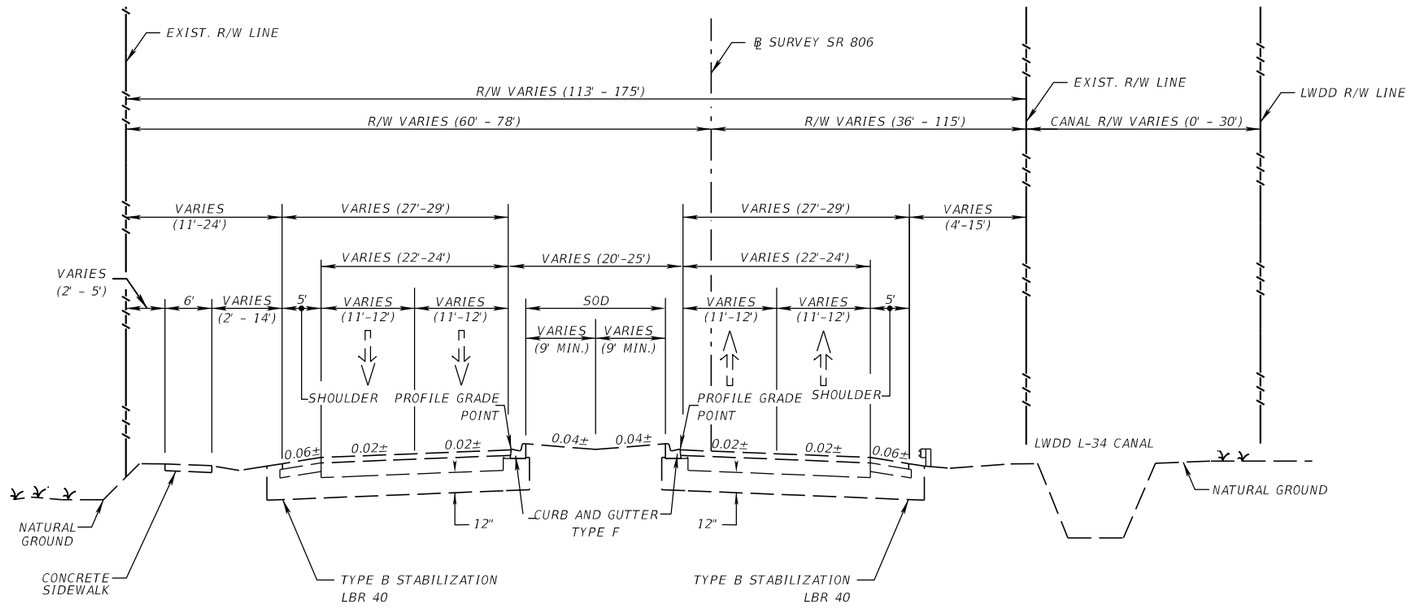
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

EXISTING TYPICAL SECTION 2



SR 806 (ATLANTIC AVENUE)

FROM WEST OF CUMBERLAND DRIVE TO JOG ROAD

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
(X)	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

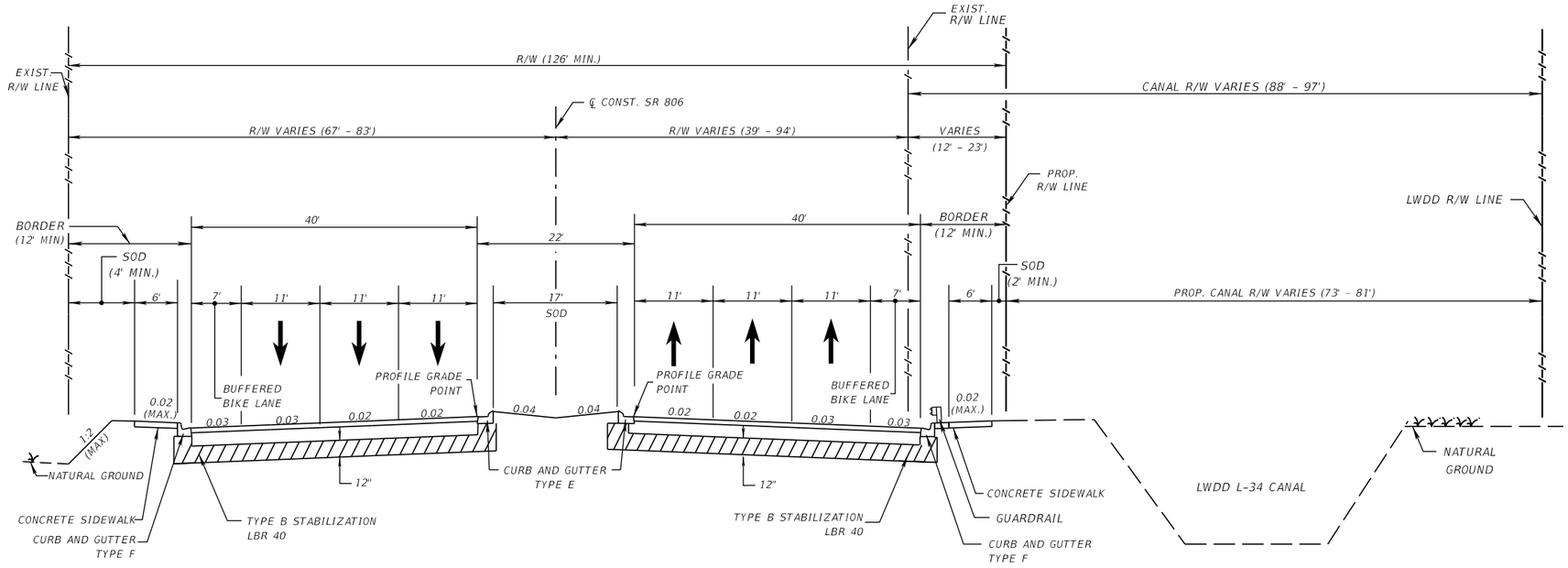
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 1 (6' S/W ON BOTH SIDES)



PROPOSED ROADWAY TYPICAL

SR 806 (ATLANTIC AVENUE)

FROM FLORIDA'S TURNPIKE TO WEST OF CUMBERLAND DRIVE

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 42,500
ESTIMATED OPENING YEAR = 2025 AADT = 50,700
ESTIMATED DESIGN YEAR = 2045 AADT = 65,300
K = 9.0 % D = 57.75 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 3.0%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	2

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
(X)	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

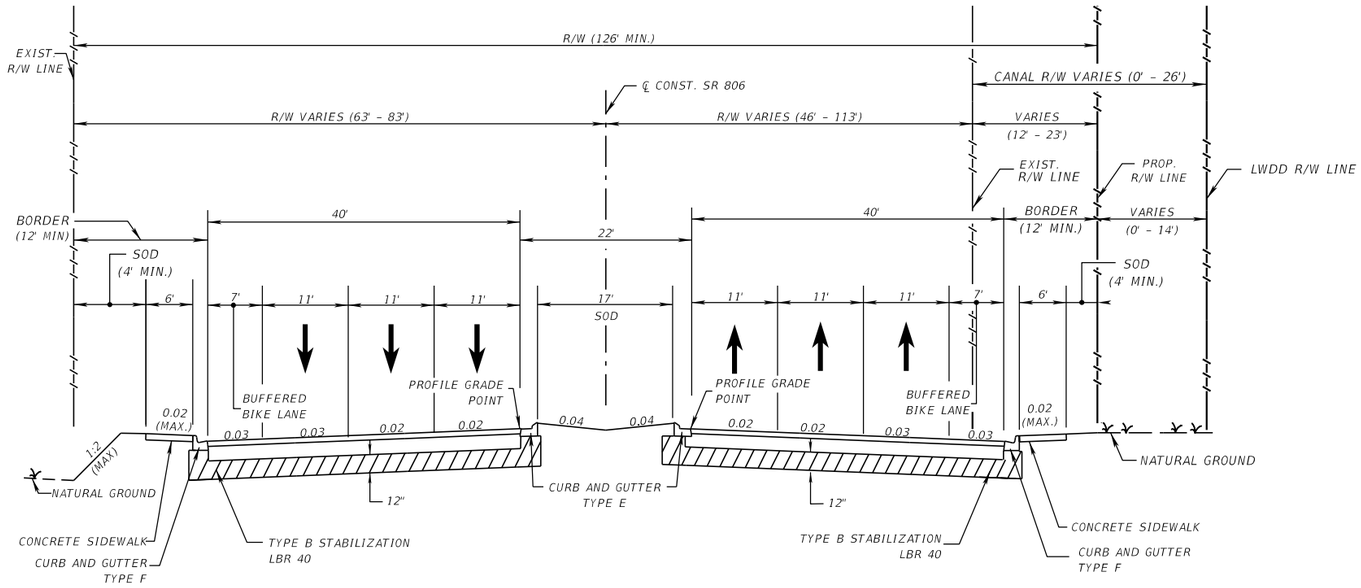
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 1 (6' S/W ON BOTH SIDES)



PROPOSED ROADWAY TYPICAL

SR 806 (ATLANTIC AVENUE)

FROM WEST OF CUMBERLAND DRIVE TO JOG ROAD

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 46,700
ESTIMATED OPENING YEAR = 2025 AADT = 51,900
ESTIMATED DESIGN YEAR = 2045 AADT = 66,900
K = 9.0 % D = 57.75 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 3.0%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	3

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
(X)	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

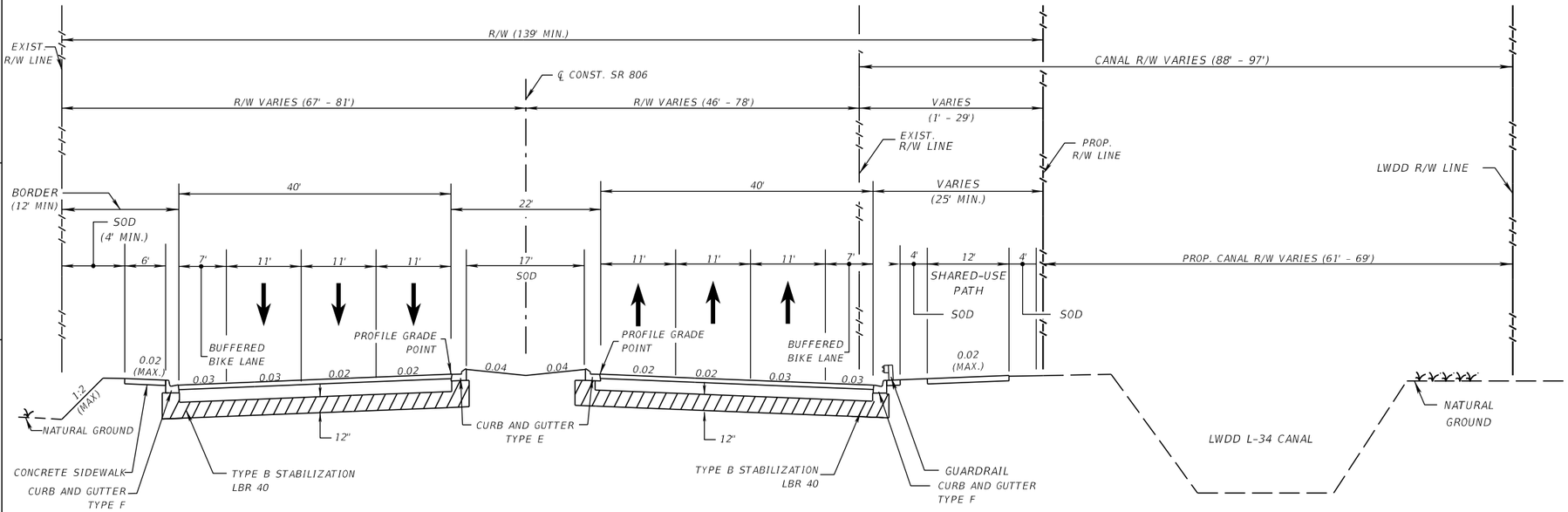
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 2 (12' SHARED-USE PATH ON CANAL SIDE)



PROPOSED ROADWAY TYPICAL

SR 806 (ATLANTIC AVENUE)

FROM FLORIDA'S TURNPIKE TO WEST OF CUMBERLAND DRIVE

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 42,500
ESTIMATED OPENING YEAR = 2025 AADT = 50,700
ESTIMATED DESIGN YEAR = 2045 AADT = 65,300
K = 9.0 % D = 57.75 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 3.0%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	4

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
(X)	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

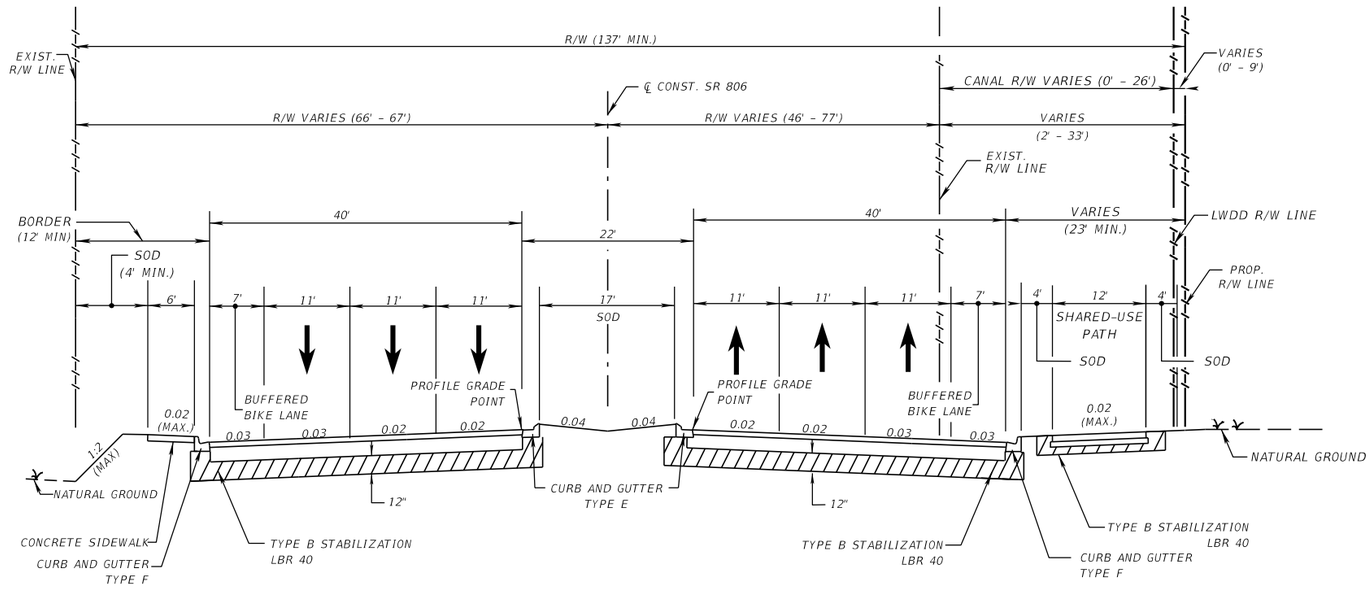
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 2 (12' SHARED-USE PATH ON CANAL SIDE)



PROPOSED ROADWAY TYPICAL

SR 806 (ATLANTIC AVENUE)

FROM WEST OF CUMBERLAND DRIVE TO JOG ROAD

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 46,700
ESTIMATED OPENING YEAR = 2025 AADT = 51,900
ESTIMATED DESIGN YEAR = 2045 AADT = 66,900
K = 9.0 % D = 57.75 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 3.0%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	5

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
(X)	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

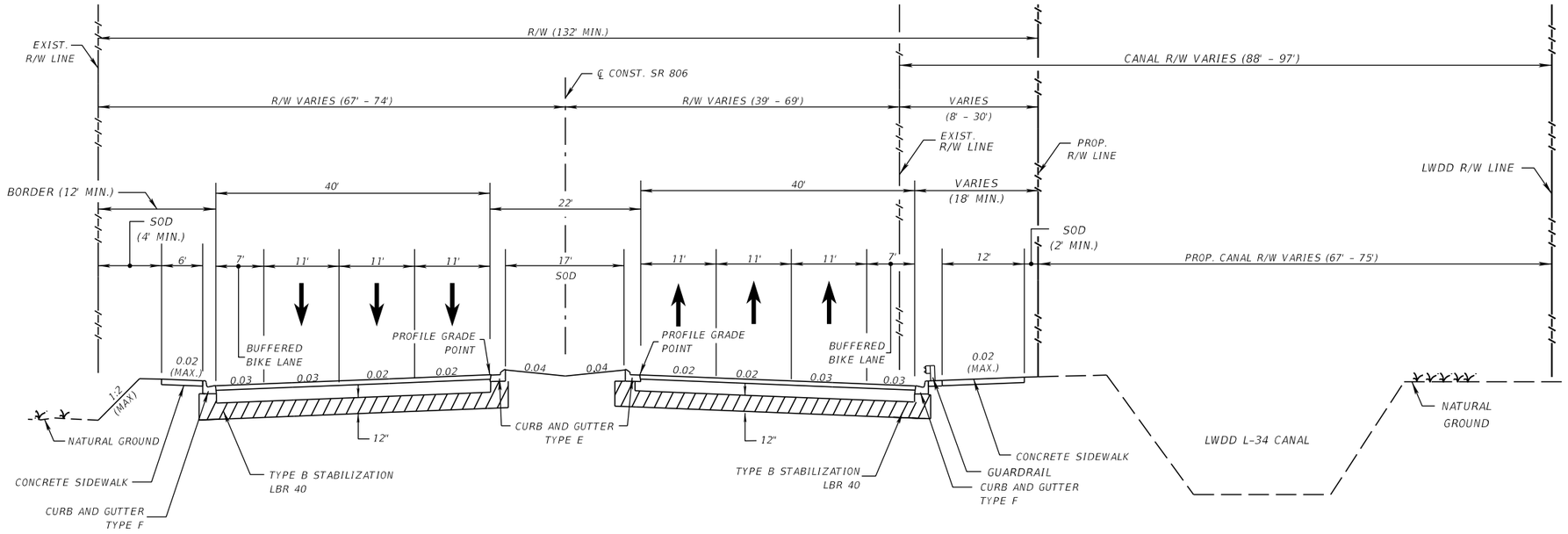
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 3 (12' S/W ON CANAL SIDE)



PROPOSED ROADWAY TYPICAL

SR 806 (ATLANTIC AVENUE)

FROM FLORIDA'S TURNPIKE TO WEST OF CUMBERLAND DRIVE

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 42,500
ESTIMATED OPENING YEAR = 2025 AADT = 50,700
ESTIMATED DESIGN YEAR = 2045 AADT = 65,300
K = 9.0 % D = 57.75 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 3.0%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	6

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
(X)	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
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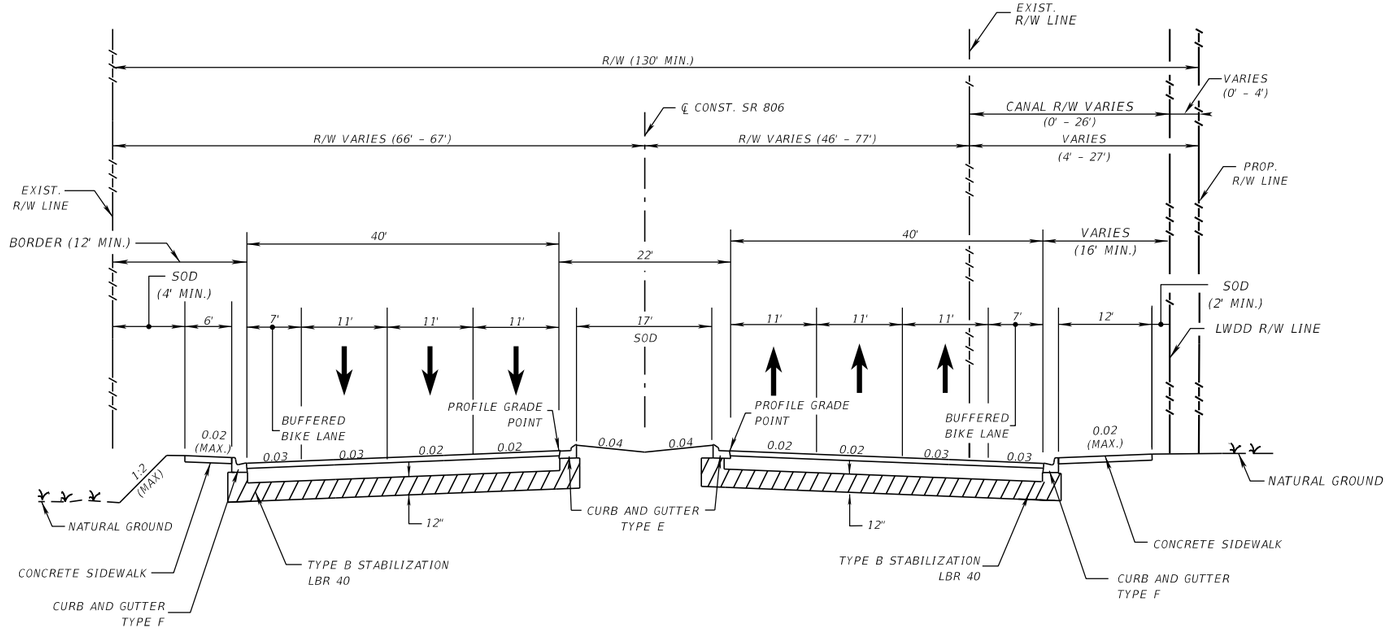
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 3 (12' S/W ON CANAL SIDE)



PROPOSED ROADWAY TYPICAL

SR 806 (ATLANTIC AVENUE)

FROM WEST OF CUMBERLAND DRIVE TO JOG ROAD

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 46,700
ESTIMATED OPENING YEAR = 2025 AADT = 51,900
ESTIMATED DESIGN YEAR = 2045 AADT = 66,900
K = 9.0 % D = 57.75 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 3.0%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	7

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
(X)	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

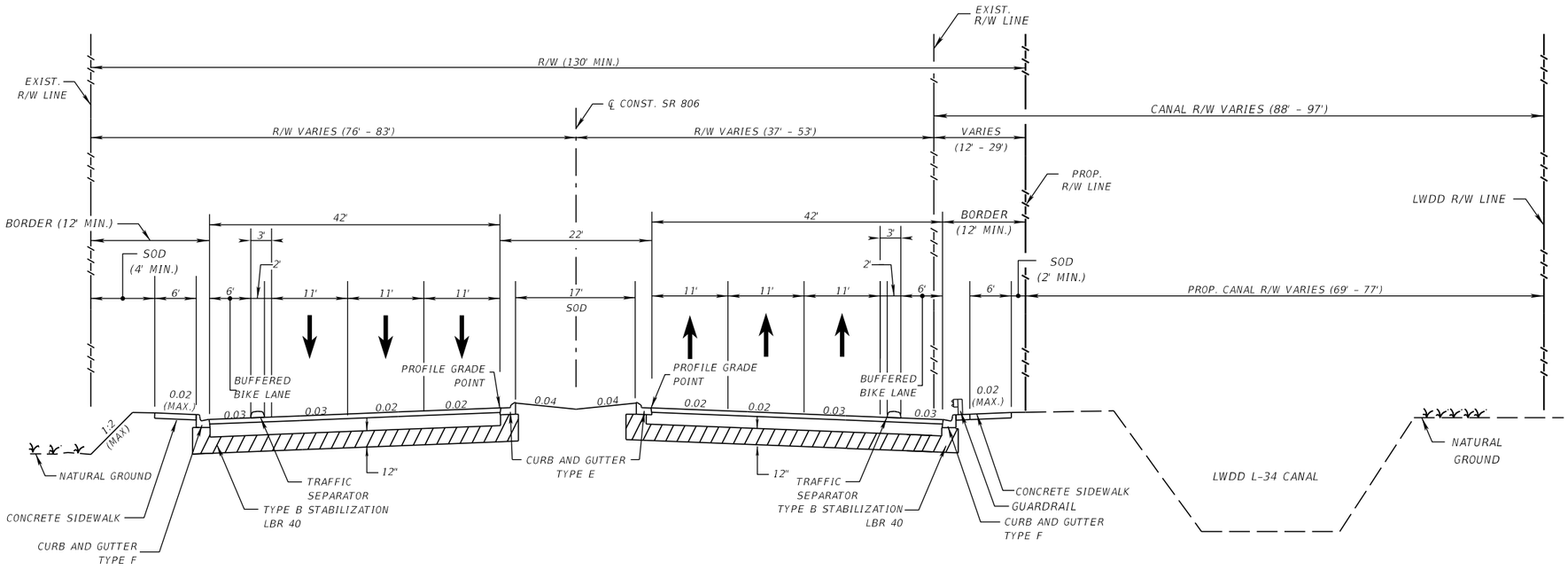
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 4 (PHYSICALLY SEPARATED BIKE LANES)



PROPOSED ROADWAY TYPICAL

SR 806 (ATLANTIC AVENUE)

FROM FLORIDA'S TURNPIKE TO WEST OF CUMBERLAND DRIVE

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 42,500
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ESTIMATED DESIGN YEAR = 2045 AADT = 65,300
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DESIGN HOUR T = 3.0%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	8

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
(X)	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

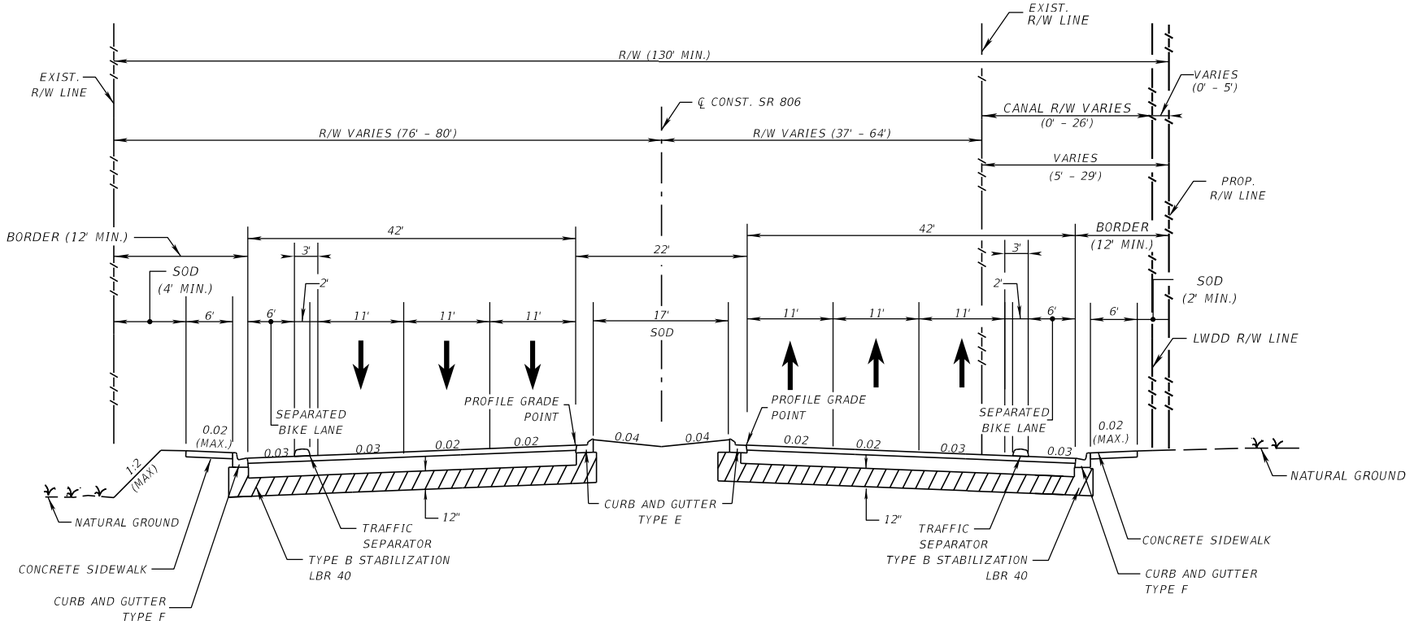
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 4 (PHYSICALLY SEPARATED BIKE LANES)



PROPOSED ROADWAY TYPICAL

SR 806 (ATLANTIC AVENUE)

FROM WEST OF CUMBERLAND DRIVE TO JOG ROAD

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 46,700
ESTIMATED OPENING YEAR = 2025 AADT = 51,900
ESTIMATED DESIGN YEAR = 2045 AADT = 66,900
K = 9.0 % D = 57.75 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 3.0%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	9

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
(X)	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

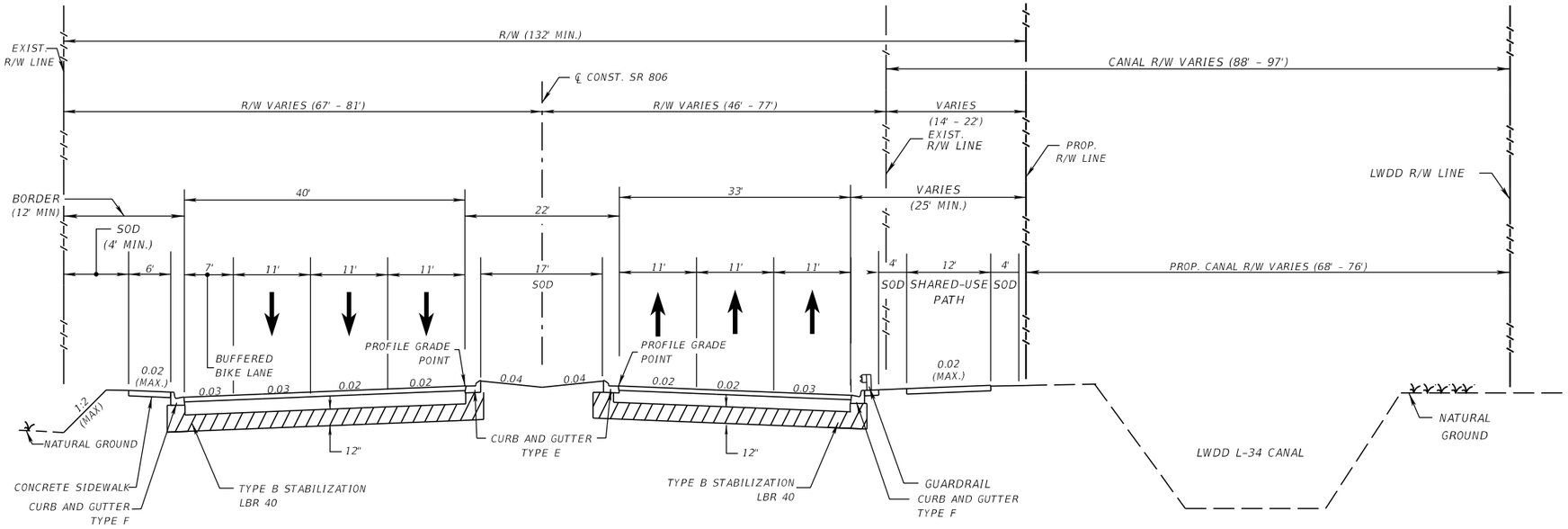
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 5 (12' SHARED-USE PATH WITH NO BIKE LANE ON CANAL SIDE)



PROPOSED ROADWAY TYPICAL

SR 806 (ATLANTIC AVENUE)

FROM FLORIDA'S TURNPIKE TO WEST OF CUMBERLAND DRIVE

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 42,500
ESTIMATED OPENING YEAR = 2025 AADT = 50,700
ESTIMATED DESIGN YEAR = 2045 AADT = 65,300
K = 9.0 % D = 57.75 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 3.0%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	10

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

9/28/2020 4:48:27 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
(X)	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( )	NATIONAL HIGHWAY SYSTEM
( )	STRATEGIC INTERMODAL SYSTEM
(X)	STATE HIGHWAY SYSTEM
( )	OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

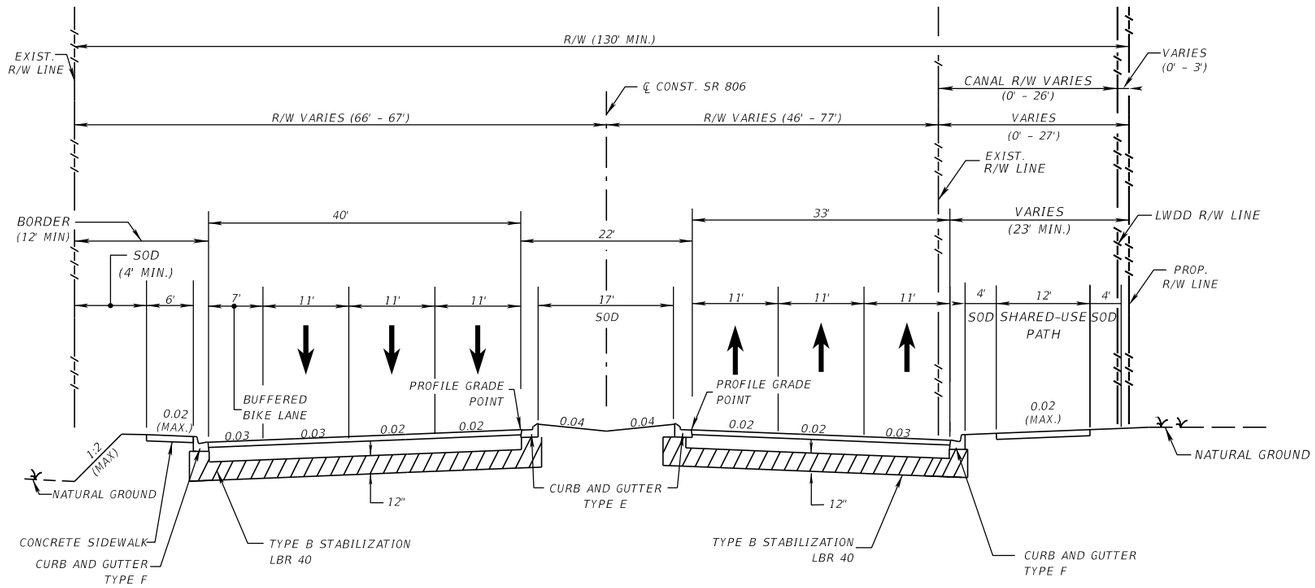
( )	1 - FREEWAY
( )	2 - RESTRICTIVE w/Service Roads
( )	3 - RESTRICTIVE w/660 ft. Connection Spacing
( )	4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X)	5 - RESTRICTIVE w/440 ft. Connection Spacing
( )	6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( )	7 - BOTH MEDIAN TYPES

CRITERIA

(X)	NEW CONSTRUCTION / RECONSTRUCTION
( )	RESURFACING (LA FACILITIES)
( )	RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 5 (12' SHARED-USE PATH WITH NO BIKE LANE ON CANAL SIDE)



PROPOSED ROADWAY TYPICAL

SR 806 (ATLANTIC AVENUE)

FROM WEST OF CUMBERLAND DRIVE TO JOG ROAD

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 46,700
ESTIMATED OPENING YEAR = 2025 AADT = 51,900
ESTIMATED DESIGN YEAR = 2045 AADT = 66,900
K = 9.0 % D = 57.75 % T = 6.0 % (24 HOUR)
DESIGN HOUR T = 3.0%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
440575-3-22-02	11

Meeting Minutes

Project:	FPID No. 440575-3-22-02 Atlantic Avenue (SR 806) PD&E Study from Turnpike to Jog Road
Subject:	Progress Meeting
Date and time:	March 16, 2021 3:00 PM
Meeting place:	Online Teams Meeting **Minutes by:** Scalar Consulting Group Inc.

Attendees:

Alexander Estrada – FDOT District Four; Alexander.Estrada@dot.state.fl.us
Georgi Celusnek – FDOT District Four; Georgi.Celusnek@dot.state.fl.us
Olivia Bonilla– FDOT District Four Olivia Bonilla@dot.state.fl.us
Aniruddha Gotmare – Scalar Consulting Group Inc.; agotmare@scalarinc.net
John Scarlatos – Scalar Consulting Group; jscarlatos@scalarinc.net
David Boyer – Scalar Consulting Group; dboyer@scalarinc.net
Brent Morris – Scalar Consulting Group; bmorris@scalarinc.net
David Varner – LWDD; dvarner@lwdd.net
David Bends – LWDD; dbends@lwdd.net

Key points discussed are provided below.

Alex and Rudy provided a brief overview of the project and explained that a typical section requiring 139-ft of right-of-way is currently being evaluated and that at intersections, additional right-of-way may be required to accommodate left-turn and right-turn lanes. The traffic analysis is currently underway to determine the intersection geometry that will be needed. An alignment which holds the north right-of-way line and a “best fit” alignment is being considered.

Rudy started meeting with typical dimensions of the project,10’ sidewalks on the south side of the road, 8’ sidewalks on the north side of the road, 7’ buffered bike lane and six 12’ lanes. The entire project will be curb and gutter with an urban cross section. Scalar has the understanding that the LWDD desires a 70’ easement or right of way. Scalar has examined two alignments, the northern (preferred) alignment and the Southern alignment. There will be a need for some walls to be used at pinch points to minimize the impact to the canal.
David Bends mentioned The 35’ maintenance berm (30’ at pinch points) requirement and to ensure that if maintenance access from the north was not possible that the maintenance berm on the south side of the canal had access and either ten or 35 foot widths at a minimum. The need for 6” sidewalks where LWDD maintenance was expected to cross sidewalks to access the canal maintenance platforms.
David Boyer requested the canal sections models and flows, to this the LWDD agreed to send the Facilities Report.
Rudy Gotmare asked is it possible to have a maintenance schedule with FDOT for accessing canal from north side over sidewalk? Anthony La Casas didn’t believe it would be well received by the LWDD board.
David Boyer asked could the canal cross section be shrunk of it could be proven that the reduced cross section was ample. LWDD stated it could be looked at through the board but we would have to show a hardship need for such work.
Georgi Celuski asked could the sidewalk be considered part of the berm for width purposes. Anthony La Casas said it’s possible the board may consider the sidewalk as part of the thirty-five-foot requirement for high side berm and ten for low side berm meaning they desired 45’ total berm width at a minimum.

Anthony La Casas further stated, “generally the LWDD doesn’t like to give up right of way as a rule and he didn’t see the win-win situation he only saw the FDOT getting a win.”
David Boyer asked could a partial piping of the canal be considered from Eagle Point to Legends Way?
Anthony La Casas stated as long as it can make the design flows and not have an adverse impact it was possible but not desired as it is generally a bad practice and it would still need to be board approved.
Brian Tillis stated that indeed board approval would be required, and we would have to show a substantial hardship to get approval and felt the LWDD loosing right of way was the only hardship.
The LWDD said an agreement would be required to maintain the pipe with FDOT and LWDD between Eagles Point and Legends Way.

Meeting Minutes

Project:	FPID No. 440575-3-22-02 Atlantic Avenue (SR 806) PD&E Study from Turnpike to Jog Road
Subject:	Palm Beach TPA Alternatives Review Meeting
Date and time:	March 25, 2021 9:00 AM
Meeting place:	Online Teams Meeting **Minutes by:** Scalar Consulting Group Inc.

Attendees:

Alexander Estrada – FDOT District Four; Alexander.Estrada@dot.state.fl.us
Aniruddha Gotmare – Scalar Consulting Group Inc.; agotmare@scalarinc.net
John Scarlatos – Scalar Consulting Group; jscarlatos@scalarinc.net
Ehsan Doustmohammadi – Scalar Consulting Group Inc.; edoustmohammadi@scalarinc.net
Andrew Uhlir – Palm Beach TPA; AUhlir@palmbeachtpa.org
Nick Uhren – Palm Beach TPA; NUhren@palmbeachtpa.org
Valerie Neilson – Palm Beach TPA; VNeilson@palmbeachtpa.org
Conor Campobasso – Palm Beach TPA; ccampobasso@palmbeachtpa.org
Alyssa Frank – Palm Beach TPA; afrank@palmbeachtpa.org

The purpose of this meeting was to discuss the proposed alignment alternatives and intersection options at Atlantic Avenue and Jog Road. It was explained that LWDD is requiring 75-ft minimum RW for the canal comprised of 35-ft south of the canal, 30-ft for the canal, and another 10-ft on the north side of the canal. LWDD will allow piping the ditch east of Cumberland Drive. Two (2) alignments were presented, best fit and south alignments which are discussed below.

Best Fit Alignment: This alignment consists of acquiring some right-of-way along the north side of Atlantic Avenue in order to minimize the amount of right-of-way acquisition from the LWDD canal. The alternative will not impact parking on businesses but wll require utility and sign relocations. The typical section consists of a standard 6-lane urban typical section with 22-ft wide median, 7-ft wide buffered bicycle lanes, an eight-ft wide sidewalk on the north side and 10-ft wide sifewalk on the south side for a minum right-of-way width of 130-ft. Portions of this alignment does not allow for 75-ft minimum canal RW width with the worst case being between Eagle Point and Legends Way due to the shopping plaza constraint on the northeast corner of Atlantic Avenue and Hagen Ranch Road.

South Alignment: This alignment consists of shifting the alignment to the south in order to avoid right-of-way along the north side of Atlantic Avenue. The typical section as same as the the best fit alignment. The majority of this alignment does not allow for 75-ft minimum canal RW width with the worst case being between Eagle Point and Legends Way due, similar to the best fit alignment.

The Department requested to identify the LWDD right-of-way availability by segment showing the widths of the canal and area north and south of the canal. Nick asked to explore the idea of reducing the buffered bike lanes from 7-ft wide to 5-ft wide in order to increase the north sidewalk from 8 to 10-ft wide and reduce the right-of-way take by two feet on the south side. In order to get LWDD approval, he also suggested boxing the canal between Eagle Point and legends Way and factoring it into the construction cost.

Atlantic Avenue at Jog Road Intersection Concepts: It was explained that several intersection concepts were developed consisting of partial displaced lefts eastbound and westbound, triple lefts, dual lefts, and an overpass alternative. The concepts presented are discussed below:

Partial Displaced Left Turns: This concept consists of displaced left turns eastbound and westbound on Atlantic Avenue. It was explained that this concept does have substantial right-of-way impacts and acess impacts. It would involve closing the southbound left turn into Kings Point Shopping Center and Atlantic Square. It also eliminates the left turn into Seville Terrace, thus requiring a u-turn at Cumberland Drive. An option to discuss with the King Points residents would be to provide acess at Cumberland Drive by making it a full four-legged intersection or constructing another access point bewteen Cumberland Drive and Seville Terrace. Another key access change would be the need to close the existing signalized intersection on Jog Road just south of Atlantic Avenue. This alternative provides acceptable intersection LOS. Nick mentioned the alternative will likely get push back due to the amount of right-of-way impacts and that the unusual configuration may be difficult for users to navigate through.

Triple Lefts: This concept consists of having triple lefts in all directions. It has less impacts than the displaced left turns concept but has an LOS of F in the 2045 design year. Nick asked to confirm if it is required to make the intersection operate at LOS D and if dual lefts would be accetable to further minimize imapcts. Rudy explained that right-of-way, cost, public input will also be factors on deciding the intersection configuration which may ultimimately not meet LOS ‘D’.

Dual Lefts: This concept consists of maintaining dual lefts in each direction. It increases the intersection by approximately 15 seconds as opposed to triple lefts.

The overpass alternative was mentioned but not presented due to the amount of impacts associated with the concept.

Meeting Minutes

Project:	FPID No. 440575-3-22-02 Atlantic Avenue (SR 806) PD&E Study from Turnpike to Jog Road
Subject:	Progress Meeting
Date and time:	June 9, 2021 1:30 PM
Meeting place:	Online Teams Meeting **Minutes by:** Scalar Consulting Group Inc.

Attendees:

Alexander Estrada – FDOT District Four; Alexander.Estrada@dot.state.fl.us
Adham Naiem – FDOT District Four; Adham.Naiem@dot.state.fl.us
Thuc Le – FDOT District Four; thuc.le@dot.state.fl.us
Aniruddha Gotmare – Scalar Consulting Group Inc.; agotmare@scalarinc.net
Brent Morris – Scalar Consulting Group; bmorris@scalarinc.net
John Scarlatos – Scalar Consulting Group; jscarlatos@scalarinc.net
David Boyer – Scalar Consulting Group; dboyer@scalarinc.net
David Bends – LWDD; dbends@lwdd.net
Tommy Strowd – LWDD; tstrowd@lwdd.net
Brian Tilles – LWDD; btilles@lwdd.net
Nicole Smith – LWDD; nsmith@lwdd.net
Shawn Mitchell – LWDD; smitchell@lwdd.net
Anthony Las Casas – LWDD; alascasas@lwdd.net

Key points discussed are provided below.

David Bends indicated LWDD will likely object to a 22-ft wide median. Rudy explained that 22-ft is the standard median width for this type of facility. Rudy explained that to the west, there is more available right-of-way than east of Hagen Ranch Road. David Varner stated that LWDD does not object to piping the canal near Kings Point. Currently, maintenance of the canal is provided from both sides. The canal will require a minimum of 75-ft of right-of-way, consisting of 10-ft on the north side, 30-ft for the canal, and another 35-ft on the south side. There is a pinch point for both alignments that will require 55-65 feet of canal right of way, this pinch point is between Eagle Point Dr. to Legends Way. In the best fit alignment, it would also need to be closed in at Michelangelo Blvd. for approximately 415 feet. Brent displayed both alignments in cross section explaining the issues by cross section and displaying the lack of cross section in the pinch point section. David asked that the sloping on the south side of the canal be revised to show the 1:20 slope, sloping away from the canal toward the south. Brent explained the reasoning for the sloping inward and agreed to change the sloping direction. Rudy explained piping in the canal in these areas was unavoidable. David said LWDD would prefer bulkheading the north bank of the canal as opposed to piping or reducing the canal section. LWDD may be open to piping near the intersections where additional right-of-way may be needed but prefer the option of bulkheading. Rudy explained this would not be cost visible. Piping will require going before the LWDD Board for approval which will also require a permit and annual fees. From the LWDD facilities report, the design discharges and maintenance requirements, we can make the required flows and provide required widths in all other sections of the L-34 Canal.. Anthony Las Casas asked what we would do if the LWDD right of way didn't exist. Rudy explained in that case we would consider purchasing land to accommodate the project which is the same approach we are taking now. David asked for exhibits to review the information. Rudy agreed

we would provide the data for review. Rudy invited the LWDD to participate in the public meetings on the 28th and 29th for the project.

Meeting Minutes

Project:	FPID No. 440575-3-22-02 Atlantic Avenue (SR 806) PD&E Study from Turnpike to Jog Road
Subject:	Progress Meeting
Date and time:	August 17, 2021 3:00 PM
Meeting place:	Online Teams Meeting **Minutes by:** Scalar Consulting Group Inc.

Attendees:

Thuc Le – FDOT District Four; thuc.le@dot.state.fl.us
Brent Morris – Scalar Consulting Group; bmorris@scalarinc.net
John Scarlatos – Scalar Consulting Group; jscarlatos@scalarinc.net
David Boyer – Scalar Consulting Group; dboyer@scalarinc.net
David Bends – LWDD; dbends@lwdd.net
Tommy Strowd – LWDD; tstrowd@lwdd.net
Brian Tilles – LWDD; btilles@lwdd.net
Nicole Smith – LWDD; nsmith@lwdd.net
Shawn Mitchell – LWDD; smitchell@lwdd.net
Anthony Las Casas – LWDD; alascasas@lwdd.net

Key points discussed are provided below.

John asked if the Department would agree to box the entire Canal, if LWDD would approve as he explained the TPA is requesting additional bike/ped safety which could further widen the typical section footprint. LWDD staff agreed this option would need to go before the Board for approval and would need to address any maintenance issues and who would be responsible for maintenance. LWDD staff said they do not favor boxing the entire canal if it is not necessary and prefer to see an open channel. The current proposal which consists of piping portions of the Canal and realigning the Canal other areas to maintain a 35-ft berm on the south side will provide for additional capacity.

Calculations to document piping the canal need to show the headloss through the system as currently exists verses the new piped section. The objective would be to provide as little headloss over the existing conditions as possible. The design flow is for a 10-year event, so LWDD would prefer to see the headloss calculations as opposed to just passing the design flow, since larger storms will occur.

East of Cumberland, LWDD would prefer FDOT to purchase the entire R/W, however, the new piped system will need to accommodate any existing offsite flows.

The LWDD Board meets the 1st Wednesday, following the 10th of each month and is comprised of 5 members. LWDD Staff recommends limiting the number of times to appear in front of the board. The staff would like to review all calculations prior to presenting to the Board. David Bends will coordinate with the study team for preparing a presentation to the Board and will be reviewed by the study team before finalizing. The Board will also want to see an MOA prior to making final approval. David Bends will send the study team a sample MOA for reference. (received after the meeting)

The question was asked if the 35-ft maintenance berm could be on the north side of the Canal and LWDD staff said they generally do not support it as they have concern with the presence of poles and guardrail.

LWDD staff indicated anywhere that sheet pile wall may be proposed, the wall will be within FDOT right-of-way and will be maintained by FDOT. This would be specified in the MOA.

LWDD staff does not support having walls on both sides of the Canal as it will be difficult to maintain because it is restrictive and there are also concerns with damaging the walls.

LWDD will provide the study team with permitting costs. (received after the meeting)

Meeting Minutes

Project:	FPID No. 440575-3-22-02 Atlantic Avenue (SR 806) PD&E Study from Turnpike to Jog Road
Subject:	Progress Meeting
Date and time:	March 16, 2022 1:30 PM
Meeting place:	Online Teams Meeting **Minutes by:** Scalar Consulting Group Inc.

Attendees:

Thuc Le – FDOT District Four; thuc.le@dot.state.fl.us
John Scarlatos – Scalar Consulting Group; jscarlatos@scalarinc.net
David Boyer – Scalar Consulting Group; dboyer@scalarinc.net
Rudy Gotmare – Scalar Consulting Group; rgotmare@scalarinc.net
David Bends – LWDD; dbends@lwdd.net
Brian Tilles – LWDD; btilles@lwdd.net
Nicole Smith – LWDD; nsmith@lwdd.net
Anthony Las Casas – LWDD; alascasas@lwdd.net

Key points discussed are provided below.

John discussed the proposed typical section consisting of 10-ft wide sidewalks and seven-ft wide buffered bicycle lanes on both sides and explain how the previous alternative was the same except for an eight-ft wide sidewalk on the north side instead of 10-ft. As such, the current proposed typical section is not anticipated to encroach further into the LWDD canal right-of-way than the previous alternative. The additional two-ft needed for the 10-ft sidewalk will be done by widening to the north side. The segment from the E-2E Canal to Lexington Club Boulevard will likely require sheet pile on the southside in order to minimize encroachment into LWDD right-of-way. The sheet pile wall will be within FDOT right-of-way and maintained by FDOT. The L-34 Canal segments from Eagle Point Drive to Legends Way and from approximately 250-ft west of Michelangelo Boulevard to 75-ft east of Michelangelo Boulevard will need to be piped. The ditch east of Cumberland Drive is proposed to also be piped.

LWDD staff has requested to allow for 35-ft maintenance where possible and to keep the 35-ft maintenance one side of the Canal. FDOT will align the Canal if necessary to keep the 35-ft maintenance on one side.

The project will be presented at the LWDD workshop on April 5, 2022 and to the LWDD Board on April 13, 2022.

The presentation will require the following information:

- Table summarizing R/W widths by segment
- Sections that are proposed to be piped or have sheet pile wall
- Show areas where 35-ft maintenance requirement is met and locations and widths where it's not
- Provide LWDD with CAD file showing the proposed R/W line

An MOA will also be required for the purchasing of right-of-way, canal relocation, and construction phasing. Thuc suggested revising the MOA that has been written for the segment of Atlantic Avenue to

the west to also include the PD&E segment instead of preparing a new MOA and the team agreed it would be a good idea.

Other information brought up during the meeting includes that LWDD maintains the L-34 Canal four times per year and that 15-ft drop curbs are requested to allow for maintenance vehicles.

APPENDIX D

Existing Permits, WQIE and Sole Source Aquifer Checklist

Atlantic Commons Pond – Permit No. 50-08178-P

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE PERMIT NO. 50-08178-P
DATE ISSUED: FEBRUARY 12, 2009

FORM #0145
Rev. 08/95

PERMITTEE: ATLANTIC COMMONS ASSOCIATES, LLLP
(ATLANTIC COMMONS PUD)
1600 SAWGRASS CORPORATE PARKWAY,SUITE
SUNRISE , FL 33323

PROJECT DESCRIPTION CONCEPTUAL APPROVAL OF A SURFACE WATER MANAGEMENT SYSTEM TO SERVE A 121.30 ACRE RESIDENTIAL DEVELOPMENT KNOWN AS ATLANTIC COMMONS PUD. IN ADDITION, AUTHORIZATION FOR EXCAVATION OF LAKES, SITE CLEARING AND GRADING AND CONTROL STRUCTURE INSTALLATION.

PROJECT LOCATION: PALM BEACH COUNTY , SECTION 16,17 TWP 46S RGE 42E

PERMIT DURATION: See Special Condition No:1. See attached Rule 40E-4.321, Florida Administrative Code.

This Permit is issued pursuant to Application No. 051107-11 , dated August 9, 2005. Permittee agrees to hold and save the South Florida Water Management District and its successors harmless from any and all damages, claims or liabilities which may arise by reason of the construction, operation, maintenance or use of activities authorized by this Permit. This Permit is issued under the provisions of Chapter 373 , Part IV Florida Statutes (F.S.), and the Operating Agreement Concerning Regulation Under Part IV, Chapter 373 F.S., between South Florida Water Management District and the Department of Environmental Protection. Issuance of this Permit constitutes certification of compliance with state water quality standards where neccessary pursuant to Section 401, Public Law 92-500, 33 USC Section 1341 , unless this Permit is issued pursuant to the net improvement provisions of Subsections 373.414(1)(b), F.S., or as otherwise stated herein.

This Permit may be transferred pursuant to the appropriate provisions of Chapter 373, F.S, and Sections 40E-1.6107(1) and (2), and 40E-4.351(1), (2), and (4), Florida Administrative Code (F.A.C.). This Permit may be revoked, suspended, or modified at any time pursuant to the appropriate provisions of Chapter 373, F.S. and Sections 40E-4.351(1), (2), and (4), F.A.C.

This Permit shall be subject to the General Conditions set forth in Rule 40E-4.381, F.A.C., unless waived or modified by the Governing Board. The Application, and the Environmental Resource Permit Staff Review Summary of the Application, including all conditions, and all plans and specifications incorporated by reference, are a part of this Permit. All activities authorized by this Permit shall be implemented as set forth in the plans, specifications, and performance criteria as set forth and incorporated in the Environmental Resource Permit Staff Review Summary. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual, pursuant to the appropriate provisions of Chapter 373, F.S. and Sections 40E-4.361 and 40E-4.381, F.A.C.

In the event the property is sold or otherwise conveyed, the Permittee will remain liable for compliance with this Permit until transfer is approved by the District pursuant to Rule 40E-1.6107, F.A.C.

SPECIAL AND GENERAL CONDITIONS ARE AS FOLLOWS:

SEE PAGES 2 - 3 OF 6 (19 SPECIAL CONDITIONS).
SEE PAGES 4 - 6 OF 6 (19 GENERAL CONDITIONS).

SOUTH FLORIDA WATER MANAGEMENT
DISTRICT, BY ITS GOVERNING BOARD

On **ORIGINAL SIGNED BY:**

By **ELIZABETH VEGUILLA**
DEPUTY CLERK

Last Date For Agency Action: 12-FEB-2009

INDIVIDUAL ENVIRONMENTAL RESOURCE PERMIT STAFF REPORT

Project Name: Atlantic Commons Pud

Permit No.: 50-08178-P

Application No.: 051107-11 **Associated File:** 051122-8 WU Concurrent

Application Type: Environmental Resource (Conceptual Approval And New Construction/Operation)

Location: Palm Beach County, S16,17/T46S/R42E

Permittee : Atlantic Commons Associates, Llp

Operating Entity : Property Owner'S Association

Project Area: 121.30 acres

Project Land Use: Residential

Drainage Basin: C-15

Receiving Body: LWDD E-2E Canal **Class:** CLASS III

FINAL APPROVED BY GB

FEB 1 2 2009

WPB

Special Drainage District: Lake Worth Drainage District

Total Acres Wetland Onsite:	5.50	
Total Acres Impacted Onsite :	5.50	
Offsite Mitigation Credits-Mit.Bank:	2.76	Loxahatchee Mitigation Bank

Conservation Easement To District : No

Sovereign Submerged Lands: No

PROJECT PURPOSE:

This application is a request for conceptual approval of a surface water management system to serve a 121.30 acre residential development known as Atlantic Commons PUD. In addition, the applicant is requesting construction authorization for the excavation of lakes, site clearing and grading and control structure installation. Staff recommends approval with conditions.

PROJECT EVALUATION:

PROJECT SITE DESCRIPTION:

The project site is located at the northeast corner of the intersection of Atlantic Avenue and the Florida Turnpike in unincorporated Palm Beach County (Exhibit 1). The site consists of agricultural lands that include row crops and ditches. The site also contains three (3) isolated wetland areas as described in the 'Wetlands' section below. There are no permitted surface water management facilities within the project area.

PROPOSED PROJECT:

This application is a request for the conceptual approval of a surface water management system to serve a 121.30 acre residential development known as Atlantic Commons PUD. The applicant also requests construction approval for the excavation of lakes, site clearing and grading, and the installation of the control structures. The proposed surface water management system will consist of inlets, culverts and nine (9) wet detention areas which will provide water quality treatment and attenuation prior to discharge to the LWDD E-2E Canal.

Construction of the project will adversely impact three (3) isolated wetland areas (a total of 5.1 acres of wetlands). Mitigation to off-set these impacts will be provided by the applicant's purchase of mitigation credits at the Loxahatchee Mitigation Bank as described in the 'Wetlands' section below.

LAND USE:

In the following table, "other" represents 5.75 acres of contributory drainage area from West Atlantic Boulevard into the Southeast Basin of this project.

Construction:
Project:

	This Phase	Total Project	
Building Coverage		21.76	acres
Lake	14.08	14.08	acres
Lake Bank	7.46	7.46	acres
Other		5.75	acres
Pavement		28.22	acres
Pervious		44.03	acres
Total:	**21.54**	**121.30**	

Basin : North Basin

	This Phase	Total Basin	
Building Coverage		11.19	acres
Lake	5.34	5.34	acres
Lake Bank	3.25	3.25	acres
Pavement		14.90	acres
Pervious		16.44	acres

Basin : North Basin

	This Phase	Total Basin	
Total:	**8.59**	**51.12**	

Basin : Southeast Basin

	This Phase	Total Basin	
Building Coverage		5.92	acres
Lake	5.39	5.39	acres
Lake Bank	3.01	3.01	acres
Other		5.75	acres
Pavement		8.18	acres
Pervious		14.23	acres
Total:	**8.40**	**42.48**	

Basin : Southwest Basin

	This Phase	Total Basin	
Building Coverage		4.65	acres
Lake	3.35	3.35	acres
Lake Bank	1.20	1.20	acres
Pavement		5.14	acres
Pervious		13.36	acres
Total:	**4.55**	**27.70**	

WATER QUANTITY :

Discharge Rate :

As shown in the table below, the proposed project discharge is within the allowable limit for the area.

Discharge Storm Frequency : 25 YEAR-3 DAY Design Rainfall : 14 inches

Basin	Allow Disch (cfs)	Method Of Determination	Peak Disch (cfs)	Peak Stage (ft, NGVD 29)
Southeast Basin	4.63	Discharge Formula	4.4	20.06
Southwest Basin	3.03	Discharge Formula	3	21
North Basin	5.6	Discharge Formula	5.5	20.3

Finished Floors :

As shown in the following table and the attached exhibits, minimum finished floor elevations have been set above the calculated design storm flood elevation.

Building Storm Frequency : 100 YEAR-3 DAY Design Rainfall : 18 inches

Basin

Basin	Peak Stage (ft, NGVD 29)	Proposed Min. Finished Floors (ft, NGVD 29)	FEMA Elevation (ft, NGVD 29)
Southeast Basin	21	21.2	N/A
Southwest Basin	21	21.2	N/A
North Basin	21.2	21.3	N/A

Road Design :

As shown in the following table and the attached exhibits, minimum road center lines have been set at or above the calculated design storm flood elevation.

Road Storm Frequency : 5 YEAR-1 DAY Design Rainfall: 8 inches

Basin	Peak Stage (ft, NGVD 29)	Proposed Min. Road Crown (ft, NGVD 29)
Southeast Basin	18.47	19
Southwest Basin	18.47	19
North Basin	18.95	19

Control Elevation :

Basin	Area (Acres)	Ctrl Elev (ft, NGVD 29)	WSWT Ctrl Elev (ft, NGVD 29)	Method Of Determination
Southeast Basin	42.48	16	16.00	Adjacent Canal Control Elevation
Southwest Basin	27.70	16	16.00	Adjacent Canal Control Elevation
North Basin	51.12	16	16.00	Adjacent Canal Control Elevation

Receiving Body :

Basin	Str.#	Receiving Body
Southeast Basin	CS-1	LWDD E-2E Canal
Southwest Basin	CS-2	LWDD E-2E Canal
North Basin	CS-3	LWDD E-2E Canal

Discharge Structures: Note: The units for all the elevation values of structures are (ft, NGVD 29)

Bleeders:

Basin	Str#	Count	Type	Width	Height	Length	Dia.	Invert Angle	Invert Elev.
North Basin	CS-3	1	Triangular Orifice	1.21'	1'				16
Southeast Basin	CS-1	1	Triangular Orifice	1'	1'				16
Southwest Basin	CS-2	1	Triangular Orifice	.79'	.83'				16

WATER QUALITY :

The required water quality treatment (2.5" times percent impervious) will be provided in nine (9) wet detention areas prior to discharge into the LWDD E-2E canal.

To ensure that proposed construction activities do not degrade adjacent surface waters, the applicant will install and maintain temporary silt fences around the limits of construction in accordance with Exhibit 2, and as stipulated in the special conditions of this permit. The temporary erosion control barriers will

be installed prior to and will be removed upon completion of construction activities.

No adverse water quality impacts are anticipated as a result of the proposed project.

Basin	Treatment Method		Vol Req.d (ac-ft)	Vol Prov'd
Southeast Basin	Treatment	Wet Detention	3.58	3.58
Southwest Basin	Treatment	Wet Detention	2.31	2.31
North Basin	Treatment	Wet Detention	4.59	4.59

WETLANDS:

The project site contains a total of 5.1 acres of degraded freshwater wetlands which consist of 4.4 acres of willow-dominated wetlands, 0.7 acre of exotic wetland hardwoods and 0.4 acre of freshwater marsh (Exhibit 3, page 1 of 2). These wetlands are poor quality as a result of adjacent surrounding agricultural practices and altered hydrology associated with regional water management practices.

Wetland Impacts:

The project will directly impact all 5.1 acres of on-site degraded wetlands.

Based upon Section 4.2.2.1 of the Basis of Review for Environmental Resource Permit Applications, wetland mitigation is not required to offset adverse impacts to isolated wetland areas that are less than one-half acre in size. Therefore, no wetland protection or mitigation requirements are required for the 0.4 acre freshwater marsh wetland.

Based upon the degraded condition of the 4.4 acre willow-dominated wetlands and 0.7 acre of exotic wetland hardwoods, the location of these wetlands in the existing agricultural landscape and within the proposed development landscape, and the reduced ecological value that these wetlands currently provide to fish and wildlife, staff determined that project modifications to preserve these wetlands would not result in enhanced ecological benefits to fish and wildlife, and therefore, modifications were not considered practicable.

Mitigation Proposal:

As compensation for direct impacts to 5.1 acres of freshwater wetlands, the applicant proposes to purchase 2.76 freshwater herbaceous wetland credits from the Loxahatchee Mitigation Bank. The number of credits to be purchased was determined based on a functional assessment evaluation of the on-site wetlands using the same methodology (Wetland Rapid Assessment Procedure) as that used to determine the credit allocation for the mitigation bank and applying a 15% increase adjustment to the number of mitigation credits necessary to off-set functional impacts to account for time lag and risk involved in the goals being achieved for the mitigation bank. A copy of District staff's mitigation credit calculations are contained in the District permit file.

A letter of reservation from a representative of the mitigation bank confirming that the 2.76 freshwater herbaceous credits have been reserved for this project is provided in Exhibit 3, page 2 of 2. Pursuant to Exhibit 4 and as stipulated in the special conditions of this permit, no later than April 12, 2009 and prior to the commencement of any wetland impacts associated with the proposed project construction, the permittee will submit verification that the specified number of credits have been debited from the Loxahatchee Mitigation Bank ledger for this project by the Florida Department of Environmental

Protection.

Cumulative Impact Assessment:

The proposed off-site mitigation site at the Loxahatchee Mitigation Bank is located within the same basin as the proposed wetland impacts. Therefore, pursuant to Rule 4.2.8 of the Basis of Review, the project will not result in adverse cumulative wetland impacts to the basin in which the wetland impacts are proposed.

Wetland Inventory :

CONSTRUCTION NEW -Wetland Impacts

Site Id	Site Type	Pre-Development				Post-Development						
		Pre Flucs	AA Type	Acreage (Acres)	Current Wo Pres	With Project	Time Lag (Yrs)	Risk Factor	Pres. Adj. Factor	Post Fluccs	Adj Delta	Functional Gain / Loss
1	ON	617	Direct	4.40							.000	.000
2	ON	619	Direct	.70							.000	.000
3	ON	641	Direct	.40							.000	.000
			Total:	5.50								.00

Fluccs Code	Description
617	Mixed Wetland Hardwoods
619	Melaleuca - Brazilian Pepper - Exotics Hardwoods
641	Freshwater Marshes

MITBANK Loxahatchee Mitigation Bank

Type Of Credits	Number Of Credits
	Mitigation Bank Cr Used
Fresh Water Herbaceous	2.76
Total:	**2.76**

Wildlife Issues:

The wetlands at the project site do not contain preferred habitat for wetland-dependent endangered or threatened wildlife species or species of special concern and submitted information indicates that potential use of the site by such species is minimal.

This permit does not relieve the applicant from complying with all applicable rules and any other agencies'

requirements if, in the future, endangered/threatened species or species of special concern are discovered on the site.

CERTIFICATION AND MAINTENANCE OF THE WATER MANAGEMENT SYSTEM:

It is suggested that the permittee retain the services of a Professional Engineer registered in the State of Florida for periodic observation of construction of the surface water management (SWM) system. This will facilitate the completion of construction completion certification Form #0881 which is required pursuant to Section 10 of the Basis of Review for Environmental Resource Permit Applications within the South Florida Water Management District, and Rule 40E-4.361(2), Florida Administrative Code (F.A.C.).

Pursuant to Chapter 40E-4 F.A.C., this permit may not be converted from the construction phase to the operation phase until certification of the SWM system is submitted to and accepted by this District. Rule 40E-4.321(7) F.A.C. states that failure to complete construction of the SWM system and obtain operation phase approval from the District within the permit duration shall require a new permit authorization unless a permit extension is granted.

For SWM systems permitted with an operating entity who is different from the permittee, it should be noted that until the permit is transferred to the operating entity pursuant to Rule 40E-1.6107, F.A.C., the permittee is liable for compliance with the terms of this permit.

The permittee is advised that the efficiency of a SWM system will normally decrease over time unless the system is periodically maintained. A significant reduction in flow capacity can usually be attributed to partial blockages of the conveyance system. Once flow capacity is compromised, flooding of the project may result. Maintenance of the SWM system is required to protect the public health, safety and the natural resources of the state. Therefore, the permittee must have periodic inspections of the SWM system performed to ensure performance for flood protection and water quality purposes. If deficiencies are found, it is the responsibility of the permittee to correct these deficiencies in a timely manner.

RELATED CONCERNS:

Water Use Permit Status:

A Water Use application for dewatering activities (Application No. 051122-8) has been submitted to the District and is being processed for this project.

The applicant will submit a Water Use application for landscape irrigation when the Environmental Resource Permit application for construction is submitted in the future.

This permit does not release the permittee from obtaining all necessary Water Use authorization(s) prior to the commencement of activities which will require such authorization, including construction dewatering and irrigation, unless the work qualifies for a No-Notice Short-Term Dewatering permit pursuant to Chapter 40E-20.302(3) or is exempt pursuant to Section 40E-2.051, FAC.

CERP:

The proposed project is not located within or adjacent to a Comprehensive Everglades Restoration Project component.

Potable Water Supplier:

Palm Beach County Water Utilities

Waste Water System/Supplier:

Palm Beach County Water Utilities

Right-Of-Way Permit Status:

A Right-of-Way Permit is not required for this project.

DRI Status:

This project is not a DRI.

Historical/Archeological Resources:

No information has been received that indicates the presence of archaeological or historical resources or that the proposed activities could cause adverse impacts to archaeological or historical resources.

This permit does not release the permittee from compliance with any other agencies' requirements in the event that historical and/or archaeological resources are found on the site.

DCA/CZM Consistency Review:

The District has not received a finding of inconsistency from the Florida Department of Environmental Protection or other commenting agencies regarding the provisions of the federal Coastal Zone Management Plan.

Third Party Interest:

No third party has contacted the District with concerns about this application.

Enforcement:

There has been no enforcement activity associated with this application.

STAFF RECOMMENDATION:

The Staff recommends that the following be issued :

Conceptual approval of a surface water management system to serve a 121.30 acre residential development known as Atlantic Commons PUD. In addition, the applicant is requesting authorization for excavation of lakes, site clearing and grading and control structure installation.

Based on the information provided, District rules have been adhered to.

Staff recommendation is for approval subject to the attached
General and Special Conditions.

STAFF REVIEW:

NATURAL RESOURCE MANAGEMENT APPROVAL

ENVIRONMENTAL EVALUATION

Trisha Stone

SUPERVISOR

Barbara J. Conmy

SURFACE WATER MANAGEMENT APPROVAL

ENGINEERING EVALUATION

Joseph D. Santangelo

SUPERVISOR

Carlos A. DeRojas, P.E.

ENVIRONMENTAL RESOURCE PERMITTING DIVISION DIRECTOR :

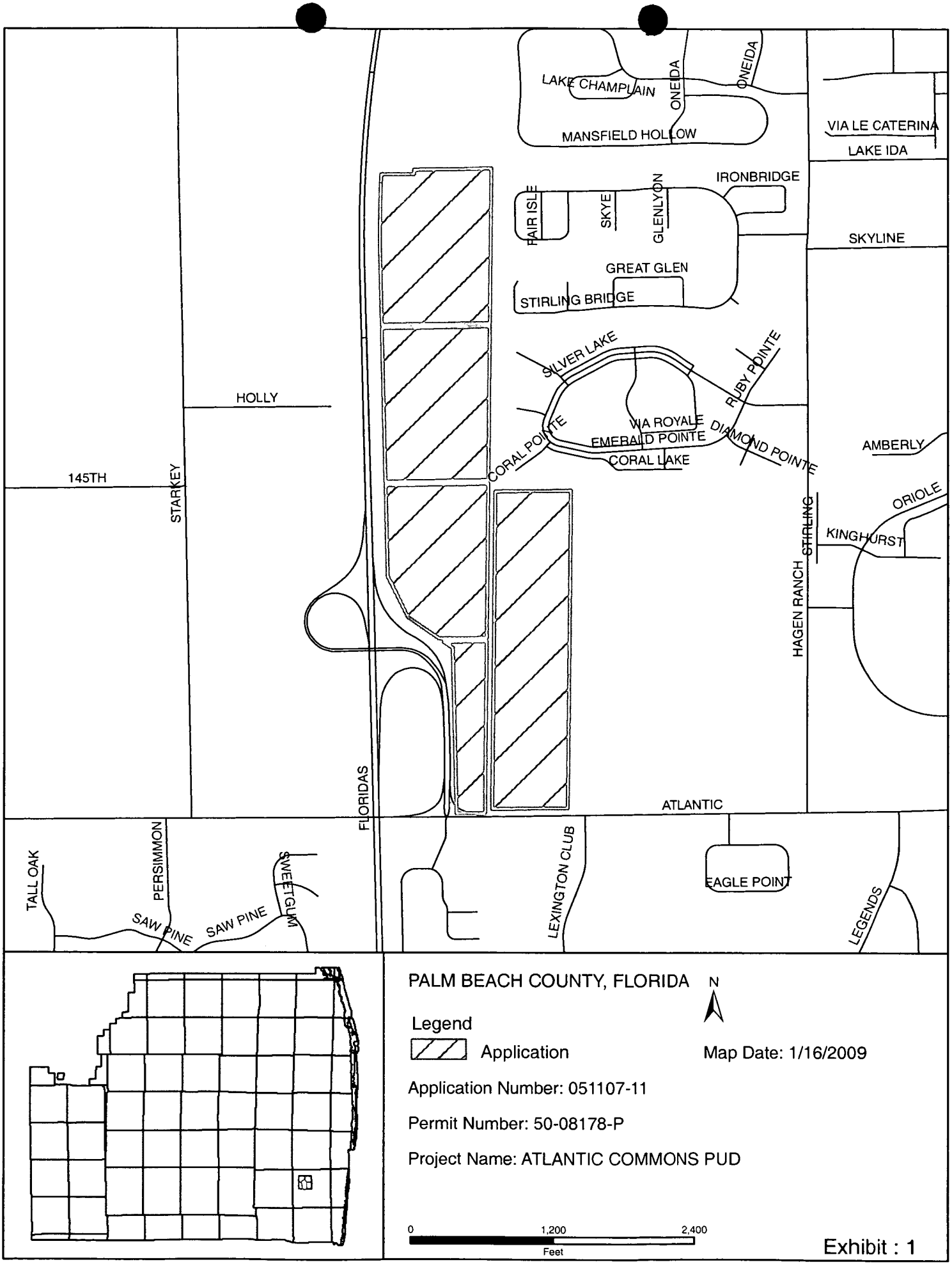
Anita R. Bain

DATE: 1/16/09

ENVIRONMENTAL RESOURCE REGULATION DEPUTY DEPARTMENT DIRECTOR :

Anthony M. Waterhouse, P.E.

DATE: 1/23/09



PALM BEACH COUNTY, FLORIDA

N

Legend

Application

Map Date: 1/16/2009

Application Number: 051107-11

Permit Number: 50-08178-P

Project Name: ATLANTIC COMMONS PUD

0 1,200 2,400

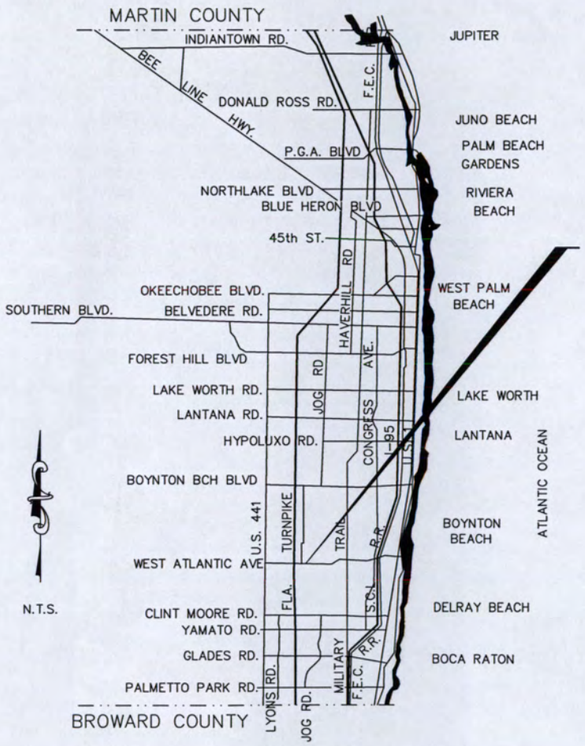
Feet

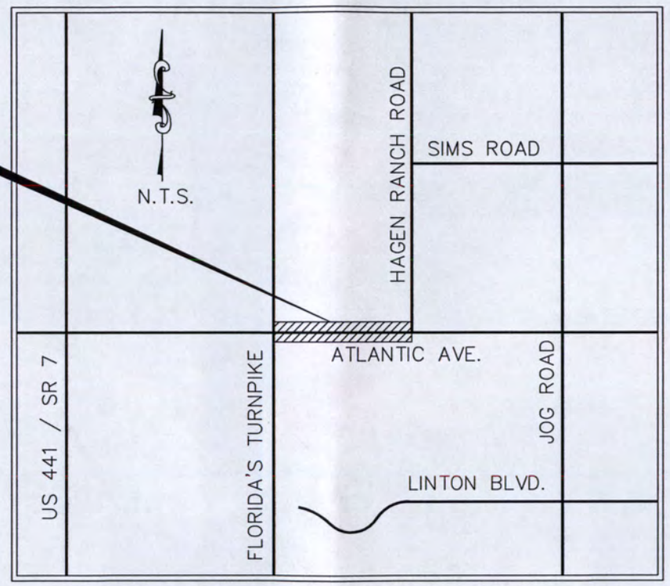
Exhibit : 1

EXHIBIT 2 APPLICATION NO. 110726-13 Page 18 of 25

ATLANTIC COMMONS

ATLANTIC AVENUE IMPROVEMENTS
PAVING AND DRAINAGE PLAN





LOCATION MAP
NO SCALE
PROJECT LOCATED IN:
SECTION 17 & 16, TOWNSHIP 46 SOUTH, RANGE 42 EAST

SHEET INDEX

PD-1	PAVING AND DRAINAGE PLAN
PD-2 to PD-3	CROSS SECTIONS
PD-4	PAVEMENT MARKING AND SIGNING PLAN
PD-5 to PD-6	DETAILS AND SPECIFICATIONS

PERMIT TRACKING

PERMITTING AGENCY	PERMIT NAME	PERMIT NUMBER	EXPIRATION DATE
F.D.O.T.	DRIVEWAY CONNECTION		
LAKE WORTH DRAINAGE DISTRICT	PERMIT MODIFICATION OF 2005-5176D.3		
SOUTH FLORIDA WATER MANAGEMENT DISTRICT	APPLICATION 110726-13		

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983, FLORIDA STATE PLANES, EAST ZONE, U.S. FEET (NAD83)

ADDL/REVISED SUBMITTAL
AUG 05 2011

110726-13

PREPARED BY:

WGI Wantman Group, Inc.
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
Cert No. 6091 - LB No. 7055

PREPARED FOR:

GL HOMES
1600 SAWGRASS CORPORATE PARKWAY
SUITE 300
SUNRISE, FL 33323
PHONE: 954-753-1730
FAX: 954-575-5385

IT'S THE LAW ! CALL 48 HOURS BEFORE YOU DIG
1-800-432-4770
SUNSHINE STATE ONE CALL OF FLORIDA, INC.
UTILITIES NOTIFICATION CENTER

AUG 05 2011
ENGINEER OF RECORD
JAMES W. RICHIE, PE
PE# 64778

ATLANTIC COMMONS
ATLANTIC AVENUE IMPROVEMENTS
PAVING & DRAINAGE
WGI NO.: 10910987.00

PERMIT SUBMITTAL

EXHIBIT 2
APPLICATION NO. 110726-13
Page 19 of 25

ATLANTIC COMMONS
GL HOMES

SITE DRAINAGE (BY OTHERS)
APPROX. LOCATION OF FUTURE DRIVEWAY TURNOUT (BY OTHERS)
16 LF 36" RCP W/ BRICK AND MORTAR PLUG INVERT ELEV. 7.45 (SEE NOTE 1 ON THIS SHEET)
SIDE WALK (BY OTHERS)
CONST. KNOCK-OUT FOR 36" RCP (S)
APPROX. LOCATION OF FUTURE CURB RETURN (BY OTHERS)
88 LF 18" RCP
57 LF 18" RCP
EX. 42" WM PBCWUD 3054
SEE NOTE 2
TYPE F CURB (TYP)
TYPE D CURB
FLARED END (TYP)
SAW-CUT & MATCH EX. WALK & PVMT.
SAW-CUT & REMOVE EX. SHOULDER
REMOVE EX. SIGNS
EX. UTILITY POLE TO BE RELOCATED BY OTHERS
MATCHLINE – SEE BELOW

S-2
19.35
11.65 E
11.85 W
7.50 S
7.50 N

S-3
17.80
12.15

S-1
17.80
11.85

+97.76 97.82' L
+99.54 86.11' L
+33.99
+03.55 48.90' L
+29.17 60.66' L

NOTES:

1. THIS DRAINAGE PIPE WILL CONNECT TO THE PROPOSED ATLANTIC COMMONS ON-SITE SURFACE WATER MANAGEMENT SYSTEM (BY OTHERS).
2. HANDICAP RAMPS SHALL COMPLY WITH FDOT DESIGN STANDARD INDEX 304: WESTERN RAMP TYPE CR 23 AND EASTERN RAMP TYPE CR 21.

DRAINAGE STRUCTURES

NAME	TYPE	BOTTOM	TOP/FRAME & GRATE	FDOT INDEX
S-1, S-3	DBI	TYPE C	STEEL GRATE	201, 232
S-2	MH	TYPE J-8 ALT. A, 6' DIA.	TYPE 1	200, 201

TERRA NOVA
APPROX. LOCATION OF FUTURE TURN LANE EDGE OF PAVEMENT (BY OTHERS)
WALL (BY OTHERS)
RELOCATE SIGN (SEE MARKING AND SIGNING SHEET)
EX. UTILITY POLE SHALL REMAIN
EX. UTILITY POLE TO BE RELOCATED BY OTHERS
6' CONC. WALK
10' U.E.
221' TURN LANE
140.89' FDOT R/W
+50.16 60.45' L
+00.15 48.57' L
50' TAPER
+21.66 48.59' L
SAW-CUT & REMOVE EX. PVMT. STRIPE
SAW-CUT & REMOVE EX. SHOULDER MATCH EX. PVMT.
SAW-CUT & MATCH EX. WALK
6' EX. CONC. WALK
EX. 8' GRASS SWALE
12B.28' FDOT R/W
1077+00
1078+00
1079+00
1080+00
ATLANTIC AVENUE (SR 806)
FDOT R/W
CONST. BASELINE
RIGHT TURN LANE

North
0 10 20 40
SCALE IN FEET

LEFT TURN LANE

North
0 10 20 40
SCALE IN FEET

LEGEND

MILL AND RESURFACE	EXISTING GROUND ELEVATION +17.45
CONCRETE PAVEMENT	FLOW DIRECTION
ASPHALT PAVEMENT	CATCH BASIN
PAVEMENT REMOVAL	MANHOLE
STRUCTURE NUMBER I-35	TRAFFIC CONTROL SIGN
RIM/GRATE EL. 20.00	WATER MAIN & VALVE — W —
INVERT EL. AND DIRECTION 13.50 N, 13.00 S	RECLAIMED WATER MAIN & VALVE — RW —
DRAINAGE PIPE — D —	SEWER FORCE MAIN — FM —
EXISTING DRAINAGE PIPE — D —	EXISTING WATER MAIN — W —
FINISHED GROUND ELEVATION 20.70	EXISTING SEWER FORCE MAIN — FM —

ATLANTIC AVENUE (SR 806)
FDOT R/W
REMOVE EX. TREES WITHIN LIMITS OF TURN LANE CONSTRUCTION
REMOVE EX. TREE
SAW-CUT AND MATCH EX. F CURB
50' TAPER
280' TURN LANE
MATCHLINE – SEE ABOVE
128.28' FDOT R/W
1071+00
1072+00
1073+00
1074+00
1075+00
1076+00
+24.94 9.07' L
+59.94 2.95' R
+74.94 3.58' R
+05.06 20.04' L
+05.08 12.28' L
+35.32 0.27' L
CONST. BASELINE
RELOCATE EX. IRRIGATION
SAW-CUT & REMOVE EX. PVMT., STRIPE & CURB
MATCH EX. PVMT.
TYPE F CURB
RELOCATE EX. SIGN
MILL AND RESURFACE MEDIAN CROSSOVER
SAW-CUT & REMOVE EX. PVMT. & CURB
EX. INLET
LWDD L-34 CANAL
LWDD R/W
LEXINGTON CLUB

AUG 05 2011

WGI Wantman Group, Inc.
2035 Vista Parkway, Suite 100
West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
Cert No. 6091 - LB No. 7055

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

CAD D9877PD.DWG			
JOB NO. 109109987.00	DRAWN	JWR	
TOTAL SHEETS 7	DESIGNED	JWR	
DATE 8/4/2011	CHECKED	DKB	
SCALE AS NOTED	QC	DKB	

ENGINEER OF RECORD
JAMES W. RICHIE, PE
PE# 64778

PROJECT: ATLANTIC COMMONS
ATLANTIC AVENUE IMPROVEMENTS
TASK: PAVING AND DRAINAGE PLAN

SHEET: PD-1

MASTER SURFACE WATER MANAGEMENT CALCULATIONS

FOR

Atlantic Commons

PALM BEACH COUNTY, FLORIDA

SCHNARS ENGINEERING CORPORATION
951 BROKEN SOUND PARKWAY, SUITE 320
BOCA RATON, FLORIDA 33487

SCHNARS PROJECT NO. 04122

November 2005
Revised April 2006

APR 28 2006

Gary R. Dunmyer, P.E.
FL Reg No. 54790
(For the Firm)

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Stage/Storage/Discharge Summary

Southeast Basin

3 Yr.-1 Day Storm:	17.87 NGVD	2.60 cfs Disch.
5 Yr.-1 Day Storm:	18.47 NGVD	3.20 cfs Disch.
25 Yr.-3 Day Storm:	20.06 NGVD	4.40 cfs Disch.

Peak Allowable Discharge = 4.63 cfs

Southwest Basin

3 Yr.-1 Day Storm:	17.81 NGVD	1.80 cfs Disch.
5 Yr.-1 Day Storm:	18.47 NGVD	2.20 cfs Disch.
25 Yr.-3 Day Storm:	20.12 NGVD	3.00 cfs Disch.

Peak Allowable Discharge = 3.03 cfs

North Basin

3 Yr.-1 Day Storm:	18.26 NGVD	3.70 cfs Disch.
5 Yr.-1 Day Storm:	18.95 NGVD	4.40 cfs Disch.
25 Yr.-3 Day Storm:	20.30 NGVD	5.50 cfs Disch.

Peak Allowable Discharge = 5.59 cfs

Grading Assumptions

	Finished Floor	Min Road Crown	Lake Elev.	Top of Bank
Southeast Basin	21.20	19.40	16.00	18.00
Southwest Basin	21.20	19.40	16.00	18.00
North Basin	21.30	19.40	16.00	18.50

Atlantic Commons (Southeast Basin)

Palm Beach County, Florida
Project No. 04122
SFWMD SURFACE WATER MANAGEMENT CALCULATIONS

1) SITE DATA:

	ACREAGE	
Bldg./Rec:	5.92	Ac.**
R/W:	7.76	Ac.
Lake:	5.39	Ac.**
Lake Bank:	3.01	Ac.
Lots/Rec.:	12.27	Ac.
Atlantic Ave (off-site)	5.75	Ac.
Buffers:	2.38	Ac.
TOTAL AREA:	**42.48**	**Ac.***

2) STAGE ELEVATIONS:

Percent:	From:	To:
13.9%	21.20	up
18.3%	19.20	20.45
12.7%	16.00	up
7.1%	16.00	20.00
28.9%	19.30	21.70
13.5%	21.10	23.13
5.6%	19.50	25.50
100%		

* 2.08 Ac of LWDD easement and 0.46 Ac of R/W has been removed from the on-site total of 39.29 Ac .
** lake area reduced by 0.2 Ac and building area increased by 0.2 Ac than as shown on plan as safety factc

Total Impervious:	23.91	Average Existing Grade:	20.00
	56.29%	Average Proposed Grade:	20.5
		Lake, Water Table:	16.00
Total Pervious:	18.57		
	43.71%		

2) FLOOD AND RAINFALL CRITERIA:

24 Hour Rainfall:

3 Year	6.50	in.		
5 Year	8.00	in.	Min. Road Crown (NGVD):	19.20
25 Year	10.30	in.		
100 Year	13.24	in.	Min. Floor Elev. (NGVD):	21.20

Maximum Available Soil Storage, SFWMD: 6.75 in.

3) COMPUTE STAGE STORAGE:

Stage:	R/W:	Lots/Rec.:	Atlantic Ave (off-site)	Lake:	Buffers:	0	Lake Bank:	Total:
16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16.50	0.00	0.00	0.00	2.70	0.00	0.00	0.09	2.79
17.00	0.00	0.00	0.00	5.39	0.00	0.00	0.38	5.77
17.50	0.00	0.00	0.00	8.09	0.00	0.00	0.85	8.94
18.00	0.00	0.00	0.00	10.78	0.00	0.00	1.51	12.29
18.50	0.00	0.00	0.00	13.48	0.00	0.00	2.35	15.83
19.00	0.00	0.00	0.00	16.17	0.00	0.00	3.39	19.56
19.50	0.28	0.10	0.00	18.87	0.00	0.00	4.61	23.86
20.00	1.99	1.25	0.00	21.56	0.05	0.00	6.02	30.87
20.50	5.24	3.68	0.00	24.26	0.20	0.00	7.53	40.91
21.00	9.12	7.39	0.00	26.95	0.45	0.00	9.03	52.94
21.50	13.00	12.37	0.23	29.65	0.79	0.00	10.54	66.58
22.00	16.88	18.41	1.15	32.34	1.24	0.00	12.04	82.06
22.50	20.76	24.54	2.78	35.04	1.79	0.00	13.55	98.46

Atlantic Commons (Southeast Basin)

Palm Beach County, Florida

Project No. 04122

SFWMD SURFACE WATER MANAGEMENT CALCULATIONS

4) WATER QUALITY:

Greater of the following (5A. & 5B.)
Store the first inch for the entire site or the amount of 2.5 times the percentage of imperviousness.

A. First Inch:

V = 1 in. x Total Area x 1 ft./12 in.

Total (Ac.):	V = (ac-ft)
42.48	3.54

B. 2.5 Times Percent Impervious:

1. Site Area = Total Area - (Lake Area + Bldg. Area)

Total (Ac.):	Lake:	Bldg.:	Site (Ac.):
42.48	5.39	5.92	31.17

2. Impervious Area = Site Area - Pervious Area

Site (Ac.):	Pervious:	Imperv.:
31.17	18.57	12.60

3. 2.5 in. x Imperv./Site x Total Area x 1 ft./12 in.

Imperv.:	V=(ac-ft)
12.6	3.58

C. Total Required Detention:

1. The total required detention for water quality is either the first inch or 2.5 times the percent impervious, whichever is greater. The total required detention is:

Water Quality (ac-ft):
3.58

2. Allowable discharge thru bleed down device is 1/2" per day of the required detention volume:

Req'd ac-ft.	ac-ft / day	Allow.CFS
3.58	1.79	0.90

3. Allowable C-15 Basin discharge: 70.0 csm for the 25 year storm

Total (Ac.):	Allow CFS
42.48	4.65

5) RUNOFF (ZERO DISCHARGE)

A. Soil Storage

1. Soil Storage (S) = Available Soil Storage x Pervious Area/Total Area
(See C-35, SFWMD Vol.IV)

Av. Soil St.	Pervious:	Total (Ac.):	S = (in.):
6.75	18.57	42.48	2.95

Atlantic Commons (Southeast Basin)

Palm Beach County, Florida

Project No. 04122

SFWMD SURFACE WATER MANAGEMENT CALCULATIONS

B. 100 Yr.-3 Day Storm Event

Finished Floor Elevation: 21.20 NGVD

1. Rainfall - 3 Day Duration (P):
   P72 = P24 x 1.359

P24 = 13.24 in.
P72 = 17.99 in.

2. Runoff, Q (in.)
   Q = {(P - 0.2 x S)^2}/(P + 0.8 x S)

P72 (in.):	S = (in.):	Q (in.):
17.99	2.95	14.88

3. Total Runoff Volume, V (ac-ft.)
   V = Q x Total Area x 1 ft. /12 in.

Q (in.):	Total (Ac.):	V=(ac-ft):
14.88	42.48	52.68

4. From the Stage - Storage Curve, the zero discharge elevation is:

Interpolate Stage between...	20.50	21.00
Interpolate Runoff between...	40.91	52.94

Stage: 20.99

The stage is at or below the Minimum Finished Floor Elevation.

C. 25 Yr.-3 Day Storm Event

1. Rainfall - 3 Day Duration (P):
   P72 = P24 x 1.359

P24 = 10.30 in.
P72 = 14.00 in.

2. Runoff, Q (in.)
   Q = {(P - 0.2 x S)^2}/(P + 0.8 x S)

P72 (in.):	S = (in.):	Q (in.):
14.00	2.95	10.99

3. Total Runoff Volume, V (ac-ft.)
   V = Q x Total Area x 1 ft. /12 in.

Q (in.):	Total (Ac.):	V = (ac-ft):
10.99	42.48	38.90

4. From the Stage - Storage Curve, the zero discharge elevation is:

Interpolate Stage between...	20.00	20.50
Interpolate Runoff between...	30.87	40.91

Stage: 20.40

Atlantic Commons (Southeast Basin)

Palm Beach County, Florida

Project No. 04122

SFWMD SURFACE WATER MANAGEMENT CALCULATIONS

D. 5 Yr.-1 Day Storm Event (Local Road Criteria)

Min. Road Elevation 19.20 NGVD

1. Rainfall - 1 Day Duration (P):

P24 = 8.00 in.

2. Runoff, Q (in.)

Q = {(P - 0.2 x S)^2}/(P + 0.8 x S)

P24 (in.):	S = (in.):	Q (in.):
8.00	2.95	5.30

3. Total Runoff Volume, V (ac-ft.)

V = Q x Total Area x 1 ft. /12 in.

Q (in.):	Total (Ac.):	V = (ac-ft):
5.30	42.48	18.76

4. From the Stage - Storage Curve, the zero discharge elevation is:

Interpolate Stage between...	18.50	19.00
Interpolate Runoff between...	15.83	19.56

Stage: 18.89

The stage is at or below the Minimum Road Crown Elevation.

E. 3 Yr.-1 Day Storm Event (Lake Bank Minimum Elevation)

1. Rainfall - 1 Day Duration (P):

P24 = 6.50 in.

2. Runoff, Q (in.)

Q = {(P - 0.2 x S)^2}/(P + 0.8 x S)

P24 (in.):	S = (in.):	Q (in.):
6.50	2.95	3.94

3. Total Runoff Volume, V (ac-ft.)

V = Q x Total Area x 1 ft. /12 in.

Q (in.):	Total (Ac.):	V = (ac-ft):
3.94	42.48	13.95

4. From the Stage - Storage Curve, the zero discharge elevation is:

Interpolate Stage between...	18.00	18.50
Interpolate Runoff between...	12.29	15.83

Stage: 18.23

Atlantic Commons (Southeast Basin)

Palm Beach County, Florida
Project No. 04122
SFWMD SURFACE WATER MANAGEMENT CALCULATIONS

6) SUMMARY

Required Storage: 42.48 ac-ft

Soil Storage: 2.95 in

ZERO DISCHARGE

3 Yr.-1 Day Storm:	13.95	ac-ft	18.23	NGVD Stage Elevation
5 Yr.-1 Day Storm:	18.76	ac-ft	18.89	NGVD Stage Elevation
25 Yr.-3 Day Storm:	38.90	ac-ft	20.40	NGVD Stage Elevation
100 Yr.-3 Day Storm:	52.68	ac-ft	20.99	NGVD Stage Elevation

FLOOD ROUTING

3 Yr.-1 Day Storm:	17.87	NGVD	2.60	cfs Disch.
5 Yr.-1 Day Storm:	18.47	NGVD	3.20	cfs Disch.
25 Yr.-3 Day Storm:	20.06	NGVD	4.40	cfs Disch.

DATE PRINTED:	PREPARED BY:	REVISED BY:	DATE:
28-Apr-06	grd		11/1/2005

7) Site Data Breakdown:

	Pervious	Impervious	Total
Bldg./Rec:	0.00 Ac.	5.92 Ac.	5.92 Ac.
R/W:	2.02 Ac.	5.74 Ac.	7.76 Ac.
Lake:	0.00 Ac.	5.39 Ac.	5.39 Ac.
Lake Bank:	3.01 Ac.	0.00 Ac.	3.01 Ac.
Lots/Rec.:	9.83 Ac.	2.44 Ac.	12.27 Ac.
Atlantic Ave (off-site)	1.33 Ac.	4.42 Ac.	5.75 Ac.
Buffers:	2.38 Ac.	0.00 Ac.	2.38 Ac.
Totals:	18.57 Ac.	23.91 Ac.	42.48 Ac.

Atlantic Commons (Southeast Basin)

Palm Beach County, Florida

Project No. 04122

SFWMD SURFACE WATER MANAGEMENT CALCULATIONS

8) Stage Storage Discharge Relationship:

Stage	Storage	Discharge
16.00	0.00	0.00
16.50	2.79	0.25
17.00	5.77	1.39
17.50	8.94	2.20
18.00	12.29	2.78
18.50	15.83	3.26
19.00	19.56	3.68
19.50	23.86	4.05
20.00	30.87	4.40
20.50	40.91	4.71

WEIR LENGTH	3 FT.
WEIR ELEVATION	20.5 FT. NGVD
WEIR COEFFICIENT	3.13
TYPE OF BLEEDER SLOT	TRIANGLAR ORIFICE
SLOT INVERT ELEV.	16 FT. NGVD
ORIFICE HEIGHT	1 FT.
ORIFICE BASE WIDTH	1 FT.

	WEIR FLOW IN CFS		
STAGE	WEIR	BLEEDER	TOTAL
16.00	0.00	0.00	0.00
16.50	0.00	0.25	0.25
17.00	0.00	1.39	1.39
17.50	0.00	2.20	2.20
18.00	0.00	2.78	2.78
18.50	0.00	3.26	3.26
19.00	0.00	3.68	3.68
19.50	0.00	4.05	4.05
20.00	0.00	4.40	4.40
20.50	0.00	4.71	4.71

S C S P R O G R A M

PROJECT NAME . . . . : SE Basin
REVIEWER . . . . . :
PROJECT AREA . . . . : 42.48 ACRES
GROUND STORAGE . . . : 2.95 INCHES
TERMINATION DISCHARGE : 1.00 CFS
DISTRIBUTION TYPE . . : SFWMD
RETURN FREQUENCY . . : 25.00 YEARS
RAINFALL DURATION . . : 3-DAY
24-HOUR RAINFALL . . : 10.30 INCHES
REPORTING SEQUENCE . : STANDARDIZED

STAGE (FT)	STORAGE (AF)	DISCHARGE (CFS)
16.00	.00	.00
16.50	2.79	.25
17.00	5.77	1.39
17.50	8.94	2.20
18.00	12.29	2.78
18.50	15.83	3.26
19.00	19.56	3.68
19.50	23.86	4.05
20.00	30.87	4.40
20.50	40.91	4.71

- - - - - - R E S E R V O I R - - - - -

TIME (HR)	RAIN FALL (IN)	ACCUM. RUNOFF (IN)	BASIN DISCHGE (CFS)	ACCUM. INFLOW (AF)	VOLUME (AF)	ACCUM. OUTFLOW (AF)	INSTANT DISCHGE (CFS)	AVERAGE DISCHGE (CFS)	STAGE (FT)
.00	.00	.00	.0	.0	.0	.0	.0	.0	16.00
4.00	.25	.00	.0	.0	.0	.0	.0	.0	16.00
8.00	.50	.00	.0	.0	.0	.0	.0	.0	16.00
12.00	.75	.01	.3	.0	.0	.0	.0	.0	16.00
16.00	1.00	.05	.6	.2	.2	.0	.0	.0	16.03
20.00	1.25	.12	.9	.4	.4	.0	.0	.0	16.07
24.00	1.50	.22	1.1	.8	.7	.1	.1	.1	16.13
28.00	1.87	.39	2.0	1.4	1.3	.1	.1	.1	16.23
32.00	2.24	.59	2.3	2.1	2.0	.1	.2	.1	16.35
36.00	2.60	.82	2.5	2.9	2.7	.2	.2	.2	16.48
40.00	2.97	1.06	2.7	3.8	3.5	.3	.5	.4	16.61
44.00	3.33	1.32	2.9	4.7	4.2	.5	.8	.6	16.73
48.00	3.70	1.59	3.0	5.6	4.8	.8	1.0	.9	16.84
52.00	4.16	1.96	4.9	6.9	5.7	1.2	1.4	1.2	16.99
56.00	5.11	2.73	11.1	9.7	8.0	1.7	1.9	1.6	17.33
58.00	5.89	3.41	16.9	12.1	10.0	2.1	2.4	2.1	17.63
59.00	6.47	3.91	25.0	13.9	11.6	2.3	2.6	2.5	17.86
59.50	6.98	4.37	39.6	15.5	13.1	2.4	2.8	2.7	18.06

				- - - - - - R E S E R V O I R - - - - -					
TIME (HR)	RAIN FALL (IN)	ACCUM. RUNOFF (IN)	BASIN DISCHGE (CFS)	ACCUM. INFLOW (AF)	VOLUME (AF)	ACCUM. OUTFLOW (AF)	INSTANT DISCHGE (CFS)	AVERAGE DISCHGE (CFS)	STAGE (FT)
59.75	8.53	5.79	242.1	20.5	18.0	2.5	3.2	3.0	18.46
60.00	10.45	7.59	309.4	26.9	24.4	2.5	3.8	3.5	19.19
60.50	11.21	8.31	61.3	29.4	26.7	2.7	4.2	4.0	19.66
61.00	11.60	8.68	32.0	30.7	27.9	2.8	4.2	4.2	19.76
62.00	12.12	9.18	19.4	32.5	29.3	3.2	4.3	4.3	19.87
64.00	12.76	9.80	12.7	34.7	30.7	4.0	4.4	4.4	19.98
68.00	13.50	10.51	7.7	37.2	31.8	5.4	4.4	4.4	20.04
72.00	14.00	10.99	5.1	38.9	32.0	6.9	4.4	4.4	20.06
80.00	14.00	10.99	.0	38.9	29.1	9.8	4.3	4.4	19.88
88.00	14.00	10.99	.0	38.9	26.3	12.6	4.2	4.2	19.68
96.00	14.00	10.99	.0	38.9	23.6	15.3	4.0	4.1	19.47
104.00	14.00	10.99	.0	38.9	21.0	17.9	3.8	3.9	19.17
112.00	14.00	10.99	.0	38.9	18.6	20.3	3.6	3.7	18.87
120.00	14.00	10.99	.0	38.9	16.3	22.6	3.3	3.4	18.57
128.00	14.00	10.99	.0	38.9	14.2	24.7	3.0	3.2	18.27
136.00	14.00	10.99	.0	38.9	12.3	26.6	2.8	2.9	18.00
144.00	14.00	10.99	.0	38.9	10.6	28.3	2.5	2.6	17.74
152.00	14.00	10.99	.0	38.9	9.0	29.9	2.2	2.3	17.51
160.00	14.00	10.99	.0	38.9	7.7	31.2	1.9	2.0	17.30
168.00	14.00	10.99	.0	38.9	6.5	32.4	1.6	1.7	17.12
176.00	14.00	10.99	.0	38.9	5.6	33.3	1.3	1.5	16.96
184.00	14.00	10.99	.0	38.9	4.8	34.1	1.0	1.2	16.84
184.75	14.00	10.99	.0	38.9	4.7	34.2	1.0	1.0	16.83

SUMMARY INFORMATION

MAXIMUM STAGE WAS 20.06 FEET AT 72.00 HOURS
MAXIMUM DISCHARGE WAS 4.4 CFS AT 72.00 HOURS

S C S P R O G R A M

PROJECT NAME . . . . . : SE Basin
REVIEWER . . . . . :
PROJECT AREA . . . . . : 42.48 ACRES
GROUND STORAGE . . . . : 2.95 INCHES
TERMINATION DISCHARGE : 1.00 CFS
DISTRIBUTION TYPE . . : SFWMD
RETURN FREQUENCY . . : 5.00 YEARS
RAINFALL DURATION . . : 1-DAY
24-HOUR RAINFALL . . : 8.00 INCHES
REPORTING SEQUENCE . : STANDARDIZED

STAGE (FT)	STORAGE (AF)	DISCHARGE (CFS)
16.00	.00	.00
16.50	2.79	.25
17.00	5.77	1.39
17.50	8.94	2.20
18.00	12.29	2.78
18.50	15.83	3.26
19.00	19.56	3.68
19.50	23.86	4.05
20.00	30.87	4.40
20.50	40.91	4.71

- - - - - - R E S E R V O I R - - - - - -

TIME (HR)	RAIN FALL (IN)	ACCUM. RUNOFF (IN)	BASIN DISCHGE (CFS)	ACCUM. INFLOW (AF)	VOLUME (AF)	ACCUM. OUTFLOW (AF)	INSTANT DISCHGE (CFS)	AVERAGE DISCHGE (CFS)	STAGE (FT)
.00	.00	.00	.0	.0	.0	.0	.0	.0	16.00
4.00	.36	.00	.0	.0	.0	.0	.0	.0	16.00
8.00	1.10	.07	2.7	.3	.3	.0	.0	.0	16.04
10.00	1.70	.31	7.0	1.1	1.1	.0	.1	.0	16.18
11.00	2.15	.54	12.3	1.9	1.9	.0	.2	.1	16.32
11.50	2.55	.78	21.4	2.8	2.7	.1	.2	.2	16.45
11.75	3.75	1.64	146.0	5.8	5.8	.0	.8	.5	16.74
12.00	5.25	2.85	208.3	10.1	10.0	.1	1.9	1.4	17.33
12.50	5.83	3.35	43.3	11.9	11.7	.2	2.6	2.4	17.85
13.00	6.14	3.62	22.8	12.8	12.5	.3	2.8	2.7	18.00
14.00	6.54	3.98	14.0	14.1	13.6	.5	2.9	2.9	18.16
16.00	7.04	4.43	9.3	15.7	14.7	1.0	3.1	3.0	18.32
20.00	7.62	4.95	5.6	17.5	15.5	2.0	3.2	3.1	18.44
24.00	8.00	5.30	3.8	18.8	15.6	3.2	3.2	3.2	18.47
30.00	8.00	5.30	.0	18.8	14.1	4.7	3.0	3.1	18.26
36.00	8.00	5.30	.0	18.8	12.6	6.2	2.8	2.9	18.05
42.00	8.00	5.30	.0	18.8	11.3	7.5	2.6	2.7	17.85
48.00	8.00	5.30	.0	18.8	10.1	8.7	2.4	2.5	17.67

- - - - - - R E S E R V O I R - - - - -

TIME (HR)	RAIN FALL (IN)	ACCUM. RUNOFF (IN)	BASIN DISCHGE (CFS)	ACCUM. INFLOW (AF)	VOLUME (AF)	ACCUM. OUTFLOW (AF)	INSTANT DISCHGE (CFS)	AVERAGE DISCHGE (CFS)	STAGE (FT)
54.00	8.00	5.30	.0	18.8	8.9	9.9	2.2	2.3	17.50
60.00	8.00	5.30	.0	18.8	7.9	10.9	1.9	2.1	17.34
66.00	8.00	5.30	.0	18.8	7.0	11.8	1.7	1.8	17.19
72.00	8.00	5.30	.0	18.8	6.2	12.6	1.5	1.6	17.07
78.00	8.00	5.30	.0	18.8	5.5	13.3	1.3	1.4	16.96
84.00	8.00	5.30	.0	18.8	4.9	13.9	1.1	1.2	16.86
86.25	8.00	5.30	.0	18.8	4.7	14.1	1.0	1.0	16.83

SUMMARY INFORMATION

MAXIMUM STAGE WAS 18.47 FEET AT 24.00 HOURS
MAXIMUM DISCHARGE WAS 3.2 CFS AT 24.00 HOURS

S C S P R O G R A M

PROJECT NAME . . . . : SE Basin
REVIEWER . . . . . :
PROJECT AREA . . . . : 42.48 ACRES
GROUND STORAGE . . . : 2.95 INCHES
TERMINATION DISCHARGE : 1.00 CFS
DISTRIBUTION TYPE . . : SFWMD
RETURN FREQUENCY . . : 3.00 YEARS
RAINFALL DURATION . . : 1-DAY
24-HOUR RAINFALL . . : 6.50 INCHES
REPORTING SEQUENCE . : STANDARDIZED

STAGE (FT)	STORAGE (AF)	DISCHARGE (CFS)
16.00	.00	.00
16.50	2.79	.25
17.00	5.77	1.39
17.50	8.94	2.20
18.00	12.29	2.78
18.50	15.83	3.26
19.00	19.56	3.68
19.50	23.86	4.05
20.00	30.87	4.40
20.50	40.91	4.71

- - - - - - R E S E R V O I R - - - - -

TIME (HR)	RAIN FALL (IN)	ACCUM. RUNOFF (IN)	BASIN DISCHGE (CFS)	ACCUM. INFLOW (AF)	VOLUME (AF)	ACCUM. OUTFLOW (AF)	INSTANT DISCHGE (CFS)	AVERAGE DISCHGE (CFS)	STAGE (FT)
.00	.00	.00	.0	.0	.0	.0	.0	.0	16.00
4.00	.29	.00	.0	.0	.0	.0	.0	.0	16.00
8.00	.89	.03	1.4	.1	.1	.0	.0	.0	16.02
10.00	1.38	.17	4.5	.6	.6	.0	.0	.0	16.10
11.00	1.75	.33	8.4	1.2	1.1	.1	.1	.1	16.19
11.50	2.07	.50	15.0	1.8	1.7	.1	.1	.1	16.28
11.75	3.05	1.12	106.4	4.0	3.9	.1	.3	.2	16.51
12.00	4.26	2.04	157.7	7.2	7.2	.0	1.3	.8	16.96
12.50	4.74	2.42	33.4	8.6	8.5	.1	2.0	1.7	17.37
13.00	4.99	2.63	17.7	9.3	9.1	.2	2.2	2.1	17.50
14.00	5.32	2.91	10.9	10.3	9.9	.4	2.4	2.3	17.63
16.00	5.72	3.26	7.2	11.5	10.7	.8	2.5	2.4	17.76
20.00	6.19	3.67	4.4	13.0	11.3	1.7	2.6	2.6	17.85
24.00	6.50	3.94	3.0	14.0	11.5	2.5	2.6	2.6	17.87
30.00	6.50	3.94	.0	14.0	10.2	3.8	2.4	2.5	17.69
36.00	6.50	3.94	.0	14.0	9.1	4.9	2.2	2.3	17.52
42.00	6.50	3.94	.0	14.0	8.0	6.0	2.0	2.1	17.35
48.00	6.50	3.94	.0	14.0	7.1	6.9	1.7	1.8	17.21

				- - - - - - R E S E R V O I R - - - - - -					
TIME (HR)	RAIN FALL (IN)	ACCUM. RUNOFF (IN)	BASIN DISCHGE (CFS)	ACCUM. INFLOW (AF)	VOLUME (AF)	ACCUM. OUTFLOW (AF)	INSTANT DISCHGE (CFS)	AVERAGE DISCHGE (CFS)	STAGE (FT)
54.00	6.50	3.94	.0	14.0	6.3	7.7	1.5	1.6	17.08
60.00	6.50	3.94	.0	14.0	5.6	8.4	1.3	1.4	16.97
66.00	6.50	3.94	.0	14.0	5.0	9.0	1.1	1.2	16.87
69.00	6.50	3.94	.0	14.0	4.7	9.3	1.0	1.0	16.83

SUMMARY INFORMATION

MAXIMUM STAGE WAS 17.87 FEET AT 24.00 HOURS
MAXIMUM DISCHARGE WAS 2.6 CFS AT 24.00 HOURS

Atlantic Commons
Site Breakdown
04122
Southeast Basin

Lakes: 5.59 Ac. *Use 5.39 Ac for the Surface Water Management Calculations*

Lake Banks: 3.01 Ac.

Road R/W: 7.76 Ac.

Paving, Curbs and Sidewalks (including driveways) – 5.74 Ac. (74%)
(2-10' lanes, 2-2' curbs, & sidewalk)
Green Area – 2.02 Ac. (26%)

Townhouse Lot Area: 17.99 Ac.

Building areas: 5.72 Ac. *Use 5.92 Ac for the Surface Water Management Calculations*

18 – 6 unit Buildings = 4.18 Ac.
10 – 4 unit Buildings = 1.54 Ac.

Impervious Areas: 2.44 Ac.

148 Total Units @ 601 sf Driveway = 2.04 Ac.
Impervious Open Space = 0.40 Ac.

Pervious Areas: 9.83 Ac.

148 Lots @ 1,380+/-sf = 4.69 Ac.
Misc open space = 5.14 Ac.

Buffers: 2.38 Ac.

Total Site Area *: 36.73 Ac.

* - Total excludes 2.08 Ac. of LWDD Canal R/W and 0.46 Ac. of R/W dedicated to PBC.

OFFSITE (W Atlantic R/W): 5.75 Ac. (1,188' frontage + 800' (per PBC))

1.33 Ac. Pervious
4.42 Ac. Impervious

Total Site Area: 5.75 Ac. + 36.73 Ac. = 42.48 Ac.

Atlantic Commons (SE Basin)

Palm Beach County, Florida
Project No. 04122
CONCEPTUAL SFWMD SURFACE WATER MANAGEMENT CALCULATIONS

WATER QUALITY DISCHARGE

The proposed weir will be a fixed aluminum weir plate with a top weir elevation of 20.06' NGVD and an inverted triangular bleeder with an invert elevation of 16.00' NGVD, top elevation of 17.00' NGVD, a top width of 1.00 feet and a height of 1.00 feet (approx 53.13° V-notch). The width of the weir at elevation 20.06' NGVD will be 3.17 feet. This weir will restrict the allowable water quality discharge of less than ½ inch on the detained volume per day.

District Formula for V-notch angel bleeder, θ:

V_{det} = Allowable Volume to be discharged per day:

V_{det} = ½ in x (42.33 acres – 5.39 acres of lake) x 1 ft/12 in = 1.54 ac-ft
V_{det} = 1.54 ac-ft x 1.5 = 2.31 ac-ft

$\theta = 2(\tan^{-1}((0.492V_{det}/H^{2.5}))$

Stage-storage information for the Water Quality Calculation

Stage (el. NGVD)	16.00	16.50
Storage (ac-ft)	0.00	2.79

At stage 16.41' NGVD the Storage is 2.31 ac-ft

H (@ 2.31 ac-ft) = 16.41 – 16.00 (notch of bleeder) = 0.41 ft

$\theta = 2(\tan^{-1}((0.492(2.31)/(0.41)^{2.5}))$

$= 2(\tan^{-1}((1.14)/(0.11))$

$= 2(\tan^{-1}(10.33)$

$= 2 \times 84.47°$

$= 168.94°$

Since allowable v-notch angle is greater than the provided ($\theta_{Inv\ tri\ bleeder}$ = 53.13°). The water quality volume discharge is restricted to less than the allowable.

Lexington Club – Permit No. 50-01538-S

SURFACE WATER MANAGEMENT EVALUATION

APPLICATION NUMBER 09236-3 DATE: November 19, 1986

PROJECT NAME: Lexington Club

LOCATION: Palm Beach COUNTY

SECTIONS 21, TOWNSHIP 46 SOUTH, RANGE 42 EAST

PROJECT AREA 101.8 ACRES DRAINAGE AREA 111.2 * ACRES

* Includes 9.4 acres of offsite runoff from Delray West Road.

FACILITIES:

1. EXISTING: The site is presently agricultural fields which have been permitted under Permit No. 50-00393-S/W, for 120.0 acres. The site is also bounded on the north by Lake Worth Drainage District (LWDD) L-34 Canal, and on the west by LWDD E-2 Canal.

2. PROPOSED: A system of swales, catch basins, and culverts will direct runoff from the multi-family residential site to 2 interconnected, on-site lakes. Discharge will be via 1-3.5' wide weir with a crest at elevation 21.5' NGVD, 1-2.0' wide by 0.58' high rectangular orifice with an invert at elevation 18.5' NGVD, and 75 LF of 21" diameter CMP culvert. Discharge will be to the C-15 Canal via LWDD L-34 Canal.

DRAINAGE BASIN C-15 Canal RECEIVING BODY C-15 Canal via LWDD L-34

RUN OFF FORMULA 7Q CSM ALLOWABLE DISCHARGE 12 CFS

REQUIRED DETENTION 14.3 AC-FT
DETENTION METHOD Lakes
DETENTION PROVIDED 103.6 AC-FT

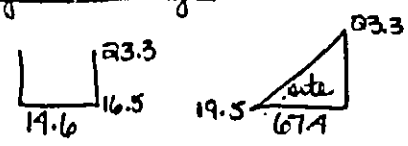
FLOOD PROTECTION	
LOCAL ROAD CRITERIA	3 YEAR, 24 HOUR STORM
FLOOD CONTOUR	18.2 FEET NGVD
MINIMUM ROAD GRADE	20.5 FEET NGVD
PARKING LOT CRITERIA	N/A YEAR, N/A HOUR STORM
FLOOD CONTOUR	N/A FEET NGVD
MINIMUM PARKING LOT GRADE	N/A FEET NGVD
BASIN DESIGN FREQUENCY	25 YEAR, 72 HOUR STORM
FLOOD CONTOUR	21.5 FEET NGVD
DESIGN DISCHARGE	12 CFS
100 YEAR FLOOD	
FLOOD CONTOUR	22.2 FEET NGVD
MINIMUM FLOOR ELEVATION	22.8 FEET NGVD
FIA FLOOD ELEVATION	N/A FEET NGVD

Lexington Club

total area = 101.8 ac (111.2 ac w/ offsite)
lake area = 11.76 ac - 2.86 ac = 14.6 ac
impervious = 42.05 (excludes lake, includes 95% offsite road)
pervious = 51.55 ac

$\frac{8.18}{12}(51.55) = 37.18$ ac-ft
$S = \frac{37.18}{101.8} \times \frac{12}{1} = 1.38$ use 4.09 (regs)

stage-storage



101.8 - 14.6 - 19.8 = 67.4

allowable discharge = 70 csm
12 cfs (using offsite acreage also)

water quality
$V = \frac{1}{2}(111.2) = 9.27$ ac-ft

$2.5'' \left(\frac{111.2 - 14.6 - 19.8 - 22.25}{111.2 - 14.6 - 19.8}\right) = 1.77'' \times (111.2 - 14.6) \times \frac{1}{12} = 14.29$ ac-ft

det. provided 103.56 ac-ft well over O.K.

discharge
1 - 3.5' wide weir w/ crest @ 21.10'
1 - 2.21' wide by 0.52' high rect. orifice w/ invert @ 16.5'
and 85 LF of 21" dia CMP (1.75' dia)

floors
100 yr - 3 day $18.5 \times 1.359 = 25.14$

$Q = \frac{(25.14 - .2(1.09))^2}{25.14 + .8(1.09)} = 20.82'' \times \frac{1}{2} \times 101.8 = 176.63$ ac-ft
wet floors @ 22.6'

Villaggio Isles Pond – Permit No. 50-07775-P

CAULFIELD & WHEELER, INC.
Consulting Engineers Planners Surveyors
7900 Glades Road, Suite 100
Boca Raton, Florida 33434 (561) 392-1991

160218-18

January 14, 2013 (Rev. 12-30-15)

VILLAGGIO ISLES
(f/k/a TERRANOVA)
ATLANTIC AVE. & HAGEN RANCH ROAD
PALM BEACH COUNTY, FLORIDA

STORMWATER MANAGEMENT CALCULATIONS

I. Given:

A. Acreage	Residential	Commercial	Recreation	Atlantic Ave. Frontage + 800'	Total
1. Total	87.99 Ac.	17.41 Ac.	4.35 Ac.	7.13 Ac.	116.88 Ac.
2. Impervious					
a) Buildings (roofs)	22.75 Ac.	3.19 Ac.	0.51 Ac.	0.00 Ac.	26.45 Ac.
b) Roads & Parking	18.38 Ac.	9.08 Ac.	2.39 Ac.	6.22 Ac.	36.07 Ac.
3. Lakes	10.55 Ac.	0.00 Ac.	0.00 Ac.	0.00 Ac.	10.55 Ac.
4. Pervious	36.31 Ac.	5.14 Ac.	1.45 Ac.	0.91 Ac.	43.81 Ac.

B. Proposed Minimum Elevations

1. Roads centerlines = 18.05' NAVD
2. Floors = 20.15' NAVD
3. Water Control Elev. = 14.50' NAVD

C. Design storm allowable discharge is 12.78 cfs based on 70 csm for the SFWMD C-15 Basin.

D. Water Level Elevations

1. Wet season water table = 14.5' NAVD
2. Receiving body water level has been determined not to affect discharge rates.

(Note: Proposed minimum road grade (18.05' NAVD) is more than the 2 ft. minimum distance above the wet season water table, or control elevation, of 14.50' NAVD).

JOHN F. WHEELER LICENSE No 25478 STATE OF FLORIDA PROFESSIONAL ENGINEER
FEB 17 2016

RECEIVED
FEB 18 2016
WATER RESOURCE REGULATION

Turnberry Lakes – Permit No. 50-01706-S

Form #8113
Rev 10/89

South Florida Water Management District

CERTIFICATION FOR STORMWATER DISCHARGE

SURFACE WATER MANAGEMENT PERMIT NO. 50-02529-S

(NON-ASSIGNABLE)

DATE ISSUED: December 20, 1990

AUTHORIZING: CONSTRUCTION AND OPERATION OF A WATER MANAGEMENT SYSTEM SERVING 12.94 ACRES OF RESIDENTIAL LANDS DISCHARGING INTO C-15 CANAL VIA LWDD'S E-2 CANAL.

LOCATED IN: PALM BEACH COUNTY, SECTION 20 TWP. 46S RGE. 42E

ISSUED TO: Lennar Homes, Inc.
(Turnberry Lakes)
700 NW 107th Avenue
Miami, FL 33172

This Permit is issued pursuant to Application for Permit No 900906-12 dated Aug. 22, 19 90. Permittee agrees to hold and save the South Florida Water Management District and its successors harmless from any and all damages, claims or liabilities which may arise by reason of the construction, operation, maintenance or use of any work or structure involved in the Permit. Said Application, including all plans and specifications attached thereto, as addressed by the Staff Report, is by reference made a part hereof.

This Permit may be revoked or modified at anytime pursuant to the appropriate provisions of Chapter 373, Florida Statutes.

This Permit does not convey to Permittee any property rights or privileges other than those specified herein, nor relieve the Permittee from complying with any law, regulation or requirement affecting the rights of other bodies or agencies. All structures and works installed by Permittee hereunder shall remain the property of the Permittee.

Within thirty (30) days after the completion of the construction of any work or structure relative to this Permit, the Permittee shall file with the District a written statement of completi ie appropriate form provided by the Board

SPECIAL CONDITIONS ARE AS FOLLOWS:

SEE SHEETS 2 & 3 OF 4 - 13 SPECIAL CONDITIONS.
SEE SHEET 4 OF 4 - 12 LIMITING CONDITIONS.

FILED WITH THE CLERK OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT

ON Original signed by:
BY Vern Kaiser
DEPUTY CLERK

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD

ORIGINAL SIGNED BY
By TONY BURNS
Assistant Secretary

SFWMD ONLY

N A I M

DRAINAGE BASIN(S) TABLE

	BASIN NO. ONE PROJECT (ACRES)	BASIN NO. ONE OFF-SITE (ACRES)	BASIN NO. _____ PROJECT (ACRES)	BASIN NO. _____ OFF-SITE (ACRES)	TOTAL DRAINAGE AREA (ACRES)
IMPERVIOUS					
BUILDINGS	8.1				8.1
OTHERS	8.3	1.8			10.1
WATER MANAGEMENT					
WET	6.3				6.3
DRY	1.2				1.2
PERVIOUS	15.6				16.62
TOTAL	39.52	1.8			41.32
NUMBER OF DWELLING UNITS (ALLOWED/ PROPOSED)	210/200		1		210/200
SQUARE FOOTAGE OF:					
COMMERCIAL					
INDUSTRIAL					

PHASE(S) TABLE

	CONSTRUCTION AND OPERATION — ALL PAST PHASES PROJECT (ACRES)	ALL PAST PHASES OFF-SITE (ACRES)	THIS PHASE PROJECT (ACRES)	THIS PHASE OFF-SITE (ACRES)	TOTAL PROJECT AREA (ACRES)
IMPERVIOUS					
BUILDINGS	NONE		1.7		8.1
OTHERS			1.6	1.8	10.1
WATER MANAGEMENT					
WET			2.9		6.3
DRY			0.6		1.2
PERVIOUS			5.7		15.6
TOTAL			12.2	1.8	41.32
NUMBER OF DWELLING UNITS (ALLOWED/ PROPOSED)	1		136		210/200
SQUARE FOOTAGE OF:					
COMMERCIAL					
INDUSTRIAL					

Upjohn – Permit No. 50-03863-P

APPLICATION NUMBER: 000412-13

ENDANGERED, THREATENED & SPECIES OF SPECIAL CONCERN SUMMARY:

The Lake Worth Drainage District (LWDD) L-35 Canal has the potential presence of the West Indian manatee. Special measures have been included in the construction plans to ensure the safety of this endangered species (Exhibit 3). This permit does not relieve the applicant from complying with all applicable rules and any other agencies' requirements if in the future, endangered/threatened species or species of special concern are discovered on the site.

ENVIRONMENTAL SUMMARY:

The proposed project site consists of a 82.02 acre parcel (Basin 1) within the previously permitted Upjohn PUD project (SFWMD Permit No. 50-03863-P) and is located on the east side of Michelangelo Boulevard just south of West Atlantic Avenue in Delray Beach, Palm Beach County. The applicant proposes modification of the lake configuration and acreages within Basin 1, and authorization to continue lake construction and earthwork for the modified plan.

There are no wetlands at the project site and there are no wetland protection or mitigation requirements in the permit for this parcel.

The proposed activities have been evaluated for potential secondary and cumulative impacts and to determine if the project is contrary to the public interest. Based upon the proposed project design, the District has determined that the project will not cause adverse secondary or cumulative impacts to the water resources and is not contrary to the public interest.

APPLICABLE LAND USE:

The following Land Use Table is an acreage breakdown of the proposed project. The OTHER category is the 3.69-acres of Atlantic Avenue.

	TOTAL PROJECT	PREVIOUSLY PERMITTED	THIS PHASE	
TOTAL ACRES	82.02		82.02	acres
WTRM ACREAGE	12.25		12.25	acres
PAVEMENT	18.86		18.86	acres
BUILD COVERAGE	18.71		18.71	acres
PERVIOUS	28.51		28.51	acres
OTHER	3.69		3.69	acres

Exhibit 26

West Atlantic Avenue and Jog Road Intersection – Permit No. 50-02295-S

METRIC ENGINEERING, INC.
ENGINEERS, PLANNERS, SURVEYORS

JOB W. ATL[illegible]E / JOG RD INTERSECTN
SHEET NO. 1 OF
CALCULATED BY DATE
CHECKED BY DATE

ORIGINAL SUBMITTAL
MAR 0 8 1994
WPB

WATER QUALITY CALCULATIONS

DRAINAGE SYSTEM #1

KING POINT DR STA 89+00 TO JOG RD STA 98+00

MAXIMIZE WATER QUALITY DETENTION IN DRY SWALE. MINIMUM WATER QUALITY VOLUME REQ'D IS 2.5" OVER ADD'L IMPERVIOUS AREA PROPOSED UNDER THIS PROJECT.

ADDITIONAL IMPERVIOUS AREA = 0.38 AC

MIN WATER QUALITY REQ'D = 2.5" × 0.38 AC = 0.95 AC·IN
= 0.08 AC·FT

TOTAL IMPERVIOUS AREA TRIBUTARY TO DRY SWALE = 0.80 AC

2.5" × 0.80 AC = 2.0 AC·IN
= 0.17 AC·FT

DRAINAGE SYSTEM #2

JOG RD STA 98+00 TO EL-CLAIR RANCH RD STA 113+53.40

WATER QUALITY FOR ENTIRE SYSTEM SHALL BE PROVIDED FOR IN DRY SWALE WHICH MEETS OR EXCEEDS SFWMD WATER QUALITY CRITERIA

TOTAL DRAINAGE AREA	=	5.61 AC
TOTAL IMPERVIOUS AREA PROPOSED	=	3.63 AC
TOTAL IMP AREA FUTURE FDOT PROJ	=	3.74 AC

(STATE PROJ NO. 93030-3510)

West Atlantic Avenue/Hagen Ranch Road – Permit No. 50-06865-S

PROJECT EVALUATION:

PROJECT SITE DESCRIPTION:

The project site is the intersection of Atlantic Avenue and Jog Road in Palm Beach County consisting of 0.52 acres of new impervious area. The area proposed for development is an existing intersection where the applicants are proposing three new turn lanes. There are no wetlands or other surface waters located within or affected by the proposed project.

PROPOSED PROJECT:

Proposed is the modification of Permit No. 50-06865-P for the construction and operation of a surface water management system to serve a 0.52 acre roadway improvement project known as Turn Lane Improvements at Atlantic Avenue and Jog Road. The proposed surface water management system will consist of inlets, culverts and exfiltration trench which will provide water quality treatment prior to overflow into the existing Jog Road surface water management system. Ultimate discharge will be to the LWDD L-35 Canal.

LAND USE:

Construction:
Project.

	Total Project	
Total	.52	acres
Total:	**.52**	

WATER QUANTITY :

Discharge Rate :

Post-development discharge for the 25-year 3-day design event should not exceed existing conditions.

Control Elevation .

Basin	Area (Acres)	Ctrl Elev (ft, NGVD)	WSWT Ctrl Elev (ft, NGVD)	Method Of Determination
Site	.52	16	16.00	Previously Permitted

WATER QUALITY :

Water quality treatment for the new impervious area will be provided in exfiltration trench which will overflow into the existing Jog Road system. The authorization for construction of the surface water management system is issued pursuant to the water quality net improvement provisions referenced in Rule Section 40E-4.302(1), Florida Administrative Code; therefore, the state water quality certification is waived.

CERTIFICATION AND MAINTENANCE OF THE WATER MANAGEMENT SYSTEM:

It is suggested that the permittee retain the services of a Professional Engineer registered in the State of

Atlantic Avenue from Turnpike to King's Point – Permit No. 50-04463-P

CALCULATION FOR REQUIRED TREATMENT VOLUME (WATER QUALITY)

SYSTEM NO. 1

ADDITIONAL IMPERVIOUS AREA:

1.5m (5') PAVED SHOULDER FROM STA 20+67 TO 21+79 (112m = 368 FT.)

$A_1 = 5(368\ FT.) = 1840\ SF$

CURB & GUTTER @ 2 FT. WIDE FROM STA 21+79 TO 22+90 (111m = 365 FT.)

$A_2 = 2(365) = 730\ SF$

1.8m (6') SIDEWALK FROM STA 20+67 TO STA 22+90 (223m = 732 FT.)

$A_3 = 6(732) = 4392\ SF$

TOTAL A_i SYSTEM NO. 1 : $1840 + 730 + 4392 \rightarrow A_{i_1} = 6962\ SF \approx 0.16\ Ac$

∴ REQUIRED TREATMENT VOLUME = $2.5(0.16) = 0.40$ AC-in

SYSTEM NO. 2

ADDITIONAL IMPERVIOUS AREA:

1.5m (5') PAVED SHOULDER FROM STA 20+67 TO 28+74 (807m = 2648 FT.)

$A_1 = 5(2648) = 13{,}240\ SF$

1.8m (6') SIDEWALK FROM STA 20+67 TO 28+77 (810m = 2658 FT.)

$A_2 = 6(2658) = 15{,}948\ SF$

TOTAL A_i SYSTEM NO. 2 = $13240 + 15948 \rightarrow A_{i_2} = 29{,}188\ SF \approx 0.67\ Ac$

TREATMENT FOR SYSTEM NO. 2 IS PROVIDED BY A SWALE WITH BOT. EL. @ 18.60 NGVD (2.5' ABOVE WT EL. 16.00) → DRY DETENTION

∴ REQD. TREATMENT = $0.75 \mid 2.5(0.67) \mid = 1.26$ AC-in (0.11 Ac-ft)

DETENTION VOLUME PROVIDED BY SWALE @ STAGE 21.00 IS 0.26 Ac-ft (3.12 AC-in) (SEE WATER QUANTITY CALCULATIONS)

CALCULATION FOR REQUIRED TREATMENT VOLUME (WATER QUALITY) (CONT.)

SYSTEM NO. 3

ADDITIONAL IMPERVIOUS AREA (RIGHT SIDE OF THE ROAD) :

2' CURB & GUTTER FROM STA 29+96 TO 31+06 (110 m = 361 FT.) (RIGHT SIDE)

$A_1 = 2(361) = 722$ SF

1.2m' (4') ADDITIONAL PAVEMENT FOR RIGHT TURN LANE FROM STA 29+96 TO 30+92 ON RIGHT SIDE OF THE ROAD :

96m = 315FT.

$A_2 = 4(315) = 1260$ SF

ADDITIONAL IMPERVIOUS AREA (LEFT SIDE OF THE ROAD) :

2' CURB & GUTTER FROM STA 29+01 TO 29+36 (35m = 115 FT.)
STA 29+43 TO 30+00 (57m = 187 FT.)
STA 30+08 TO 31+06 (98m = 322 FT.)

TOTAL = 624

$A_3 = 2(624) = 1248$ SF

1.2m (4') ADDITIONAL PAVEMENT FOR RIGHT TURN LANE (SAME LIMITS AS C&G) :

$A_4 = 4(624) = 2496$ SF

1.8m (6') SIDEWALK (SAME LIMITS AS C&G) :

$A_5 = 6(624) = 3744$ SF

$\therefore A_{I_3} = 722\text{ SF} + 1260\text{SF} + 1248 + 2496 + 3744 = 9470\text{SF} = 0.22\text{ AC}$

$\therefore$ REQUIRED TREATMENT VOLUME = $2.5(0.22) = 0.55$ AC-IN.

CALCULATION FOR REQUIRED TREATMENT VOLUME (WATER QUALITY) (CONT.)

SYSTEM NO. 4 (DRAINAGE AREA S-11 CONTRIBUTES NO ADDITIONAL IMPERVIOUS AREA)

2' CURB & GUTTER FROM STA 32+93 TO 33+83 (90m = 296 FT)
STA 33+94 TO 34+31 (37m = 122 FT)
34+40 TO 34+79 (39m = 128 FT.)
TOTAL = 546 FT.

NOTE: NO ADDITIONAL IMPERVIOUS AREAS ARE CONTRIBUTED BY THE PROPOSED SIDEWALK AND PAVEMENT, AS THEY REPLACE EXISTING SIDEWALK AND PAVEMENT.

$\therefore A_{i_4} = 2(546) = 1092$ SF = **0.03 AC**

$\therefore$ REQUIRED TREATMENT VOLUME = 2.6 (0.03) = 0.08 Ac-in

SYSTEM NO. 5

2' CURB & GUTTER FROM STA 37+48 TO 38+53 (LT.) = 105m (345 FT.)

$A_1 = 2(345) = 690$ SF

1.6m (5') ADDITIONAL PAVEMENT WIDTH FROM STA 37+63 (LT.) TO 38+13 (LT.)
50m = 164 FT

$A_2 = 5(164) = 820$ SF

3.2m (10.5') ADDITIONAL PAVEMENT WIDTH FROM STA 38+13 TO 38+53 (LT.)
40m = 132 FT.

$A_3 = (10.5)(132) = 1386$ SF

2.55m (8.4') PAVED SHOULDER (INCLUDES SHOULDER GUTTER) FROM STA 36+87 TO 39+00 (RT.)
213m = 699 FT.

$A_4 = (8.4)\,699 = 5872$ SF

$\therefore A_{i_5} = 2668 + 820 + 1386 + 5872 = 10,736$ SF = **0.25 AC**

$\therefore$ REQUIRED TREATMENT VOLUME = 2.6 (0.25) = 0.63 Ac-in

West Atlantic Avenue and Turnpike – Permit No. 50-04083-P

Kimley»Horn

July 24, 2017

South Florida Water Management District
Carlos de Rojas
3301 Gun Club Road
West Palm Beach, Florida 33406

RE: ***Palm Beach County Project 2012501 - West Atlantic Avenue (SR 806) and Florida's Turnpike (SR 91) Intersection Improvements. Palm Beach County, Florida***

Dear Mr. de Rojas:

Enclosed please find two sets of signed and sealed plans for the subject improvement project. We are hereby requesting a permit modification for the construction of the minor safety improvements.

The project consists of widening West Atlantic Avenue to provide a dedicated right turn lane into Florida's Turnpike NB ramps and an additional westbound lane from the Florida's Turnpike NB entrance to the Tuscany Shoppes driveway, approximately 0.12 miles. The existing bridge over the E-2E canal will be widened to accommodate the proposed improvements. A Bridge permit will be submitted separately.

The proposed widening will result in approximately 0.38 acres of additional impervious area all within the right of way. The additional impervious area west of the E-2E canal will be treated by exfiltration trench, and the additional impervious area east of the canal will be treated by a roadside detention swale using all available right of way to do so.

The water quality treatment volume is 2.5 inches over the additional impervious area. The 92 linear feet of French Drain can treat 0.39 acre-inches and the detention swale can treat 0.05 acre-inches of runoff. There is no right of way remaining that could facilitate more exfiltration trench or detention swale.

The existing gas and water main facilities adjacent to the project conflict with the proposed improvements and will need to relocate. A permit for the utility relocation will be submitted separately.

Please contact me at (561) 840-0850 or marwan.mufleh@kimley-horn.com should you have any questions or require additional information.

Sincerely,

Marwan Mufleh, P.E.
Project Manager

West Atlantic Avenue & Hagen Ranch Road – Permit No. 50-04507-P

LNW
Lawson, Noble & Webb, Inc.
ENGINEERS • PLANNERS • SURVEYORS
West Palm Beach • Port St. Lucie • Orlando

Job Name WEST ATLANTIC AVE Job No. A 642
Sheet No. 1 Of
Calculated By PAF Date 3-28-02
Checked By Date

WATER QUALITY COMPUTATIONS:

PER SFWMD CRITERIA, WATER QUALITY MUST BE PROVIDED FOR THE ADDITIONAL IMPERVIOUS AREA CONSTRUCTED. STEP ONE: DETERMINE ADDITIONAL PAVEMENT AREA

→ PROJECT CONSISTS OF WIDENING WEST ATLANTIC AVENUE TO PROVIDE DUAL LEFT TURNS EASTBOUND ONTO HAGEN RANCH ROAD (NORTHBOUND) AND REMOVAL OF EXISTING PAVEMENT TO ACCOMPLISH THE PAVEMENT TRANSITIONS

NET PAVEMENT ADDED = PAVEMENT ADDED − PAVEMENT REMOVED
= 12,373.7886 Ft² − 5,743.4318 = 6,630.3568

6,630.3568 ft² = 0.15 ACRES

→ WATER QUALITY MUST BE PROVIDED FOR 2.5 inches × THE ADDITIONAL AREA
2.5 in × 0.15 AC = 0.375 AC-IN.

PROPOSE A SYSTEM OF DRY DETENTION ⇒ 75% OF THE PRETREATMENT (CALCULATED ABOVE)
0.375 ACRE-IN × .75 = 0.28 ACRE-IN = 1016 ft³

THERE ARE 3 SWALES AVAILABLE FOR PRETREATMENT

(#1) AVG WIDTH = 5.3′
AVG DEPTH = 0.30′
LENGTH = 395′
VOLUME = 395′ × 0.3′ × ½ (TRIANGULAR SECTION) × 5.3′ = 314 ft³

(#2) AVG. WIDTH = 1.25′
AVG. DEPTH = 0.10′
LENGTH = 525′
VOLUME = 525′ × 0.1′ × ½ × 1.25′
= 32 ft³

(#3) AVG. WIDTH = 6.3′ AVG. DEPTH = 0.55′, LENGTH = 400′
VOLUME 400′ × 0.55′ × ½ × 6.3′ = 693 ft³

TOTAL VOLUME = 693 + 314 + 32
1039 ft³ OK

McDonald's – Permit No. 50-00518-S

Kimley»Horn

DRAINAGE REPORT
November 11, 2019

SUBJECT: McDonald's Atlantic and Hagen 009-2659
McDonald's USA, LLC
7375 Atlantic Avenue
Delray Beach, FL 33446
KHA File No. 147208326

Project Area: 0.96 acres

Introduction

This drainage report is intended to provide a summary of the existing and proposed conditions related to the Oriole Plaza located at 7375 Atlantic Avenue, Delray Beach, FL 33446. The site has been permitted under SFWMD master permit No. 50-00518-S (Appendix A), which encompasses roughly 470 acres, including Oriole Plaza. This minor modification to SFWMD permit No. 50-00518-S is to develop an existing parking field into an outparcel.

The overall project area is approximately 41,751 SF (0.96 AC). The site plan associated with this permit shows a proposed McDonald's located in the southeast corner of the shopping center.

Existing Conditions

The site is located in the southeast the corner of Oriole Plaza in Delray Beach, Florida. The existing site is a parking lot which drain to interconnected storm inlets, ultimately discharging to a lake north of the shopping center. The existing area breakdowns for the proposed McDonald's site are as follows:

	Existing Parking Lot	
Parameter	**Area (sf)**	**Area (ac)**
Buildings	0	0
Pervious Area	11,727	0.27
Impervious Area	30,024	0.72
Total	**41,751**	**0.96**

Proposed Design

The existing stormwater system will continue to consist of interconnected inlets that will discharge an existing lake north of the site. The existing system will be relocated to avoid conflict with the proposed building and will be able to continue to convey the stormwater runoff from the site. The proposed area breakdowns for the McDonald's site are as follows:

	McDonald's (Proposed)	
Parameter	**Area (sf)**	**Area (ac)**
Buildings	4,455	0.10
Pervious Area	11,410	0.26
Impervious Area	25,886	0.60
Total	**41,751**	**0.96**

Kimley»Horn

Water Quality

Water quality shall be the greater of 1" over the entire drainage area or 2.5 x % impervious. 1" over the entire drainage area is as follows:

Pre-Development

1" x Drainage Area is as follows:

1" x 0.96 acres = 0.96 ac-in = **0.08 ac-ft**

2.5 x % impervious is as follows:

a)	0.96 – (roof)	=	0.96 – 0	=	0.96 ac
b)	0.96 – green area	=	0.96 – 0.27	=	0.69 ac
c)	% impervious	=	(0.69/0.96) x 100	=	71.91%
d)	2.5 x % impervious	=	2.5 x 0.7191	=	1.80 in
e)	1.80 in x 0.96 ac	=	1.72 ac-in	=	**0.144 ac-ft**

* 2.5" x Impervious Area yields the larger quantity of water to be treated therefore the site must provide the 0.144 ac-ft of treatment in the pre-development condition.

Post-Development

1"x Drainage Area is as follows:

1" x 0.96 acres = 0.96 ac-in = **0.08 ac-ft**

2.5 x % impervious is as follows:

a)	0.96 – (roof)	=	0.96 – 0.10	=	0.86 ac
b)	0.86 – green area	=	0.86 – 0.26	=	0.60 ac
c)	% impervious	=	(0.60/0.86) x 100	=	69.53%
d)	2.5 x % impervious	=	2.5 x 0.6953	=	1.74 in
e)	1.74 in x 0.96 ac	=	1.67 ac-in	=	**0.139 ac-ft**

* 2.5" x Impervious Area yields the larger quantity of water to be treated therefore the site must provide the 0.139 ac-ft of treatment in the post-development condition.

With the development of the McDonald's within the shopping center, the water quality onsite will be improved in the post development condition and will remain compliant with the master permit.

Water Quantity – SCS Equation Comparison

Pre-Development CN

Description	Area (SF)	Area (AC)	% of Total	Surface	CN	CN x Area(%)
Impervious						
Pavement	30,024	0.69	71.91%		98	70.47
Building	0	0	0%		98	0
Impervious Total=	30,024	0.69				
Pervious						
Group (C)	11,727	0.27	28.09%	Open, good	61	17.13
Total Area =	41,751	0.96	100%			CN = 87.61

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Post-Development CN

Description	Area (SF)	Area (AC)	% of Total	Surface	CN	CN x Area(%)
Impervious						
Pavement	25,932	0.60	62.00%		98	60.76
Building	4,455	0.10	10.67%		98	10.46
Impervious Total=	30,387	0.70				
Pervious						
Group (C)	11,410	0.26	27.33%	Open, good	61	16.67
Total Area =	41,751	0.96	100%			CN = 87.89

Pre-Development and Post-Development Runoff

$$S = (1000/CN) - 10$$

$$V = \frac{\left(P - (0.2 * S)\right)^2}{P + (0.8 * S)} * Area * \frac{1}{12}$$

Rainfall Event	**10 year-1 day**		**25 year-3day**		**100 year-3day**	
Condition	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
P (in)	**9**	**9**	**13.73**	**13.73**	**18.35**	**18.35**
S	**1.41**	**1.38**	**1.41**	**1.38**	**1.41**	**1.38**
A (cf)	**41,751**	**41,751**	**41,751**	**41,751**	**41,751**	**41,751**
V (ac-ft)	**0.60**	**0.60**	**0.97**	**0.97**	**1.34**	**1.34**

As demonstrated in the calculations above, the proposed development will not alter the runoff volume conveyed from the site.

Storage

The proposed finished floor elevation for the McDonald's site is to be set at 21.5 NAVD. Per the Master drainage report (see appendix A) the 100 year-5 day stage was found to be 18.7 NAVD. The minimum inlet for the site is 18.9 NAVD, and the site does not stage up past the minimum inlet in the 100 year storm. Therefore, there is no compensation for additional storage is needed, as the existing system has sufficient capacity to accommodate the proposed McDonald's. However, 170 LF of exfiltration trench has been proposed, providing 0.178 AC-FT of storage.

Water Quality Impact Evaluation (WQIE)

WATER QUALITY IMPACT EVALUATION CHECKLIST

PART 1: PROJECT INFORMATION

Project Name:	Atlantic Ave. PD&E Study from Florida's Turnpike to Jog Rd.
County:	Palm Beach
FM Number:	440575-3-22-02
Federal Aid Project No:	N/A
Brief Project Description:	The project involves widening a 1.8 mile segment of Atlantic Ave. from an existing four-lane roadway with no designated bike lanes to a six-lane roadway with consideration for designated bicycle facilities.

PART 2: DETERMINATION OF WQIE SCOPE

Does project discharge to surface or ground water? ☒ Yes ☐ No

Does project alter the drainage system? ☒ Yes ☐ No

Is the project located within a permitted MS4? ☐ Yes ☒ No
Name: _____

If the answers to the questions above are no, complete the applicable sections of Part 3 and 4, and then check Box A in Part 5.

PART 3: PROJECT BASIN AND RECEIVING WATER CHARACTERISTICS

Surface Water
Receiving water names: LWDD Canal L-34

Water Management District: SFWMD

Environmental Look Around meeting date: 3/12/2021
Attach meeting minutes/notes to the checklist.

Water Control District Name(s) (list all that apply): LWDD

Groundwater
Sole Source Aquifer (SSA)? ☒ Yes ☐ No
Name Biscayne Aquifer
If yes, complete Part 5, D and complete SSA Checklist shown in Part 2, Chapter 11 of the PD&E Manual

Other Aquifer? ☐ Yes ☒ No
Name _____

Springs vents? ☐ Yes ☒ No
Name _____

Well head protection area? ☐ Yes ☒ No
Name _____
Groundwater recharge? ☐ Yes ☒ No
Name _____

Notify District Drainage Engineer if karst conditions are expected or if a higher level of treatment may be needed due to a project being located within a WBID verified as Impaired in accordance with Chapter 62-303, F.A.C.

Date of notification: N/A

PART 4: WATER QUALITY CRITERIA

List all WBIDs and all parameters for which a WBID has been verified impaired, or has a TMDL in **Table 1**. This information should be updated during each re-evaluation as required.

Note: If BMAP or RAP has been identified in **Table 1**, **Table 2** must also be completed.
*Attach notes or minutes from all coordination meetings identified in **Table 2**.*

EST recommendations confirmed with agencies? ☒ Yes ☐ No

BMAP Stakeholders contacted? ☐ Yes ☒ No

TMDL program contacted? ☐ Yes ☒ No

RAP Stakeholders contacted? ☐ Yes ☒ No

Regional water quality projects identified in the ELA? ☒ Yes ☐ No

If yes, describe:
Minor stormwater treatment in the area for Atlantic Ave. right-of-way in the form of dry detention ponds, roadside swales and exfiltration trench. Adjacent to the project, there are previously permitted wet detention ponds to accept stormwater runoff from Atlantic Ave.

Potential direct effects associated with project construction and/or operation identified? ☒ Yes ☐ No

If yes, describe:
The bridge piles may have a direct effect, however the exact extent of the impact is unknown. According to best available data from the United States Geological Survey (USGS), the Biscayne aquifer extends from the land's surface to a depth of 50 feet in south eastern Miami-Dade County, deepening to 120 feet in south east Palm Beach County. Per coordination with SFWMD, it was suggested that the Fort Thompson Formation (limestone) be the depth of concern for construction penetration. SPT

borings were recommended to be completed to determine if it is present and at what depth within the project corridor. During final design, detailed geotechnical surveys including SPT borings will be conducted.

Discuss any other relevant information related to water quality including Regulatory Agency Water Quality Requirements.

Stormwater will be treated in two ponds permitted under Villaggio Isles (Permit No. 50-07775-P) and Atlantic Commons (Permit No. 50-08178-P). These two ponds are permitted for a total of 10.64 acres of impervious area from the Atlantic Ave. right-of-way which will more than offset the proposed new impervious area of up to 9.7 acres or any potential destruction of existing small water quality elements in the project corridor.

PART 5: WQIE DOCUMENTATION

☐ A. No involvement with water quality
☐ B. No water quality regulatory requirements apply.
☒ C. Water quality regulatory requirements apply to this project (provide Evaluator's information below). Water quality and stormwater issues will be mitigated through compliance with the design requirements of authorized regulatory agencies.
☐ D. EPA Ground/Drinking Water Branch review required. ☐ Yes ☒ No
Concurrence received? ☐ Yes ☒ No
If Yes, Date of EPA Concurrence: Click here to enter a date..
Attach the concurrence letter

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.

Evaluator Name (print): Brent A. Morris	
Title:Senior Drainage Engineer	
Signature: 	Date:4/30/2021

*** ONRW, OFW, Aquatic Preserve, Wild and Scenic River, Special Water, SWIM Area, Local Comp Plan, MS4 Area, Other**
**** Lakes, Spring vents, Streams, Estuaries**
Note: If BMAP or RAP has been identified in Table 1, Table 2 must also be completed.

Table 2: REGULATORY Agencies/Stakeholders Contacted

Receiving Water Name (list all that apply)	Contact and Title	Date Contacted	Follow-up Required (Y/N)	Comments

Sole Source Aquifer Checklist

Sole Source Aquifer Checklist

PROJECT NAME: Atlantic Avenue PD&E Study

NAME OF SOLE SOURCE AQUIFER OR SOURCE AREA: Biscayne Aquifer

1. **Location of project:** Florida's Turnpike to east of Jog Road.

2. **Project description.**
   The project involves widening a 1.8 mile segment of Atlantic Avenue from an existing four-lane roadway with no designated bike lanes to a six-lane roadway with consideration for designated bicycle facilities.

3. **Is there any increase of impervious surface? If so, what is the area?**
   Yes; up to 9.7 acres.

4. **Describe how storm water is currently treated on the site?**
   Treatment and attenuation are currently provided in exfiltration trenches, roadside swales, and dry detention ponds.

5. **How will storm water be treated on this site during construction and after the project is complete?**
   Stormwater will be treated in two ponds permitted under Villaggio Isles (Permit No. 50-07775-P) and Atlantic Commons (Permit No. 50-08178-P). These two ponds are permitted for a total of 10.64 acres of impervious area from the Atlantic Avenue right-of-way which will more than offset the proposed new impervious area of up to 9.7 acres or any potential destruction of existing small water quality elements in the project corridor.

6. **Are there any underground storage tanks present or to be installed? Include details of such tanks.**
   Yes, there are existing tanks. No new tanks are proposed to be installed. Supporting documentation is attached detailing the existing tanks.

7. **Will there be any liquid or solid waste generated? If so how will it be disposed of?**
   No liquid or solid waste will be generated.

8. **What is the depth of excavation?**
   Canal L-34 on the south side of the project will extend to a depth of approximately 10 feet.

9. **Are there any wells in the area that may provide direct routes for contaminates to access the aquifer and how close are they to the project?**
   There are 21 wells within 500 feet of the project corridor. Information from the SFWMD ePermitting website was used to summarize the wells found in Table 1:

Table-1

Well ID	SFWMD Permit No.	Water Use Classification	Source
1	50-04400-W	Landscape irrigation	Surficial aquifer system
Well 1	50-05544-W	Landscape irrigation	Surficial aquifer system
Well 2			
Well 3			
Well 4			
Well 5			
Well 6			
Well 1	50-05874-W	Landscape	Surficial aquifer system
WELL	50-03957-W	Landscape irrigation	Surficial aquifer system
Well 4	50-09917-W	Landscape irrigation	Surficial aquifer system
Well 5			
Well 7			
Well 1	50-08052-W	Landscape	Surficial aquifer system
1	50-05053-W	Landscape	Surficial aquifer system
Well 1	50-06724-W	Landscape	Surficial aquifer system
1	50-05668-W	Landscape	Surficial aquifer system
2			
Well 1	50-09196-W	Landscape	Surficial aquifer system
12	50-4462-W	Landscape irrigation	Surficial aquifer system
Well 1	50-06474-W	Landscape	Surficial aquifer system
1	50-06428-W	Landscape	Surficial aquifer system

10. **Are there any hazardous waste sites in the project area....especially if the waste site has an underground plume with monitoring wells that may be disturbed? Include details.**
    Yes, there are hazardous waste sites in the project area. However, none contain underground plumes. Details are included in the supporting documents section.

11. **Are there any deep pilings that may provide access to the aquifer?**
    Proposed bridge piles are approximately 50 - 70 feet, however the exact extent of the impact is unknown. According to best available data from the United States Geological Survey (USGS), the Biscayne aquifer extends from the land's surface to a depth of 50 feet in south eastern Miami-Dade County, deepening to 120 feet

in south east Palm Beach County. Per coordination with SFWMD, it was suggested that the Fort Thompson Formation (limestone) be the depth of concern for construction penetration. SPT borings were recommended to be completed to determine if it is present and at what depth within the project corridor. During final design, detailed geotechnical surveys including SPT borings will be conducted.

12. **Are Best Management Practices planned to address any possible risks or concerns?**
    The contractor will follow FDOT approved Best Management Practices.

13. **Is there any other information that could be helpful in determining if this project may have an affect on the aquifer?**
    No, the proposed work is not expected to affect the aquifer based on our contamination screening evaluation report.

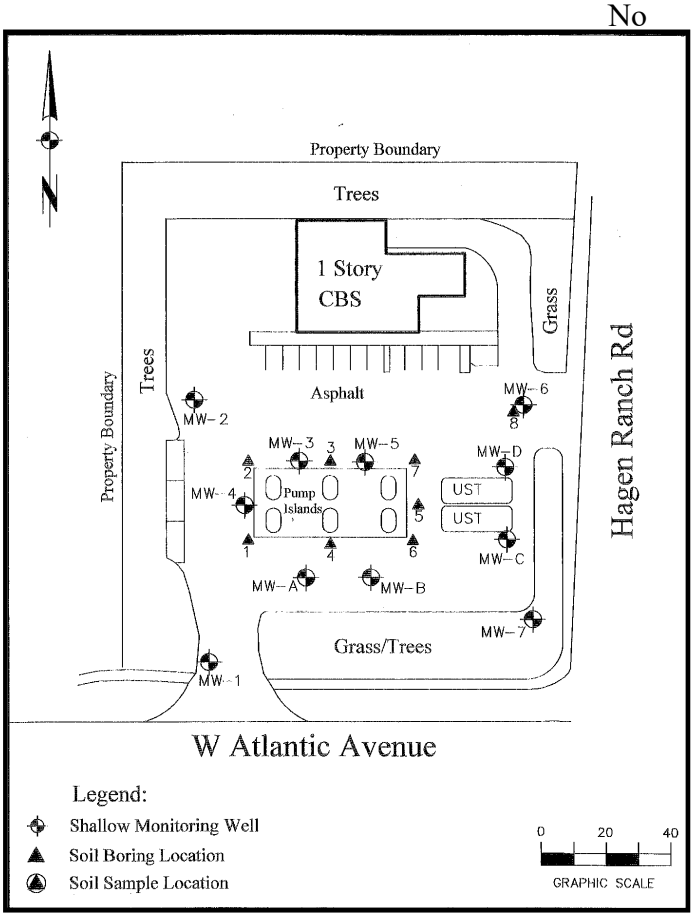
14. **Does this Project include any improvements that may be beneficial to the aquifer, such as improvements to the wastewater treatment plan?**
    No, this is a roadway project with the intent to increase the net water quality benefit to the region.

The EPA Sole Source Aquifer Program may request additional information if impacts to the aquifer are questionable after this information is submitted for review.

Supporting Documentation

Underground Storage Tanks – Excerpt from CSER

Site No.	Facility Name Facility Address	Facility ID Dist. From Project	Facility Type Risk Rating
5a	Chevron West Atlantic Food Mart 7533 W. Atlantic Blvd.	8513851 At ROW North	UST Low
5b	Atlantic Chevron	FLD984208124	SQG No



Located on the Northwest corner of Atlantic Avenue and Hagen Ranch Road, this site has been operational since 1981 (**Figure 6**). Five tanks were installed at this location in 1981. The first registration for the site was December 18, 1984. The tanks included four (4) 10,000-gallon fuel tanks and one 1,000-gallon waste oil tank. There was one leaded gasoline tank, two unleaded gasoline tanks, and one diesel tank. A Discharge Notification Form (DNF) was submitted on May 5, 1989. The application noted that an unknown quantity of an unknown type was lost at an undetermined time. The DNF was submitted because of an odor within one of the monitoring wells. The site received eligibility for cleanup under the Florida Pollution Liability Insurance and Restoration Program (FPLIRP) on February 26, 1990. The score for the site was determined to be 10 on October 12, 1990 (it was subsequently raised to 30 on June 19, 1992).

The facility was registered as a SQG on August 8, 1991 and listed ignitables, corrosives, and benzene as part of their waste stream.

Surface piping at the gas station was replaced on July 9, 1993. The five original tanks were replaced with two larger tanks on September 16, 1998. The replacement tanks were a single 20,000-gallon tank used for diesel and a 15,000-gallon tank containing unleaded gasoline.

No funding was available for cleanup as of June 29, 2000. The site was rescored as 30 on April 23, 2007.

A Discharge Report Form (DRF) was sent to FDEP and PBDERM on March 26, 2009 indicating that some petroleum contaminated soil was found in association with a cracked spill bucket for one of the tanks. A Closure Assessment Report was submitted on March 31, 2009 detailing the history of the site and the determination that the contamination found was from the 1989 incident. The March 2009 DRF was rescinded on June 10, 2009.

(Site Map from TSAR /NFAP - right)

The site was rescored at 6 on December 12, 2012. No cleanup funding was available on January 3, 2013.

Current Regulatory Status

A Template Site Assessment Report (TSAR) was completed November 14, 2016 to determine if any contamination could be found on the site from the 1989 DNF. Seven monitoring wells were installed for the assessment. No contaminated soil or groundwater was found during sampling. SCTL and GCTL were not exceeded for any samples. The recommendation of the TSAR was for no further action. The TSAR was approved December 13, 2016. All monitoring wells were abandoned by March 10, 2017. The Site Rehabilitation Completion Order (SRCO) was issued June 27, 2017. The last compliance inspection record available is July 24, 2018. At that time, the facility was found to be in compliance. Given the lack of non-compliance inspections and the quick response to requested repairs, the site is Risk Rated as Low because it is still an operating retail station and maintains compliance with regulations.

The RCRA registration for the facility was changed on April 4, 2011 when a request for designation as a CESQG. The FDEP noted that the existing registration had been modified as "No Active Hazardous Waste Treatment, Storage, or Disposal Permit." There has been no change since that date.

Site No.	Facility Name Facility Address	Facility ID Dist. From Project	Facility Type Risk Rating
10a	7-Eleven Store #34974 7255 W. Atlantic Ave.	8514449 At North ROW	UST Low
10b	Mobil Oil Corp.	FLD984204677	SQG No

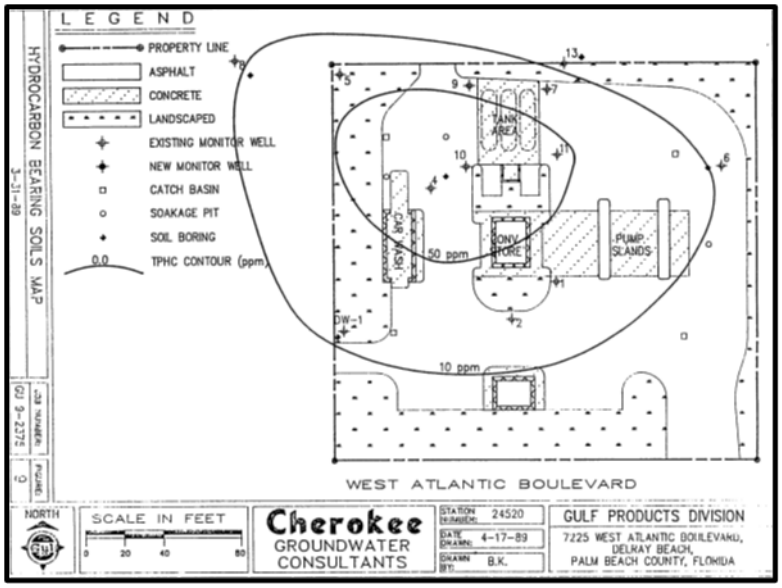
Located on the East side of the Villages of Oriole Place, operations at this site began with the installation of five USTs on December 1, 1983 (**Figure 6**). Tanks consisted of three 10,000-gallon fuel tanks, one 8,000-gallon diesel tank, and one 550-gallon tank for waste oil. A discharge of 800 gallons of diesel was reported on July 25, 1986 that was the result of a faulty sheer valve. An application for the Early Detection Incentive (EDI)

program was submitted on July 25, 1986. The tanks installed in 1983 were replaced in May 31, 1988.

A Contamination Assessment Report (CAR) that was submitted on August 30, 1988. Following agency Request for Additional Information (RAI) the final CAR was submitted July 28, 1989 and approved by Palm Beach County on October 16, 1989.

The CAR found groundwater at approximately 5-6 feet bls. There was no Free Product found in any of the monitoring wells.

Groundwater contaminants found were benzene and Total Volatile Organic Aromatics (VOA) above the target limits in three monitoring wells. Six other wells were found to have no contaminant concentrations above target limits. The constituents analyzed included: VOA, benzene, Methyl-tert-butyl Ether (MTBE), dissolved lead, ethylene dibromide (EDB), Volatile Organic Hydrocarbons (VOH), and Polycyclic Aromatic Hydrocarbon (PAH).



Hydrocarbon contaminated soils amounted to 7,300 cubic yards. Contaminated soils were measured by Organic Vapor Analyzer (OVA). The Total Petroleum Hydrocarbon Content (TPHC) concentrations ranged from 10 ppm to 80 ppm (**left**).

A Remedial Action Plan (RAP) was submitted on August 1, 1989. It was revised on August 18, 1989. The site was determined to be eligible for EDI reimbursement on November 20, 1989. Palm Beach County requested additional information prior to approval of the RAP on December 13, 1990. The RAI include a request for further testing, including additional contaminants. It also requested details concerning the calculation of 7,300 cubic yards of contaminated soil. The original remediation contractor was replaced.

The convenience store associated with the gas station was identified as a SQG on August 14, 1991 (**FLD984204677**). The waste stream was described as containing ignitables and benzene. The only compliance inspection document found was on April 7, 2011. At the time the facility was inspected as a non-handler. The inspection found the facility in compliance.

A Groundwater Analytical report was submitted June 14, 1993. No petroleum contaminants were found above MDL for groundwater samples. Soil samples measured

with an OVA-FID (Flame Ionization Detector) soil samples found no contaminated soils. A Request for No Further Action was submitted August 24, 1993. The No Further Action Proposal (NFAP) was approved November 11, 1993.

During the process of replacing three spill containment buckets leakage was reported. Soil contamination was discovered during screening with an OVA. Laboratory analysis indicated that the measured contamination was above the SCTL leachability based on groundwater criteria. A DRF was submitted to FDEP on December 20, 2007. The spill amount was not quantified.

A proposal was submitted to PBDERM for the removal of existing tanks and an associated Site Assessment on February 11, 2008. The initial background investigation of the DRF discovered that a separate DRF had been submitted because of groundwater sampling of monitoring wells on October 21, 1997. The discharge had been found eligible for remediation under the Florida Petroleum Liability and Restoration Insurance Program (FPLRIP). The 2007 DRF was requested to be rescinded. The DRF recission was approved April 28, 2008.

Three USTs were removed from the site on May 20, 2008. Excavation of the existing tank pit was expanded to accommodate four new tanks (two at 10,000 gallons and two at 8,000 gallons). The tank pit was lined with piling on all four sides. The excavated soil was stored on site during the installation process. A total of 21,000 cubic feet of soil was removed. A total of 1,714 tons of Petroleum contaminated soil was transported offsite for disposal based on OVA readings from 10 ppm to over 250 ppm. The Source Removal Report (December 10, 2008) also recommended No Further Action because all contamination source material had been removed. The report was accepted by FDEP on December 16, 2008.

The property ownership was transferred from Mobil-Exxon to 7-Eleven on March 30, 2011. A Phase II Environmental Site Assessment for the real estate exchange was submitted to 7-Eleven on July 14, 2011. The report sampled soil and groundwater on the property. No analyzed samples contained petroleum constituents at levels greater than the SCTL and GCTL.

Current Regulatory Status: In a letter from the FDEP to Exxon Mobil, the SQG registration was classified as Closed as an outdated registration for Hazardous waste handling. It was part of a massive purge of records for Exxon Mobil. As such, the Hazardous Waste aspect of the facility location is given a Risk Rating of No.

The site was found eligible for state funded cleanup by FDEP on November 30, 2012. Soil sampling was performed for this effort on March 13, 2013. Monitoring wells were installed, and groundwater sampling was performed March 27, 2013. Laboratory Analysis of samples found no COC in soil or groundwater. The site was recommended for a SRCO. FDEP issued the SRCO on July 26, 2013.

Petroleum facility compliance inspections from 2013 to present found some minor non-compliance items that did not affect operational issues.

The site is still operating as a retail gasoline station. The existing tank pit is lined with sheet pile walls on all vertical sides. No incidents have occurred since the source removal in 2008. The site is Risk Rated as Low because the site was determined to have Contaminants of Concern (COC) below SCTL and GCTL in 2013 and no further releases have been determined from normal operational monitoring and compliance inspections.

APPENDIX E

Geotechnical

TSF, INC.

March 11, 2021, Revision 3

Florida Department of Transportation
3400 W Commercial Blvd
Fort Lauderdale, FL 33309

Attn: Alexander Estrada, P.E.
FDOT Project Manager

RE: **Roadway Soil Survey Report**
PD&E Services for SR-806/Atlantic Ave from Turnpike to Jog Rd
Palm Beach County, Florida
FPID No. 440575-3-22-02
TSF Project No: 7111-20-119

Dear Mr. Estrada:

Tierra South Florida, Inc. (TSF) has completed a roadway soil survey for the subject project. This geotechnical study was performed in general accordance with FDOT procedures. The results of our exploration program and geotechnical recommendations are presented in this report

If you have any questions or comments regarding this report, please contact our office at your earliest convenience.

Sincerely,

TSF, INC.
This document has been digitally signed and sealed by:

Amy L. Guisinger, P.E.
Principal Engineer
FL Registration No. 63989
On the date adjacent to the seal.
Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Ramakumar Vedula, P.E.
Principal Engineer
FL Registration No. 54873

2765 Vista Parkway, Suite 10 • West Palm Beach, Florida 33411
561.687.8536 • www.TSFGeo.com
State of Florida Registration No. 28073

in boring B-2 within the depth of the boring. Encountered groundwater depths are presented on the Roadway Soil Profiles provided in the Appendix.

Groundwater conditions will vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences (i.e. existing canals, swells, drainage ponds, under drains, and areas of covered soils, like paved parking lots and sidewalks). Fluctuations should be anticipated. We recommend that the contractor determine the actual groundwater levels at the time of construction to determine the groundwater impact on construction procedures.

5.2 Seasonal High Groundwater Estimates (SHGWT)

Seasonal high groundwater levels are expected to be controlled by existing drainage features present in the project vicinity. Estimated seasonal high groundwater table levels are expected at elevation about +14 feet, NGVD 1929 (+12.5 feet, NAVD 1988). This estimate is based on the Altitude of Water Table, Surficial Aquifer, Shallow Zone, in Eastern Palm Beach County, Florida, May 16-19, 1988, published by USGS.

6.0 FIELD PERMEABILITY TESTING

6.1 Exfiltration Tests

Exfiltration tests were performed at three locations using the South Florida Water Management District (SFWMD) usual open-hole constant head method. The test locations are shown on the boring location plan in the Appendix. The tests were performed at depths of 10, 15, and 20 feet at each location. Each borehole was drilled using a hollow stem auger (about 6-inches in diameter) to retrieve soil samples for visual classification. The results of the exfiltration tests are attached in the Appendix.

7.0 ENGINEERING EVALUATIONS AND RECOMMENDATIONS

7.1 General

In general, the existing shallow subsurface soils encountered in the borings are suitable for supporting the proposed improvements after proper subgrade preparation. Site preparation should consist of normal clearing and grubbing followed by compactions of subgrade soils.

The removal of topsoil where required should be accomplished in accordance with the Florida Department of Transportation (FDOT) Standard Specifications Section 110 – Clearing and Grubbing. Backfill should consist of materials conforming to FDOT Standard Plans Index 120-001 and compacted in accordance with Section 120-9 of the current Standard Specification for Road and Bridge Construction.

7.2 Permanent Cut and Fill Slopes

If fill or cuts are required for the proposed roadway improvements, we recommend that all proposed permanent side slopes be constructed on a 2H:1V slope or flatter. To prevent minor sloughing at the surface, we recommend that the slopes be seeded, mulched and maintained to enhance slope stability soon after being completed.

7.3 Excavations

All excavations should be performed in accordance with FDOT Standard Plans Index 120-002, the latest Standard Specifications for Road and Bridge Construction, and in accordance with OSHA Standards. We recommend that sides of temporary excavations be sloped to 2H:1V or flatter or supported by temporary shorings.

SR-806/ATLANTIC AVENUE FROM TURNPIKE TO JOG ROAD
PALM BEACH COUNTY, FLORIDA
FPID 440575-3-22-02
TSF PROJECT. NO. 7111-20-119

SUMMARY OF BORING AND TEST LOCATIONS

BORING/ TEST NO.	APPROXIMATE TEST LOCATION (FEET)							GROUND SURFACE ELEVATION
	LATITUDE	LONGITUDE	EASTING	NORTHING	STATION	OFFSET	REFERENCE	
B-1	26.45360	-80.17636	582111	2926181	121+40	11 RT	B/L Survey	N/A
B-2	26.45407	-80.17482	582264	2926235	126+64	159.5 LT	B/L Survey	N/A
AB-3	26.45373	-80.17321	582424	2926198	131+69	31 LT	B/L Survey	N/A
B-4	26.45354	-80.17156	582590	2926179	137+11	39 RT	B/L Survey	N/A
AB-5	26.45371	-80.17038	582707	2926197	140+97	19 LT	B/L Survey	N/A
B-6	26.45358	-80.16836	582908	2926185	147+56	30 RT	B/L Survey	N/A
AB-7	26.45375	-80.16674	583069	2926205	182+86	30 LT	B/L Survey	N/A
B-8	26.45358	-80.16511	583232	2926186	158+20	36 RT	B/L Survey	N/A
B-9	26.45395	-80.16362	583381	2926229	163+00	99 LT	B/L Survey	N/A
AB-10	26.45377	-80.16239	583503	2926209	167+10	27 LT	B/L Survey	N/A
B-11	26.45390	-80.15973	583769	2926225	175+82	65 LT	B/L Survey	N/A
AB-12	26.45380	-80.15870	583871	2926215	179+18	25 LT	B/L Survey	N/A
B-13	26.45392	-80.15711	584030	2926229	184+40	62.5 LT	B/L Survey	N/A
B-14	26.45366	-80.15603	584138	2926202	187+93	34 RT	B/L Survey	N/A
AB-15	26.45393	-80.15368	584372	2926233	195+62	59.5 LT	B/L Survey	N/A
AB-16	26.45370	-80.15224	584516	2926208	200+33	27 RT	B/L Survey	N/A
B-17	26.45394	-80.15060	584679	2926236	205+70	59 LT	B/L Survey	N/A
B-18	26.45366	-80.14901	584838	2926206	210+90	45 RT	B/L Survey	N/A
BHP-1	26.45362	-80.16056	583686	2926195	173+09	31.5 RT	B/L Survey	N/A
BHP-2	26.45382	-80.15120	584618	2926223	203+71	17.5 LT	B/L Survey	N/A
MR-1	26.45352	-80.17346	582399	2926174	130+87	44.5 RT	B/L Survey	N/A
MR-2	26.45396	-80.16622	583122	2926228	154+59	105 LT	B/L Survey	N/A
MR-3	26.45363	-80.15951	583790	2926196	176+54	35 RT	B/L Survey	N/A
MR-4	26.45406	-80.15440	584300	2926247	193+30	105 LT	B/L Survey	N/A
MR-5	26.45367	-80.14918	584820	2926207	210+30	40 RT	B/L Survey	N/A

LATITUDE/LONGITUDE, REFERENCE WGS 84
NORTHING/EASTING, REFERENCE UTM WGS 84

TIERRA SOUTH FLORIDA

SUMMARY OF CORROSION TEST RESULTS

Atlantic Blvd PD&E
Palm Beach County, Florida
TSF Project No. 7111-20-119

Boring Number	Depth (ft)	pH (FM 5-550)	Resistivity (ohm-cm) (FM 5-551)	Chlorides (ppm) (FM 5-552)	Sulfates (ppm) (FM 5-553)	Environmental Classification* (Soil)	
						Steel	Concrete
B-4	8.0 - 10.0	8.1	18,000	45	87.0	Slightly Aggressive	Slightly Aggressive
B-9	6.0 - 8.0	7.0	2,800	30	0.0	Moderately Aggressive	Moderately Aggressive
B-14	6.0 - 8.0	7.6	5,100	45	0.0	Slightly Aggressive	Slightly Aggressive
B-17	6.0 - 8.0	7.0	12,000	30	228.0	Moderately Aggressive	Slightly Aggressive

* As per FDOT Structures Design Guidelines, Table 1.1, Updated January, 2019
**** Any reading represented as "0.0" is below the detection limit of 4.8 ppm**

Table 1.3.2-1 Criteria for Substructure Environmental Classifications

Classification	Environmental Condition	Units	Steel		Concrete	
			Water	Soil	Water	Soil
Extremely Aggressive (If any of these conditions exist)	pH		< 6.0		< 5.0	
	Cl	ppm	> 2000		> 2000	
	SO_4	ppm	N.A.		> 1500	> 2000
	Resistivity	Ohm-cm	< 1000		< 500	
Slightly Aggressive (If all of these conditions exist)	pH		> 7.0		> 6.0	
	Cl	ppm	< 500		< 500	
	SO_4	ppm	N.A.		< 150	< 1000
	Resistivity	Ohm-cm	> 5000		> 3000	
Moderately Aggressive	This classification must be used at all sites not meeting requirements for either slightly aggressive or extremely aggressive environments.					
pH = acidity ($-\log_{10}H^+$; potential of Hydrogen), Cl = chloride content, SO_4 = Sulfate content.						

2. Superstructure: Any superstructure located within 2,500 feet of any coal burning

Summary of Borehole Permeability Test Results
PD&E Services for SR-806/Atlantic Ave from Turnpike to Jog Rd
Palm Beach County, Florida

TSF Project No. 7111-20-119

Test Location	Date Performed	Diameter		Depth of Hole	Depth to Groundwater Level Below Ground Surface (Feet)		Hydraulic Head, H_2	Saturated Hole Depth, Ds	Average Flow Rate, Q	Hydraulic Conductivity (K)
		Hole (Inches)	Casing (Inches)	(Feet)	Prior to Test	During Test	(Feet)	(Feet)	(gpm)	($ft^3/sec/ft^2$-ft Head)
BHP-1	5/22/2020	6	4	10.0	5.3	0.0	5.3	4.8	1.10	5.98E-05
BHP-1	5/29/2020	6	4	15.0	5.5	0.0	5.5	9.5	6.00	1.88E-04
BHP-1	5/29/2020	6	4	20.0	5.5	0.0	5.5	14.5	7.00	1.56E-04
BHP-2	5/22/2020	6	4	10.0	6.0	0.0	6.0	4.0	1.20	6.01E-05
BHP-2	5/29/2020	6	4	15.0	5.5	0.0	5.5	9.5	5.00	1.57E-04
BHP-2	5/29/2020	6	4	20.0	5.5	0.0	5.5	14.5	6.00	1.34E-04

Note:

(1) The above hydraulic conductivity values represent an ultimate value. The designer should decide on the required factor of safety

(2) The hydraulic conductivity values were calculated based on the South Florida Water Management Districts's USUAL OPEN HOLE CONSTANT HEAD percolation test procedure.

(3) Casing diameter was used for the calculation of hydraulic conductivity values.

Field Exploration Plan

PD&E SR-806/Atlantic Avenue
from Turnpike to Jog Road
FPID 440575-3-22-02

Legend

- Borehole Percolation Test
- Mr Sample Location
- SPT Boring (10 ft)

Start Project
B1
B2
B3
MR1
B4
B5
B6
MR2
B7
B8
B9
B10
W Atlantic Ave
806
91
Florida's Turnpike (Toll road)
Stone Quarry Rd
Gateway Rd
Hagen Ranch Rd
Lexington Club Blvd
Tranquility Lake Dr
Sweetgum Ave
Sawpine Rd
Eagle Point Dr

N

1000 ft

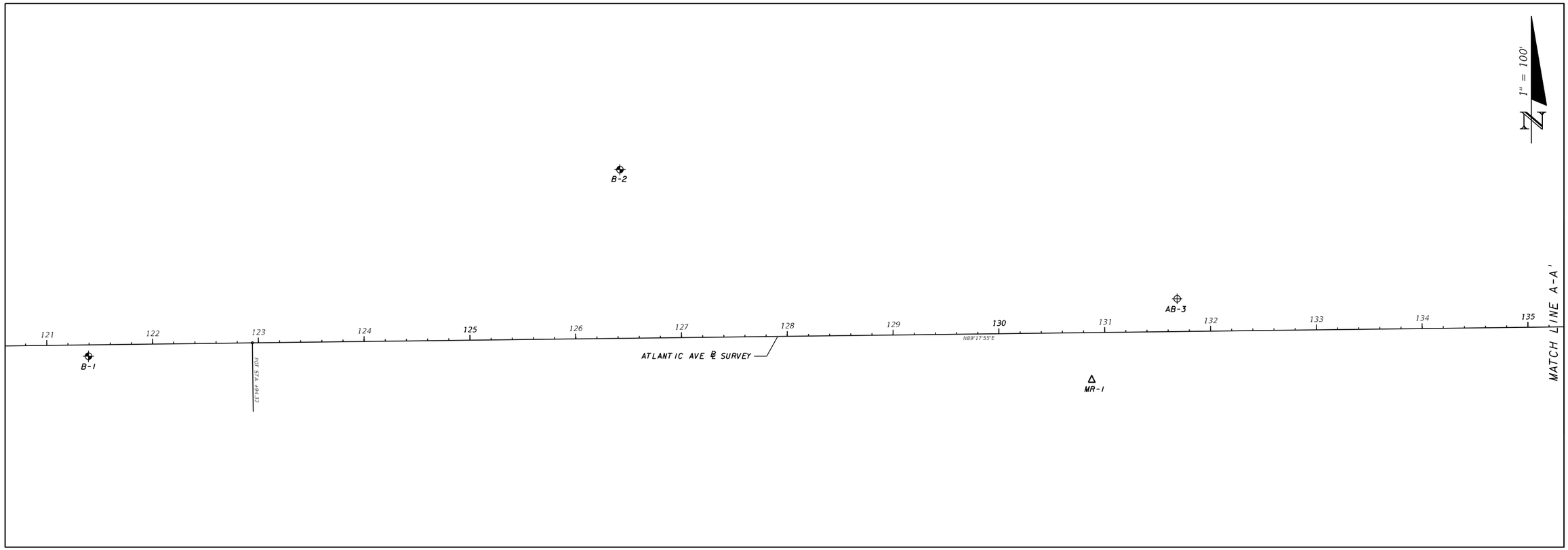
Field Exploration Plan

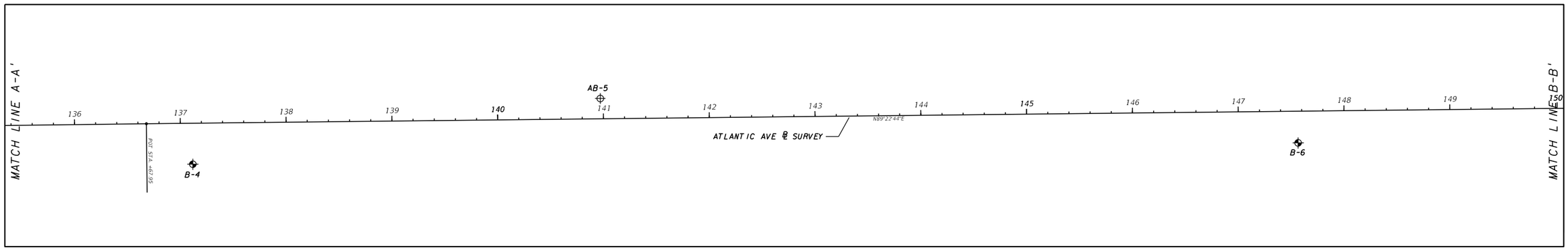
PD&E SR-806/Atlantic Avenue
from Turnpike to Jog Road
FPID 440575-3-22-02

Legend

- Borehole Percolation Test
- Mr Sample Location
- SPT Boring (10 ft)

Abbey Ln
Willowbrook Ln
Bal Moral Ln
Moonlit Dr
Wild Flower Ln
Wildflower Ln
Summersong Ln
806
B11
B12
B13
MR4
B15
B17
Bhp2
End of P
Bhp1
MR3
B14
B16
MR5
B18
Legends Way
Michelangelo Blvd
Tuscany Ln
Jog Rd
Seville Terrace
Strathearn Dr
Seville B
N
1000 ft
Google Earth
© 2020 Google





Approximate Location of SPT Test

Approximate Location of Auger Boring Test

Approximate Location of MR Test

Approximate Location of BHP Test

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AMY GUISINGER, P.E.
P.E. LICENSE NUMBER 63989
TIERRA SOUTH FLORIDA, INC.
2765 VISTA PARKWAY, SUITE 10
WEST PALM BEACH, FL 33411

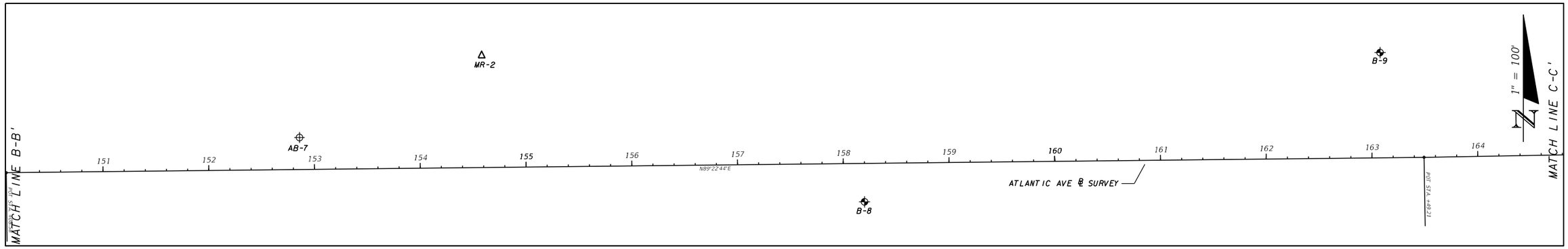
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

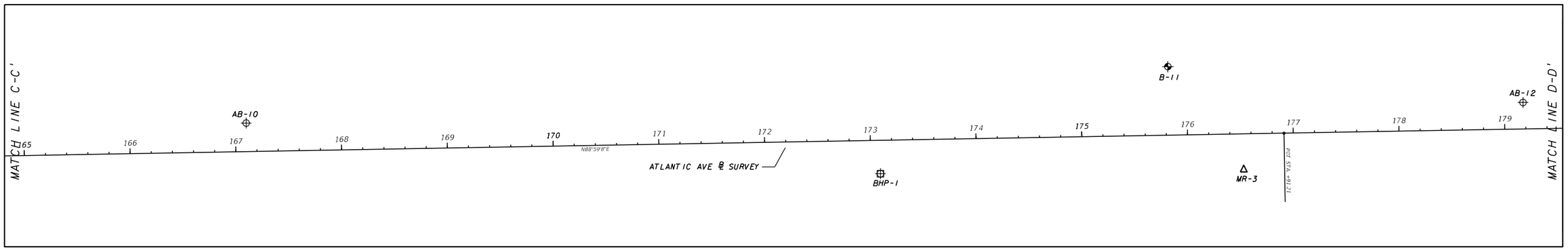
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 806	PALM BEACH	440575-3-22-02

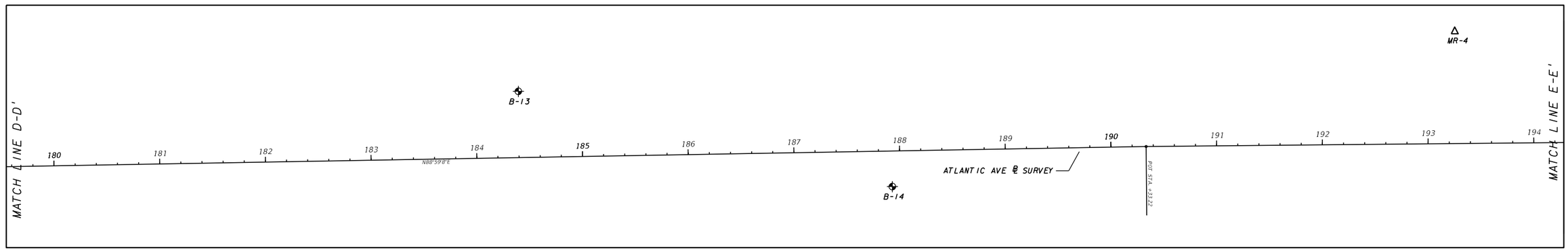
BORINGS LOCATION PLAN

SHEET NO.

jolva 11/16/2020 4:36:51 PM J:\Tierra Documents\Projects\TSF 2020\7111-20-119.Atlantic Blvd PD&E (Scalar)\440575-3-22-02\geotech\aborrd01_siteplan.DGN







Approximate Location of SPT Test

Approximate Location of Auger Boring Test

Approximate Location of MR Test

Approximate Location of BHP Test

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AMY GUISINGER, P.E.
P.E. LICENSE NUMBER 63989
TIERRA SOUTH FLORIDA, INC.
2765 VISTA PARKWAY, SUITE 10
WEST PALM BEACH, FL 33411

STATE OF FLORIDA
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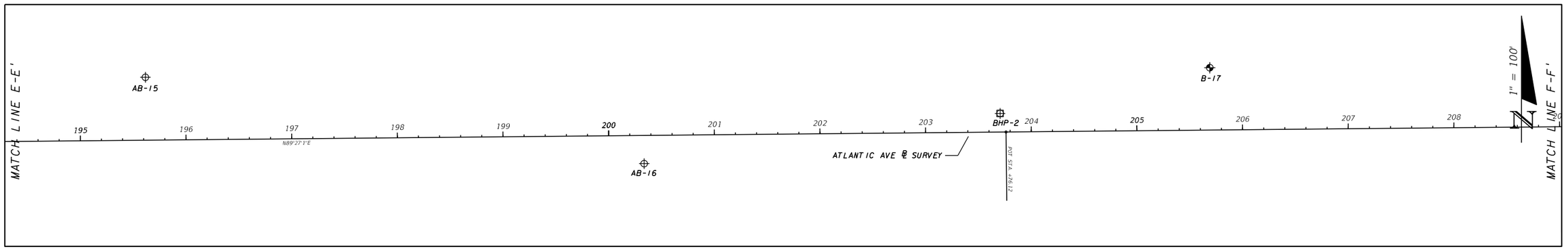
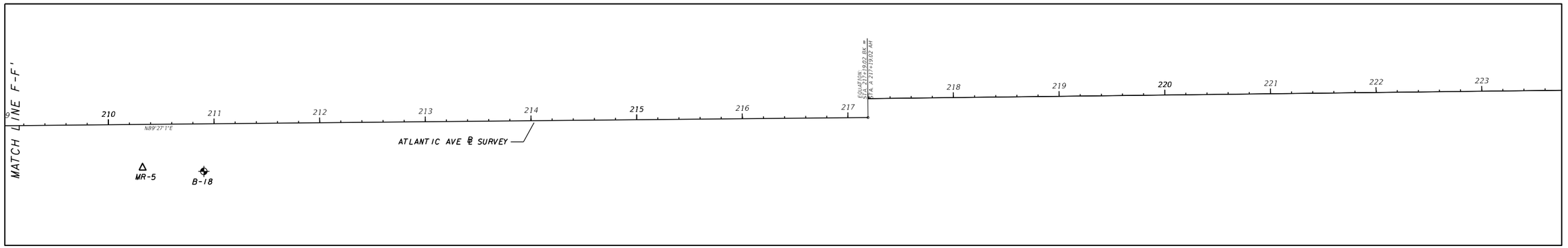
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 806	PALM BEACH	440575-3-22-02

BORINGS LOCATION PLAN

SHEET NO.

jolva 11/16/2020 4:36:51 PM J:\Tierra Documents\Projects\TSF 2020\718-20-119.Atlantic Blvd PD&E (Scalar)\440575-3-22-02\geotech\aborrd01_siteplan.DGN





Approximate Location of SPT Test

Approximate Location of Auger Boring Test

Approximate Location of MR Test

Approximate Location of BHP Test

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 806	PALM BEACH	440575-3-22-02

BORINGS LOCATION PLAN

SHEET NO.

Supporting Documentation

Hazardous Waste Sites – Excerpt from CSER

Table-2: Potential Contamination Sites – Hazardous Waste (RCRA)

Facility Location Number	Facility Name	Facility Address	Facility ID	Facility Type	Discharge	Distance from Project	Other	Risk Rating
4b	United Agri Products	West of Hagen Ranch Road	FLR000072041	CESQG	No	At ROW N	Pesticides Fungicides Herbicides	Low
5b	Atlantic Chevron	7533 West Atlantic Blvd.	FLD984208124	SQG/CESQG	No	At ROW N	Ignitables Corrosives Benzene	No
7	Walgreens #2202	7431West Atlantic Avenue	FLR000089672	SQG	No	354 ft. N	Silver (Photo Developing)	No
10b	Mobil Oil Corp	7255 West Atlantic Avenue	FLD984204677	SQG	No	At ROW N	Ignitables Benzene	No
14	CVS Pharmacy #2966	6464 West Atlantic Avenue	FLR000183327	CESQG	No	At ROW	Ignitables Corrosives Cadmium Chromium Mercury Selenium Pharmaceuticals	No

N/A – Not Available/Applicable; (CE)SQG – (Conditionally Exempt) Small Quantity Generator

APPENDIX F

Bridge Hydraulics Memo

BRIDGE HYDRAULIC MEMORANDUM

Date: October 29, 2021

To: James Poole, PE, FDOT District Four Drainage Engineer

From: David M. Boyer, PE, CFM, Scalar Drainage Engineer

Reference: CA792 – PD&E Services for SR-806/Atlantic Ave from Turnpike to Jog Rd
Bridge No 930032
FM No. 44075-3-22-01
Scalar Project No. FL20006.00

CC: Project File

DESCRIPTION

The project involves widening a 1.8-mile segment of Atlantic Avenue from the Florida's Turnpike to Jog Road in unincorporated Palm Beach County. The proposed project would widen the existing four-lane roadway with no designated bike lanes to a six-lane roadway with consideration for designated bicycle facilities. The existing Atlantic Avenue (SR 806) Bridge over the Lake Worth Drainage District (LWDD) Canal E-2E (Bridge No 930032) will be widened 15'-4-1/8" to add a designated sidewalk on the south side of the bridge. The bridge widening also provides additional room for a bike lane to eastbound Atlantic Avenue. FDOT District Four Drainage Engineer, James Poole P.E., stated in an email on March 18, 2021, attached, that on controlled canals a BHR will not be required however a Bridge Hydraulics memo will be needed. The main criteria for the memorandum are that the waterbody is a controlled canal, the proposed widened bridge maintains the existing low member elevation and that the proposed piles are in line with the existing piles. The north side of the bridge was previously widened by Palm Beach County in 2020 and is like the south side proposed widening. The LWDD approved plans and permit are attached.

PROPOSED BRIDGE WIDENING CONDITIONS

The existing bridge over the LWDD E-2E Canal (Bridge No. 930032) is the only bridge along the study corridor that will be widened. The proposed widening of the bridge is the same for both Alternative 1: Best Fit Alignment and Alternative 2: South Alignment. No new bridges are proposed.

The deck needs to be widened to the south by a total of 15′-4⅛″± to accommodate an additional 11′-0″ lane, 8′-4″ buffered bicycle lane, single slope bridge railing (1′-4″ per Index 521-427), 11′-4″ shared use path, and pedestrian/bicycle railing- aluminum (9½″ per Index 515-061). The widening will follow the span arrangement of the existing bridge: 20′-0″ + 20′-0″ + 20′-0″ = 60′-0″. The existing bridge is not skewed, which will be maintained on the widened portion. The proposed bridge typical section is attached.

The superstructure of the existing bridge is reinforced concrete flat slab 1′-0″ thick. The widened portion of the deck slab will be of the same thickness. The connection/splice detail will include removal of the clear cover of the side of the existing deck and installation of two rows of the dowels (top and bottom). The roadway portion of the deck widening needs to allow for minimum of 1½″ of asphalt overlay.

The existing pile bents will be widened as well. The pile bent caps will be widened by 15′-3¾″±. Extensions of the caps will be done by using dowels. The cap cross-sectional dimensions of the widening portion will match the dimension of the existing bent caps. The widening of the bent caps will include two 18″ prestressed concrete piles for each bent cap.

The existing aerial utility bridge (centerline 5′-6″± from the south face of the existing deck) will be affected by the widening. The bridge carries a 16″ diameter watermain. To avoid relocating the watermain to a temporary location, the construction of the new aerial utility bridge will need to start and be finished before widening of the existing bridge. The layout of the new aerial utility bridge will match the span layout of the existing bridge (20′-0″ + 20′-0″ + 20′-0″ = 60′-0″). The relocation will need to be coordinated with Palm Beach County Water Utilities Department.

The LWDD E-2E Canal is a controlled canal with the Water Control Elevation (WCE) in this area is 14.50 (NAVD 1988), with the Design High Water (DHW) is 14.80, per the LWDD.

LWDD requires a minimum of 40 inches of vertical clearance above WCE and a minimum of 2 feet of vertical clearance above DHW. The existing bridge low member elevation is 18.63. After the widening the bridge low member elevation will remain 18.63 to avoid additional impacts. After the widening the bridge meets LWDD vertical clearance requirements.

Currently the canal is lined with concrete articulated block extending from underneath the bridge and to the north beyond the limits of the bridge widening. LWDD has in the past required articulating block revetment but have changed their criteria to rubble rip rap. The new piles, concrete head walls, and construction activities related to the installation of these item will require the removal of the existing articulated block south of the bridge. Rubble rip rap will be utilized to protect the canal. Additional rubble rip rap will be needed to remove articulated block at the L-34 72” outfall south of the bridge since it will be replaced as part of the roadway widening plans. A LWDD rip rap detail is attached.

CONCLUSION

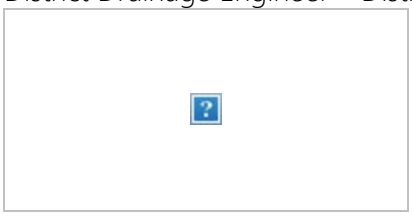
The LWDD E-2E Canal is a controlled canal with set control water elevations per the LWDD. The proposed widening will not lower the low member elevation and all proposed piles and bents will match the existing conditions. Based on the above, the proposed widening is not expected to cause any hydraulic impacts to the E-2E Canal.

Correspondence

From: Poole, James
To: David Boyer, P.E.; Miller, Michael
Cc: John Scarlatos; Brent Morris,P.E.
Subject: Re: Atlantic Avenue crossing the E-2 Canal
Date: Thursday, March 18, 2021 1:52:40 PM
Attachments: image001.png
image004.jpg
Outlook-dmwg0isr.jpg

A very basic BHR (or BHR-like tech memo) should suffice for something like this. No HEC-RAS would be expected.

James Poole, P.E.
District Drainage Engineer – District 4



Florida Department of Transportation
3400 West Commercial Boulevard
Fort Lauderdale, Florida 33309-3421
(954) 777-4204

From: David Boyer, P.E. <dboyer@scalarinc.net>
Sent: Wednesday, March 17, 2021 11:10 AM
To: Poole, James <James.Poole@dot.state.fl.us>; Miller, Michael <Michael.Miller2@dot.state.fl.us>
Cc: John Scarlatos <jscarlatos@scalarinc.net>; Brent Morris,P.E. <bmorris@scalarinc.net>
Subject: RE: Atlantic Avenue crossing the E-2 Canal

Does that mean that a controlled canal does not need a BHR for minor widenings?

David M. Boyer, P.E. CFM
Senior Project Manager

Ph: (561) 429-5065
Cell: (561) 596-8081
dboyer@scalarinc.net
www.scalargroupinc.com
West Palm Beach | Tampa |Orlando | Pensacola

From: Poole, James <James.Poole@dot.state.fl.us>
Sent: Tuesday, March 16, 2021 1:27 PM
To: David Boyer, P.E. <dboyer@scalarinc.net>; Miller, Michael <Michael.Miller2@dot.state.fl.us>
Cc: John Scarlatos <jscarlatos@scalarinc.net>; Brent Morris,P.E. <bmorris@scalarinc.net>
Subject: Re: Atlantic Avenue crossing the E-2 Canal

David,
We're fairly confident we won't have a HEC-RAS model for this bridge because it's over a controlled canal. Have you seen evidence that there should be one out there?

James Poole, P.E.
District Drainage Engineer – District 4
Florida Department of Transportation
3400 West Commercial Boulevard
Fort Lauderdale, Florida 33309-3421
(954) 777-4204

From: David Boyer, P.E. <dboyer@scalarinc.net>
Sent: Tuesday, March 16, 2021 9:38 AM
To: Poole, James <James.Poole@dot.state.fl.us>; Miller, Michael <Michael.Miller2@dot.state.fl.us>
Cc: John Scarlatos <jscarlatos@scalarinc.net>; Brent Morris,P.E. <bmorris@scalarinc.net>
Subject: Atlantic Avenue crossing the E-2 Canal

James: we are doing a PD&E for the widening of Atlantic between the turnpike and Jog road. There will be some widening of the bridge over the LWDD E-2 Canal. I was wondering if you have an existing Hec Ras model for this bridge, either when it was constructed or when KHA widened it to the north last year?

Thanks

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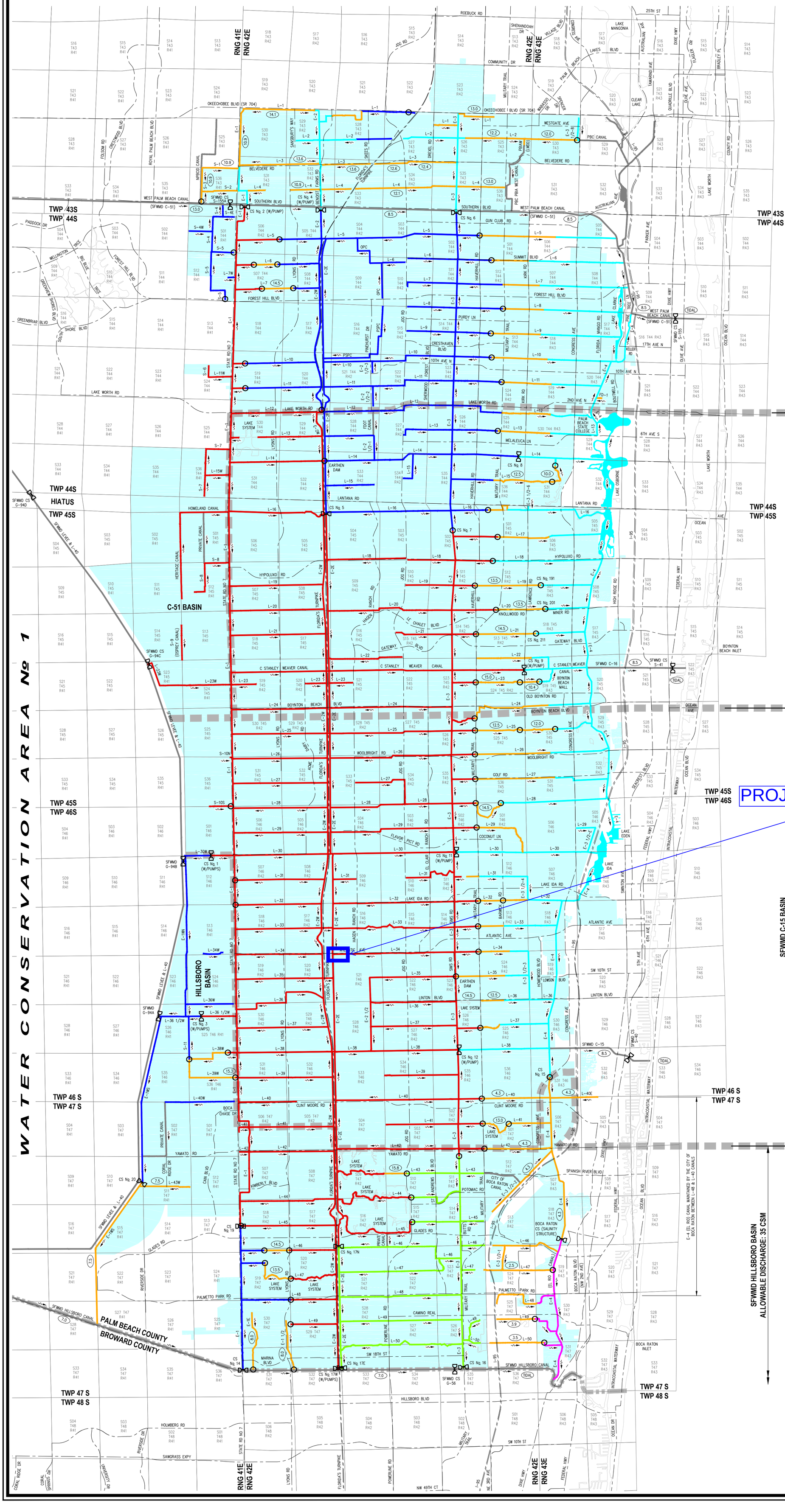
Figures

LAKE WORTH DRAINAGE DISTRICT

MAINTAINED CANAL ELEVATIONS MAP



NOTES: 16.0 NGVD = 14.5 NAVD

1. MAINTENANCE ELEVATION OF THE CONTROL STRUCTURE AND NOT NECESSARILY THE CANAL WATER SURFACE ELEVATION. ACTUAL WATER ELEVATION IN THE CANAL WILL VARY.

2. IF UNSPECIFIED, THE MAINTENANCE ELEVATIONS IN THESE AREAS ARE DEPENDENT ON CANAL BOTTOM ELEVATIONS, CULVERT INVERT ELEVATIONS OR GROUNDWATER INTRUSION.

3. ALL ELEVATIONS ARE SUBJECT TO VERIFICATION BY A CURRENT CANAL CROSS SECTION(S) TO LWDD SPECIFICATIONS.

DISCLAIMER:

THIS MAP SHOWS THE MAINTAINED ELEVATIONS OF LWDD CANALS AND IS TO BE USED FOR INFORMATIONAL PURPOSES ONLY. FOR SPECIFIC DESIGN REQUIREMENTS, PLEASE CONTACT THE LWDD ENGINEERING DEPARTMENT DIRECTLY. CANAL RIGHT-OF-WAY INFORMATION IS NOT SHOWN ON THIS MAP. ALSO, THIS MAP DOES NOT DISTINQUISH CONVEYANCE METHODS BETWEEN OPEN CHANNEL FLOW OR FLOW THROUGH CLOSED CULVERTS.

MAP CREATED BY: RMW • MAP CHECKED BY: JWF • MAP UPDATED: FEBRUARY 2014 • CAD FILE: LWDD_CANAL_MAINT_ELEV_MAP.DWG

LWDD Permit Data

LAKE WORTH DRAINAGE DISTRICT

Stormwater Management Permit

Permit No.: SW-17-0013

Date Issued: August 17, 2017

Permittee: L. Morton Rose
Palm Beach County Road & Bridge
2300 N. Jog Road
West Palm Beach, FL 33411

Permit Use Type: Stormwater Management

Project Description: West Atlantic Avenue will be widened 29 feet from the Florida's Turnpike NB entrance to the Tuscany Shoppes driveway, approximately 0.12 miles. All within the available right of way. LWDD Canal work is limited to new endwall placement.
Consultant No: 2012501

Project Location: LWDD L-34, E-2E Canal; West Atlantic Avenue (SR 806) and Florida's Turnpike (SR91) Intersection, Palm Beach County, Florida
Section 20, Township 46 South, Range 42 East

This permit is issued by the Lake Worth Drainage District (LWDD) pursuant to an initial application received on August 8, 2017, and approves the drainage as specified in the signed and sealed plans submitted on August 8, 2017. The application, including all plans and specifications submitted to LWDD, is by reference made a part hereof. This permit is subject to the general and special conditions contained herein, which the permittee acknowledges and agrees to be bound by acceptance of this permit.

Should the permittee object to any permit conditions, a request to petition the LWDD Board of Supervisors must be submitted in writing no later than 30 days from date of permit issuance. The LWDD Board of Supervisors will consider the petition at the next available Board meeting, providing the petition is received more than 10 business days prior to the next available Board meeting. All petitions should include permittee name, contact information, condition(s) being contested, and explanation of disputed items.

1.0 General Conditions

1.1 All structures and/or works located on LWDD rights-of-way constructed by permittee shall remain the property of the permittee, who shall be solely responsible for ensuring that such structures and other uses remain in good and safe condition. It is left to the sole discretion of LWDD to determine whether or not the facilities are being properly maintained. Permittees are advised that other federal, state and local safety standards may govern the occupancy and use of the LWDD's rights-of-way. The LWDD assumes no duty with regard to ensuring that such uses are so maintained and assumes no liability with regard to injuries caused to others by any such failure.

1.2 Permittee solely acknowledges and accepts the duty and all associated responsibilities to incorporate safety features, which meet applicable engineering practice and industry standards, into the design, construction, operation and continued maintenance of the permitted facilities/authorized use. This duty shall include, but not be limited to, permittee's consideration of LWDD's regulation and fluctuation, without notice, of water levels in canals and works, as well as the permittee's consideration of upgrades and modifications to the permitted facilities/authorized use which may be necessary to meet any future changes to applicable engineering practice and accepted industry standards. Permittee acknowledges

that LWDD's review and issuance of this permit, including, but not limited to, any field inspections performed by LWDD, does not in any way consider or ensure that the permitted facilities/authorized use is planned, designed, engineered, constructed, or will be operated, maintained or modified so as to meet applicable engineering practice and accepted industry standards, or otherwise provide any safety protections. Permittee further acknowledges that any inquiries, discussions, or representations, whether verbal or written, by or with any LWDD staff or representative during the application review and permit issuance process, including, but not limited to, any field inspections, shall not in any way be relied upon by permittee as LWDD's assumption of any duty to incorporate safety features, as set forth above, and shall also not be relied upon by permittee in order to meet permittee's duty to incorporate safety features, as set forth above.

1.3 Permittee agrees to abide by all terms and conditions of this permit, including any representations made on the permit applications and related documents. Permittee agrees to pay all demolition, removal and restoration costs, investigative costs, court costs and reasonably attorney's fees, including appeals, resulting from any action taken by LWDD to obtain compliance with the conditions of the permit or removal of the permitted use. If legal action is taken by LWDD, "reasonable attorney's fees" is understood to mean the fair market value of the services provided, based upon what a private attorney would charge.

1.4 This permit does not create any vested rights, and except for governmental entities and utilities, is revocable at will upon 30 days prior written notice. LWDD reserves the right to amend the terms and conditions contained herein at any time and for any reason. Permittee bears all risk of loss as to monies expended in furtherance of the permitted use. Upon revocation, the permittee shall promptly modify, relocate or remove the permitted use and properly restore the right-of-way to the LWDD's satisfaction. In the event of failure to so comply within the specified time frame, LWDD may remove the permitted use and permittee shall be responsible for all removal and restoration costs.

1.5 This permit does not convey any property rights nor any rights or privileges other than those specified herein and this permit shall not, in any way, be construed as an abandonment of any other such impairment or disposition of LWDD's property rights. The LWDD approves the permitted use only to the extent of its interest in the works of LWDD. Permittee shall obtain all other necessary federal, state, local, special district and private authorizations prior to the start of any construction or alteration authorized by this permit. Permittee shall comply with any more stringent conditions or provisions which may be set forth in other required Permits or other authorizations. However, the LWDD, assumes no duty to ensure that any such authorizations have been obtained or to protect the legal rights of the underlying fee owner, in those instances where the LWDD owns less than fee.

1.6 Unless specifically prohibited or limited by statute, permittee agrees to indemnify, defend and save the LWDD (which used herein includes LWDD and its past, present and/or future employees, agents, representatives, officers and/or Board members and any of their successors and assigns) from and against any and all lawsuits, actions, claims, demands, losses, expenses, costs, attorney's fees, judgements and liabilities which arise from or may be related to the ownership, construction, maintenance or operation of the permitted use or the possession, utilization, maintenance, occupancy or ingress and egress of the LWDD's right-of-way which arise directly or indirectly and are caused in whole or in part by the acts, omissions or negligence of the permittee or of third parties. Permittee agrees to provide legal counsel acceptable to the LWDD if requested for the defense of any such claims.

1.7 Permittee releases LWDD for any and all damages that may be caused by LWDD to the permitted use, while exercising its responsibilities and obligations of maintenance of its drainage system. The LWDD is not responsible for the repair of or claims of damage to any facilities and uses which may incur damage resulting from water fluctuations or flows, or by the use of LWDD's rights-of-way by LWDD or a third party. Improvements placed within the right-of-way are done so at the sole risk of the owner/permittee.

1.8 The LWDD is not responsible for any personal injury or property damage which may directly or indirectly result from the use of water from the LWDD canals or any activities which may include use of contact with water from LWDD canals, since LWDD periodically sprays its canals and/or rights-of-way for aquatic weed control purposes and uses substances which may be harmful to human health or plant life.

1.9 Permittee acknowledges that LWDD is exempt from liability for personal injury and damages that may arise as a result of the issuance of this Permit by virtue of Florida Statute, Chapter No. 2003-344.

1.10 The LWDD does not waive sovereign immunity.

1.11 The permittee shall not engage in any activity regarding the permitted use which interferes with the construction, alteration, maintenance or operation of the works of LWDD, including:

a) Discharging of debris or aquatic weeds into the works of LWDD;
b) Causing erosion or shoaling within the works of LWDD;
c) Planting trees or shrubs or erecting structures which limit or prohibit access by LWDD equipment and vehicles, except as may be authorized by the permit;
d) Leaving construction or other debris on the LWDD right-of-way or waterway;
e) Damaging LWDD berms and levees;
f) Removing of LWDD owned spoil material;
g) Removing or damaging LWDD locks, gates, and fencing;
h) Opening of LWDD rights-of-way to unauthorized vehicular access; or
i) Running or allowing livestock on the LWDD rights-of-way.

1.12 Permittee shall allow all LWDD staff the right to inspect the permitted use at any reasonable time.

1.13 Permittee shall allow, without charge or any interference, the LWDD, its employees, agents, and contractors, to utilize the permitted facilities before, during and after construction for the purpose of conducting LWDD's routine and emergency, canal operation, maintenance, and construction activities. To the extent there is a conflicting use, the LWDD's use shall have priority over the permittee's use.

1.14 This permit is non-exclusive and revocable. Permittee shall not interfere with any other existing or future permitted uses or facilities authorized by the LWDD.

1.15 If the use involves the construction of facilities for a non-exempt water withdrawal or surface water discharge, the permittee must apply for and obtain the appropriate water management permit before or concurrently with any activities which may be conducted pursuant to this permit.

1.16 Permittee authorizes the LWDD to record the permit through filing the appropriate notice in the public records of Palm Beach County. Governmental entities and utilities are not subject to this provision.

1.17 Permittee shall be responsible for the repair or replacement of any existing facilities located within the LWDD right-of-way which are damaged as a result of construction or maintenance of the authorized facility.

1.18 If determined that the permitted use interferes with LWDD's canal maintenance, operations or rehabilitation efforts, permittee agrees that all or part of the permitted use must be removed and/or reconstructed at the permittees expense.

1.19 Permittee shall provide prior written notice to their successors in title of the permit and its terms and conditions. As the LWDD has no control over the sale or transfer of real or personal property, it is the sole obligation of a permittee to disclose the existence of an LWDD right-of-way permit, its terms and conditions to prospective purchasers.

1.20 Permittee agrees that the transfer of any rights, title or interests of the property or facility ownership referenced in this permit herein shall require a transfer of permit. All successors and assigns shall be required to apply for a transfer of permit with LWDD within 60 days of obtaining property or facility. LWDD shall have the right to approve in writing the successors and assigns of transfer of any rights or conditions contained in this permit, which approval shall not be unreasonably withheld. Failure to submit a transfer of permit shall be considered a default of the terms and conditions of this permit and LWDD shall have the right to terminate this permit upon 10 days written notice to permittee.

1.21 Permittee agrees that no other encroachments and/or facilities shall be located within the right-of-way without prior authorization from LWDD.

1.22 It shall be the responsibility of the permittee to locate and protect the underground facilities of the LWDD or those of others prior to and during construction.

1.23 Permittee shall take the necessary precautions to prevent turbidity and/or silting upstream or downstream during construction.

1.24 All unpermitted facilities installed prior to or during construction must be removed prior to the project's final approval.

1.25 The permittee must make a copy of this permit available and/or post at the job site prior to and during any construction. Failure to comply may result in suspension of construction.

1.26 Permittee agrees that significant construction shall commence within one year and construction be complete within two (2) years from the date of permit issuance or the permit may terminate and a new permit application must be submitted. The new application must meet current operating policies including current applicable fees. Prior to the expiration date, the permittee may submit a request in writing for an extension of time to commence or complete construction.

1.27 Permittee or permittee's representative shall notify the LWDD construction inspector at least forty-eight (48) hours prior to any work to be undertaken within LWDD rights-of-way. All underground installations must be inspected prior to backfilling.

1.28 No dewatering into LWDD canals is authorized until written notification of approval from South Florida Water Management District has been submitted to LWDD.

1.29 Any non-compliance by the permittee of any condition listed herein will result in the termination of this permit, removal of permitted uses or facilities at the permittees expense, and/or LWDD requesting other jurisdictional agencies to withhold their final approvals.

1.30 Special Conditions that are specific to the project site and right-of-way usage shall be incorporated into every permit as may be necessary in the best interest of the LWDD.

2.0 Special Conditions

2.1 This permit authorizes the Stormwater Management as represented on the application, plans and/or specs submitted by Kimley-Horn & Associates, on August 8, 2017.

2.2 If applicable, pursuant to the approved plans, the Permittee shall reconstruct canal(s) to approved design section along and adjacent to the project's limits, including clearing and proper sloping of the maintenance berms. The cleared canal berms and side slopes shall be stabilized. The type of stabilization shall be approved by LWDD. This construction shall be completed prior to any building activity adjacent to LWDD rights-of-way. Please be advised that any fill material scheduled to be removed from the canal may not be relied on for site work.

2.3 If applicable, pursuant to the approved plans, the emergency control type structure(s) shall remain closed at all times unless specific written approval is granted by LWDD for its operation. At no time, shall the structure(s) be operated to bypass the water quality detention requirements for the project or to lower the lake levels below the permitted control elevation for the project. If for whatever reason it is determined that the Permittee is not complying with the directives of the LWDD, and/or is operating the structure(s) contrary to their intended purpose as an emergency outflow, the structure(s) shall be modified by LWDD to render the emergency structure(s) inoperable. In addition, the emergency structure(s) shall be equipped with a lock mechanism to prevent its unauthorized use, and a staff gauge shall be installed upstream of the structure(s) so that lake levels within the project can be quickly determined. By accepting this permit, the Permittee and/or assigns agree to allow LWDD to ingress/egress and render the emergency portion of the structure(s) inoperable for non-compliance or to prevent potential or actual unacceptable adverse impacts.

2.4 Permittee is to construct any sidewalk or pathway that is proposed within LWDD's rights-of-way with six-inch (6") thick concrete, or to meet LWDD approved alternate loading and material(s). The LWDD will not be held responsible or liable for any damage to the sidewalk or pathway resulting from LWDD operations and maintenance procedures, or any property damage or personal injury resulting from any sidewalk or pathway damage. All repairs are to be the responsibility of the Permittee.

2.5 Permittee shall restore LWDD's right-of-way to its original or better condition where disturbed by construction activity.

2.6 At the time of installation, a permanent benchmark shall be established at 2nd order, class II or better on top of the control structure(s) with the elevation clearly defined, pursuant to the National Geodetic Survey standards and requirements for leveling.

2.7 Where improvements are erected on lots or parcels contiguous to LWDD canals, the Permittee shall install gutters and downspouts eliminating surplus water overland flow, assuring the route of said water into the on-site drainage facility and/or storm sewer system.

2.8 Permittee shall submit record drawings within sixty (60) days of project completion. Drawings should show, as a minimum, perimeter grading at or above the design storm and control structure elevations. Failure of the Permittee to provide these drawings within the time specified may result in LWDD requesting that all jurisdictional agencies withhold their final approval until the drawings are received and approved by LWDD.

2.9 All underground utility installations in LWDD rights-of-way must have a minimum depth (cover) of thirty-six inches (36") unless an alternate design is approved. All underground utilities placed within LWDD's canal rights-of-way must be identified with LWDD approved permanent witness markers identifying utility type and location.

2.10 Permittee shall obtain any and all permits required by any governmental agency and/or municipality that may be involved, prior to the commencement of any construction.

2.11 Permittee agrees that the stormwater discharge authorized by this permit shall comply with all applicable provisions of Part IV of Chapter 373, Florida Statutes, as well as applicable management and storage of surface water rules, including but not limited to, 40E-4.301, 40E-400.215, and 40E-400.315, Florida Administrative Code, and Section 5.2 of the SOUTH FLORIDA WATER MANAGEMENT DISTRICT Basis of Review. All costs of correcting any violations of SOUTH FLORIDA WATER MANAGEMENT DISTRICT law and rules shall be the exclusive obligation of Permittee.

2.12 The Permittee, LWDD approved assignees, and/or successors in title agree to operate and maintain the system/facility in perpetuity, including correction of any damages caused as a result of this installation.

2.13 In the event it becomes necessary for LWDD to expand or further utilize its facilities within its right-of-way, the Permittee shall after reasonable notice (the same not to exceed sixty (60) days), effect such removal of the permitted facility as LWDD may reasonably require from time to time so as to allow and not delay LWDD canal or right-of-way improvements and further, the Permittee shall maintain in good safe operating condition the facility permitted and involved herein.

2.14 Permittee may, at its sole expense, modify the facility involved and installed herein under the condition that same does not unreasonably interfere with LWDD's use of its right-of-way and under the condition that the plans and specifications for such modification have been approved in writing by LWDD.

2.15 It shall be the responsibility of the Permittee or Permittee's contractor(s) installing the above described facility to maintain the continuous uninterrupted free flow of water in the canal. It shall further be the duty of the Permittee to obtain the approval of LWDD for any construction methods, which would be contrary to the above. The Permittee shall also be responsible for the installation of silt screens and/or turbidity barriers as necessary to maintain the clarity of the water. PERMITTEE'S FAILURE TO COMPLY WITH WRITTEN NOTICE OF A VIOLATION OF THE CONDITIONS OF THIS PERMIT SHALL, AFTER FIVE (5) WORKING DAYS, AUTOMATICALLY WITHOUT FURTHER NOTICE VOID THIS PERMIT, BUT NOT THE

PERMITTEE'S LIABILITY INVOLVED HEREIN. ANY BOND CONDITIONED BY THIS PERMIT SHALL BE UTILIZED FOR THE RESTORATION OF ANY DAMAGES DONE TO THE CANAL RIGHT-OF-WAY BY THE PERMITTEE OR THE PERMITTEE'S CONTRACTOR(S).

2.16 In consideration of and by acceptance of the permit issued by the LWDD, the undersigned agrees to perform the above. Further, each party shall be liable for its own actions and negligence and, to the extent permitted by law, Permittee shall indemnify, defend and hold harmless LWDD against any actions, claims, or damages arising out of Permittee's negligence in connection with this agreement, and LWDD shall indemnify, defend and hold harmless Permittee against any actions, claims, or damages arising out of LWDD's negligence in connection with this agreement. The foregoing indemnification shall not constitute a waiver of sovereign immunity beyond or alter the limits set forth in Florida Statutes Section 768.28, nor shall the same be construed to constitute agreement by either party to indemnify the other party for such other party's, or any third party's negligent, willful or intentional acts or omissions.

Permittee acknowledges that LWDD is exempt from liability for personal injury and damages that may arise as a result of the issuance of this Permit by virtue of Florida Statute, Chapter No. 2003-344.

This permit shall expire two (2) years from issuance date, should construction fail to be completed.

During the duration of this permit, Permittee shall at all times provide LWDD access through LWDD right(s)-of-way.

Approved by:

Patrick A. Martin, P.E.
Senior Engineer

James W. Fandrey, P.E.
Assistant Director of Right-of-Way

THIS CONTRACT PLAN SET INCLUDES

ROADWAY PLANS
SIGNING AND PAVEMENT MARKING PLANS
SIGNALIZATION PLANS
STRUCTURES PLANS
UTILITY RELOCATION PLANS (NOT INCLUDED)

INDEX OF SHEETS

1	KEY SHEET
1A	SIGNATURE SHEET (NOT INCLUDED)
2	TYPICAL SECTION
3	SUMMARY OF QUANTITIES
4	SUMMARY OF DRAINAGE STRUCTURES
5-6	GENERAL NOTES
7-9	PLAN SHEET
10-14	DRAINAGE STRUCTURES
15	DRAINAGE DETAIL SHEET
16	EOP PROFILE
17-18	ROADWAY SOIL SURVEY (NOT INCLUDED)
19-25	CROSS SECTIONS
26-27	PROJECT NETWORK CONTROL
28-29	UTILITY ADJUSTMENT SHEET

COUNTY OF PALM BEACH
STATE OF FLORIDA

BOARD OF COUNTY COMMISSIONERS

PROJECT NO. 2012501

WEST ATLANTIC AVENUE AND FLORIDA'S TURNPIKE INTERSECTION IMPROVEMENTS

HAL R. VALECHE
DISTRICT 1

PAULETTE BURDICK
DISTRICT 2
MAYOR

DAVE KERNER
DISTRICT 3

STEVEN L. ABRAMS
DISTRICT 4

MARY LOU BERGER
DISTRICT 5

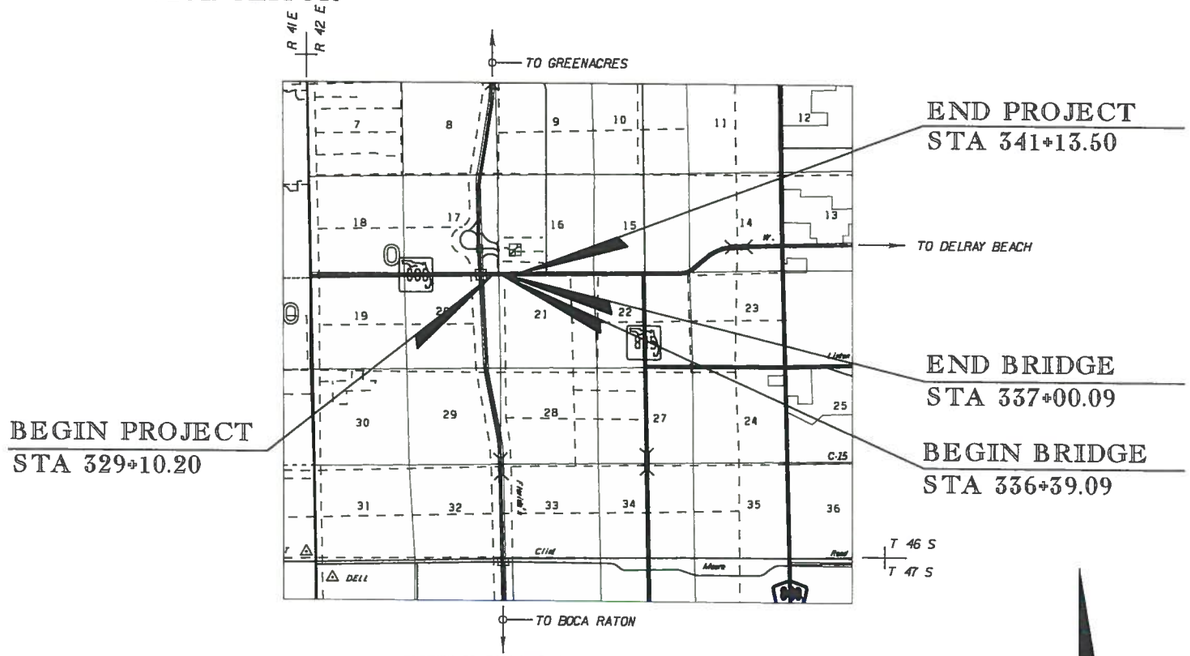
MELISSA McKINLAY
DISTRICT 6
VICE MAYOR

MACK BERNARD
DISTRICT 7

PALM BEACH COUNTY • FLORIDA

MARWAN H. MUFLEH * ENGINEER * No. 45329 * STATE OF FLORIDA * PROFESSIONAL ENGINEER

7-31-17



SECTION 20, TOWNSHIP 46 SOUTH, RANGE 42 EAST

LOCATION MAP

PROJECT LENGTH IS BASED ON ℄ OF CONSTRUCTION

LENGTH OF PROJECT		
	LINEAR FEET	MILES
ROADWAY	1203.30	0.228
BRIDGES	61.00	0.012
NET LENGTH OF PROJECT	1264.30	0.240
EXCEPTIONS	-	-
GROSS LENGTH OF PROJECT	1264.30	0.240

B.M. DATA IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD-'88).

PERMIT PLANS
JULY 26, 2017

Kimley»Horn

PLANS PREPARED BY:
KIMLEY-HORN AND ASSOCIATES, INC.
CONSULTING ENGINEERS AND PLANNERS
1920 WEKIVA WAY, SUITE 200
WEST PALM BEACH, FLORIDA 33411
FLORIDA BUSINESS CERT. NO. 696
PHONE (561) 845-0665
FAX (561) 863-8175

ROADWAY PLANS

ENGINEER OF RECORD: MARWAN H. MUFLEH, P.E.

P.E. NO.: 45329

ENGINEERS CERTIFICATION

I HEREBY CERTIFY THAT THE ATTACHED PLANS AND DESIGN ARE IN SUBSTANTIAL COMPLIANCE WITH THE DESIGN STANDARDS AND CRITERIA IN EFFECT ON THIS DATE FOR PALM BEACH COUNTY ENGINEERING DEPARTMENT AND THE STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION.

APPROVED BY: MARWAN H. MUFLEH, P.E.

DATE: ____

P.E. NO.: 45329

GOVERNING STANDARDS AND SPECIFICATIONS :
FLORIDA DEPARTMENT OF TRANSPORTATION.
ROADWAY AND TRAFFIC DESIGN STANDARDS
DATED JANUARY 2017-18 AND
GOVERNING SPECIFICATIONS DATED 2017 ARE
CONTAINED IN THE CONTRACT DOCUMENTS
FOR THIS PROJECT.

SPEED LIMIT = 45 MPH
PERMIT # 17C-496-0002-93030

RECEIVED
AUG 08 2017
LWDD

PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ENGINEERING SERVICES
P. O. BOX 21229, WEST PALM BEACH, FLORIDA

NO. | REVISION | BY | DATE

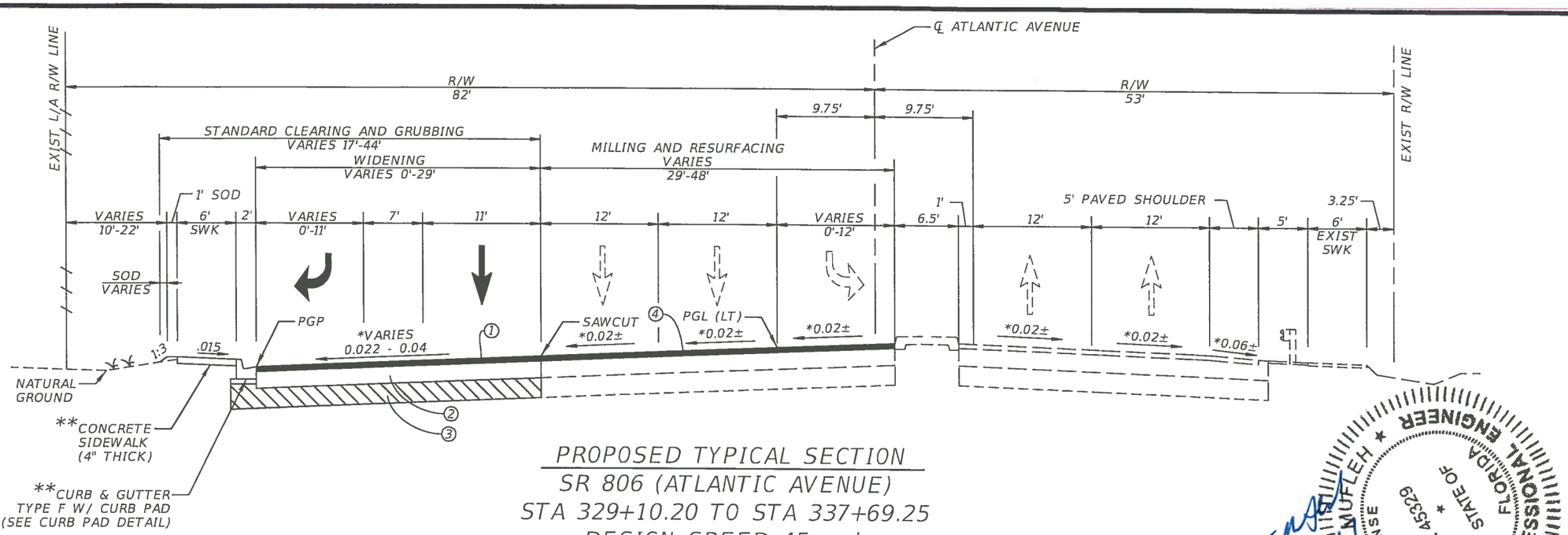
SCALE:
APPROVED: MHM
DRAWN: SMB
CHECKED: MHM
DATE: 11/30/2015
FIELD BOOK NO.

PROJECT: WEST ATLANTIC AVENUE AND FLORIDA'S TURNPIKE INTERSECTION IMPROVEMENTS
DESIGN FILE NAME: KEYSHOO1.DGN
DRAWING NO.

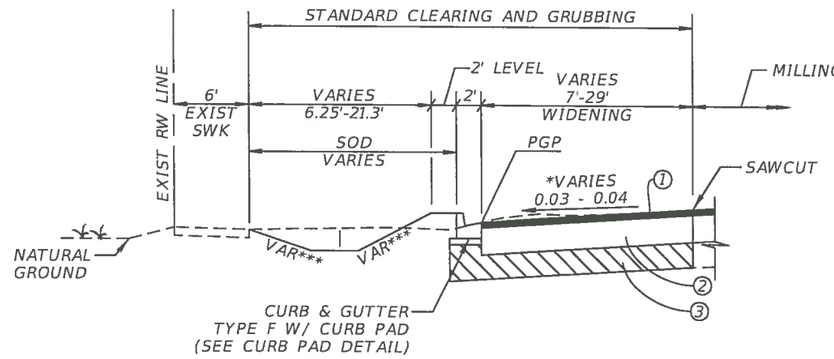
SHEET: 1
OF: 29
PROJECT NO. 2012501

EW-111-00028

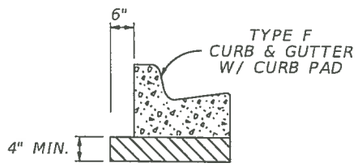
brandon.kern 7/26/2017 4:00:13 PM



PROPOSED TYPICAL SECTION
SR 806 (ATLANTIC AVENUE)
STA 329+10.20 TO STA 337+69.25
DESIGN SPEED 45 mph



PROPOSED HALF TYPICAL SECTION
SR 806 (ATLANTIC AVENUE)
STA 337+69.25 TO STA 341+13.50
DESIGN SPEED 45 mph



CURB PAD DETAIL
N.T.S.

*: REFER TO BRIDGE WIDENING PLANS FOR CROSS SLOPES AT BRIDGE AND BRIDGE APPROACH SLABS. 0.0216 CROSS SLOPE LOCATED AT CONNECTIONS TO APPROACH SLABS (STA. 336+19.09 AND 337+20.09).

**: BEGIN SIDEWALK, CURB & GUTTER CONST. STA 333+73.25

*** NOT LESS THAN 1:6 OR GREATER THAN 1:4 SEE CROSS SECTION FOR ADDITIONAL INFORMATION

NOTES:

1. NONE OF THE EXISTING BASEROCK REMOVED IS TO BE USED IN THE CONSTRUCTION OF THE NEW BASEROCK.
2. ALL PAVED AREAS WITHIN THE PROJECT LIMITS WHICH ARE NOT SPECIFICALLY COVERED BY A "TYPICAL SECTION" SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PAVEMENT SPECIFICATIONS INDICATED HEREIN, UNLESS OTHERWISE NOTED.
3. CURB PADS ARE REQUIRED AT ALL CURB AND GUTTER LOCATIONS. THEY SHALL BE CONSTRUCTED OF 4" TYPE B-12.5 ASPHALT BASE AND EXTEND A MINIMUM OF 6" BEYOND THE BACK OF CURB AND GUTTER. COST OF CURB PAD SHALL BE INCLUDED IN THE PRICE FOR CURB AND GUTTER.

MILLING & RESURFACING

MILLING: MILL 1.5" EXIST ASPHALT (AVG)

④ RESURFACE: RESURFACE 1.5" ASPHALTIC CONCRETE FRICTION COURSE (FC-12.5) RUBBER

PAVEMENT DESIGN - WIDENING

① SURFACE: 1.5" ASPHALTIC CONCRETE FRICTION COURSE (FC 12.5) RUBBER OVER 2.5" TYPE SP STRUCTURAL COURSE (TRAFFIC C)

② BASE: OPTIONAL BASE GROUP 7

③ SUBBASE: 12" TYPE B STABILIZED SUBGRADE (LBR 40)

MARWAN H. MUFLEH * PROFESSIONAL ENGINEER * STATE OF FLORIDA * No. 45329 * LICENSE

7-31-17

Kimley»Horn
Certificate Of Authorization No. 696
MARWAN MUFLEH, P.E.
License No. 45329
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

NO.	REVISION	BY	DATE

PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SO
DATE:	11/30/15

TYPICAL SECTION

DESIGN FILE NAME	DRAWING NO.
TYPSR001.DGN	

SHEET: 2
OF: 29
PROJECT NO. 2012501

braedon.kern 7/26/2017 4:00:14 PM

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	
			ORIG.	FINAL
1	MOBILIZATION	LS	1	
2	MAINTENANCE OF TRAFFIC (INCL. PEDESTRIAN M.O.T.)	LS	1	
3	CLEARING & GRUBBING	LS	1	
4	TOTAL EXCAVATION	CY	1374	
5	EMBANKMENT	CY	110	
6	TYPE B STABILIZATION (LBR 40)(12")	SY	1615	
7	OPTIONAL BASE, BASE GROUP 07	SY	1449	
8	MILLING EXIST ASPH PAVT, 1 1/2" AVG DEPTH	SY	5263	
9	TYPE SP STRUCTURAL COURSE (TRAFFIC C)	TN	199	
10	ASPHALTIC CONCRETE FRICTION COURSE (FC-12.5, RUBBER)	TN	556	
11	MISCELLANEOUS ASPHALT PAVEMENT	TN	2	
12	INLETS (CURB)(TYPE P-3)<10'	EA	1	
13	INLETS (CURB)(TYPE P-4)<10'	EA	1	
14	INLETS (CURB)(TYPE P-5)<10'	EA	1	
15	INLETS (CURB)(TYPE 9)<10'	EA	1	
16	INLETS (DITCH BOTTOM)(TYPE D)	EA	1	
17	CLOSED FLUME INLET	EA	1	
18	MANHOLES (J-7)<10'	EA	1	
19	CONCRETE CLASS I, ENDWALLS	CY	6.00	
20	CONCRETE PIPE CULVERT (15")	LF	12	
21	CONCRETE PIPE CULVERT (18")	LF	52	
22	CONCRETE PIPE CULVERT (24")	LF	142	
23	FRENCH DRAIN, (24" DIA.)(INCL. BALLAST ROCK AND FILTER FABRIC)	LF	92	
24	CONCRETE CURB & GUTTER (TYPE F)	LF	586	
25	CONCRETE SIDEWALK (4" THICK)	SY	1587	
26	CONCRETE SIDEWALK (6" THICK)	SY	43	
27	RIPRAP-RUBBLE, BANK & SHORE	TN	729	
28	GUARDRAIL (ROADWAY)	LF	150	
29	GUARDRAIL REMOVAL	LF	130	
30	SPECIAL GUARDRAIL POSTS	EA	1	
31	END ANCHORAGE ASSEMBLY (PARALLEL)	EA	1	
32	GUARDRAIL BRIDGE ANCHORAGE ASSEMBLY/APPROACH TRANSITION TO RIGID BARRIER	EA	1	
33	SODDING	SY	571	
34			-	
35			-	
36			-	

PAY ITEM FOOT NOTES

1. INCLUDES NPDES EROSION CONTROL MEASURES.
2. INCLUDES ALL ITEMS FOR MAINTENANCE OF TRAFFIC WHICH ARE NOT INCLUDED FOR PAYMENT UNDER SEPARATE ITEMS. INCLUDES PEDESTRIAN MAINTENANCE OF TRAFFIC IN ACCORDANCE WITH SECTION GP-18 OF THE SPECIFICATIONS. INCLUDES THE PREPARATION OF DETAILED MAINTENANCE OF TRAFFIC PLANS.
4. COST OF CLEARING & GRUBBING ALSO INCLUDES COSTS OF EXIST DRAINAGE STRUCTURES AND PIPES REMOVAL.

12-23. COST OF DRAINAGE STRUCTURES INCLUDES ALL COSTS FOR TEMPORARY SHORING AND SHEET PILING THAT MAY BE REQUIRED TO AVOID ENCROACHMENT OUTSIDE RIGHT-OF-WAY OR CONSTRUCTION EASEMENT LINES SHOWN IN THE PLANS. INCLUDES ALL COSTS ASSOCIATED WITH PROPER PIPE CONNECTION TO EXISTING DRAINAGE STRUCTURE.

19. REINFORCING STEEL FOR ENDWALL IS INCLUDED IN THE COST OF CONCRETE CLASS I.
23. COST OF 24" FRENCH DRAIN TO INCLUDE COST OF PIPE, PIPE PLUGS, PIPE FITTINGS, CONCRETE JACKET, BALLAST ROCK, FILTER FABRIC ENVELOPE, SKIMMER, TRENCH EXCAVATION, BACKFILL, COMPACTION, AND DISPOSAL OF SURPLUS EXCAVATED MATERIAL PER FDOT INDEXES 280 & 285. INCLUDES ALL COSTS FOR TEMPORARY SHORING AND SHEET PILING THAT MAY BE REQUIRED TO AVOID ENCROACHMENT OUTSIDE RIGHT-OF-WAY OR CONSTRUCTION EASEMENT LINES INCLUDES COSTS OF PROVIDING 8' OF SOLID 24" RCP COMPLETE WITH CONNECTIONS OF THE FRENCH DRAIN ON BOTH ENDS PER INDEX 285, ORIENTED TO MATCH PROPOSED SIDEWALK (LOCATION TO BE DETERMINED IN THE FIELD).
24. INCLUDES COST OF FURNISHING 4" TYPE B-12.5. ASPHALT CURB PAD.

SUMMARY OF EARTHWORK

DESCRIPTION	P CY	F CY
REGULAR EXCAVATION	1040	
CHANNEL EXCAVATION	334	
TOTAL EXCAVATION	1374	
EMBANKMENT (COMPACTED IN PLACE)	110	
TOTAL EMBANKMENT	110	

7-31-17

Kimley»Horn
Certificate Of Authorization No. 696
MARWAN MUFLEH, P.E.
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NO.	REVISION	BY	DATE

PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE:
APPROVED: MHM
DRAWN: SMB
CHECKED: SO
DATE: 11/30/15

SUMMARY OF QUANTITIES

DESIGN FILE NAME: SUMQRDQI.DGN
DRAWING NO.

SHEET: 3
OF: 29
PROJECT NO. 201250

brandon.keen 7/26/2017 4:00:14 PM

QUANTITY	STR. NO.	STATION	SIDE	DESCRIPTION	STORM PIPE ROUND SHAPE 15"	STORM PIPE ROUND SHAPE 18"	STORM PIPE ROUND SHAPE 24"	FRENCH DRAIN 24"	CURB INLETS P-3 <10'	CURB INLETS P-4 <10'	CURB INLETS P-5 <10'	CURB INLETS 9 <10'	MANHOLES J-7 >10'	DBI D <10'	CLOSED FLUME INLET	CLASS I CONC CY		REMARKS
P	S-1	333+72.44	LT	INLET, PIPE	12							1						
F																		
P	S-2	334+74.10	LT	INLET, PIPE				92		1								W/TYPE I SKIMMER
F																		
P	S-3	335+69.16	LT	INLET, PIPE			6		1									W/TYPE I SKIMMER
F																		
P	S-3A	335+79.00	LT	MANHOLE, PIPE			70						1					3.5' X 7.5'
F																		
P	S-4	336+49.81	LT	ENDWALL												3.00		
F																		
P	S-5	336+91.73	LT	ENDWALL												3.00		
F																		
P	S-6	337+59.50	LT	INLET, PIPE			66				1							
F																		
P	S-7	338+13.00	LT	INLET, PIPE		52								1				
F																		
P	S-8	339+16.80	LT	INLET											1			
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SHEET TOTALS - PLAN QUANTITY					12	52	142	92	1	1	1	1	1	1	1	6.00		
SHEET TOTALS - FINAL QUANTITY																		
GRAND TOTALS - PLAN QUANTITY					12	52	142	92	1	1	1	1	1	1	1	6.00		
GRAND TOTALS - FINAL QUANTITY																		

MARWAN H. MUFLEH ★ PROFESSIONAL ENGINEER ★ LICENSE No. 45329 STATE OF FLORIDA

7-31-17

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PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE: 1"=40'
APPROVED: MHM
DRAWN: SMB
CHECKED: SD
DATE: 11/30/15

SUMMARY OF DRAINAGE STRUCTURES

DESIGN FILE NAME SUMDRD01.DGN
DRAWING NO.

SHEET: 4
OF: 29
PROJECT NO. 2012501

brandon.kern 7/26/2017 4:00:15 PM

GENERAL NOTES

1. B.M. DATA IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD-'88). ANY NAVD-'88 MONUMENT WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF IN DANGER OF DAMAGE THE CONTRACTOR SHOULD NOTIFY:

   GEODETIC INFORMATION CENTER
   ATTN: MARK MAINTENANCE CENTER
   ATTN: N/CG-162
   6001 EXECUTIVE BOULEVARD
   ROCKVILLE, MARYLAND 20852
   TELEPHONE (301) 443-8319

2. EXISTING SECTION, QUARTER SECTION CORNER, PROPERTY CORNERS, AND PALM BEACH COUNTY SURVEY CONTROL MONUMENTS AND ALL OTHER PERMANENT MONUMENTS LOCATED WITHIN PROPOSED CONSTRUCTION ARE TO BE REFERENCED PRIOR TO CONSTRUCTION AND RESET AFTER CONSTRUCTION BY A PROFESSIONAL SURVEYOR AND MAPPER REGISTERED IN THE STATE OF FLORIDA.

3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ESTABLISH ADDITIONAL BENCHMARKS OUTSIDE CONSTRUCTION AREA PRIOR TO RESURFACING EXISTING AREA.

4. UNLESS OTHERWISE SHOWN, ALL EXISTING DRAINAGE STRUCTURES AND PIPES, WITHIN LIMITS OF CONSTRUCTION, ARE TO REMAIN.

5. THE LOCATION OF THE EXISTING UTILITIES SHOWN IN THE PLANS ARE APPROXIMATE ONLY; THE EXACT LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY IF "OTHER" UTILITIES (NOT SHOWN IN THE PLANS) EXIST WITHIN THE AREA OF CONSTRUCTION. SHOULD THERE BE UTILITY CONFLICTS, THE CONTRACTOR SHALL INFORM THE ENGINEER AND NOTIFY THE RESPECTIVE UTILITY OWNERS TO RESOLVE UTILITY CONFLICTS AND UTILITY ADJUSTMENTS, AS REQUIRED.

6. THE CONTRACTOR SHALL NOTIFY UTILITY OWNERS THROUGH SUNSHINE STATE ONE CALL OF FLORIDA (1-800-432-4770) AND UTILITY OWNERS LISTED BELOW TWO BUSINESS DAYS (OR 10 DAYS IF DIGGING UNDER WATER) IN ADVANCE OF BEGINNING CONSTRUCTION ON THE JOB SITE UNLESS OTHERWISE NOTED.

   UTILITY OWNERS:

COMPANY	CONTACT	TELEPHONE NUMBERS
AT&T - LONGLINE (PEA)	STEFAN ERIKSSON	(407) 578-8000
AT&T	GARTH BEDWARD	(561) 540-9263
COMCAST	STEVE ROSA	(561) 436-9034
FLORIDA POWER & LIGHT - DISTRIBUTION	LONNIE TAYLOR	(561) 742-2003
FLORIDA POWER & LIGHT - FIBERNET	IVAN GORDON	(561) 402-6313
PALM BEACH COUNTY TRAFFIC DIVISION	SUPERINTENDENT	(561) 233-3900
PALM BEACH COUNTY (ISS)	KENNETH SCHNEIDER	(561) 355-4195
PALM BEACH COUNTY WATER UTILITIES	JACKIE MICHELS	(561) 493-6116

7. THE CONTRACTOR IS ADVISED THAT ANY DEWATERING WITHIN ONE MILE OF AN EPA SUPER FUND SITE OR A LANDFILL REQUIRES A GENERAL OR INDIVIDUAL WATER USE PERMIT FROM THE SFWMD. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE IF CONSTRUCTION LIES WITHIN THESE LIMITS AND TO ACQUIRE ALL NECESSARY PERMITS. THE LOCATION OF KNOWN EPA SUPER FUND SITES AND LANDFILLS NEAR THE PROJECT LIMITS ARE ACCESSIBLE FROM THE FOLLOWING SOURCES: ENVIRONMENTAL PROTECTION AGENCY, 703-603-8797, http://www.epa.gov/enviro/cleanups/, WASTE & RECYCLING SERVICES OF PALM BEACH COUNTY.

8. INLET PROTECTION IS TO BE INCLUDED IN THE COST FOR MOBILIZATION.

9. ALL EROSION CONTROL MEASURES SHALL BE REMOVED WHEN THEY ARE NO LONGER NEEDED OR WHEN DIRECTED BY THE ENGINEER.

10. SOME UTILITY LOCATIONS MAY BE DETERMINED BY CALLING SUNSHINE ONE-CALL AND THE RESPECTIVE UTILITY COMPANY.

11. CONTRACTOR SHALL SUBMIT A DETAILED MAINTENANCE OF TRAFFIC PLAN TO PALM BEACH COUNTY FOR THEIR APPROVAL FOUR WEEKS PRIOR TO COMMENCEMENT OF CONSTRUCTION. MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH CURRENT FLORIDA D.O.T. STANDARDS, ESPECIALLY INDEX NO. 600 SERIES OF THE DESIGN STANDARDS AND THE CURRENT EDITION OF "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES."

12. ACTUAL WIDTH OF WIDENING MAY VARY DUE TO ACTUAL EXISTING PAVEMENT WIDTH. THE MINIMUM WIDTH OF WIDENING IS TO BE TWO (2) FEET, IN ALL AREAS SHOWN TO BE WIDENED, FOR COMPACTION PURPOSES.

13. ALL LANES OF ATLANTIC AVENUE MUST BE OPEN TO TRAFFIC DURING AN EVACUATION NOTICE OF A HURRICANE OR OTHER CATASTROPHIC EVENT AND SHALL REMAIN OPEN FOR THE DURATION OF THE EVENT OR AS DIRECTED BY THE ENGINEER.

14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE MAINTENANCE OF THE FACILITY WITHIN THE PROJECT LIMITS THROUGHOUT THE CONSTRUCTION CONTRACT DURATION. MAINTENANCE OF GUARDRAIL, LIGHTING, MOWING AND LITTER PICK UP ARE SPECIFICALLY REQUIRED IN ADDITION TO OTHER STANDARD MAINTENANCE ITEMS. THE SCHEDULE WILL BE ESTABLISHED BY THE ENGINEER.

15. INTERSECTING ROADS AND DRIVEWAYS ARE TO BE GRADED AS DIRECTED BY THE ENGINEER, UNLESS OTHERWISE NOTED.

16. PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH FLORIDA STATUTE 556.105 FOR THE PROTECTION OF UNDERGROUND GAS PIPELINES.

17. GRADES SHOWN ARE FINISHED GRADE, UNLESS OTHERWISE NOTED.

18. UTILITIES ARE TO BE ADJUSTED BY OTHERS, UNLESS OTHERWISE NOTED.

19. STATIONS AND OFFSETS REFER TO THE BASELINE OF CONSTRUCTION, UNLESS OTHERWISE NOTED.

20. DRAINAGE STRUCTURES AND PIPES

   A. ATTENTION IS BROUGHT TO THE FACT SOME DRAINAGE STRUCTURES MAY HAVE TO BE CONSTRUCTED IN THE FIELD DUE TO UTILITY CONFLICT CONDITIONS. THE CONTRACTOR SHOULD DETERMINE THESE LOCATIONS PRIOR TO ORDERING PRE-FABRICATED STRUCTURES.

   B. SPECIAL ATTENTION IS DIRECTED TO THE FACT THAT PORTIONS OF SOME DRAINAGE STRUCTURES EXTEND INTO THE STABILIZED PORTION OF THE ROAD BED AND EXTREME CAUTION WILL BE NECESSARY IN STABILIZATION OPERATIONS AT THESE LOCATIONS.

   C. WHERE AN EXISTING SANITARY LINE, FORCE MAIN LINE, GAS LINE OR WATER MAIN PIPE IS TO GO THROUGH A CONFLICT MANHOLE/INLET, THE MANHOLE/INLET SHALL HAVE A STEEL SLEEVE THROUGH THE STRUCTURE WALL TO PROTECT THE UTILITY FROM BREAKAGE DUE TO POSSIBLE STRUCTURE SETTLEMENT. THE SLEEVE SHALL BE AT LEAST 6" LARGER THAN THE UTILITY LINE IN DIAMETER. FOR FURTHER DETAILS, SEE FDOT STANDARD INDEX NO. 307. CONTRACTOR SHALL COORDINATE WITH THE RESPONSIBLE UTILITY COMPANY AT ALL TIMES. ALL COSTS FOR UTILITY CONFLICT WORK AND MATERIAL ARE TO BE INCLUDED UNDER THE CONTRACT UNIT PRICE FOR THE DRAINAGE STRUCTURE.

   D. ALL DITCH BOTTOM INLETS SHALL HAVE AN EYEBOLT AND CHAIN IN ACCORDANCE WITH FDOT INDEX 201.

   E. CONCRETE PIPE CULVERT (R.C.P.) SHALL BE CLASS III, WALL B UNLESS OTHERWISE NOTED.

   F. ALL PROPOSED INLET DRAINAGE STRUCTURES SHALL HAVE A MINIMUM 2' SUMP, EXCEPT CONTROL STRUCTURES. WEEP HOLES SHALL NOT BE A PART OF THESE SUMPS. ALL PROPOSED MANHOLE HAVE MINIMUM 1' SUMPS.

   G. ALL PIPES SHALL BE IN ACCORDANCE WITH FLORIDA DOT AND PALM BEACH COUNTY REQUIREMENTS.

21. THE CONTRACTOR SHALL TAKE ALL NECESSARY CARE AND CAUTION TO PREVENT MILLED MATERIAL FROM ENTERING THE EXISTING AND PROPOSED DRAINAGE SYSTEMS AND IF THAT HAPPENS THE CONTRACTOR WILL REMOVE MILLED MATERIALS AT NO ADDITIONAL COST TO THE OWNER. ALL COSTS ASSOCIATED WITH THIS WORK SHALL BE INCLUDED IN MILLING EXISTING ASPHALT PAVEMENT.

22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AND RESTORATION OF EXISTING PAVEMENT, FENCE, PIPES, CONDUITS, CABLES, ETC., AND LANDSCAPED AREAS AND IRRIGATION SYSTEM DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATIONS AND/OR THOSE OF HIS SUBCONTRACTORS, AND SHALL RESTORE THEM PROMPTLY TO THEIR ORIGINAL CONDITION OR BETTER AS DETERMINED BY THE ENGINEER AT NO EXTRA COST.

23. EXISTING DRIVEWAYS WITHIN THE LIMITS OF THIS PROJECT ARE TO REMAIN AT THE SAME LOCATION AND WIDTH, UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THE MINIMUM WIDTH IS 12'. CONTRACTOR SHALL MAINTAIN ACCESS TO AFFECTED PROPERTIES (AT LEAST ONE DRIVEWAY) AT ALL TIMES.

24. ROOT PRUNING
   IF CONSTRUCTION OCCURS WITHIN THE DRIPLINE (OR THE HORIZONTAL EXTENT OF THE CANOPY) OF A TREE, THEN THE TREE IS A CANDIDATE FOR ROOT PRUNING. ROOT PRUNING MUST OCCUR PRIOR TO TRENCHING OPERATION TO INSURE THAT THE ROOTS ARE CUT CLEAN AND AT PROPER ANGLES AND NOT MECHANICALLY RIPPED FROM THE EARTH DURING CONSTRUCTION. FOR TREES REQUIRING ROOT PRUNING, A TREE ASSESSMENT SHALL BE CONDUCTED AND A ROOT-PRUNING PLAN SHALL BE DEVELOPED BY A CERTIFIED ARBORIST OR CONSULTING ARBORIST. THIS PLAN SHOULD IDENTIFY: MAXIMUM ALLOWABLE SIZE OF ROOTS TO BE CUT, ALLOWABLE PROXIMITY TO THE TRUNK FOR CUTS, TIME OF YEAR WHEN ROOT CUTTING IS ALLOWABLE, METHOD FOR MAKING CUTS, MITIGATING CANOPY PRUNING, TYPE AND EXTENT OF NECESSARY STRUCTURAL SUPPORT, SCHEDULE FOR WATERING/FERTILIZATION AFTER PRUNING IMPLEMENT THE ROOT-PRUNING PLAN PER THE ARBORIST'S RECOMMENDATION. COSTS TO BE INCLUDED IN THE COSTS OF CLEARING AND GRUBBING.

DEWATERING NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING OPERATIONS AND TO ENSURE THE FOLLOWING CONDITIONS ARE MET. IF THE BELOW CONDITIONS ARE VIOLATED, THE CONTRACTOR MUST SUBMIT FOR AND OBTAIN A DEWATERING GENERAL WATER USE PERMIT FROM THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT. THE COST FOR SUBMITTING AND OBTAINING A DEWATERING PERMIT SHALL BE INCLUDED IN MAINTENANCE OF TRAFFIC PAY ITEM.

2. ALL DEWATERING ACTIVITIES MUST MEET THE FOLLOWING CRITERIA TO BE CONSIDERED UNDER THE 'NO NOTICE' DEWATERING PERMIT CRITERIA.

2A. FOLLOW ALL CONDITIONS OF ISSUANCE IN 40E-20.301 F.A.C. AND THE 'NO NOTICE' REQUIREMENTS IN 40E-20.302 (3), F.A.C..

2B. MAXIMUM DAILY PUMPAGE OF LESS THAN 5 MILLION GALLONS PER DAY AND MAXIMUM TOTAL 90 DAY PUMPAGE LESS THAN 100 MILLION GALLONS. THE 90 DAY PUMPAGE MAY INCLUDE A ROLLING 90-DAY DURATION IN WHICH THE DEWATERING OPERATION AT THE END OF EACH 90 DAY PERIOD OCCURS MORE THAN 1 MILE FROM THE LOCATION AT THE BEGINNING OF EACH 90 DAY PERIOD.

2C. PROPOSED DEWATERING ACTIVITIES WILL RETAIN ALL DISCHARGE ON THE PROJECT SITE. NO OFF-SITE DISCHARGE IS AUTHORIZED UNDER "NO-NOTICE" DEWATERING, AND THERE IS NO POTENTIAL FOR RESOURCE HARM.

2D. PROPOSED DEWATERING ACTIVITIES WILL NOT DEWATER TO A DEPTH BELOW 0.0 FEET NGVD WITHIN 1000 FEET OF SALINE WATER, EXCEPT WHEN DEWATERING SALINE WATER, AS DEFINED IN CHAPTER ONE OF THE BASIS OF REVIEW.

2E. PROPOSED DEWATERING ACTIVITIES WILL NOT OCCUR WITHIN 100 FEET OF A WASTEWATER TREATMENT PLANT RAPID-RATE LAN APPLICATION SYSTEM PERMITTED UNDER PART FOUR OF CHAPTER 62-610, F.A.C..

2F. PROPOSED DEWATERING ACTIVITIES WILL NOT OCCUR WITHIN ONE MILE OF A KNOWN LANDFILL OR CONTAMINATED SITE.

2G. PROPOSED DEWATERING ACTIVITIES WILL NOT OCCUR WITHIN 1000 FEET OF A WETLAND.

3. CONTRACTOR TO APPLY FOR DEWATERING PERMIT FROM THE DEPARTMENT FOR ALL DEWATERING ACTIVITIES WITHIN F.D.O.T RIGHT-OF-WAY.

MARWAN H. MUFLEH LICENSE NO. 45329 STATE OF FLORIDA PROFESSIONAL ENGINEER
3-31-17

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NO.	REVISION	BY	DATE

PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SD
DATE:	11/30/15

GENERAL NOTES

DESIGN FILE NAME	GNNTRD01.DGN
DRAWING NO.	

SHEET:	5
OF:	29
PROJECT NO.	2012501

FDOT GENERAL NOTES

1. PERMITTEE WILL COORDINATE ALL WORK WITH THE PALM BEACH OPERATIONS PERMITS DEPARTMENT USING FAX # (561) 370-1236. COORDINATION WILL INCLUDE A PRE-CONSTRUCTION MEETING.

2. ALL MATERIALS AND CONSTRUCTION WITHIN THE FLORIDA DEPARTMENT OF TRANSPORTATION DESIGN (F.D.O.T.) RIGHT-OF-WAY SHALL CONFORM TO THE LATEST EDITION F.D.O.T. DESIGN STANDARDS AND LATEST EDITION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

3. DRAINAGE INLET TOP, INCLUDING GRATE, WILL BE REMOVED AND DELIVERED TO WPB OPERATIONS BY THE PERMITTEE/CONTRACTOR AT THEIR EXPENSE OR AS DIRECTED BY THE OPERATIONS ENGINEER.

4. ALL MAINTENANCE OF TRAFFIC (M.O.T.) FOR THIS PROJECT WILL BE IN COMPLIANCE WITH THE DEPARTMENTS CURRENT EDITION OF THE DESIGN STANDARDS, (600 SERIES) AND THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). THE OPERATIONS ENGINEER OR HIS DESIGNEE RESERVES THE RIGHT TO DIRECT THE REMOVAL/RELOCATION/MODIFICATION OF ANY TRAFFIC DEVICES(S) AT THE PERMITTEE'S SOLE EXPENSE. SPECIAL ATTENTION WILL BE GIVEN TO F.D.O.T. DESIGN STANDARD INDEX 611, 612, 613, AND 660.

5. ALL THERMOPLASTIC TRAFFIC STRIPES, MARKINGS AND SIGNAGE WILL BE INSTALLED PER THE F.D.O.T. ROADWAY AND TRAFFIC DESIGN STANDARDS.

6. FOR ANY UNDERGROUND WORK, THE CONTRACTOR MUST CONTACT THE SIGNAL TRAFFIC CONTROL MAINTAINING AGENCY PRIOR TO CONSTRUCTION.

7. DEEP POLE REMOVAL: SHALL CONSIST OF COMPLETELY REMOVING EACH POLE INCLUDING THE FOUNDATION AND ALL ACCESSORIES AND ATTACHMENTS, SUCH AS POLE KEYS, DEAD MEN, GUYING APPARATUS, CONDUIT, ANCHOR BOLTS AND REINFORCING STEEL.

8. IT IS THE PERMITTEE'S RESPONSIBILITY TO OBTAIN FINAL ACCEPTANCE OF PERMITTED WORK (COMPLETED) AND THE RESTORATION OF THE RIGHT-OF-WAY FROM THE F.D.O.T. PRIOR TO USAGE.

9. PERMITTEE WILL PROVIDE THE NECESSARY DENSITIES IN ACCORDANCE WITH SECTION 125-8 OF THE F.D.O.T. STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION (LATEST EDITION) PRIOR TO FINAL ACCEPTANCE BY THE F.D.O.T.

10. PERMITTEE WILL RESTORE THE RIGHT OF WAY AS A MINIMUM, TO ITS ORIGINAL CONDITION OR BETTER IN ACCORDANCE WITH F.D.O.T.'S LATEST STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION OR AS DIRECTED BY THE RESIDENT OPERATIONS ENGINEER.

11. DURING THE REMOVAL/INSTALLATION OF ANY CURB AND GUTTER SECTION, THE PERMITTEE WILL BE RESPONSIBLE FOR ANY DAMAGE DONE TO THE ABUTTING ASPHALT. THE DAMAGED ASPHALT REPAIR WILL BE IN ACCORDANCE WITH THE CURRENT SPECIFICATIONS AND/OR AS DIRECTED BY THE RESIDENT OPERATIONS ENGINEER.

12. ALL PUBLIC SIDEWALK CURB RAMPS WILL MEET THE ROADWAY & TRAFFIC DESIGN STANDARDS (CURRENT EDITION) INDEX NO. 304 CURB/RAMP INSPECTIONS REQUIRED PRIOR TO INSTALLATION OF CONCRETE.

13. PERMITTEE SHALL PROVIDE THE PRODUCER'S CERTIFICATION (DELIVERY TICKET) FOR THE NS CONCRETE-2500 PSI (USED FOR SIDEWALK, CURB & GUTTER, DITCH PAVEMENT AND TRAFFIC SEPARATOR) PRIOR TO FINAL ACCEPTANCE BY THE DEPARTMENT. THE DELIVERY TICKET SHALL CERTIFY THE CONCRETE WAS BATCHED, DELIVERED AND PLACED IN ACCORDANCE WITH SECTION 347 OF THE F.D.O.T.'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (CURRENT EDITION).

14. PERMITTEE WILL BE REQUIRED TO DELIVER ALL GUARDRAIL AND APPURTENANCES REMOVED, WITHIN THE LIMITS OF CONSTRUCTION TO THE WEST PALM BEACH OPERATIONS CENTER PRIOR TO OBTAINING FINAL ACCEPTANCE BY THE DEPARTMENT.

15. PERMITTEE WILL INSTALL GUARDRAIL IN ACCORDANCE WITH STANDARD INDEX 400 (I.E. OFFSETS FROM HAZARDS, END TREATMENTS, MOWING STRIP, ETC.)

16. REMOVAL/INSTALLATION OF SIDEWALK WILL BE IN ACCORDANCE WITH F.D.O.T. STANDARD INDEX 310.

17. SODDED AREAS WILL BE IN ACCORDANCE WITH STANDARD INDEX 105 AND SECTIONS 162, 981, 982, 983, 987 OF THE F.D.O.T.'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION. ALL DISTURBED AREAS WILL BE SODDED WITHIN ONE (1) WEEK OF INSTALLATION OF SAID PERMITTED WORK.

18. OWNERSHIP OF ALL SUITABLE EXCAVATED MATERIALS WITHIN THE F.D.O.T. R/W, AS DETERMINED BY THE F.D.O.T., SHALL REMAIN IN THE DEPARTMENT UNTIL A FINAL ACCEPTANCE OF THE PERMITTED PROJECT IS FULFILLED. EXCAVATED MATERIALS SHALL BE HAULED BY THE CONTRACTOR, AT THEIR COST & EXPENSE FROM THE SITE TO THE PALM BEACH OPERATIONS CENTER, 7900 W FOREST HILL BLVD OR STOCKPILED IN THOSE AREAS AS DIRECTED BY THE DOT, INCLUDING ASPHALT MILLINGS.

19. RESTRICTED HOURS OF OPERATION FOR LANE CLOSURES WILL BE FROM 9:00 AM TO 3:30 PM, (MONDAY-FRIDAY), UNLESS OTHERWISE APPROVED BY THE OPERATIONS ENGINEER, OR DESIGNEE.

PERMITTEE: PLEASE NOTE:

20. PERMITTEE'S CONTRACTORS THAT ARE PERFORMING PERMITTED WORK ACTIVITIES SHALL PROVIDE THE F.D.O.T. (PERMIT OFFICE) PROOF OF A PROPER STATE CONTRACTOR'S LISCENSE AND CERTIFICATE OF LIABILITY INSURANCE PRIOR TO ANY COMMENCEMENT OF PERMITTED WORK.

21. PERMITTEE SHALL OBTAIN A UTILITY PERMIT FROM THE DEPARTMENT PRIOR TO COMMENCING UTILITY WORK IN THE FDOT R/W.

22. THE INSTALLATION OF ALL NEW LANDSCAPE MATERIALS WILL BE IN ACCORDANCE WITH CURRENT EDITIONS OF THE STANDARD INDICES #546, 544, AND 700 (HORIZONTAL CLEARANCE/CLEAR ZONE REQUIREMENTS).

23. PERMIT IS VALID FOR ONE YEAR FROM DATE OF ISSUE.

24. PERMITEE WILL PROVIDE THE F.D.O.T. WITH CERTIFIED "AS-BUILT" PLANS PRIOR TO FINAL ACCEPTANCE OF THE PERMITTED WORK.

MARWAN H. MUFLEH LICENSE No. 45329 STATE OF FLORIDA PROFESSIONAL ENGINEER

11-31-17

Kimley»Horn
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NO.	REVISION	BY	DATE

PALM BEACH COUNTY
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SCALE:	1"=40'
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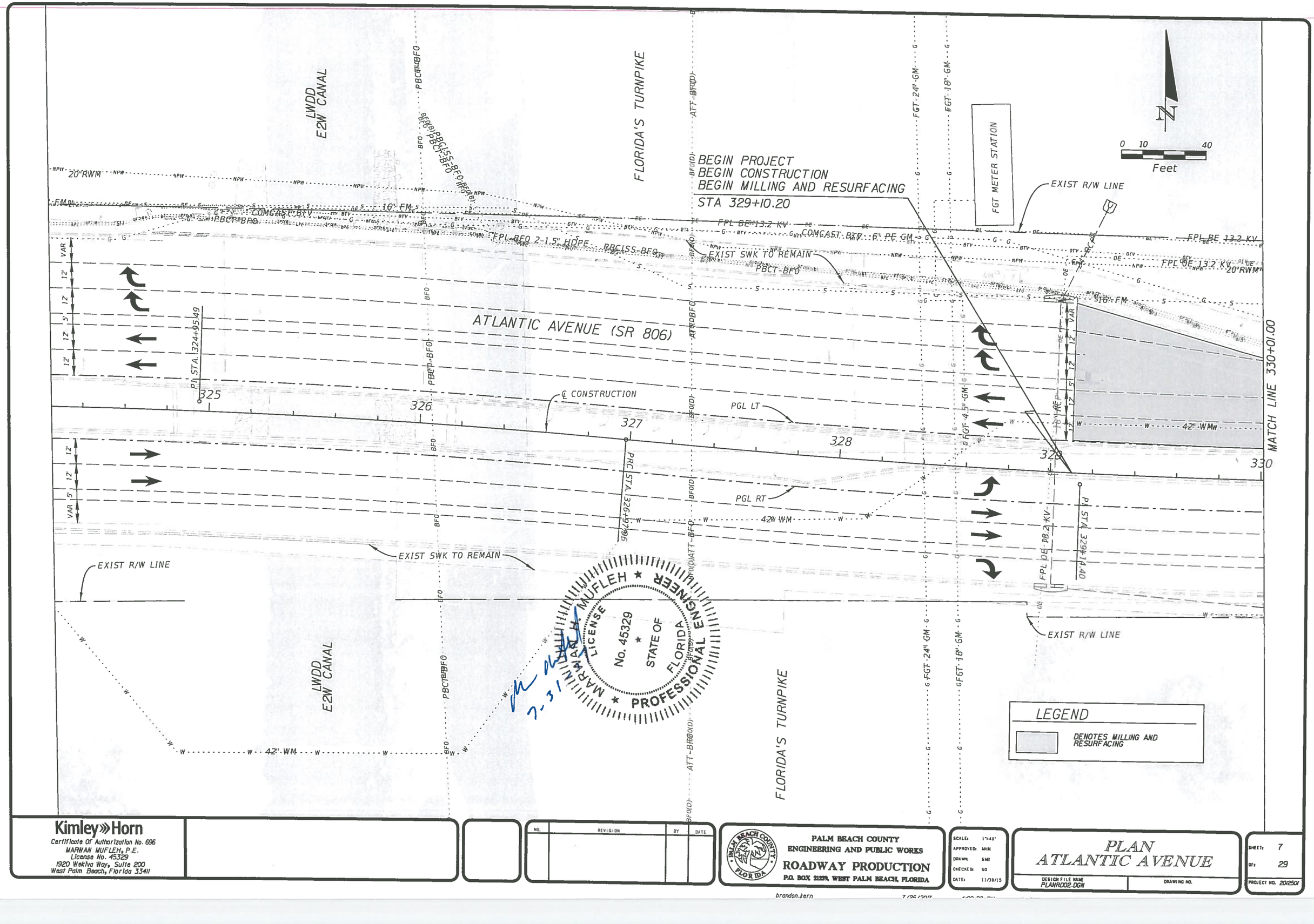
GENERAL NOTES

DESIGN FILE NAME: GNNTRDOH.DGN
DRAWING NO.

SHEET: 6
OF: 29
PROJECT NO. 201250



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NO.	REVISION	BY	DATE

PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

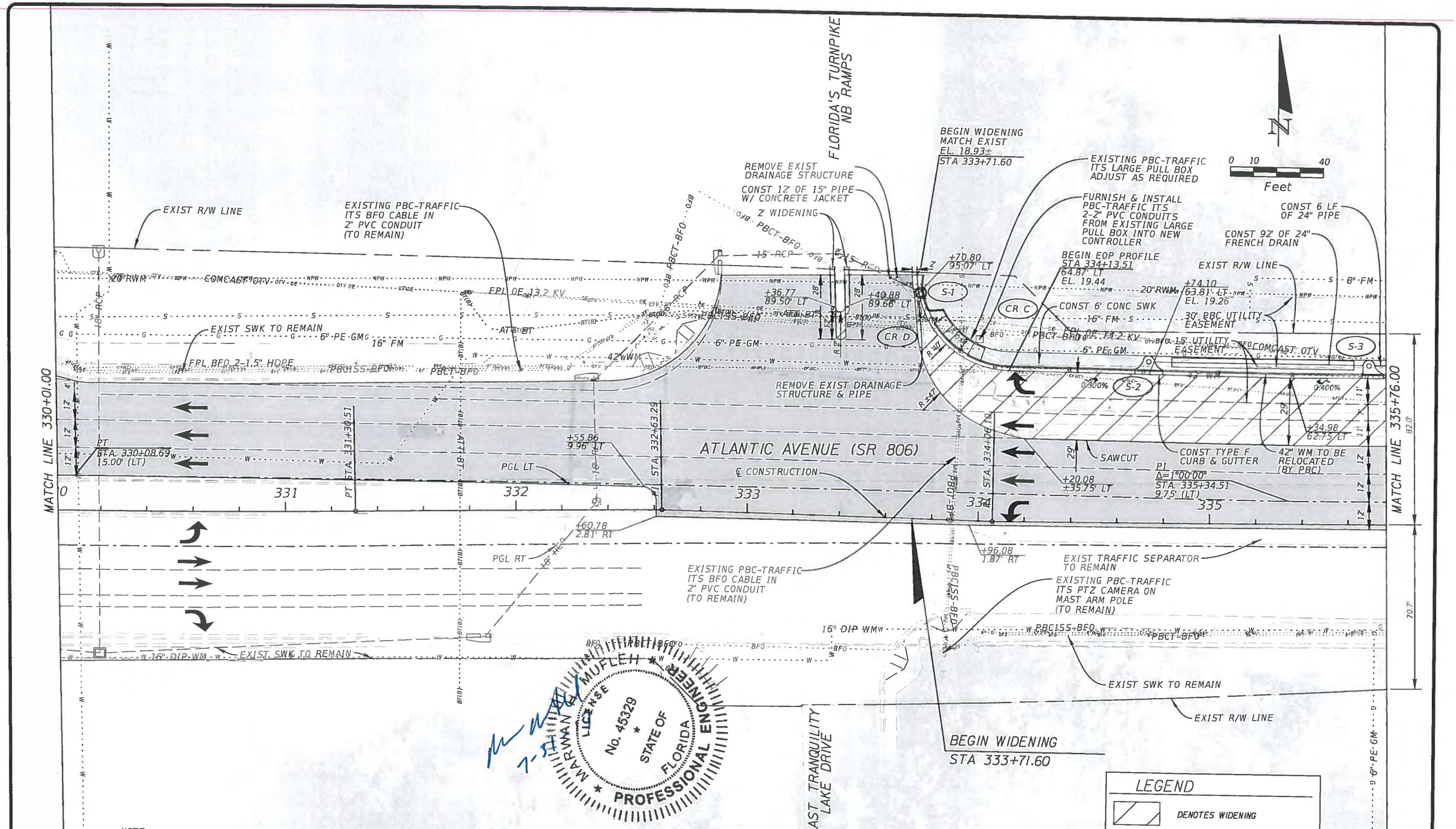
brandon.kern 7/26/2017

SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SG
DATE:	11/30/15

PLAN
ATLANTIC AVENUE

DESIGN FILE NAME	DRAWING NO.
PLANRD02.DGN	

SHEET: 7
OF: 29
PROJECT NO. 2012501



NOTE:

1. CURB RAMPS WITH DETECTABLE WARNINGS AND CROSSWALKS WILL BE COMPLIANT WITH FDOT DESIGN STANDARD INDEXES 304 AND 17346.

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7-31-17

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P.O. BOX 21229, WEST PALM BEACH, FLORIDA

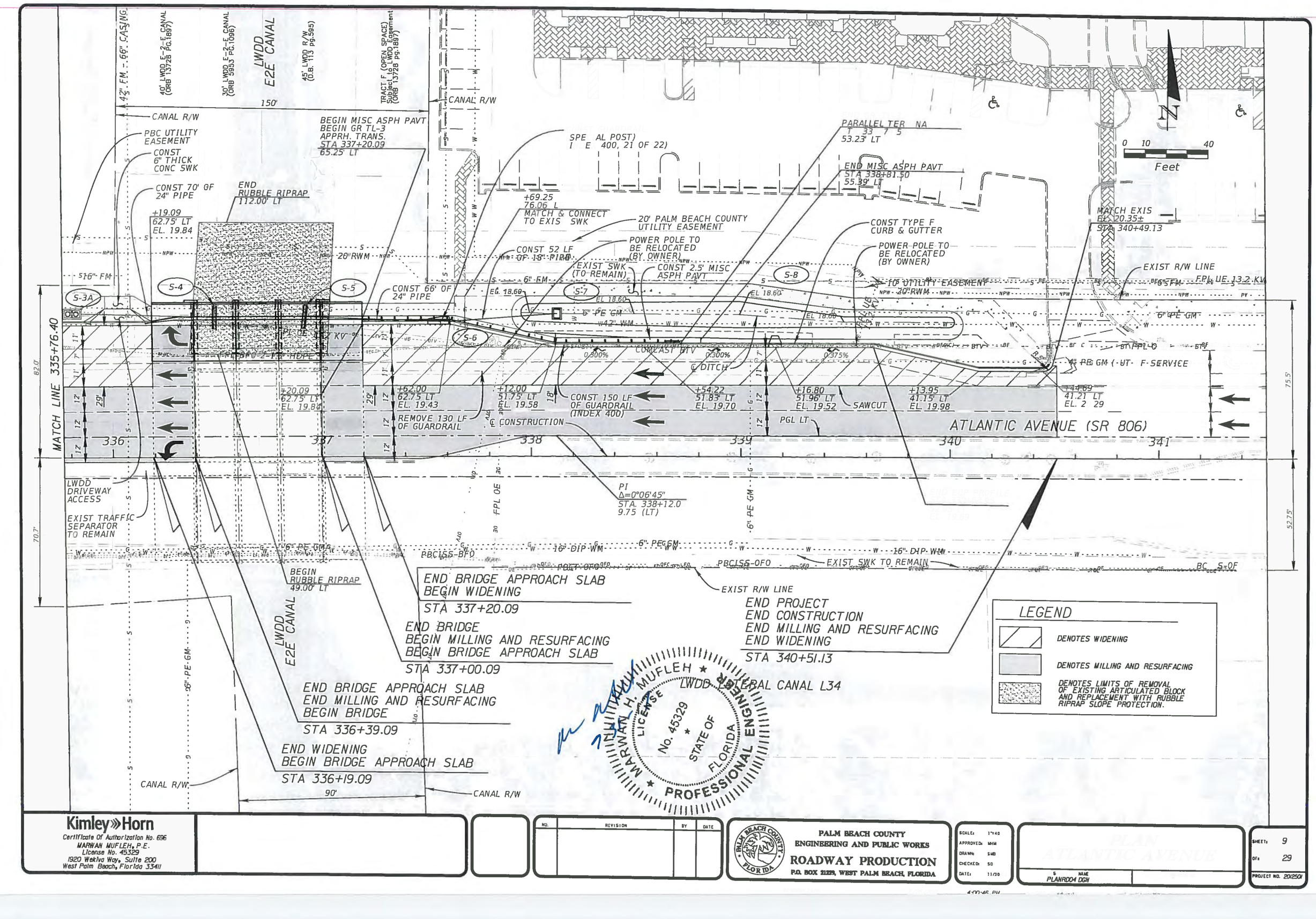
SCALE: 1"=40'
APPROVED: MHM
DRAWN: SMB
CHECKED: SD
DATE: 11/30/15

PLAN ATLANTIC AVENUE

DESIGN FILE NAME: PLANRD03.DGN
DRAWING NO.

SHEET: 8
OF: 29
PROJECT NO. 2012501

brandon.kern 7/26/2017



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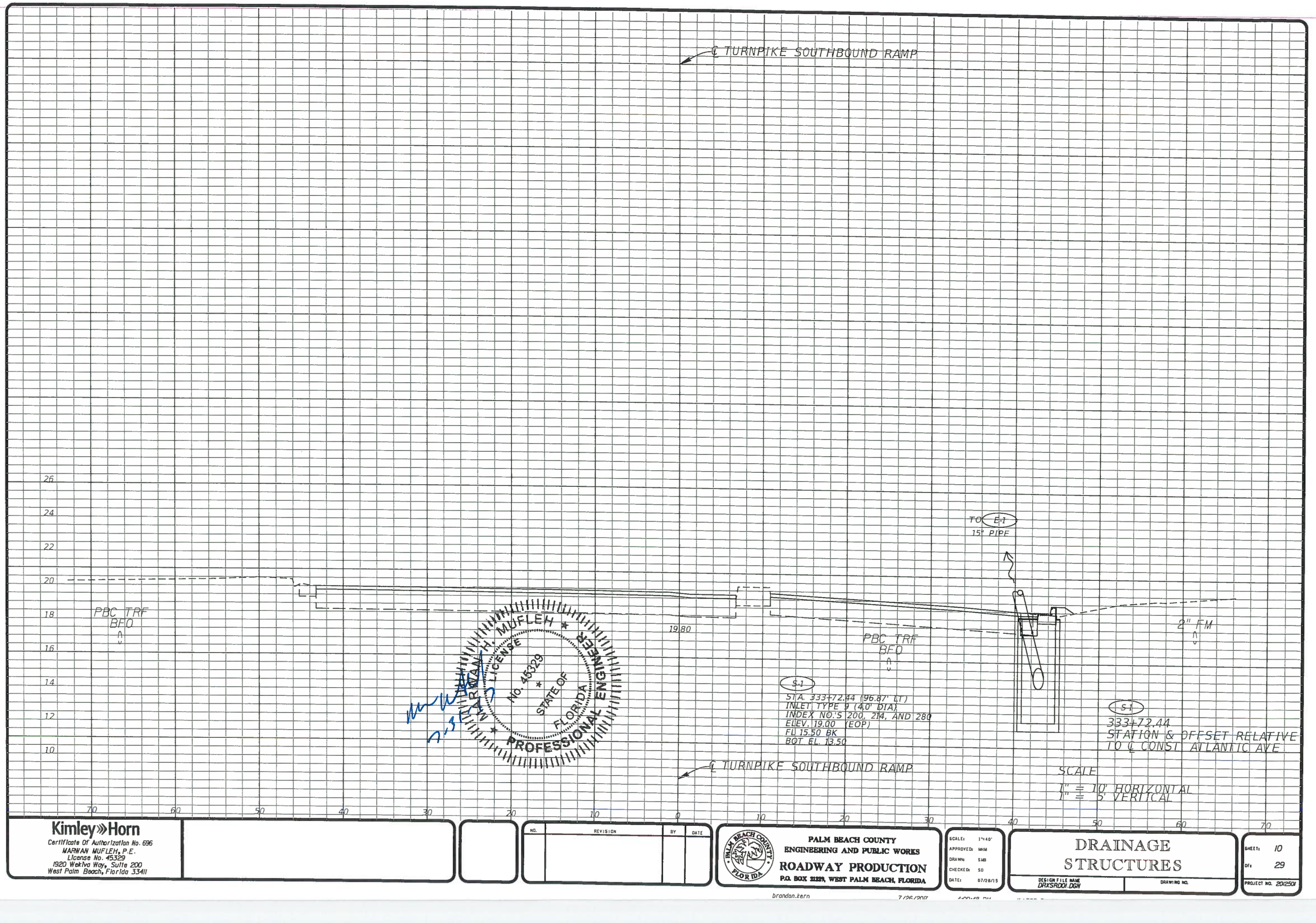
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE: 1"=40
APPROVED: MHM
DRAWN: SMB
CHECKED: SD
DATE: 11/20

S NAME PLANR004.DGN

PLAN
ATLANTIC AVENUE

SHEET: 9
OF: 29
PROJECT NO. 20I250I



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P.O. BOX 21229, WEST PALM BEACH, FLORIDA

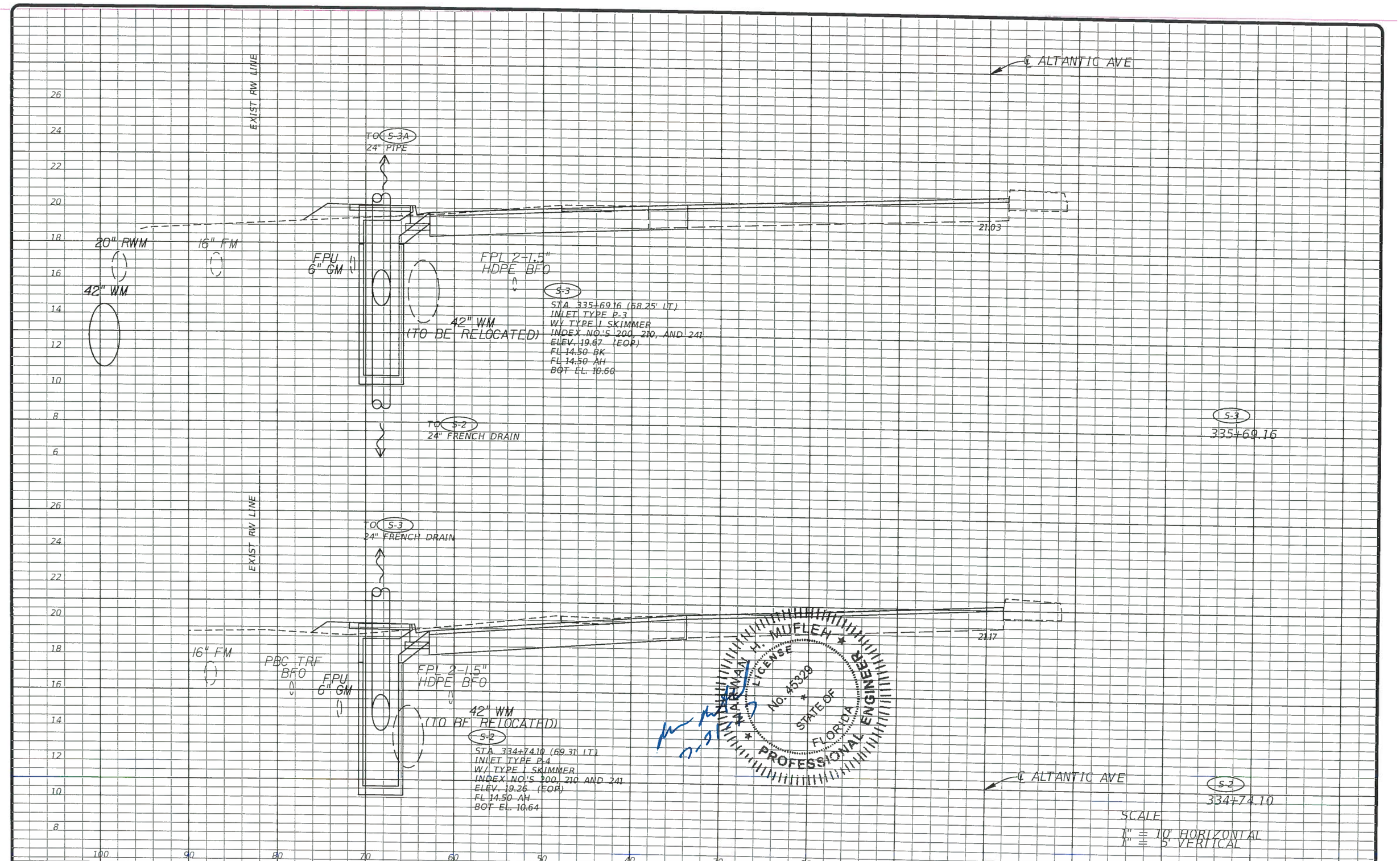
SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SD
DATE:	07/28/15

DRAINAGE STRUCTURES

DESIGN FILE NAME: DRNSTR001.DGN
DRAWING NO.

SHEET: 10
OF: 29
PROJECT NO. 20125O1

brandon.kern 7/26/2017



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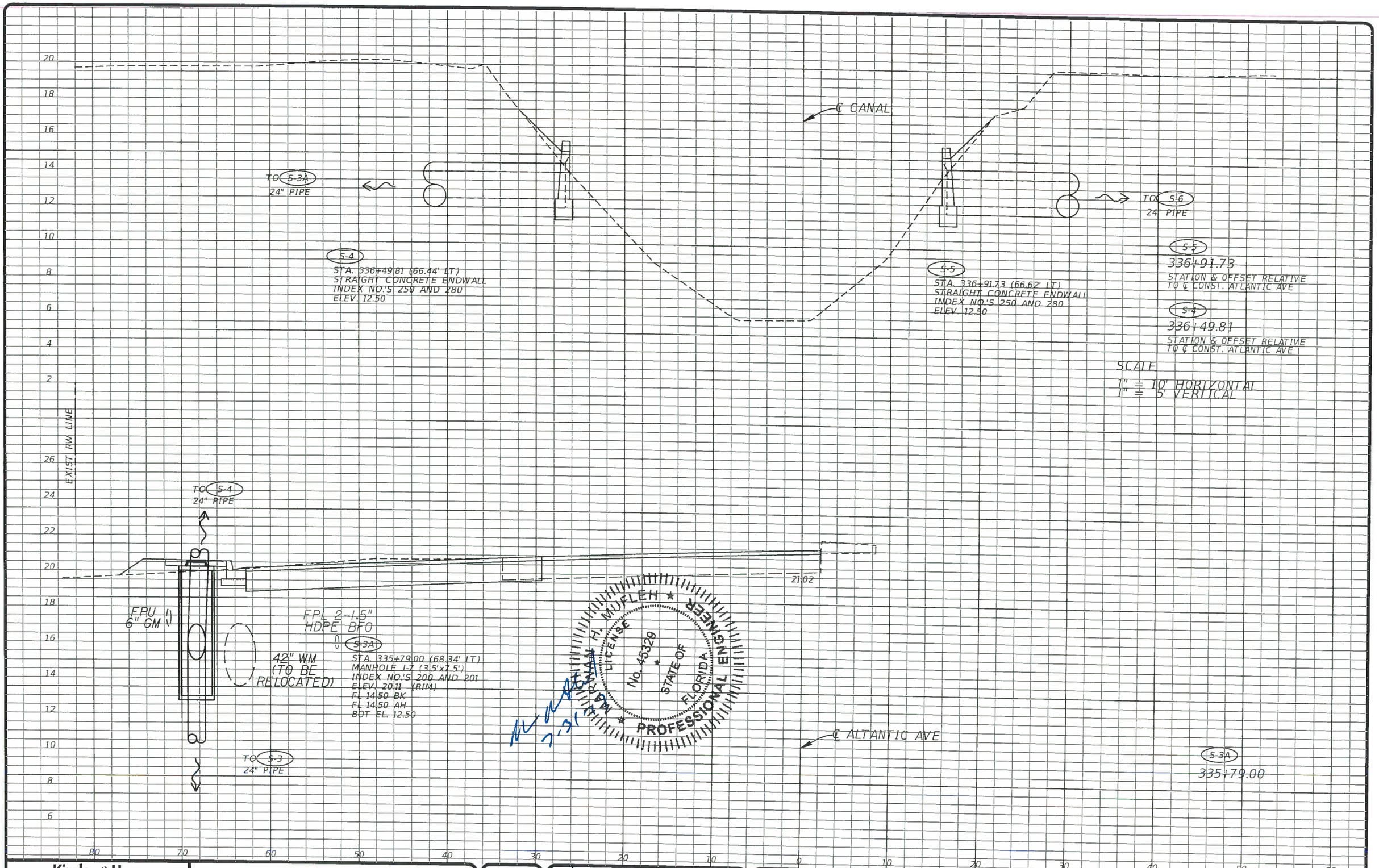
SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SD
DATE:	07/28/15

DRAINAGE STRUCTURES

DESIGN FILE NAME	DRNSRDDI.DGN
DRAWING NO.	
SHEET:	11
OF:	29
PROJECT NO.	2012501



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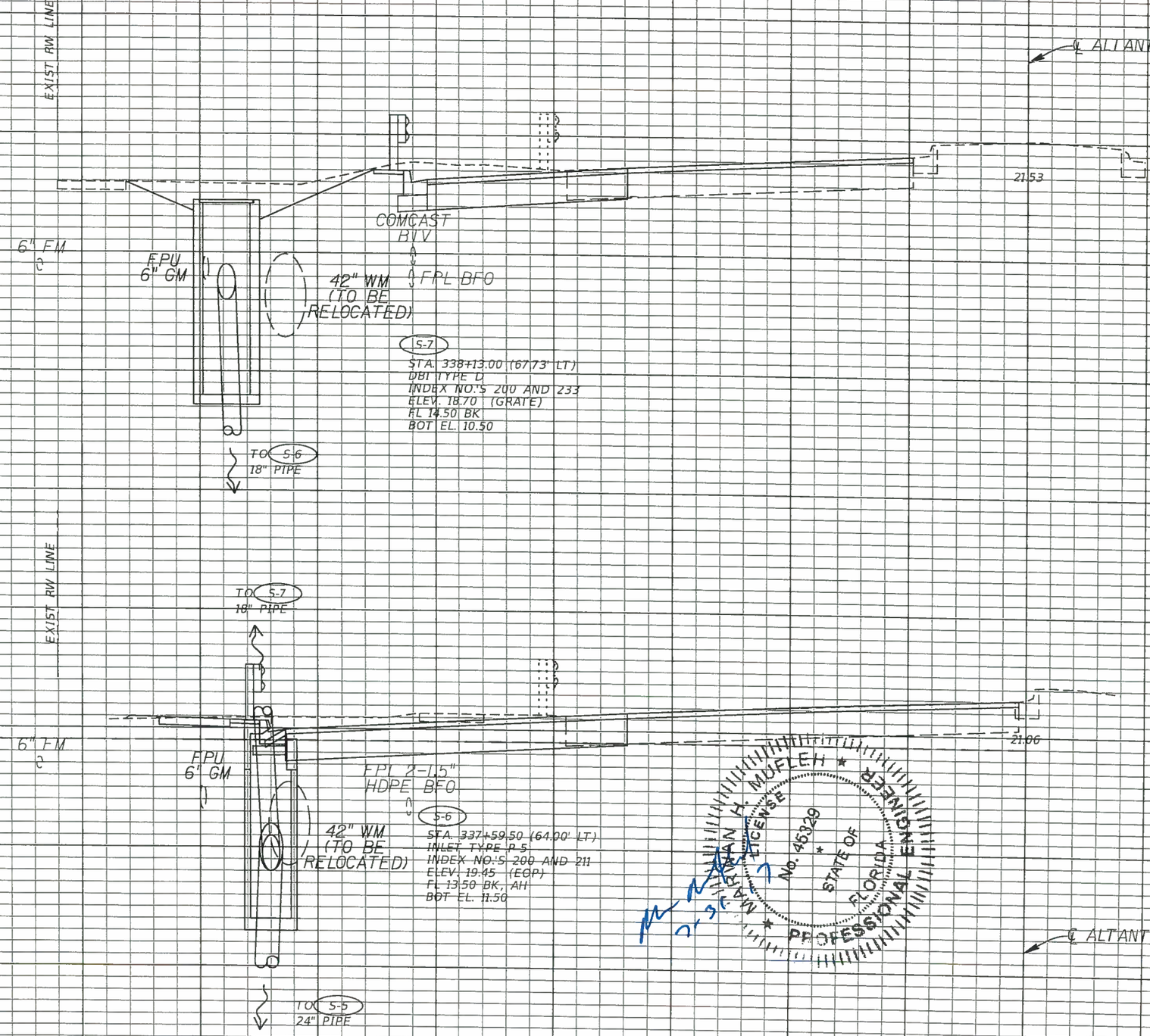
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SD
DATE:	07/28/15

DRAINAGE STRUCTURES

DESIGN FILE NAME: DRNSTR001.DGN
DRAWING NO.

SHEET: 12
OF: 29
PROJECT NO. 2012501



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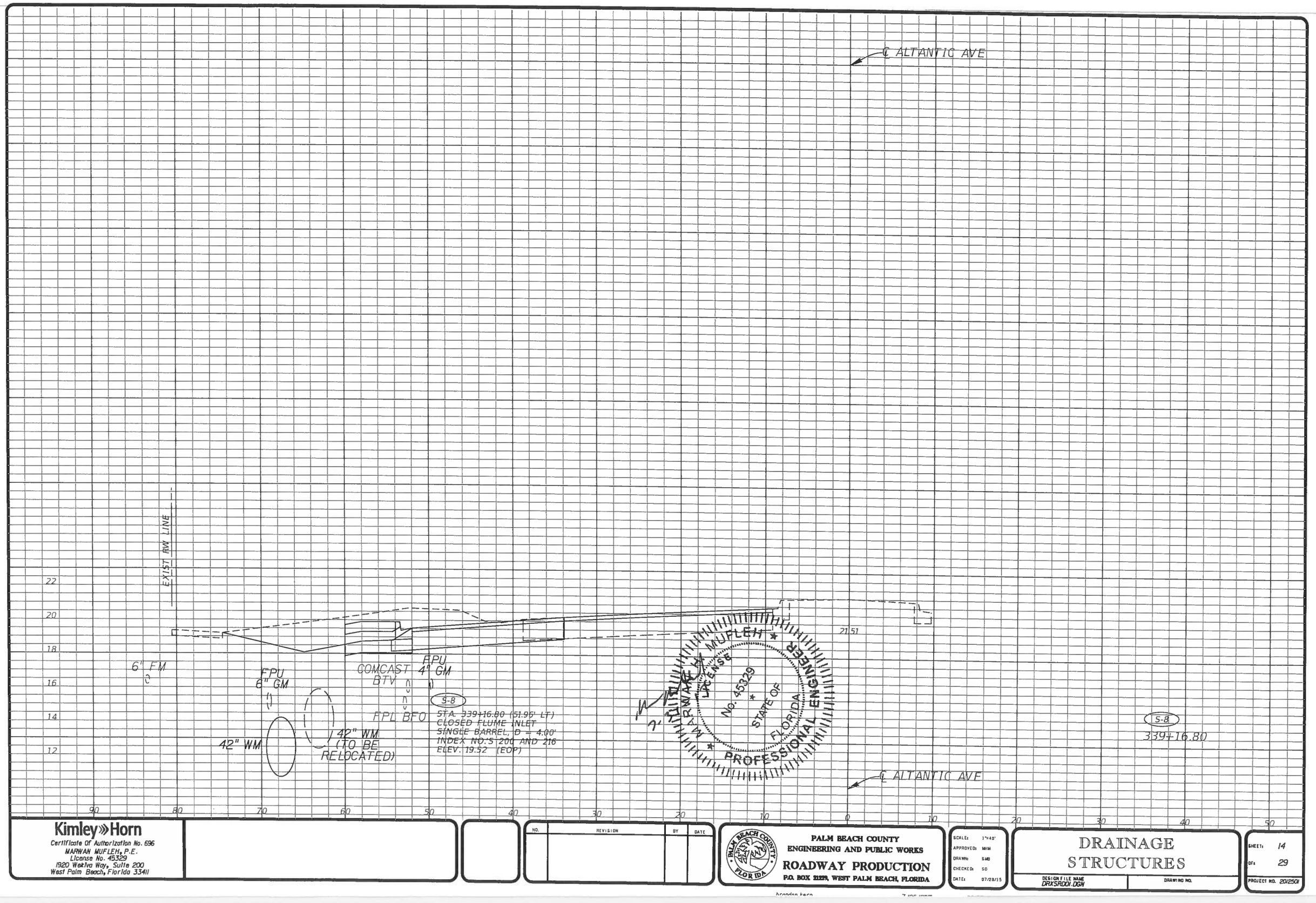
SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SO
DATE:	07/28/15

DRAINAGE STRUCTURES

DESIGN FILE NAME: DRYSR001.DGN
DRAWING NO.

SHEET: 13
OF: 29
PROJECT NO. 2012501



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SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SD
DATE:	07/28/15

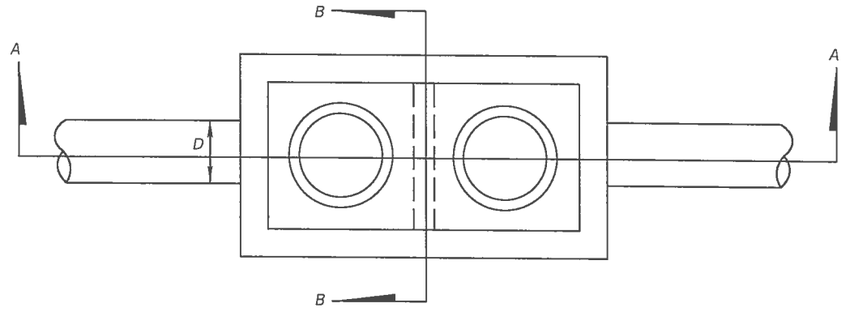
DRAINAGE STRUCTURES

DESIGN FILE NAME	DRNSR001.DGN
DRAWING NO.	
SHEET:	14
OF:	29
PROJECT NO.	2012501

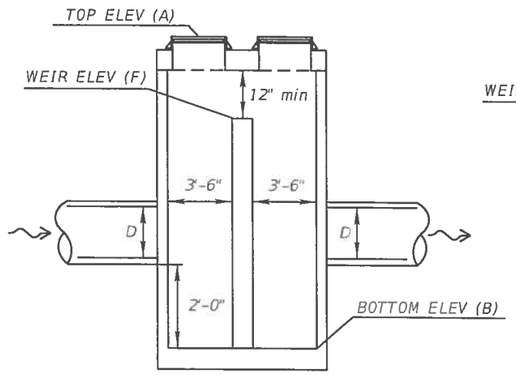
CONTROL STRUCTURES

CONTROL STRUCTURE NUMBER	TYPE	STATION	SIDE	GRATE/TOP ELEV (A)	BOTTOM ELEV (B)	PIPE FL ELEV (C)	PIPE DIAM (D)	BLEEDER TYPE (No.)	BLEEDER ELEV (E)	WEIR ELEV (F)	WEIR WIDTH (G)	WEIR SIDE	REMARKS
S-3A	MH J-7	335+79.00	LT	20.14	12.50	14.50	24"	NA	NA	17.50	NA	NA	SEE DETAIL BELOW
S-7	D	338+13.00	LT	18.70	10.50	14.50	24"	3"	14.50	18.70	42"	AH	SEE DETAIL BELOW

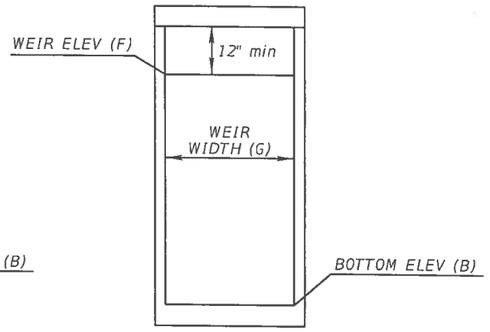
1. SEE INDEX NO. 232 FOR ADDITIONAL DETAILS AND DIMENSIONS.



PLAN VIEW
NTS

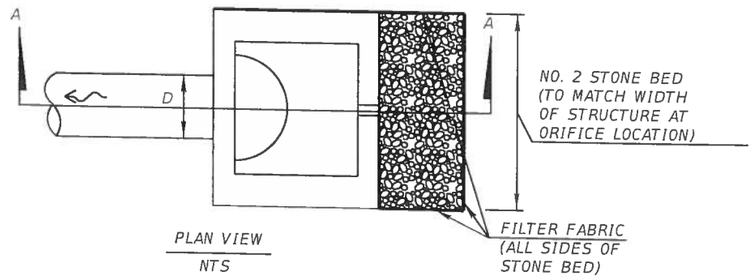


SECTION A-A
NTS

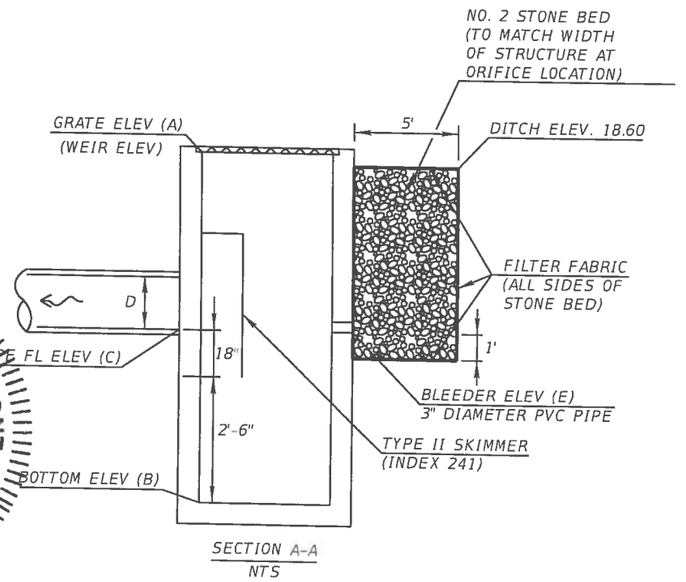


SECTION B-B
NTS

CONTROL STRUCTURE DETAIL (S-3A)
NTS



PLAN VIEW
NTS



SECTION A-A
NTS

CONTROL STRUCTURE DETAIL (S-7)
NTS

MARWAN H. MUFLEH
LICENSE
No. 45329
STATE OF FLORIDA
PROFESSIONAL ENGINEER
7-31

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PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE: 1"=40'
APPROVED: MHM
DRAWN: GMB
CHECKED: SO
DATE: 11/30/15

DRAINAGE DETAIL SHEET

DESIGN FILE NAME: DRDTRD01.DGN
DRAWING NO.

SHEET: 15
OF: 29
PROJECT NO. 20125O1

BEGIN EOP PROFILE
STA 334+13.51 (64.87' LT)

EL. 19.41

EXISTING GROUND

(-) 0.300%

PI +73.84
EL. 19.26

(+) 0.400%

PI +19.09
EL. 19.84

END BRIDGE APPROACH SLAB
BEGIN BRIDGE
STA 336+39.09

LWDD E2E CANAL

END WIDENING
BEGIN BRIDGE
APPROACH SLAB
STA 336+19.09

NOTE:

ELEVATIONS LOCATED AT
PROPOSED EDGE OF PAVEMENT

PI +20.09
EL. 19.84

END BRIDGE
BEGIN BRIDGE APPROACH SLAB
STA 337+00.09

(-) 0.983%

PI +62.00
EL. 19.43

END BRIDGE
APPROACH SLAB
BEGIN WIDENING
STA 337+20.09

(+) 0.300%

PI +12.00
EL. 19.58

(+) 0.300%

PI +54.22
EL. 19.70

(-) 0.300%

PI +16.80
EL. 19.52

(+) 0.375%

334 335 336 337 338 339 340 341 342 343 344

PI +63.95
EL. 19.69

EXISTING GROUND

(+) 0.375%

END EOP PROFILE
STA 339+63.95 (52.05' LT)

MARWAN H. MUFLEH
LICENSE
No. 45329
STATE OF FLORIDA
PROFESSIONAL ENGINEER

7-31-17

SCALE:
1" = 40' HORIZ.
1" = 4' VERT.

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PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

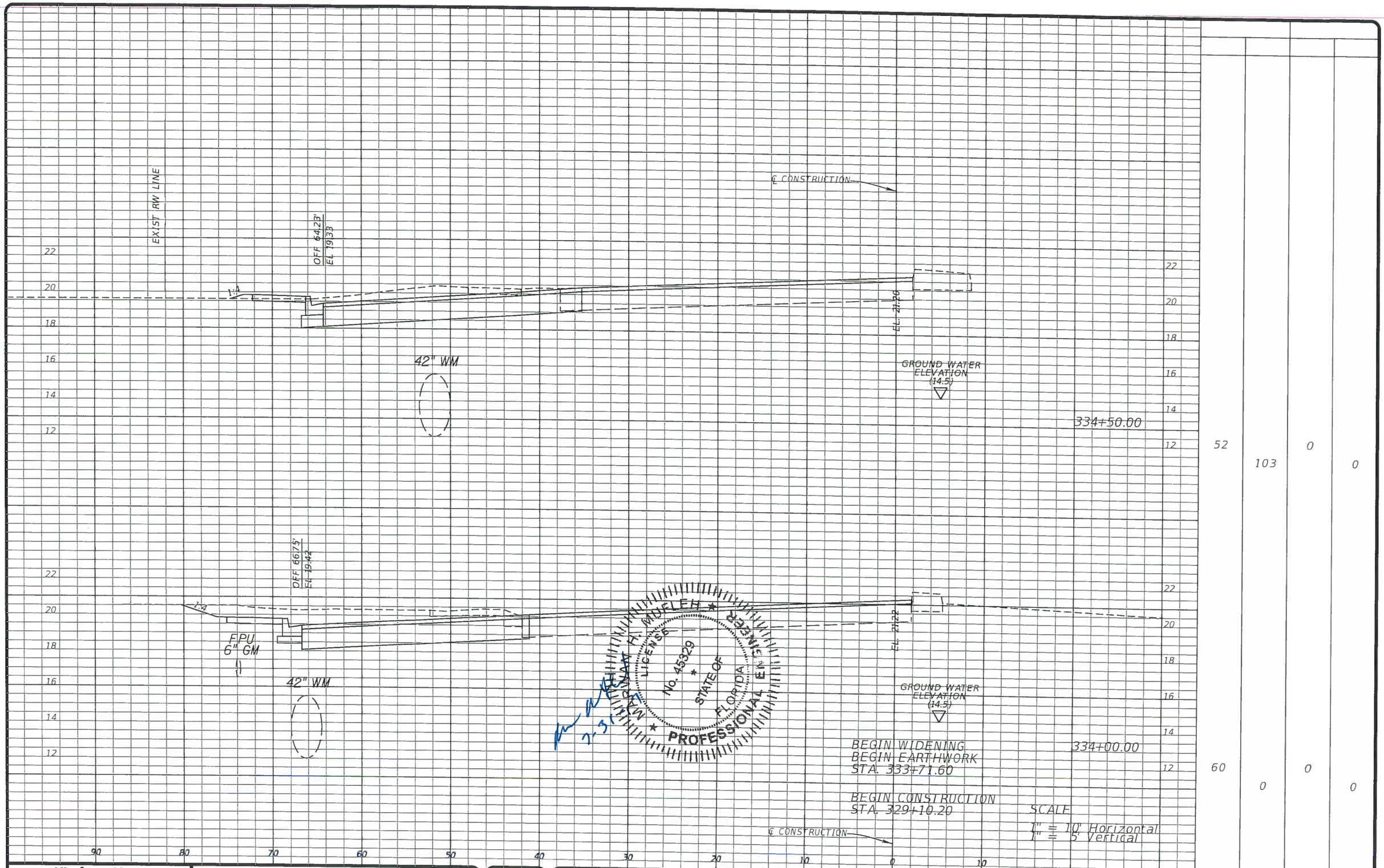
SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SD
DATE:	11/30/15

EOP PROFILE
ATLANTIC AVENUE

DESIGN FILE NAME: PROFA002.DGN
DRAWING NO.

SHEET: 16
OF: 29
PROJECT NO. 2012501

brandon.kero



52	103	0	0
60	0	0	0

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West Palm Beach, Florida 33411

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PALM BEACH COUNTY
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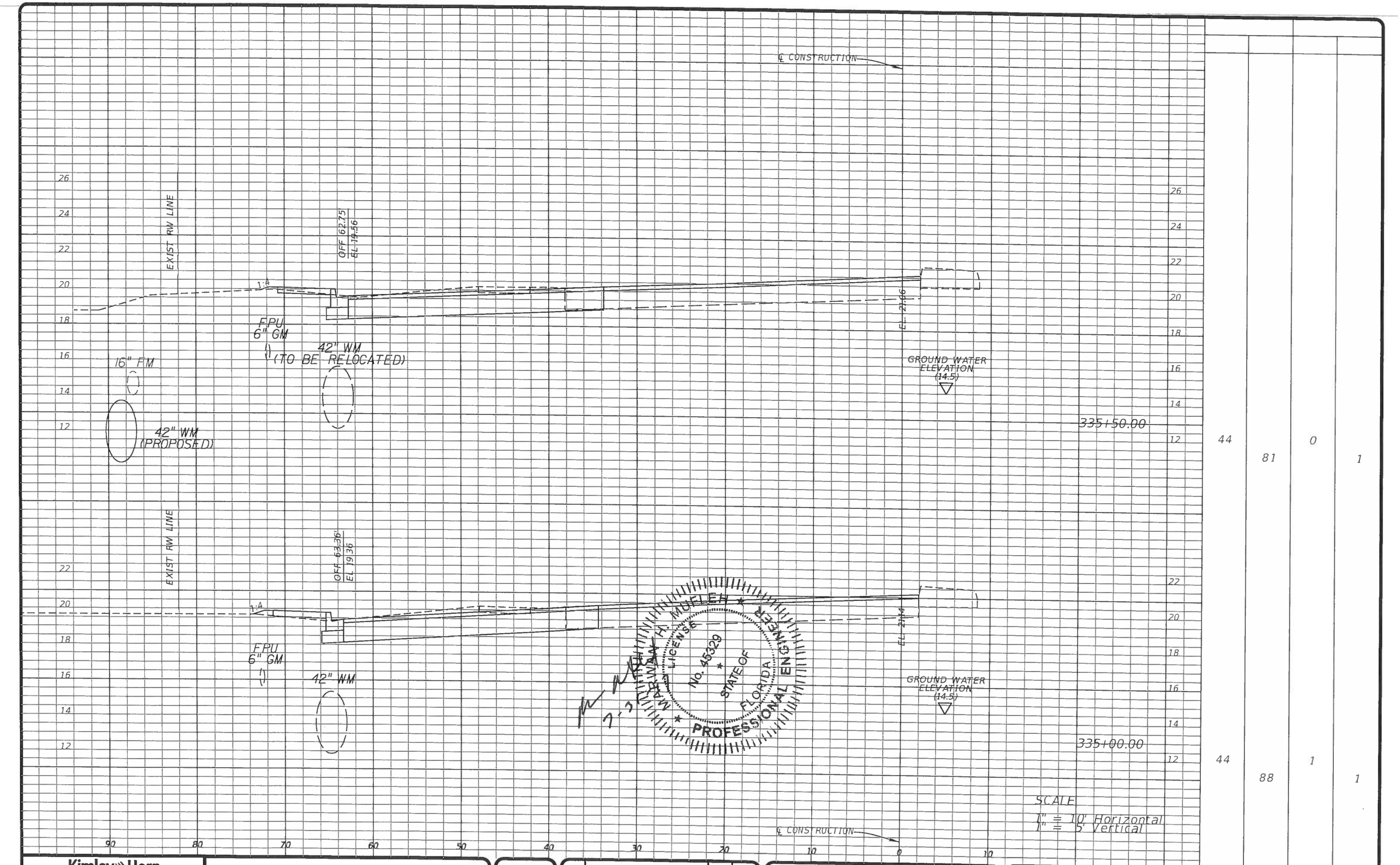
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SO
DATE:	11/30/15

CROSS SECTIONS ATLANTIC AVENUE

DESIGN FILE NAME: ROXSR001.DGN
DRAWING NO.

SHEET: 19
OF: 29
PROJECT NO. 2012501



44	81	0	1
44	88	1	1

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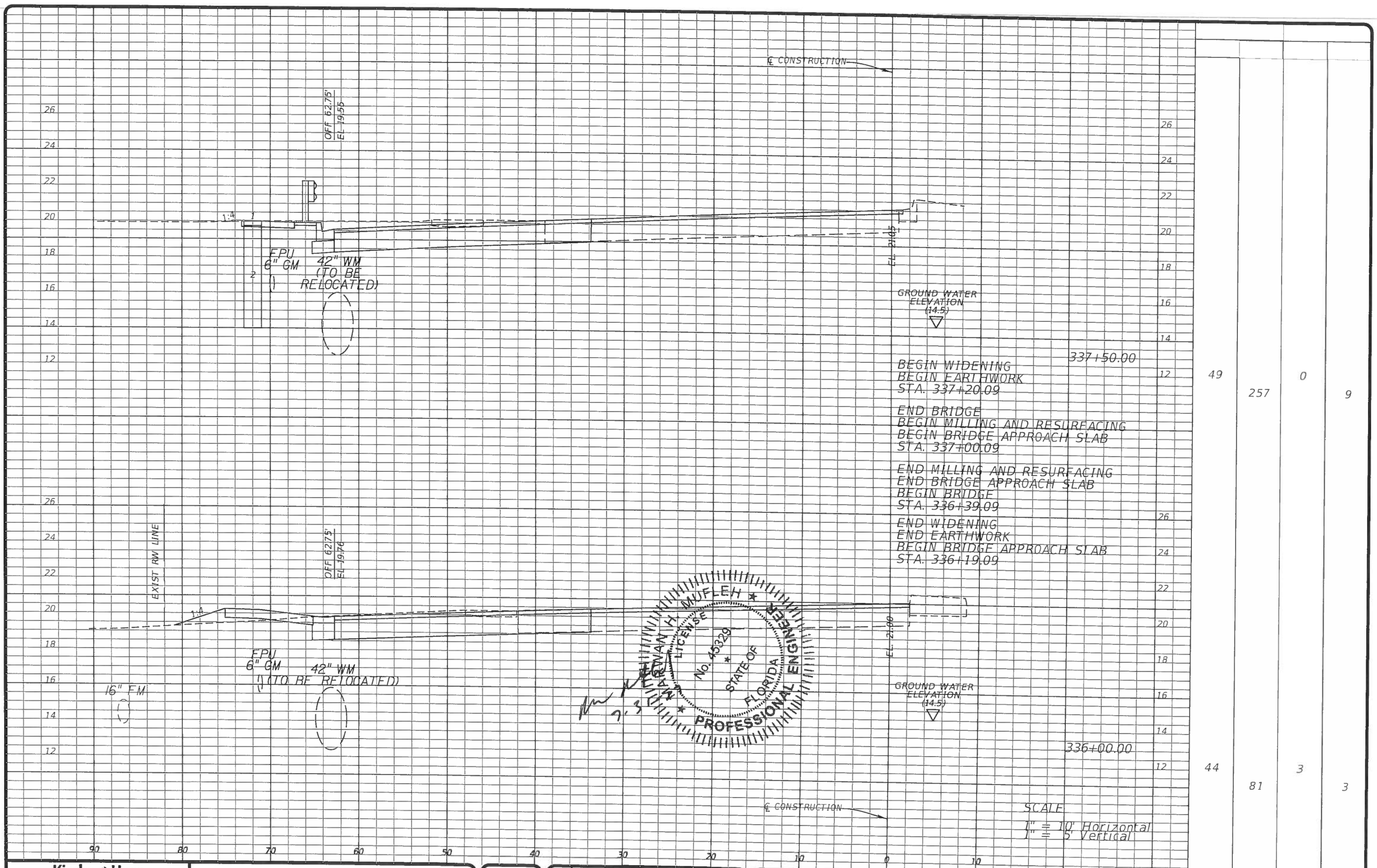
PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SO
DATE:	11/30/15

CROSS SECTIONS
ATLANTIC AVENUE

DESIGN FILE NAME: RDXSR001.DGN
DRAWING NO.

SHEET: 20
OF: 29
PROJECT NO. 20125001



49	257	0	9
44	81	3	3

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PALM BEACH COUNTY
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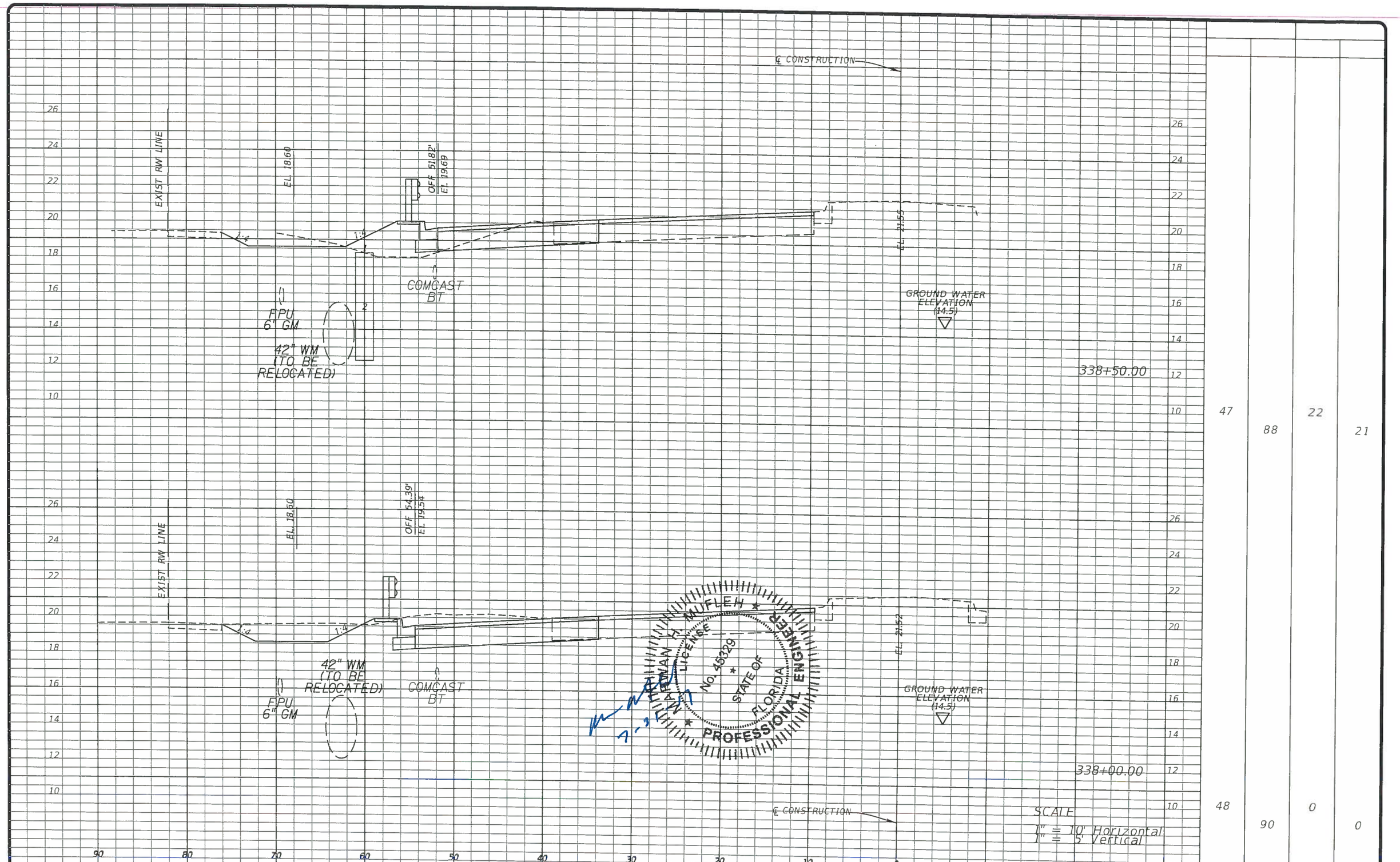
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE:	1"=40'
APPROVED:	MMM
DRAWN:	SMB
CHECKED:	SD
DATE:	11/30/15

CROSS SECTIONS
ATLANTIC AVENUE

DESIGN FILE NAME: RDXSRD01.DGN
DRAWING NO.

SHEET: 21
OF: 29
PROJECT NO. 2012504



47 88 22 21

48 90 0 0

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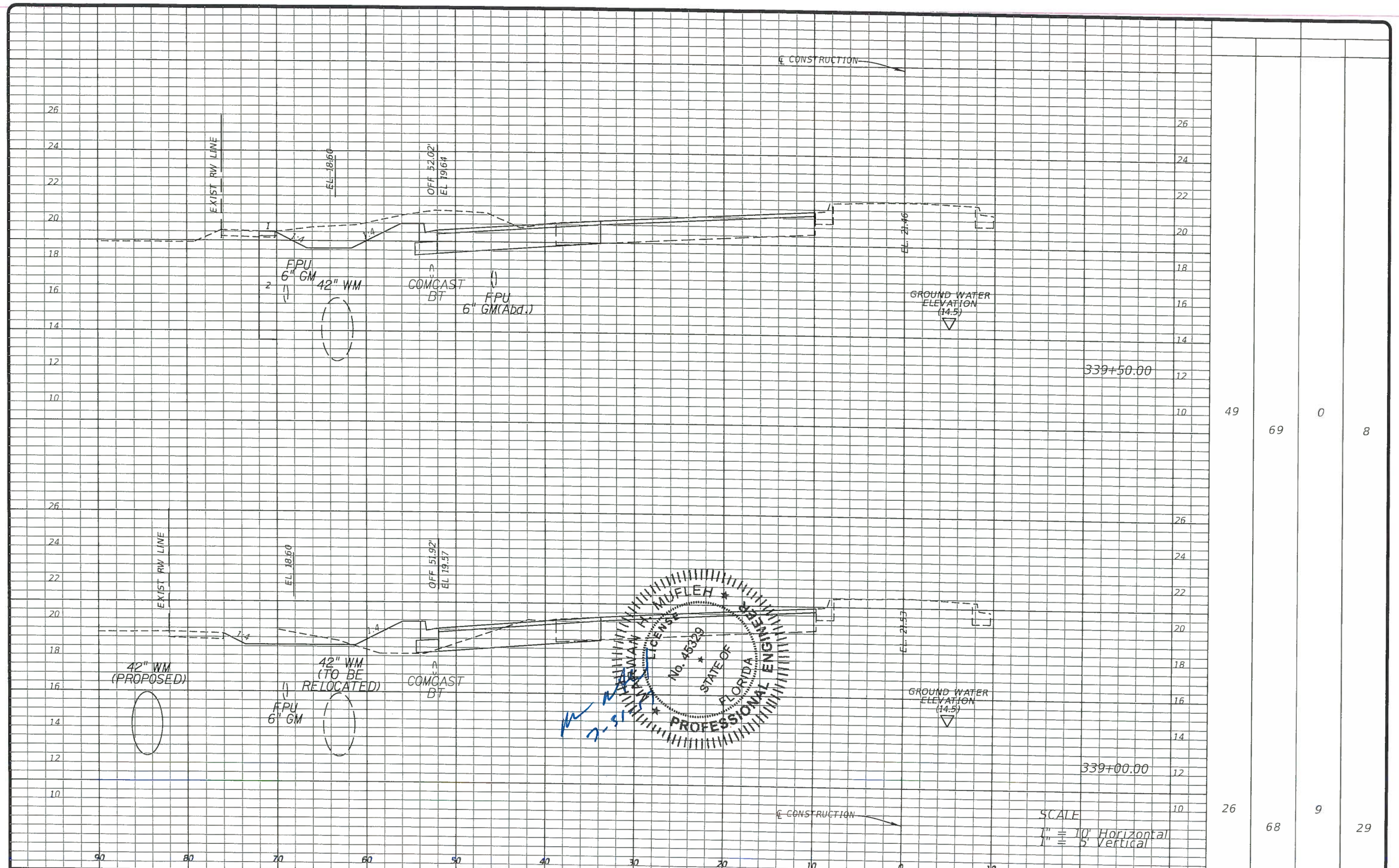
PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SD
DATE:	11/30/15

CROSS SECTIONS
ATLANTIC AVENUE

DESIGN FILE NAME: RDXSR001.DGN
DRAWING NO.

SHEET: 22
OF: 29
PROJECT NO. 2012501



49	69	0	8
26	68	9	29

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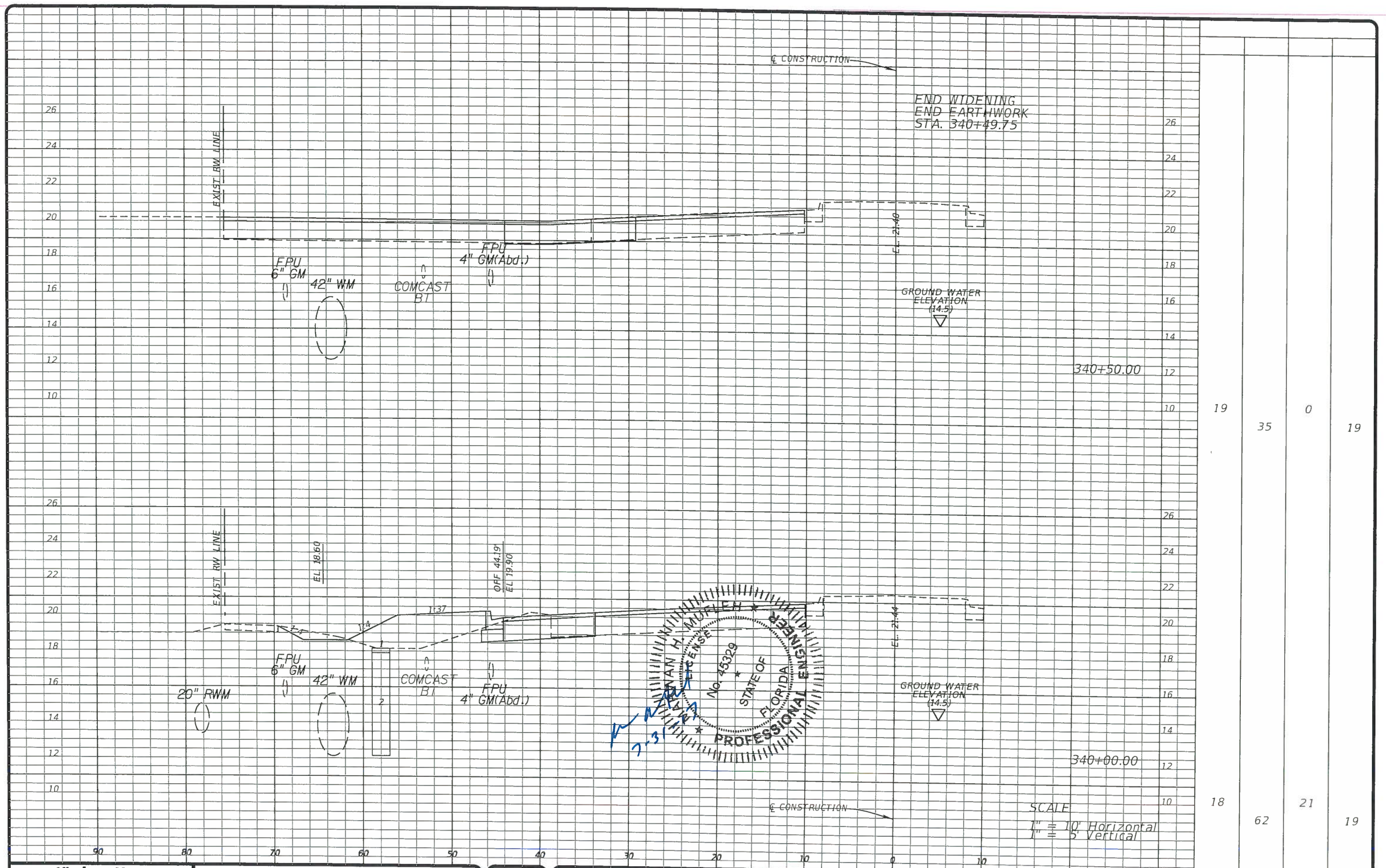
PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SD
DATE:	11/30/15

CROSS SECTIONS
ATLANTIC AVENUE

DESIGN FILE NAME	DRAWING NO.
RDXSR001.DGN	

SHEET:	23
OF:	29
PROJECT NO.	2012501



19 | 35 | 0 | 19

18 | 62 | 21 | 19

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ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SO
DATE:	11/30/15

CROSS SECTIONS
ATLANTIC AVENUE

DESIGN FILE NAME: RDXSR001.DGN
DRAWING NO.

SHEET: 24
OF: 29
PROJECT NO. 2012501

END PROJECT
END CONSTRUCTION
END MILLING AND RESURFACING
STA. 341+13.50

EXIST RW LINE

COMCAST
BT

FPU
6" GM
42" WM

FPU
4" GM(Abd.)

EL. 21.26

GROUND WATER
ELEVATION
(14.5)

341+00.00

℄ CONSTRUCTION

MARWAN F. MUFLEH
LICENSE
No. 45329
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

7.31.17

SCALE
1" = 10' Horizontal
1" = 5' Vertical

0 18 0 0

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ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

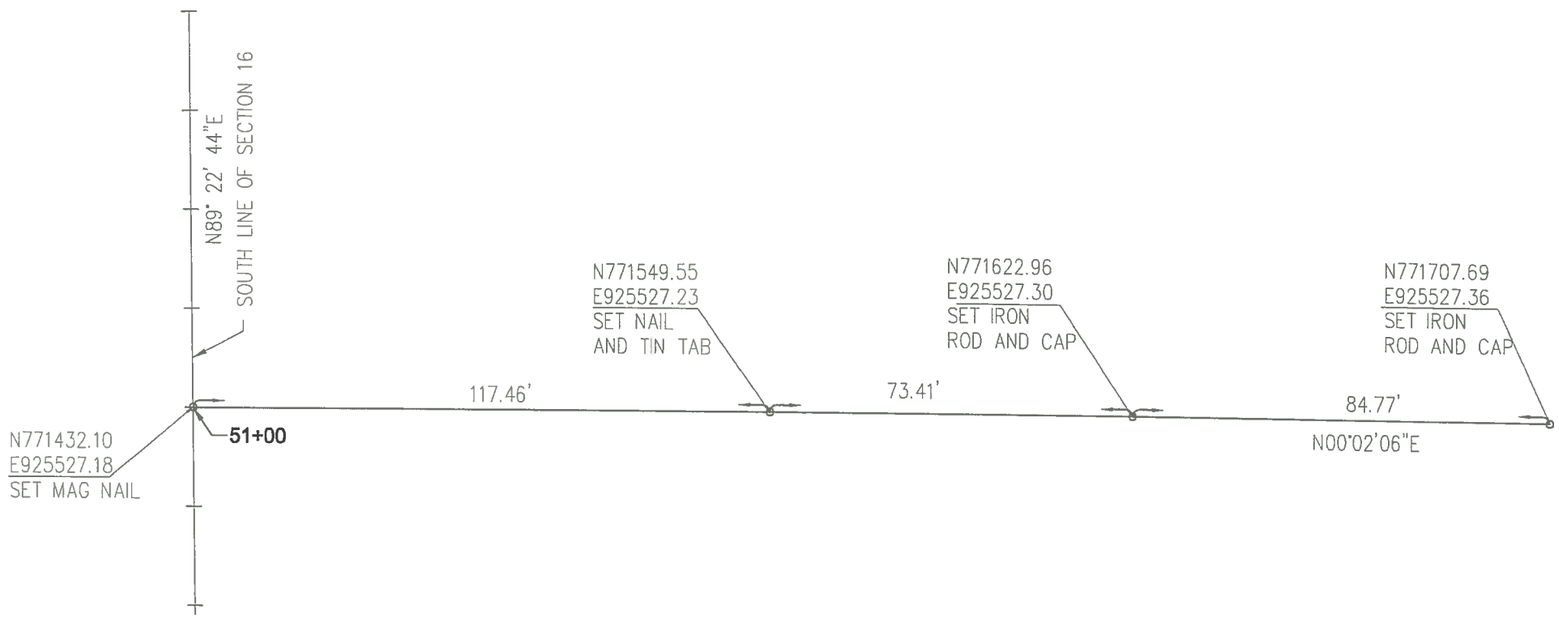
SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SG
DATE:	11/30/15

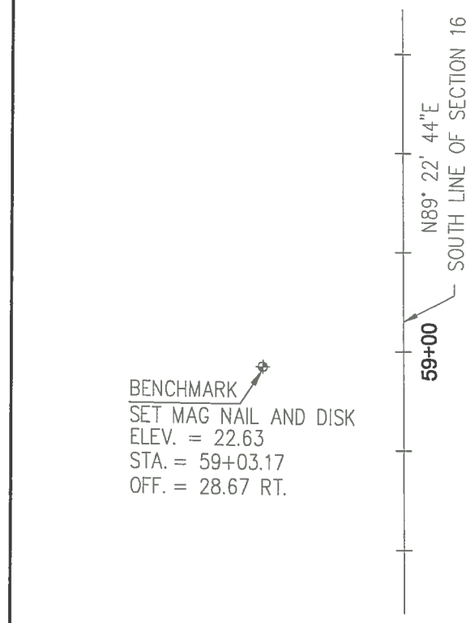
CROSS SECTIONS
ATLANTIC AVENUE

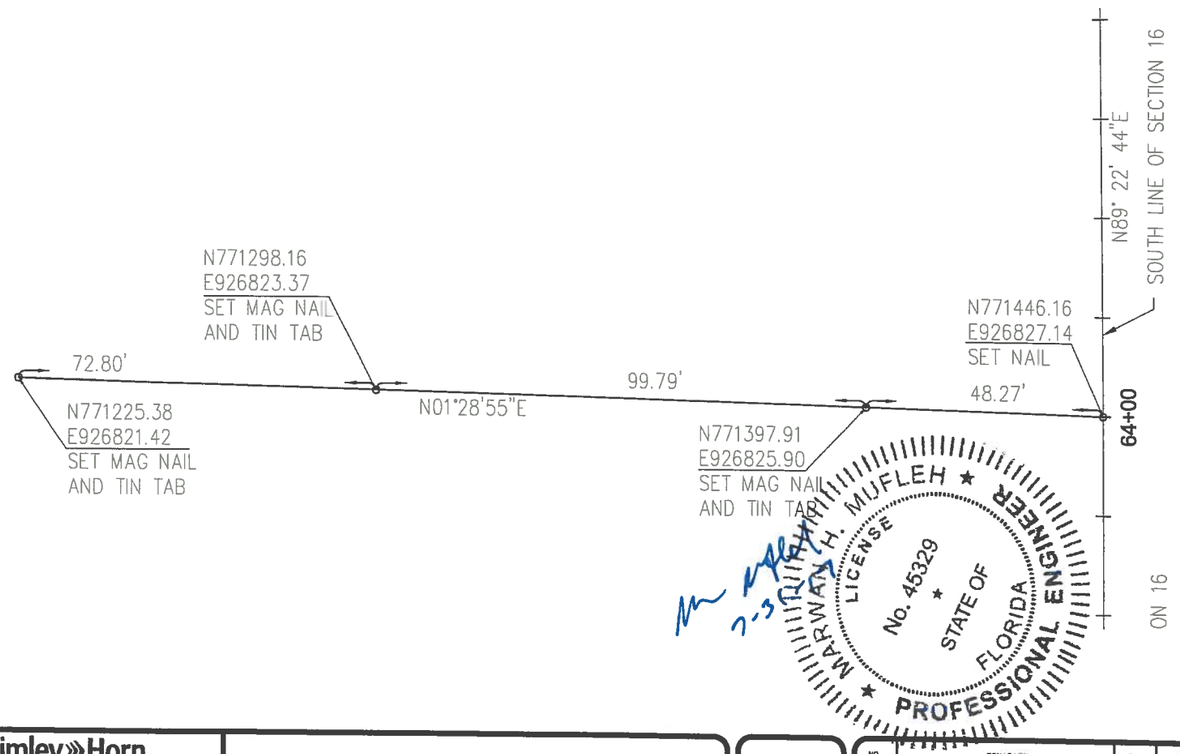
DESIGN FILE NAME: RDXSRD01.DGN
DRAWING NO.

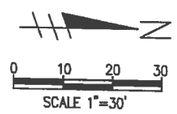
SHEET: 25
OF: 29
PROJECT NO. 20125O

brandon.kern 7/25/2017









ORB – OFFICIAL RECORD BOOK
D.B. – DEED BOOK
PG. – PAGE
R/W – RIGHT-OF-WAY
R – RADIUS
Δ – CENTRAL ANGLE
A – ARC LENGTH
℄ – CENTERLINE
IR – IRON ROD
IR/C – IRON ROD WITH CAP AS NOTED
N/D – NAIL & DISK
PK – PARKER KALON
LB – LICENSED BUSINESS
EL. – ELEVATION
NGVD – NATIONAL GEODETIC VERTICAL DATUM
STA. = STATION
OFF. = OFFSET
RT. = RIGHT
LT. = LEFT

NOTE:

1. BEARINGS ARE BASED ALONG THE SOUTH LINE OF SECTION 16, TOWNSHIP 46 SOUTH, RANGE 42 EAST, REFERENCED TO A BEARING OF N89°22'44"E (GRID).

2. ELEVATIONS SHOWN HEREON ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988, AND ARE REFERENCED TO PALM BEACH COUNTY BENCHMARK "BURNETT", ELEVATION=23.08'.

3. STATE PLANE COORDINATES
   A. COORDINATES SHOWN ARE GRID
   B. DATUM – NAD 83, 1990 ADJUSTMENT
   C. ZONE – FLORIDA EAST
   D. LINEAR UNIT – US SURVEY FOOT
   E. COORDINATE SYSTEM 1983/1990 STATE PLANE
   F. TRANSVERSE MERCATOR PROJECTION
   G. ALL DISTANCES ARE GROUND
   H. SCALE FACTOR – 1.0000246
   I. GROUND DISTANCE X SCALE FACTOR=GRID DISTANCE
   J. ROTATION EQUATION: NONE

MARWAN H. MUFLEH ★ LICENSE ★ No. 45329 ★ STATE OF FLORIDA ★ PROFESSIONAL ENGINEER

7-31-17

Kimley»Horn
Certificate Of Authorization No. 696
MARWAN MUFLEH, P.E.
License No. 45329
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

NO.	REVISION	BY	DATE

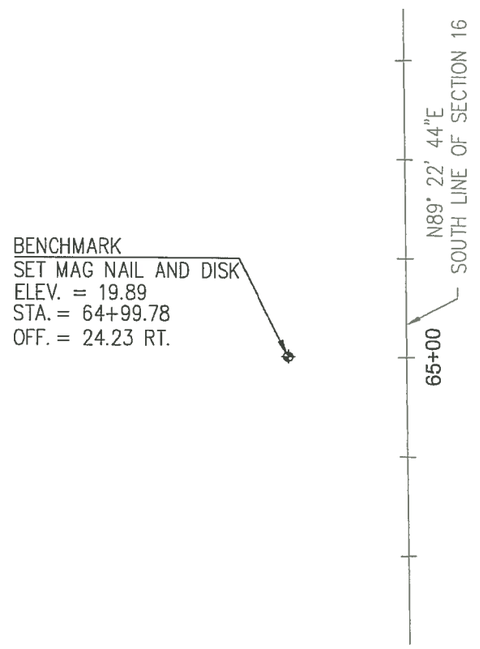
PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

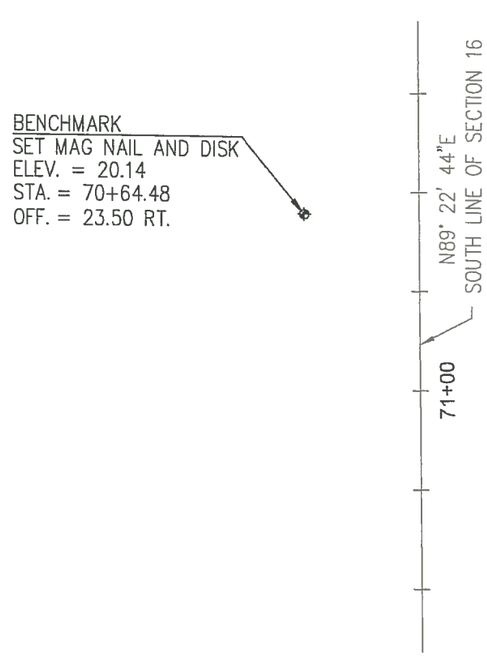
SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SO
DATE:	11/30/15

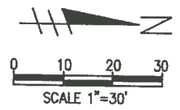
PROJECT NETWORK CONTROL

DESIGN FILE NAME: CTLSR001.DGN
DRAWING NO.

SHEET: 26
OF: 29
PROJECT NO. 20/2501







ORB – OFFICIAL RECORD BOOK
D.B. – DEED BOOK
PG. – PAGE
R/W – RIGHT-OF-WAY
R – RADIUS
Δ – CENTRAL ANGLE
A – ARC LENGTH
℄ – CENTERLINE
IR – IRON ROD
IR/C – IRON ROD WITH CAP AS NOTED
N/D – NAIL & DISK
PK – PARKER KALON
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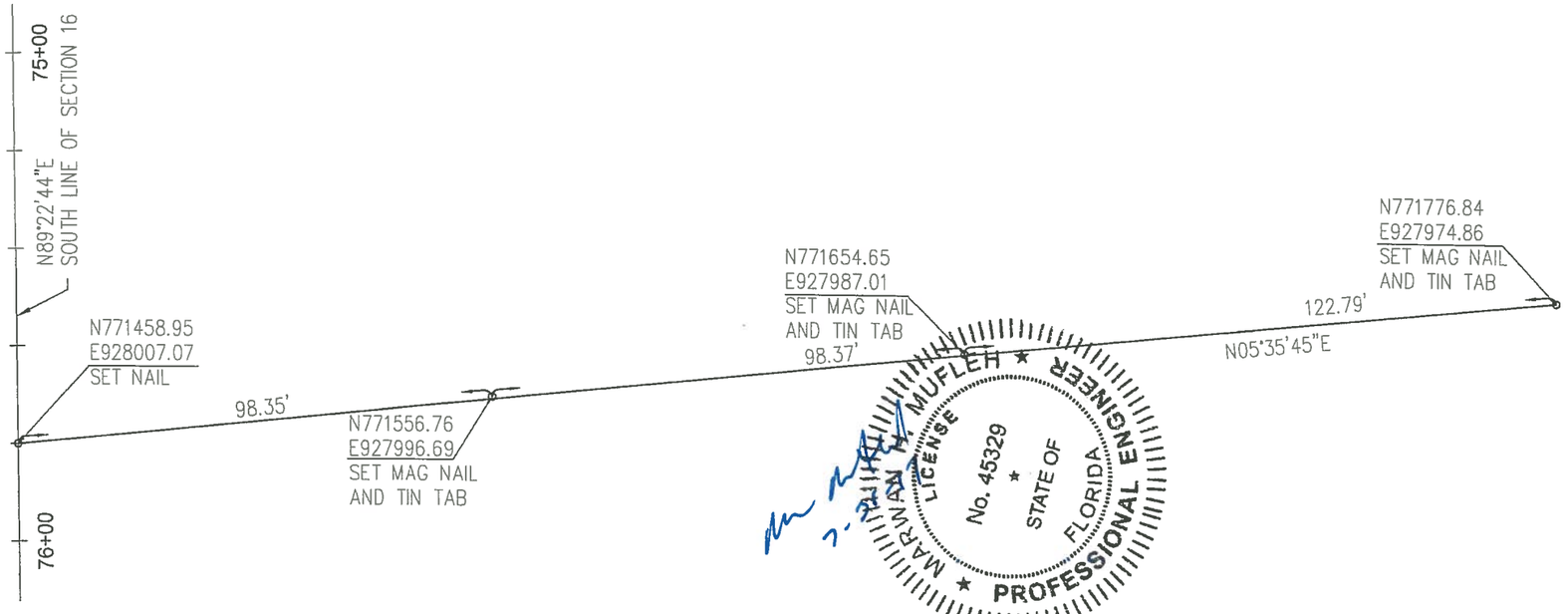

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   F. TRANSVERSE MERCATOR PROJECTION
   G. ALL DISTANCES ARE GROUND
   H. SCALE FACTOR – 1.0000246
   I. GROUND DISTANCE X SCALE FACTOR=GRID DISTANCE
   J. ROTATION EQUATION: NONE

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PROJECT NETWORK CONTROL

DESIGN FILE NAME: CTLSRD02.DGN
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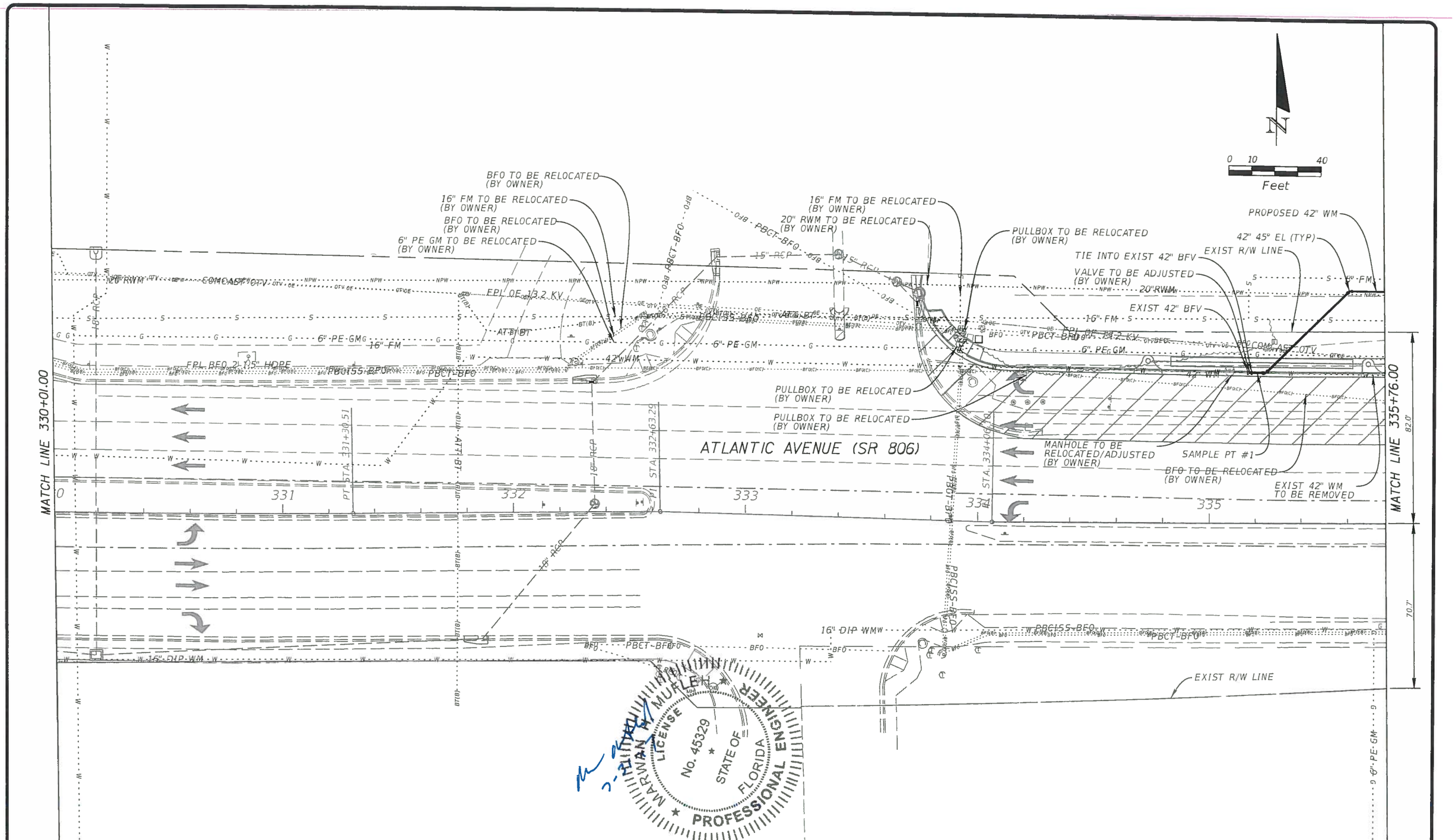
PROJECT NO. 2012501



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3-11-16

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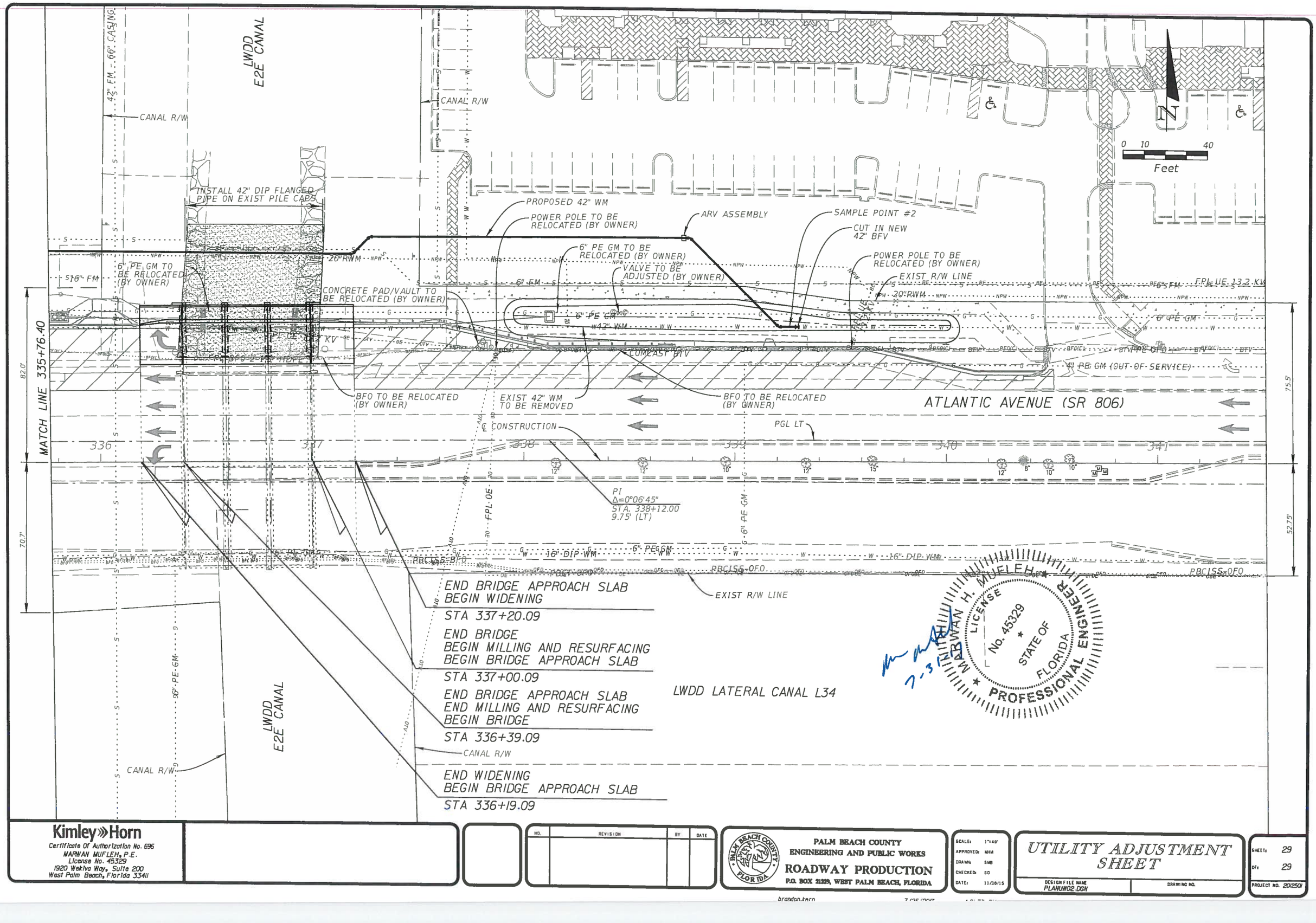
UTILITY ADJUSTMENT SHEET

DESIGN FILE NAME: PLANUW01.DGN
DRAWING NO.

SHEET: 28
OF: 29
PROJECT NO. 2012501

brandon kern



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7-31-15

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UTILITY ADJUSTMENT SHEET

DESIGN FILE NAME	DRAWING NO.
PLANUW02.DGN	

SHEET:	29
OF:	29
PROJECT NO.	2012501

brandon.kern

COUNTY OF PALM BEACH
STATE OF FLORIDA

BOARD OF COUNTY COMMISSIONERS

PROJECT NO. 2012501

WEST ATLANTIC AVENUE AND FLORIDA'S TURNPIKE INTERSECTION IMPROVEMENTS

HAL R. VALECHE
DISTRICT 1

PAULETTE BURDICK
DISTRICT 2
MAYOR

STEVEN L. ABRAMS
DISTRICT 4

MELISSA McKINLAY
DISTRICT 6
VICE MAYOR

DAVE KERNER
DISTRICT 3

MARY LOU BERGER
DISTRICT 5

MACK BERNARD
DISTRICT 7

B.M. DATA IS
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD-'88).

INDEX OF SHEETS

B-01	KEY SHEET
B-02	GENERAL NOTES (1 OF 2)
B-03	GENERAL NOTES (2 OF 2)
B-04	PLAN AND ELEVATION
B-05	CONSTRUCTION SEQUENCE
B-06	TYPICAL SECTION
B-07	* REPORT OF CORE BORINGS
B-08	FOUNDATION LAYOUT
B-09	PILE DATA TABLE
B-10	END BENT 1 LAYOUT
B-11	END BENT 4 LAYOUT
B-12	END BENT DETAILS (1 OF 2)
B-13	END BENT DETAILS (2 OF 2)
B-14	INTERMEDIATE BENT LAYOUT
B-15	INTERMEDIATE BENT DETAILS (1 OF 2)
B-16	INTERMEDIATE BENT DETAILS (2 OF 2)
B-17	FINISH GRADE ELEVATIONS
B-18	SUPERSTRUCTURE PLAN
B-19	SUPERSTRUCTURE DETAILS
B-20	APPROACH SLAB LAYOUT
B-21	REINFORCING BAR LIST
B-22	LOAD RATING DATA TABLE
BX-01 - BX-31	EXISTING BRIDGE PLANS

* SHEET NOT INCLUDED WITH THIS SUBMITTAL.

PERMIT PLANS

JERRY MARCUS PICCOLO LICENSE No. 80484 STATE OF FLORIDA PROFESSIONAL ENGINEER

Kimley»Horn

PLANS PREPARED BY:
KIMLEY-HORN AND ASSOCIATES, INC.
CONSULTING ENGINEERS AND PLANNERS
1920 WEKIVA WAY, SUITE 200
WEST PALM BEACH, FLORIDA 33411
FLORIDA BUSINESS CERT. NO. 696
PHONE (561) 845-0665
FAX (561) 863-8175

STRUCTURES PLANS

ENGINEER OF RECORD: JERRY MARCUS PICCOLO, P.E.

P.E. NO.: 80484

ENGINEERS CERTIFICATION

I HEREBY CERTIFY THAT THE ATTACHED PLANS AND DESIGN ARE IN SUBSTANTIAL COMPLIANCE WITH THE DESIGN STANDARDS AND CRITERIA IN EFFECT ON THIS DATE FOR PALM BEACH COUNTY ENGINEERING DEPARTMENT AND THE STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION.

BRIDGE NO. 930032

PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
P. O. BOX 21229, WEST PALM BEACH, FLORIDA

ENGINEERING SERVICES

DATE | BY | REVISION | NO.

SCALE:
APPROVED:
DRAWN:
CHECKED:
DATE:
FIELD BOOK NO.

PROJECT: WEST ATLANTIC AVENUE AND FLORIDA'S TURNPIKE INTERSECTION IMPROVEMENTS
DESIGN FILE NAME
DRAWING NO.

SHEET: B-01
OF:
PROJECT NO. 2012501

Jerry piccolo

GENERAL NOTES

A. Design Specifications

1. FDOT Structures Manual dated January 2017.
2. American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor (LRFD) Bridge Design Specifications, 7th Edition and all subsequent interim's.
3. FDOT Plans Preparation Manual dated January 2017

B. Governing Standards and Construction Specifications

Florida Department of Transportation, FY 2017-18 Design Standards and January 2016 Standard Specifications for Road and Bridge Construction, as amended by Contract Documents.

C. Vertical Datum

Benchmark elevations shown on the plans are North American Vertical Datum of 1988 (NAVD-1988). The conversion from NGVD to NAVD at this site is 1.49 feet.

D. Environment

Bridge No.	Superstructure	Substructure	Controlling Criteria
930032	Slightly	Moderately	Resistivity= 1720 OHM

E. Design Methodology

Load and Resistance Factor Design (LRFD) method using Strength, Service and Fatigue Limit States.

F. Design Loadings

1. Live Loads:
HL-93 with Dynamic Load Allowance

2. Dead Loads:

Traffic Railing (32" F Shape)	420 plf
Pedestrian/Bicycle Railing	15 plf
Reinforced Concrete	150 pcf
Future Wearing Surface	15 psf

3. Vehicle Collision Force:
Not applicable to these structures since there is no Vessel or Traffic Impact to the exposed piling.

4. Utilities:
No allowance for utility loads has been included in the design.

JERRY MARCUS PICCOLO LICENSE No. 80484 STATE OF FLORIDA PROFESSIONAL ENGINEER

G. Materials

1. Reinforcing Steel: Grade 60 Carbon Steel per Specifications Section 931.

2. Concrete

Concrete Class	Min. 28-day Compressive Strength	Location of Concrete in Structure
II	3400 psi	Traffic Railings
II (Bridge Deck)	4500 psi	Approach Slabs
IV	5500 psi	C.I.P. Substructure & C.I.P. Superstructure
V (Special)	6000 psi	Prestressed Concrete Piles

3. Concrete Cover

Cast-In-Place Superstructure (Top of Deck)	2"
Cast-In-Place Superstructure (Except Top of Deck)	2"
Cast-In-Place Substructure (Cast Against Earth)	4"
Cast-In-Place Substructure (Formed Surfaces)	3"

Concrete cover dimensions shown in the plans do not include placement and fabrication tolerances unless shown as "minimum cover". See Specification 415 for allowable tolerances. All dimensions pertaining to the location of reinforcing steel are to centerline of bar except where clear dimension is noted to face of concrete.

H. Applied Finish Coating

A Class 5 Finish Coating shall be applied to the portions of the structure shown on the Structure Finish Detail on sheet "General Notes (2 of 2)".

I. Plan Dimensions

All dimensions in these plans are measured in feet either horizontally or vertically unless otherwise noted.

J. Utilities

For plan locations of existing utilities, see Plan and Elevation sheet. Locations of utilities shown in the plans are approximate. For disposition of utilities, see the Roadway Plans.

K. Bridge Name

Place the following bridge name on the Traffic Railing in accordance with the Traffic Railing Design Standards:

Bridge No.	Bridge Name
930032	CANAL E-2E

L. Screeding Deck Slabs

Screed the riding surface of the Bridge Deck and Approach Slabs to achieve the Finish Grade Elevations shown in the plans. Account for the theoretical deflections due to self weight, deck casting sequence, deck forming systems, construction loads, overlays and temporary shoring, etc. as required.

BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

Kimley»Horn
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1920 Wekiva Way, Suite 200
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ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

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GENERAL NOTES (1 OF 2)

DESIGN FILE NAME | DRAWING NO.

SHEET: B-02
OF:
PROJECT NO. 2012501

jerry.piccolo 8/3/2017

GENERAL NOTES (Continued)

M. *Joints in Concrete*

Construction joints will be permitted only at the locations indicated in the Plans. Additional construction joints or alterations to those shown shall require approval of the Engineer.

N. *Existing Bridge Construction Considerations*

1. Dimension Verification: Unless otherwise noted, the dimensions, elevations, and intersecting angles shown are based on the information as detailed in the Original Construction Plans of the existing bridge and may not represent as-built conditions. It is the Contractor's responsibility to verify this data before beginning construction and notify the Engineer of any discrepancies.
2. Existing Reinforcing Steel: All superstructure deck transverse reinforcing steel, both top and bottom layers, end bent and intermediate bent reinforcing steel, shall be protected, salvaged and utilized in the new structure. Cutting of this reinforcing steel and substition of epoxy bonded dowels is not permitted as a construction option.

O. *Traffic Control Plans*

For Maintenance of Traffic, see the Temporary Traffic Control Plans located in the Lead (Roadway) Component of these Plans.

P. *Phasing of Work*

Work phasing and progression of the work shall conform to the Traffic Control Plans located in the Lead (Roadway) Component of these Plans and the notes on the Construction Sequence Drawings.

JERRY MARCUS PICCOLO LICENSE No. 80484 STATE OF FLORIDA PROFESSIONAL ENGINEER

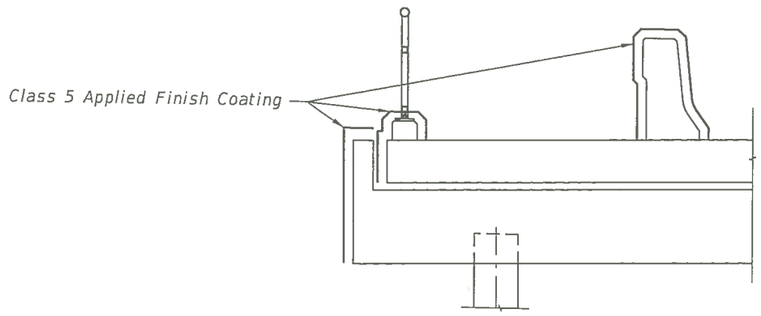
ABBREVIATIONS:

EF	=	Each Face
FFBW	=	Front Face of Backwall
FF	=	Far Face
NF	=	Near Face
PC/PS	=	Precast/Prestressed
PGP	=	Profile Grade Point
PEJM	=	Premolded Expansion Joint Material
UNO	=	Unless Noted Otherwise

Note: For additional standard abbreviations and symbols see FDOT Design Standards, Index Nos. 001 & 002.

PAY ITEM NOTES:

1. For limits of removal of existing structures/bridges (Item 110-3) see "Plan and Elevation" sheet.
2. See Roadway Plans for slope protection quantities and details.
3. Barrier wall transition section is included in pay item 521-5-1.
4. Planing of existing approach slab is included in pay item 400-7.



SURFACE FINISH DETAIL

SUMMARY OF BRIDGE QUANTITIES

Item No.	Description	Unit	Quantity
110-3	Removal of Existing Structures/Bridges	SF	414.3
110-12-1	Hydrodemolition, Removal of Deck Surface	SY	27.2
400-2-10	Concrete Class II, Approach Slab	CY	42.3
400-4-4	Concrete Class IV, Superstructure	CY	73.1
400-4-5	Concrete Class IV, Substructure	CY	27.8
400-7	Bridge Deck Grooving, Less than 8.5"	SY	196
415-1-4	Reinforcing Steel - Bridge Superstructure	LB	14400
415-1-5	Reinforcing Steel - Substructure	LB	4850
415-1-9	Reinforcing Steel - Approach Slabs	LB	8050
455-34-3	Prestressed Concrete Piling, 18" SQ	LF	394
455-143-3	Test Piles-Prestressed Concrete Piling, 18" SQ	LF	107
458-1-11	Bridge Deck Expansion Joint, New Construction, F&I Poured Joint with Backer Rod	LF	114
458-1-21	Bridge Deck Expansion Joint, Rehabilitation, Poured Joint with Backer Rod	LF	26
515-2-311	Pedestrian/Bicycle Railing, Aluminum Only, 42" Type 1	LF	101
521-5-1	Concrete Traffic Railing, Bridge 32" F - Shape	LF	101

BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

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PALM BEACH COUNTY
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ROADWAY PRODUCTION
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GENERAL NOTES (2 OF 2)

DESIGN FILE NAME | DRAWING NO.

SHEET: B-03
OF:
PROJECT NO. 2012501

jerry.piccolo 8/3/2017

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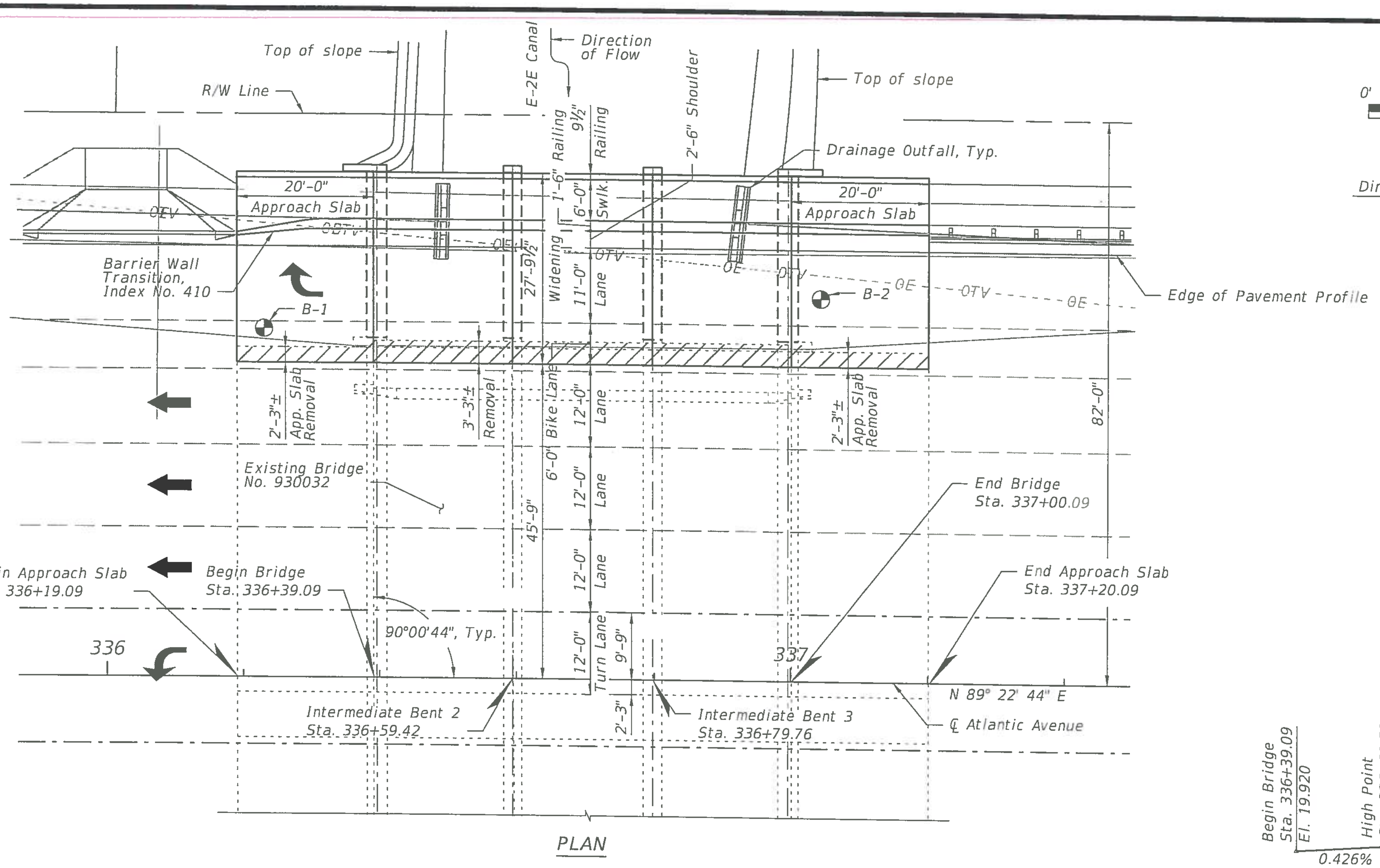
PROFESSIONAL ENGINEER



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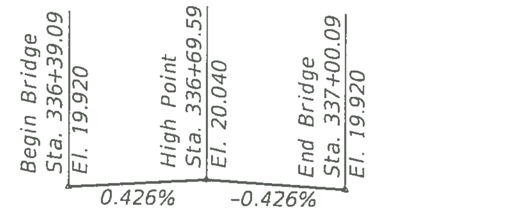
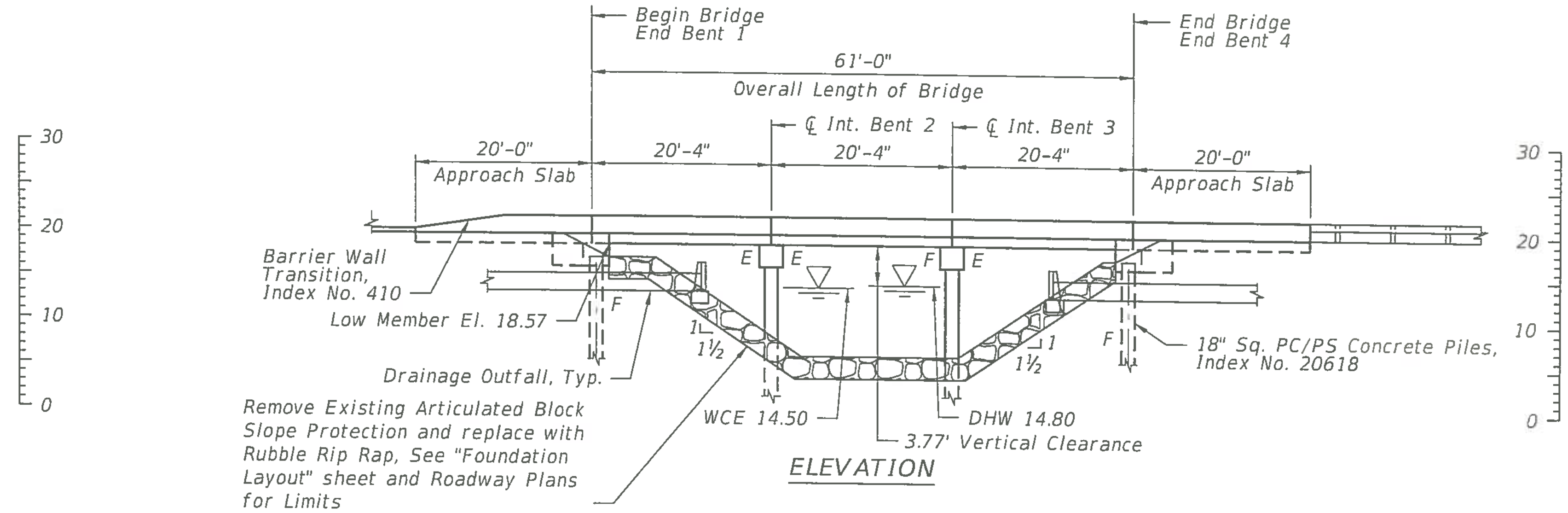


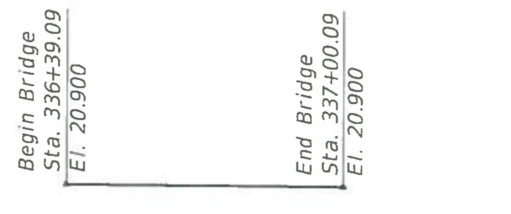
VERTICAL PROFILE @ EDGE OF PAVEMENT

TRAFFIC DATA

Atlantic Avenue Westbound
Design Speed = 45 mph
2016 AADT = 17000
K = 9.0
D = 60%
T24 = 5.6%



ELEVATION



VERTICAL PROFILE @ ℄ ATLANTIC AVENUE

Legend:

- ▨ - Indicates bridge removal
- ◐ - Indicates boring location

BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

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PLAN AND ELEVATION

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SHEET: B-04
OF:
PROJECT NO. 2012501

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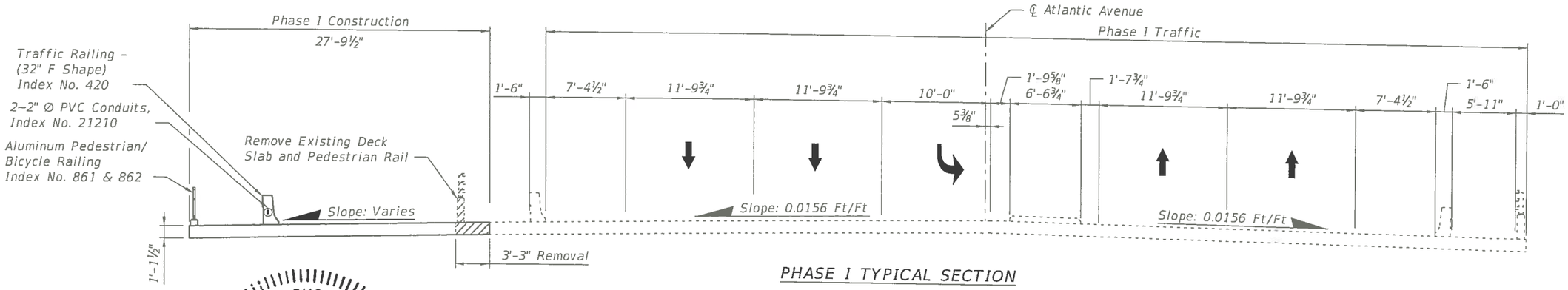

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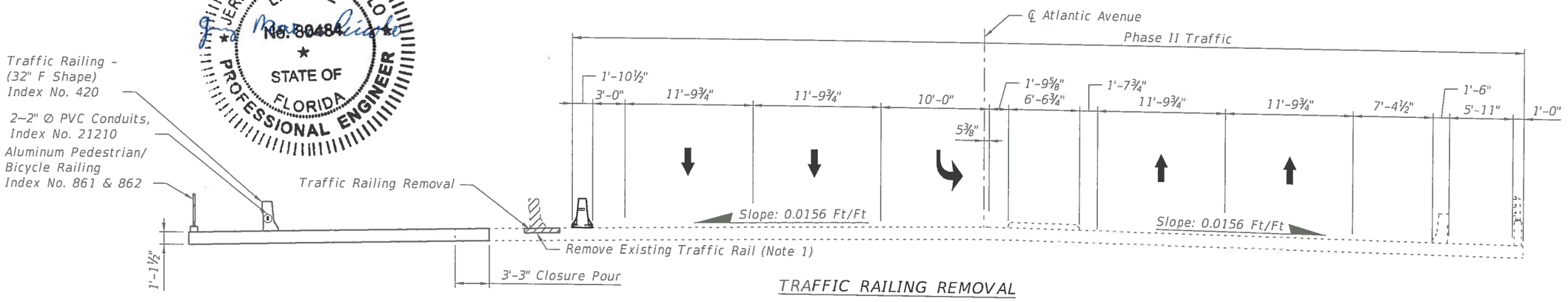
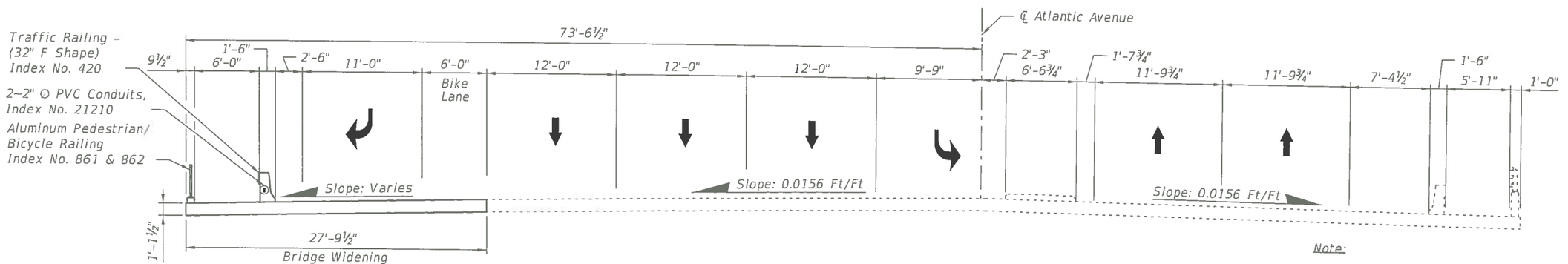


TRAFFIC RAILING REMOVAL



PROPOSED TYPICAL SECTION

Note:

1. See "Superstructure Details" or "Approach Slab Layout" sheets for traffic railing removal information.

JERRY MARCUS PICCOLO LICENSE No. 80484 STATE OF FLORIDA PROFESSIONAL ENGINEER

BRIDGE NO. 930032

ATLANTIC AVENUE OVER LWDD CANAL E-2E

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CONSTRUCTION SEQUENCE

DESIGN FILE NAME | DRAWING NO.

SHEET: B-05
OF:
PROJECT NO. 2012501

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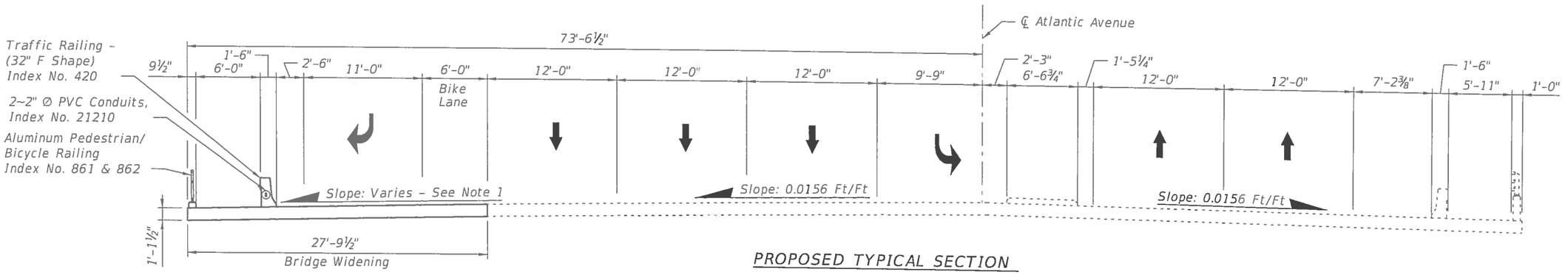

PROPOSED TYPICAL SECTION

JERRY MARCUS PICCOLO LICENSE No. 80484 STATE OF FLORIDA PROFESSIONAL ENGINEER

Note:

1. Cross slope varies from 0.02 Ft/Ft at Begin Bridge to 0.016 Ft/Ft at ℄ Span 2 and back to 0.02 Ft/Ft at End Bridge (For Bridge Deck Drainage). Approach Slabs are a constant 0.02 Ft/Ft cross slope.

BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

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TYPICAL SECTION

DESIGN FILE NAME | DRAWING NO.

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OF:
PROJECT NO. 2012501

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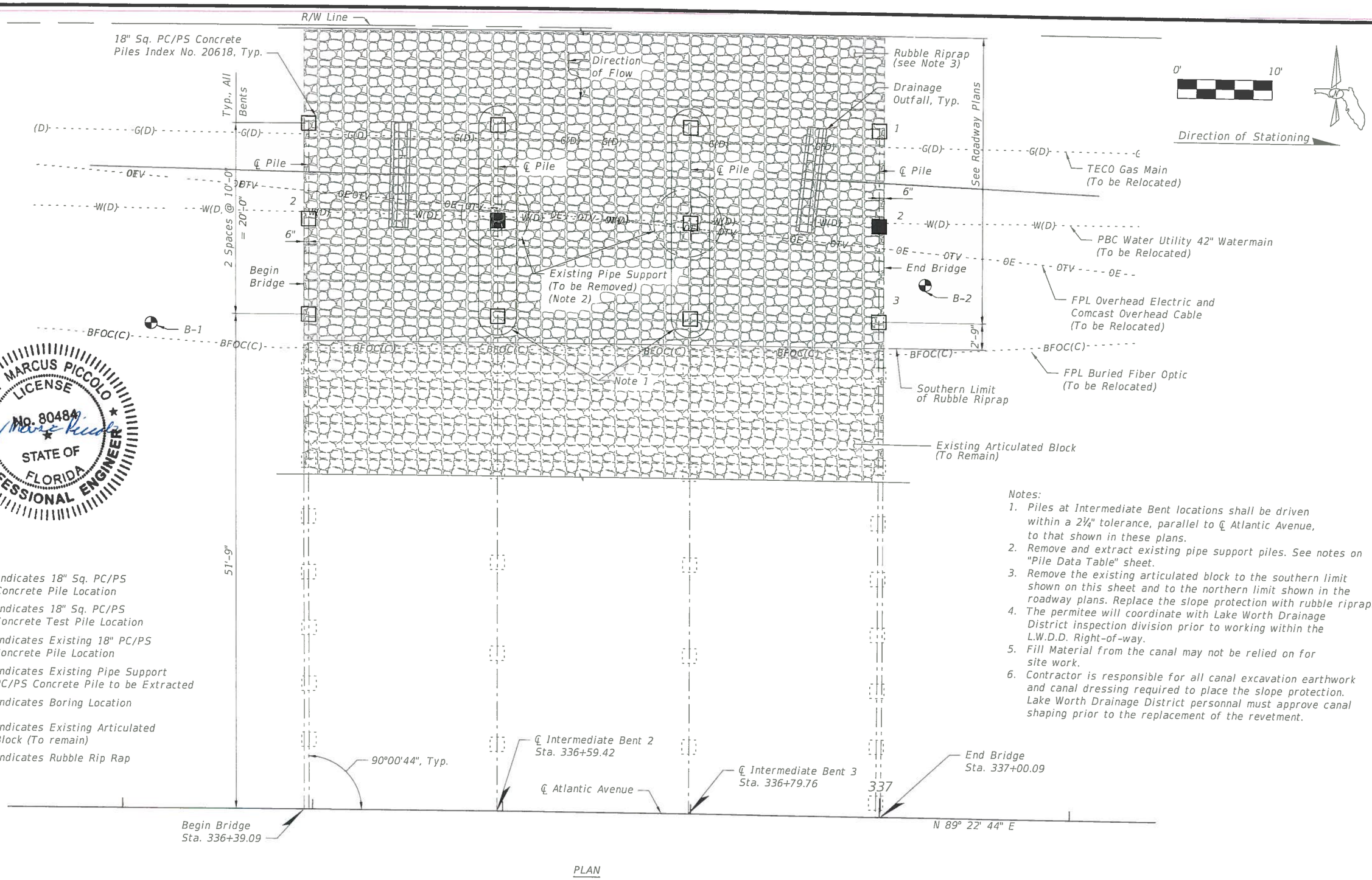

LEGEND

- Indicates 18" Sq. PC/PS Concrete Pile Location
- Indicates 18" Sq. PC/PS Concrete Test Pile Location
- Indicates Existing 18" PC/PS Concrete Pile Location
- Indicates Existing Pipe Support PC/PS Concrete Pile to be Extracted
- Indicates Boring Location
- Indicates Existing Articulated Block (To remain)
- Indicates Rubble Rip Rap

PLAN

Notes:

1. Piles at Intermediate Bent locations shall be driven within a 2¼" tolerance, parallel to ℄ Atlantic Avenue, to that shown in these plans.
2. Remove and extract existing pipe support piles. See notes on "Pile Data Table" sheet.
3. Remove the existing articulated block to the southern limit shown on this sheet and to the northern limit shown in the roadway plans. Replace the slope protection with rubble riprap.
4. The permitee will coordinate with Lake Worth Drainage District inspection division prior to working within the L.W.D.D. Right-of-way.
5. Fill Material from the canal may not be relied on for site work.
6. Contractor is responsible for all canal excavation earthwork and canal dressing required to place the slope protection. Lake Worth Drainage District personnal must approve canal shaping prior to the replacement of the revetment.

JERRY MARCUS PICCOLO LICENSE No. 80484 STATE OF FLORIDA PROFESSIONAL ENGINEER

BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

Kimley»Horn
Certificate Of Authorization No. 696
JERRY MARCUS PICCOLO, P.E.
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NO.	REVISION	BY	DATE

PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

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FOUNDATION LAYOUT

DESIGN FILE NAME | DRAWING NO.

SHEET: B-08
OF:
PROJECT NO. 2012501

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PILE DATA TABLE

INSTALLATION CRITERIA								DESIGN CRITERIA								PILE CUT-OFF ELEVATIONS		
PIER or BENT NUMBER	PILE SIZE (in.)	NOMINAL BEARING RESISTANCE (tons)	NOMINAL UPLIFT RESISTANCE (tons)	MINIMUM TIP ELEVATION (ft.)	TEST PILE LENGTH (ft.)	REQUIRED JET ELEVATION (ft.)	REQUIRED PREFORM ELEVATION (ft.)	FACTORED DESIGN LOAD (tons)	FACTORED DESIGN UPLIFT LOAD (tons)	DOWN DRAG (tons)	TOTAL SCOUR RESISTANCE (tons)	NET SCOUR RESISTANCE (tons)	100-YEAR SCOUR ELEVATION (ft.)	Ø COMPRESSION	Ø UPLIFT	PILE 1	PILE 2	PILE 3
End Bent 1	18	130	N/A	-22.0	N/A	N/A	N/A	84	N/A	N/A	N/A	N/A	N/A	0.65	N/A	17.2	17.4	17.6
Intermediate Bent 2	18	134	N/A	-22.0	55.0	N/A	N/A	87	N/A	N/A	N/A	N/A	N/A	0.65	N/A	17.3	17.4	17.6
Intermediate Bent 3	18	134	N/A	-22.0	N/A	N/A	N/A	87	N/A	N/A	N/A	N/A	N/A	0.65	N/A	17.3	17.4	17.6
End Bent 4	18	130	N/A	-19.0	52.0	N/A	N/A	84	N/A	N/A	N/A	N/A	N/A	0.65	N/A	17.2	17.4	17.6

$$\frac{\text{Factored Design Load + Net Scour Resistance + Down Drag}}{\text{Ø}} \leq \text{Nominal Bearing Resistance}$$

TENSION RESISTANCE – The ultimate side friction capacity that must be obtained below the 100 year scour elevation to resist pullout of the pile (Specify only when design requires tension capacity).

TOTAL SCOUR RESISTANCE – An estimate of the ultimate static side friction resistance provided by the scourable soil.

NET SCOUR RESISTANCE – An estimate of the ultimate static side friction resistance provided by the soil from the required preformed or jetting elevation to the scour elevation.

100-YEAR SCOUR ELEVATION – Estimated elevation of scour due to the 100 year storm event.

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PILE INSTALLATION NOTES:

1. Contractor to verify location of all utilities prior to any pile installation activities.
2. Minimum Tip Elevation is required per Standard Specifications Section 455-5.8.
3. No jetting will be allowed without the approval of the Engineer.
4. During installation of foundation, protect and monitor existing Structures in accordance with section 108 of the FDOT Standard Specifications for Road and Bridge Construction.
5. After extracting the existing pipe support piles the Contractor shall back fill the holes immediately with sand using a tremie. The Contractor shall consider special construction procedures and/or equipment to install the piles to meet the requirements in Section 455-5.15 of the Standard Specifications for Road and Bridge Construction. The cost for such special construction procedures and/or equipment should be included in the unit price for concrete pile.

BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

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PILE DATA TABLE

DESIGN FILE NAME | DRAWING NO.

SHEET: B-09
OF:
PROJECT NO. 2012501

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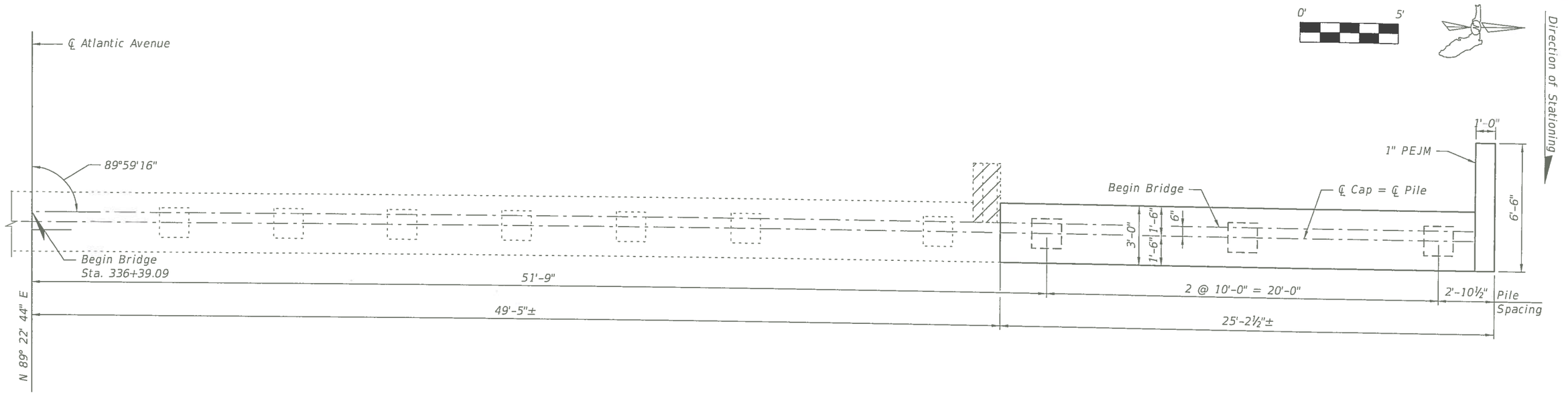
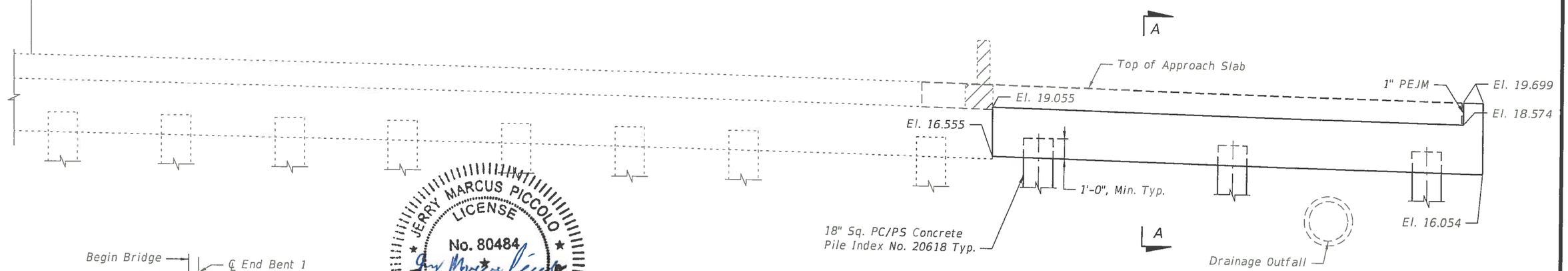
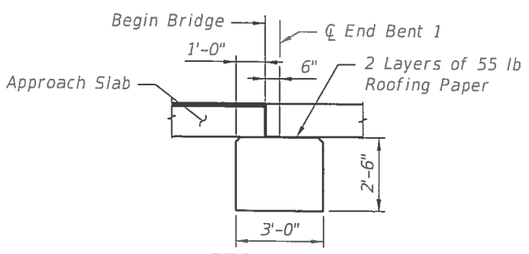


PLAN





SECTION A-A

ELEVATION

Legend:

▨ – Indicates bridge removal

Notes:
1. For pile cutoff elevations see "Pile Data Table".

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BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

END BENT 1 LAYOUT

DESIGN FILE NAME | DRAWING NO.

SHEET: B-10
OF:
PROJECT NO. 2012501

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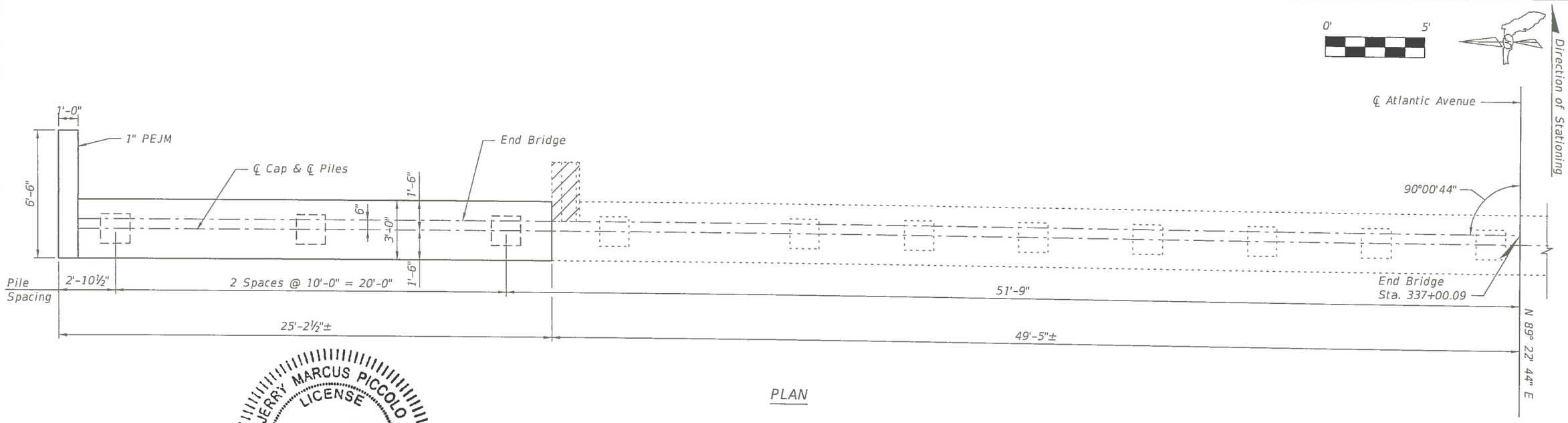
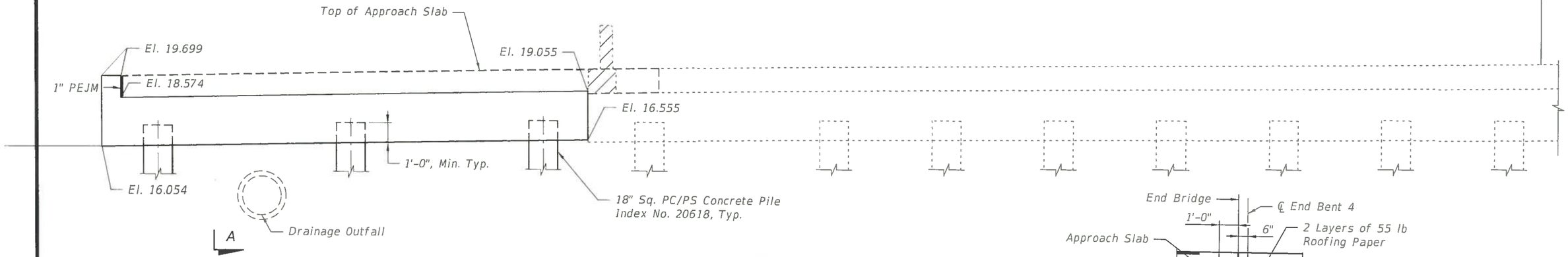
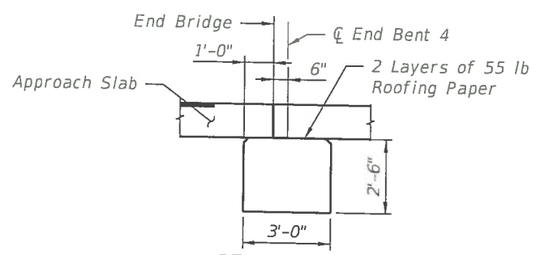


PLAN

Note:
1. For pile cutoff elevations see "Pile Data Table".



ELEVATION



SECTION A-A

Legend:
☒ – Indicates bridge removal

JERRY MARCUS PICCOLO LICENSE No. 80484 STATE OF FLORIDA PROFESSIONAL ENGINEER

BRIDGE NO. 930032
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END BENT 4 LAYOUT

DESIGN FILE NAME | DRAWING NO.

SHEET: B-11
OF:
PROJECT NO. 2012501

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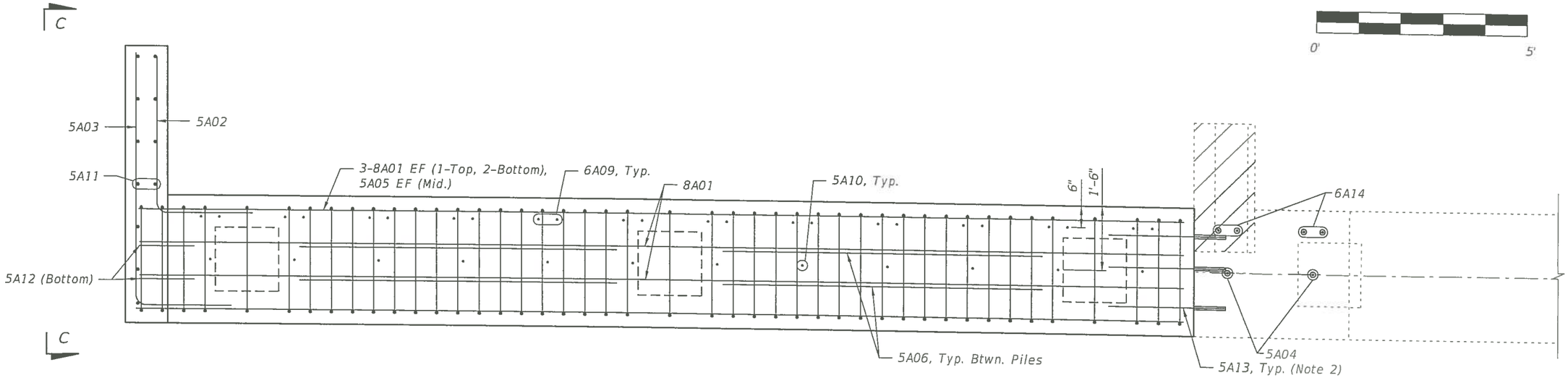
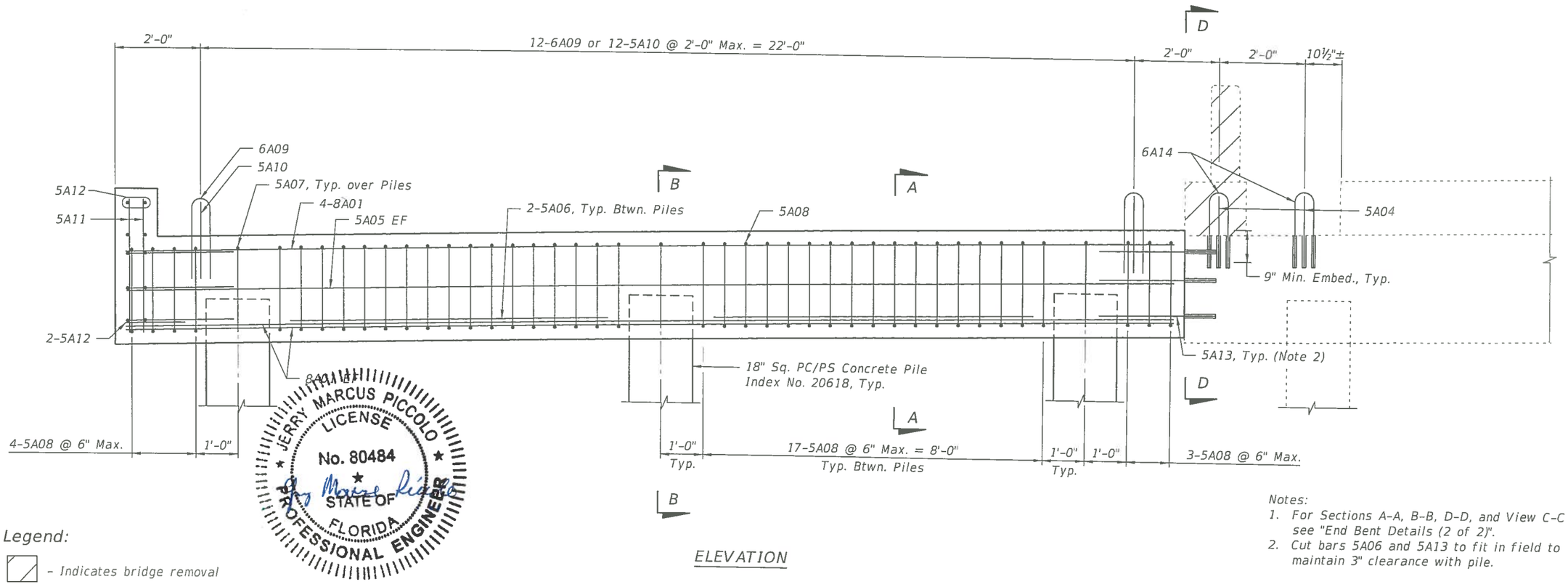


PLAN



ELEVATION

Legend:

- Indicates bridge removal

Notes:

1. For Sections A-A, B-B, D-D, and View C-C see "End Bent Details (2 of 2)".
2. Cut bars 5A06 and 5A13 to fit in field to maintain 3" clearance with pile.

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BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

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END BENT DETAILS (1 OF 2)

DESIGN FILE NAME | DRAWING NO.

SHEET: B-12
OF:
PROJECT NO. 20/250

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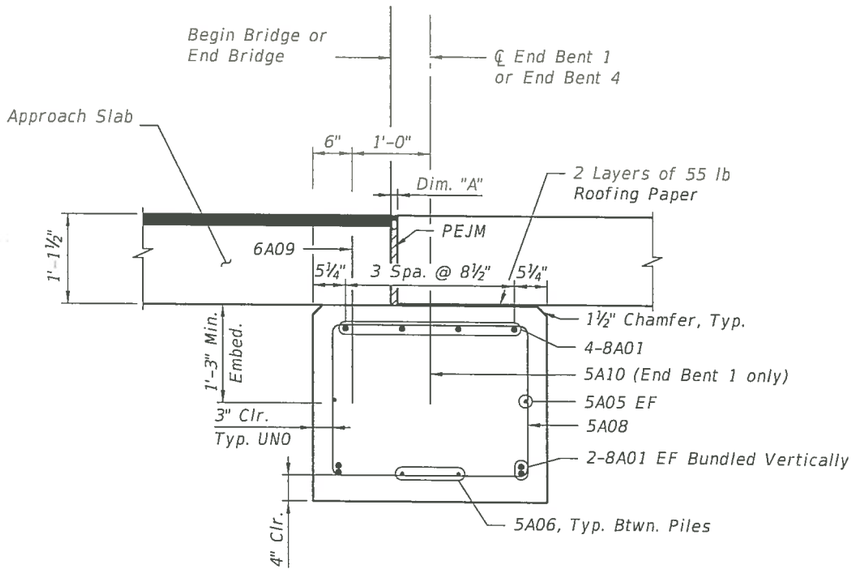
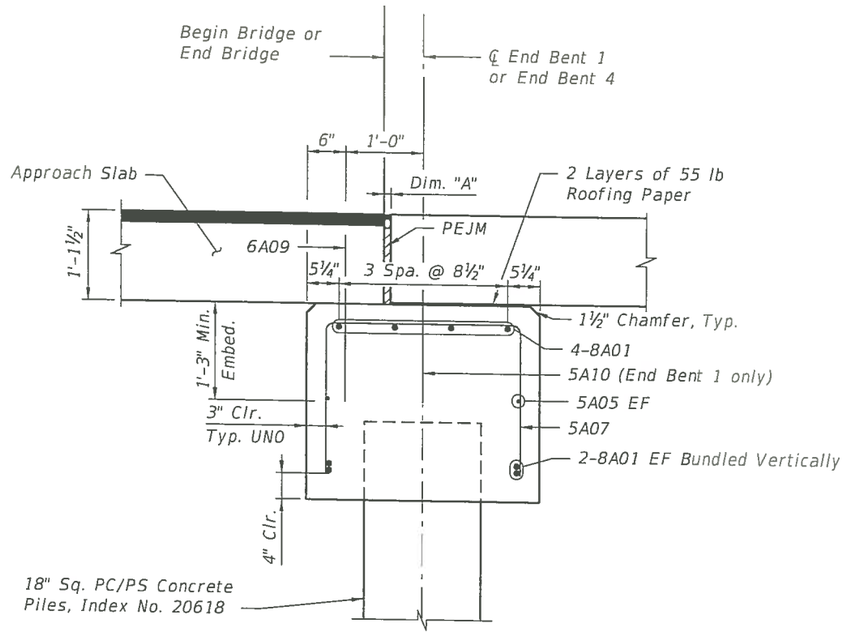


SECTION A-A



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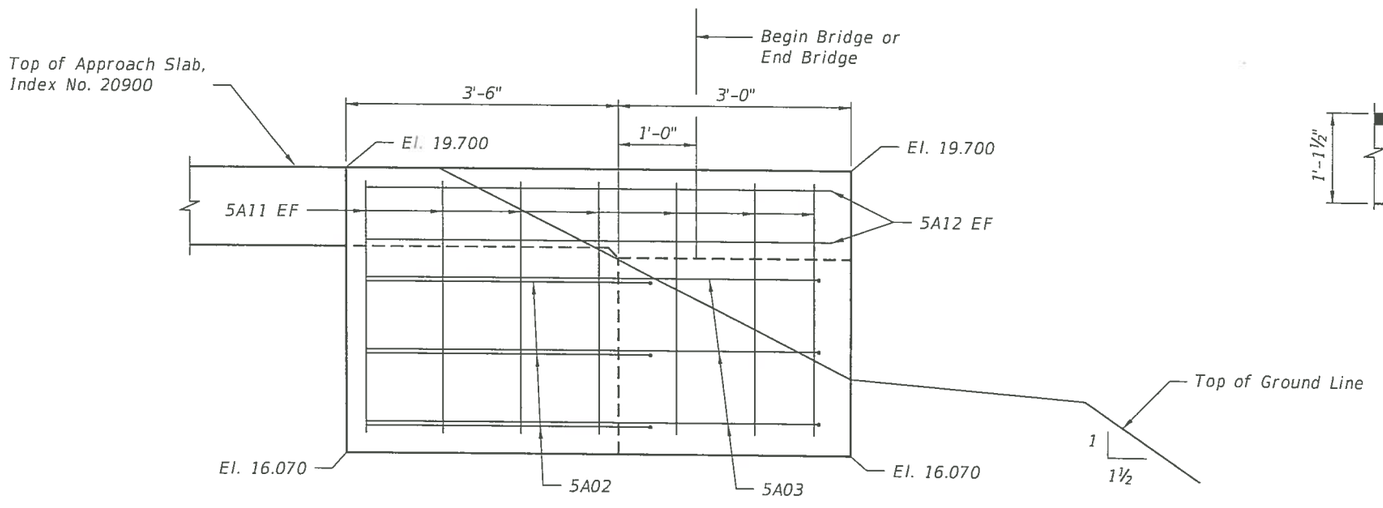
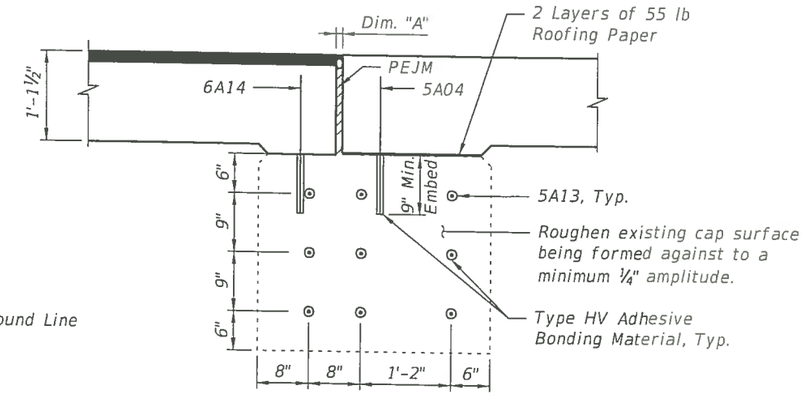


VIEW C-C



SECTION D-D

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BRIDGE NO. 930032

ATLANTIC AVENUE OVER LWDD CANAL E-2E

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END BENT DETAILS (2 OF 2)

DESIGN FILE NAME | DRAWING NO.

SHEET: B-13
OF:
PROJECT NO. 20/2501

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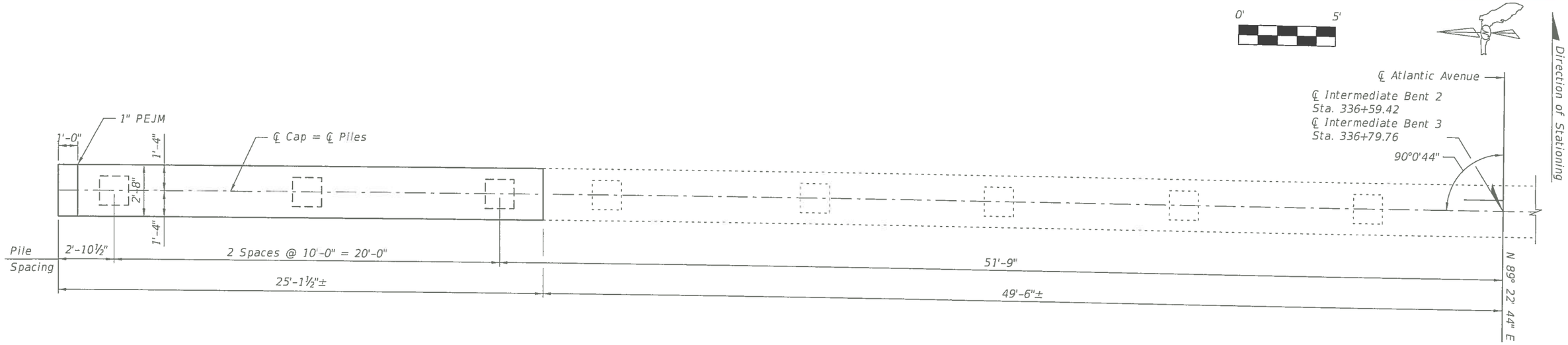
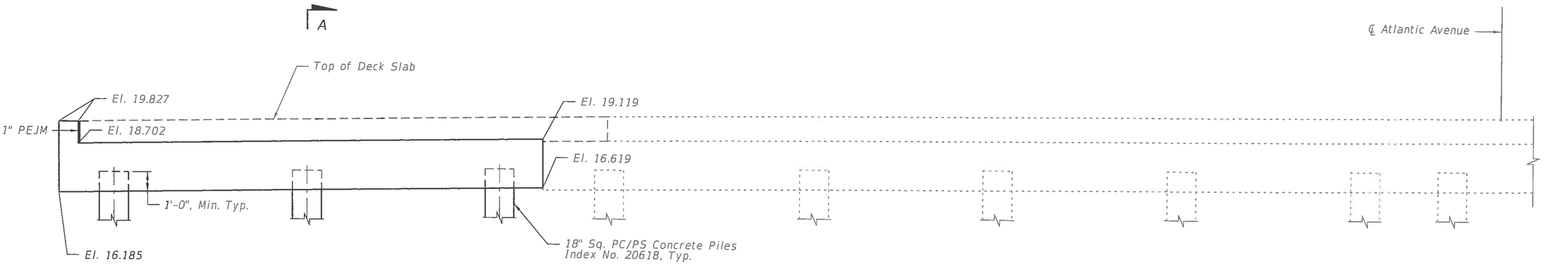
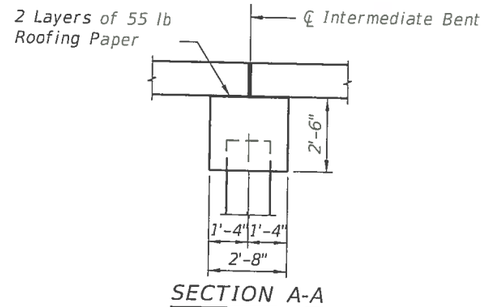


PLAN

Notes:
1. For pile cutoff elevations see "Pile Data Table" sheet.
2. For pile driving tolerance see "Foundation Layout" sheet.



ELEVATION



SECTION A-A

BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

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INTERMEDIATE BENT LAYOUT

DESIGN FILE NAME | DRAWING NO.

SHEET: B-14
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PROJECT NO. 2012501

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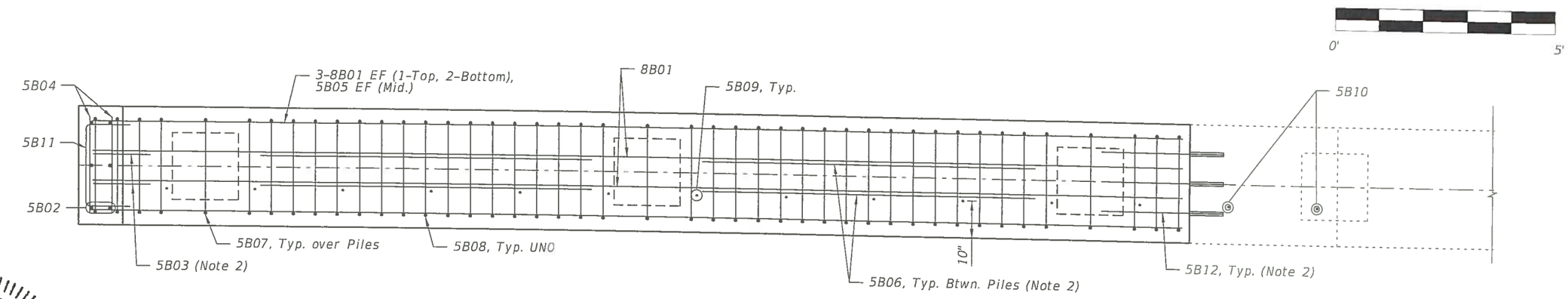
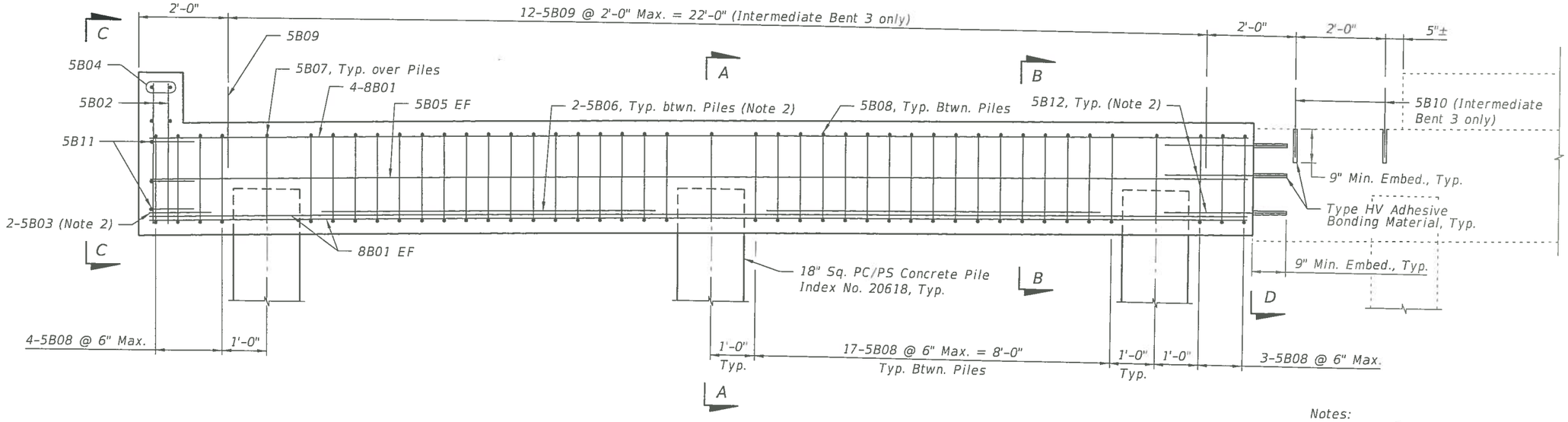


PLAN



ELEVATION

Notes:
1. For Sections A-A, B-B, D-D, and View C-C see "Intermediate Bent Details (2 of 2)".
2. Cut bars to fit in field to maintain 3" clearance with pile.

JERRY MARCUS PICCOLO
LICENSE
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ATLANTIC AVENUE OVER LWDD CANAL E-2E

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INTERMEDIATE BENT DETAILS (1 OF 2)

DESIGN FILE NAME
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SHEET: B-15
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PROJECT NO. 2012501

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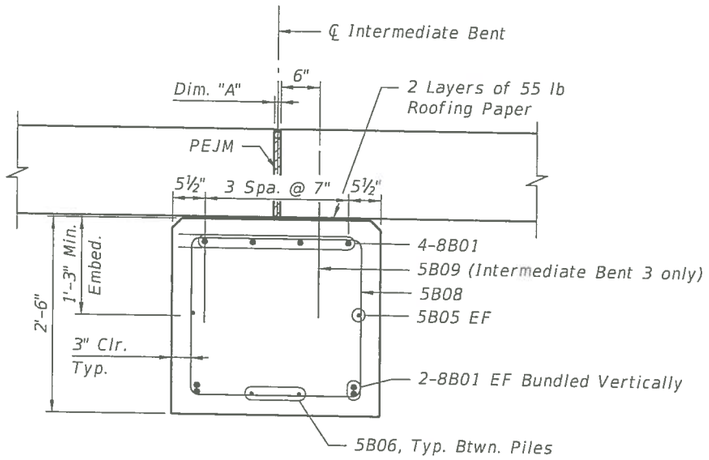
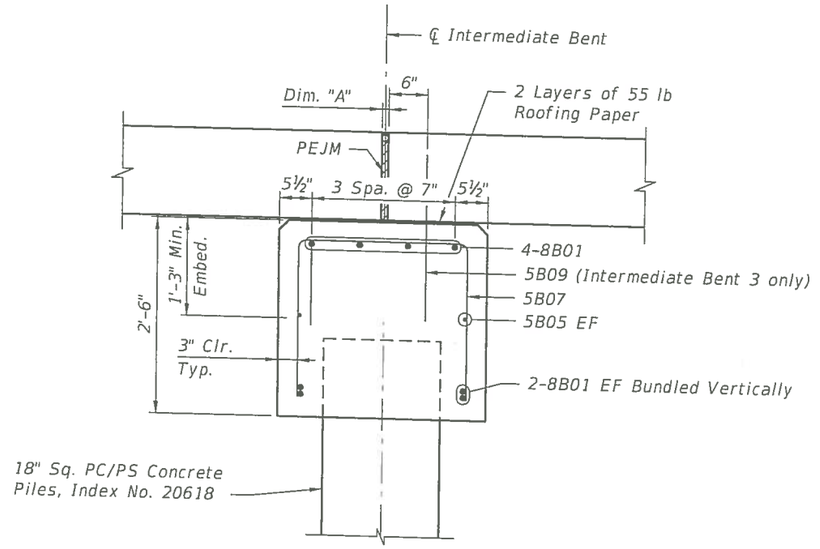


SECTION A-A



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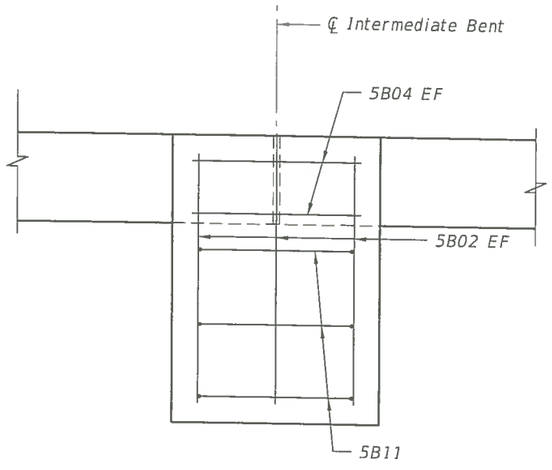
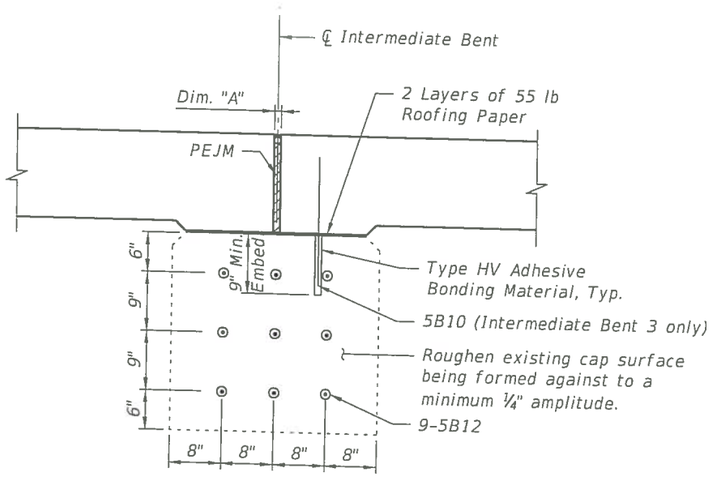


VIEW C-C



SECTION D-D

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BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

INTERMEDIATE BENT DETAILS (2 OF 2)

DESIGN FILE NAME | DRAWING NO.

SHEET: B-16
OF:
PROJECT NO. 20125O1

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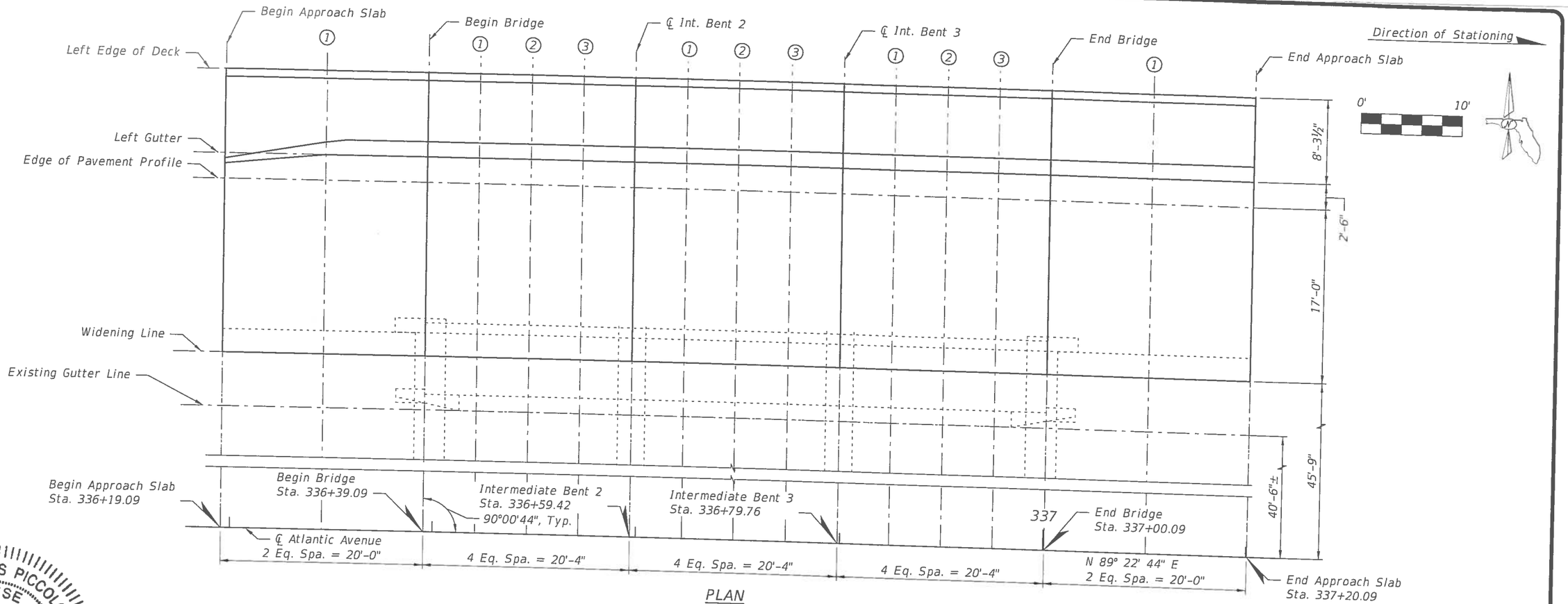
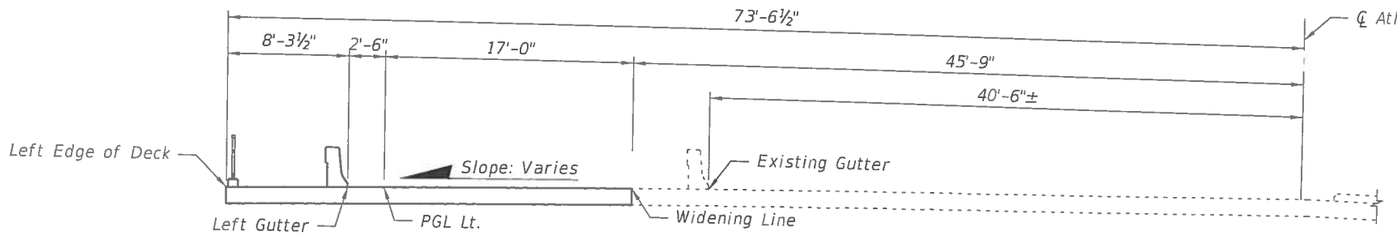


PLAN



TYPICAL SECTION SHOWING FINISH GRADE ELEVATION POINTS

Location	Begin Apprh. Slab	1	Begin Bridge	Span 1			℄ Int. Bent 2	Span 2			℄ Int. Bent 3	Span 3			End Bridge	1	End Apprh. Slab
				1	2	3		1	2	3		1	2	3			
Left Edge of Deck	19.606	19.653	19.699	19.731	19.763	19.795	19.827	19.849	19.871	19.849	19.827	19.795	19.763	19.731	19.699	19.653	19.606
Left Gutter	19.785	19.825	18.865	19.892	19.918	19.945	19.971	19.988	20.004	19.988	19.971	19.945	19.918	19.892	19.865	19.825	19.785
Edge of Pavement Profile	19.839	19.877	19.915	19.940	19.965	19.990	20.014	20.029	20.044	20.029	20.014	19.990	19.965	19.940	19.915	19.877	19.839
Widening Line	20.207	20.231	20.255	20.269	20.282	20.296	20.309	20.313	20.316	20.313	20.309	20.296	20.282	20.269	20.255	20.231	20.207
Existing Gutter (Note 1)	20.320	20.340	20.360	20.370	20.380	20.390	20.400	20.400	20.400	20.400	20.400	20.390	20.380	20.370	20.360	20.340	20.320

Notes:

1. Contractor to verify Finish Grade Elevations at Existing Gutter prior to deck pour and inform Engineer of any discrepancies.

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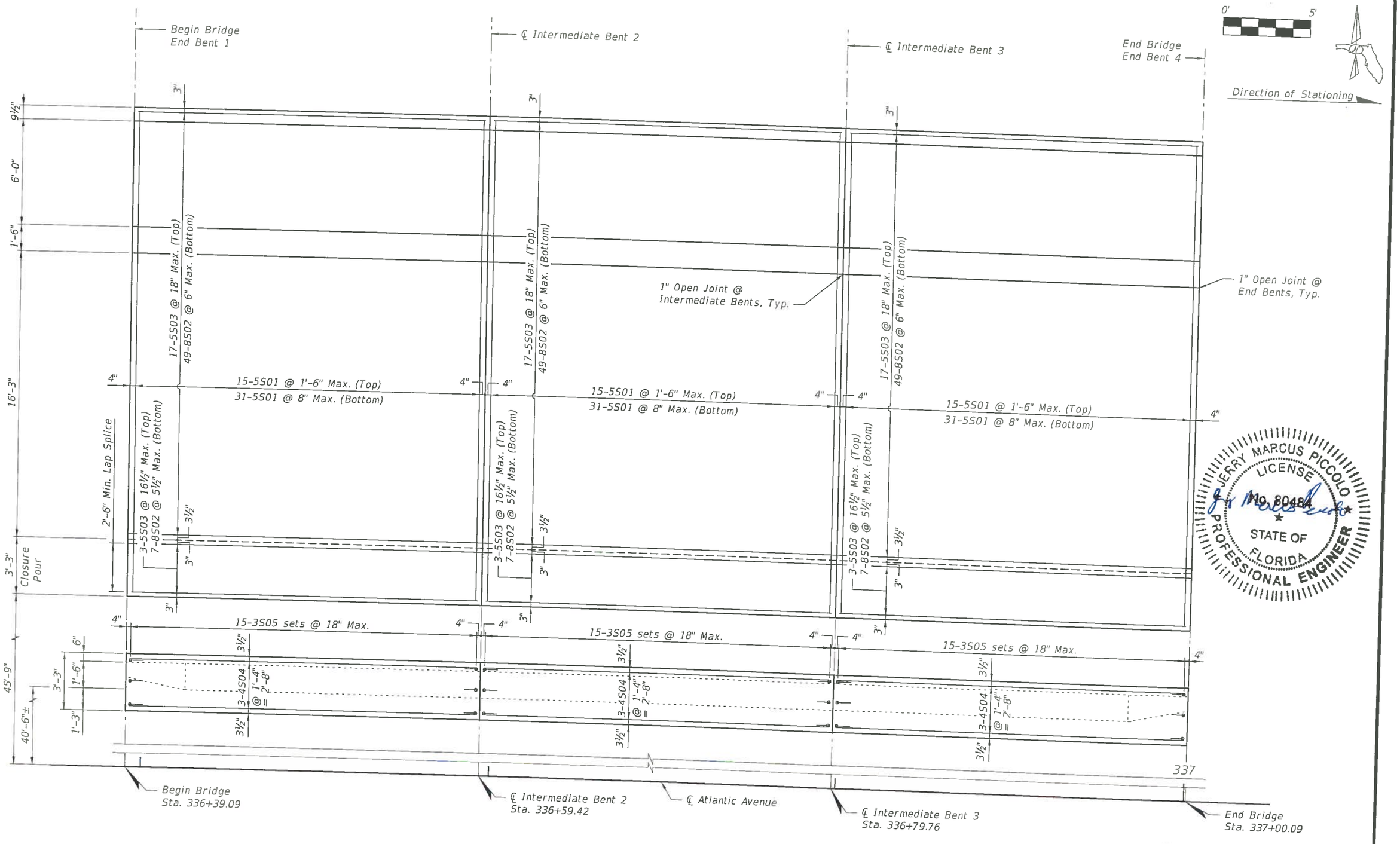
FINISH GRADE ELEVATIONS

DESIGN FILE NAME | DRAWING NO.

SHEET: B-17
OF:
PROJECT NO. 2012501

jerry.piccolo 8/3/2017

BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E



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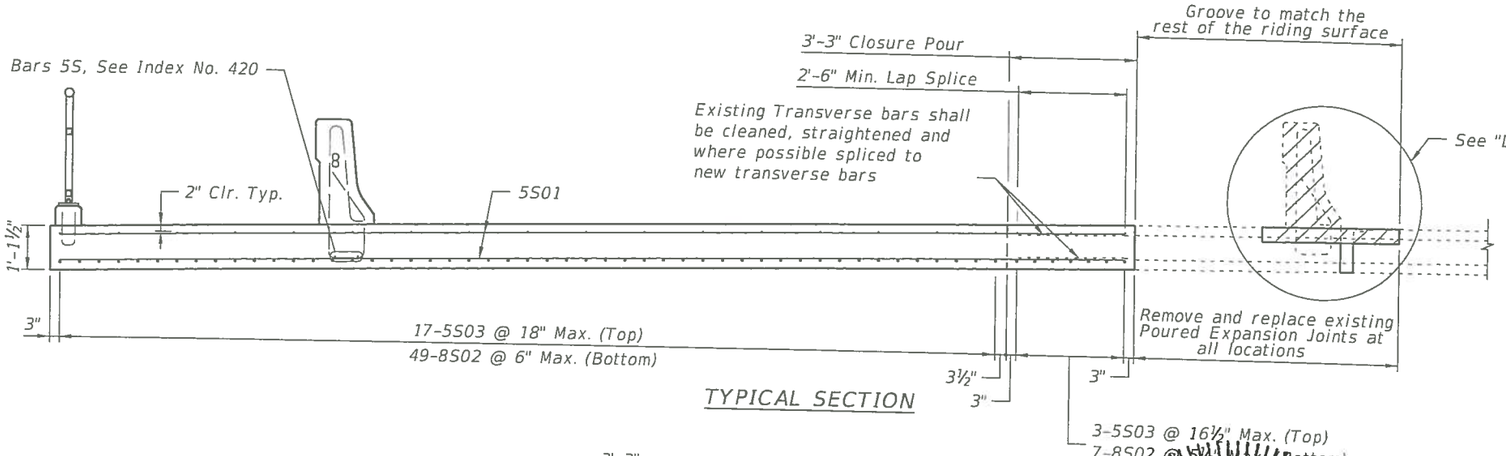
BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

SUPERSTRUCTURE PLAN

DESIGN FILE NAME | DRAWING NO.

SHEET: B-18
OF:
PROJECT NO. 2012501

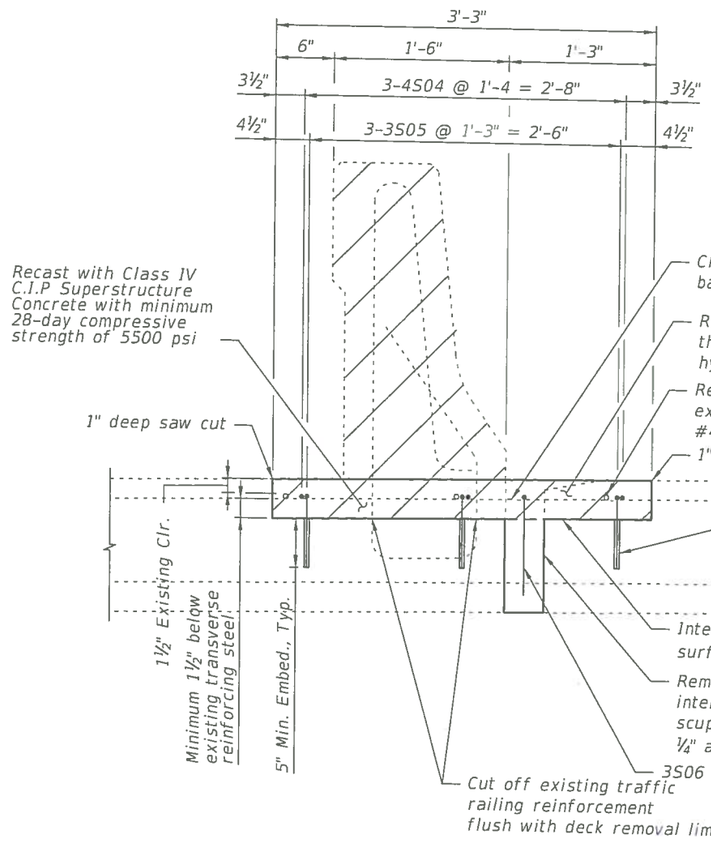
jerry.piccolo 8/2/2017 8:48:24 AM



TYPICAL SECTION

POURED EXPANSION JOINT DATA TABLE INDEX NO. 21110			Table Date 1-01-09
LOCATION	DIM. "A" @ 70°F	TOTAL DESIGN MOVEMENT	DIM. "A" ADJUSTMENT PER 10°F
End Bent 1	1"	0"	0"
Int. Bent 2	1"	¼"	1/32"
Int. Bent 3	1"	⅛"	1/64"
End Bent 4	1"	0"	0"

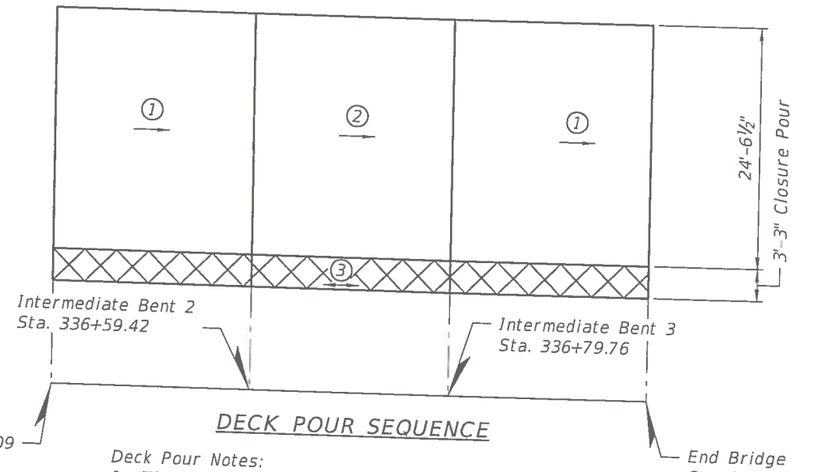
NOTE:
Dim. "A" adjustment per 10°F shown is measured perpendicular to ℄ Expansion Joint. Work this table with Design Standards Index No. 21110.



DETAIL A

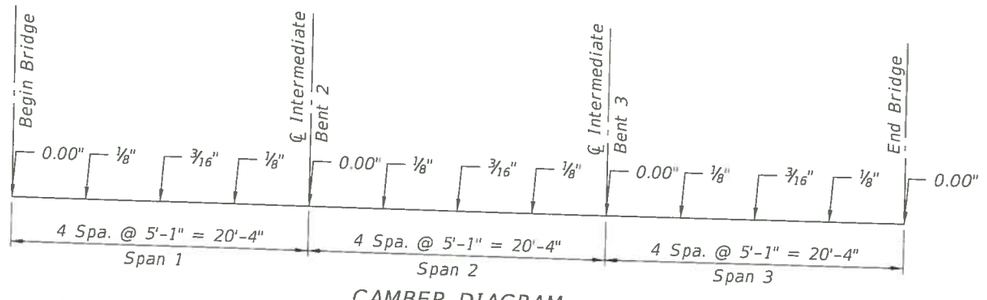
Legend:

- Indicates bridge removal of existing concrete. Do not damage existing bridge deck reinforcement



DECK POUR SEQUENCE

Deck Pour Notes:
1. The Contractor may submit an alternative pouring sequence for approval by the Engineer.
2. ⓐ Indicates Pour Sequence Number



CAMBER DIAGRAM

Camber Notes:
1. Camber does not include allowance for false work settlement or deflections.
2. Camber values were obtained by multiplying the dead load of the Deck Slab by a coefficient of creep of 4.0 per AASHTO Seventh Ed. LRFD 5.7.3.6.2.

JERRY MARCUS PICCOLO LICENSE No. 80484 STATE OF FLORIDA PROFESSIONAL ENGINEER

BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

Kimley»Horn
Certificate Of Authorization No. 696
JERRY MARCUS PICCOLO, P.E.
License No. 80484
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

NO.	REVISION	BY	DATE

PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

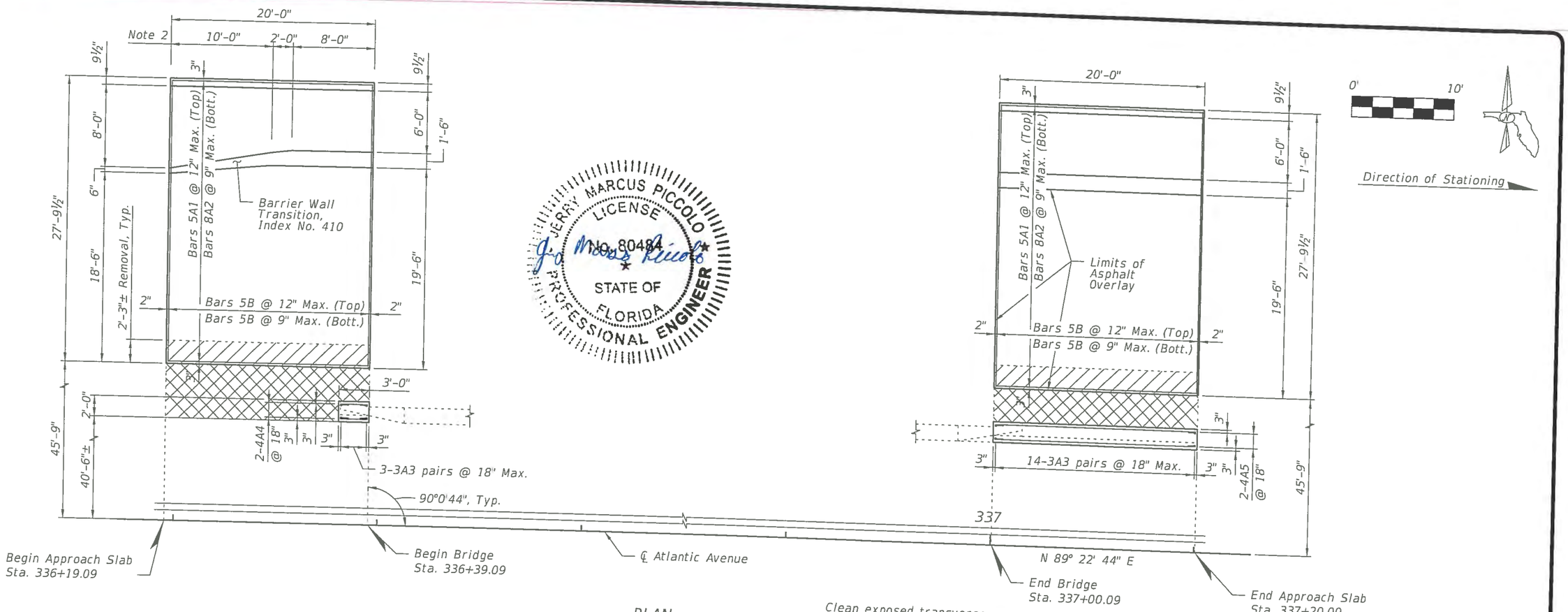
SCALE:
APPROVED:
DRAWN:
CHECKED:
DATE:

SUPERSTRUCTURE DETAILS

DESIGN FILE NAME | DRAWING NO.

SHEET: B-19
OF:
PROJECT NO. 2012501

Jerry.piccolo 8/2/2017



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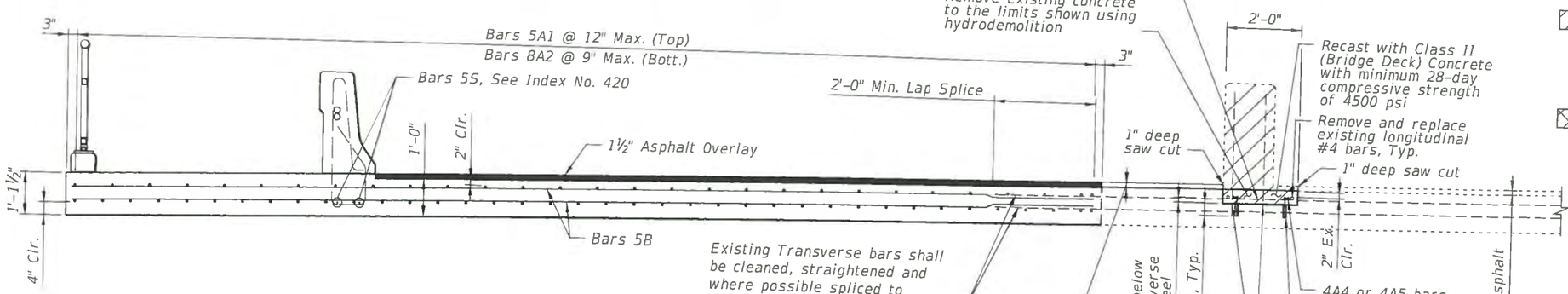
PLAN



TYPICAL SECTION

Legend:

- Indicates removal of existing approach slab concrete. Do not damage existing approach slab reinforcement
- Indicates planing of existing approach slab 1½"

Note:

1. For Approach Slab Finish Grade Elevations see "Finish Grade Elevations" sheet.
2. Transition barrier wall from 1'-6" to 1'-3" over a distance of 2'-0" as detailed in Index 410. Once width transition is complete, transition to Type F curb and gutter, as detailed in Index 410, at begin approach slab.

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P.O. BOX 21229, WEST PALM BEACH, FLORIDA

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BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

APPROACH SLAB LAYOUT

SHEET: B-20
PROJECT NO. 2012501

MARK		LENGTH		NO	TYP	STY		B			C			D			E			F			H			J			K			N	Ø
SIZE	DES	FT	IN	BARS	BAR	A	G	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	FT	IN	FR	NO	ANG
LOCATION END BENTS																																NO. REQUIRED = 1	
8	A01	24- 9		16	1			24- 9																									
5	A02	5- 8		6	10			3- 8			2- 0																						
5	A03	8- 0		6	10			6- 0			2- 0																						
5	A04	1- 8		2	1			1- 8																									
5	A05	24- 9		4	1			24- 9																									
5	A06	8- 0		8	1			8- 0																									
5	A07	6- 4		6	11			2- 6			1-11			1-11																			
5	A08	9-10		82	4	4	4	2- 6			1-11																						
6	A09	4- 9		24	23			2- 1			0- 2 1/4			2- 1																			
5	A10	2- 3		24	1			2- 3																									
5	A11	3- 1		22	1			3- 1																									
5	A12	1- 8		4	1			1- 8																									
5	A13	2- 9		18	1			2- 9																									
6	A14	3- 9		4	23			1- 7			0- 2 1/4			1- 7																			
LOCATION INTERMEDIATE BENTS																																NO. REQUIRED = 1	
8	B01	24- 8		16	1			24- 8																									
5	B02	3- 1		12	1			3- 1																									
5	B03	1- 7		4	1			1- 7																									
5	B04	2- 2		8	1			2- 2																									
5	B05	24- 8		4	1			24- 8																									
5	B06	8- 0		8	1			8- 0																									
5	B07	6- 2		6	11			2- 2			2- 0			2- 0																			
5	B08	9- 4		82	4	4	4	2- 0			2- 2																						
5	B09	2- 1		12	1			2- 1																									
5	B10	1- 7		2	1			1- 7																									
5	B11	4- 2		6	11			2- 2			1- 0			1- 0																			
5	B12	2- 9		18	1			2- 9																									
LOCATION SUPERSTRUCTURE																																NO. REQUIRED = 1	
5	S01	27- 6		138	1			27- 6																									
8	S02	20- 0		168	1			20- 0																									
5	S03	20- 0		60	1			20- 0																									
4	S04	20- 0		9	1			20- 0																									
3	S05	1- 3		135	10			0- 7 1/2			0- 7 1/2																						
3	S06	1- 6		4	10			0-10			0- 8																						
LOCATION APPROACH SLABS																																NO. REQUIRED = 1	
5	B	27- 6		98	1			27- 6																									
5	A1	19- 8		58	1			19- 8																									
8	A2	19- 8		76	1			19- 8																									
3	A3	1- 3		34	10			0- 6			0- 9																						
4	A4	2- 8		2	1			2- 8																									
4	A5	19- 8		2	1			19- 8																									

END OF LIST

JERRY MARCUS PICCOLO
LICENSE
No. 80484
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Kimley»Horn
Certificate Of Authorization No. 696
JERRY MARCUS PICCOLO, P.E.
License No. 80484
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

NO.	REVISION	BY	DATE

PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE:
APPROVED:
DRAWN:
CHECKED:
DATE:

BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

REINFORCING BAR LIST

DESIGN FILE NAME | DRAWING NO.

SHEET: B-21
OF:
PROJECT NO. 2012501

Jerry.piccolo 8/2/2017 8:48:25 AM

Load Rating Summary Details for Reinforced Concrete Bridges

Table Date 07-01-15

Table 1 - LFR

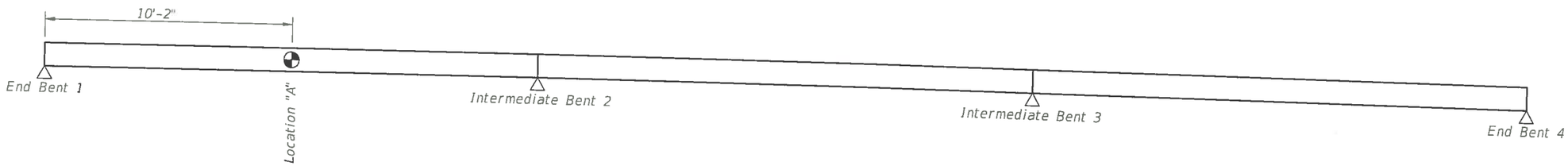
Level	Vehicle	Weight (tons)	Load Factors		Moment (Strength)					Shear (Strength)					Comments:
			LL	DL	Distribution Factor (DF)	Rating Factor	Tons	Location	Dimension	Distribution Factor (DF)	Rating Factor	Tons	Location	Dimension	Interior/exterior beam DF method if other than Standard Spec. Other appropriate comments
Inventory	HS-20	36.0	2.17	1.30	0.097	1.00	36.0	A	10'-2"	N/A	N/A	N/A	N/A	N/A	The existing bridge controlled the rating and yielded LRFR RF<1.0. The existing bridge yielded sufficient LFR rating factors.
Operating	HS-20	36.0	1.30	1.30	0.097	1.62	58.3	A	10'-2"	N/A	N/A	N/A	N/A	N/A	

General Notes:
1. This table is based on the requirements established in the January 2016 "Structures Manual".

Abbreviations:

Inv - Inventory

Op - Operating



RATING LOCATIONS

JERRY MARCUS PICCOLO LICENSE No. 80484 STATE OF FLORIDA PROFESSIONAL ENGINEER

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DRAWN:
CHECKED:
DATE:

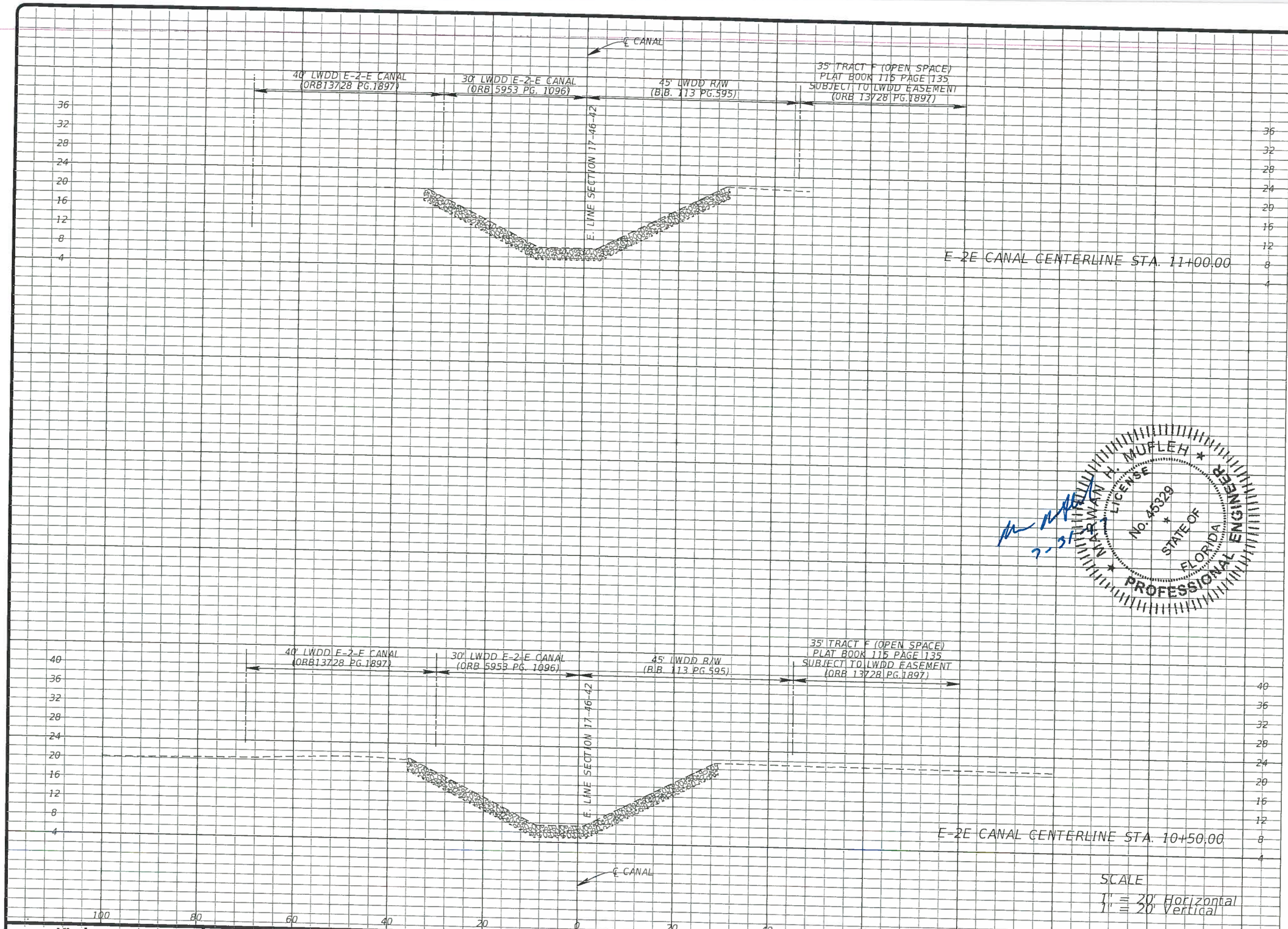
LOAD RATING DATA TABLE

DESIGN FILE NAME | DRAWING NO.

SHEET: B-22
OF:
PROJECT NO. 2012501

BRIDGE NO. 930032
ATLANTIC AVENUE OVER LWDD CANAL E-2E

jerry.piccolo 8/12/2017



Regular Exc.		Embankment	
A	V	A	V

MARWAN H. MUFLEH * LICENSE No. 45329 * STATE OF FLORIDA * PROFESSIONAL ENGINEER

3-31-17

SCALE
1" = 20' Horizontal
1" = 20' Vertical

Kimley»Horn
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West Palm Beach, Florida 33411

NO.	REVISION	BY	DATE

PALM BEACH COUNTY
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SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SO
DATE:	07/28/15

E-2E CANAL CROSS SECTION

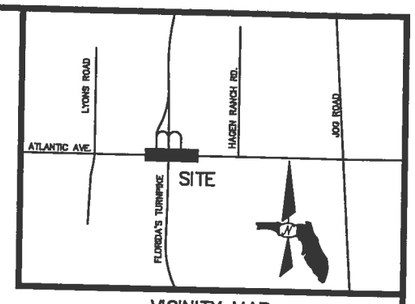
DESIGN FILE NAME	DRAWING NO.

SHEET:
OF:
PROJECT NO. 2012501

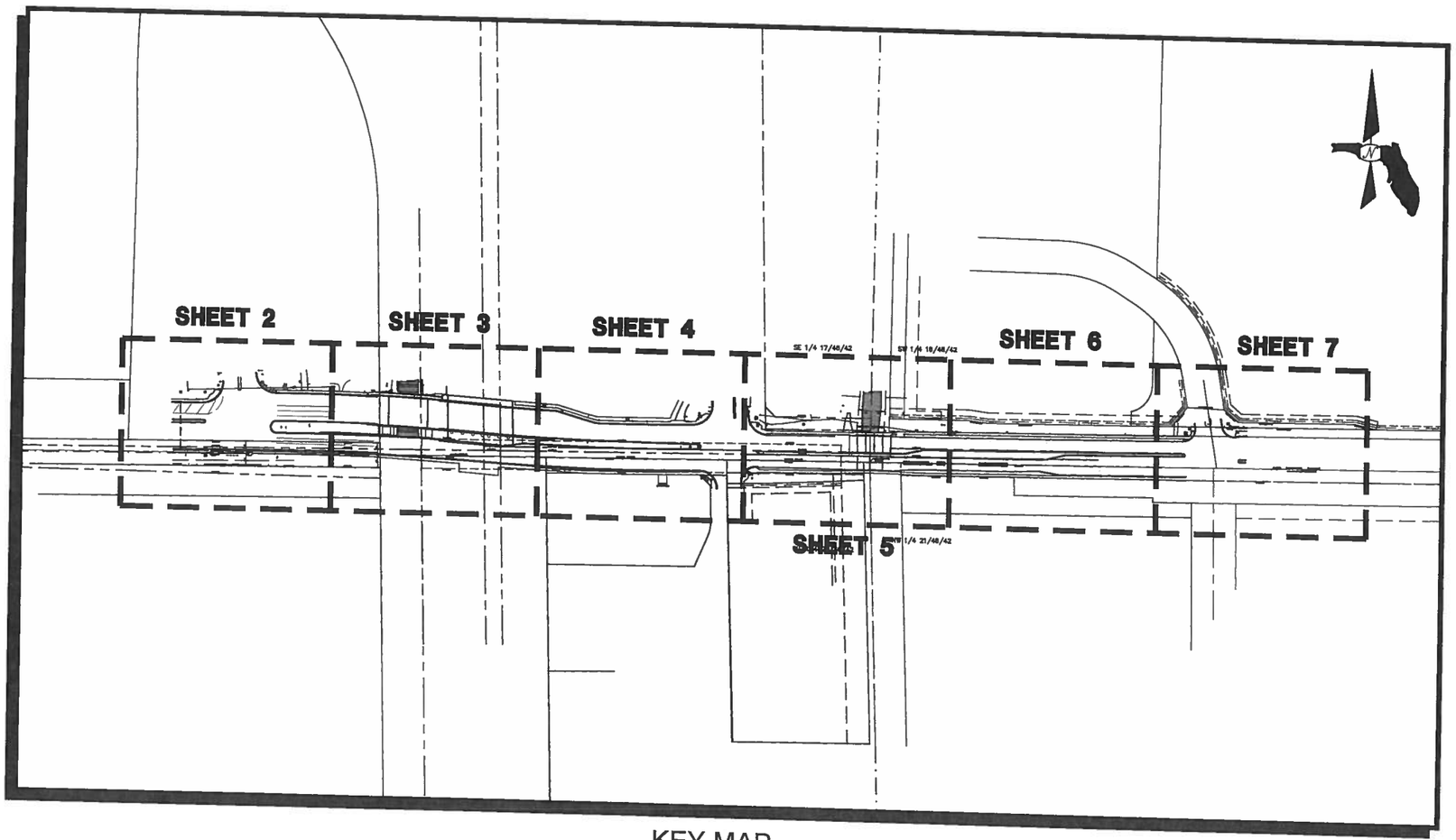
sara.lopez 7/17/2017 3:01:48 PM K:\BCD_Roadway\040256026_Atlantic AV at TPK S\2012501\drainage\DRXSR001.DGN

COUNTY OF PALM BEACH
STATE OF FLORIDA

SKETCH OF TOPOGRAPHIC SURVEY
FOR
WEST ATLANTIC AVENUE AND TURNPIKE



VICINITY MAP
NOT TO SCALE



KEY MAP
N.T.S.

SURVEY REPORT:

1. THIS IS A TOPOGRAPHIC SURVEY, PREPARED IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF THE STANDARDS OF PRACTICE SET FORTH IN RULE 5J-17.050 THROUGH 5J-17.052, FLORIDA ADMINISTRATIVE CODE.

   THE FIELD WORK WAS COMPLETED ON JUNE 19, 2015.

2. THE SURVEY WAS BASED ON PALM BEACH COUNTY SURVEY CONTROL AND FDOT RIGHT-OF-WAY MAP 93030-2510.

3. BEARINGS ARE BASED ON N89°22'44"E (GRID) ALONG THE SOUTH LINE OF SECTION 18, TOWNSHIP 46 SOUTH, RANGE 42 EAST.

4. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE COMMITMENT. NO SEARCH OF THE PUBLIC RECORDS HAS BEEN PERFORMED BY BROWN & PHILLIPS, INC.

   THERE MAY BE ADDITIONAL EASEMENTS AND/OR RESTRICTIONS NOT SHOWN ON THIS SURVEY THAT MAY BE FOUND IN THE PUBLIC RECORDS OF PALM BEACH COUNTY.

5. SOME TOPOGRAPHIC FEATURES MAY BE EXAGGERATED IN SCALE FOR CLARITY. THE CENTER OF THE SYMBOL OF SUCH FEATURES IS THE CORRECT LOCATION.

6. NO UNDERGROUND UTILITIES OR FOUNDATIONS WERE LOCATED.

7. ELEVATIONS SHOWN HEREON ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988, AND ARE REFERENCED TO PALM BEACH COUNTY BRASS DISK BURNETT, ELEVATION=23.08.

8. +10.0 DENOTES SPOT ELEVATION, REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988.

9. THE CONTRACTED PURPOSE OF THIS SURVEY IS FOR THE DESIGN OF A TURN LANE. THIS SURVEY IS NOT VALID FOR ANY OTHER USE.

10. ADDITIONS OR DELETIONS TO SURVEY MAPS OR REPORTS BY OTHER THAN THE SIGNING PARTY OR PARTIES IS PROHIBITED WITHOUT WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.

11. THIS SURVEY WAS PREPARED FOR THE PARTIES LISTED BELOW AND IS NOT ASSIGNABLE:
    -KIMLEY HORN & ASSOCIATES.
    THE USE OF THE DATA SHOWN HEREON BY ANY OTHER PARTY IS PROHIBITED.

12. THIS MAP IS INTENDED TO BE DISPLAYED AT A SCALE OF 1"=20', ON A 24"x 36" SHEET.

13. THE UNDERLYING 2013 PALM BEACH COUNTY AERIAL PHOTO IS SHOWN FOR INFORMATION ONLY AND IS NOT A PART OF THE SURVEY.

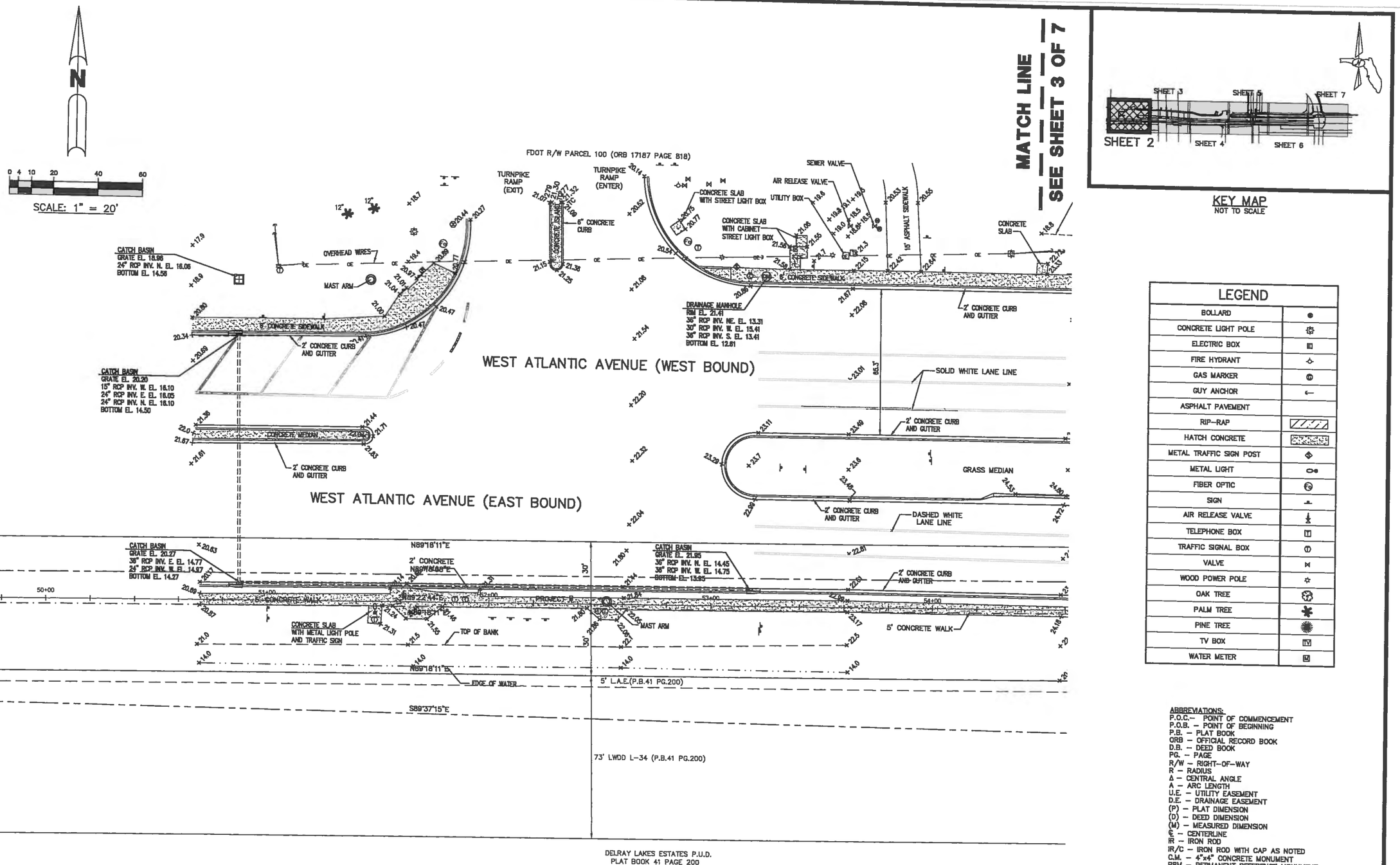
14.

ABBREVIATIONS:
P.O.C.- POINT OF COMMENCEMENT
P.O.B. - POINT OF BEGINNING
P.B. - PLAT BOOK
ORB - OFFICIAL RECORD BOOK
D.B. - DEED BOOK
PG. - PAGE
R/W - RIGHT-OF-WAY
R - RADIUS
Δ - CENTRAL ANGLE
A - ARC LENGTH
U.E. - UTILITY EASEMENT
D.E. - DRAINAGE EASEMENT
(P) - PLAT DIMENSION
(D) - DEED DIMENSION
(M) - MEASURED DIMENSION
℄ - CENTERLINE
IR - IRON ROD
IR/C - IRON ROD WITH CAP AS NOTED
C.M. - 4"x4" CONCRETE MONUMENT
PRM - PERMANENT REFERENCE MONUMENT
PCP - PERMANENT CONTROL POINT
N/D - NAIL & DISK
PK - PARKER KALON
NAD - NORTH AMERICAN DATUM
LB - LICENSED BUSINESS

BROWN & PHILLIPS, INC.
PROFESSIONAL SURVEYING SERVICES
CERTIFICATE OF AUTHORIZATION # LB 6473
1860 OLD OKEECHOBEE ROAD, SUITE 509, WEST PALM BEACH, FLORIDA 33409 561-615-3988, 615-3991 FAX

DRAWN: JAO	PROJ. No. 15-039	
CHECKED: JEP	SCALE: N.T.S.	
F.B. PBCo. S. #12	DATE: JULY 2015	
PAGES: 42-50	SHT. 1 OF 7	JOHN E. PHILLIPS III PROFESSIONAL LAND SURVEYOR STATE OF FLORIDA No. 4826 DATE:

S:\2015 drawing files\15-039\15-039 Atlantic and Jpiks topo survey.dwg, 3/29/2017 12:56:42 PM



KEY MAP
NOT TO SCALE

LEGEND	
BOLLARD	●
CONCRETE LIGHT POLE	☼
ELECTRIC BOX	E
FIRE HYDRANT	⊹
GAS MARKER	G
GUY ANCHOR	←
ASPHALT PAVEMENT	
RIP-RAP	
HATCH CONCRETE	
METAL TRAFFIC SIGN POST	◆
METAL LIGHT	○●
FIBER OPTIC	FO
SIGN	▬
AIR RELEASE VALVE	
TELEPHONE BOX	T
TRAFFIC SIGNAL BOX	ⓣ
VALVE	⋈
WOOD POWER POLE	✲
OAK TREE	
PALM TREE	
PINE TREE	
TV BOX	TV
WATER METER	M

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E-Mail: info@brown-phillips.com
561-615-3988, 615-3991 FAX

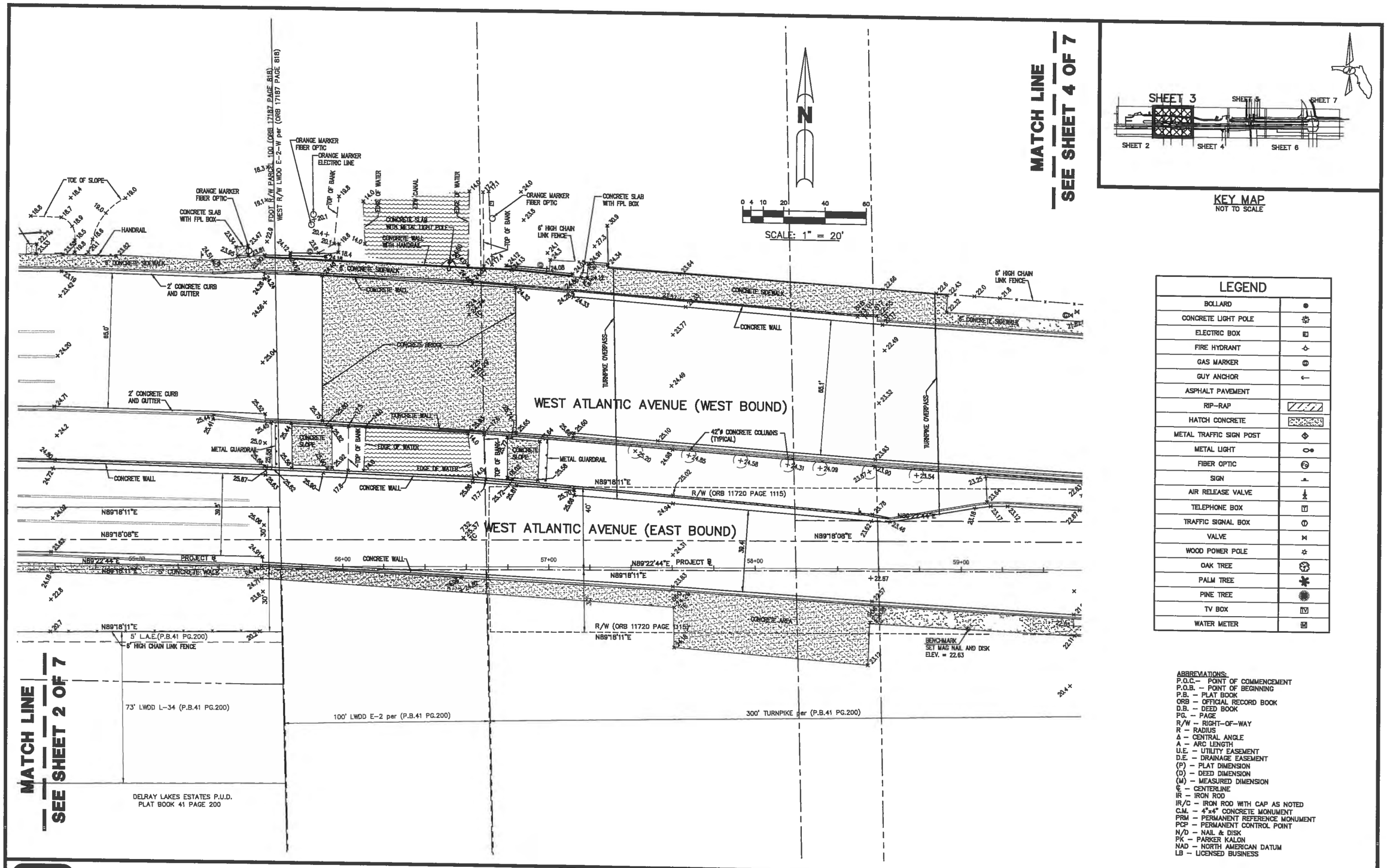
SKETCH OF TOPOGRAPHIC SURVEY

WEST ATLANTIC AVENUE AND TURNPIKE

DRAWN: JAO
CHECKED: JEP
F.B. PBCo. S. #12
PAGES: 42-50

PROJ. No. 15-039
SCALE: 1"=20'
DATE: JULY 2015
SHEET 2 OF 7

S:\2015 drawing files\15-039\15-039 Atlantic and spike topo survey.dwg, 3/20/2017 12:50:45 PM



KEY MAP
NOT TO SCALE

LEGEND	
BOLLARD	●
CONCRETE LIGHT POLE	☼
ELECTRIC BOX	E
FIRE HYDRANT	⊹
GAS MARKER	G
GUY ANCHOR	←
ASPHALT PAVEMENT	
RIP-RAP	
HATCH CONCRETE	
METAL TRAFFIC SIGN POST	◆
METAL LIGHT	○●
FIBER OPTIC	FO
SIGN	▬
AIR RELEASE VALVE	
TELEPHONE BOX	T
TRAFFIC SIGNAL BOX	T
VALVE	⋈
WOOD POWER POLE	✲
OAK TREE	
PALM TREE	✱
PINE TREE	
TV BOX	TV
WATER METER	M

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561-615-3988, 615-3991 FAX

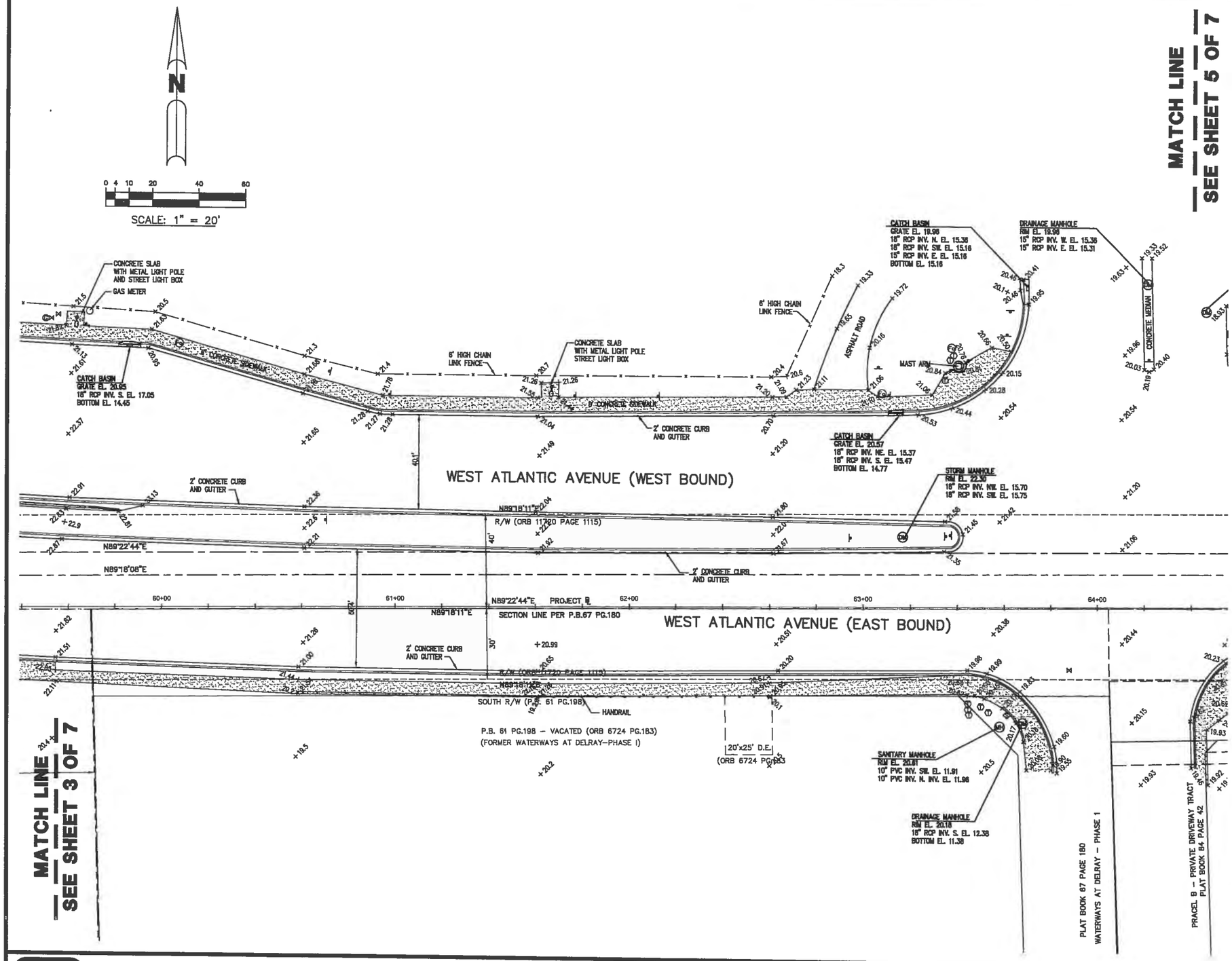
SKETCH OF TOPOGRAPHIC SURVEY

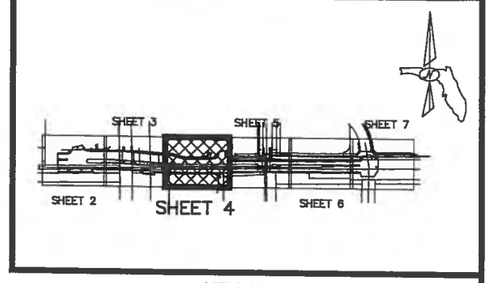
WEST ATLANTIC AVENUE AND TURNPIKE

DRAWN: JAO
CHECKED: JEP
F.B. PBCo. S. #12
PAGES: 42-50

PROJ. No. 15-039
SCALE: 1"=20'
DATE: JULY 2015
SHEET 3 OF 7

S:\2015 drawing files\15-039\15-039 Atlantic and Ipike topo survey.dwg, 3/29/2017 12:50:50 PM





KEY MAP
NOT TO SCALE

LEGEND	
BOLLARD	●
CONCRETE LIGHT POLE	☼
ELECTRIC BOX	E
FIRE HYDRANT	⊹
GAS MARKER	G
GUY ANCHOR	←
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RIP–RAP	
HATCH CONCRETE	
METAL TRAFFIC SIGN POST	◆
METAL LIGHT	○●
FIBER OPTIC	FO
SIGN	▬
AIR RELEASE VALVE	
TELEPHONE BOX	T
TRAFFIC SIGNAL BOX	T
VALVE	M
WOOD POWER POLE	☼
OAK TREE	
PALM TREE	
PINE TREE	
TV BOX	TV
WATER METER	M

ABBREVIATIONS:
P.O.C. – POINT OF COMMENCEMENT
P.O.B. – POINT OF BEGINNING
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D.B. – DEED BOOK
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BROWN & PHILLIPS, INC.
PROFESSIONAL SURVEYING SERVICES
CERTIFICATE OF AUTHORIZATION # LB 6473
1860 OLD OKEECHOBEE ROAD, SUITE 509, WEST PALM BEACH, FLORIDA 33409
E–Mail: info@brown–phillips.com
561–615–3988, 615–3991 FAX

SKETCH OF TOPOGRAPHIC SURVEY

WEST ATLANTIC AVENUE AND TURNPIKE

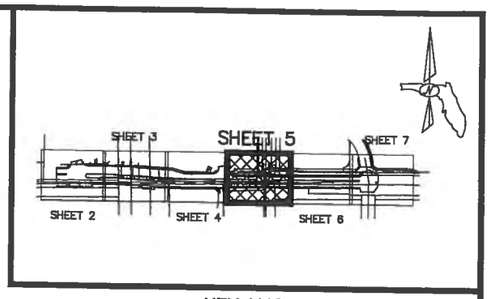
DRAWN: JAO
CHECKED: JEP
F.B. PBCo. S. #12
PAGES: 42–50

PROJ. No. 15–039
SCALE: 1"=20'
DATE: JULY 2015
SHEET 4 OF 7

S:\2015 drawing files\15-039\15-039 Atlantic and turke topo survey.dwg, 3/29/2017 12:56:55 PM

MATCH LINE
SEE SHEET 4 OF 7

MATCH LINE
SEE SHEET 6 OF 7



KEY MAP
NOT TO SCALE

MANHOLE
RIM EL. 19.25
MANHOLE LID IN TRAFFIC
BLIND CORNER NO
ASBUILT

CATCH BASIN
GRATE EL. 18.05
15" RCP INV. NW EL. 15.85
BOTTOM EL. 15.65

CONCRETE SLAB
WITH TRAFFIC
CABINET

OVERHEAD WIRES

MAST ARM

FPL BOX

TREE LINE

ORANGE MARKER
FIBER OPTIC

PALM BEACH FARMS COMPANY
PLAT NO.1 – PLAT BOOK 2 PG.26
TRACTS 127 & 128

30' EASEMENT (ORB 19079 PG.1375)

15' U.E. (ORB 12940 PG.847)

N89°22'44"E

N89°18'08"E

AIR RELEASE
MANHOLE

& (ORB 20894 PG.986)

VARIES

6' CONCRETE SIDEWALK

WEST ATLANTIC AVENUE (WEST BOUND)

N89°18'11"E

R/W (ORB 11720 PAGE 1615)

N89°22'44"E

N89°18'08"E

65+00

PROJECT ℄

66+00 S. LINE OF SECTION 17 (ORB 17187 PAGE 818)

67+00

N89°22'44"E

N89°18'11"E

BENCHMARK
SET MAG NAIL AND DISK
ELEV. = 19.89

WEST ATLANTIC AVENUE (EAST BOUND)

METAL GUARDRAIL

6' CONCRETE SIDEWALK

R/W (ORB 11720 PAGE 1615)

N89°18'11"E

MAST ARM

R/W (ORB 6966 PG.713) per P.B.84 PG.42

5' L.A.E.

10' UTILITY EASEMENT

ARC AT DELRAY WEST P.U.D.
PLAT BOOK 84 PAGE 42

LANDSCAPE BUFFER EASEMENT

PRACEL B – PRIVATE DRIVEWAY TRACT
PLAT BOOK 84 PAGE 42

LANDSCAPE BUFFER EASEMENT

20' UTILITY EASEMENT
(P.B.84 PG.42)

55' CANAL EASEMENT
(ORB 6538 PG.1268)
per P.B.84 PG.42

N

0 4 10 20 40 60

SCALE: 1" = 20'

WEST LINE OF SECTION 16/46/42
per P.B.115 PG.135

LWDD R/W (D.B. 113 PG.595)

6' HIGH CHAIN
LINK FENCE

8" DIP
REUSE WATER PIPE

2.7' x 2.5'
CONCRETE COLUMN

4' DIP

CONCRETE BRIDGE

BENT

SECTION LINE PER P.B.57 PG.92

75' LWDD CANAL E-2

CANAL R/W (ORB 2735 PG.416)

TRACT F (OPEN SPACE)
PLAT BOOK 115 PAGE 135
Subject to LWDD Easement (ORB 13728 PG.1897)

30' PBCUE

ATLANTIC COMMONS – PLAT ONE
TRACT A
PLAT BOOK 115 PAGE 135

20' BUFFER EASEMENT
10' UTILITY EASEMENT
5' L.A.E.

20' PBCUE

N89°22'44"E 189.07'

R/W (ORB 20894 PAGE 986)

GAS VALVE

CONCRETE PAD
WITH TELEPHONE BOX

METAL GUARDRAIL

2' CONCRETE CURB
AND GUTTER

GRASS MEDIAN

12'

S. LINE OF S.W.1/4 SECTION 16/46/42

NORTH LINE OF N.W.1/4 SECTION 21/46/42

LWDD LATERAL CANAL L-34 (ORB 5208 PG.1)

THE LEXINGTON CLUB PLAT NO.2
PLAT BOOK 59 PAGE 18

LEGEND

BOLLARD	●
CONCRETE LIGHT POLE	⊙
ELECTRIC BOX	E
FIRE HYDRANT	⊹
GAS MARKER	G
GUY ANCHOR	←
ASPHALT PAVEMENT	
RIP-RAP	
HATCH CONCRETE	
METAL TRAFFIC SIGN POST	◆
METAL LIGHT	○●
FIBER OPTIC	FO
SIGN	▪
AIR RELEASE VALVE	
TELEPHONE BOX	T
TRAFFIC SIGNAL BOX	T
VALVE	M
WOOD POWER POLE	☼
OAK TREE	
PALM TREE	
PINE TREE	
TV BOX	TV
WATER METER	W

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SKETCH
OF
TOPOGRAPHIC SURVEY

WEST ATLANTIC
AVENUE
AND
TURNPIKE

DRAWN: JAO
CHECKED: JEP
F.B. PBCo. S. #12
PAGES: 42-50

PROJ. No. 15-039
SCALE: 1"=20'
DATE: JULY 2015
SHEET 5 OF 7

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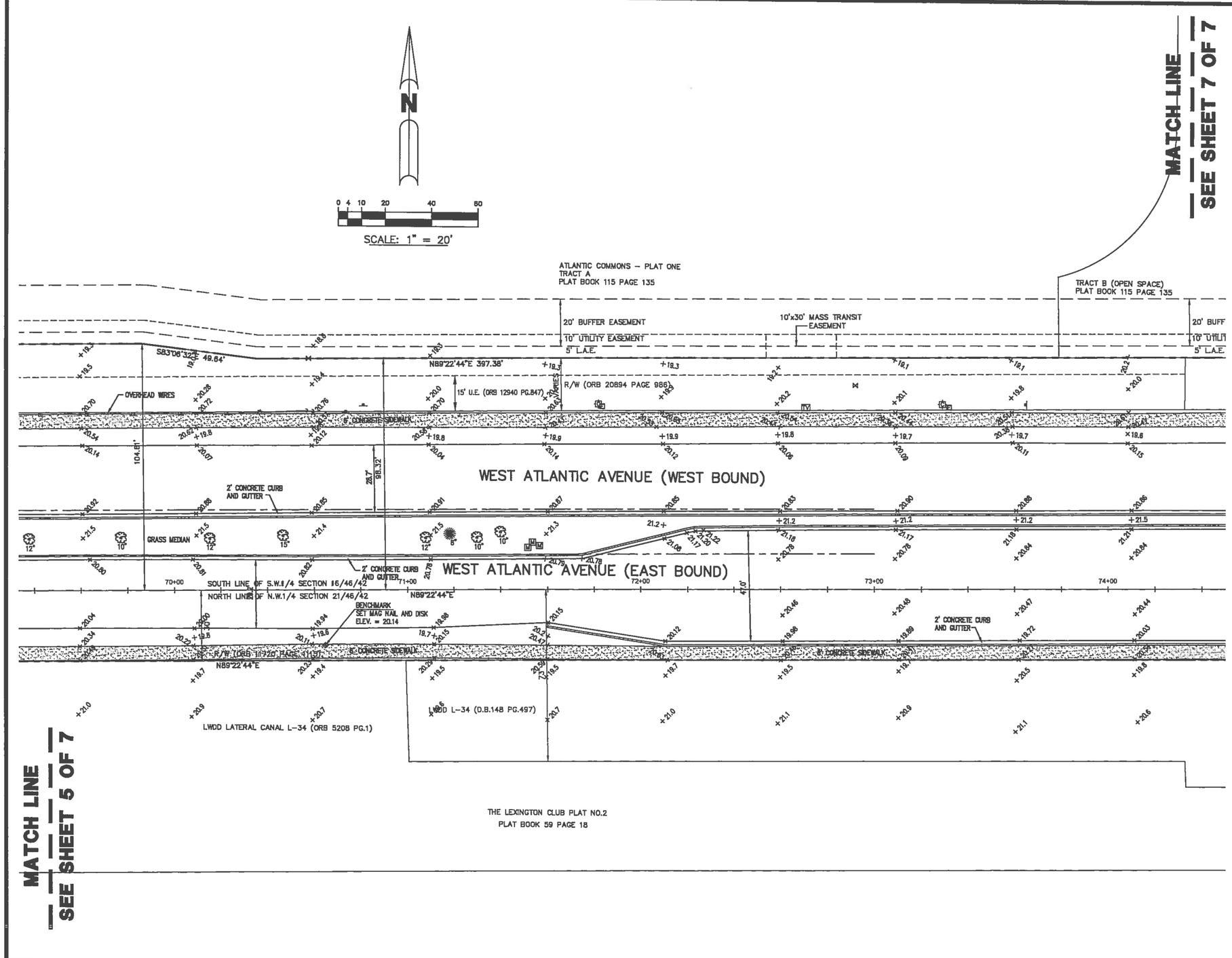

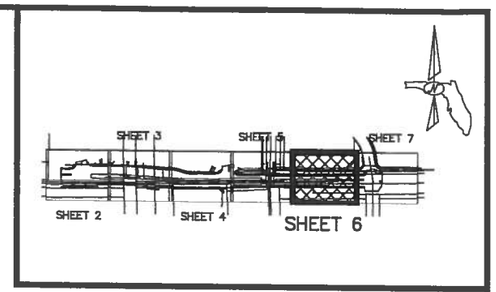

KEY MAP
NOT TO SCALE

LEGEND	
BOLLARD	
CONCRETE LIGHT POLE	
ELECTRIC BOX	
FIRE HYDRANT	
GAS MARKER	
GUY ANCHOR	
ASPHALT PAVEMENT	
RIP-RAP	
HATCH CONCRETE	
METAL TRAFFIC SIGN POST	
METAL LIGHT	
FIBER OPTIC	
SIGN	
AIR RELEASE VALVE	
TELEPHONE BOX	
TRAFFIC SIGNAL BOX	
VALVE	
WOOD POWER POLE	
OAK TREE	
PALM TREE	
PINE TREE	
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WATER METER	

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WEST ATLANTIC
AVENUE
AND
TURNPIKE

DRAWN: JAO
CHECKED: JEP
F.B. PBCo. S. #12
PAGES: 42-50

PROJ. No. 15-039
SCALE: 1"=20'
DATE: JULY 2015
SHEET 6 OF 7

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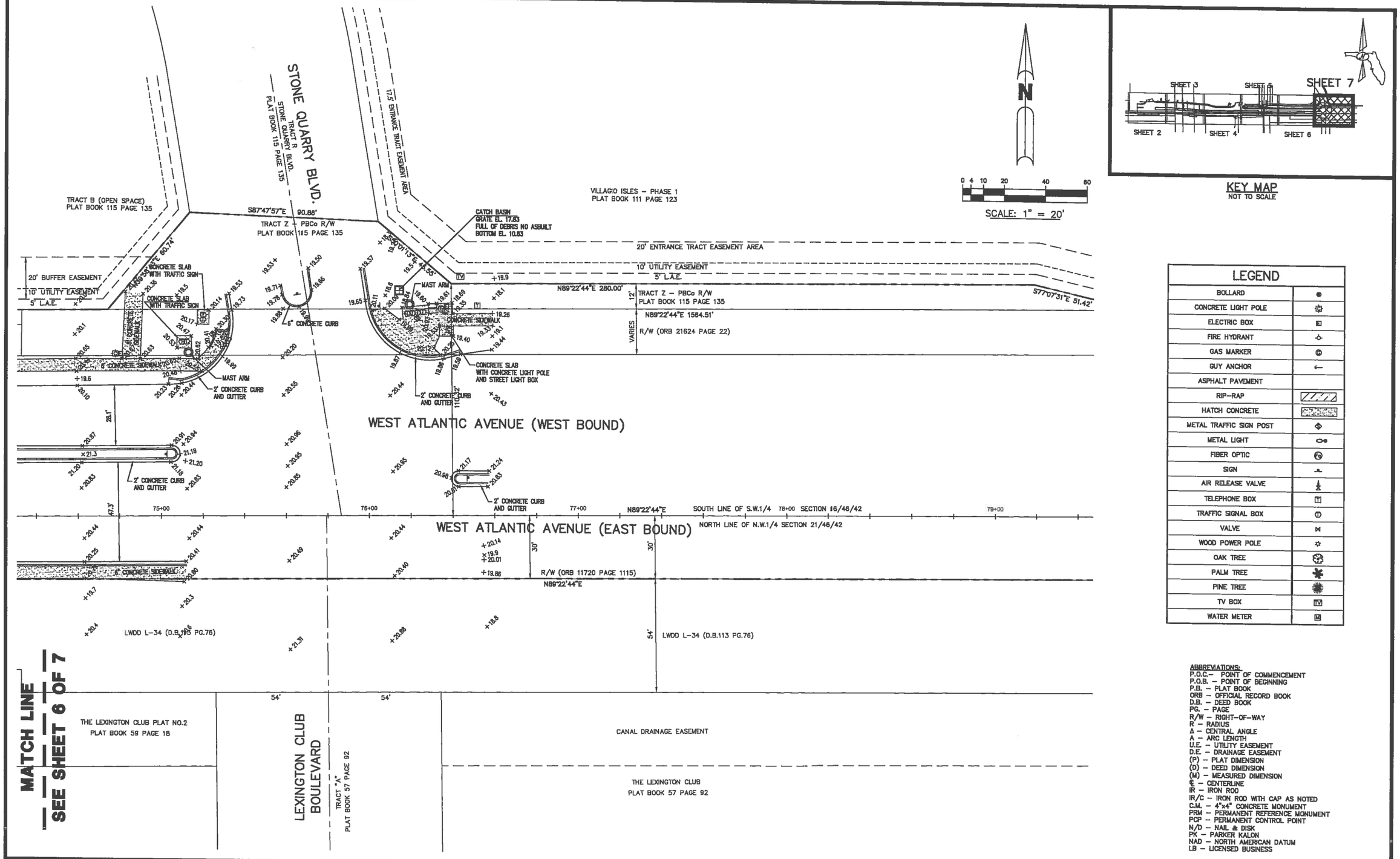

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BOLLARD	
CONCRETE LIGHT POLE	
ELECTRIC BOX	
FIRE HYDRANT	
GAS MARKER	
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RIP-RAP	
HATCH CONCRETE	
METAL TRAFFIC SIGN POST	
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WEST ATLANTIC AVENUE AND TURNPIKE

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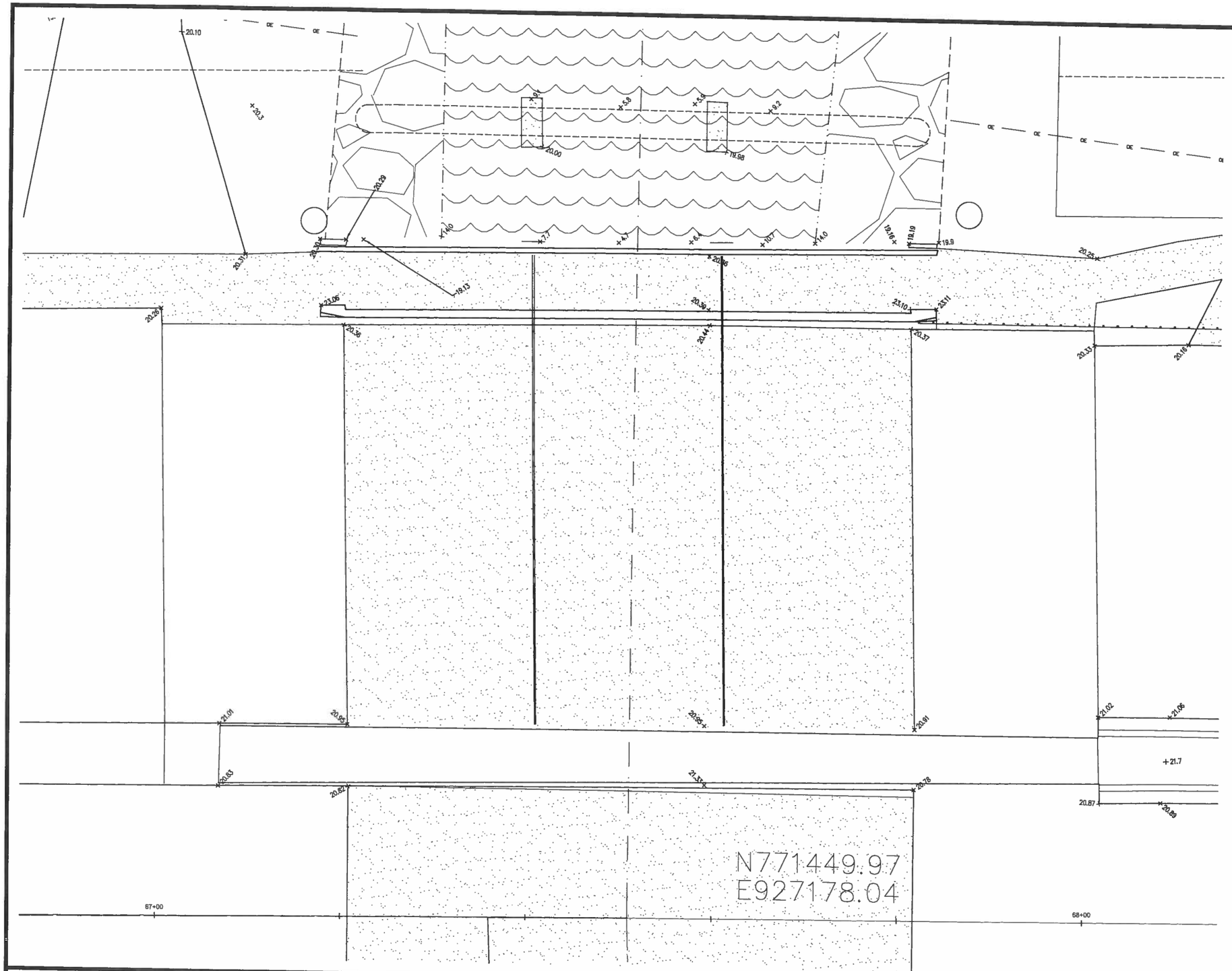

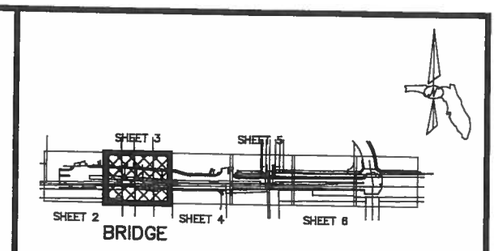

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CONCRETE LIGHT POLE	☼
ELECTRIC BOX	E
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GAS MARKER	G
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RIP-RAP	
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METAL LIGHT	
FIBER OPTIC	FO
SIGN	
AIR RELEASE VALVE	
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PROJ. No. 15-039
SCALE: 1"=5'
DATE: JAN. 2016
SHEET 1 OF 1

BRIDGE

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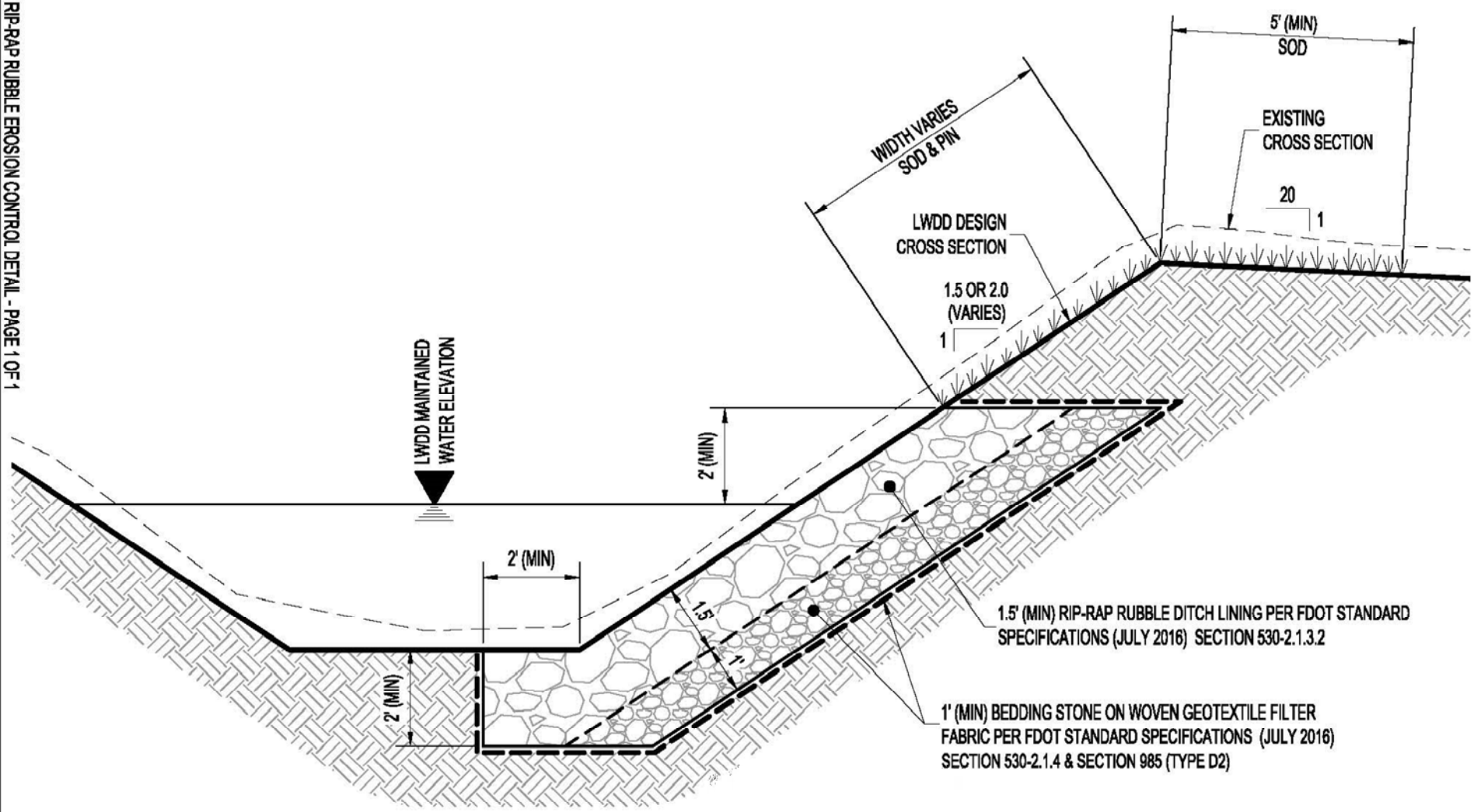
LWDD Rock Rubble Rip Rap Detail

LWDD RIP-RAP RUBBLE EROSION CONTROL DETAIL - PAGE 1 OF 1

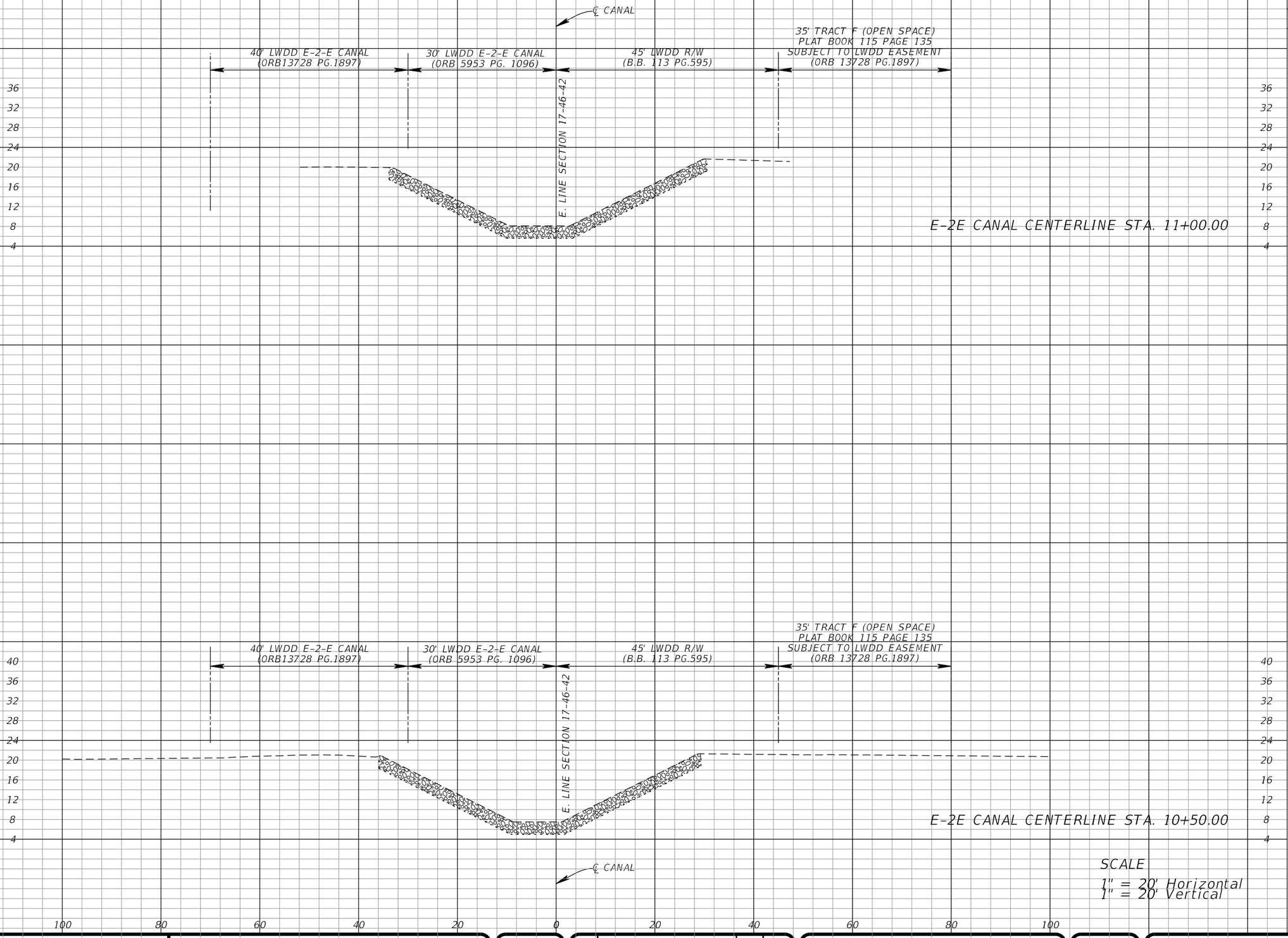


LWDD RIP-RAP RUBBLE EROSION CONTROL DETAIL

NOT TO SCALE

LWDD Rock Rubble Rip Rap – E-2E Canal Cross Section Excerpt

Regular Exc.		Embankment	
A	V	A	V



SCALE
1" = 20' Horizontal
1" = 20' Vertical

Kimley»Horn
Certificate Of Authorization No. 696
MARWAN MUFLEH, P.E.
License No. 45329
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

NO.	REVISION	BY	DATE

PALM BEACH COUNTY
ENGINEERING AND PUBLIC WORKS
ROADWAY PRODUCTION
P.O. BOX 21229, WEST PALM BEACH, FLORIDA

SCALE:	1"=40'
APPROVED:	MHM
DRAWN:	SMB
CHECKED:	SO
DATE:	07/28/15

E-2E CANAL CROSS SECTION

DESIGN FILE NAME | DRAWING NO.

SHEET:
OF:
PROJECT NO. 2012501

sara.lopez 7/17/2017 3:01:48 PM K:\BCD_Roadway\040256026_Atlantic AV at TPK S\2012501\drainage\DRXSRD01.DGN

Proposed Typical Section – Bridge 930032

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) N/A : L.A. FACILITY
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

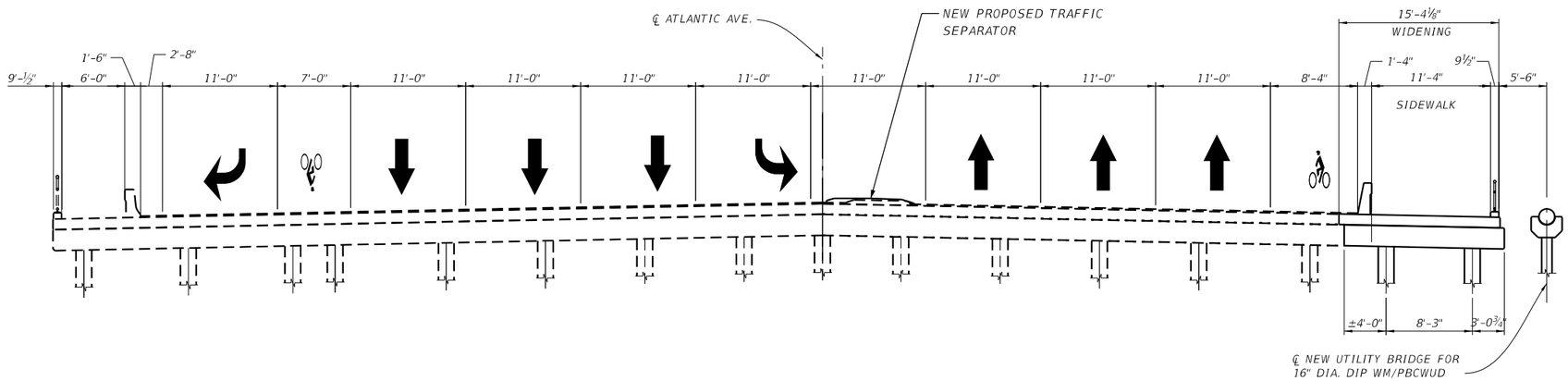
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 6 - BOTH MEDIAN TYPES

CRITERIA

( ) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION NO. 2



PROPOSED SR 806 OVER LWDD E-2E CANAL
(BR 930032)
(INT. BENTS SHOWN)

FINANCIAL PROJECT ID	SHEET NO.
44057532202	2

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7/7/2021 4:00:14 PM cgarcia
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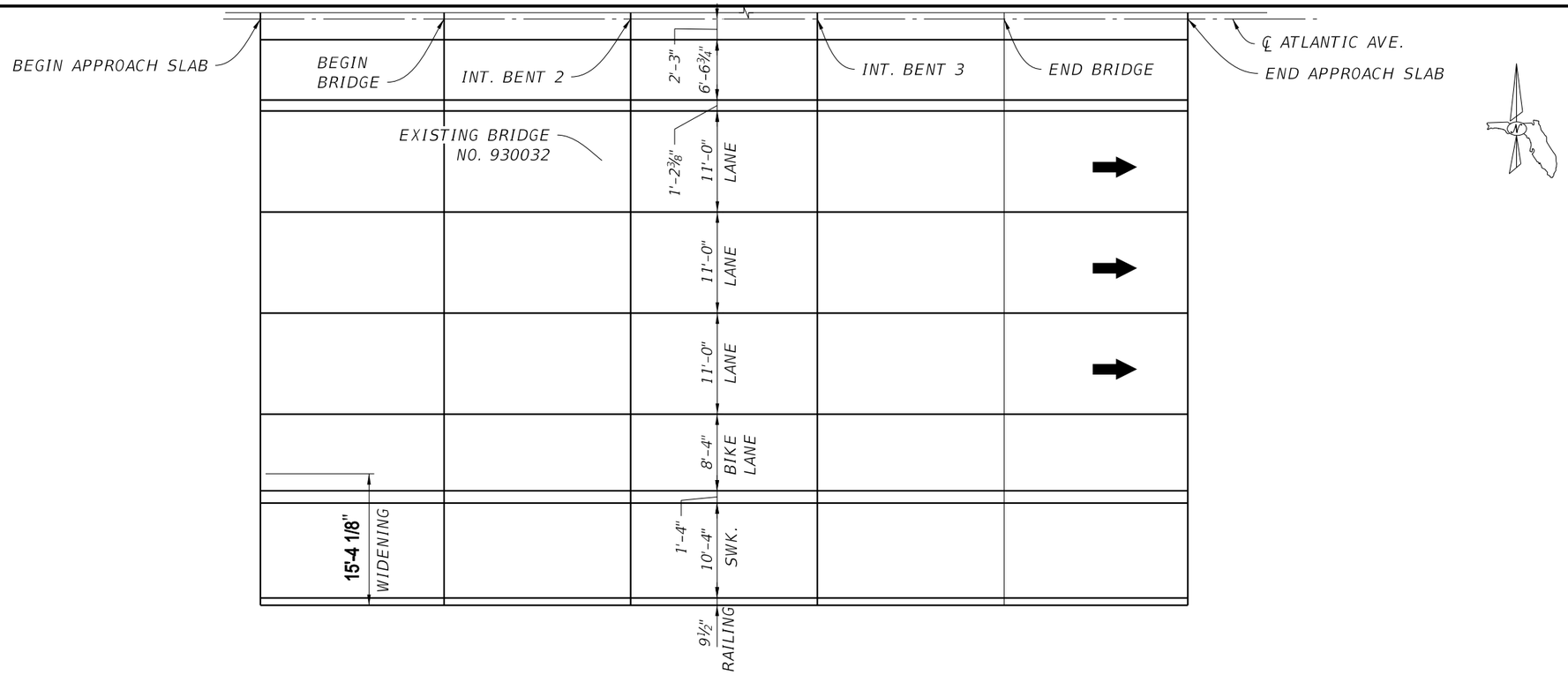
Proposed Plan View – Bridge 930032



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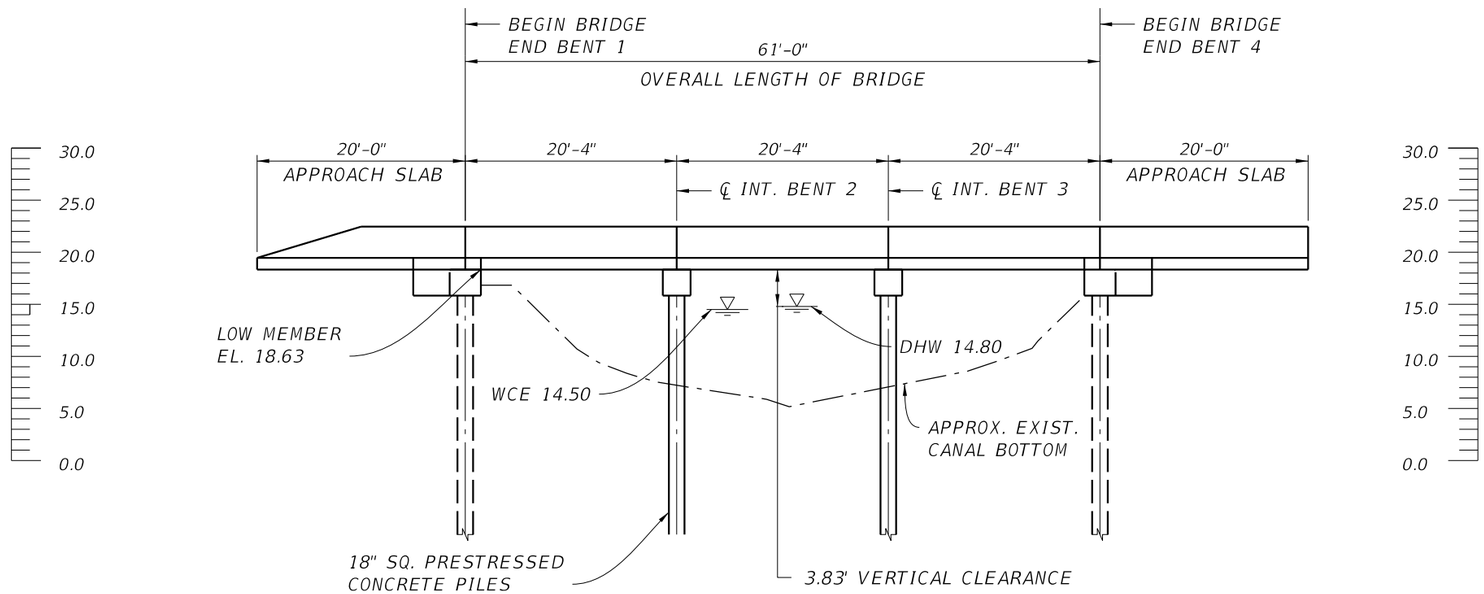

ELEVATION

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REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

PREDRAG MILOSAVLJEVIC, P.E.
P.E. LICENSE NUMBER 54961
SCALAR CONSULTING GROUP INC.
5713 CORPORATE WAY, SUITE 200
WEST PALM BEACH, FL 33071

DRAWN BY: HJS 03-21
CHECKED BY: PZM 03-21
DESIGNED BY: JS 03-21
CHECKED BY: PZM 03-21

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 806	PALM BEACH	440575-3-22-02

SHEET TITLE:

PROJECT NAME: FLORIDA'S TURNPIKE (M.P 1.748) TO JOG ROAD (M.P. 3.560)

REF. DWG. NO.

SHEET NO.