SELMON EXPRESSWAY

South Selmon PD&E Study

Pond Siting Report

June 2021

Professional Engineer Certification

Pond Siting Report

Project: Selmon Expressway (S.R. 618) Project Development and Environment Study

THEA Project No: HI-0112

Study Limits: From End of Existing Six-lane Section at the Selmon Expressway West Extension Project to the Beginning of the Six-lane Section Near Whiting Street

Date: June 2021

This preliminary engineering report contains engineering information that fulfills the purpose and need for the Selmon Expressway (S.R. 618) Project Development and Environment Study from the end of existing six-lane section at the Selmon Expressway West Extension Project to the beginning of the six-lane section near Whiting Street in Hillsborough County, Florida. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through professional judgment and experience.

I hereby certify that I am a registered professional engineer in the State of Florida practicing with HDR Engineering, Inc. and that I have prepared or approved the evaluation, findings, opinions, conclusions or technical advice for this project.

This item has been digitally signed and sealed by Juan C. Lopez-Paniagua, P.E. 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.

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Executive Summary

The purpose of this Pond Siting Report for THEA's PD&E Study of the Selmon Expressway is to summarize the project's required stormwater management needs and evaluate stormwater management facilities to comply with regulatory requirements. The project traverses nine basins in total. A key objective is to explore the feasibility of accommodating the required stormwater management needs within the existing THEA right-of-way.

Various build alternatives have been considered for this project. Alternatives 1, 3, 4 and 5 have been eliminated from consideration (refer to Preliminary Engineering Report). Alternatives 2 and 6 were further developed and refined based on PD&E Study analysis results. For the purpose of this PSR, Alternative 2 was used to estimate the required size of stormwater management facilities, since it involves the most additional impervious area. Although the recommended stormwater management facilities outlined in this report are based on the proposed widening from construction of Alternative 2, it is noted that the same stormwater management approach will meet all regulatory requirements for the other alternatives.

Two separate water quality requirements affect this project. These criteria are referred to as the presumptive water quality treatment requirement and the net nutrient improvement requirement. Presumptive water quality treatment requires either 0.5 or 1.0 inch of runoff, for dry or wet facilities, respectively, from the added impervious area must be stored and treated. Additionally, the impervious area added from the widening of the inside shoulder as part of the South Selmon Safety Improvement project must also be treated, once the paved shoulder becomes repurposed as additional travel lanes. No net increase in nutrient loading across the project limits must also be demonstrated, as the project drains to a nutrient impaired waterway.

Required attenuation volumes are estimated for each basin for the 100-year, 24-hour design storm event. Any impacts to existing ditches that provide some form of attenuation storage will be replaced. Proposed stormwater management solutions to meet all regulatory criteria include the following approaches:

- Shifting basin limits
    - Basin divides along the Selmon Expressway are modified to reduce runoff volumes and prevent the need for additional stormwater management facilities
- Wet Detention/Dry Retention Stormwater Management Facilities
    - Conventional ponds are used in any available open spaces within the THEA right-of-way
    - Due to high groundwater tables, most facilities are designed as wet detention ponds
- Underground stormwater vault systems
    - One alternative in the Palma Ceia basin includes an underground stormwater vault system
    - Due to high groundwater tables, this system is designed to be closed and separate from the groundwater. Therefore, only attenuation can be provided.

- Modifying existing stormwater ponds
  - Three stormwater ponds within THEA right-of-way are proposed to be expanded to provide necessary treatment and attenuation volumes.
- Compensatory treatment
  - In some basins without the right-of-way for any form of water quality treatment, compensatory treatment will be utilized.

Using a combination of these stormwater management approaches, treatment and attenuation requirements can be met within the existing THEA right-of-way.

The Palma Ceia basin (Basin 4) has significant stormwater management needs and limited available right-of-way. Therefore, three alternatives were investigated for this basin that included underground storage, creating a new outfall, and a conventional pond site. The conventional pond requires additional right-of-way to be purchased and the new outfall requires coordination with the City of Tampa on expanding the existing outfall within their right-of-way.

The following table outlines the required and provided treatment and attenuation volumes across the project limits:

Basin	Pond Name	Treatment Volume Required (ac-ft)	Treatment Volume Provided (ac-ft)	Attenuation Volume Required (ac-ft)	Attenuation Volume Provided (ac-ft)
Gandy	Pond 1 (existing pond)	0.10[1]	0.10[1]	0.77[2]	0.77[2]
Euclid	Pond EC - 1	0.21	0.04	1.33	0.15
	Pond EC - 2		0.09		0.44
	Pond EC - 3		0.09		0.40
	Pond EC - 4		0.02		0.19
	Pond EC - 5		0.02		0.16
Granada	-	0.17	-	0.00	-
Palma Ceia	W Mississippi Ave - South Pond	0.33	0.04	1.18	0.02
	Mississippi Ave - North Pond		0.04		0.03
	Stormwater Management Alternative (See Section 3.2)		-		1.34[3]
Rome Ave.	Swann Pond Expansion	0.25	0.22	0.45	0.49
Spanishtown Creek	Pond SC-1	0.35[6]	0.19	0.75	0.83
Brorein West	Pond BW-1	0.79[6]	1.08	2.83[4]	2.87
	Pond BW-2		0.37		0.53
	Pond BW-3		0.16		0.07
Hillsborough River Bridge	-	0.03	-	-	-
Brorein East	-	0.12	-	-	-
Meridian R.R.	Pond M-1	0.03	0.04	0.02	0.05
	Totals	***2.28***	***2.40***	***3.73 (7.33)[5]***	***7.57***

[1]Additional treatment volume available in existing Pond-1; no additional treatment volume required
[2]ICPR3 model results show negligible impact due to increase in runoff; no additional attenuation volume required
[3]Multiple alternatives available to account for increase in runoff from Palma Ceia basin; refer to Section 3.2. Option 2 attenuation volume is shown
[4]Outfall drains directly to Hillsborough Bay; no additional attenuation volume required, but excess is provided to prevent pipe surcharge
[5]Number in parenthesis includes attenuation volume that is not required from a regulatory perspective, such as that within the Brorein West and Gandy basins
[6]Includes twice the existing treatment volume of Pond 9 and Pond 10, due to proposed conversion from dry to wet ponds

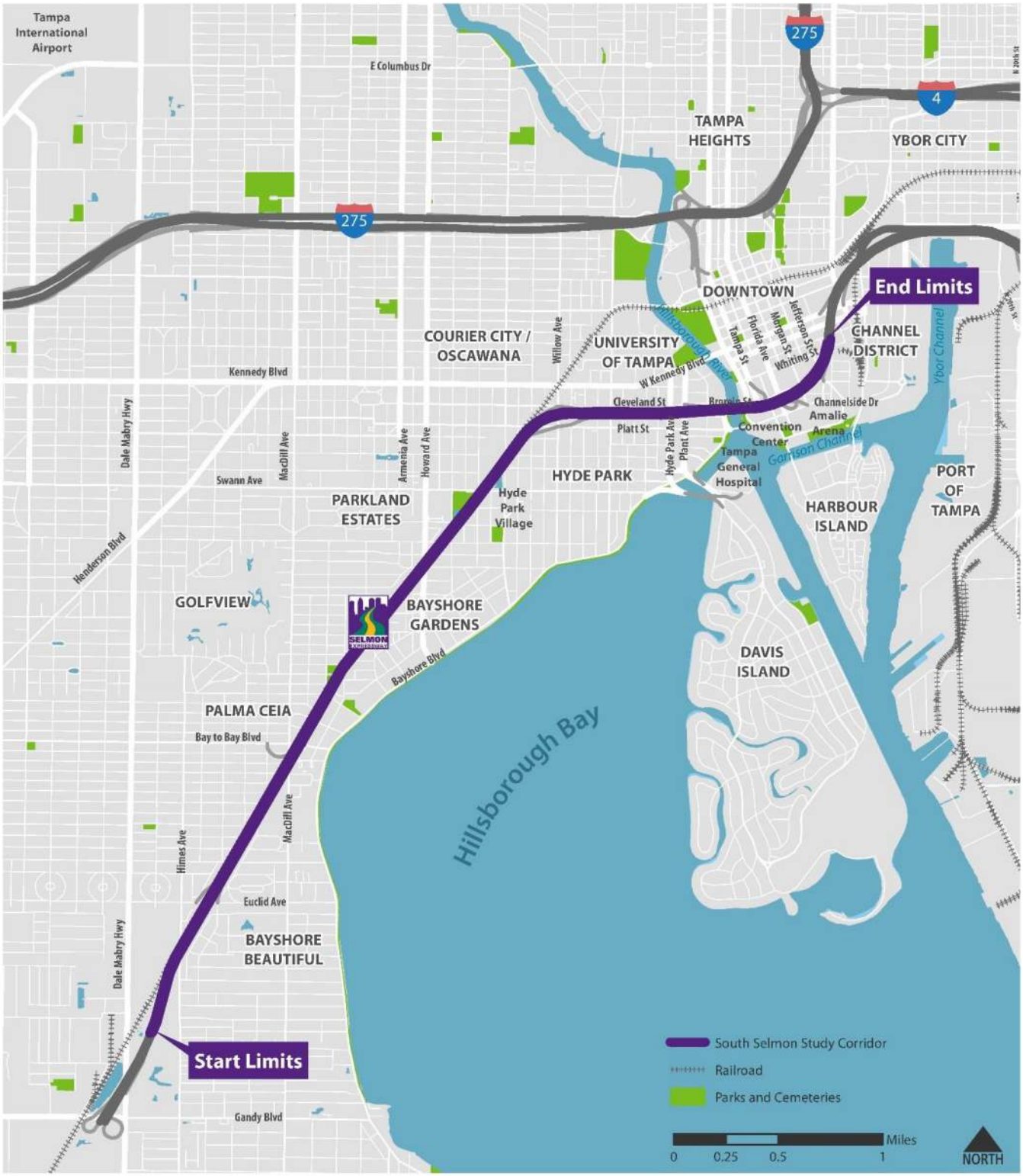
1.0 Introduction

The Tampa Hillsborough Expressway Authority (THEA) conducted a Project Development and Environment (PD&E) Study to evaluate capacity improvements along the Selmon Expressway in Hillsborough County, Florida. The project limits extend from Himes Avenue to the beginning of the six-lane section at Whiting Street, approximately 4.5 miles, as shown in **Figure 1**. This segment of the Selmon Expressway extends across nine stormwater basins, each with a separate outfall to either the Hillsborough River or Hillsborough Bay.

The purpose of this Pond Siting Report (PSR) is to summarize the project's required stormwater management needs and evaluate stormwater management facilities for each basin to comply with regulatory requirements. A key objective is to explore the feasibility of accommodating the required stormwater management needs within the THEA right-of-way. Offsite pond sites are to be evaluated if onsite stormwater management facilities are not feasible in the right-of-way.

Various widening alternatives are considered for improving capacity along the expressway, each with different impacts to the existing drainage systems and different stormwater management needs. This PSR considers the stormwater management needs for the most critical typical section alternative, with the greatest amount of new impervious area, which results in the greatest amount of required treatment and attenuation.

Figure 1: Project Location

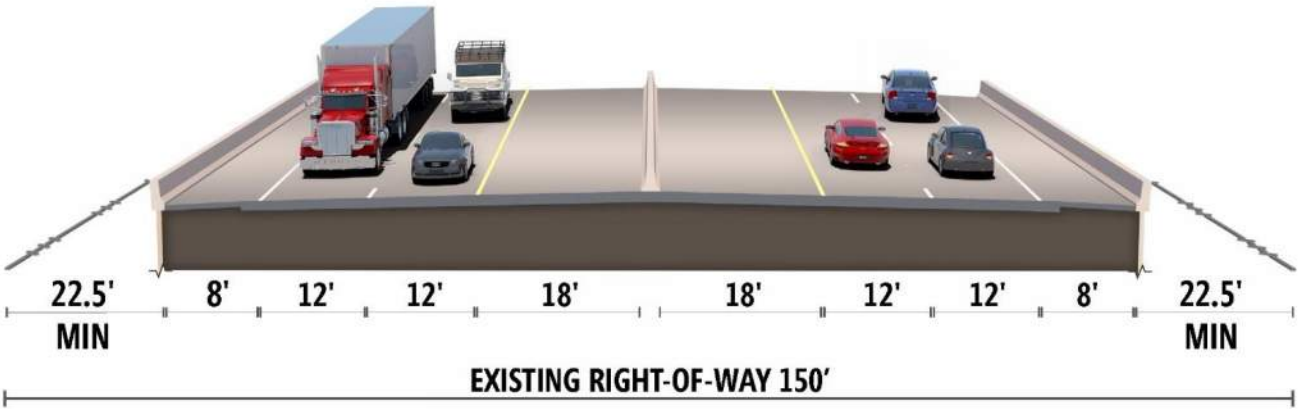


1.1 Existing Conditions

1.1.1 Roadway

The Selmon Expressway, also known as SR 618, is a limited access, tolled facility and is functionally classified as an Urban Principal Arterial Expressway. The roadway is part of the Strategic Intermodal System (SIS) and is a hurricane/emergency evacuation route. The Selmon Expressway within the project limits consists of two 12-foot-wide travel lanes in each direction separated by a 38-foot paved median with a concrete barrier wall. The inside shoulders are 18-feet wide. The outside shoulders are 8-feet wide and contain either shoulder gutter with guardrail or shoulder gutter with barrier wall on the outside. The typical section is shown below in **Figure 2**.

Figure 2: Existing Typical Section



1.1.2 Drainage Basins

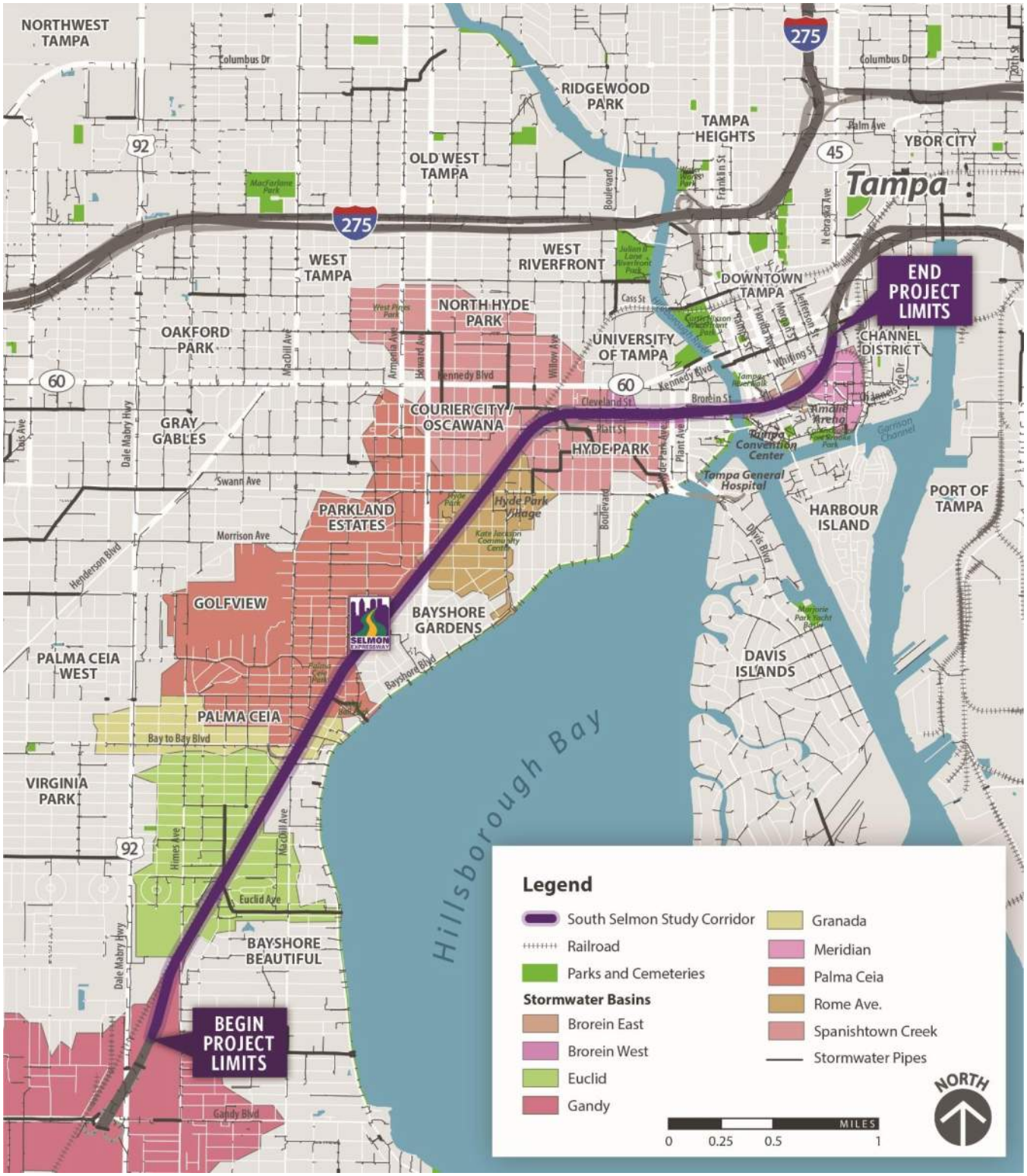
The Selmon Expressway project limits cross nine stormwater basins, which outfall into the Hillsborough River or Hillsborough Bay. The stormwater basin names used in this PSR are based on the naming convention of the City of Tampa, which manages the stormwater infrastructure GIS geodatabase. An overview of these basins is shown in **Figure 3**, and the limits are presented in **Table 1**.

General information about each of these basins is described below. Individual basin maps are provided in **Appendix A** and more detailed pre- and post-development drainage maps are included with the drainage analysis in **Appendix C.**

Basin 1 (Gandy)

Basin 1 begins at the southern end of the project limits (Sta. 77+22) and extends to the high point of the bridge over Himes Avenue at Sta. 99+50. Runoff from the expressway in this basin is conveyed to either side of the roadway, and is conveyed south and west through ditches and cross-drains until it discharges into SMF 1A (Pond 1), which was recently modified with the Selmon West Extension project (THEA Project Number O-17-00217).

Figure 3: Stormwater Network and Basins



Basin 2 (Euclid)

Basin 2 extends between the high points along the bridges over Himes Avenue (Sta. 99+50) and El Prado Boulevard (Sta. 127+63). Runoff from the roadway in Basin 2 enters lateral storm sewer pipes that convey it to a ditch on the west side, between the expressway and the CSX railroad. Runoff in the ditch is conveyed to a control structure under the southbound ramp bridge around Station 120+00, which is connected to a double 4'x5' concrete box culvert that heads southeast towards the Hillsborough Bay. The control structure was recently installed by the THEA safety project to provide discharge attenuation only. This storm sewer system expands to double 6'x5' concrete box culverts before discharging into Hillsborough Bay. No permitted stormwater management systems exist in this basin.

Basin 3 (Granada)

Basin 3 begins at the high point along the bridge over El Prado Boulevard at Sta. 127+63 and extends north until approximately the bridge over Bay to Bay Boulevard at Sta. 163+90, a distance of 3,627 feet. Runoff from the roadway is typically conveyed through lateral storm sewer pipes that send water to a ditch along the west side, between the expressway and the CSX railroad. Runoff in this ditch is conveyed north until it enters ditch bottom inlets just before MacDill Avenue. Once in the storm sewer system, runoff continues north before turning east into a 54" pipe that flows east into the Hillsborough Bay.

Basin 4 (Palma Ceia)

Basin 4 extends between north of Bay to Bay Boulevard (Sta. 163+90) and approximately Howard Avenue (Sta. 217+55). Runoff from the roadway in this basin is typically conveyed to the west side of the expressway, to a ditch between the expressway and the CSX railroad. Runoff from this ditch enters a storm sewer system via slotted ditch bottom inlets. This storm sewer system becomes an 8'x4' concrete box culvert, which is parallel to double 60" pipes, and both systems continue southeast along Rubideaux Street before discharging into the Hillsborough Bay.

Basin 5 (Rome Avenue)

Basin 5 extends from approximately Howard Avenue (Sta. 217+55) to north of Swann Avenue (Sta. 244+04). In the southern part of the basin, runoff from the expressway is conveyed to a ditch along the west side, between the roadway and the CSX railroad. This runoff drains to a triangular pond within Hyde Park, between the CSX railroad and S. Albany Avenue. Ditch runoff enters a recently installed control structure connected to an existing railroad cross-drain that outfalls to the pond. The pond currently has no gravity-driven outfall structure, but there is a pump station in poor condition that does not appear to be operable. No permit or design records are available for this pond constructed with the original Selmon Expressway. The old plans indicate a pond outfall pipe across the tracks, but this pipe cannot be found due to heavy vegetation in the CSX right-of-way or it may be buried. Without the pump operation, runoff now backflows out of the pond into the ditch between the railway and the expressway. During an October 2020 field review, the pond stage was about one foot below the berm. Refer to photos in this section.

The drainage ditch continues north and provides hydraulic connection to the existing storm sewer system along Swann Avenue. The storm sewer system discharges into the Swann Avenue Pond, located

between the expressway and Rome Avenue. Additionally, runoff from the expressway in the northern part of this basin discharges directly to the Swann Avenue Pond. The Swann Pond was modified by a City of Tampa beautification project. There is no excess hydraulic capacity as evidenced during our field review. Debris was observed hanging over the top of the skimmer and control structure. In addition, the pond has steep slopes with synthetic mats and sand cement bags in certain areas to prevent further erosion. The outfall for this pond is a 38"x60" pipe that runs south along Rome Avenue, before discharging into the Hillsborough Bay.

Figure 4: S. Albany Pond Photos

Figure 5: Swann Pond Photos

Basin 6 (Spanishtown Creek)

Basin 6 extends from approximately north of Swann Avenue (Sta. 244+04) to the high point at the bridge over Willow Avenue (Sta. 507+50). In the southwestern part of the basin, runoff from the expressway is conveyed via lateral storm sewer pipes to a ditch along the west side, between the roadway and the CSX railroad. This ditch then conveys runoff north and enters a storm sewer system along Platt Street, which flows east until reaching a 12'x5' box culvert system that outfalls to the Hillsborough Bay. In the northeast part of the basin, runoff from the expressway is conveyed to the existing Pond 9 that is located at the northwest corner of Platt St. and Willow Ave. This pond, along with the existing Pond 10 in the Brorein West basin, were constructed as part of the South Selmon Expressway Median Safety Improvements Project (THEA Project Number O-00518). These ponds were designed to provide attenuation runoff within this basin and the Brorein West basin and some compensatory water treatment for the entire safety improvement project length. Pond 9 provides 0.1 ac-ft. of treatment volume and 0.28 ac-ft. of attenuation volume. Pond 9 retains a depth of 0.34' above the pond bottom elevation of 17.0, which is about 2.5' above the estimated SHW elevation. The pond eventually discharges through a control structure into the concrete box culvert system that conveys stormwater runoff southeast to the Hillsborough Bay.

Basin 7 (Brorein W)

Basin 7 extends from the high point at the bridge over Willow Avenue (Sta. 507+50) to the bridge over the Hillsborough River (Sta. 551+50). Runoff from the expressway in this area is conveyed in lateral storm sewer pipes from the north to the south and connects to a storm sewer system that runs parallel to the expressway on the south side. This system ranges in size from 18" to 36", and discharges to the Hillsborough River under the Tony Jannus Park.

The majority of the basin runoff drains untreated directly to the Hillsborough River. In the west part of the basin, part of the expressway drains into Pond 10, which was constructed as part of the South Selmon Expressway Median Safety Improvements Project. This dry retention pond provides 0.18 ac-ft. and 0.39 ac-ft. of treatment and attenuation volume, respectively. The pond bottom elevation of 16.0' is 4.5' above the SHGWT and provides a 0.5' retention depth. Pond 10 discharges through a control structure and enters the storm sewer system that runs parallel to the expressway.

A small dry retention pond provides treatment of the existing toll plaza facility within this basin and connects to the same storm sewer system that discharges into the Hillsborough River. No permit information is available for this facility. Aside from this pond and the existing Pond 10, no other stormwater management facilities exist within this basin.

Basin 8 (Brorein E)

Basin 8 extends from the bridge over the Hillsborough River (Sta. 554+60) to east of Morgan Street in downtown Tampa (Sta. 572+50). Runoff from the expressway in this basin typically is conveyed from the overpass to a storm sewer system on the ground level by vertical pipes connected to the bridge piles. Runoff from the storm sewer system on the ground level travels westward before discharging into the Hillsborough River via a 42" pipe. No existing stormwater management facilities exist within this basin.

Basin 9 (Meridian)

Basin 9 extends from east of Morgan Street (Sta. 572+50) to the end of the project limits, which is near Whiting Street (Sta. 584+17). Bridge deck runoff from the expressway in this basin is typically conveyed to a storm sewer system on the ground level by vertical pipes connected to the expressway's structural piles. The storm sewer system conveys runoff northeast, before turning south and discharging into the Garrison Channel via an 8'x5' concrete box culvert. No existing stormwater management facilities exist within this basin.

Hillsborough River Bridge

In addition to the above basins, a portion of the existing bridge over the Hillsborough River is proposed to be widened. The bridge features scuppers that drain roadway runoff directly into the Hillsborough River below.

Table 1: Existing Basin Information

Basin Number	Basin Name	Begin Station	End Station	Basin Length (ft.)	Outfall Size
1	Gandy	77+22	99+50	2,228	4'x10' CBC
2	Euclid	99+50	127+63	2,813	2 x 4'x5' CBC
3	Granada	127+63	163+90	3,627	54"
4	Palma Ceia	163+90	217+55	5,365	2 x 60" & 8'x4' CBC
5	Rome Ave.	217+55	244+04	2,649	38"x60"
6	Spanishtown Creek	244+04	507+50	3,578	2 x 7'x5.4' CBC
7	Brorein W	507+50	551+50	2,968	36"
-	Hillsborough River Bridge	551+50	554+60	310	-
8	Brorein E	554+60	572+50	1,790	42"
9	Meridian	572+50	584+17	1,167	8'x5' CBC

1.1.3 Soils

Soils within the project limits feature mainly dual hydrologic soil group classifications, the most common being A/D. The dual classification states that the amount of runoff from a certain soil type will vary depending on if the soil is a drained condition or left undisturbed. Artificially drained soils, such as from the use of excavated ditches, lower the seasonal high groundwater table and reduce the runoff resulting from a design storm event.

The areas adjacent to the expressway are highly urbanized, and therefore many of the underlying soils can be considered disturbed or altered. Site specific geotechnical evaluations should be required before the design and construction of stormwater management facilities along this corridor, due to the uncertainty in groundwater elevations resulting from disturbed soils. For the purpose of estimating seasonal high groundwater table (SHGWT) elevations in S Willow Avenue interchange, estimates from the geotechnical report for the South Selmon Expressway Median Safety Improvements project are referenced in the stormwater management calculations in this report. All other seasonal high groundwater table elevations are based on the USDA Soils Report in **Appendix B** and are summarized in **Table 2.**

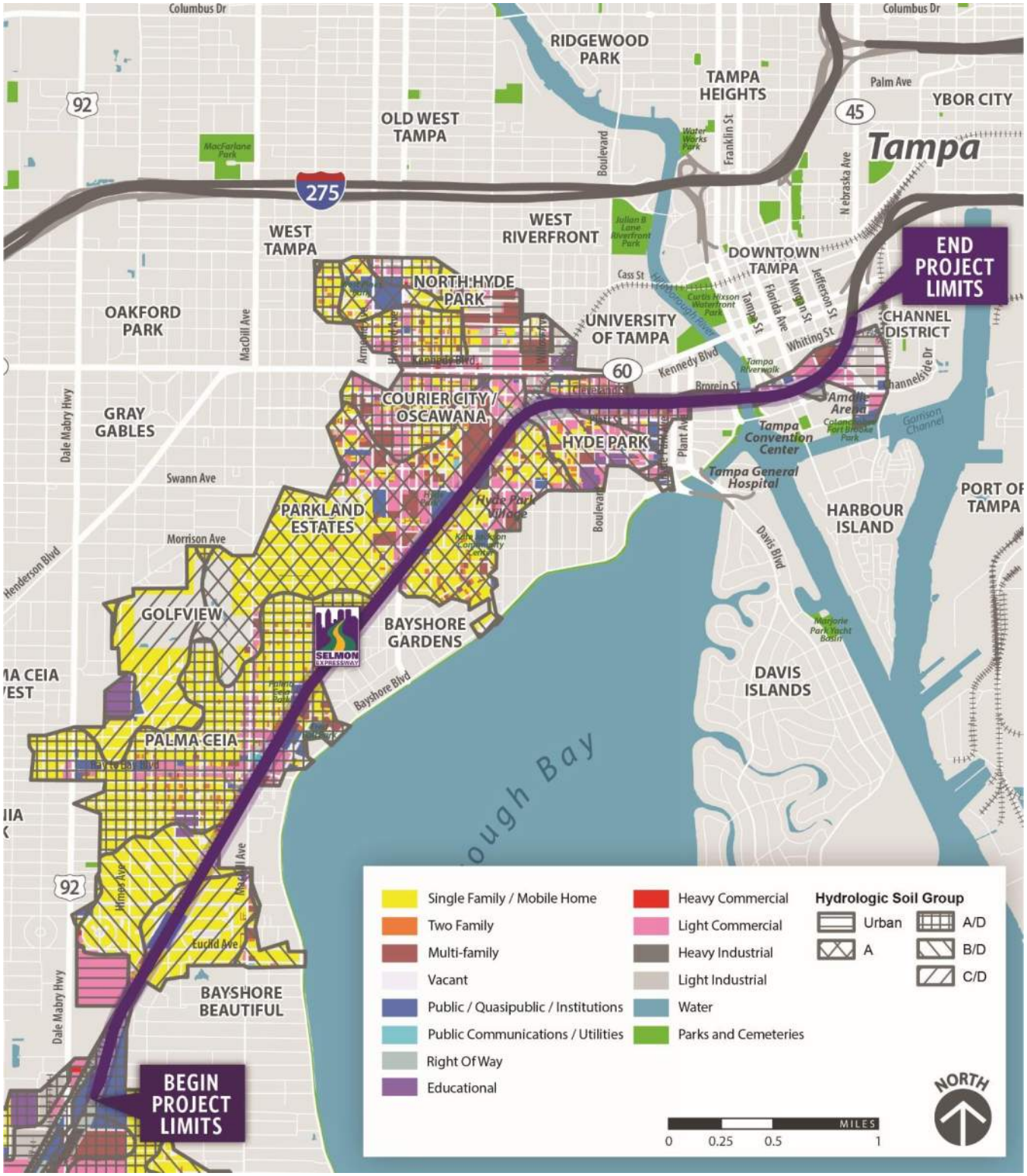
Table 2: Soil Classification by Basin

Basin Number	Basin Name	Hydrologic Soil Group	Soil Type	USDA Depth to SHGWT (in)
1	Gandy	A/D	Myakka - Urban land complex	12.2
2	Euclid	A/D	Myakka - Urban land complex	12.2
		B/D	Ona-Urban land complex	12.2
		C/D	Wabasso - Urban land complex	12.2
3	Granada	A/D	Myakka - Urban land complex	12.2
		B/D	Ona-Urban land complex	12.2
4	Palma Ceia	A	Tavares fine sand-Urban land complex 0-5% slopes	29.9
		A/D	Myakka - Urban land complex	12.2
5	Rome Ave.	A	Tavares fine sand-Urban land complex 0-5% slopes	29.9
6	Spanishtown Creek	A	Tavares fine sand-Urban land complex, 0-5% slopes	29.9
		A/D	Myakka - Urban land complex	12.2
		B/D	Immokalee-Urban land complex	12.2
7	Brorein W	A/D	Myakka - Urban land complex	12.2
		A/D	Malabar fine sand, 0-2% slopes	5.9
8	Brorein E	-	Urban Land	-
9	Meridian	-	Urban Land	-

1.1.4 Land Use

The land use types adjacent to the expressway corridor are predominantly single-family and multi-family residential properties. Commercial properties are also common, especially in the northwest region of the project limits, where the expressway approaches downtown Tampa. The high level of urbanization within this project area produces a large amount of impervious area, and subsequently large runoff volumes. The soil and land uses within the basins of the project limits are presented in **Figure 6**.

Figure 6: Soils and Land Uses within Project Basins



1.1.5 Flooding History

A coordination meeting with the City of Tampa was held on 10/9/2020. During this meeting, it was revealed that many City-owned outfalls within the project limits are undersized and cause flooding issues across the basins. It was recommended by City staff to consider all outfalls as lacking capacity and to provide additional storage of runoff, where feasible, to improve the existing flooding conditions.

City staff mentioned a flooding issue within the Parkland Estates neighborhood, which lies within the Palma Ceia basin. An analysis by City staff, using the XPSWMM software, showed that the addition of an additional 60" pipe within THEA right-of-way would improve the flooding. Upon further investigation, this proposed 60" pipe location is outside of THEA right-of-way, and is west of the CSX railroad. The existing and proposed 60" pipe is within the CSX right-of-way. A stub-out for a future proposed 60" was included in the junction structure (refer to **Appendix D**), but this is west of the existing 60" pipe. Any work to improve these flooding conditions would require work outside of the right-of-way and would require additional coordination with the CSX railroad. Therefore, the outfall improvement was not considered with the Pond Siting evaluation.

Additionally, City staff brought up the THEA-owned pond located adjacent to S. Albany Avenue (S. Albany Pond) and its current condition. This pond has a pump station that has been inoperational for an unknown duration. In early 2020, the City expressed concerns to THEA about pond flooding and the safety improvement project. These concerns were addressed with RFI #015 response on March 3, 2020 (see copy in **Appendix I**). In short, the Selmon Safety Improvement project added additional impervious area to the basin draining to this existing pond. The additional runoff was mitigated by expanding the existing ditch to provide attenuation volume.

The approach within this PSR is to match the amount of impervious area draining to this pond to avoid any hydraulic impacts. There is no opportunity to enlarge the existing S. Albany Pond. Therefore, no modification to this pond or pump station is proposed for this project.

1.1.6 FEMA Floodplain

None of the project's corridor falls within the Federal Emergency Management Agency (FEMA) 100-year floodplain limits, except within the area surrounding the Hillsborough River. However, the expressway within this area is raised well above the Zone AE 100-year floodplain elevation of 9 feet (NAVD) and no impacts are anticipated for any build alternative. The project area is covered by five Hillsborough County FEMA FIRM maps (effective on August 28, 2008) for community number 12057, panels C0344H, C0342H, C0361H, C0353H and C0354H. It is noted that the FEMA floodplain elevation is based on a hurricane storm surge event. Refer to floodplain map in **Appendix A**. Additional floodplain information can be found within the Location Hydraulics Report.

1.1.7 Existing Permits

11759.006 – Selmon West Extension

This permit was a major modification of permit 11759.000, which included the construction of two regional ponds within the Dale Mabry Hwy. and Selmon Expressway interchange. This permit was issued

in 2018 for the Selmon West Extension project (THEA Project No. O-16-01515), portions of which overlap with the southern limits of the South Selmon PD&E Study. The Selmon West Extension project added additional impervious area within Basin 6 , which drains to Ponds 1 & 2 (note: these use the permit's naming convention). Pond 1 was excavated and re-graded to provide additional storage volume for the 3.16 acres of added impervious area in this basin. These ponds were designed with a surplus of treatment volume, and a portion of this additional treatment volume was taken for the proposed improvements. Select excerpts from this permit are included in **Appendix F**.

21192.003 – South Selmon Expressway Median Safety Improvements

This permit, issued on 8/14/2019, was an individual ERP for the construction of median safety improvements along the Selmon Expressway. The safety improvements involved filling in a median ditch or grassy area and replacing it with a barrier wall and an extended, paved shoulder. The entire project falls within the limits of the South Selmon PD&E Study (permitted project limits: Sta. 100+66.03 to Sta. 536+09.00). Due to the addition of the extended shoulder within the median, and subsequent loss of the informal treatment function of the ditch, compensatory treatment volume was provided in Ponds 9 & 10, which were constructed within the Selmon Expressway and Willow Avenue interchange area. Additionally, minor drainage modifications were made within each basin to meet the increase in runoff, such as converting ditch bottom inlets to control structures to attenuate runoff within the existing ditches.

19654.008 – Lee Roy Selmon Expressway Bridge Widening and Desk Replacement

This permit was a standard general permit for improvements to the Selmon Expressway from west of Morgan Street to 22nd Street, which encompasses the northern end of the South Selmon PD&E Study (permitted project limits: Sta. 566+23.73 to Sta. 656+61.02). The project involved widening from four to six lanes in this area and replacing bridge decks. The permit was issued on 5/18/2018 and permit information is included in **Appendix F**.

2417.000 – City of Tampa – Swann Avenue

This permit, issued 7/11/1998, is for the construction of roadway and drainage improvements along Swann Avenue and modification of the Swann Avenue pond adjacent to Rome Avenue. The Swann Avenue pond has received many modifications over time, most recently with the Swann Avenue Fountain Park beautification project (ERP Exemption 698252).

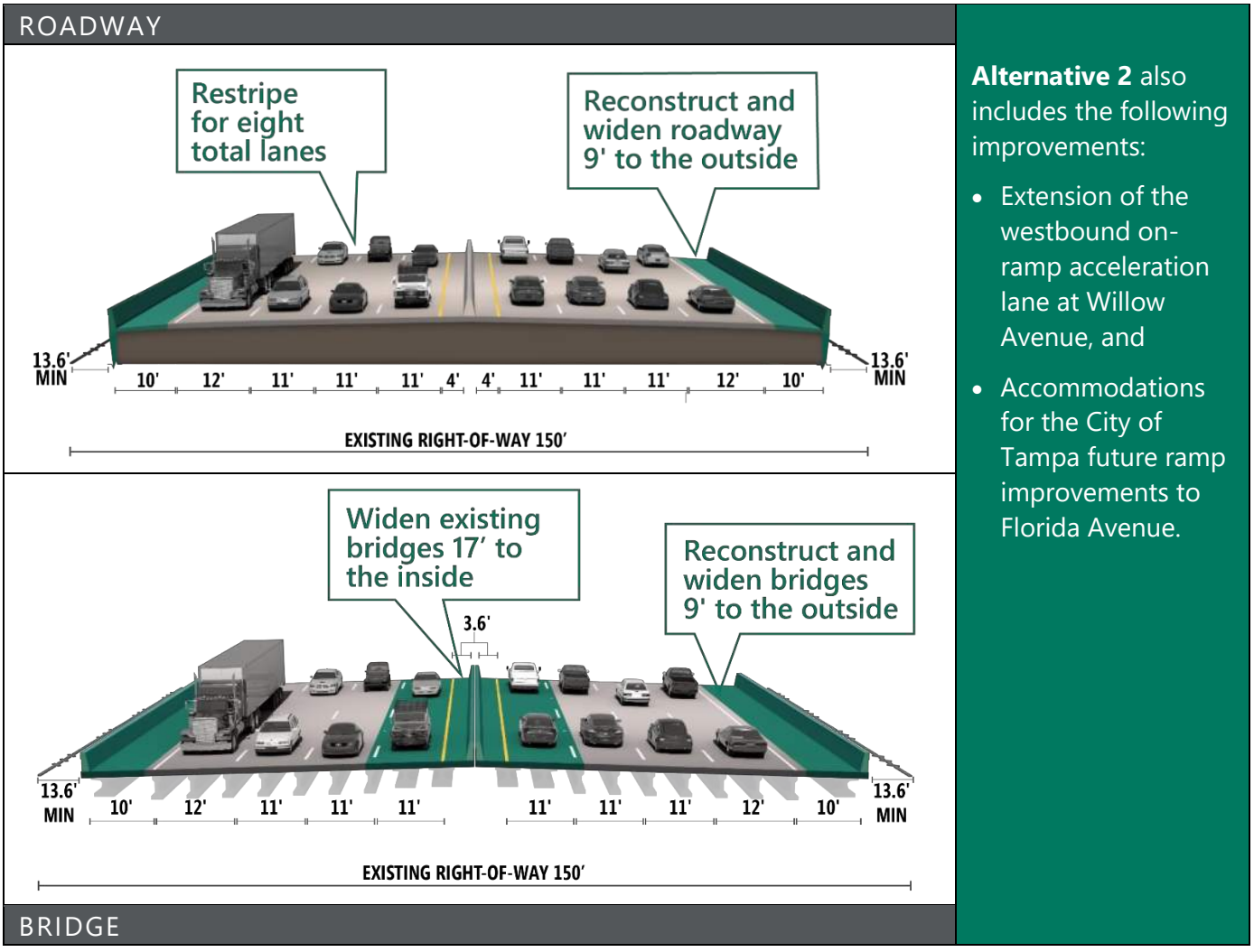
1.2 Proposed Conditions

Five preliminary alternative configurations (Alternatives 1 through 5) were considered for the PD&E Study. However, Alternative 1 was eliminated because it would require demolition of interim improvements and significant reconstruction to widen to the outside in the ultimate phase. Alternatives 3 and 4 were eliminated from further evaluation based on the results of the traffic analysis and Alternative 5 was eliminated based on excessive construction costs. An additional alternative, Alternative 6, was added to address concerns related to inside widening. Alternatives 2 and 6 were further developed and refined based on PD&E Study analysis results. Details on Alternatives 2 and 6 are provided below.

1.2.1 Alternative 2 – Eight Lanes At-Grade with Outside Widening

Alternative 2 proposes to utilize the improvements provided by the South Selmon Safety Project by restriping the existing lanes and inside paved shoulders and widening 9-feet to the outside in both directions to accommodate an eight-lane section. The typical section for Alternative 2 consists of three 11-foot lanes and one 12-foot outside lane in each direction with four-foot inside shoulders and 10-foot outside shoulders (see **Figure 7**). The existing outside barrier wall would be removed and a new retaining wall with barrier would be constructed in order to accommodate the 10-foot outside shoulder. The existing median barrier wall would remain. Alternative 2 requires inside and outside widening of the existing bridges along the corridor to match the proposed roadway section.

Figure 7: Alternative 2 – Roadway and Bridge



Alternative 2 also includes the following improvements:

- Extension of the westbound on-ramp acceleration lane at Willow Avenue, and
- Accommodations for the City of Tampa future ramp improvements to Florida Avenue.

1.2.2 Alternative 6 – Six Lanes At-Grade with Outside Widening

Alternative 6 was developed to provide the same outside widening footprint as shown in Alternative 2 (widening 9-feet to the outside in both directions). In the interim phase (**Figure 8**), Alternative 6 provides for a 6 lane section by widening to the outside and therefore does not require inside bridge widening at all overpass locations. Alternative 6 in the ultimate phase (**Figure 9**) would be able to accommodate a future 8 lane section without outside widening. The roadway typical section in the interim phase for Alternative 6 consists of three 12-foot lanes in each direction with 18-foot inside shoulders (utilizing improvements provided by the South Selmon Safety Project) and five-foot outside shoulders. The existing outside barrier wall would be removed and a new retaining wall with barrier would be constructed in order to accommodate the outside widening. The existing median barrier wall would remain. Existing bridges along the corridor would be widened to the outside to the same extent as shown in Alternative 2. Unless it is required to maintain ingress and egress at the interchanges, all overpass bridges would not be widened to the inside during the interim phase and would maintain the existing 4-foot inside shoulder. Bridges that require both inside and outside widening would provide a 10-foot minimum inside shoulder (Himes, Euclid, El Prado, and Platt).

Figure 8: Alternative 6 – Interim Roadway and Bridge

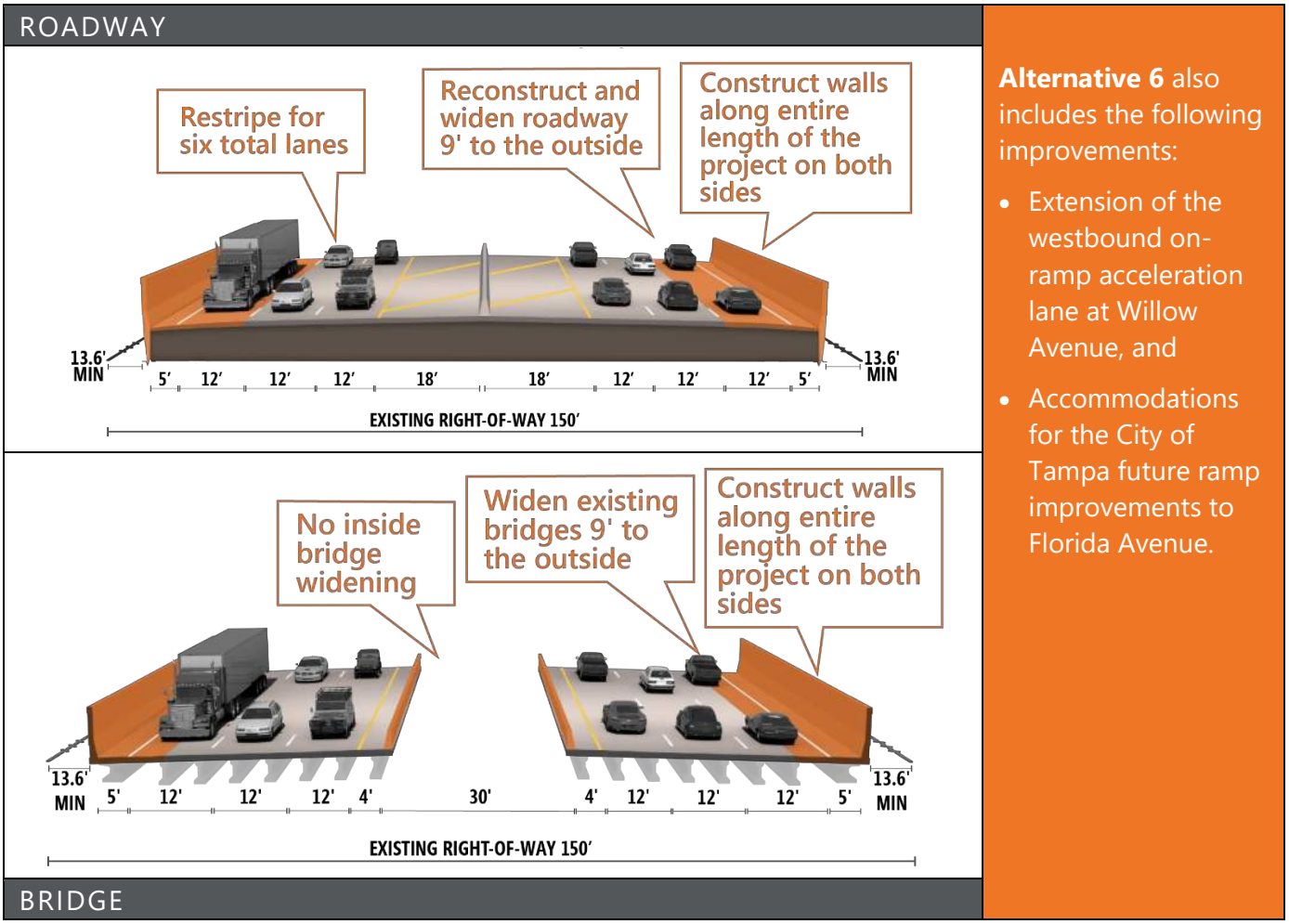
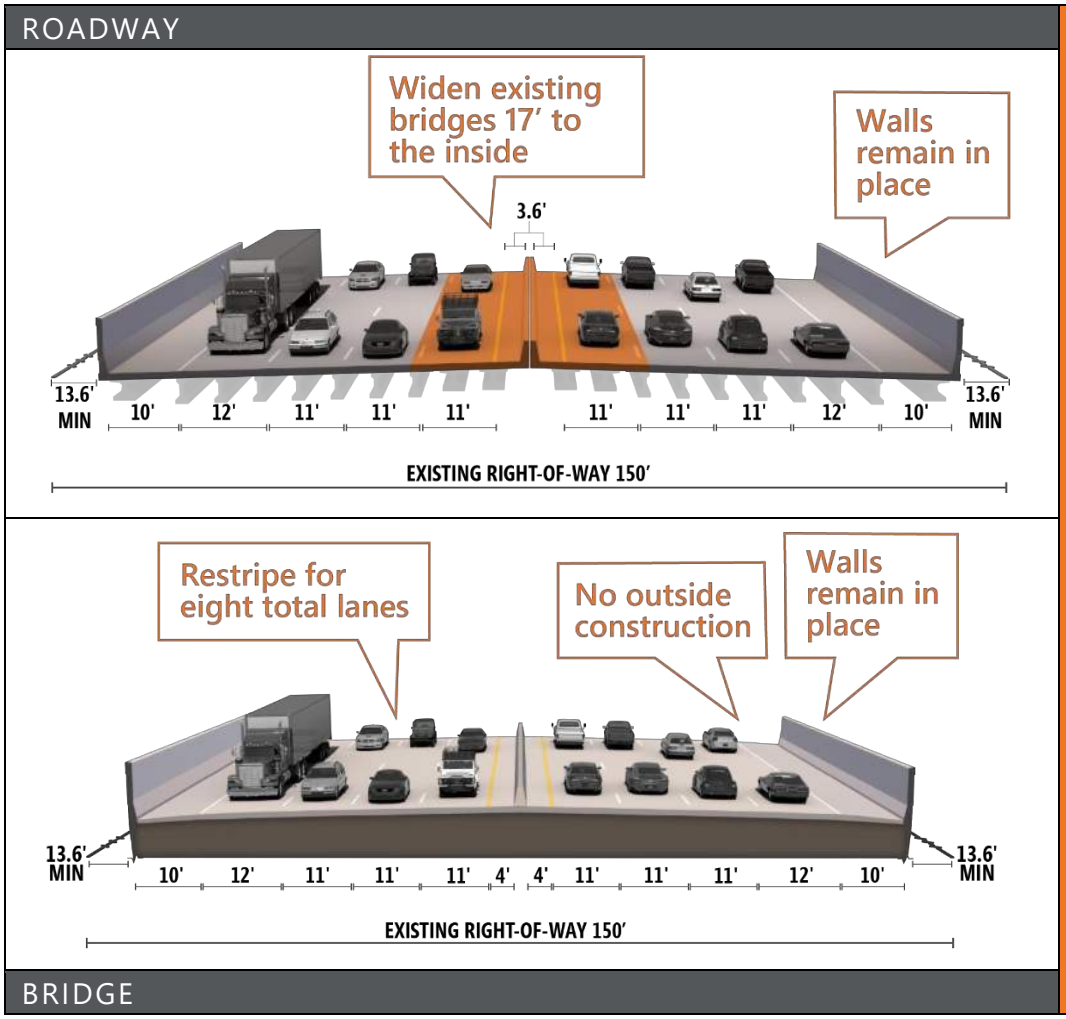


Figure 9: Alternative 6 – Ultimate Roadway and Bridge



Alternative 6 also includes the following improvements:

- Extension of the westbound on-ramp acceleration lane at Willow Avenue, and
- Accommodations for the City of Tampa future ramp improvements to Florida Avenue.

2.0 Design Requirements

All stormwater management facilities and drainage systems that result from any of the considered build alternatives must be designed to meet certain criteria and regulations. Governing drainage design criteria from agencies with jurisdiction of this area are the SWFWMD and FDEP. In addition, the design will comply with the FDOT design standards.

The various SWFWMD regulations regarding drainage design are separated into three categories: water quality, water quantity and floodplain mitigation design requirements. **Table 3** summarizes these design requirements. A SWFWMD pre-application meeting was held on 9/30/2020 to identify the stormwater management requirements for the project. Key design criteria are summarized below. See meeting minutes in **Appendix E**.

2.1 Water Quality

Two separate water quality requirements affect this project. These criteria are referred to as the presumptive water quality treatment requirement and the net nutrient improvement requirement. The SWFWMD presumptive requirement states that either 0.5 or 1.0 inch of runoff, for dry retention or wet detention ponds, respectively, must be stored and treated from any added impervious area. This treatment volume is required for each project basin, but compensatory treatment is possible due to the entire project draining to the same ultimate outfall (Hillsborough Bay). In addition, equivalent treatment provided in existing SMFs shall be replaced if impacted or eliminated by the roadway improvements.

Dry retention or wet detention ponds treatment volume must be able to recover within a prescribed time. For dry retention facilities, the treatment volume shall recover via percolation within 72 hours, with only the volume available after 36 hours counted for water quantity storage volumes. For wet detention facilities, no more than one-half of the treatment volume shall recover within the first 60 hours via a bleeder device and the entire treatment volume shall be discharged in no less than 120 hours. Side slopes must be no steeper than a 1V:4H slope, unless a fence is provided for public safety. The pond peak stages must be designed for the 25-year, 24-hour design storm event.

Additionally, no net increase in nutrient loading (e.g. nitrogen and phosphorus) is required by the SWFWMD and the Florida Department of Environmental Protection (FDEP) for nutrient-impaired basins. The project lies within the FDEP Water Body Identification numbers (WBID) 1640, 1609, 1443E and 1548A1 as shown on the FDEP WBID map provided in **Appendix A**. These basins drain to Old Tampa Bay designated as WBID 1558E and 15842A2. Review of the FDEP 2019 Final Verified Lists for Group 1 Basins only shows only WBID 1584A1 as the only impaired basin for fecal coliforms. However, based on the SWFWMD pre-application meeting the District considers WBID 1640-Direct Runoff to Tampa Bay impaired for nutrients and demonstration of no net increase in nitrogen and phosphorus is required.

This approach requires current and proposed nutrient loadings, specifically total nitrogen and phosphorus, to be estimated. A net reduction in nutrient loading must be shown using appropriate methods, such as the BMP Trains water quality modeling software. This approach is independent of the presumptive water quality requirement, but the treatment capacity of any stormwater management facilities, or other best management practices (BMPs), can be counted towards meeting both water quality requirements.

South Selmon Expressway Median Safety Improvement Project

The recent median safety improvements removed some treatment functions from the grassed median swales. To account for this loss, the analysis assumed that these swales provided treatment for 0.25 inches of runoff over the pavement that contributed to these median swales. For impervious area that did not drain to these median swales, no formal water quality treatment was performed; however, there remains informal treatment from the ditches along either side of the expressway. Compensatory water quality treatment was estimated for this project within two stormwater management facilities labeled Pond 9 and 10 in the Willow Avenue interchange infields, both of which are within the Spanishtown Creek basin.

Since no water quality treatment was performed for most of the safety improvement project area, the additional pavement that was left untreated must be taken into account for this project due to added travel lanes.

2.2 Water Quantity

Of the various basins within the project limits, only the Brorein West and Brorein East basins drain directly in the Hillsborough River through THEA right-of-way. The remainder of the expressway runoff enters a storm sewer system owned by the City of Tampa before discharging into Hillsborough Bay. Attenuation of stormwater runoff is not required for outfalls that drain into tidally controlled water bodies, such as the Brorein basins. Since most of the expressway runoff first enters a separate storm sewer system, attenuation must be met to assure no downstream impacts occur.

Runoff from the expressway must be attenuated such that the post-development discharge rate is less than or equal to the discharge rate in the existing condition. The design storm event for this discharge rate is the 100-year, 24-hour storm event due to the existing flooding problem in the City systems. Also, SWFWMD requires that any historic storage, such as depressional areas with some volume of storage below the 100-year, 24-hour storm event, be replaced or mitigated. However, there are no depressional storage areas along the corridor as the existing ditches are conveyance or attenuation systems. Attenuation storage in the existing linear swales shall be replaced by the project.

Table 3: Drainage Design Criteria

Design Control	Value	Source
Presumptive Water Quality Treatment	Wet Detention: Treat 1" over Increase in Impervious Area Dry Retention: Treat 0.5" over Increase in Impervious Area	SWFWMD
Net Nutrient Improvement	Net reduction in nutrients must be met for discharges into impaired waters	SWFWMD/FDEP
Historic Basin Storage	Any existing storage capacity in existing depressional areas must be replaced or mitigated	SWFWMD
Discharge Attenuation	<25 year/24 hour Design Storm Peak Discharge Rate (cfs)	SWFWMD
Retention Pond Recovery	Dry Systems: Treatment volume shall be available within 72 hours; volume available within 36 hours can be counted for water quantity storage Wet Systems: Bleed ½ the treatment volume in 60 hours, all treatment volume in no less than 120 hours	SWFWMD
Side Slope Criteria	Retention and detention areas should have side slopes no steeper than 1:4 (V:H) unless protected or 2' below NWL	SWFWMD

2.3 Required Treatment & Attenuation Volumes

The following tables present the estimated treatment and attenuation volumes required for the construction of Alternative 2, which is the most critical alternative in terms of the pond sizing. Treatment volumes are estimated to meet the presumptive water quality criteria and impacts to the existing ditches as a result of the proposed roadway widening. These volumes are separated into:

- **Treatment volumes required due to increases in impervious area**
    - Example: outside widening of expressway
- **Treatment volumes required due to modifying existing impervious area from shoulder use to new travel lanes**
    - Example: re-striping inside shoulder to act as travel lane
    - Previous safety improvement project accounted for the attenuation of this added impervious area, but did not provide formal treatment

The required attenuation volumes are also separated into two categories:

- **Attenuation volumes required due to increases in impervious area**
- **SWM facilities that were impacted and must be replaced**

The total required volumes for the project are 1.33 acre-feet of required treatment and 6.40 acre-feet of required attenuation.

Table 4: Required Treatment and Attenuation Volumes for Alternative 2

Basin #	Basin Name	Treatment Volume Required due to Added Impervious Area (ac-ft.)	Treatment Volume from Replacing Paved Shoulder with Travel Lanes (ac-ft.)	Attenuation Volume Required due to Added Impervious Area (ac-ft.)	Attenuation Storage Lost (ac-ft.)	Existing Pond Name
1	Gandy	0.09	0.01	0.77[3]	0.00	Pond 1
2	Euclid	0.14	0.06	1.32	0.00	-
3	Granada	0.08	0.09	0.00	0.00	-
4	Palma Ceia	0.16	0.17	1.18	0.00	-
5	Rome Ave. Outfall	0.07	0.07	0.45	0.00	Swann Pond
6	Spanishtown Creek	0.06	0.09	0.33	0.42[2]	Pond 9/10
7	Brorein West	0.20	0.04	2.83[1]	0.39[1,2]	
-	Hillsborough Bridge	0.03	0.00	0.00	0.00	
8	Brorein East	0.12	0.00	0.00	0.00	
9	Meridian R.R	0.03	0.00	0.02	0.00	
	Subtotals:	0.98	0.53	3.31[1]	0.81	
	Totals:	**1.79[2]**		**4.12[2]**		

[1]*Discharges directly to Hillsborough Bay; Attenuation Volume not included in total*

[2]*Includes volumes of existing Ponds 9 and 10 from South Selmon Safety Improvement project*

[3]*ICPR model of ponds show no impact due to additional runoff; no additional attenuation storage required*

2.4 Floodplain Impacts / Mitigation

Nearly all of the project falls within FEMA's Zone X, which is outside the 100-year floodplain. A small portion of the bridge over the Hillsborough River is within Zone AE, which has a 100-year floodplain elevation of 10 feet (NAVD). However, the bridge and approach sections of the Expressway are well above the floodplain elevation and no impacts to the floodplain are expected for any of the widening alternatives. FEMA information references Community Number 120114, FIRM Panels 0342H, 0344H, 0353H, 0354H, and 0361H, effective August 2008. A FEMA FIRMette is provided in **Appendix A**.

Preliminary FEMA information is also available within this corridor. These preliminary maps show similar flooding extents along the Selmon Expressway. At the bridge over the Hillsborough River, the Zone AE floodplain elevation is set at 11 or 12 feet (NAVD), for the west and east sides, respectively. Additionally, a new 500-year floodplain is shown surrounding the Selmon Expressway and Dale Mabry Highway interchange but does not encroach upon the travel lanes.

2.5 Net Nutrient Improvement

According to the Tampa Bay Estuary Program's (TBEP) Reasonable Assurance Plan, Tampa Bay is to be considered an impaired waterbody. SWFWMD has agreed to enforce this decision beginning in 2009 and requires all projects that discharge into the Tampa Bay demonstrate no increase in total nutrient loads resulting from the construction of the project. Therefore, this 'net nutrient improvement' criteria must be demonstrated for the future widening of the Expressway.

To demonstrate a net improvement in nutrient loading, a BMP Trains (2020 Version) model was created. A Net Improvement analysis was performed to determine the annual loadings from the existing condition and the proposed condition of the Selmon Expressway. The stormwater management facilities that are currently proposed to meet the presumptive treatment and attenuation criteria were also added to the proposed condition model to determine what nutrient reduction they provide. The results of this analysis are presented in **Table 5**. With the current proposed stormwater management facilities, net nutrient improvement is met across the project limits.

Table 5: Estimated Nutrient Loading due to Proposed Improvements

Nutrient	Existing Condition Loading (kg/yr)	Proposed Condition Loading (kg/yr)	Proposed Condition Loading with Pond Treatment (kg/yr)
Total Nitrogen	394.0	465.3	393.9
Total Phosphorus	51.1	60.8	48.7

3.0 Proposed Drainage Conditions

It is the intent of the Expressway Authority to avoid the purchase of additional right-of-way for the purpose of stormwater management, if possible. Therefore, the stormwater management approaches considered in this section aim to make use of all available right-of-way within each basin to provide the required treatment and attenuation volumes. Should it become necessary to purchase additional right-of-way for stormwater management, three alternatives are considered for each basin. Since the build Alternative 2 was used in estimating required treatment and attenuation volumes, it is assumed that should another build alternative be chosen, the alternative's stormwater management needs could be met with an equivalent or lesser set of pond sites.

Alternative stormwater management approaches were evaluated to demonstrate no right-of-way need for each basin. Compensatory treatment was evaluated where traditional stormwater management approaches were not possible. Additionally, basin divides were changed in some areas to meet attenuation requirements in basins that did not have enough available storage. An overview of the proposed stormwater management facilities is presented in **Table 6**.

3.1 Stormwater Management

The following subsections provide an outline of the stormwater management approach used to meet treatment and attenuation requirements for the project. **Table 6** provides a summary of the required and provided treatment and attenuation volumes required for each basin.

3.1.1 Gandy

The southernmost basin within the project limits drains south into existing ponds that were modified with the Selmon West Extension project. Build Alternative 2 proposes minor widening associated with the proposed roadway widening transition to the existing roadway. These improvements within this basin require a treatment volume of 0.10 ac-ft. and a required attenuation volume of 0.77 ac-ft. It is noted that the South Selmon Expressway Median Safety Improvement project did not add impervious area in the median and no additional treatment needs to be provided for this basin.

According to the existing permit #11759, there is 4.39 ac-ft. of surplus treatment volume within the existing Ponds 1 and 2, which can accommodate the Gandy basin treatment requirements (see permit documentation in **Appendix F**). In addition, these two ponds, named regional stormwater ponds, provide a nutrient removal surplus of 350 kg/yr. and 88.82 kg/yr. that greatly exceeds the added nutrients generated by the minor widening.

An ICPR3 model, which was created for the design of the Selmon West Extension project, was modified to determine if the added pavement from this project would negatively impact the ponds. The proposed condition model from the Selmon West Extension project was used as the existing condition model for this analysis, with the new proposed condition including the additional impervious area. Results of this analysis included in **Appendix H** show a maximum increase in peak stage, across all nodes, of 0.01 feet. This increase is considered negligible and the existing ponds are determined to be large enough to handle the increase in runoff.

3.1.2 Euclid

The proposed condition Euclid basin extends between Sta. 99+50 to 130+05. It is noted that the proposed northern limits of the basin have been shifted 242 feet to the north to divert runoff from the adjacent Granada basin to the Euclid basin. Runoff diversion is proposed due to the available infield area of the Euclid interchange with sufficient capacity to accommodate the Granada treatment and attenuation. Construction of Alternative 2 requires 0.20 ac-ft. of treatment volume and 1.32 ac-ft. of attenuation volume in the extended basin limits.

There is enough available open space within the existing right-of-way for five separate stormwater management facilities of various sizes as shown in **Appendix C**. All five ponds are preliminarily sized as wet ponds. The southern three ponds are in areas with underlying Myakka-Urban land complex soil and shallow seasonal high groundwater tables (SHGWT). The northern two pond site SHGWT is greater than 60" deep per the USDA, but a four foot depth is estimated for the normal water elevation.. The design maximizes the storage volume in the interchange infield. Pond EC-2 configuration is based on the construction of an MSE wall along the northbound shoulder with a 10 ft berm. To optimize the storage use of the northwest infield Pond EC-3, a jack and bore pipe under the railroad is assumed to interconnect the two ponds. Overall, these proposed ponds provide 0.26 ac-ft. of treatment volume and 1.34 ac-ft. of attenuation volume, which satisfies the requirements for the basin. Roadway runoff will be conveyed to the proposed ponds primarily with storm sewer pipes.

It is noted that a pond is not proposed on the THEA-owned parcel adjacent to the southbound exit ramp (see Euclid drainage map in **Appendix B**) due to the difficulty of conveying Selmon Expressway runoff to the pond as the expressway runoff would have to cross both the railroad and the southbound off ramp.

3.1.3 Granada

The Granada basin in the proposed condition extends from approximately Sta. 130+05 to Sta. 163+90. Because there is no open space within the basin to meet the stormwater requirements with traditional approaches, the proposed limits of the basin have been reduced by diverting runoff from 0.86 acres to the Euclid basin to the south. The construction of Alternative 2 requires 0.17 ac-ft. of treatment volume and no need for attenuation volume, as the diversion results in no increase in impervious area in the basin. Compensatory treatment will be considered to meet the required treatment volume for the basin. No stormwater management facilities are proposed for the basin.

3.1.4 Palma Ceia

The Palma Ceia basin extends between approximately station 163+90 and station 217+55. The construction of Alternative 2 requires 0.33 ac-ft. of treatment volume and 1.18 ac-ft. of attenuation volume. There is enough available space within the existing right-of-way for two small stormwater management ponds, which provide a total of 0.08 ac-ft. of treatment volume and 0.05 ac.-ft. of attenuation volume. Compensatory treatment can be used to satisfy the remaining 0.25 ac-ft. of required treatment volume, but currently there is a need for additional attenuation volume within the basin that can't be met within the THEA-owned right-of-way. Three options were considered for handling this attenuation volume and are discussed in Section 3.2.

3.1.5 Rome Ave.

The Rome Avenue basin extends between approximately station 217+55 and station 244+04. The construction of Alternative 2 requires 0.14 ac-ft. of treatment volume and 0.45 ac-ft. of attenuation volume. There are two wet existing detention ponds that receive runoff from the expressway in this basin: the S. Albany Pond and the Swann Avenue pond.

The stormwater management approach for this basin is to send an equivalent amount of pavement to the existing S. Albany Pond that currently drains there and to expand the Swann Avenue pond to account for the increase in runoff within the basin. The expansion of the Swann Avenue pond can provide 0.22 ac-ft. of treatment volume and 0.49 ac-ft. of attenuation volume. The minor lack of treatment volume will be compensated for at different ponds within the project limits.

3.1.6 Spanishtown Creek

Spanishtown Creek basin extends station 244+04 to station 507+50 on the east-west alignment of the expressway. The basin has one existing dry retention pond that was constructed in the southwest infield of the Willow Avenue interchange as part of the South Selmon Expressway Median Safety Improvements project. The construction of Alternative 2 requires 0.15 ac-ft. of treatment volume and 0.33 ac-ft. of attenuation volume. There is significant area within the Willow Avenue interchange area

for the expansion of the existing pond. The expansion of this pond provides a treatment volume of 0.19 ac-ft. and an attenuation volume of 0.83 ac-ft. To maximize storage and limit pond flood stages the pond is proposed to be converted to a wet pond. Roadway runoff is expected to be conveyed to these ponds primarily through storm sewer pipes.

3.1.7 Brorein West

The Brorein West basin extends between stations 507+50 to the bridge over the Hillsborough River around station 551+50. The construction of Alternative 2 requires 0.43 ac-ft. of treatment volume and 2.83 ac-ft. of attenuation volume. The existing Pond 10 within the interchange east of Willow Avenue is proposed to be converted to a wet pond and expanded (Pond BW-1). Additionally, there is enough available right-of-way on the south side of the basin for two separate stormwater management facilities (Ponds BW-2 and BW-3). In total, these stormwater management improvements provide 1.07 ac-ft. of treatment volume and 4.09 ac-ft. of attenuation volume. Some of the excess treatment volume will be used for other basins within the project limits.

The storm sewer system that drains runoff from this basin discharges directly into the opening of the Hillsborough River, which means attenuation is not required. However, excess attenuation volume is provided in the ponds to assure no downstream impacts occur within the storm sewer system. As an alternative, these ponds could be reduced if parts of the storm sewer system are enlarged to accommodate the increase in runoff rate.

3.1.8 Brorein East

The Brorein East basin extends past the bridge of the Hillsborough River to approximately station 572+50 in downtown Tampa. The construction of Alternative 2 requires 0.12 ac-ft of treatment volume. No attenuation volume is required for this basin, since any widening of the Expressway is done over existing impervious area on the lower street level, and both areas drain into the same storm sewer system. Compensatory treatment can be used for the small amount of required treatment volume in this basin.

3.1.9 Meridian

The Meridian basin extends past station 572+50 to the end of the project limits in downtown Tampa. The construction of Alternative 2 requires 0.03 ac-ft. of treatment volume and 0.02 ac-ft of attenuation volume. Although the basin is heavily urbanized, a small stormwater management facility is proposed on a small parcel of right-of-way, and this pond provides for 0.04 ac-ft. of treatment volume and 0.05 ac-ft. of attenuation volume, which meets the criteria for this basin.

Table 6: Provided Treatment and Attenuation Volumes in Ponds

Basin	Pond Name	Treatment Volume Required (ac-ft)	Treatment Volume Provided (ac-ft)	Attenuation Volume Required (ac-ft)	Attenuation Volume Provided (ac-ft)
Gandy	Pond 1 (existing pond)	0.10[1]	0.10[1]	0.77[2]	0.77[2]
Euclid	Pond EC - 1	0.21	0.04	1.33	0.15
	Pond EC - 2		0.09		0.44
	Pond EC - 3		0.09		0.40
	Pond EC - 4		0.02		0.19
	Pond EC - 5		0.02		0.16
Granada	-	0.17	-	0.00	-
Palma Ceia	W Mississippi Ave - South Pond	0.33	0.04	1.18	0.02
	Mississippi Ave - North Pond		0.04		0.03
	Stormwater Management Alternative (See Section 3.2)		-		1.34[3]
Rome Ave.	Swann Pond Expansion	0.25	0.22	0.45	0.49
Spanishtown Creek	Pond SC-1	0.35[6]	0.19	0.75	0.83
Brorein West	Pond BW-1	0.79[6]	1.08	2.83[4]	2.87
	Pond BW-2		0.37		0.53
	Pond BW-3		0.16		0.07
Hillsborough River Bridge	-	0.03	-	-	-
Brorein East	-	0.12	-	-	-
Meridian R.R.	Pond M-1	0.03	0.04	0.02	0.05
	Totals	***2.28***	***2.40***	***3.73 (7.33)[5]***	***7.57***

[1]Additional treatment volume available in existing Pond-1; no additional treatment volume required
[2]ICPR3 model results show negligible impact due to increase in runoff; no additional attenuation volume required
[3]Multiple alternatives available to account for increase in runoff from Palma Ceia basin; refer to Section 3.2. Option 2 attenuation volume is shown
[4]Outfall drains directly to Hillsborough Bay; no additional attenuation volume required, but excess is provided to prevent pipe surcharge
[5]Number in parenthesis includes attenuation volume that is not required from a regulatory perspective, such as that within the Brorein West and Gandy basins
[6]Includes twice the existing treatment volume of Pond 9 and Pond 10, due to proposed conversion from dry to wet ponds

3.2 Palma Ceia Pond Alternatives

Although ponds PC-1 and PC-2 can provide some storage within the existing right-of-way, they are insufficient to meet the requirements for the entire basin. Due to this lack of stormwater management sites, other options must be considered. Three alternatives have been considered to meet the lack of attenuation volume within the basin:

1. Adding a new outfall pipe, or expanding an existing outfall pipe, to the Hillsborough Bay
2. Providing underground storage within THEA-owned and/or City-owned right-of-way
3. Purchasing additional right-of-way for a conventional pond site

Of the three above options for this basin, only one would require additional right-of-way to be purchased. Each option offers a unique approach to attenuating the additional stormwater runoff within the Palma Ceia basin and there are multiple configurations for each. Each alternative is described below in depth. **Figure 10** provides a spatial overview of the three options. Cost estimates for the alternatives are presented in **Appendix J**.

3.2.1 Alternative 1: New Outfall

Currently two separate outfall pipes drain portions of the Expressway within the Palma Ceia basin: an 8'x4' concrete box culvert and a pair of 60" circular pipes. Both systems convey runoff southeast along Rubideaux Street and then through the Fred Ball Park before discharging into the Bay. These outfalls only travel approximately 1,000 feet between the Expressway and the Hillsborough Bay.

Per correspondence with the City of Tampa, these existing outfall pipes are at or above capacity and cannot accommodate additional impervious area. Recurring flooding occurs in the upper reaches of the basin, west and upstream of the Selmon Expressway. Therefore, a stormwater management alternative was considered that involves constructing an additional 36" pipe outfall along Rubideaux Street from the Expressway to the Hillsborough Bay to account for the increase in runoff. No attenuation would be required since the outfall is within tidal waters. Additionally, treatment for this basin could be compensated for in other ponds within the project limits. However, this outfall alignment location was dismissed due to tight right-of-way constraints and potential existing utility conflicts.

Two additional pipe outfall location alternatives were considered: one along Barcelona Street and one along the drainage easement which parallels the 54" outfall system for the Granada basin. Both outfall locations are shorter distances compared to Rubideaux Street. Barcelona Street has a 48-inch sanitary force main running along the south side that may limit any new storm sewer outfall construction. The location of this stormwater management alternative will be decided after further coordination with the City of Tampa. Cost estimates for this alternative are provided in **Appendix J**. Two pipe sizes were considered for cost estimating purposes: one with a minimum pipe size required for this project and one with a larger pipe size that would provide additional flooding improvement for the overall basin.

3.2.2 Alternative 2: Underground Storage within Right-of-Way

There is a significant lack of open space within the Expressway right-of-way in the Palma Ceia basins. Due to this, an underground stormwater detention system was considered to meet the required

attenuation volume for the basin. A preliminary design of an underground stormwater storage vault was created for the area underneath the Expressway southeast of the MacDill Avenue and W. Bay to Bay Boulevard. Due to expected high groundwater tables, the stormwater vault system is designed to function below the water table with DuroMaxx Steel Reinforced Polyethylene Pipe (SRPE) with water-tight joints. A preliminary pipe layout to provide the attenuation volume is presented in **Appendix C**, while pipe specifications and cost estimates are provided in **Appendix J**. The pipe network, comprised of 2,450 linear feet of 72" pipes, is configured to avoid the existing bridge foundations and comply with the FDOT pipe/wall zone requirements.

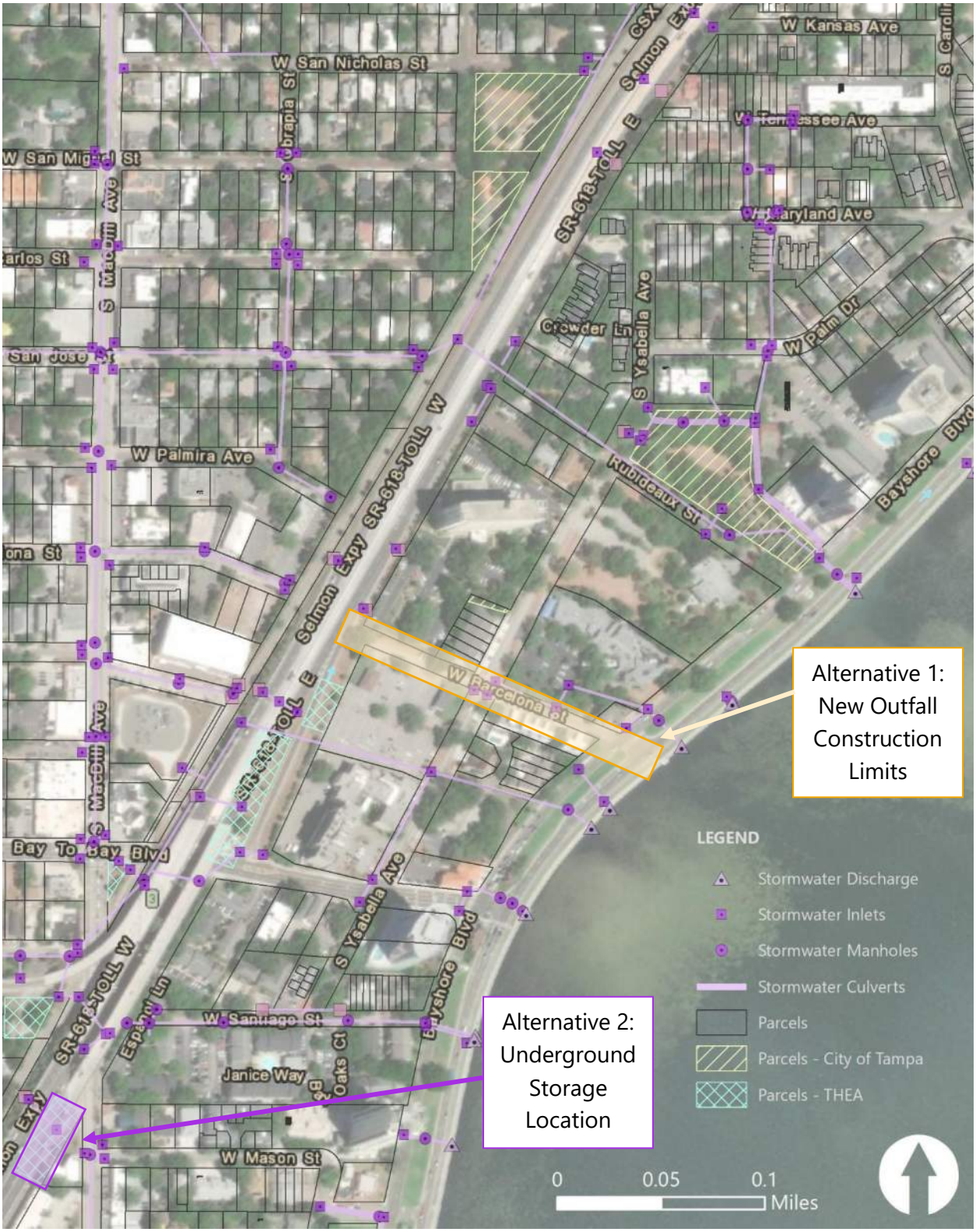
The preliminary design provides 1.54 ac-ft. of attenuation volume. The design intent involves over-attenuating runoff within the Granada basin in this vault system and sending additional pavement from the Palma Ceia basin to the 54" outfall pipe that services the Granada basin. To accomplish this, basin limits between the Granada and Palma Ceia basins would shift from Sta. 163+90 to 169+50. This shift in basin divides would send approximately 2.0 acres of pavement from the Palma Ceia basin to the Granada basin, which would offset any increase in pavement. Compensatory treatment would be used to account for the required treatment volume of the Palma Ceia basin.

3.2.3 Alternative 3: Conventional Pond Siting with New Right-of-Way

Finally, a conventional pond site was also considered as an alternative to meet stormwater management needs. This basin is highly urbanized and does not offer an ideal location for a pond. Additionally, right-of-way costs are especially high.

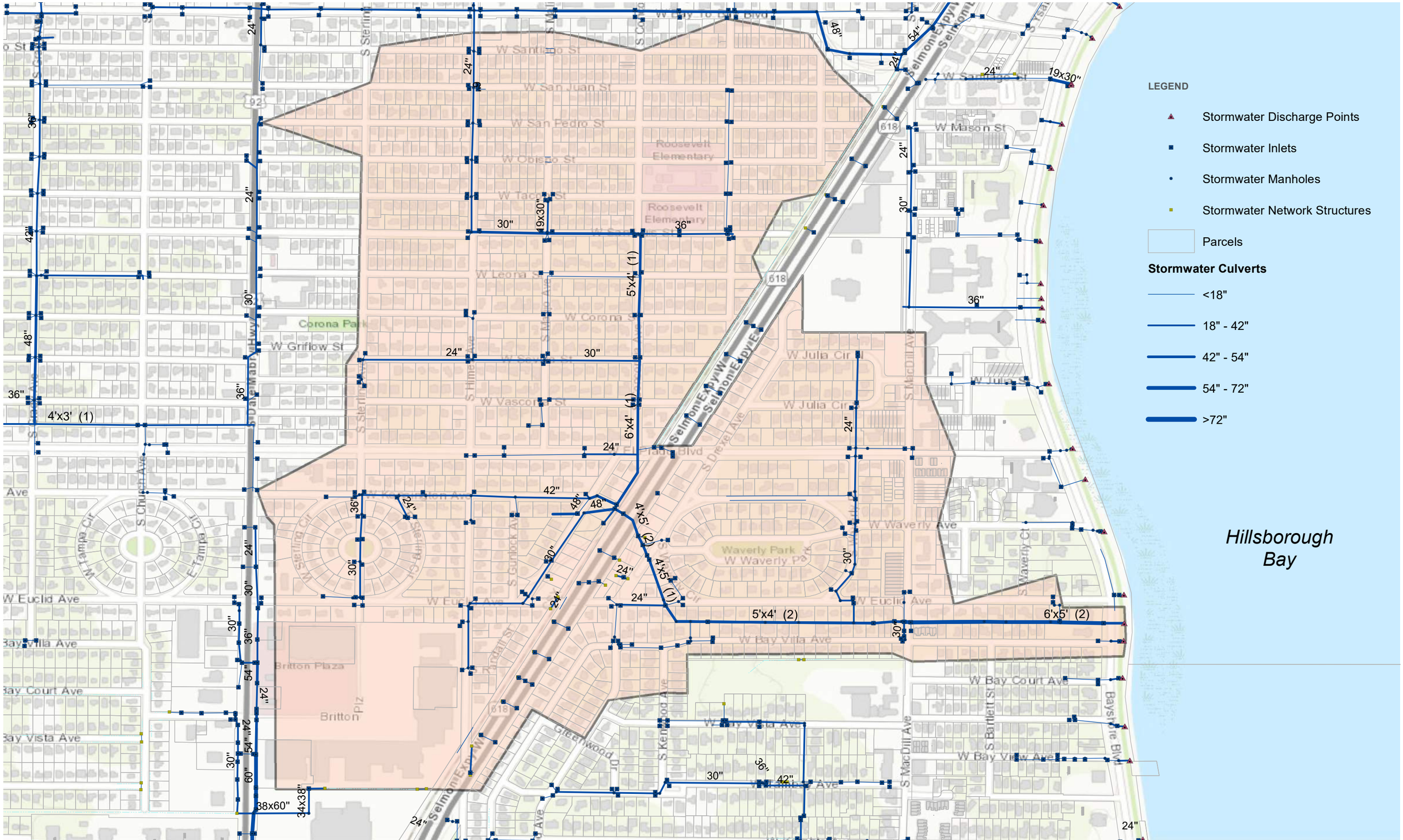
Preliminary calculations for the required treatment and attenuation volumes show that approximately 1.5 acres of land would need to be required for a conventional pond. Due to this size, it is not recommended to proceed with the conventional pond site alternative.

Figure 10: Palma Ceia Stormwater Management Options



Appendix A - Figures

Basin Overview Figures



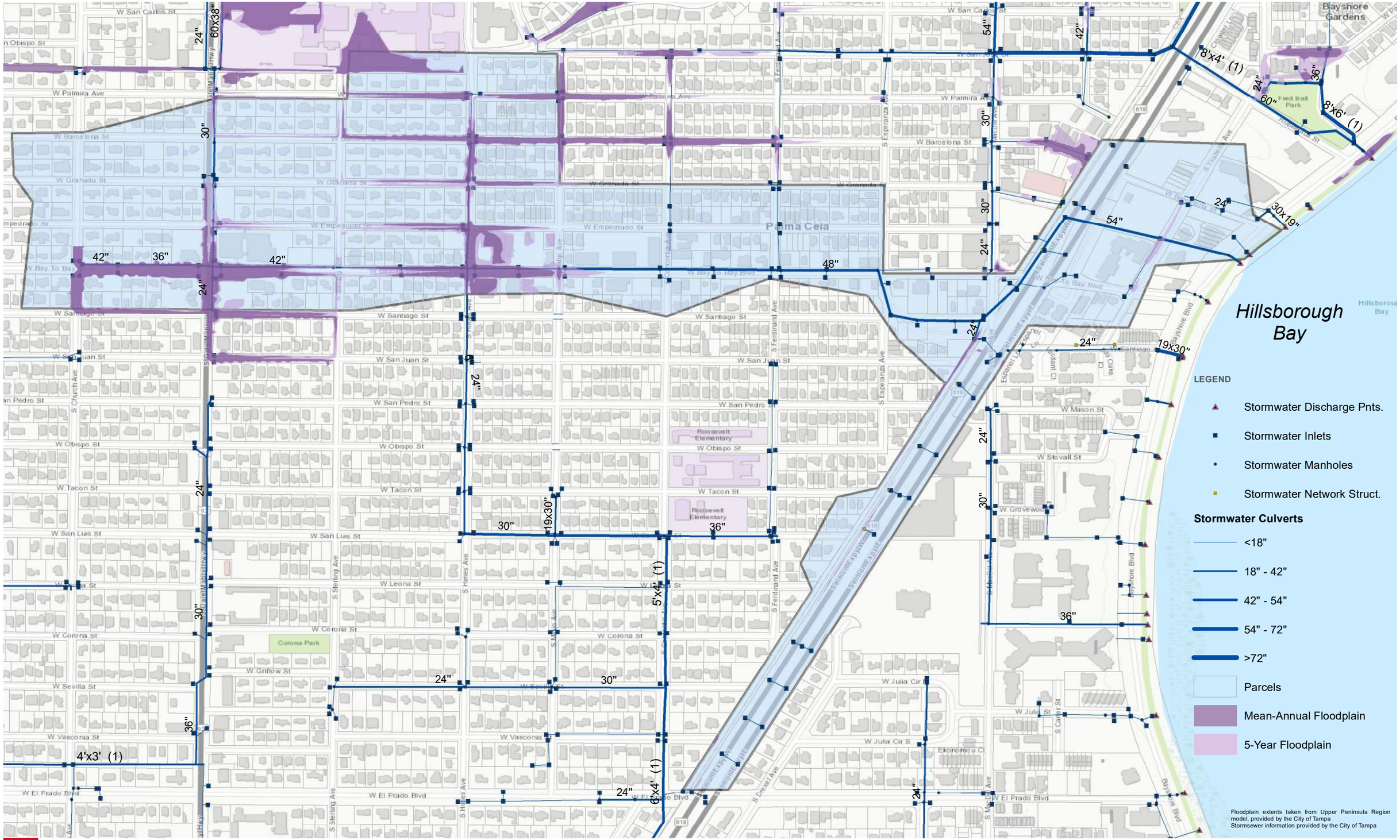
EUCLID BASIN DIAGRAM

BASIN FIGURE 1

TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY

0 Feet 520

PATH: H:\PROJECTS\THEA\SOUTH_SELMON_PDE_STUDY\MXD\3_ENGINEERING\EUCLID BASIN FIGURE.MXD - USER: ALMILLER - DATE: 10/22/2019



Floodplain extents taken from Upper Peninsula Region model, provided by the City of Tampa
Stormsewer information provided by the City of Tampa

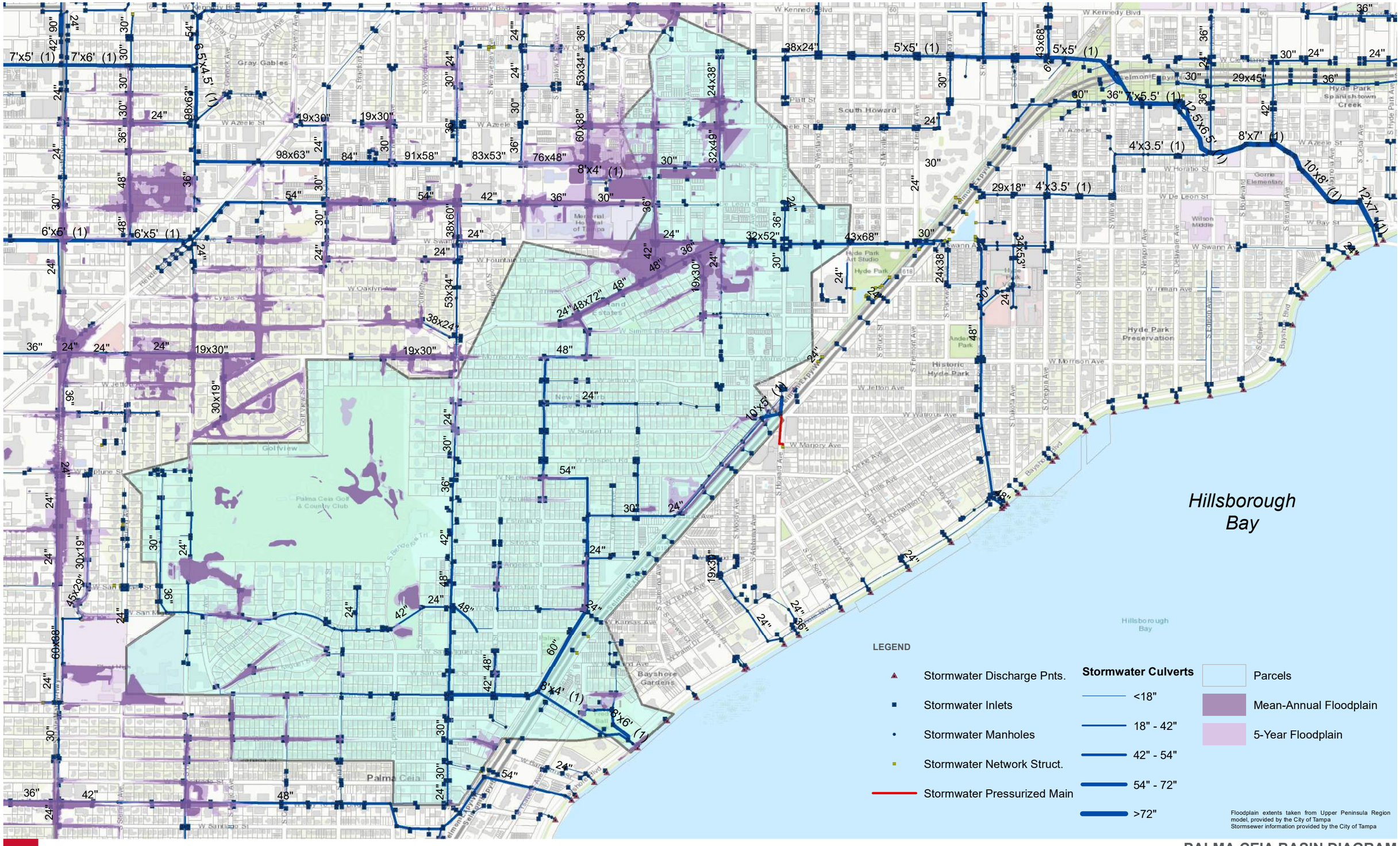
TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY

0 Feet 430

GRANADA BASIN DIAGRAM

BASIN FIGURE 2

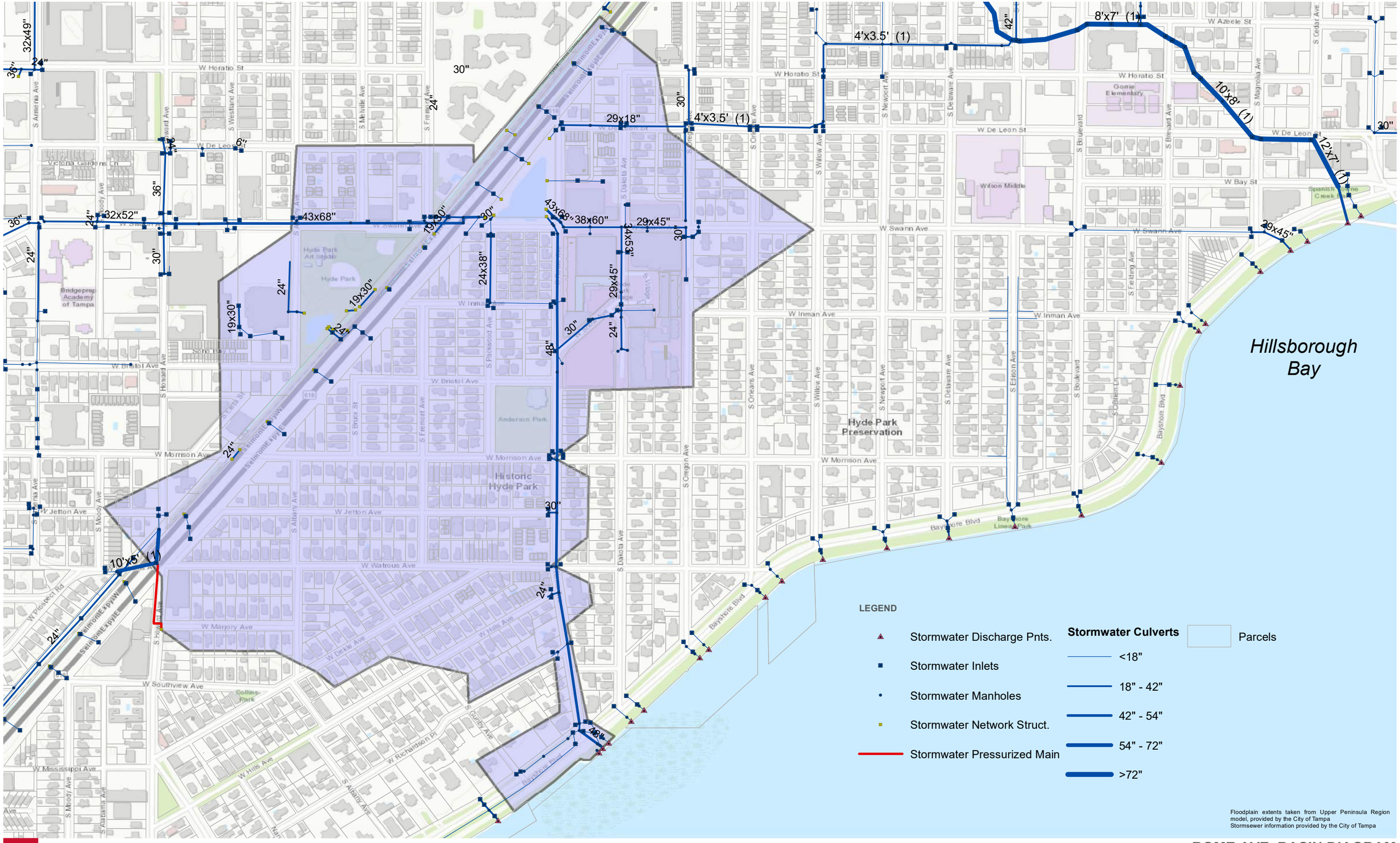
PATH: H:\PROJECTS\THEA\SOUTH_SELMON_PDE_STUDY\MXD\3_ENGINEERING\GRANADA BASIN FIGURE.MXD - USER: ALMILLER - DATE: 10/23/2019



PALMA CEIA BASIN DIAGRAM

BASIN FIGURE 3

PATH: H:\PROJECTS\THEA\SOUTH_SELMON_PDE_STUDY\MXD\3_ENGINEERING\PALMA CEIA BASIN FIGURE.MXD - USER: ALMILLER - DATE: 10/24/2019



LEGEND

- Stormwater Discharge Pnts.
- Stormwater Inlets
- Stormwater Manholes
- Stormwater Network Struct.
- Stormwater Pressurized Main

Stormwater Culverts

- <18"
- 18" - 42"
- 42" - 54"
- 54" - 72"
- >72"

Parcels

Floodplain extents taken from Upper Peninsula Region model, provided by the City of Tampa
Stormsewer information provided by the City of Tampa

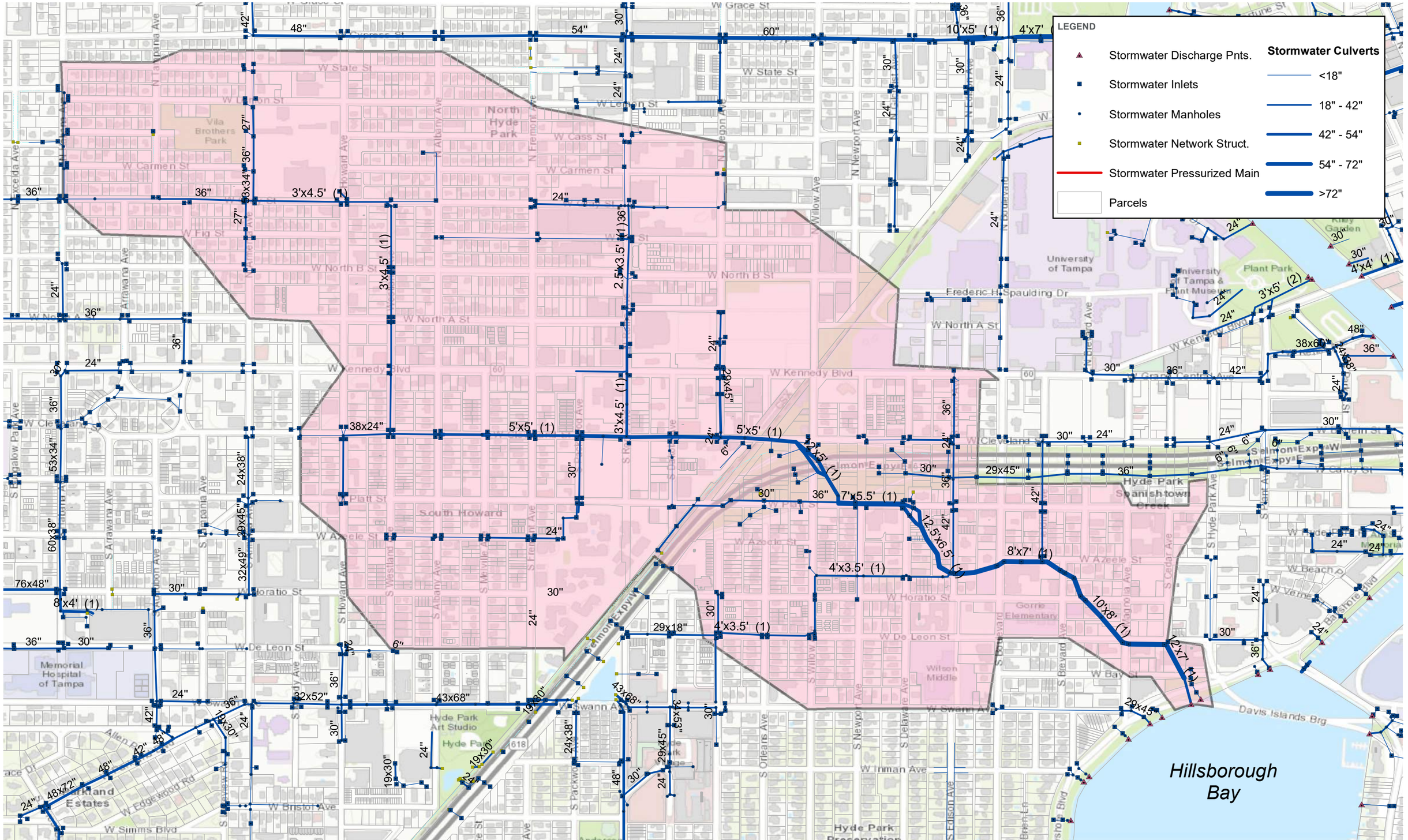
TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY

0 Feet 540

ROME AVE. BASIN DIAGRAM

BASIN FIGURE 4

PATH: H:\PROJECTS\THEA\SOUTH_SELMON_PDE_STUDY\MXD\3_ENGINEERING\ROME AVE BASIN FIGURE.MXD - USER: ALMILLER - DATE: 10/22/2019


LEGEND
Stormwater Discharge Pnts.
Stormwater Inlets
Stormwater Manholes
Stormwater Network Struct.
Stormwater Pressurized Main
Parcels
Stormwater Culverts
<18"
18" - 42"
42" - 54"
54" - 72"
>72"
W Grace St
W State St
W Lemon St
W Cass St
W Carmen St
W Fig St
W North B St
W North A St
W Kennedy Blvd
W Cleveland St
W Platt St
W Azeele St
W Horatio St
W De Leon St
W Bay St
W Swann Ave
W Inman Ave
W Beach
W Kennedy Blvd
Frederic H Spaulding Dr
W Grace Centre Ave
W Kennedy Blvd
Davis Islands Brg
Hillsborough Bay
North Hyde Park
South Howard
Hyde Park Spanishtown Creek
Hyde Park Art Studio
Hyde Park Preservation
Parkland Estates
Memorial Hospital of Tampa
University of Tampa
Plant Park
Gorrie Elementary
Wilson Middle
Vila Brothers Park
Selmon Expy
Selmon Expy E
Selmon Expy W
48"
54"
60"
10'x5' (1)
4'x7' (1)
3'x4.5' (1)
2.5'x3.5' (1)
3'x4.5' (1)
3'x4.5' (1)
5'x5' (1)
5'x5' (1)
10'x5' (1)
7'x5.5' (1)
4'x3.5' (1)
4'x3.5' (1)
12.5'x6.5' (1)
8'x7' (1)
10'x8' (1)
42'x7' (1)
4'x4' (1)
3'x5' (2)
38x60"
53x34"
60x38"
76x48"
8'x4' (1)
60x34"
38x24"
24x38"
29x45"
32x49"
32x52"
43x68"
48x72"
19x30"
29x18"
12'x30"
24x38"
29x45"
29x45"
29x45"
42x65"
24x38"
29x45"
29x45"
29x45

LEGEND

- Stormwater Discharge Pnts.
- Stormwater Inlets
- Stormwater Manholes
- Stormwater Network Struct.
- Stormwater Pressurized Main
- Parcels

Stormwater Culverts

- <18"
- 18" - 42"
- 42" - 54"
- 54" - 72"
- >72"

Brorein East Basin

Brorein West Basin

Hillsborough Bay

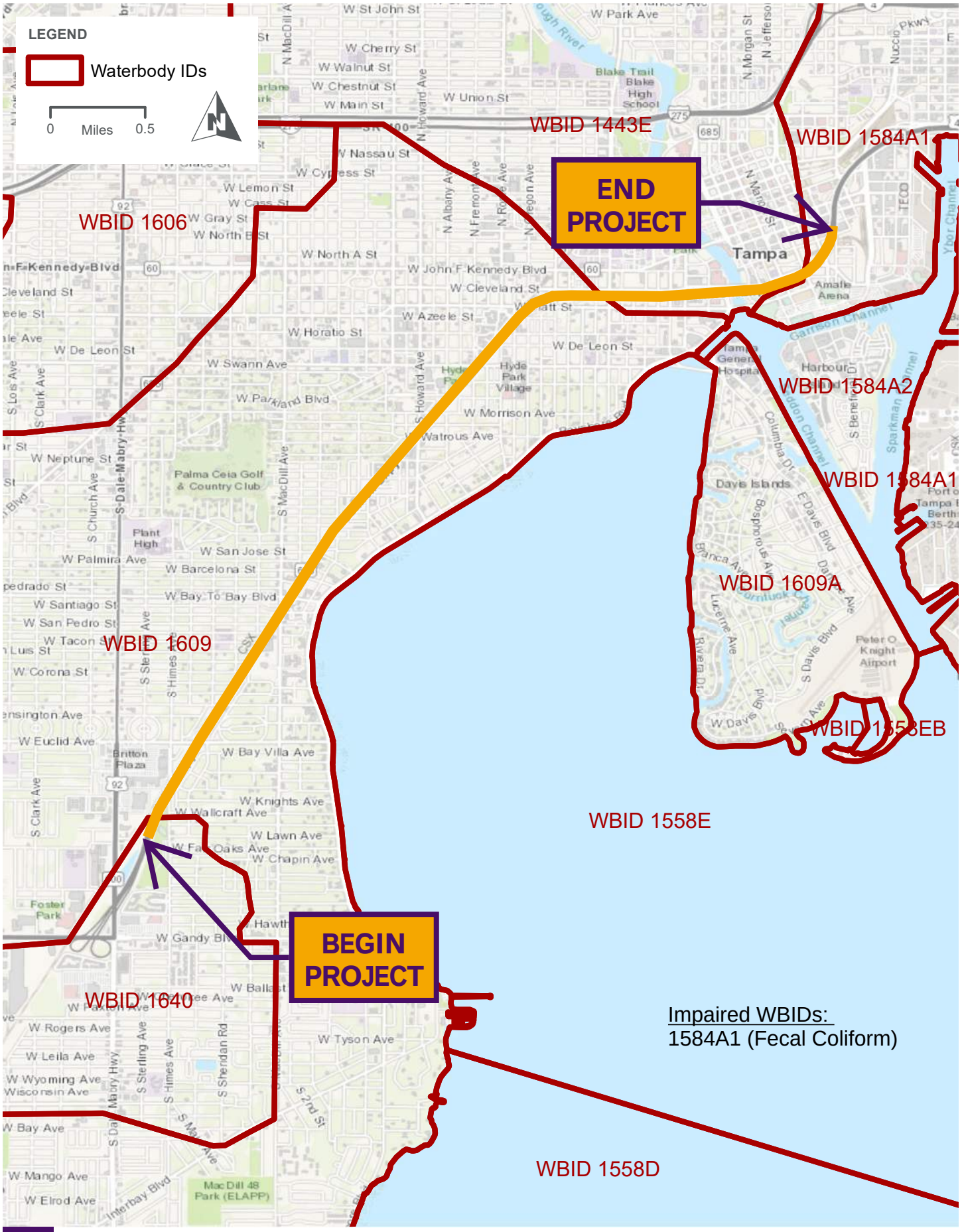
0 Feet 540

BROREIN WEST & BROREIN EAST BASINS DIAGRAM

BASIN FIGURE 6

PATH: H:\PROJECTS\THEA\SOUTH_SELMON_PDE_STUDY\MXD\3_ENGINEERING\BROREIN BASIN FIGURE.MXD - USER: ALMILLER - DATE: 10/22/2019

FDEP WBID Map



FDEP WBID MAP

Tampa Bay Group 1 Basin - Southwest District - Cycle 4 FINAL Verified List

OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0608	1463M	Little Lake Wilson	Lake	3F	Nutrients (Chlorophyll-a)		≤ 20 µg/L	NA	5	5	Impaired	Medium	AGM 2015 (31 µg/L)	AGM 2015 (30 µg/L) 2017 (22 µg/L) 2018 (29 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a high color lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0609	1464A	Black Lake	Lake	3F	Nutrients (Chlorophyll-a)		≤ 20 µg/L	NA	5	5	Impaired	Medium	AGM 2011 (64 µg/L) 2013 (40 µg/L) 2014 (35 µg/L)	AGM 2011 (64 µg/L) 2013 (40 µg/L) 2014 (35 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a high color lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0610	1464V	Lake Hiawatha	Lake	3F	Nutrients (Chlorophyll-a)		≤ 6 µg/L	NA	5	5	Impaired	Medium	AGM 2006 (3 µg/L) 2011 (20 µg/L) 2014 (7 µg/L) 2015 (9 µg/L)	AGM 2011 (20 µg/L) 2015 (12 µg/L) 2016 (12 µg/L) 2017 (9 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear acidic lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0611	1464V	Lake Hiawatha	Lake	3F	Nutrients (Total Nitrogen)		Chl-a AGM ≤ 6 µg/L, TN AGM ≤ 0.93 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 6 µg/L, TN AGM ≤ 0.51 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.69 mg/L) 2007 (0.63 mg/L) 2008 (0.64 mg/L) 2009 (0.57 mg/L) 2010 (0.62 mg/L) 2011 (0.79 mg/L) 2012 (0.59 mg/L) 2014 (0.61 mg/L) 2015 (0.71 mg/L)	AGM 2011 (0.78 mg/L) 2015 (0.71 mg/L) 2016 (0.71 mg/L) 2017 (0.62 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear acidic lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0612	1464V	Lake Hiawatha	Lake	3F	Nutrients (Total Phosphorus)		Chl-a AGM ≤ 6 µg/L, TP AGM ≤ 0.03 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 6 µg/L, TP AGM ≤ 0.01 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.02 mg/L) 2007 (0.02 mg/L) 2008 (0.02 mg/L) 2009 (0.02 mg/L) 2010 (0.02 mg/L) 2011 (0.02 mg/L) 2012 (0.02 mg/L) 2014 (0.02 mg/L) 2015 (0.03 mg/L)	AGM 2011 (0.02 mg/L) 2015 (0.03 mg/L) 2016 (0.03 mg/L) 2017 (0.03 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear acidic lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0613	1464W	Lake Ann (Parker)	Lake	3F	Biology	Nutrients	Average score of at least two temporally independent LVI scores ≥ 43; or either of the two most recent LVI scores ≥ 43; or if there are only two LVI scores and there is less than or equal to a 20 point difference.	NA	5	5	Impaired	Medium	LVI (n=2) WBID Mean (40) Mean 1 (36), Mean 2 (45)	LVI (n=2) WBID Mean (34) Mean 1 (33), Mean 2 (36)	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0614	1464W	Lake Ann (Parker)	Lake	3F	Nutrients (Chlorophyll-a)		≤ 6 µg/L	NA	5	5	Impaired	Medium	AGM 2006 (17 µg/L) 2015 (13 µg/L)	AGM 2015 (13 µg/L) 2016 (12 µg/L) 2017 (13 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear acidic lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0615	1464W	Lake Ann (Parker)	Lake	3F	Nutrients (Total Nitrogen)		Chl-a AGM ≤ 6 µg/L, TN AGM ≤ 0.93 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 6 µg/L, TN AGM ≤ 0.51 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.78 mg/L) 2015 (0.66 mg/L)	AGM 2015 (0.66 mg/L) 2016 (0.72 mg/L) 2017 (0.74 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear acidic lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.

Tampa Bay Group 1 Basin - Southwest District - Cycle 4 FINAL Verified List

OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0616	1464W	Lake Ann (Parker)	Lake	3F	Nutrients (Total Phosphorus)		Chl-a AGM ≤ 6 µg/L, TP AGM ≤ 0.03 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 6 µg/L, TP AGM ≤ 0.01 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.02 mg/L) 2015 (0.02 mg/L)	AGM 2015 (0.02 mg/L) 2016 (0.02 mg/L) 2017 (0.02 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear acidic lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0617	1473W	Lake Juanita	Lake	3F	Nutrients (Chlorophyll-a)		≤ 6 µg/L	NA	5	5	Impaired	Medium	AGM 2006 (1 µg/L) 2007 (5 µg/L) 2008 (8 µg/L) 2009 (5 µg/L) 2010 (3 µg/L) 2011 (6 µg/L) 2012 (8 µg/L) 2015 (24 µg/L)	AGM 2011 (6 µg/L) 2012 (8 µg/L) 2015 (24 µg/L) 2016 (15 µg/L) 2017 (8 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear acidic lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0618	1473W	Lake Juanita	Lake	3F	Nutrients (Total Nitrogen)		Chl-a AGM ≤ 6 µg/L, TN AGM ≤ 0.93 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 6 µg/L, TN AGM ≤ 0.51 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.89 mg/L) 2007 (1.03 mg/L) 2008 (0.92 mg/L) 2009 (0.82 mg/L) 2010 (0.65 mg/L) 2011 (0.78 mg/L) 2012 (0.72 mg/L) 2015 (0.91 mg/L)	AGM 2011 (0.78 mg/L) 2012 (0.62 mg/L) 2015 (0.91 mg/L) 2016 (0.95 mg/L) 2017 (0.87 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear acidic lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0619	1473W	Lake Juanita	Lake	3F	Nutrients (Total Phosphorus)		Chl-a AGM ≤ 6 µg/L, TP AGM ≤ 0.03 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 6 µg/L, TP AGM ≤ 0.01 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.01 mg/L) 2007 (0.01 mg/L) 2008 (0.01 mg/L) 2009 (0.01 mg/L) 2010 (0.01 mg/L) 2011 (0.01 mg/L) 2012 (0.01 mg/L) 2015 (0.03 mg/L)	AGM 2011 (0.01 mg/L) 2012 (0.01 mg/L) 2015 (0.03 mg/L) 2016 (0.02 mg/L) 2017 (0.02 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear acidic lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0620	1474A	Lake Wastena	Lake	3F	Biology	Nutrients	Average score of at least two temporally independent LVI scores ≥ 43; or either of the two most recent LVI scores ≥ 43; or if there are only two LVI scores and there is less than or equal to a 20 point difference.	NA	5	5	Impaired	Medium	LVI (n=1) WBID Mean (20) Mean 1 (20), Mean 2 (ND)	LVI (n=2) WBID Mean (24) Mean 1 (29), Mean 2 (20)	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0621	1474A	Lake Wastena	Lake	3F	Nutrients (Chlorophyll-a)		≤ 6 µg/L	NA	5	5	Impaired	Medium	AGM 2006 (1 µg/L) 2015 (13 µg/L)	AGM 2015 (13 µg/L) 2017 (19 µg/L) 2018 (14 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear acidic lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0622	1474A	Lake Wastena	Lake	3F	Nutrients (Total Nitrogen)		Chl-a AGM ≤ 6 µg/L, TN AGM ≤ 0.93 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 6 µg/L, TN AGM ≤ 0.51 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.73 mg/L) 2015 (0.84 mg/L)	AGM 2015 (0.84 mg/L) 2017 (1.05 mg/L) 2018 (0.97 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear acidic lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0623	1474A	Lake Wastena	Lake	3F	Nutrients (Total Phosphorus)		Chl-a AGM ≤ 6 µg/L, TP AGM ≤ 0.03 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 6 µg/L, TP AGM ≤ 0.01 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.01 mg/L) 2015 (0.02 mg/L)	AGM 2015 (0.02 mg/L) 2017 (0.03 mg/L) 2018 (0.03 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear acidic lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.

Tampa Bay Group 1 Basin - Southwest District - Cycle 4 FINAL Verified List

OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0624	1474W	Lake Dead Lady	Lake	3F	Nutrients (Chlorophyll-a)		≤ 20 µg/L	NA	5	5	Impaired	Medium	AGM 2006 (2 µg/L) 2011 (31 µg/L) 2013 (52 µg/L) 2014 (34 µg/L) 2015 (56 µg/L)	AGM 2011 (31 µg/L) 2015 (50 µg/L) 2016 (33 µg/L) 2017 (39 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a high color lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0625	1486A	Lake Tarpon	Lake	3F	Biology	Nutrients	Average score of at least two temporally independent LVI scores ≥ 43; or either of the two most recent LVI scores ≥ 43; or if there are only two LVI scores and there is less than or equal to a 20 point difference.	NA	5	5	Impaired	Medium	LVI (n=5) WBID Mean (39) Mean 1 (35), Mean 2 (37)	LVI (n=6) WBID Mean (37) Mean 1 (42), Mean 2 (35)	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. Pinellas County provided additional biological data used in this assessment.
19-0626	1486A	Lake Tarpon	Lake	3F	Nutrients (Chlorophyll-a)		≤ 20 µg/L	NA	5	5	Impaired	Medium	AGM 2006 (9 µg/L) 2007 (22 µg/L) 2008 (25 µg/L) 2009 (26 µg/L) 2010 (18 µg/L) 2011 (16 µg/L) 2012 (21 µg/L) 2013 (23 µg/L) 2014 (19 µg/L) 2015 (26 µg/L)	AGM 2011 (16 µg/L) 2012 (21 µg/L) 2013 (23 µg/L) 2014 (19 µg/L) 2015 (26 µg/L) 2016 (22 µg/L) 2017 (25 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a high color lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0627	1493D	Williams Lake	Lake	3F	Biology	Nutrients	Average score of at least two temporally independent LVI scores ≥ 43; or either of the two most recent LVI scores ≥ 43; or if there are only two LVI scores and there is less than or equal to a 20 point difference.	NA	5	5	Impaired	Medium	LVI (n=1) WBID Mean (19) Mean 1 (19), Mean 2 (ND)	LVI (n=3) WBID Mean (38) Mean 1 (48), Mean 2 (47)	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0628	1493D	Williams Lake	Lake	3F	Nutrients (Total Nitrogen)		Chl-a AGM ≤ 6 µg/L, TN AGM ≤ 0.93 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 6 µg/L, TN AGM ≤ 0.51 mg/L	NA	5	5	Impaired	Medium	AGM Insufficient Data	AGM 2016 (0.74 mg/L) 2017 (0.68 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear acidic lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0629	1498	Brushy Creek	Stream	3F	Escherichia coli		≤ 410 Counts / 100 mL	NA	5	5	Impaired	Low	No Data	5/8	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. Fewer than twenty samples can be used to identify a waterbody as impaired if there are at least five exceedances, per 62-303.390(2)(f) F.A.C. There is a DEP Adopted Fecal Coliform TMDL for this waterbody. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0630	1502C	Chapman Lake	Lake	3F	Nutrients (Chlorophyll-a)		≤ 20 µg/L	NA	5	5	Impaired	Medium	AGM 2011 (14 µg/L) 2015 (25 µg/L)	AGM 2011 (14 µg/L) 2015 (25 µg/L) 2016 (46 µg/L) 2017 (34 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a high color lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.

Tampa Bay Group 1 Basin - Southwest District - Cycle 4 FINAL Verified List

OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0631	1507A	Rocky Creek (Channel A)	Estuary	2	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	41/120	41/78	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using chemical tracer data and land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0632	1507A	Rocky Creek (Channel A)	Estuary	2	Fecal Coliform		≤ 43 MPN/100 mL	3a	5	5	Impaired	Medium	63/130	45/78	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0633	1507A	Rocky Creek (Channel A)	Estuary	2	Fecal Coliform (3)		≤ 14 MPN/100 mL	NA	5	5	Impaired	Medium	Planning List	Impaired	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. Station 21FLHILL102 (Channel A at SR 580 bridge) had a median value that exceeded the 14 counts/100 mL criterion with at least 20 samples in the verified period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0634	1513E	Double Branch (Freshwater Segment)	Stream	3F	Escherichia coli		≤ 410 Counts / 100 mL	NA	5	5	Impaired	High	No Data	13/14	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. Fewer than twenty samples can be used to identify a waterbody as impaired if there are at least five exceedances, per 62-303.390(2)(f) F.A.C. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0635	1513F	Double Branch (Estuarine Segment)	Estuary	2	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	Low	83/120	59/78	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. There is a DEP Adopted Fecal Coliform TMDL for this waterbody. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0636	1529	Cow Branch	Stream	3F	Escherichia coli		≤ 410 Counts / 100 mL	NA	5	5	Impaired	High	3/5	13/20	This waterbody is impaired for this parameter based on the number of exceedances for the sample size This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. Data that were available in FL STORET as Escherichia were manually added to the assessment because they were not available in the IWR Run 56 database.
19-0637	1530A	Moccasin Creek	Lake	3F	Nutrients (Chlorophyll-a)		≤ 20 µg/L	NA	5	5	Impaired	Medium	AGM 2009 (65 µg/L) 2010 (54 µg/L) 2011 (64 µg/L) 2013 (59 µg/L)	AGM 2011 (64 µg/L) 2013 (59 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. There are insufficient data to determine the long-term geometric mean color and alkalinity yet the annual geometric mean chlorophyll-a exceeds the applicable criterion for a colored lake. This parameter is being added to the Verified List per 62-303.450(4) F.A.C. and the department is requesting EPA add it to the 303(d) List.

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OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0638	1530A	Moccasin Creek	Lake	3F	Nutrients (Total Nitrogen)		Chl-a AGM ≤ 20 µg/L, TN AGM ≤ 2.23 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TN AGM ≤ 1.27 mg/L	NA	5	5	Impaired	Medium	AGM 2009 (1.50 mg/L) 2010 (1.34 mg/L) 2011 (1.55 mg/L) 2013 (1.63 mg/L)	AGM 2011 (1.55 mg/L) 2013 (1.63 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. There are insufficient data to determine the long-term geometric mean color and alkalinity yet the annual geometric mean chlorophyll-a exceeds the applicable criterion for a colored lake. This parameter is being added to the Verified List per 62-303.450(4) F.A.C. and the department is requesting EPA add it to the 303(d) List.
19-0639	1530A	Moccasin Creek	Lake	3F	Nutrients (Total Phosphorus)		Chl-a AGM ≤ 20 µg/L, TP AGM ≤ 0.16 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TP AGM ≤ 0.05 mg/L	NA	5	5	Impaired	Medium	AGM 2009 (0.11 mg/L) 2010 (0.17 mg/L) 2011 (0.17 mg/L) 2013 (0.14 mg/L)	AGM 2011 (0.17 mg/L) 2013 (0.14 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. There are insufficient data to determine the long-term geometric mean color and alkalinity yet the annual geometric mean chlorophyll-a exceeds the applicable criterion for a colored lake. This parameter is being added to the Verified List per 62-303.450(4) F.A.C. and the department is requesting EPA add it to the 303(d) List.
19-0640	1536E	Palm River	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	65/324	59/231	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0641	1541C	Briar Creek	Stream	3F	Biology	Nutrients	Average score of at least two temporally independent SCI scores ≥ 40; or either of the two most recent SCI scores ≥ 35; or if there are only two SCI scores and there is less than or equal to a 20 point difference.	NA	5	5	Impaired	Medium	SCI (n=1) WBID Mean (36) Mean 1 (36), Mean 2 (ND)	SCI (n=4) WBID Mean (32) Mean 1 (34), Mean 2 (28)	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. A stressor identification evaluation identified that best management practices would help to reduce stormwater runoff and lower anthropogenic sources of high conductivity. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. Pinellas County provided additional biological data used in this assessment.
19-0642	1541C	Briar Creek	Stream	3F	Escherichia coli		≤ 410 Counts / 100 mL	NA	5	5	Impaired	High	3/5	11/20	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. Data that were available in FL STORET as Escherichia were manually added to the assessment because they were not available in the IWR Run 56 database. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0643	1541C	Briar Creek	Stream	3F	Nutrients (Total Phosphorus)		AGM ≤ 0.12 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.16 mg/L) 2007 (0.18 mg/L) 2008 (0.24 mg/L) 2009 (0.20 mg/L) 2010 (0.19 mg/L) 2011 (0.24 mg/L) 2012 (0.18 mg/L) 2013 (0.22 mg/L) 2014 (0.17 mg/L) 2015 (0.15 mg/L)	AGM 2011 (0.24 mg/L) 2012 (0.18 mg/L) 2013 (0.22 mg/L) 2014 (0.17 mg/L) 2015 (0.15 mg/L) 2016 (0.16 mg/L) 2017 (0.18 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period, and there is biological evidence indicating non-attainment of the designated use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.

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OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0644	1558CB	E G Simmons Park	Beach	3M	Bacteria (Beach Advisories)		< 21 days of beach advisories	2	5	5	Impaired	High	Beach Advisories 2006 (0 days) 2007 (0 days) 2008 (0 days) 2009 (13 days) 2010 (0 days) 2011 (0 days) 2012 (14 days) 2013 (0 days) 2014 (43 days) 2015 (68 days)	Beach Advisories 2011 (0 days) 2012 (14 days) 2013 (0 days) 2014 (43 days) 2015 (68 days) 2016 (80 days) 2017 (75 days)	This waterbody is impaired for this parameter because there were 21 days or more of beach advisories in the verified period. This is a beach WBID, which are assessed solely on beach advisory information received from DOH.^ This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0645	1558CC	Bahia Beach	Beach	3M	Bacteria (Beach Advisories)		< 21 days of beach advisories	2	5	5	Impaired	High	Beach Advisories 2006 (5 days) 2007 (0 days) 2008 (0 days) 2009 (0 days) 2010 (0 days) 2011 (6 days) 2012 (19 days) 2013 (7 days) 2014 (0 days) 2015 (32 days)	Beach Advisories 2011 (6 days) 2012 (19 days) 2013 (7 days) 2014 (0 days) 2015 (32 days) 2016 (28 days) 2017 (29 days)	This waterbody is impaired for this parameter because there were 21 days or more of beach advisories in the verified period. This is a beach WBID, which are assessed solely on beach advisory information received from DOH.^ This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0646	1558EB	Davis Island Beach	Beach	3M	Bacteria (Beach Advisories)		< 21 days of beach advisories	2	5	5	Impaired	High	Beach Advisories 2006 (5 days) 2007 (0 days) 2008 (6 days) 2009 (0 days) 2010 (0 days) 2011 (0 days) 2012 (27 days) 2013 (14 days) 2014 (21 days) 2015 (37 days)	Beach Advisories 2011 (0 days) 2012 (27 days) 2013 (14 days) 2014 (21 days) 2015 (37 days) 2016 (37 days) 2017 (68 days)	This waterbody is impaired for this parameter because there were 21 days or more of beach advisories in the verified period. This is a beach WBID, which are assessed solely on beach advisory information received from DOH.^ This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0647	1558HC	Ben T Davis (South)	Beach	3M	Bacteria (Beach Advisories)		< 21 days of beach advisories	2	5	5	Impaired	High	Beach Advisories 2006 (4 days) 2007 (20 days) 2008 (5 days) 2009 (0 days) 2010 (16 days) 2011 (28 days) 2012 (63 days) 2013 (57 days) 2014 (29 days) 2015 (0 days)	Beach Advisories 2011 (28 days) 2012 (63 days) 2013 (57 days) 2014 (29 days) 2015 (0 days) 2016 (0 days) 2017 (no advisory)	This waterbody is impaired for this parameter because there were 21 days or more of beach advisories in the verified period. This is a beach WBID, which are assessed solely on beach advisory information received from DOH.^ This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0648	1558HD	Cypress Point Park (North)	Beach	3M	Bacteria (Beach Advisories)		< 21 days of beach advisories	2	5	5	Impaired	High	Beach Advisories 2006 (5 days) 2007 (0 days) 2008 (0 days) 2009 (0 days) 2010 (0 days) 2011 (0 days) 2012 (28 days) 2013 (43 days) 2014 (22 days) 2015 (41 days)	Beach Advisories 2011 (0 days) 2012 (28 days) 2013 (43 days) 2014 (22 days) 2015 (41 days) 2016 (21 days) 2017 (25 days)	This waterbody is impaired for this parameter because there were 21 days or more of beach advisories in the verified period. This is a beach WBID, which are assessed solely on beach advisory information received from DOH.^ This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.

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OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0649	1558HE	Cypress Point Park (South)	Beach	3M	Bacteria (Beach Advisories)		< 21 days of beach advisories	2	5	5	Impaired	High	Beach Advisories 2006 (5 days) 2007 (0 days) 2008 (0 days) 2009 (0 days) 2010 (4 days) 2011 (0 days) 2012 (28 days) 2013 (49 days) 2014 (13 days) 2015 (0 days)	Beach Advisories 2011 (0 days) 2012 (28 days) 2013 (49 days) 2014 (13 days) 2015 (0 days) 2016 (0 days) 2017 (no advisory)	This waterbody is impaired for this parameter because there were 21 days or more of beach advisories in the verified period. This is a beach WBID, which are assessed solely on beach advisory information received from DOH.^ This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0650	1563	Rocky Creek (Lower Segment)	Estuary	2	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	Low	97/120	64/78	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. There is a DEP Adopted Fecal Coliform TMDL for this waterbody. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0651	1569	Bishop Creek (Tidal)	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	Low	No Data	9/11	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been confirmed using genetic marker and chemical tracer data. Fewer than twenty samples can be used to identify a waterbody as impaired if there are at least five exceedances, per 62-303.390(2)(f) F.A.C. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. There is a DEP Adopted Fecal Coliform TMDL for this waterbody. The department is requesting EPA add this parameter to the 303(d) List.
19-0652	1569A	Bishop Creek	Stream	3F	Biology	Nutrients	Average score of at least two temporally independent SCI scores ≥ 40; or either of the two most recent SCI scores ≥ 35; or if there are only two SCI scores and there is less than or equal to a 20 point difference.	NA	5	5	Impaired	Medium	SCI (n=2) WBID Mean (32) Mean 1 (27), Mean 2 (37)	SCI (n=4) WBID Mean (28) Mean 1 (20), Mean 2 (28)	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. A stressor identification evaluation identified that multiple water quality and hydrologic stressors contribute to the impairment. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. Pinellas County provided additional biological data used in this assessment.
19-0653	1569A	Bishop Creek	Stream	3F	Escherichia coli		≤ 410 Counts / 100 mL	NA	5	5	Impaired	Low	4/5	15/21	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. There is a DEP Adopted Fecal Coliform TMDL. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. Data that were available in FL STORET as Escherichia were manually added to the assessment because they were not available in the IWR Run 56 database. Station 21FLPDEM12-02 was excluded in this assessment because the station was reassigned to WBID 1569 based on updated coordinates.

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OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0654	1569A	Bishop Creek	Stream	3F	Nutrients (Macrophytes)		LVS C of C ≥ 2.5 and LVS FLEPPC ≤ 25%	NA	5	5	Impaired	Medium	02/25/2015: (less than 2 sq. m.) 12/04/2015: Avg CofC - 0.7, FLEPPC - 84% 12/15/2017: Avg CofC - 0.7, FLEPPC - 70% 03/30/2018: Avg CofC - 1.3, FLEPPC - 75%	02/25/2015: (less than 2 sq. m.) 12/04/2015: Avg CofC - 0.7, FLEPPC - 84% 12/15/2017: Avg CofC - 0.7, FLEPPC - 70% 03/30/2018: Avg CofC - 1.3, FLEPPC - 75%	This waterbody is impaired for this parameter based on failing linear vegetation surveys with a C of C score < 2.5 and FLEPPC percent coverage of > 25%. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. Pinellas County provided additional biological data used in this assessment.
19-0655	1569A	Bishop Creek	Stream	3F	Nutrients (Total Phosphorus)		AGM ≤ 0.12 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.12 mg/L) 2007 (0.10 mg/L) 2008 (0.13 mg/L) 2009 (0.11 mg/L) 2010 (0.16 mg/L) 2011 (0.13 mg/L) 2012 (0.11 mg/L) 2013 (0.13 mg/L) 2014 (0.12 mg/L) 2015 (0.13 mg/L)	AGM 2011 (0.13 mg/L) 2012 (0.11 mg/L) 2013 (0.13 mg/L) 2014 (0.12 mg/L) 2015 (0.13 mg/L) 2016 (0.14 mg/L) 2017 (0.15 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period, and there is biological evidence indicating non-attainment of the designated use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0656	1570	Henry Street Canal	Stream	3F	Escherichia coli		≤ 410 Counts / 100 mL	NA	5	5	Impaired	High	No Data	5/6	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. Fewer than twenty samples can be used to identify a waterbody as impaired if there are at least five exceedances, per 62-303.390(2)(f) F.A.C. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0657	1570A	Sweetwater Creek (Tidal Segment)	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	Low	102/120	71/78	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0658	1574A	Alligator Lake	Lake	3F	Biology	Nutrients	Average score of at least two temporally independent LVI scores ≥ 43; or either of the two most recent LVI scores ≥ 43; or if there are only two LVI scores and there is less than or equal to a 20 point difference.	NA	5	5	Impaired	Medium	LVI (n=2) WBID Mean (11) Mean 1 (16), Mean 2 (6)	LVI (n=3) WBID Mean (12) Mean 1 (11), Mean 2 (9)	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. Pinellas County provided additional biological data used in this assessment.
19-0659	1574A	Alligator Lake	Lake	3F	Nutrients (Total Phosphorus)		Chl-a AGM ≤ 20 µg/L, TP AGM ≤ 0.09 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TP AGM ≤ 0.03 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.13 mg/L) 2007 (0.13 mg/L) 2008 (0.14 mg/L) 2009 (0.13 mg/L) 2010 (0.12 mg/L) 2011 (0.15 mg/L) 2012 (0.09 mg/L) 2013 (0.12 mg/L) 2014 (0.12 mg/L) 2015 (0.11 mg/L)	AGM 2011 (0.15 mg/L) 2012 (0.09 mg/L) 2013 (0.12 mg/L) 2014 (0.12 mg/L) 2015 (0.13 mg/L) 2016 (0.13 mg/L) 2017 (0.16 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear alkaline lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.

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OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0660	1575A	Mullet Creek	Stream	3F	Biology	Nutrients	Average score of at least two temporally independent SCI scores ≥ 40; or either of the two most recent SCI scores ≥ 35; or if there are only two SCI scores and there is less than or equal to a 20 point difference.	NA	5	5	Impaired	Medium	SCI (n=2) WBID Mean (29) Mean 1 (24), Mean 2 (34)	SCI (n=4) WBID Mean (25) Mean 1 (18), Mean 2 (23)	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. A stressor identification evaluation identified that multiple water quality and hydrologic stressors contribute to the impairment. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. Pinellas County provided additional biological data used in this assessment.
19-0661	1575A	Mullet Creek	Stream	3F	Dissolved Oxygen (Percent Saturation)	Nutrients	≥ 38 %	4d	5	5	Impaired	Medium	15/73	13/52	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and nutrients have been identified as the causative pollutant. Samples used in this analysis were assessed against a time of day adjustment as described in 62-303.420(9), F.A.C. This parameter is being added to the Verified List and will remain on the 303(d) List.
19-0662	1575A	Mullet Creek	Stream	3F	Nutrients (Total Phosphorus)		AGM ≤ 0.12 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.12 mg/L) 2007 (0.11 mg/L) 2008 (0.15 mg/L) 2009 (0.13 mg/L) 2010 (0.13 mg/L) 2011 (0.16 mg/L) 2012 (0.12 mg/L) 2013 (0.14 mg/L) 2014 (0.12 mg/L) 2015 (0.15 mg/L)	AGM 2011 (0.16 mg/L) 2012 (0.12 mg/L) 2013 (0.14 mg/L) 2014 (0.12 mg/L) 2015 (0.15 mg/L) 2016 (0.15 mg/L) 2017 (0.13 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period, and there is biological evidence indicating non-attainment of the designated use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0663	1576A	Mango Lake	Lake	3F	Biology	Nutrients	Average score of at least two temporally independent LVI scores ≥ 43; or either of the two most recent LVI scores ≥ 43; or if there are only two LVI scores and there is less than or equal to a 20 point difference.	NA	5	5	Impaired	Medium	LVI (n=2) WBID Mean (12) Mean 1 (7), Mean 2 (17)	LVI (n=3) WBID Mean (12) Mean 1 (14), Mean 2 (14)	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. USF Water Institute provided additional biological data used in this assessment.
19-0664	1576A	Mango Lake	Lake	3F	Nutrients (Chlorophyll-a)		≤ 20 µg/L	NA	5	5	Impaired	Medium	AGM 2012 (100 µg/L) 2013 (105 µg/L) 2014 (114 µg/L) 2015 (80 µg/L)	AGM 2013 (99 µg/L) 2014 (135 µg/L) 2015 (74 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a high color lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0665	1576A	Mango Lake	Lake	3F	Nutrients (Total Phosphorus)		Chl-a AGM ≤ 20 µg/L, TP AGM ≤ 0.16 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TP AGM ≤ 0.05 mg/L	NA	5	5	Impaired	Medium	AGM 2010 (0.17 mg/L) 2011 (0.20 mg/L) 2012 (0.18 mg/L) 2013 (0.17 mg/L) 2014 (0.18 mg/L) 2015 (0.15 mg/L)	AGM 2013 (0.18 mg/L) 2014 (0.22 mg/L) 2015 (0.13 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a high color lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0666	1577A	Pepper Mound Creek	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	30/31	22/22	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been confirmed. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.

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OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0667	1584A1	Ybor City Drain	Estuary	3M	Fecal Coliform		≤ 400 Counts / 100 mL	NA	5	5	Impaired	Low	16/22	No Data	This waterbody is potentially impaired for this parameter based on data in the planning period. The previous impairment in the retired WBID 1584A is being carried over to WBID 1584A1; however, fecal coliform is no longer the applicable bacteria parameter for this waterbody classification. Enterococci will be included in the Strategic Monitoring Plan for this waterbody in order to collect the new applicable bacteria parameter. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0668	1587A	Woods Creek	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	34/35	22/22	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0669	1594	Fish Creek	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	21/38	15/26	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0670	1601A	Tampa Bay Channel	Estuary	2	Fecal Coliform		≤ 43 MPN/100 mL	NA	5	5	Impaired	Medium	14/118	12/77	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0671	1603	Direct Runoff to Bay	Estuary	2	Fecal Coliform		≤ 43 MPN/100 mL	3a	5	5	Impaired	Medium	22/24	22/24	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0672	1604	Allen Creek (Tidal)	Estuary	3M	Dissolved Oxygen (Percent Saturation)	Nutrients	≥ 42 %	4d	5	5	Impaired	Medium	15/79	10/54	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and nutrients have been identified as the causative pollutant. This parameter is being added to the Verified List and the department is requesting it remain on the 303(d) List.
19-0673	1604	Allen Creek (Tidal)	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	Low	35/78	18/53	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. There is a DEP Adopted Fecal Coliform TMDL for this waterbody. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0674	1604B1	Allen Creek	Stream	3F	Biology	Nutrients	Average score of at least two temporally independent SCI scores ≥ 40; or either of the two most recent SCI scores ≥ 35; or if there are only two SCI scores and there is less than or equal to a 20 point difference.	NA	5	5	Impaired	Medium	SCI (n=4) WBID Mean (34) Mean 1 (49), Mean 2 (25)	SCI (n=6) WBID Mean (34) Mean 1 (32), Mean 2 (33)	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. A stressor identification evaluation identified extensive anthropogenic development and extreme flow events contribute to the impairment. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. Pinellas County provided additional biological data used in this assessment.

Tampa Bay Group 1 Basin - Southwest District - Cycle 4 FINAL Verified List

OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0675	1604B1	Allen Creek	Stream	3F	Escherichia coli		≤ 410 Counts / 100 mL	NA	5	5	Impaired	High	7/12	8/17	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. Fewer than twenty samples can be used to identify a waterbody as impaired if there are at least five exceedances, per 62-303.390(2)(f) F.A.C. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0676	1604B1	Allen Creek	Stream	3F	Nutrients (Macrophytes)		LVS C of C ≥ 2.5 and LVS FLEPPC ≤ 25%	NA	5	5	Impaired	Medium	06/19/2014: Avg CofC - 0, FLEPPC - 96% 12/09/2014: (less than 2 sq. m.) 03/31/2015: Avg CofC - 0.4, FLEPPC - 64% 10/26/2015: Avg CofC - 0.5, FLEPPC - 87%	06/19/2014: Avg CofC - 0, FLEPPC - 96% 12/09/2014: (less than 2 sq. m.) 03/31/2015: Avg CofC - 0.4, FLEPPC - 64% 10/26/2015: Avg CofC - 0.5, FLEPPC - 87% 04/05/2017: Avg CofC - 1.3, FLEPPC - 67% 10/18/2017: Avg CofC - 1.0, FLEPPC - 76%	This waterbody is impaired for this parameter based on failing linear vegetation surveys with an average C of C score < 2.5 and FLEPPC percent coverage of > 25%. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. Pinellas County provided additional biological data used in this assessment.
19-0677	1604B1	Allen Creek	Stream	3F	Nutrients (Total Phosphorus)		AGM ≤ 0.12 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.16 mg/L) 2007 (0.16 mg/L) 2008 (0.18 mg/L) 2009 (0.19 mg/L) 2010 (0.14 mg/L) 2011 (0.16 mg/L) 2012 (0.16 mg/L) 2013 (0.16 mg/L) 2014 (0.14 mg/L) 2015 (0.14 mg/L)	AGM 2011 (0.16 mg/L) 2012 (0.16 mg/L) 2013 (0.16 mg/L) 2014 (0.14 mg/L) 2015 (0.14 mg/L) 2016 (0.17 mg/L) 2017 (0.21 mg/L) 2018 (0.24 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period, and there is biological evidence indicating non-attainment of the designated use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0678	1604B2	Allen Creek Canal	Stream	3F	Escherichia coli		≤ 410 Counts / 100 mL	NA	5	5	Impaired	High	3/5	14/21	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. Data that were available in FL STORET as Escherichia were manually added to the assessment because they were not available in the IWR Run 56 database. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0679	1605	Delaney Creek	Stream	3F	Nutrients (Macrophytes)		LVS C of C ≥ 2.5 and LVS FLEPPC ≤ 25%	NA	5	5	Impaired	Medium	No Data	03/23/2016: Avg CofC - 1.8, FLEPPC - 36% 05/12/2016: Avg CofC - 1.0, FLEPPC - 69% 05/16/2016: Avg CofC - 1.6, FLEPPC - 62% 10/03/2016: Avg CofC - 2.1, FLEPPC - 32%	This waterbody is impaired for this parameter based on failing linear vegetation surveys with an average C of C score < 2.5 and FLEPPC percent coverage of > 25%. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. USF Water Institute provided additional biological data used in this assessment.

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OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0680	1605D	Delaney Creek (Tidal)	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	111/116	72/76	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0681	1615	Drainage to McKay Bay	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	19/19	19/21	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0682	1625	Cross Canal (North)	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	Low	75/93	45/49	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. There is a DEP Adopted Fecal Coliform TMDL for this waterbody. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0683	1627B	Long Branch (Tidal)	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	46/47	36/38	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0684	1628A	Archie Creek (Tidal)	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	50/76	35/52	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0685	1632	Delaney Creek Popoff Canal	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	27/39	19/28	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been confirmed. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0686	1636	Port Sutton Ditch	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	35/35	25/25	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0687	1666	Bullfrog Creek	Stream	3F	Escherichia coli		≤ 410 Counts / 100 mL	NA	5	5	Impaired	Low	No Data	10/13	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been confirmed. Fewer than twenty samples can be used to identify a waterbody as impaired if there are at least five exceedances, per 62-303.390(2)(f) F.A.C. There is a DEP Adopted Fecal Coliform TMDL for this waterbody. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.

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OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0688	1666A	Bullfrog Creek (Tidal Segment)	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	Low	95/118	60/75	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been confirmed. There is a DEP Adopted Fecal Coliform TMDL for this waterbody. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0689	1676	The Kitchen	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	37/37	26/26	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0690	1682	Kitchen Branch	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	25/38	19/26	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0691	1683	Smacks Bayou	Estuary	2	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	16/59	16/47	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0692	1683	Smacks Bayou	Estuary	2	Fecal Coliform		≤ 43 MPN/100 mL	3a	5	5	Impaired	Medium	40/69	30/44	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0693	1683	Smacks Bayou	Estuary	2	Fecal Coliform (3)		≤ 14 MPN/100 mL	NA	5	5	Impaired	Medium	Planning List	Impaired	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. Station 21FLCOSP32-03 (Smack's Bayou, 40th Avenue Northeast) had a median value that exceeded the 14 counts/100 mL criterion with at least 20 samples in the verified period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0694	1696	Booker Creek	Stream	3F	Escherichia coli		≤ 410 Counts / 100 mL	NA	5	5	Impaired	High	No Data	7/12	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been confirmed. Fewer than twenty samples can be used to identify a waterbody as impaired if there are at least five exceedances, per 62-303.390(2)(f) F.A.C. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0695	1700	Coffeepot Bayou	Estuary	2	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	21/59	21/47	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using chemical tracer data and land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0696	1700	Coffeepot Bayou	Estuary	2	Fecal Coliform		≤ 43 MPN/100 mL	3a	5	5	Impaired	Medium	30/82	24/47	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.

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OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0697	1700	Coffeepot Bayou	Estuary	2	Fecal Coliform (3)		≤ 14 MPN/100 mL	NA	5	5	Impaired	Medium	Planning List	Impaired	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. Station 21FLCOSP44-02 (Coffee Pot Bayou, Tidal) had a median value that exceeded the 14 counts/100 mL criterion with at least 20 samples in the verified period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0698	1700A	Crescent Lake	Lake	3F	Biology	Nutrients	Average score of at least two temporally independent LVI scores ≥ 43; or either of the two most recent LVI scores ≥ 43; or if there are only two LVI scores and there is less than or equal to a 20 point difference.	NA	5	5	Impaired	Medium	LVI (n=2) WBID Mean (14) Mean 1 (5), Mean 2 (24)	LVI (n=2) WBID Mean (10) Mean 1 (14), Mean 2 (5)	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0699	1700A	Crescent Lake	Lake	3F	Nutrients (Chlorophyll-a)		≤ 20 µg/L	NA	5	5	Impaired	Medium	AGM 2010 (37 µg/L) 2013 (53 µg/L) 2014 (32 µg/L) 2015 (41 µg/L)	AGM 2013 (42 µg/L) 2014 (36 µg/L) 2015 (38 µg/L) 2016 (27 µg/L) 2017 (16 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear alkaline lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0700	1700A	Crescent Lake	Lake	3F	Nutrients (Total Phosphorus)		Chl-a AGM ≤ 20 µg/L, TP AGM ≤ 0.09 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TP AGM ≤ 0.03 mg/L	NA	5	5	Impaired	Medium	AGM 2007 (0.11 mg/L) 2008 (0.14 mg/L) 2009 (0.17 mg/L) 2010 (0.12 mg/L) 2011 (0.13 mg/L) 2012 (0.15 mg/L) 2013 (0.10 mg/L) 2014 (0.11 mg/L) 2015 (0.08 mg/L)	AGM 2013 (0.07 mg/L) 2014 (0.09 mg/L) 2015 (0.07 mg/L) 2016 (0.09 mg/L) 2017 (0.05 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria for a clear alkaline lake more than once in a three year period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0701	1708	Newman Branch	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	31/35	22/24	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0702	1709D	Little Bayou - Basin Q	Stream	3F	Escherichia coli		≤ 410 Counts / 100 mL	NA	5	5	Impaired	High	No Data	6/18	This waterbody is impaired for this parameter based on the number of exceedances for the sample size This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. Additional data that were not available in the IWR Run 56 database but have been loaded into WIN were included in the assessment. This waterbody was incorrectly assessed as a marine (class 3M) waterbody but it is actually freshwater (class 3F). The class is being updated in the Impaired Waters Rule (IWR) database.

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OGC Case Number	WBID	Waterbody Name	Waterbody Type	Waterbody Class [1]	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Pollutant of Concern for Dissolved Oxygen/Biology Assessment	Criterion Concentration or Threshold Not Met	† Previous Cycle Summary Assessment Category [2]	† Cycle 4 Assessment Category [3]	† Integrated Report Category Summary Assessment	Summary Assessment Status	Priority for TMDL Development [4]	Planning Period Assessment Data [5]	Verified Period Assessment Data [5]	Comments
19-0703	1709D	Little Bayou - Basin Q	Stream	3F	Nutrients (Total Phosphorus)		AGM ≤ 0.12 mg/L	NA	5	5	Impaired	Medium	AGM 2006 (0.43 mg/L) 2008 (0.41 mg/L) 2009 (0.32 mg/L) 2010 (0.38 mg/L) 2011 (0.36 mg/L) 2012 (0.31 mg/L) 2013 (0.34 mg/L) 2014 (0.35 mg/L) 2015 (0.33 mg/L)	AGM 2011 (0.36 mg/L) 2012 (0.31 mg/L) 2013 (0.34 mg/L) 2014 (0.35 mg/L) 2015 (0.33 mg/L) 2016 (0.26 mg/L) 2017 (0.33 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period, and there is biological evidence indicating non-attainment of the designated use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List. This waterbody was incorrectly assessed as a marine (class 3M) waterbody but it is actually freshwater (class 3F). The class is being updated in the Impaired Waters Rule (IWR) database.
19-0704	1719	Symphony Isles	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	36/36	24/24	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0705	1725	Wolf Branch Cutoff Canal	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	24/25	14/21	This waterbody is impaired for this parameter based on the number of exceedances for the sample size This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0706	1778	Cockroach Bay	Estuary	2	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	60/117	55/84	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0707	1778	Cockroach Bay	Estuary	2	Fecal Coliform		≤ 43 MPN/100 mL	3a	5	5	Impaired	Medium	47/126	37/79	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0708	1778	Cockroach Bay	Estuary	2	Fecal Coliform (3)		≤ 14 MPN/100 mL	NA	5	5	Impaired	Medium	Planning List	Impaired	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. Station 21FLHILL136 (Cockroach Bay at HCC Study Center) had a median value that exceeded the 14 counts/100 mL criterion with at least 20 samples in the verified period. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0709	1789	Piney Point Creek	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	5/7	9/11	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been confirmed using genetic marker and chemical tracer data. Fewer than twenty samples can be used to identify a waterbody as impaired if there are at least five exceedances, per 62-303.390(2)(f) F.A.C. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.
19-0710	1797A	Terra Ceia Bay	Estuary	2	Iron		≤ 0.3 mg/L	NA	5	5	Impaired	Medium	7/10	7/11	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. Fewer than twenty samples can be used to identify a waterbody as impaired if there are at least five exceedances, per 62-303.390(2)(f) F.A.C. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.

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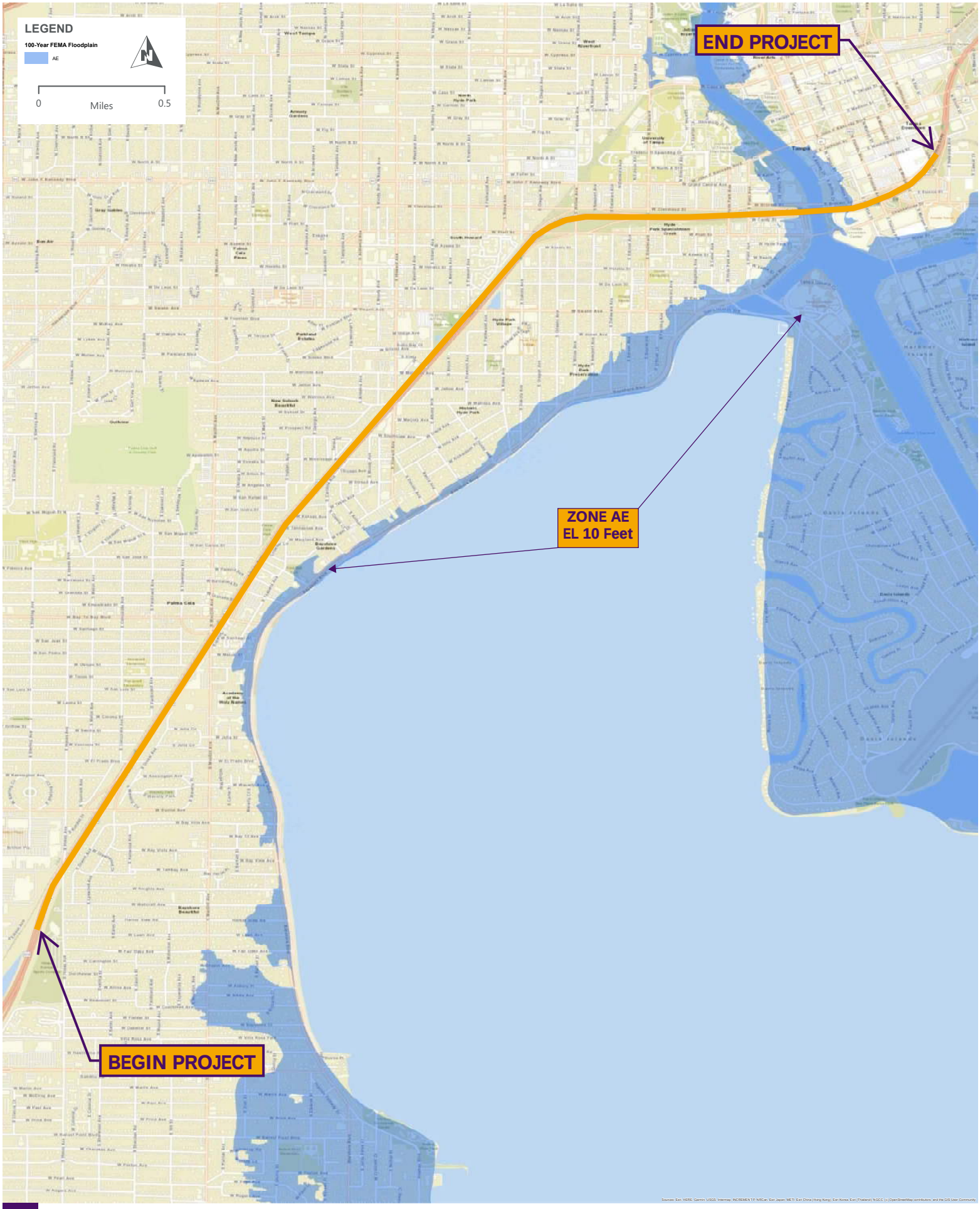
19-0711	1825A	Frog Creek (Tidal Segment)	Estuary	3M	Enterococci		≤ 130 Counts / 100 mL	NA	5	5	Impaired	High	19/28	24/40	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and anthropogenic sources have been identified using land use. This parameter is being added to the Verified List and the department is requesting EPA add it to the 303(d) List.

Effective FEMA Maps



100-YEAR FEMA FLOODPLAIN MAP

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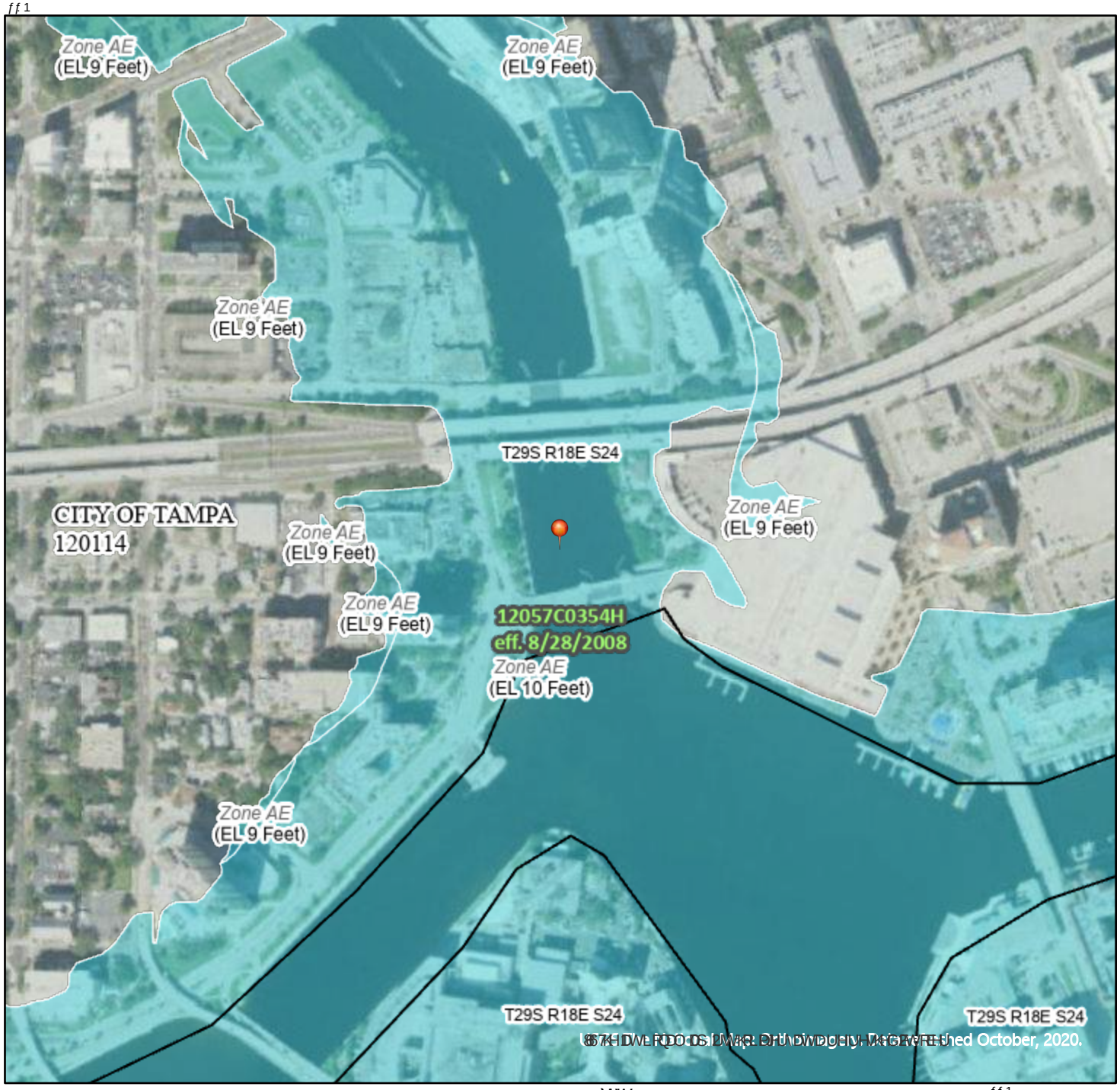

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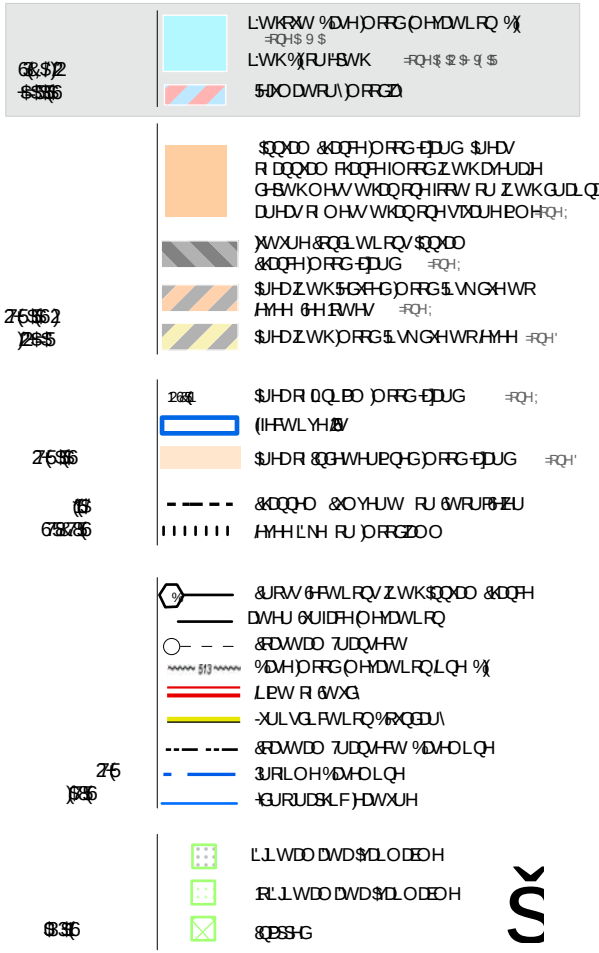

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NOTES TO USERS

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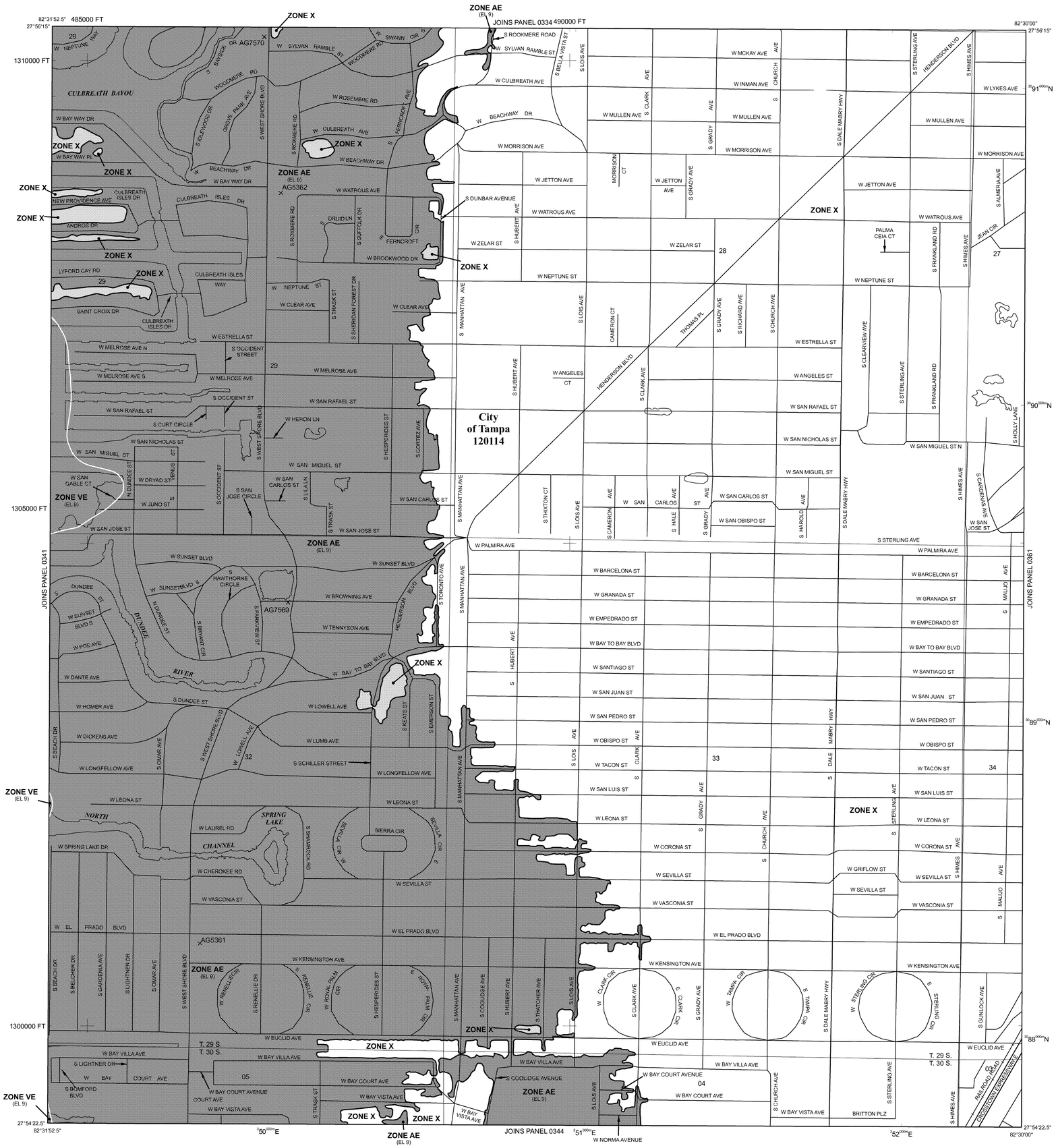
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RIVER
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SPRING LAKE
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S ROOKMERE ROAD
W SYLVAN RAMBLE ST
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W BEACHWAY DR
W MORRISON AVE
W JETTON AVE
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LEGEND

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

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

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

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

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

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet* / Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A: Cross section Line
- 23 — 23: Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 3°76'000mN — 1000-meter Universal Transverse Mercator grid values, zone NAD 83 UTM Zone 17
- 600000 FT — 5000-foot grid ticks: Florida State Plane coordinate system, West zone (FIPSZONE 0902), Transverse Mercator projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile
- 410285 — Junction

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

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

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

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

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0344H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 344 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
TAMPA, CITY OF	120114	0344	H

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

MAP NUMBER
12057C0344H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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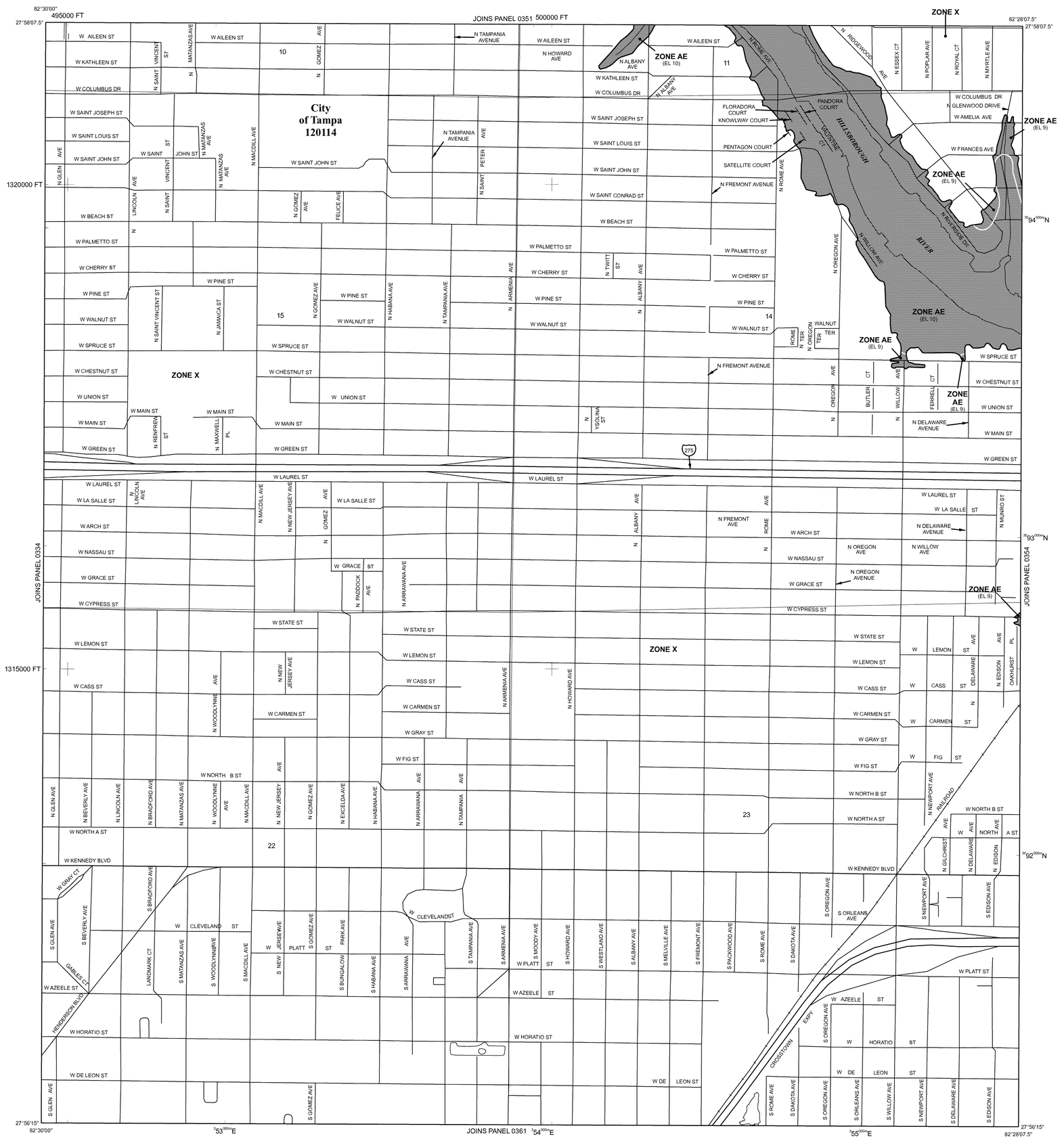
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30°93'000"N
30°92'000"N
JOINS PANEL 0354
JOINS PANEL 0334
JOINS PANEL 0361
27°56'15"
82°30'00"
53°000"E
54°000"E
55°000"E
82°28'07.5"
W AILEEN ST
W KATHLEEN ST
W COLUMBUS DR
W SAINT JOSEPH ST
W SAINT LOUIS ST
W SAINT JOHN ST
W BEACH ST
W PALMETTO ST
W CHERRY ST
W PINE ST
W WALNUT ST
W SPRUCE ST
W CHESTNUT ST
W UNION ST
W MAIN ST
W GREEN ST
W LAUREL ST
W LA SALLE ST
W ARCH ST
W NASSAU ST
W GRACE ST
W CYPRESS ST
W STATE ST
W LEMON ST
W CASS ST
W CARMEN ST
W GRAY ST
W FIG ST
W NORTH B ST
W NORTH A ST
W KENNEDY BLVD
W CLEVELAND ST
W JERSEY ST
W PLATT ST
W AZEELE ST
W HORATIO ST
W DE LEON ST
N TAMPANIA AVENUE
N HOWARD AVE
N ALBANY AVE
N MACDILL AVE
N GLEN AVE
N BEVERLY AVE
N LINCOLN AVE
N BRADFORD AVE
N MATANZAS AVE
N WOODLYNNE AVE
N NEW JERSEY AVE
N GOMEZ AVE
N EXCELDA AVE
N HABANA AVE
N ARRAWANA AVE
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N WILLOW AVE
N DELAWARE AVENUE
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W PALMETTO ST
W SAINT CONRAD ST
W SAINT LOUIS ST
W SAINT JOHN ST
W COLUMBUS DR
W GLENWOOD DRIVE
W AMELIA AVE
W FRANCES AVE
N GLENWOOD AVE
N ESSEX CT
N POPLAR AVE
N ROYAL CT
N MYRTLE AVE
FLORADORA COURT
KNOWLWAY COURT
PANDORA COURT
PENTAGON COURT
SATELLITE COURT
HILLSBOROUGH RIVER
N RIVERSIDE DR
N HARLOW AVE
N TWITTY ST
ROME TER
N OREGON TER
WALNUT TER
BUTLER AVE
WILLOW CT
FERRELL CT
ZONE X
ZONE AE (EL 10)
ZONE AE (EL 9)
ZONE AE (EL 9)
ZONE AE (EL 9)
ZONE AE (EL 9)
ZONE X
ZONE AE (EL 9)
ZONE AE (EL 9)
ZONE AE (EL 9)
ZONE AE (EL 9)

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

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Hillsborough County

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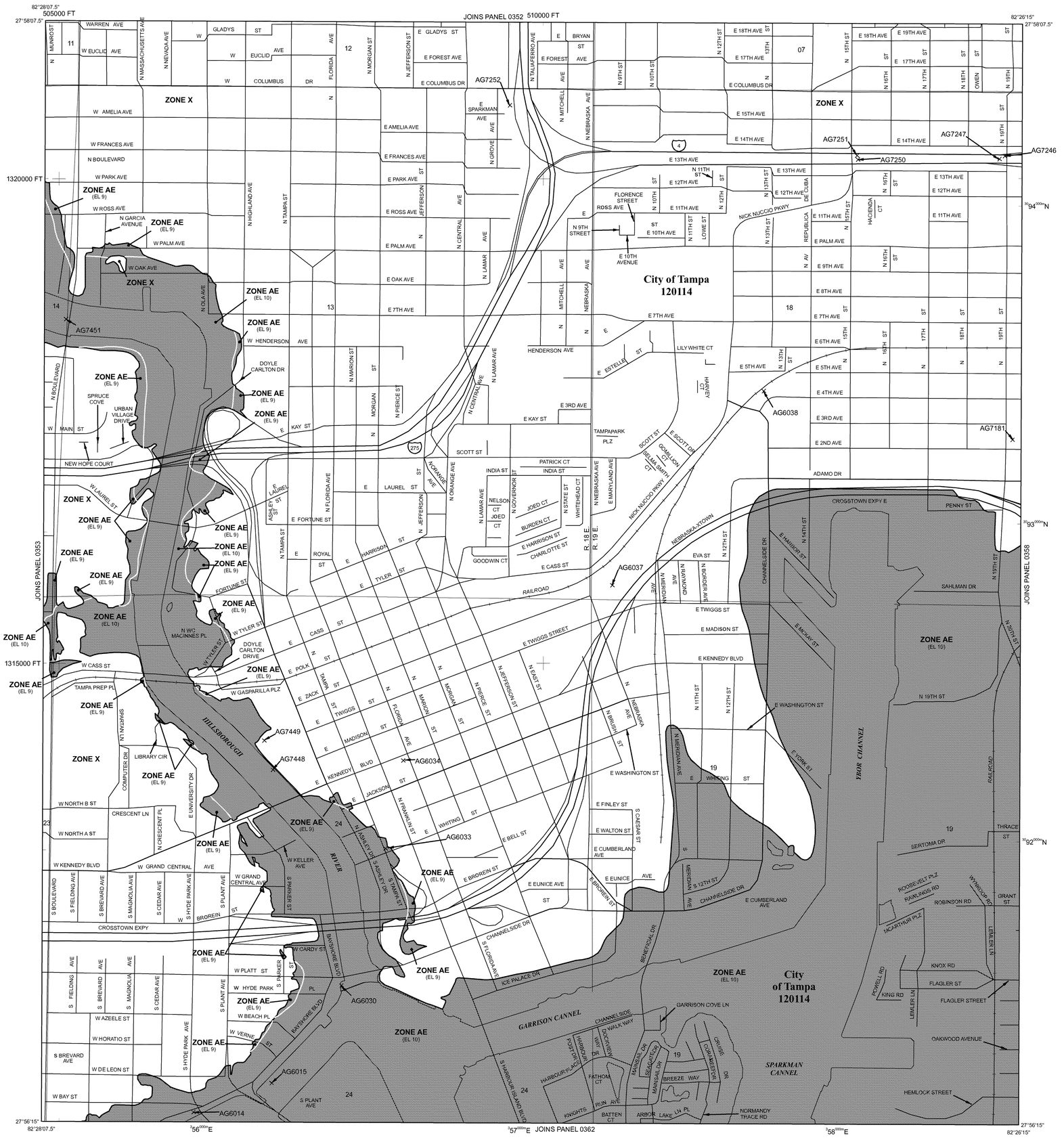
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27°58'07.5"
505000 FT
JOINS PANEL 0352
510000 FT
82°26'15"
27°58'07.5"
1320000 FT
1315000 FT
27°56'15"
82°28'07.5"
82°26'15"
ZONE X
ZONE AE
(EL 9)
(EL 10)
AG7252
AG7251
AG7250
AG7247
AG7246
AG7451
AG6038
AG7181
AG6037
AG7449
AG7448
AG6034
AG6033
AG6030
AG6015
AG6014
City of Tampa
120114
HILLSBOROUGH RIVER
GARRISON CANNEL
SPARKMAN CANNEL
YBOR CHANNEL
JOINS PANEL 0353
JOINS PANEL 0358
JOINS PANEL 0362
W GLADYS ST
E GLADYS ST
W EUCLID AVE
E FOREST AVE
W COLUMBUS DR
E COLUMBUS DR
W AMELIA AVE
E AMELIA AVE
W FRANCES AVE
E FRANCES AVE
W BOULEVARD
W PARK AVE
E PARK AVE
W ROSS AVE
E ROSS AVE
N GARCIA AVENUE
W PALM AVE
E PALM AVE
W OAK AVE
E OAK AVE
E 7TH AVE
W HENDERSON AVE
DOYLE CARLTON DR
SPRUCE COVE
URBAN VILLAGE DRIVE
W MAIN ST
NEW HOPE COURT
W LAUREL ST
E LAUREL ST
E FORTUNE ST
ROYAL ST
FORTUNE ST
W TYLER ST
E TYLER ST
W CASS ST
E CASS ST
TAMPA PREP PL
W GASPARILLA PLZ
DOYLE CARLTON DRIVE
N WC MACINNES PL
SPARKMAN LN
LIBRARY CIR
COMPUTER DR
E UNIVERSITY DR
W NORTH B ST
W NORTH A ST
CRESCENT LN
N CRESCENT PL
W KENNEDY BLVD
W GRAND CENTRAL AVE
E KENNEDY BLVD
E TWIGGS STREET
E MADISON ST
E KENNEDY BLVD
E WASHINGTON ST
E YORK ST
E FINLEY ST
E WALTON ST
E CUMBERLAND AVE
E BELL ST
E BRORein ST
E EUNICE AVE
E 3RD AVE
E KAY ST
SCOTT ST
INDIA ST
PATRICK CT
E HARRISON ST
CHARLOTTE ST
E CASS ST
GOODWIN CT
RAILROAD
E TWIGGS ST
E MADISON ST
E KENNEDY BLVD
E WASHINGTON ST
E 18TH AVE
E 17TH AVE
E 15TH AVE
E 14TH AVE
E 13TH AVE
E 12TH AVE
E 11TH AVE
E 10TH AVE
E 9TH AVE
E 8TH AVE
E 7TH AVE
E 6TH AVE
E 5TH AVE
E 4TH AVE
E 3RD AVE
E 2ND AVE
ADAMO DR
E BRYAN ST
E FORest AVE
E COLUMBUS DR
E 15TH AVE
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E 7TH AVE
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E 5TH AVE
E 4TH AVE
E 3RD AVE
E 2ND AVE
ADAMO DR
FLORENCE STREET
ROSS AVE
N 9TH STREET
E 10TH AVENUE
NICK NUCCIO PKWY
HENDERSON AVE
LILY WHITE CT
E ESTELLE ST
HARVEY CT
TAMPAPARK PLZ
SCOTT ST
E SCOTT DR
GOMILLION
SELMA SMITH CT
NICK NUCCIO PKWY
CROSSTOWN EXPY E
PENNY ST
NEBRASKA-TAMPA
EVA ST
E TWIGGS ST
E MADISON ST
E KENNEDY BLVD
E WASHINGTON ST
E YORK ST
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E CUMBERLAND AVE
E EUNICE AVE
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BENERAL DR
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CROSSTOWN EXPY
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W HORATIO ST
W DE LEON ST
W BAY ST
BAYSHORE BLVD
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S HYDE PARK AVE
S CEDAR AVE
S MAGNOLIA AVE
S BREVARD AVE
S FIELDING AVE
S BOULEVARD
W KELLER AVE
S PARKER ST
N ASHLEY DR
S ASHLEY DR
S TAMPA ST
CHANNELSIDE DR
GARRISON COVE LN
CHANNELSIDE WALK WAY
HARBOUR POINTE DR
HARBOUR WAY
HARBOUR PLACE
MARSHALL DR
DOCKVIEW DR
CORAL KEEPER DR
GRUPER DR
FATHOM CT
BREEZE WAY
S HARBOUR ISLAND BLVD
KNIGHTS RUN AVE
BATTEN CT
ARBOR LAKE LN PL
NORMANDY TRACE RD
HEMLOCK STREET
OAKWOOD AVENUE
KING RD
FLAGLER ST
FLAGLER STREET
KNOX RD
ROBINSON RD
ROOSEVELT PLZ
RAWLINGS RD
WYNDSOR RD
GRANT ST
HCARTHUR PLZ
LEMLEY LN
POWELL RD
SERTOMA DR
THRACE ST
N 20TH ST
N 19TH ST
N 18TH ST
N 17TH ST
N 16TH ST
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N 7TH ST
N 6TH ST
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N 4TH ST
N 3RD ST
N 2ND ST
N 1ST ST
N TAMPA ST
N FRANKLIN ST
N MERIDIAN AVE
N BRUSH ST
N NEBRASKA AVE
N MARYLAND AVE
N MITCHELL AVE
N JEFFERSON ST
N MORGAN ST
N PIERCE ST
N MARION ST
N FLORIDA AVE
N TAMPA ST
N HIGHLAND AVE
N OLA AVE
N CENTRAL AVE
N LAMAR AVE
N MARION ST
N ORANGE AVE
N GROVE AVE
N LAMAR AVE
N GOVERNOR ST
N STATE ST
WHITEHEAD CT
JOED CT
BURDEN CT
NELSON CT
JOED CT
CT
N RAYMOND AVE
N BORDER AVE
CHANNELSIDE DR
E HARBOUR ISLAND BLVD
N 14TH ST
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N 16TH ST
N 17TH ST
N 18TH ST
OWEN ST
N 19TH ST
HACIENDA CT
REPUBLICA DE CUBA
NICK NUCCIO PKWY
N 13TH ST
N 12TH ST
N 11TH ST
LOWE

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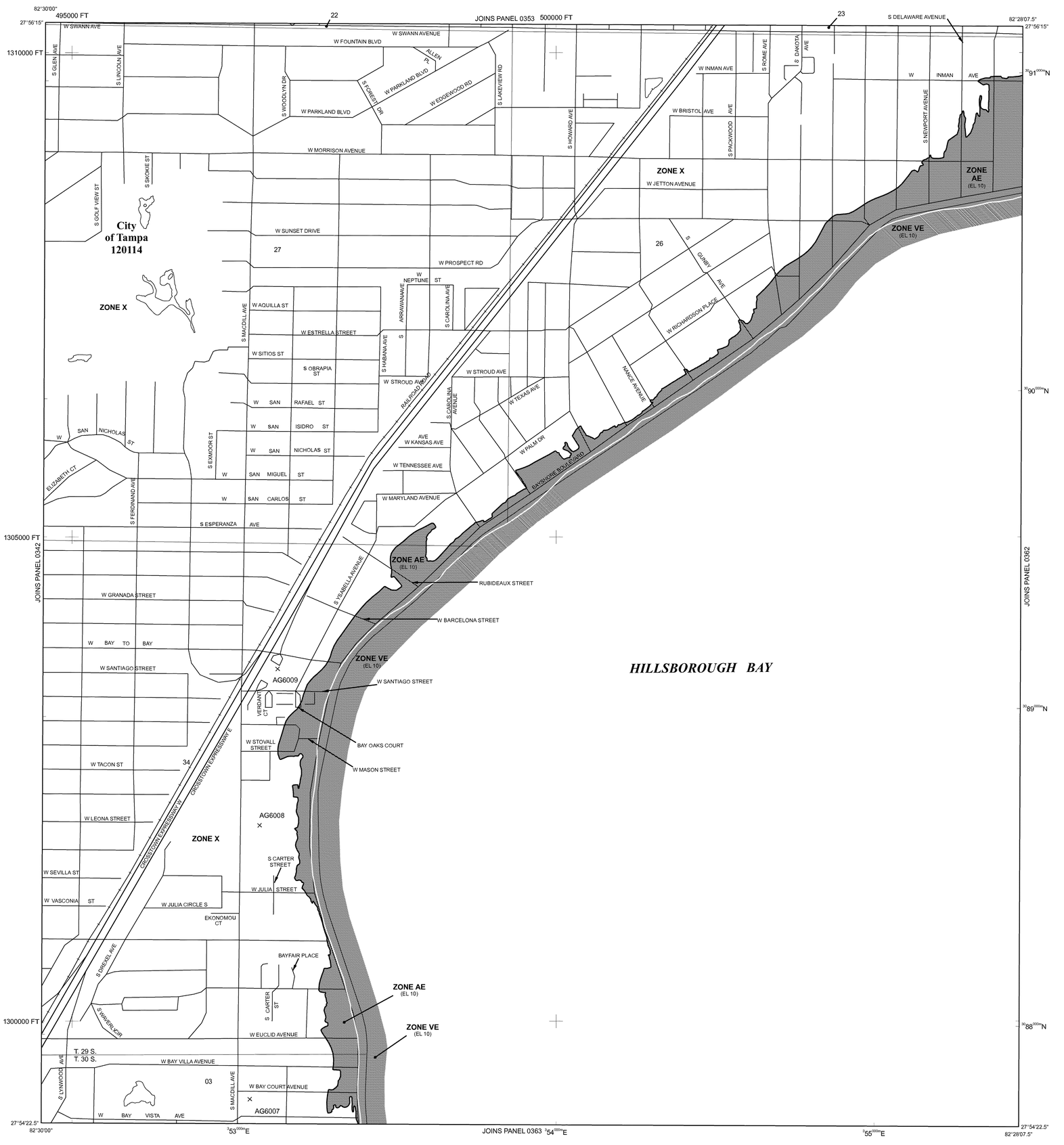


LEGEND

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

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

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

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

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

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section Line
23 — 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
3°76000mN	1000-meter Universal Transverse Mercator grid values, zone NAD 83 UTM Zone 17
600000 FT	5000-foot grid ticks: Florida State Plane coordinate system, West zone (FIPSZONE 0902), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile
410285	Junction

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

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

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

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

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0361H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 361 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
TAMPA, CITY OF	120114	0361	H

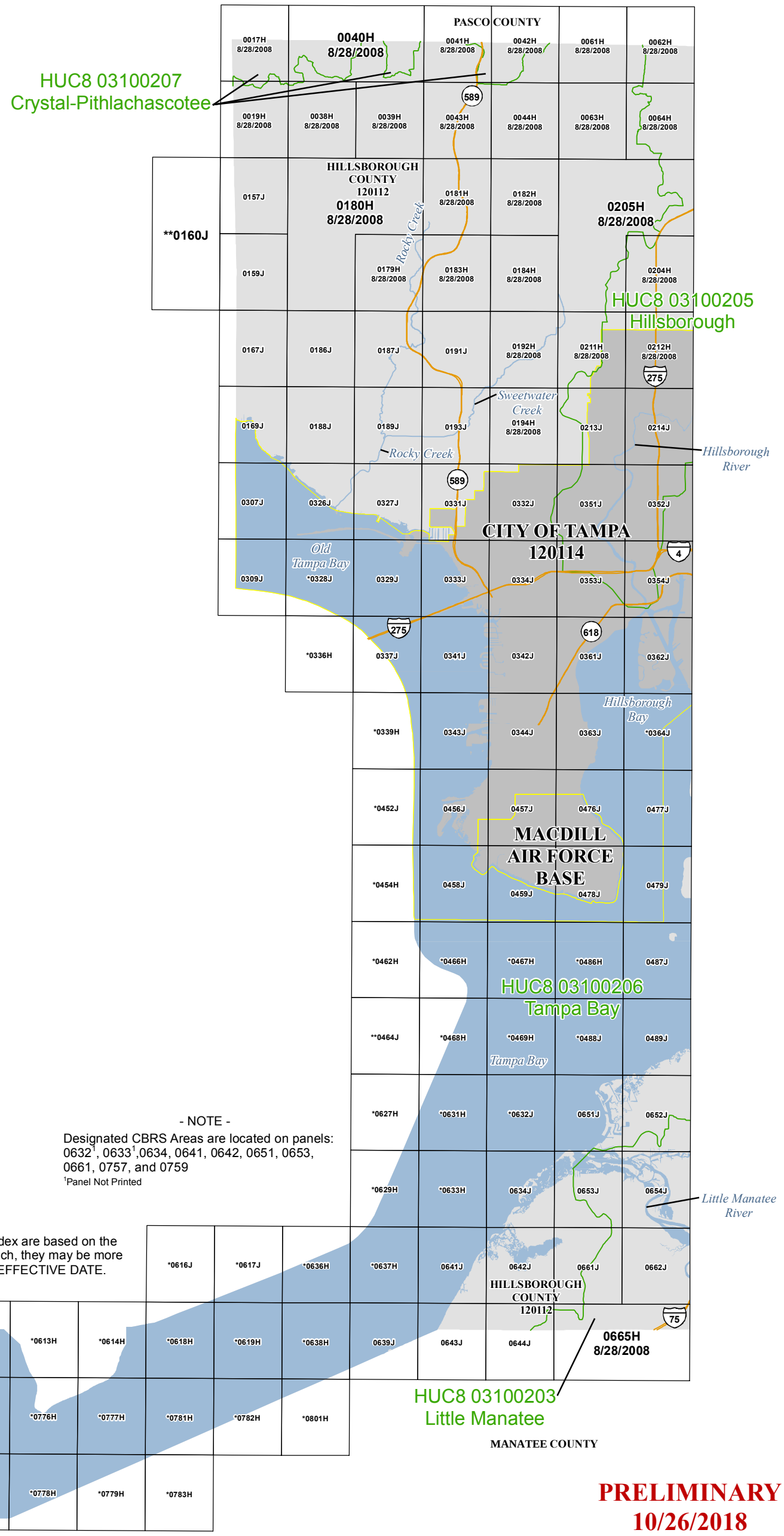
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
12057C0361H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

Preliminary FEMA Maps



- NOTE -

Designated CBRS Areas are located on panels: 0632[1], 0633[1],0634, 0641, 0642, 0651, 0653, 0661, 0757, and 0759

[1]Panel Not Printed

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PRELIMINARY
10/26/2018

N

1 inch = 17,083 feet 1:205,000

0 4,850 9,700 19,400 29,100 38,800 feet

Map Projection:
State Plane Transverse Mercator, Florida West Zone 0902; North American Datum 1983

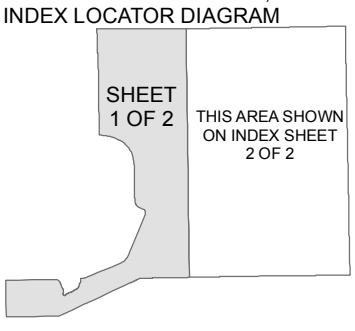
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - OPEN WATER AREA
** PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY

HILLSBOROUGH COUNTY, FL
INDEX LOCATOR DIAGRAM



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

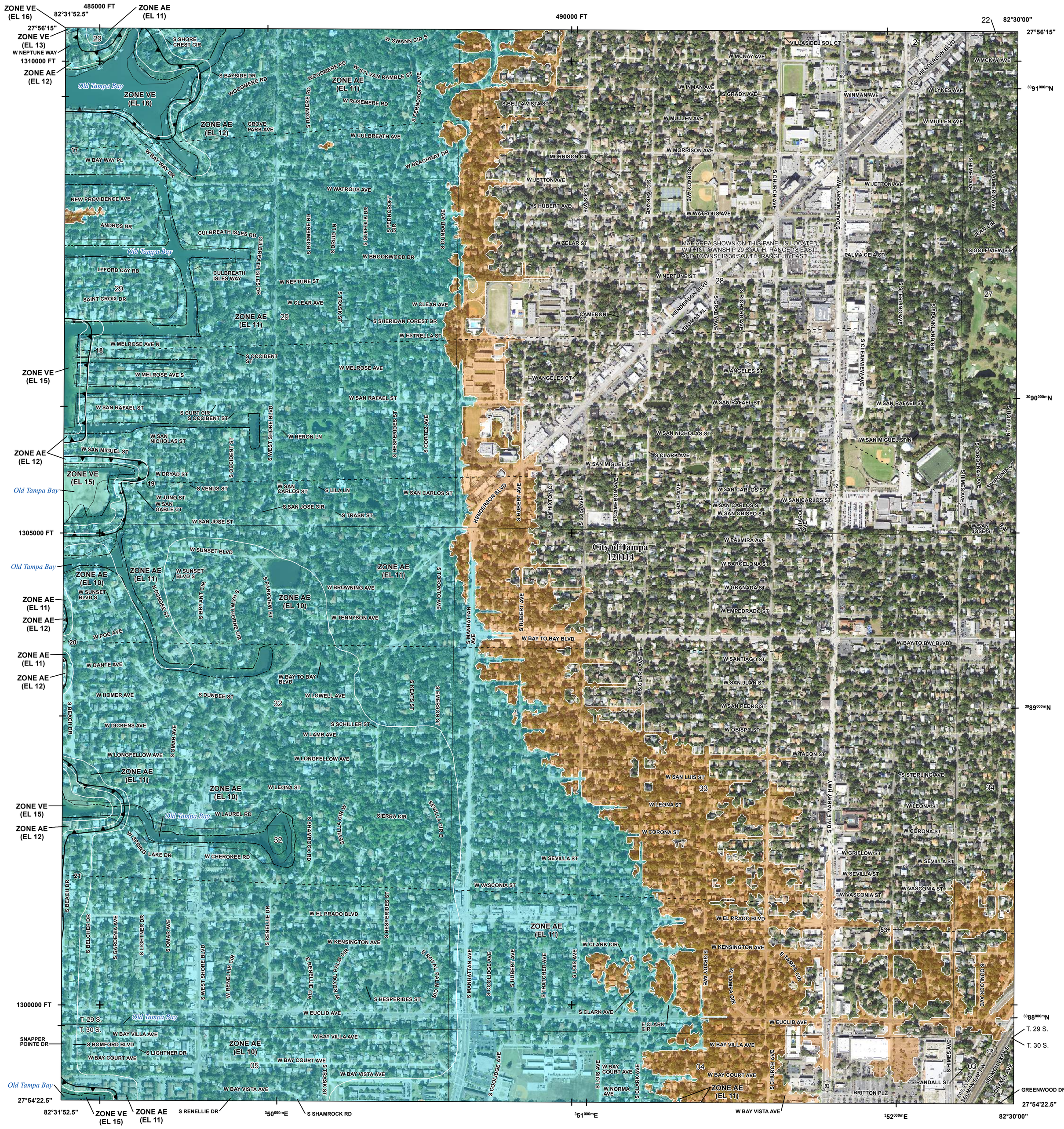
HILLSBOROUGH COUNTY, FLORIDA and Incorporated Areas
SHEET 1 OF 2

PANELS PRINTED:
0017, 0019, 0038, 0039, 0040, 0041, 0042, 0043, 0044, 0061, 0062, 0063, 0064, 0157, 0159, 0167, 0169, 0179, 0180, 0181, 0182, 0183, 0184, 0186, 0187, 0188, 0189, 0191, 0192, 0193, 0194, 0204, 0205, 0211, 0212, 0213, 0214, 0307, 0309, 0326, 0327, 0329, 0331, 0332, 0333, 0334, 0337, 0341, 0342, 0343, 0344, 0351, 0352, 0353, 0354, 0361, 0362, 0363, 0456, 0457, 0458, 0459, 0476, 0477, 0478, 0479, 0487, 0489, 0634, 0639, 0641, 0642, 0643, 0644, 0651, 0652, 0653, 0654, 0661, 0662, 0665, 0757, 0759

FEMA

MAP NUMBER
12057CIND1C

MAP REVISED



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

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SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) *Zone A,V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
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OTHER AREAS OF FLOOD HAZARD

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

- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- E 18.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 — Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

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Limit of Moderate Wave Action (LiMWA)

SCALE

N

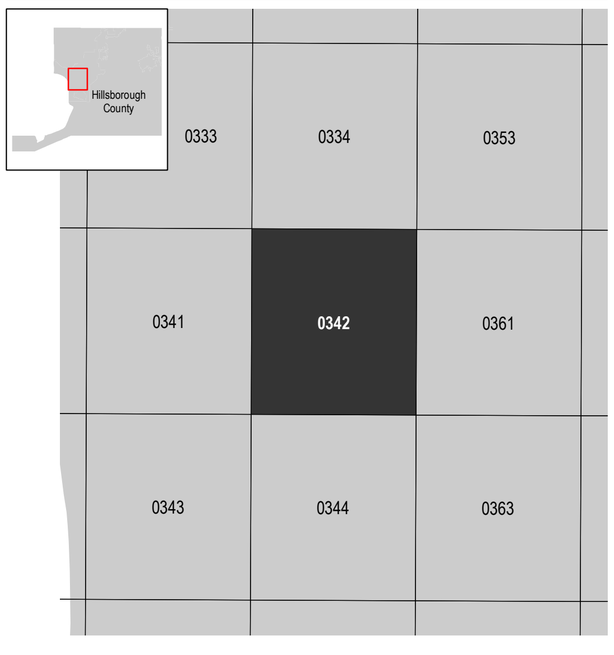
Map Projection:
State Plane Transverse Mercator, Florida West Zone 0902; North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 750 1,000 2,000 feet

0 125 250 500 meters

PANEL LOCATOR



FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
and Incorporated Areas

PANEL 342 OF 801

Panel Contains:

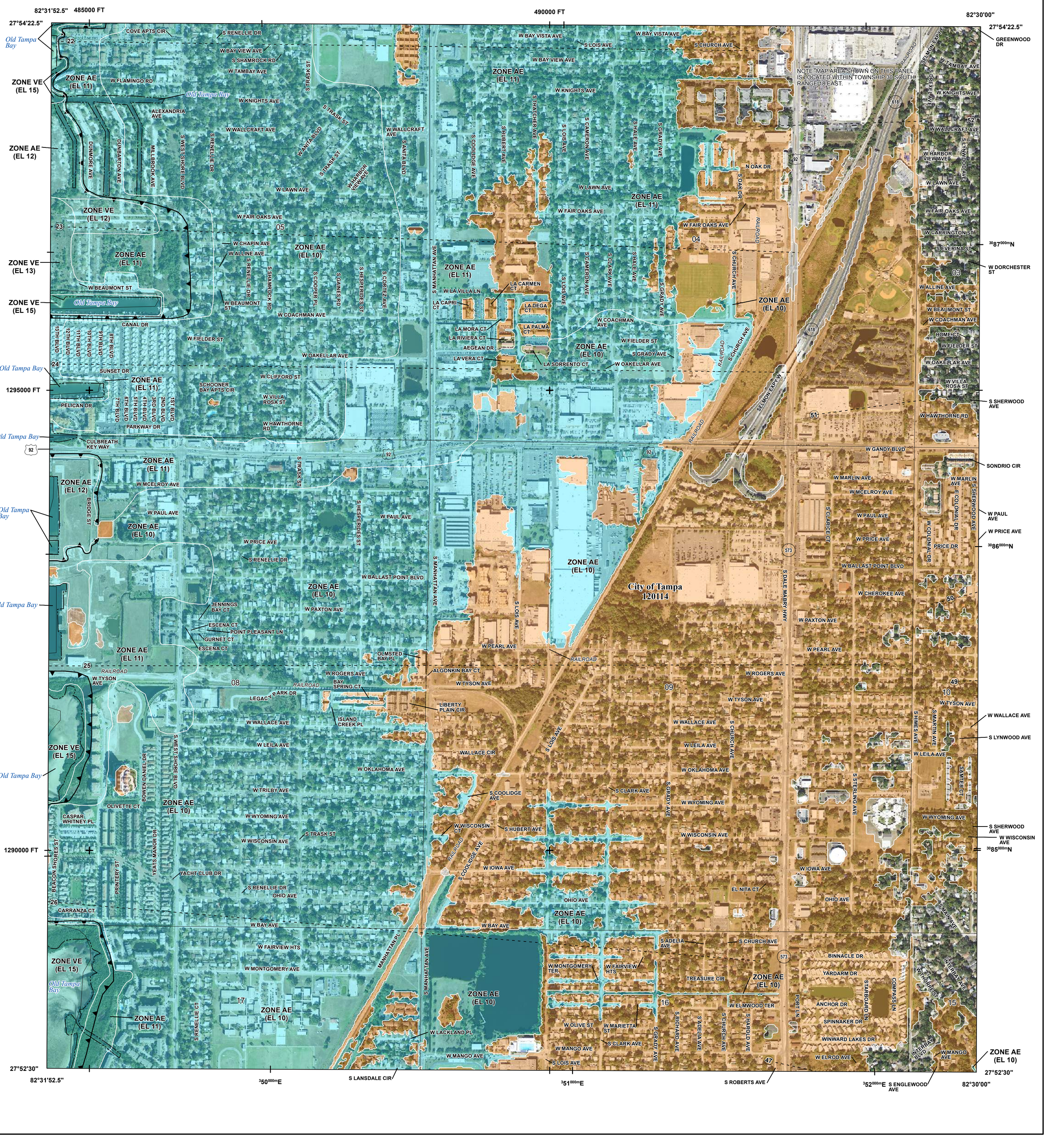
COMMUNITY	NUMBER	PANEL	SUFFIX
TAMPA, CITY OF	120114	0342	J

PRELIMINARY
10/26/2018

VERSION NUMBER
2.4.3.5

MAP NUMBER
12057C0342J

MAP REVISED



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SCALE

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PANEL LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
and Incorporated Areas

PANEL 344 OF 801

Panel Contains:

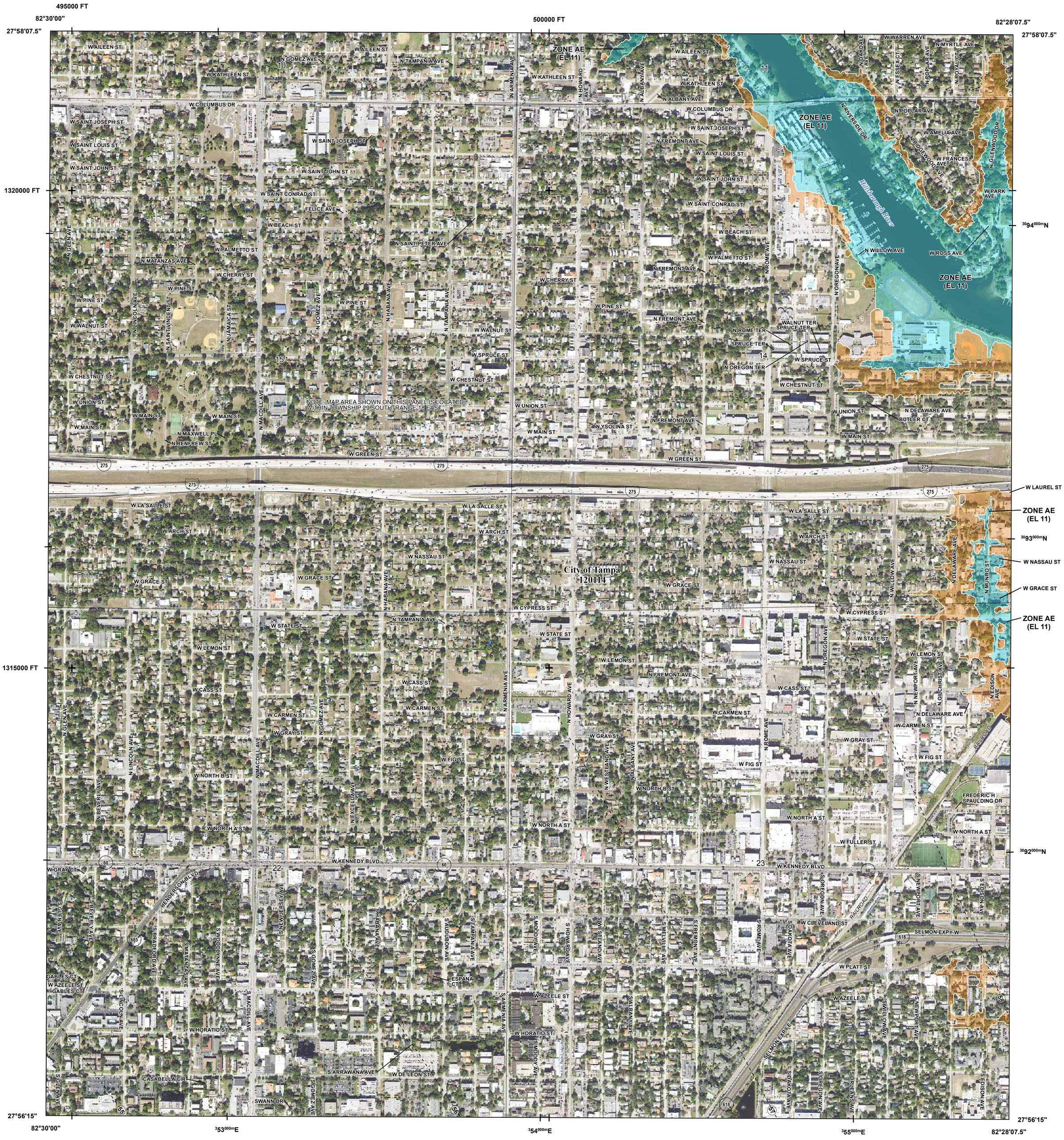
COMMUNITY	NUMBER	PANEL	SUFFIX
TAMPA, CITY OF	120114	0344	J

PRELIMINARY
10/26/2018

VERSION NUMBER
2.4.3.5

MAP NUMBER
12057C0344J

MAP REVISED



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SCALE

N

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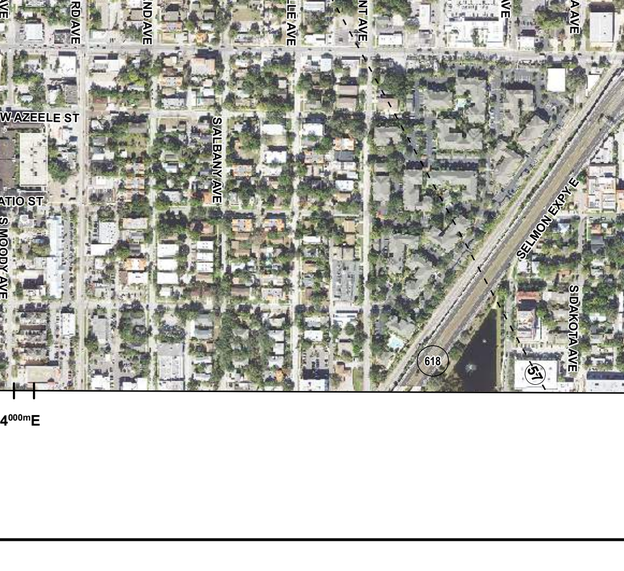
State Plane Transverse Mercator, Florida West Zone 0902; North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 750 1,000 2,000 feet

0 125 250 500 meters

PANEL LOCATOR



FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
and Incorporated Areas

PANEL 353 OF 801

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
TAMPA, CITY OF	120114	0353	J

PRELIMINARY
10/26/2018

VERSION NUMBER
2.4.3.5

MAP NUMBER
12057C0353J

MAP REVISED

505000 FT
82°28'07.5"
27°58'07.5"
510000 FT
82°26'15"
27°58'07.5"
1320000 FT
1315000 FT
$^{30}94^{000m}$N
$^{30}93^{000m}$N
$^{30}92^{000m}$N
$^{3}56^{000m}$E
$^{3}57^{000m}$E
$^{3}58^{000m}$E
27°56'15"
82°28'07.5"
82°26'15"

MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 29 SOUTH, RANGE 18 EAST AND TOWNSHIP 29 SOUTH, RANGE 19 EAST.

City of Tampa
120114

ZONE AE (EL 11)
ZONE AE (EL 12)
ZONE VE (EL 13)
ZONE VE (EL 16)
ZONE AE (EL 13)

Hillsborough River
Hillsborough Bay

W WARREN AVE
W GLADYS ST
E GLADYS ST
W EUCLID AVE
E EUCLID AVE
N WOODROW AVE
E FOREST AVE
E BRYAN ST
W COLUMBUS DR
E COLUMBUS DR
W AMELIA AVE
E AMELIA AVE
W FRANCES AVE
E FRANCES AVE
N GROVE AVE
W PARK AVE
E PARK AVE
W ROSS AVE
E ROSS AVE
W PALM AVE
E PALM AVE
N FRANKLIN ST
W OAK AVE
E OAK AVE
W 7TH AVE
E 7TH AVE
N PIERCE ST
W HENDERSON AVE
E HENDERSON AVE
N NEBRASKA AVE
W CHESTNUT ST
W MAIN ST
W UNION ST
SPRUCE CV
W GREEN ST
E ESTELLE ST
N PIERCE ST
E KAY ST
N MORGAN ST
N ORANGE AVE
E LAUREL ST
W LAUREL ST
E FORTUNE ST
W ARCH ST
E ROYAL ST
E HARRISON ST
N ORANGE AVE
E CASS ST
W FORTUNE ST
N WC MACINNES PL
W CYPRESS ST
E TYLER ST
E ZACK ST
E POLK ST
E TWIGGS ST
N BRUSH ST
PERFORMING ARTS CTR CIR
W CASS ST
W GASPARILLA PLZ
E MADISON ST
E KENNEDY BLVD
E JACKSON ST
UT MCNEEL CT
UT UNIVERSITY DR
UT SPARTAN LN
UT OLD SCHOOL HOUSE WAY
FREDERIC H SPAULDING DR
N UNIVERSITY DR
W NORTHIA ST
W KELLER AVE
W KENNEDY BLVD
W GRAND CENTRAL AVE
W CLEVELAND ST
SELMON EXPY W
SELMON EXPY E
W CARDY ST
W PLATT ST
W HYDE PARK PL
W AZEELE ST
W HORATIO ST
W BEACH PL
W VERNE ST
W DE LEON ST
W BAY ST
BAYSHORE BLVD
TAMPA GENERAL CIR
W WHITING ST
W BROREIN ST
E BROREIN ST
E EUNICE AVE
S FRANKLIN ST
E WASHINGTON ST
N FLORIDA AVE
W WASHINGTON ST
E WHITING ST
S JEFFERSON ST
E BELL ST
S NEBRASKA AVE
E WALTON ST
E CUMBERLAND AVE
S FOLSOM ST
E BALL ST
E FINLEY ST
E MADISON ST
N MERIDIAN AVE
E KENNEDY BLVD
E WASHINGTON ST
E YORK ST
E WHITING ST
HARBOUR PLACE DR
HARBOUR POST DR
S HARBOUR ISLAND BLVD
DOCKVIEW WAY
CHANNELSIDE WALK WAY
ARBOR LAKE LN
NORMANDY TRACE RD
KNIGHTS RUN AVE
OLD WATER ST
ADAMO DR
SELMON EXPY E
SELMON EXPY W
PENNY ST
SAHLMAN DR
DURHAM ST
THRACE ST
SERTOMA DR
GRANT ST
CHAPIN ST
FLAGLER ST
ELMWOOD AVE
MAPLE AVE
OAKWOOD AVE
OCEANVIEW PL
HEMLOCK ST
E 19TH AVE
E 18TH AVE
E 17TH AVE
E 15TH AVE
E 14TH AVE
E 12TH AVE
E 11TH AVE
E 9TH AVE
E 8TH AVE
E 7TH AVE
E 6TH AVE
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E 4TH AVE
E 3RD AVE
E 2ND AVE
N 19TH ST
N 18TH ST
N 17TH ST
N 16TH ST
N 15TH ST
N 14TH ST
N 13TH ST
N 12TH ST
N 11TH ST
N 10TH ST
N 9TH ST
N 20TH ST
YBOR FRONTAGE RD N
YBOR FRONTAGE RD S
N AV REPUBLICA DE CUBA
NUCCIO PKWY
E 11TH AVE FLORENCE ST
LOWE ST
E 12TH AVE
E 13TH ST
E PALM AVE
N 16TH ST
E 9TH AVE
RAILROAD
SIMON CT
LILY WHITE CT
WATERS CT
CHANNELSIDE DR
LONGSHOREMANS CT
TAMPA PARK PLZ
SELMA SMITH CT
GOMILLION CT
E SCOTT DR
SCOTT ST
N MORGAN ST
N ORANGE AVE
E LAUREL ST
E FORTUNE ST
E HARRISON ST
N RAYMOND AVE
E MADISON ST
E MCKAY ST
E WASHINGTON ST
E WHITING ST
E FINLEY ST
E 3RD AVE
E 2ND AVE
E 5TH AVE
E 4TH AVE
E 6TH AVE
E 9TH AVE
E 8TH AVE
E 7TH AVE
E 12TH AVE
E 11TH AVE
E 15TH AVE
E 14TH AVE
E 17TH AVE
E 18TH AVE
E 19TH AVE
N 16TH ST
N 17TH ST
N 18TH ST
N 19TH ST
N 20TH ST
ANGEL OLIVA SENIOR ST
WYNKOOP RD
CHANNELSIDE DR
N 12TH ST
N 14TH ST
N 15TH ST
N 16TH ST
N 17TH ST
N 18TH ST
N 19TH ST
N 20TH ST
S BOULEVARD
N BOULEVARD
N MASSACHUSETTS AVE
N OLA AVE
N HIGHLAND AVE
N TAMPA ST
N FLORIDA AVE
N JEFFERSON ST
N CENTRAL AVE
N ELMORE AVE
N MORGAN ST
N MARION ST
N FRANKLIN ST
N ASHLEY ST
N TAMPA ST
N FLORIDA AVE
N JEFFERSON ST
N PIERCE ST
N EAST ST
N NEBRASKA AVE
N MERIDIAN AVE
S ASHLEY DR
S TAMPA ST
S FLORIDA AVE
S PARKER ST
S FIELDING AVE
S MAGNOLIA AVE
S CEDAR AVE
S BREVARD AVE
S PLANT AVE
N TALIAFERRO AVE
N MITCHELL AVE
N LAMAR AVE
S CAESAR ST
S MERIDIAN AVE
S 13TH ST
S 11TH ST
S MORGAN ST
N BREVARD AVE
UT POE PKWY
DOYLE CARLTON DR
CRUISE A CADE PL
GARCIA AVE
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1. GARRISON COVE LN
2. SEABOARD PL
3. ISLAND PLACE WAY
4. TROPICAL BREEZE WAY
5. SEASCAPE WAY
6. PROMINADE PL
7. CORAL REEF DR
8. CRUISE VIEW DR
9. MAINSAIL DR
10. SEAGATE DR
11. NORMANDY TRACE RD
12. BATTEN CT
13. MASTHEAD CT
14. FATHOM CT
15. BENEFICIAL DR
16. ISLAND WALK DR

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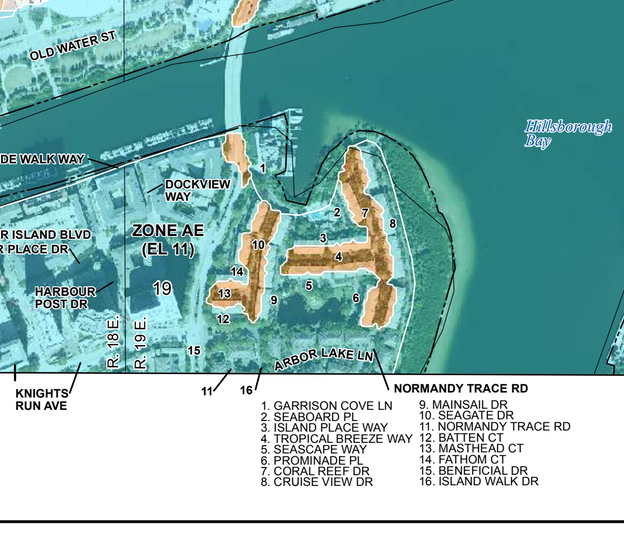


FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
and Incorporated Areas

PANEL 354 OF 801

Panel Contains:

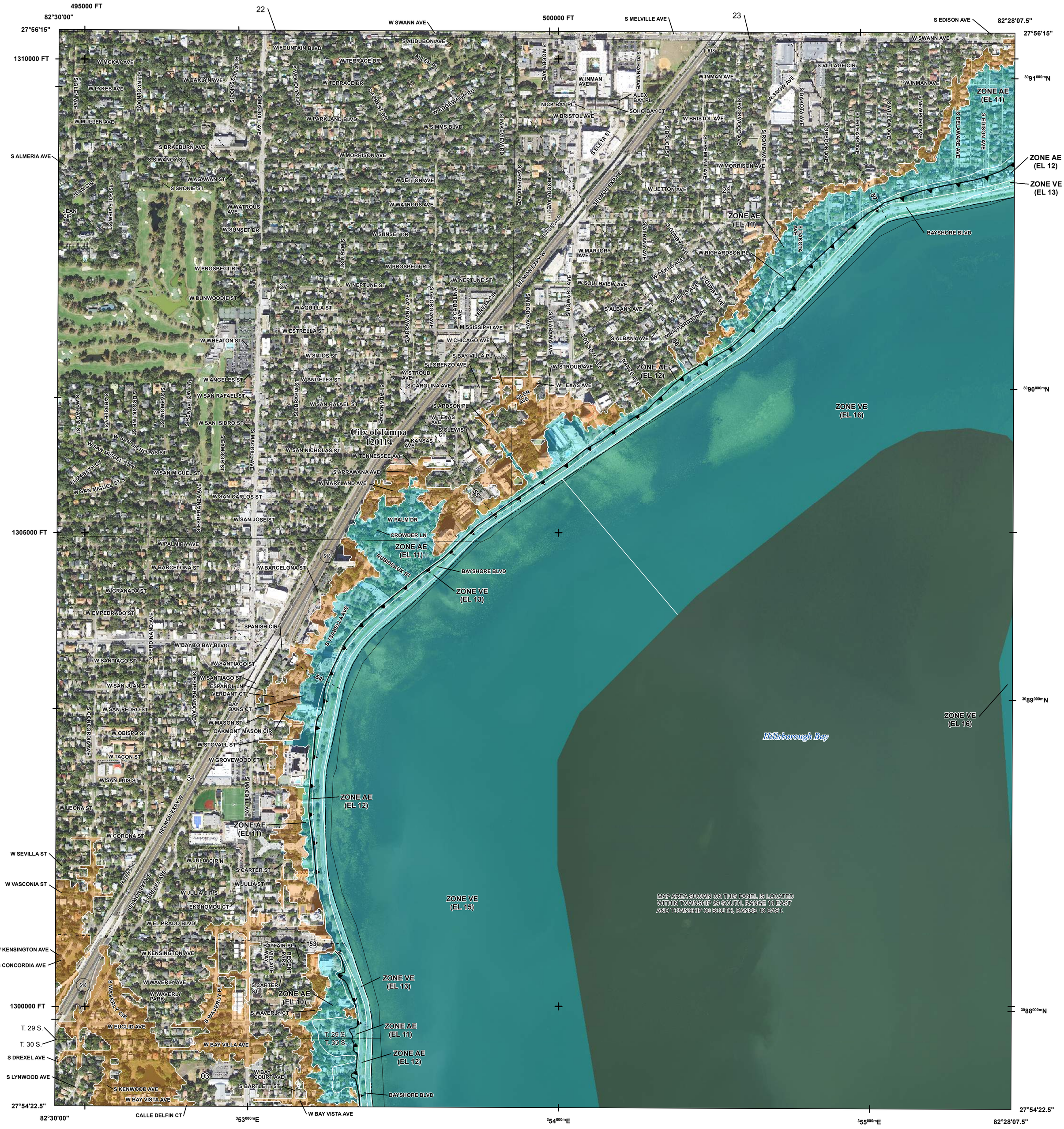
COMMUNITY	NUMBER	PANEL	SUFFIX
TAMPA, CITY OF	120114	0354	J

PRELIMINARY
10/26/2018

VERSION NUMBER
2.4.3.5

MAP NUMBER
12057C0354J

MAP REVISED



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- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS

- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- E 18.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 — Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

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

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

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

Base map information shown on this FIRM was provided by Hillsborough County, dated 2008 and 2018; the Florida Department of Transportation, dated 2017; the Florida Resources and Environmental Analysis Center, dated 2003; the U.S. Department of Agriculture, dated 2018; and the U.S. Fish and Wildlife Service, dated 2018.

LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between Zone VE and the LiMWA (or between the shoreline and the LiMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in the Zone VE.

Limit of Moderate Wave Action (LiMWA)

SCALE

N

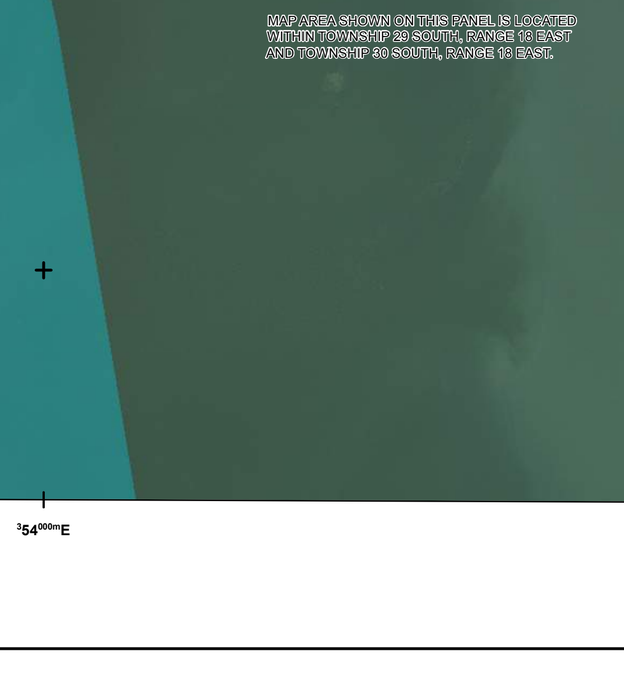
Map Projection:
State Plane Transverse Mercator, Florida West Zone 0902; North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 750 1,000 2,000 feet

0 125 250 500 meters

PANEL LOCATOR



*PANEL NOT PRINTED

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA

and Incorporated Areas

PANEL 361 OF 801

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
TAMPA, CITY OF	120114	0361	J

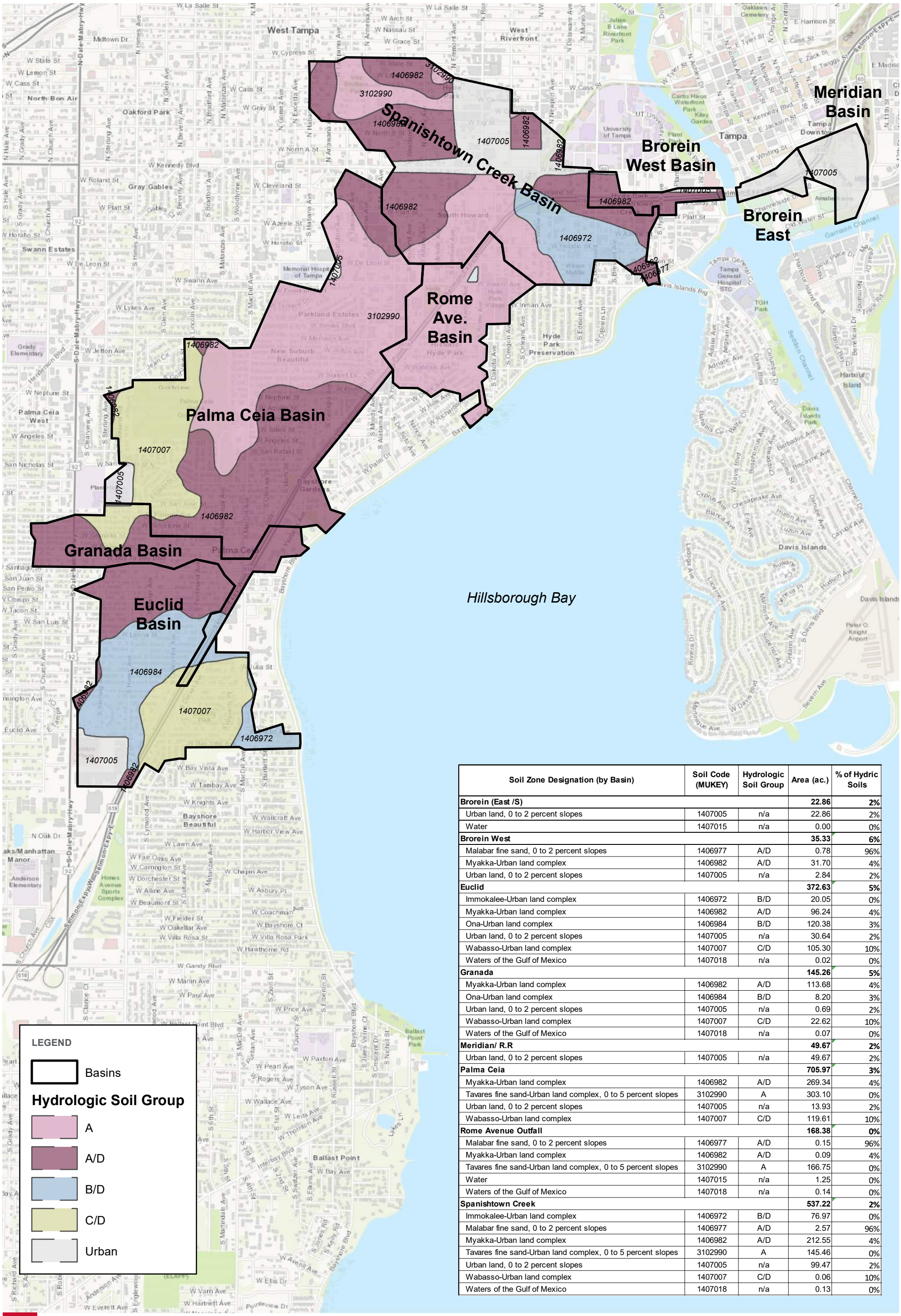
PRELIMINARY
10/26/2018

VERSION NUMBER
2.4.3.5

MAP NUMBER
12057C0361J

MAP REVISED

Appendix B - Geotechnical Data



Soil Zone Designation (by Basin)	Soil Code (MUKEY)	Hydrologic Soil Group	Area (ac.)	% of Hydric Soils
Brorein (East /S)			**22.86**	**2%**
Urban land, 0 to 2 percent slopes	1407005	n/a	22.86	2%
Water	1407015	n/a	0.00	0%
Brorein West			**35.33**	**6%**
Malabar fine sand, 0 to 2 percent slopes	1406977	A/D	0.78	96%
Myakka-Urban land complex	1406982	A/D	31.70	4%
Urban land, 0 to 2 percent slopes	1407005	n/a	2.84	2%
Euclid			**372.63**	**5%**
Immokalee-Urban land complex	1406972	B/D	20.05	0%
Myakka-Urban land complex	1406982	A/D	96.24	4%
Ona-Urban land complex	1406984	B/D	120.38	3%
Urban land, 0 to 2 percent slopes	1407005	n/a	30.64	2%
Wabasso-Urban land complex	1407007	C/D	105.30	10%
Waters of the Gulf of Mexico	1407018	n/a	0.02	0%
Granada			**145.26**	**5%**
Myakka-Urban land complex	1406982	A/D	113.68	4%
Ona-Urban land complex	1406984	B/D	8.20	3%
Urban land, 0 to 2 percent slopes	1407005	n/a	0.69	2%
Wabasso-Urban land complex	1407007	C/D	22.62	10%
Waters of the Gulf of Mexico	1407018	n/a	0.07	0%
Meridian/ R.R			**49.67**	**2%**
Urban land, 0 to 2 percent slopes	1407005	n/a	49.67	2%
Palma Ceia			**705.97**	**3%**
Myakka-Urban land complex	1406982	A/D	269.34	4%
Tavares fine sand-Urban land complex, 0 to 5 percent slopes	3102990	A	303.10	0%
Urban land, 0 to 2 percent slopes	1407005	n/a	13.93	2%
Wabasso-Urban land complex	1407007	C/D	119.61	10%
Rome Avenue Outfall			**168.38**	**0%**
Malabar fine sand, 0 to 2 percent slopes	1406977	A/D	0.15	96%
Myakka-Urban land complex	1406982	A/D	0.09	4%
Tavares fine sand-Urban land complex, 0 to 5 percent slopes	3102990	A	166.75	0%
Water	1407015	n/a	1.25	0%
Waters of the Gulf of Mexico	1407018	n/a	0.14	0%
Spanishtown Creek			**537.22**	**2%**
Immokalee-Urban land complex	1406972	B/D	76.97	0%
Malabar fine sand, 0 to 2 percent slopes	1406977	A/D	2.57	96%
Myakka-Urban land complex	1406982	A/D	212.55	4%
Tavares fine sand-Urban land complex, 0 to 5 percent slopes	3102990	A	145.46	0%
Urban land, 0 to 2 percent slopes	1407005	n/a	99.47	2%
Wabasso-Urban land complex	1407007	C/D	0.06	10%
Waters of the Gulf of Mexico	1407018	n/a	0.13	0%

TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY

SOIL DATA (BY BASIN)

FIGURE 8

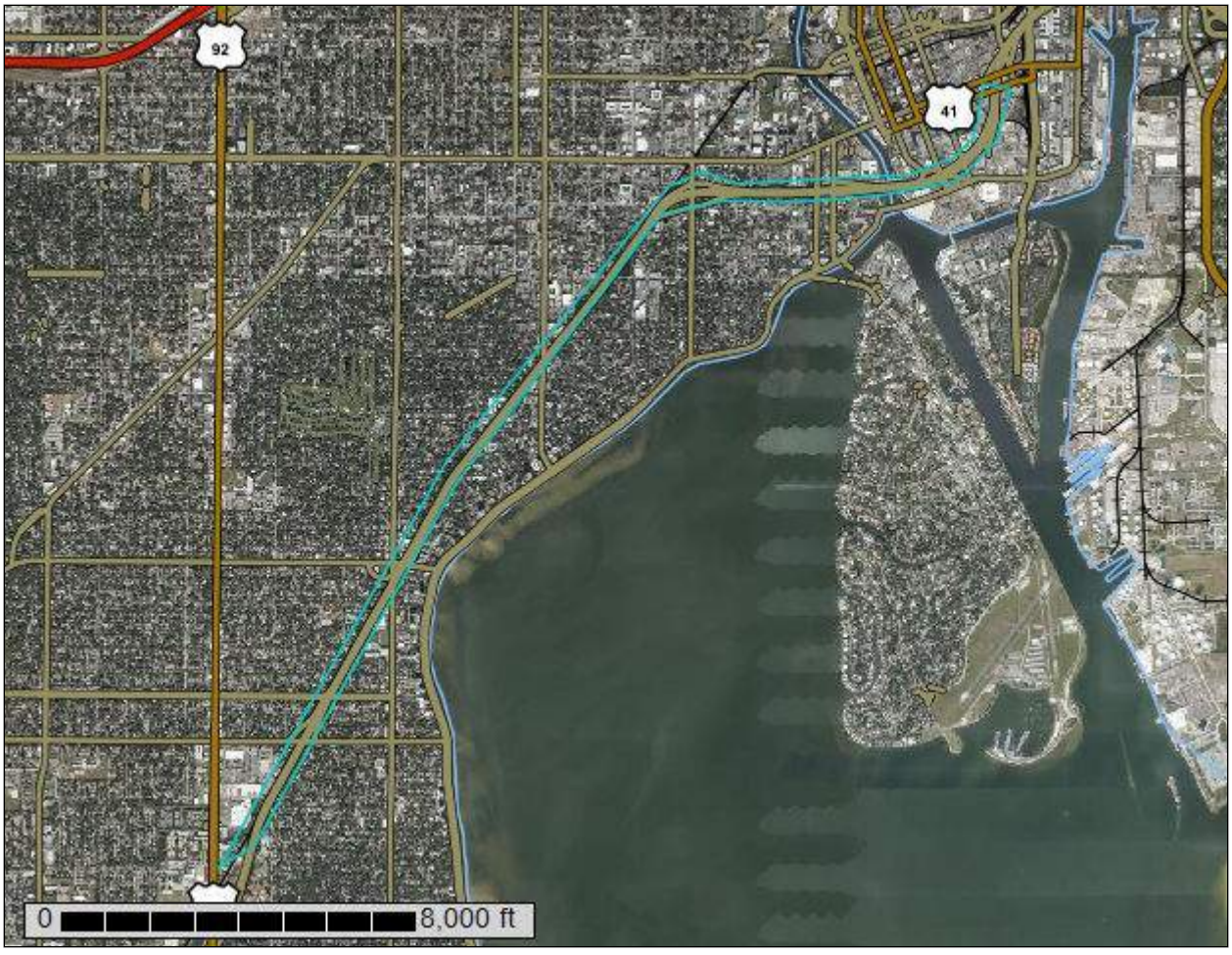
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Hillsborough County, Florida



July 22, 2020

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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

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

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

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

Soil Survey Area: Hillsborough County, Florida
Survey Area Data: Version 20, Jun 8, 2020

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

Date(s) aerial images were photographed: Dec 6, 2018—Dec 17, 2018

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.

Map—Saturated Hydraulic Conductivity (Ksat)

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- <= 66.2414
- > 66.2414 and <= 68.8039
- > 68.8039 and <= 78.2871
- > 78.2871 and <= 83.5025
- > 83.5025 and <= 91.7400
- Not rated or not available

Soil Rating Lines

- <= 66.2414
- > 66.2414 and <= 68.8039
- > 68.8039 and <= 78.2871
- > 78.2871 and <= 83.5025
- > 83.5025 and <= 91.7400
- Not rated or not available

Soil Rating Points

- <= 66.2414
- > 66.2414 and <= 68.8039
- > 68.8039 and <= 78.2871
- > 78.2871 and <= 83.5025
- > 83.5025 and <= 91.7400
- Not rated or not available

Water Features

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)

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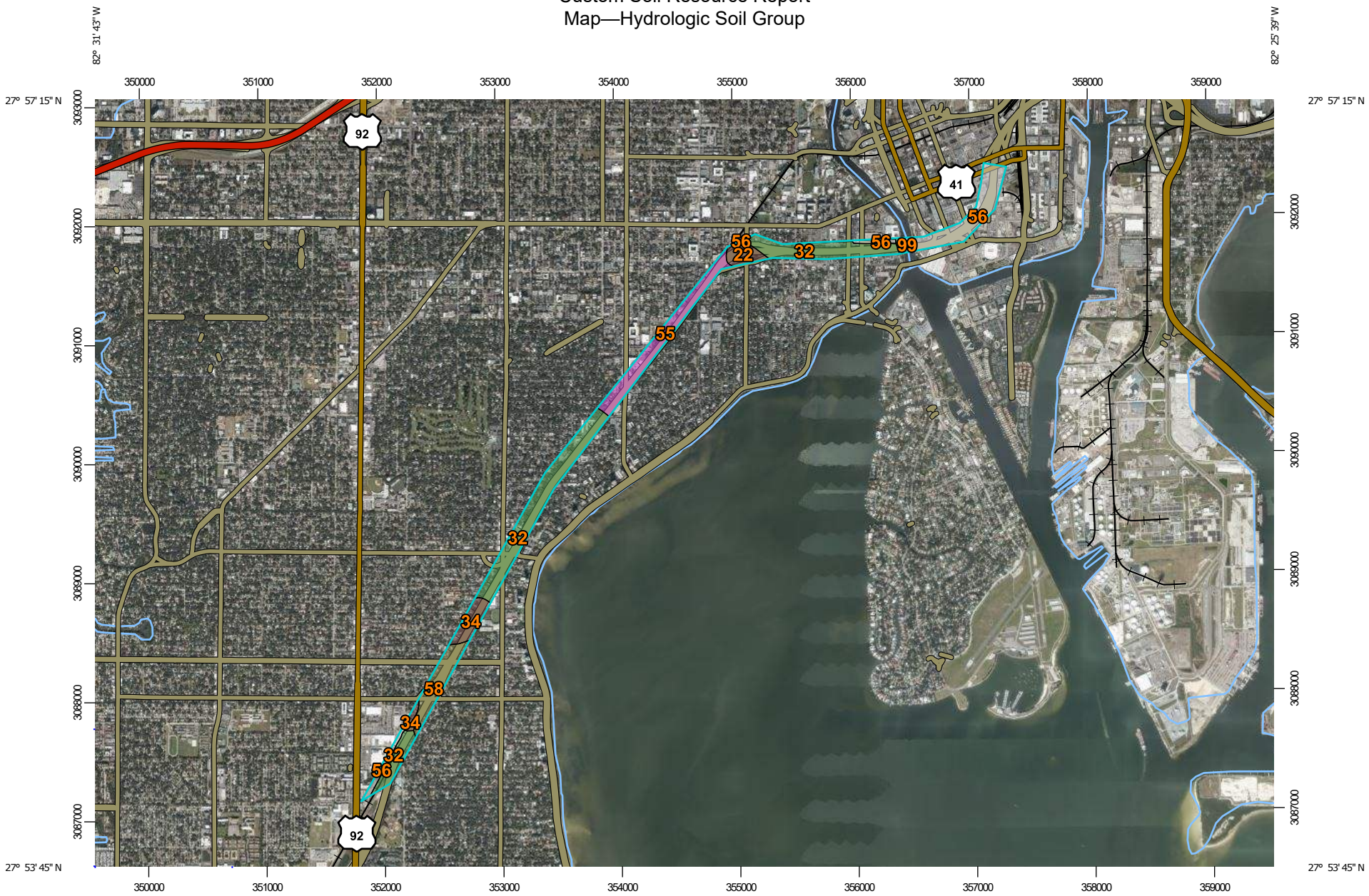
MAP LEGEND

Streams and Canals

MAP INFORMATION


82° 31' 43" W
82° 25' 39" W
27° 57' 15" N
27° 53' 45" N
350000
351000
352000
353000
354000
355000
356000
357000
358000
359000
3093000
3092000
3091000
3090000
3089000
3088000
3087000
92
41
56
22
32
99
55
34
58
Map Scale: 1:45,500 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0
500
1000
2000
3000
Feet
0
2000
4000
8000
12000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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)

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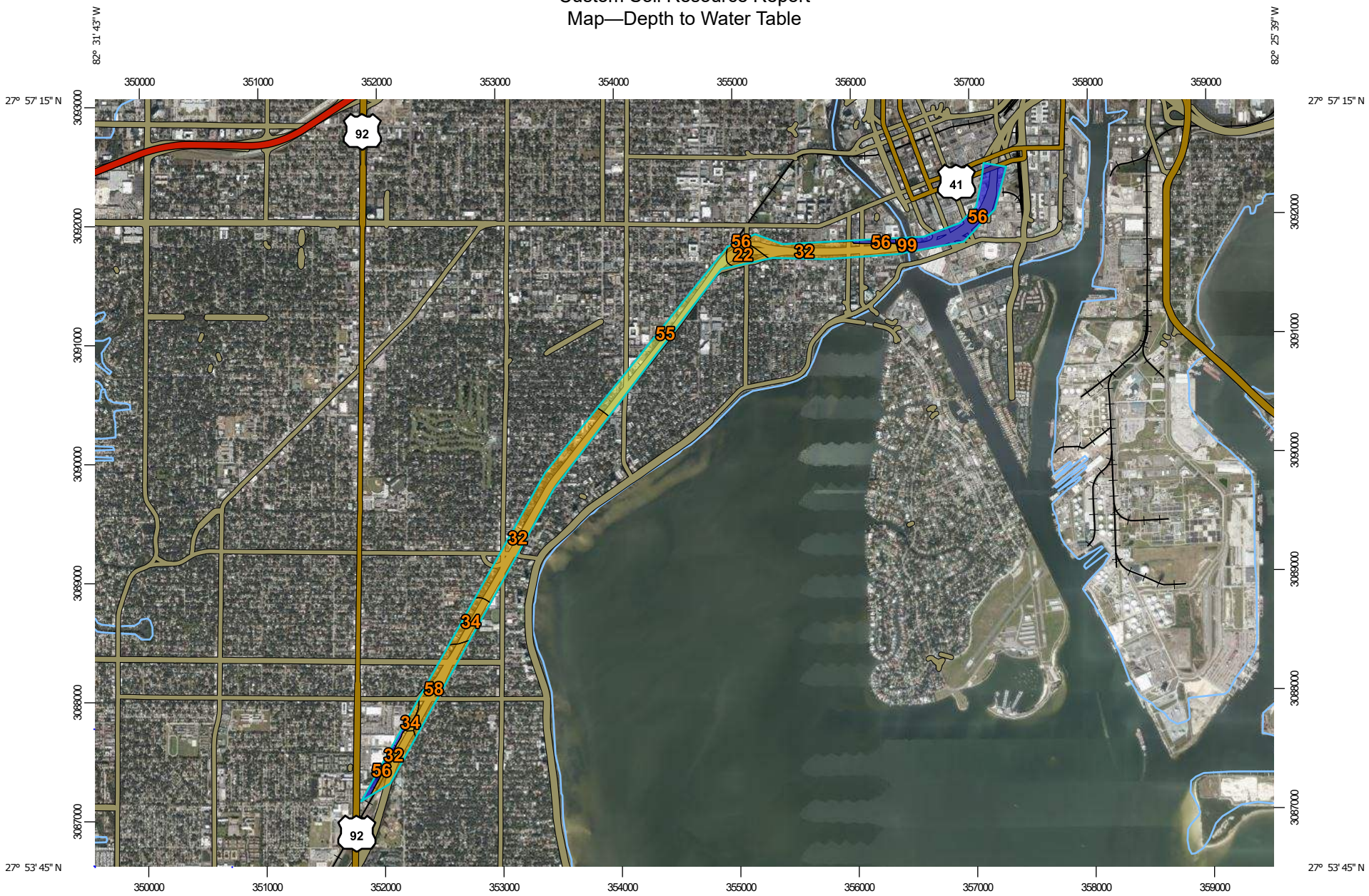
82° 31' 43" W
82° 25' 39" W
27° 57' 15" N
27° 53' 45" N
350000
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352000
353000
354000
355000
356000
357000
358000
359000
3093000
3092000
3091000
3090000
3089000
3088000
3087000
92
41
56
56
22
32
56
99
55
32
34
58
34
32
56
92
Map Scale: 1:45,500 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0
500
1000
2000
3000
Feet
0
2000
4000
8000
12000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

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
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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.

Table—Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
22	Immokalee-Urban land complex	31	11.8	4.5%
27	Malabar fine sand, 0 to 2 percent slopes	15	1.5	0.6%
32	Myakka-Urban land complex	31	115.6	43.9%
34	Ona-Urban land complex	31	17.6	6.7%
55	Tavares fine sand-Urban land complex, 0 to 5 percent slopes	76	41.5	15.8%
56	Urban land, 0 to 2 percent slopes	>200	47.6	18.1%
58	Wabasso-Urban land complex	31	25.3	9.6%
99	Water	>200	2.5	1.0%
Totals for Area of Interest			**263.4**	**100.0%**

May 31, 2018

HNTB Corporation
One Tampa City Center
201 North Franklin Street, Suite 1200
Tampa, Florida 33602

Attn: Mr. James E. Drapp, P.E.

RE: Geotechnical Data Report for RFP Submittal
South Selmon Safety Project
Hillsborough County, Florida
SR 618 (Selmon Expressway) From Himes Avenue to the Hillsborough River
Tierra Project No: 6511-16-107-013

Mr. Drapp:

Tierra, Inc. performed geotechnical data collection for the proposed project referenced above. This report is provided to support the RFP Submittal. The results of our field exploration program and laboratory testing completed to date are presented in this data report.

Tierra, Inc. appreciates the opportunity to be of service to HNTB Corporation, Inc. (HNTB) and the Tampa Hillsborough Expressway Authority (THEA) on this project. If you have any questions or comments regarding this report, please contact our office at your earliest convenience.

Sincerely,

TIERRA, INC.

Daniel F. Hoeflich, E.I.
Geotechnical Engineer Intern

Kevin H. Scott, P.E.
Senior Geotechnical Engineer
Florida License No. 65514

Thomas E. Musgrave, P.E.
Geotechnical Engineer
Florida License No. 81669

Larry P. Moore, P.E.
Principal Geotechnical Engineer
Florida License No. 47673

.

DATE OF SURVEY: APRIL, 2018 TO MAY, 2018
SURVEY MADE BY: TIERRA, INC.
SUBMITTED BY: KEVIN H. SCOTT, P.E.

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

DISTRICT: THEA
ROAD NO.: SR 618 (SELMON XPWY)
COUNTY: HILLSBOROUGH

PROJECT NAME: SOUTH SELMON SAFETY PROJECT

CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

	ORGANIC CONTENT		MOISTURE CONTENT		SIEVE ANALYSIS RESULTS PERCENT PASS (%)						ATTERBERG LIMITS (%)					CORROSION TEST RESULTS				
STRATUM NO.	NO. OF TESTS	% ORGANIC	NO. OF TESTS	MOISTURE CONTENT	NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP	DESCRIPTION	NO. OF TESTS	RESISTIVITY ohm-cm	CHLORIDE ppm	SULFATES ppm	pH
1	16	0-2	8	9-18	81	73-100	59-99	46-97	22-70	1-9	13	NP	NP	A-3	LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT	18	5,400-67,000	30-60	<5-72	7.1-8.3
2	--	--	7	17-26	18	65-100	43-98	35-91	26-67	12-24	6	NP-22	NP-5	A-2-4	LIGHT GRAY TO LIGHT BROWN SILTY SAND	--	--	--	--	--
3	2	2-3	5	1-11	18	37-100	27-97	21-91	12-57	3-33	3	NP	NP	A-3/A-2-4	LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS	1	7,600	30	<5	8.3
4	--	--	13	16-53	14	91	77	69	50	26-41	13	27-49	12-31	A-2-6/A-2-7/ A-4/A-7-5/ A-7-6	ORANGE-BROWN SILTY SAND TO CLAYEY SAND	--	--	--	--	--
5	--	--	12	28-62	12	--	--	--	--	36-84	12	51-117	26-92	A-7-5/A-7-6	BLUE-GRAY TO GRAY TO GREEN-GRAY CLAYEY SAND TO CLAY	--	--	--	--	--
6	3	6-8	3	16-24	3	--	--	--	--	8-11	--	--	--	A-8	DARK BROWN ORGANIC SAND TO ORGANIC SAND WITH SILT	--	--	--	--	--
7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	WEATHERED LIMESTONE	--	--	--	--	--

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE. MAKE FINAL CHECK AFTER GRADING.

▼ - WATER TABLE ENCOUNTERED

▽ - ESTIMATED SEASONAL HIGH GROUNDWATER TABLE

>▽ - ESTIMATED SEASONAL HIGH GROUNDWATER TABLE BEYOND BORING DEPTH

$▽^P$ - ESTIMATED SEASONAL HIGH GROUNDWATER TABLE PERCHED CONDITION

GNE - GROUNDWATER NOT ENCOUNTERED

GNA - GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID

NP - NON-PLASTIC

CAVE-IN - BORING TERMINATED DUE TO BOREHOLE COLLAPSE FROM GROUNDWATER INTRUSION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

ROADWAY SOIL SURVEY

SHEET NO.

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

LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (1)

SHEET NO.

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

LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (2)

SHEET NO.

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

LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (3)

SHEET NO.

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

LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (4)

SHEET NO.

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

LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (5)

SHEET NO.

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LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (6)

SHEET NO.

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LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (7)

SHEET NO.

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LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (8)

SHEET NO.

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LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (9)

SHEET NO.

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LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (10)

SHEET NO.

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LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

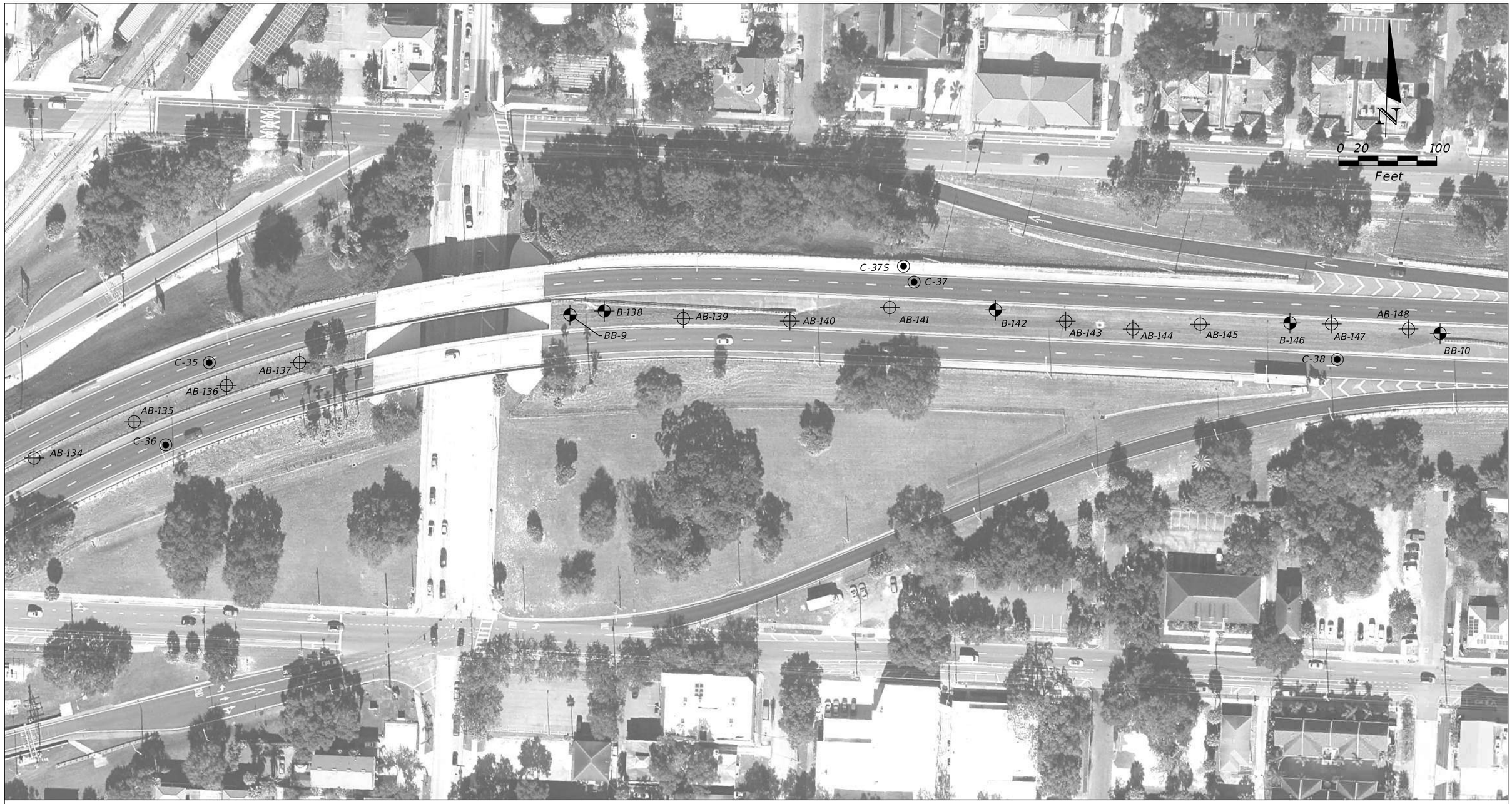
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (11)

SHEET NO.

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



LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (12)

SHEET NO.

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LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (13)

SHEET NO.

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LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE CORE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

BORING LOCATION PLAN (14)

SHEET NO.

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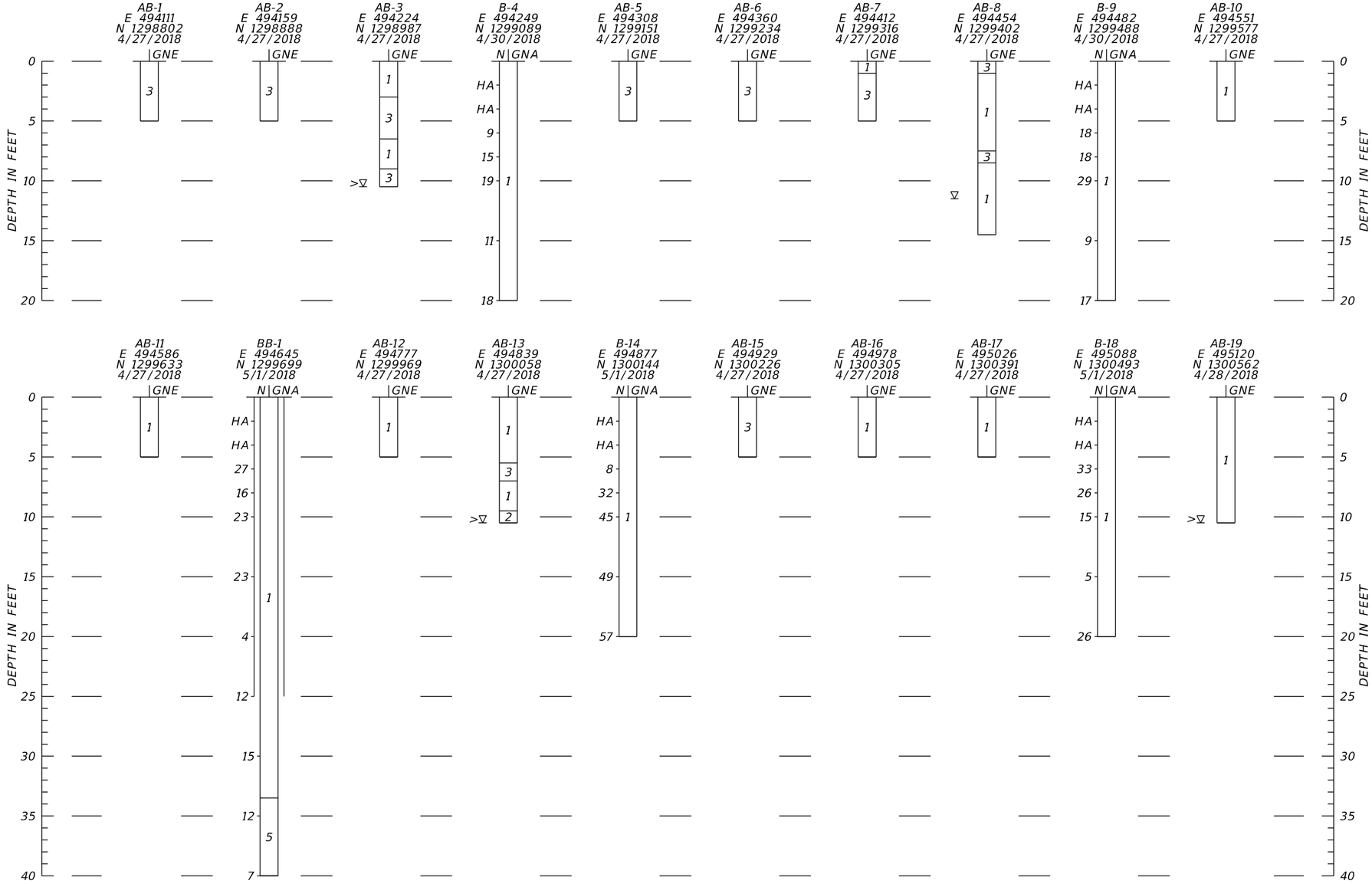

LEGEND

1.	LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2.	LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3.	LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4.	ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)
5.	BLUE-GRAY TO GRAY TO GREEN-GRAY CLAYEY SAND TO CLAY (A-7-5/A-7-6)
6.	DARK BROWN ORGANIC SAND TO ORGANIC SAND WITH SILT (A-8)
7.	WEATHERED LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
>▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE BEYOND BORING DEPTH
▽P	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE PERCHED CONDITION
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
*	RECOVERED SAMPLE INCLUDED TREE ROOTS
100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
| |	CASING
CAVE-IN	BORING TERMINATED DUE TO BOREHOLE COLLAPSE FROM GROUNDWATER INTRUSION
NOTE:	STANDARD PENETRATION BORINGS PERFORMED USING AUTOMATIC HAMMER

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

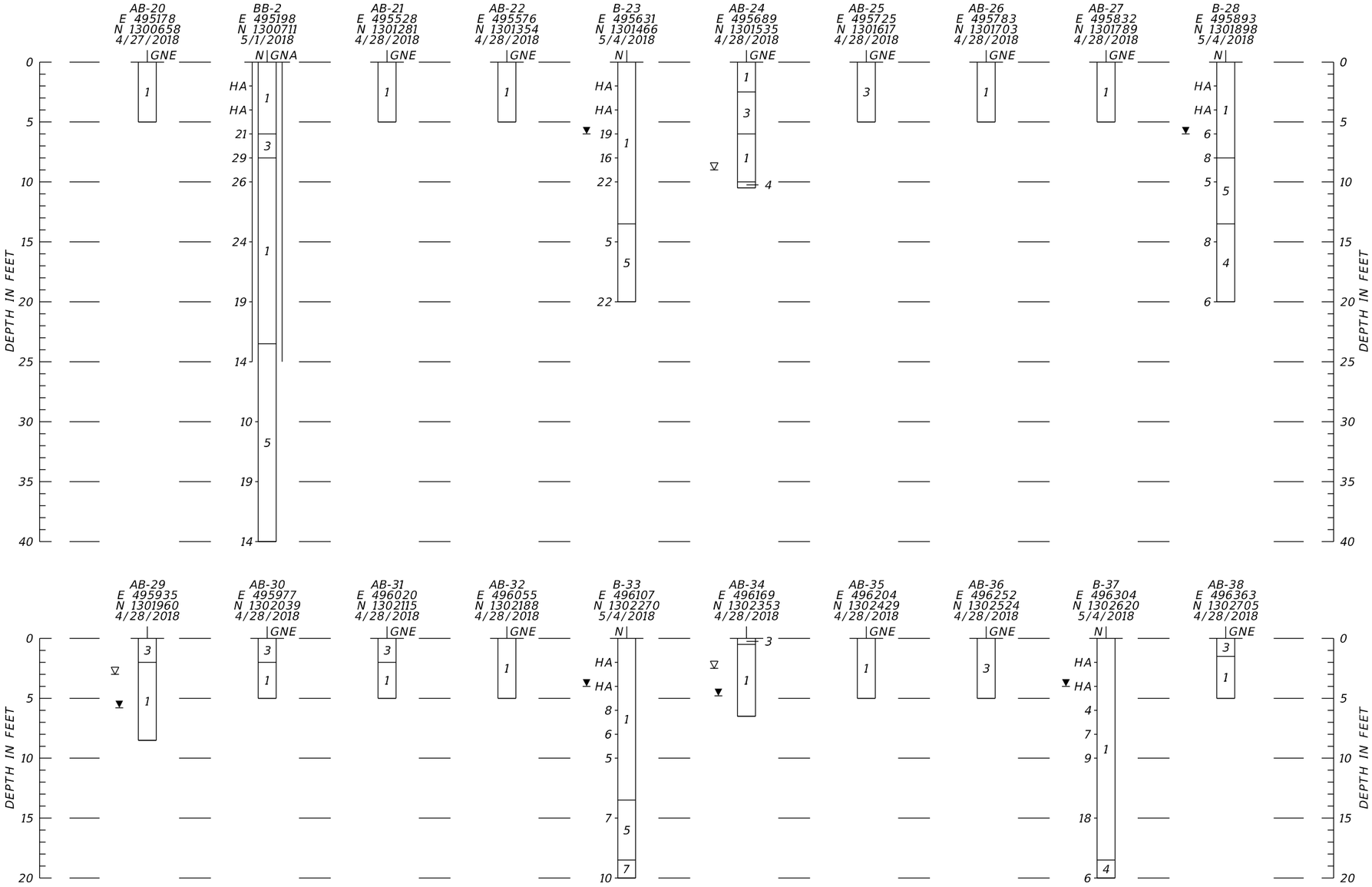
KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

ROADWAY SOIL PROFILES (1)

SHEET NO.



LEGEND

1.	LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2.	LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3.	LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4.	ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)
5.	BLUE-GRAY TO GRAY TO GREEN-GRAY CLAYEY SAND TO CLAY (A-7-5/A-7-6)
6.	DARK BROWN ORGANIC SAND TO ORGANIC SAND WITH SILT (A-8)
7.	WEATHERED LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
>▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE BEYOND BORING DEPTH
▽P	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE PERCHED CONDITION
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
*	RECOVERED SAMPLE INCLUDED TREE ROOTS
←100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
| |	CASING
CAVE-IN	BORING TERMINATED DUE TO BOREHOLE COLLAPSE FROM GROUNDWATER INTRUSION
NOTE:	STANDARD PENETRATION BORINGS PERFORMED USING AUTOMATIC HAMMER

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

ROADWAY SOIL PROFILES (2)

SHEET NO.

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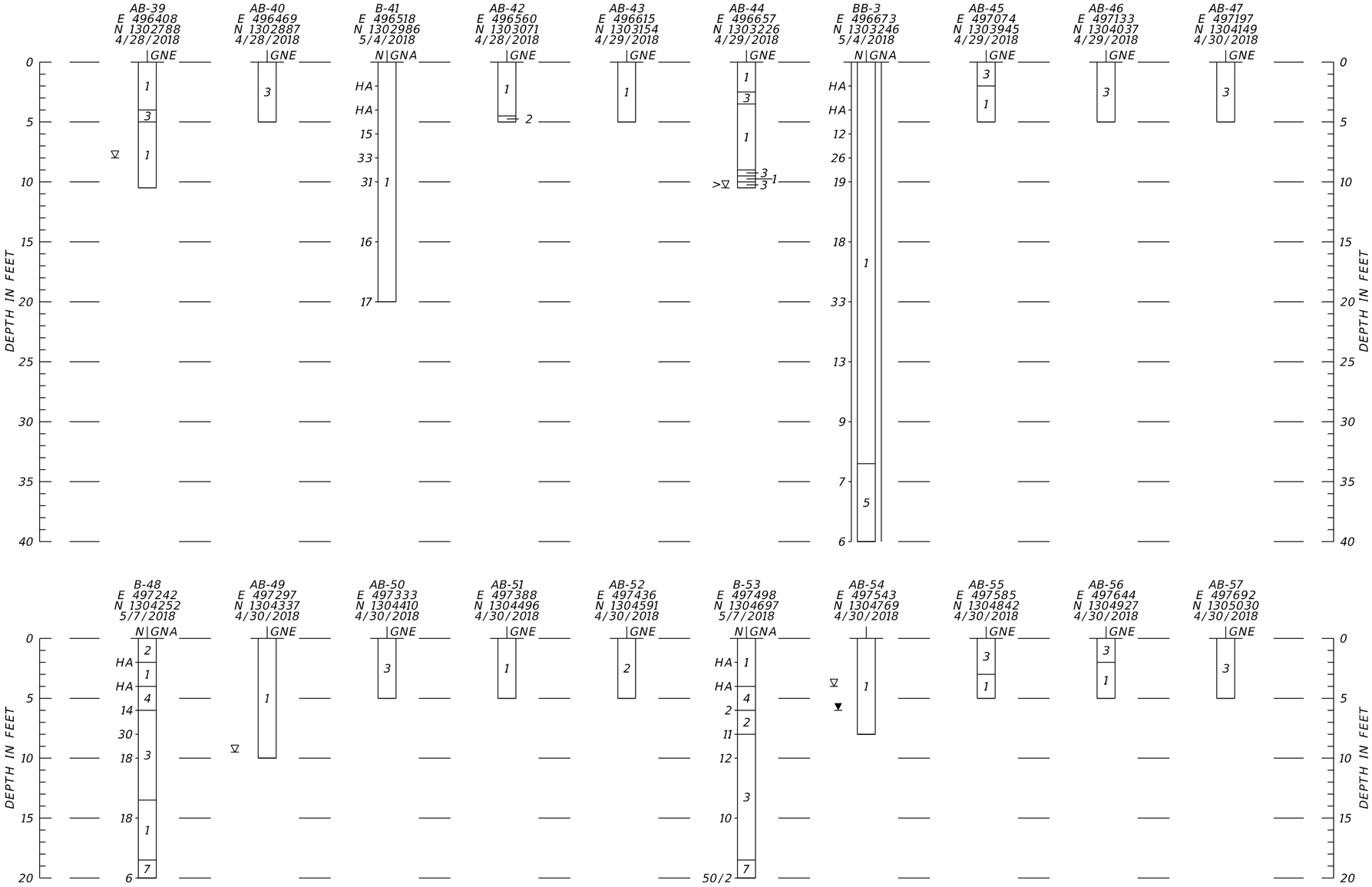

LEGEND

1.	LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2.	LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3.	LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4.	ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)
5.	BLUE-GRAY TO GRAY TO GREEN-GRAY CLAYEY SAND TO CLAY (A-7-5/A-7-6)
6.	DARK BROWN ORGANIC SAND TO ORGANIC SAND WITH SILT (A-8)
7.	WEATHERED LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
>▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE BEYOND BORING DEPTH
∇^P	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE PERCHED CONDITION
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
*	RECOVERED SAMPLE INCLUDED TREE ROOTS
⟵100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
| |	CASING
CAVE-IN	BORING TERMINATED DUE TO BOREHOLE COLLAPSE FROM GROUNDWATER INTRUSION
NOTE:	STANDARD PENETRATION BORINGS PERFORMED USING AUTOMATIC HAMMER

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS-RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

ROADWAY SOIL PROFILES (3)

SHEET NO.

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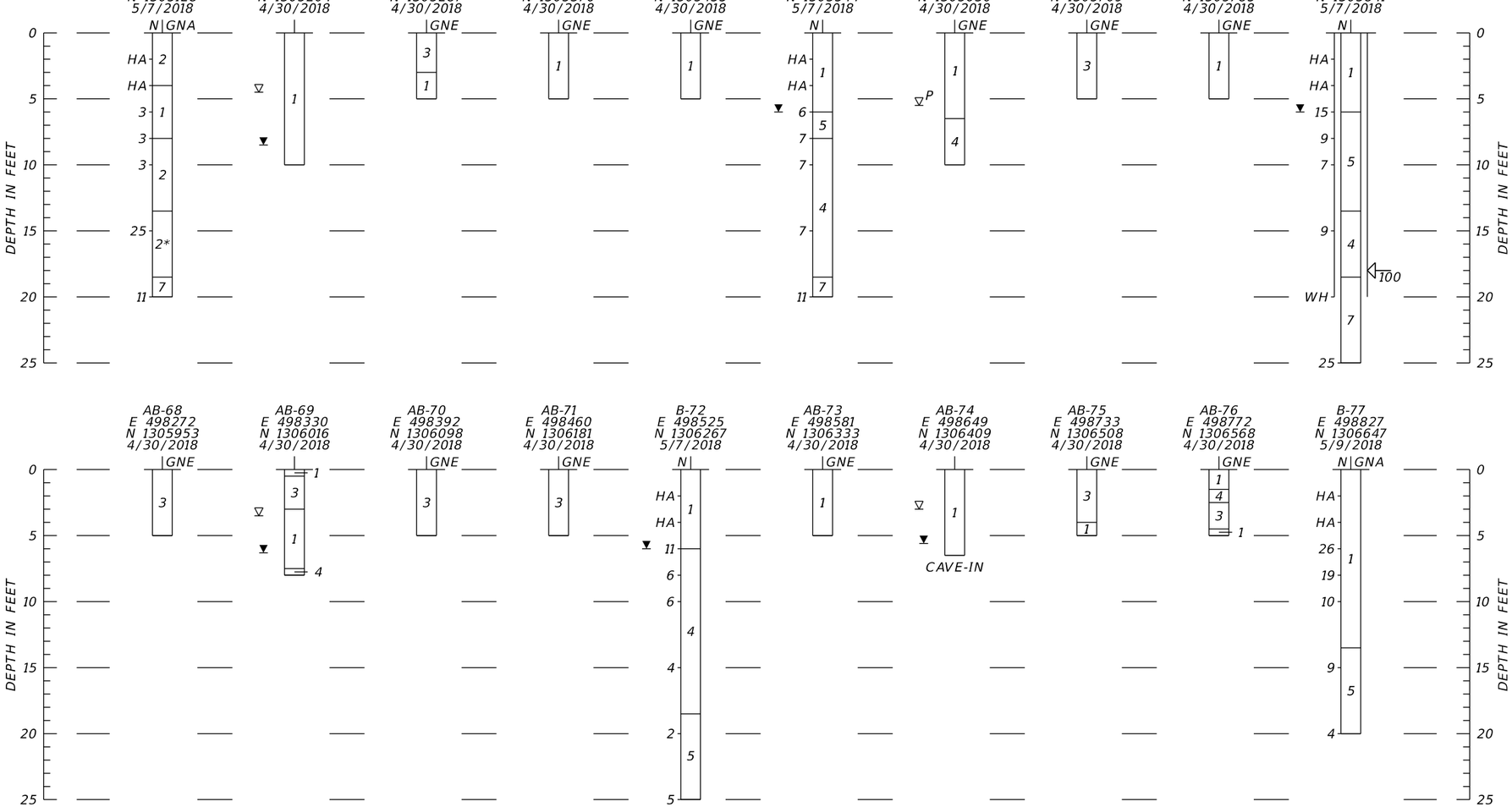

LEGEND

1. LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2. LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3. LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4. ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)
5. BLUE-GRAY TO GRAY TO GREEN-GRAY CLAYEY SAND TO CLAY (A-7-5/A-7-6)
6. DARK BROWN ORGANIC SAND TO ORGANIC SAND WITH SILT (A-8)
7. WEATHERED LIMESTONE

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
>▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE BEYOND BORING DEPTH
▽P	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE PERCHED CONDITION
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
*	RECOVERED SAMPLE INCLUDED TREE ROOTS
⇦100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
| |	CASING
CAVE-IN	BORING TERMINATED DUE TO BOREHOLE COLLAPSE FROM GROUNDWATER INTRUSION
NOTE:	STANDARD PENETRATION BORINGS PERFORMED USING AUTOMATIC HAMMER

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

ROADWAY SOIL PROFILES (4)

SHEET NO.

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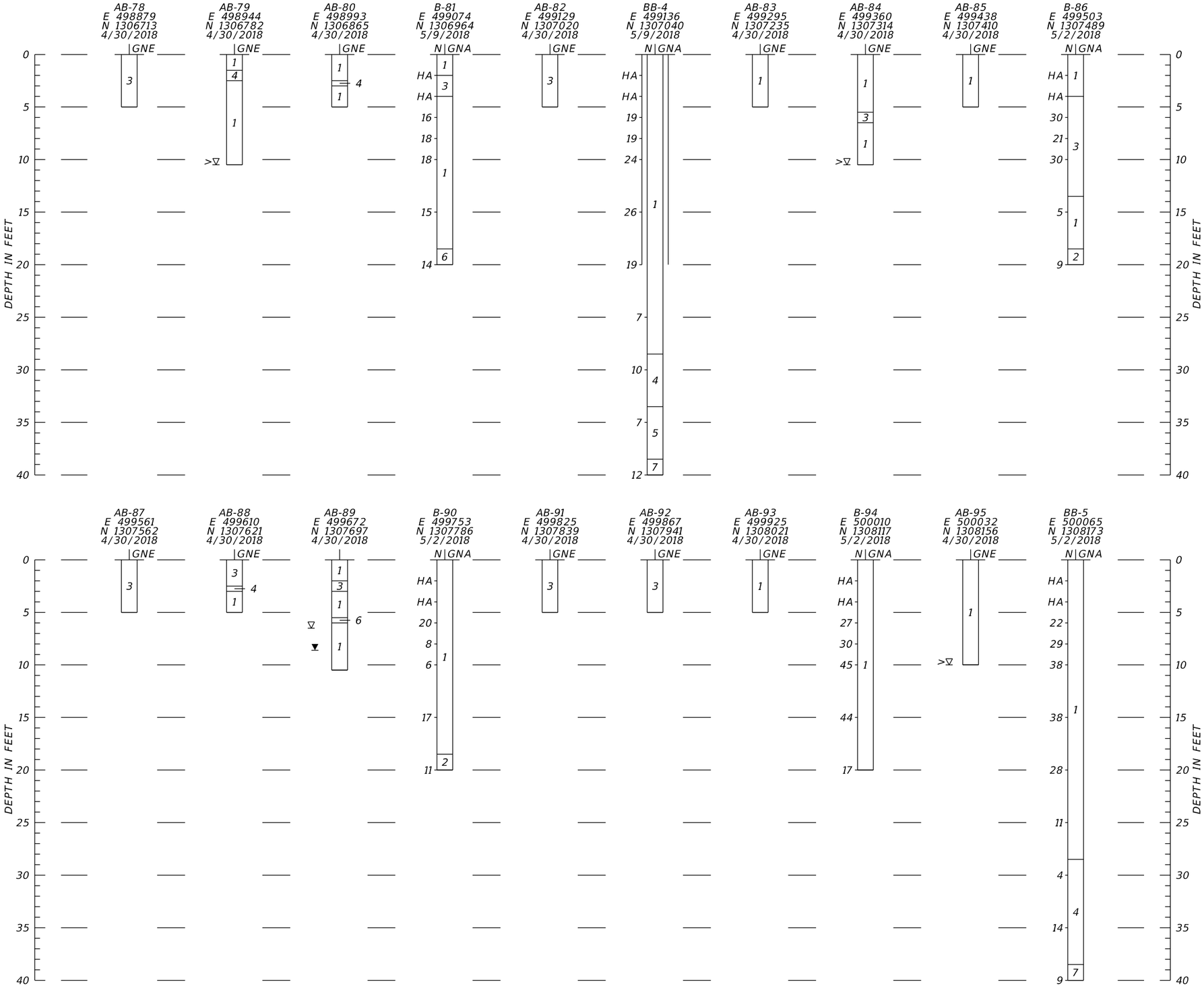


LEGEND

1.	LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2.	LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3.	LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4.	ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)
5.	BLUE-GRAY TO GRAY TO GREEN-GRAY CLAYEY SAND TO CLAY (A-7-5/A-7-6)
6.	DARK BROWN ORGANIC SAND TO ORGANIC SAND WITH SILT (A-8)
7.	WEATHERED LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
>▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE BEYOND BORING DEPTH
▽P	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE PERCHED CONDITION
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
*	RECOVERED SAMPLE INCLUDED TREE ROOTS
◁100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
| |	CASING
CAVE-IN	BORING TERMINATED DUE TO BOREHOLE COLLAPSE FROM GROUNDWATER INTRUSION
NOTE:	STANDARD PENETRATION BORINGS PERFORMED USING AUTOMATIC HAMMER

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

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

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

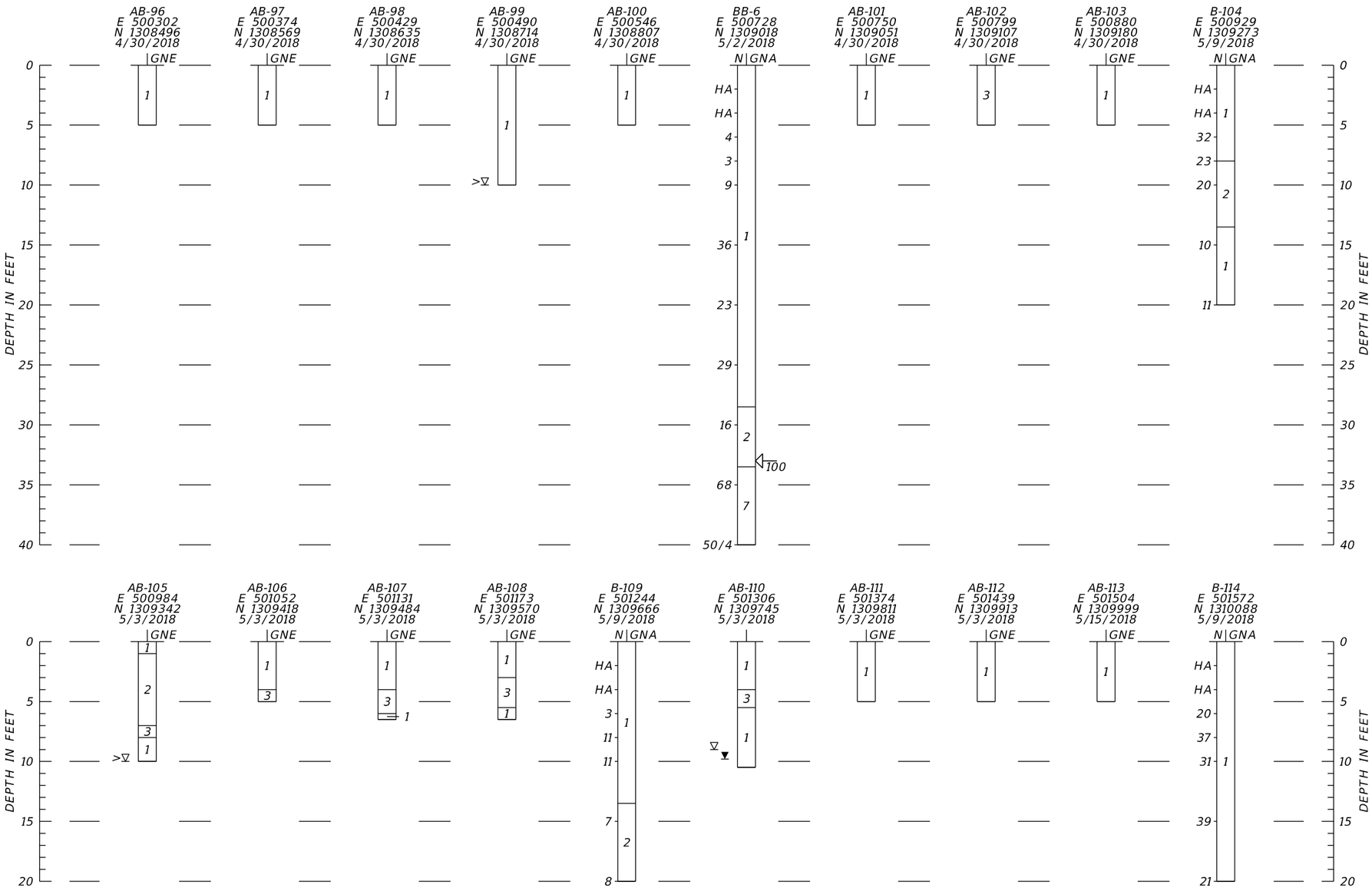
KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

ROADWAY SOIL PROFILES (5)

SHEET NO.



LEGEND

1.	LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2.	LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3.	LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4.	ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)
5.	BLUE-GRAY TO GRAY TO GREEN-GRAY CLAYEY SAND TO CLAY (A-7-5/A-7-6)
6.	DARK BROWN ORGANIC SAND TO ORGANIC SAND WITH SILT (A-8)
7.	WEATHERED LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
>▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE BEYOND BORING DEPTH
▽P	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE PERCHED CONDITION
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
*	RECOVERED SAMPLE INCLUDED TREE ROOTS
◁100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
| |	CASING
CAVE-IN	BORING TERMINATED DUE TO BOREHOLE COLLAPSE FROM GROUNDWATER INTRUSION
NOTE:	STANDARD PENETRATION BORINGS PERFORMED USING AUTOMATIC HAMMER

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

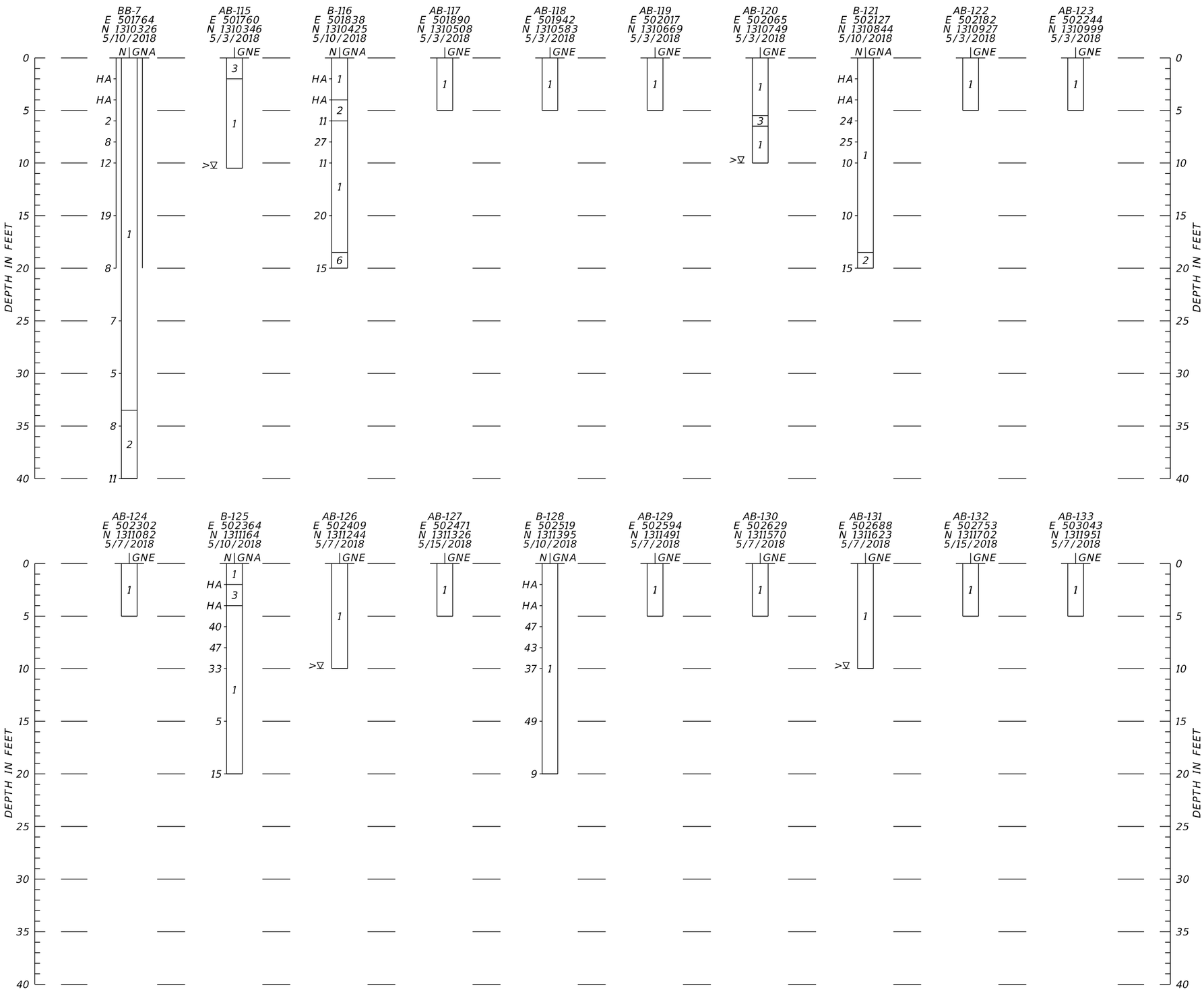
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

ROADWAY SOIL PROFILES (6)

SHEET NO.

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



LEGEND

1.	LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2.	LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3.	LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4.	ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)
5.	BLUE-GRAY TO GRAY TO GREEN-GRAY CLAYEY SAND TO CLAY (A-7-5/A-7-6)
6.	DARK BROWN ORGANIC SAND TO ORGANIC SAND WITH SILT (A-8)
7.	WEATHERED LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
>▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE BEYOND BORING DEPTH
▽^{P}	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE PERCHED CONDITION
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
*	RECOVERED SAMPLE INCLUDED TREE ROOTS
◁100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
| |	CASING
CAVE-IN	BORING TERMINATED DUE TO BOREHOLE COLLAPSE FROM GROUNDWATER INTRUSION
NOTE:	STANDARD PENETRATION BORINGS PERFORMED USING AUTOMATIC HAMMER

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS-RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

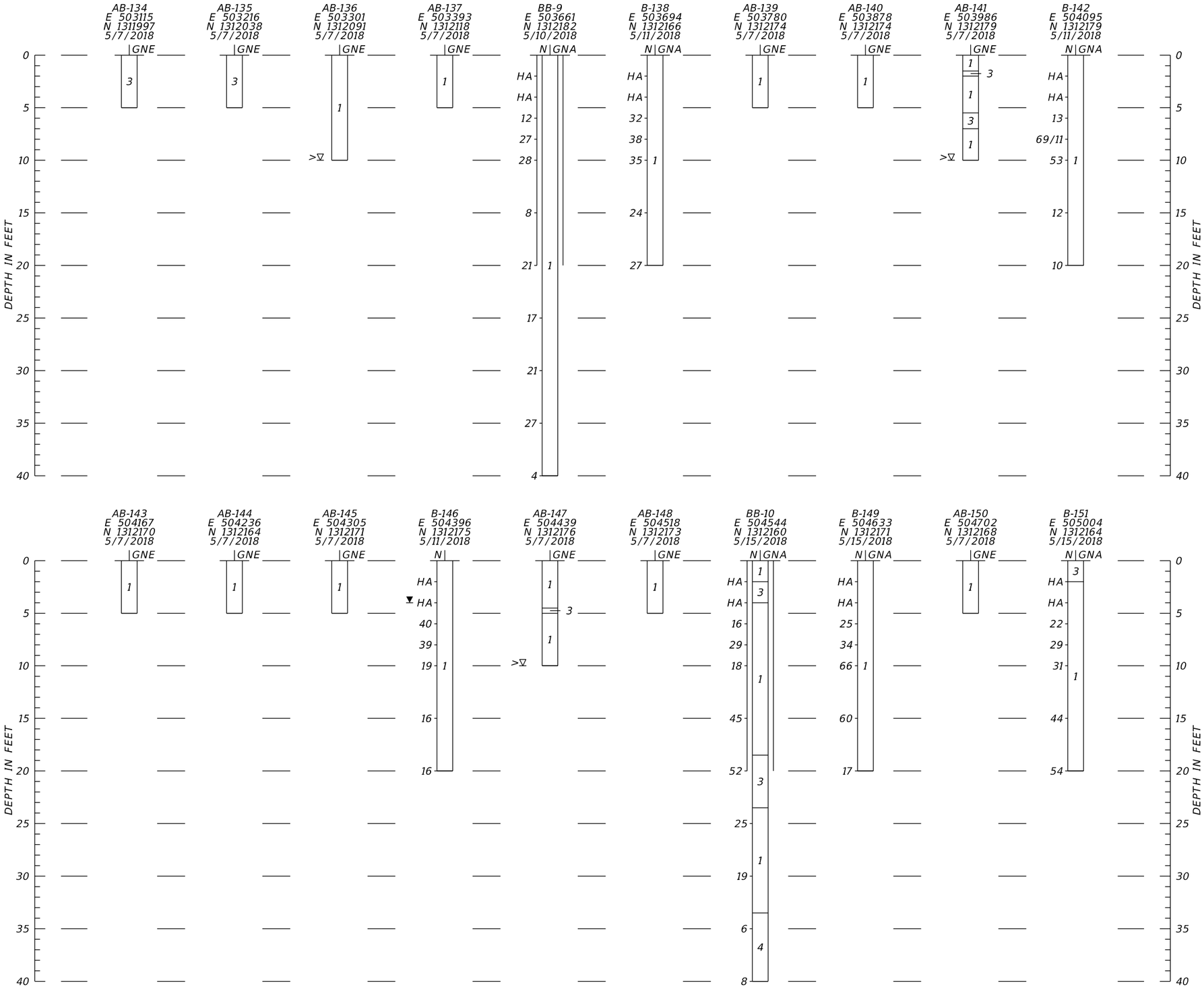
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

ROADWAY SOIL PROFILES (7)

SHEET NO.

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



LEGEND

1.	LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2.	LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3.	LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4.	ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)
5.	BLUE-GRAY TO GRAY TO GREEN-GRAY CLAYEY SAND TO CLAY (A-7-5/A-7-6)
6.	DARK BROWN ORGANIC SAND TO ORGANIC SAND WITH SILT (A-8)
7.	WEATHERED LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
>▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE BEYOND BORING DEPTH
∇^P	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE PERCHED CONDITION
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
*	RECOVERED SAMPLE INCLUDED TREE ROOTS
◁ 100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
| |	CASING
CAVE-IN	BORING TERMINATED DUE TO BOREHOLE COLLAPSE FROM GROUNDWATER INTRUSION
NOTE:	STANDARD PENETRATION BORINGS PERFORMED USING AUTOMATIC HAMMER

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

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REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

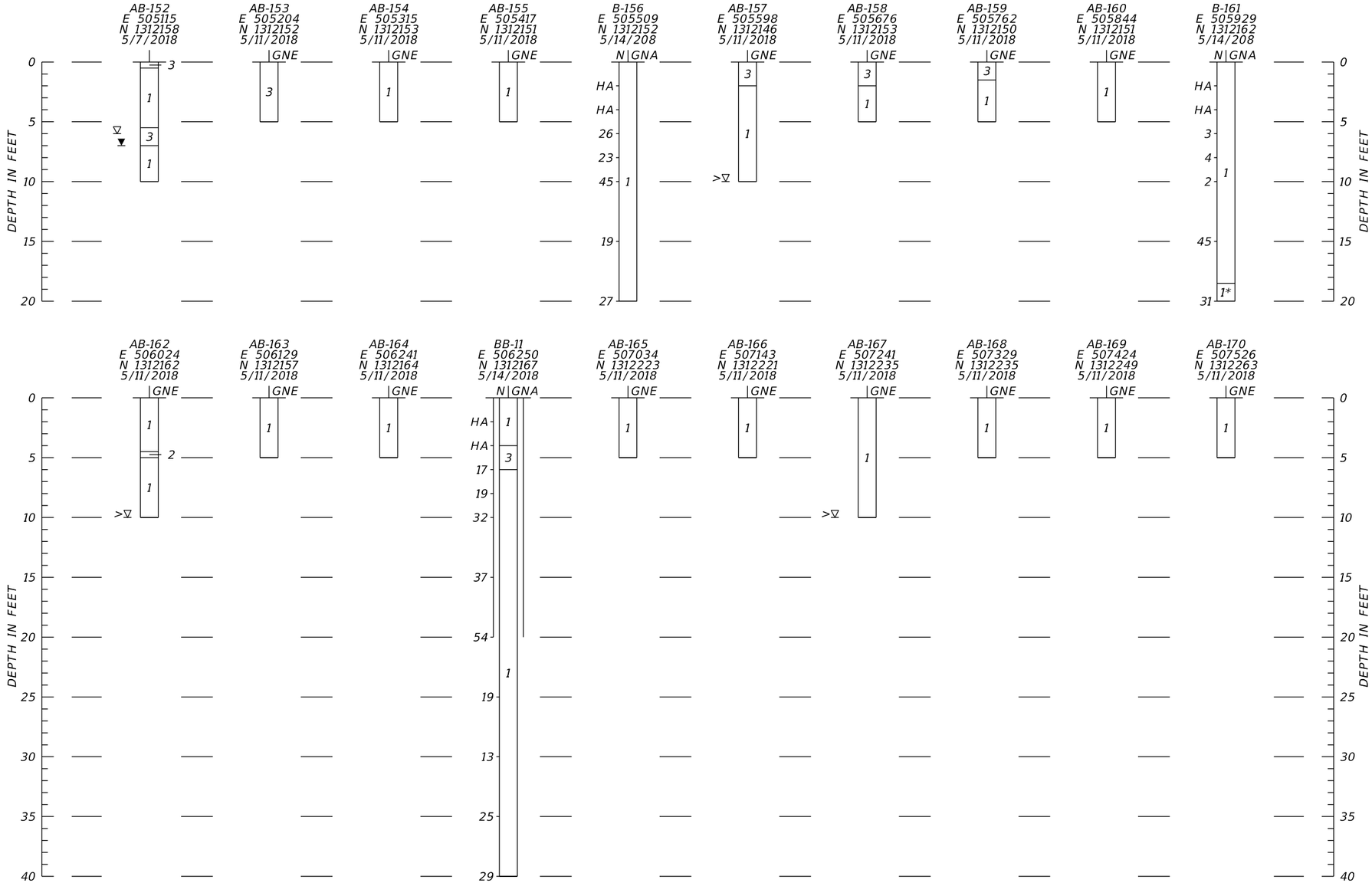
KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

ROADWAY SOIL PROFILES (8)

SHEET NO.



LEGEND

1.	LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2.	LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3.	LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4.	ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)
5.	BLUE-GRAY TO GRAY TO GREEN-GRAY CLAYEY SAND TO CLAY (A-7-5/A-7-6)
6.	DARK BROWN ORGANIC SAND TO ORGANIC SAND WITH SILT (A-8)
7.	WEATHERED LIMESTONE
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
>▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE BEYOND BORING DEPTH
▽P	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE PERCHED CONDITION
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
*	RECOVERED SAMPLE INCLUDED TREE ROOTS
100	LOSS OF CIRCULATION OF DRILLING FLUID (%)
| |	CASING
CAVE-IN	BORING TERMINATED DUE TO BOREHOLE COLLAPSE FROM GROUNDWATER INTRUSION
NOTE:	STANDARD PENETRATION BORINGS PERFORMED USING AUTOMATIC HAMMER

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

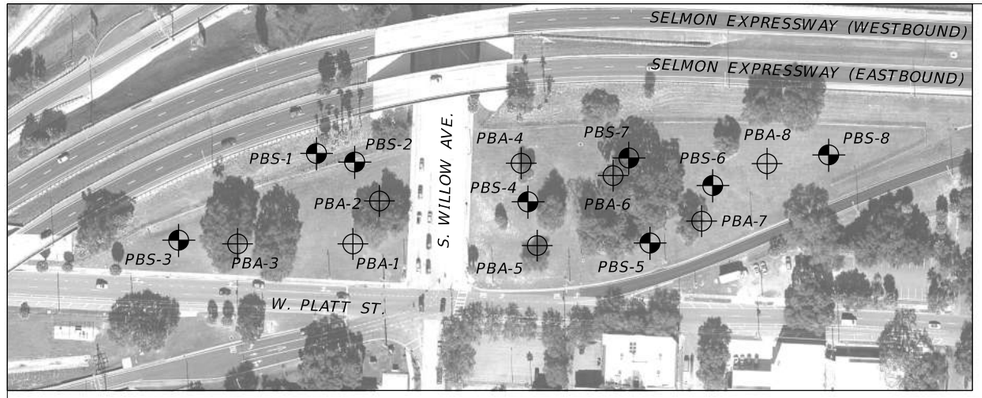
KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

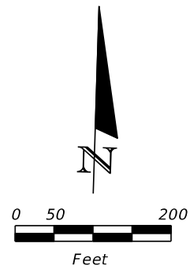
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

ROADWAY SOIL PROFILES (9)

SHEET NO.





BORING LOCATION PLAN

LEGEND

1.	LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2.	LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3.	LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4.	ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NP	NON-PLASTIC
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION

BOR # PBA-1
EASTING 503440
NORTHING 1311902
DATE 4/26/2018

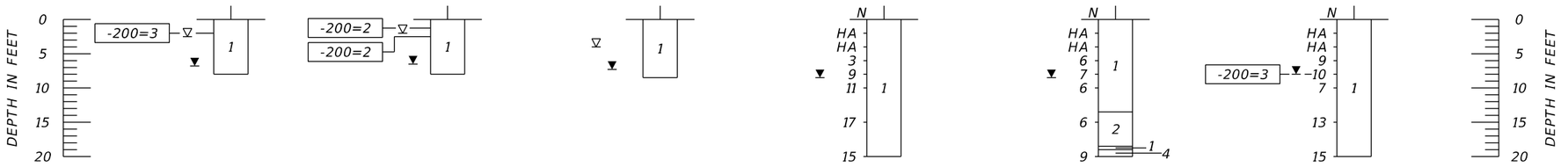
BOR # PBA-2
EASTING 503473
NORTHING 1311958
DATE 4/26/2018

BOR # PBA-3
EASTING 503293
NORTHING 1311897
DATE 4/26/2018

BOR # PBS-1
EASTING 503390
NORTHING 1312016
DATE 4/25/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25

BOR # PBS-2
EASTING 503440
NORTHING 1312007
DATE 4/25/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25

BOR # PBS-3
EASTING 503217
NORTHING 1311900
DATE 4/25/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25



	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

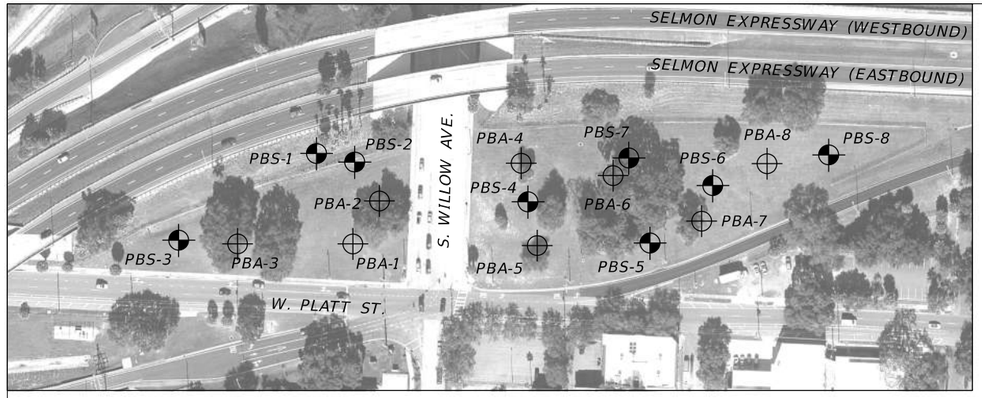
KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

SOIL SURVEY (1)
PONDS

SHEET NO.



BORING LOCATION PLAN

LEGEND

1.	LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2.	LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3.	LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4.	ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NP	NON-PLASTIC
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION

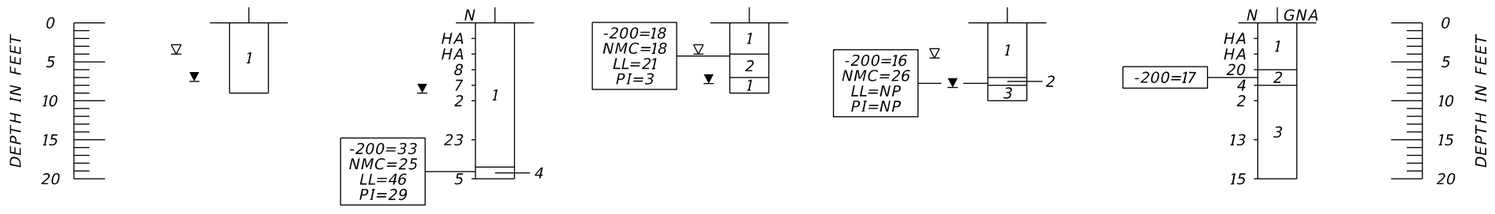
BOR # PBA-4
EASTING 503653
NORTHING 1312012
DATE 4/26/2018

BOR # PBS-4
EASTING 503663
NORTHING 1311963
DATE 4/20/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25

BOR # PBA-5
EASTING 503677
NORTHING 1311907
DATE 4/26/2018

BOR # PBA-6
EASTING 503771
NORTHING 1312000
DATE 4/26/2018

BOR # PBS-7
EASTING 503791
NORTHING 1312023
DATE 4/20/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25



	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

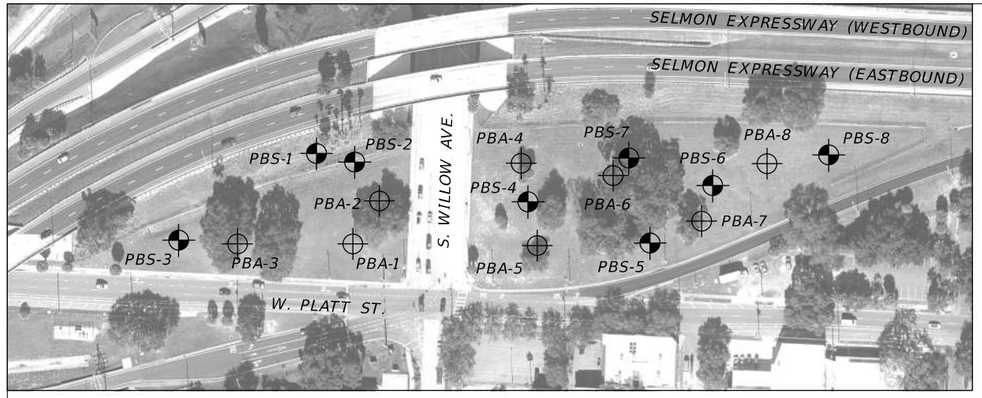
KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

SOIL SURVEY (2)
PONDS

SHEET NO.

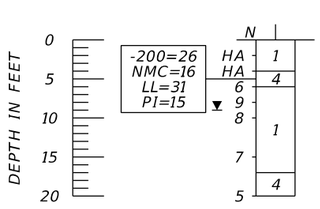


BORING LOCATION PLAN

LEGEND

1.	LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2.	LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3.	LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4.	ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NP	NON-PLASTIC
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION

BOR # PBS-5
EASTING 503821
NORTHING 1311915
DATE 4/20/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25



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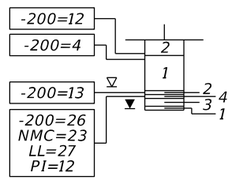
NORTHING 1311945
DATE 4/26/2018



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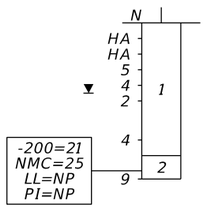
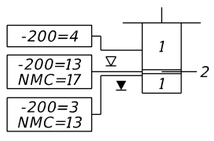
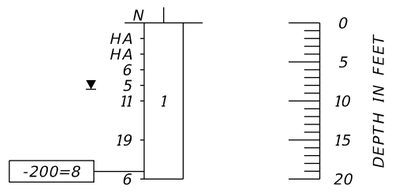
EASTING 503899
NORTHING 1311991
DATE 4/20/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25



BOR # PBA-8
EASTING 503968
NORTHING 1312021
DATE 4/26/2018



BOR # PBS-8
EASTING 504846
NORTHING 1312035
DATE 4/20/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25



	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

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REVISIONS			
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TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

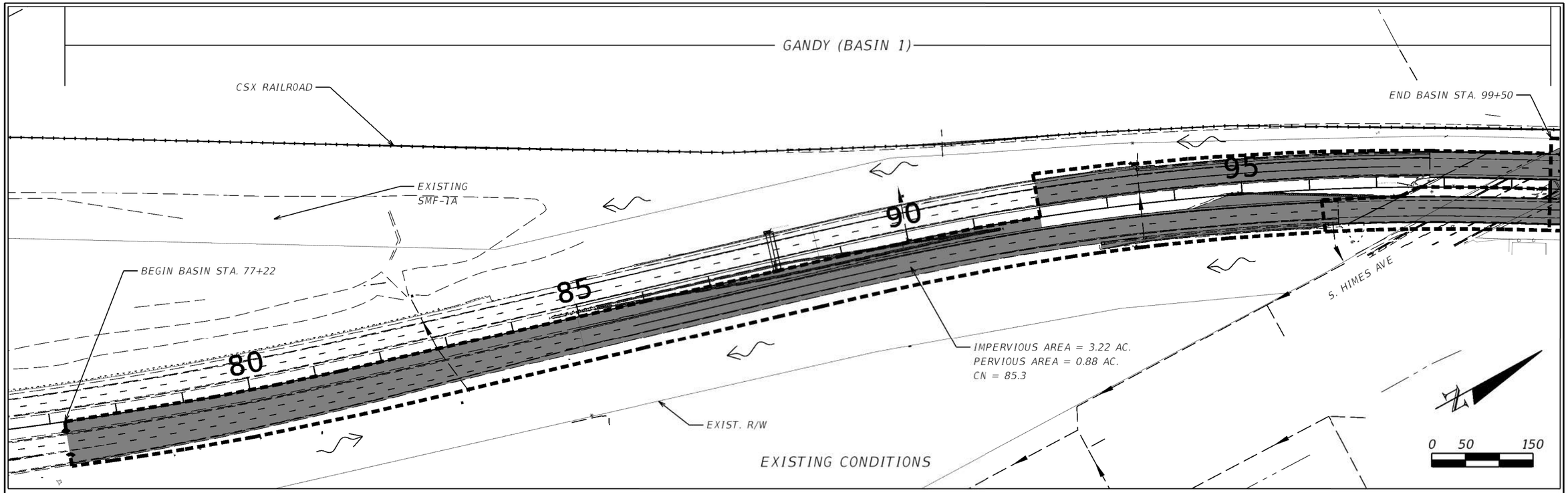
SOIL SURVEY (3)
PONDS

SHEET NO.

Appendix C - Calculations

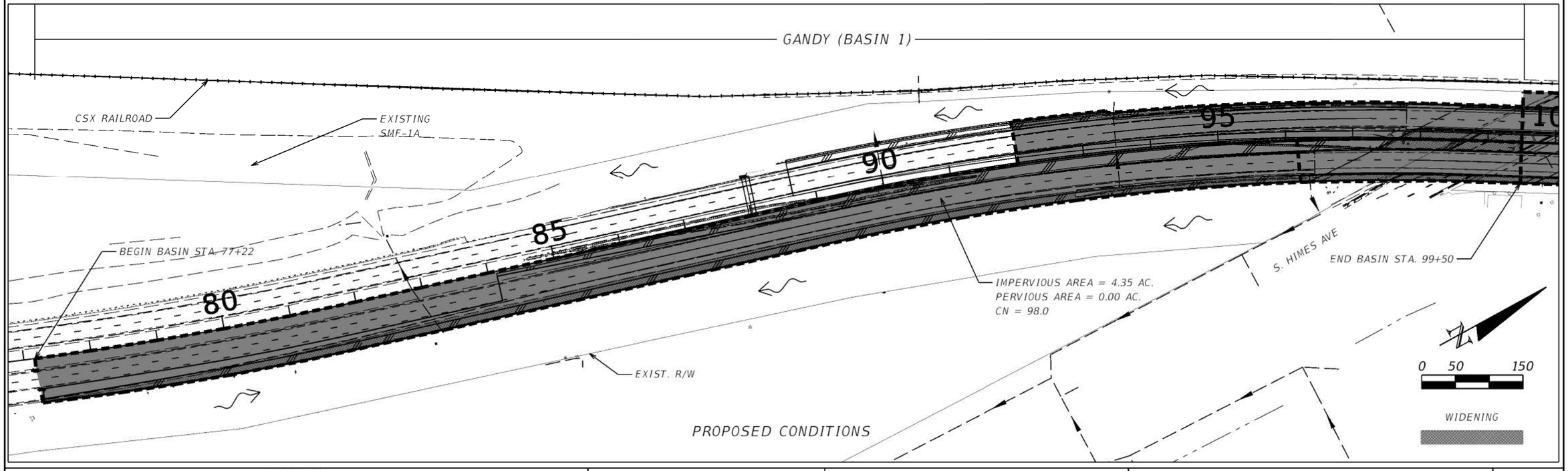
Basin 1: Gandy
Basin Limits: Sta. 77+22 to 99+50

GANDY (BASIN 1)



EXISTING CONDITIONS

GANDY (BASIN 1)



PROPOSED CONDITIONS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO.
SR 618	HILLSBOROUGH	HI-0012

PRE/POST BASIN MAP GANDY (1)

SHEET NO.

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Gandy	Location:	Tampa, FL		

Gandy Hydrologic Calculations

Existing Conditions

Total Impervious Area	
Impervious Roadway:	3.22 ac.
Impervious Other:	0.00 ac.
Total:	3.22 ac.

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Open Space (Good)	A	39	0.88 ac.
Open Space (Good)	B	61	0.00 ac.
Open Space (Good)	C	74	0.00 ac.
Impervious		98	3.22 ac.
		Total Area:	4.10 ac.

Weighted CN: **85.3**

Proposed Conditions

Total Impervious Area	
Impervious Roadway:	4.35 ac.
Impervious Other:	0.00 ac.
Total:	4.35 ac.

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Open Space (Good)	A	39	0.00 ac.
Open Space (Good)	B	61	0.00 ac.
Open Space (Good)	C	74	0.00 ac.
Impervious		98	4.35 ac.
		Total Area:	4.35 ac.

Weighted CN: **98.0**

Treatment Calculations	
Governing Agency:	SWFWMD
Treatment Method:	Wet Detention
Online or Offline:	Online
OFW:	No
Impaired Waterbody:	No
Open or Closed Basin	Open
Type of Project:	Roadway Widening

Treatment Area (New Imp.):	1.13 ac.
Treatment Area (Restriping):	0.12 ac.
Treatment Depth*:	1.0 in.
Treatment Volume Req. (New Imp.):	**0.09 ac.-ft.**
Treatment Volume Req. (Restriping):	**0.01 ac.-ft.**

* Dry Retention Criteria - 0.5 inch over DCIA
Wet Detention Criteria - 1.0 inch over DCIA

Attenuation Calculations	
Rainfall Depth*:	11.2 in.

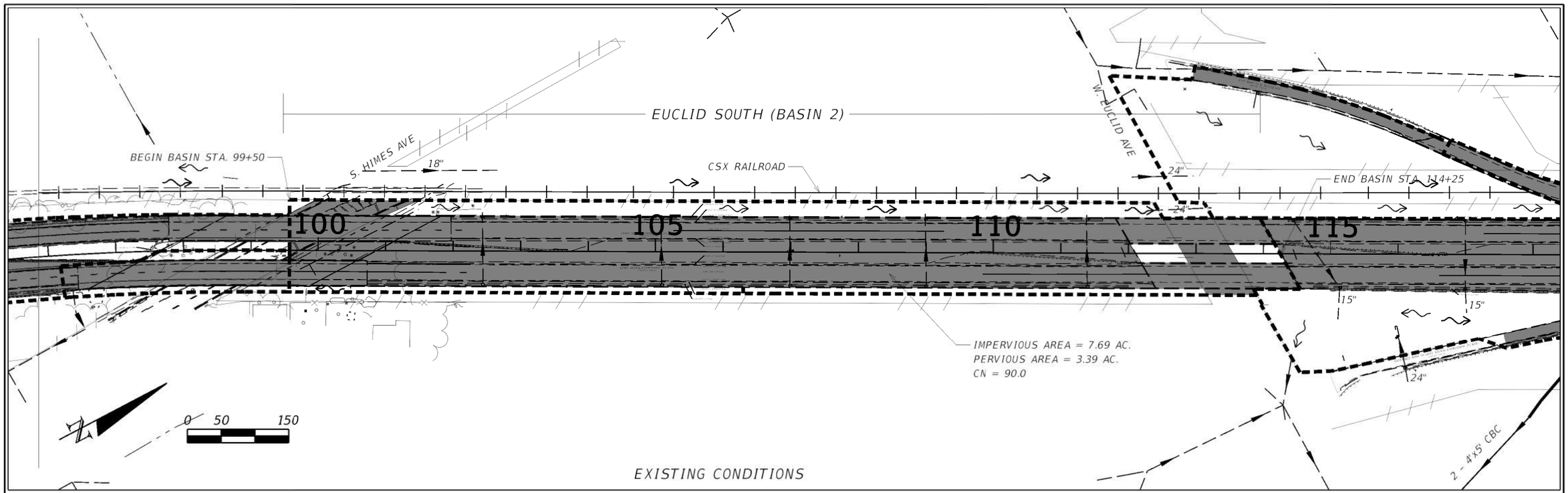
Summary of Runoff	Existing	Proposed
Total Basin Area (LT and RT):	4.10 ac.	4.35 ac.
Weighted CN (LT and RT):	85.3	98.0
Soil Retention (S):	1.7 in.	0.2 in.
Runoff Depth (Q_R):	9.4 in.	11.0 in.
Runoff Volume:	3.2 ac.-ft.	4.0 ac.-ft.

Post-Pre Attenuation Volume (V_A): 0.77 ac.-ft.

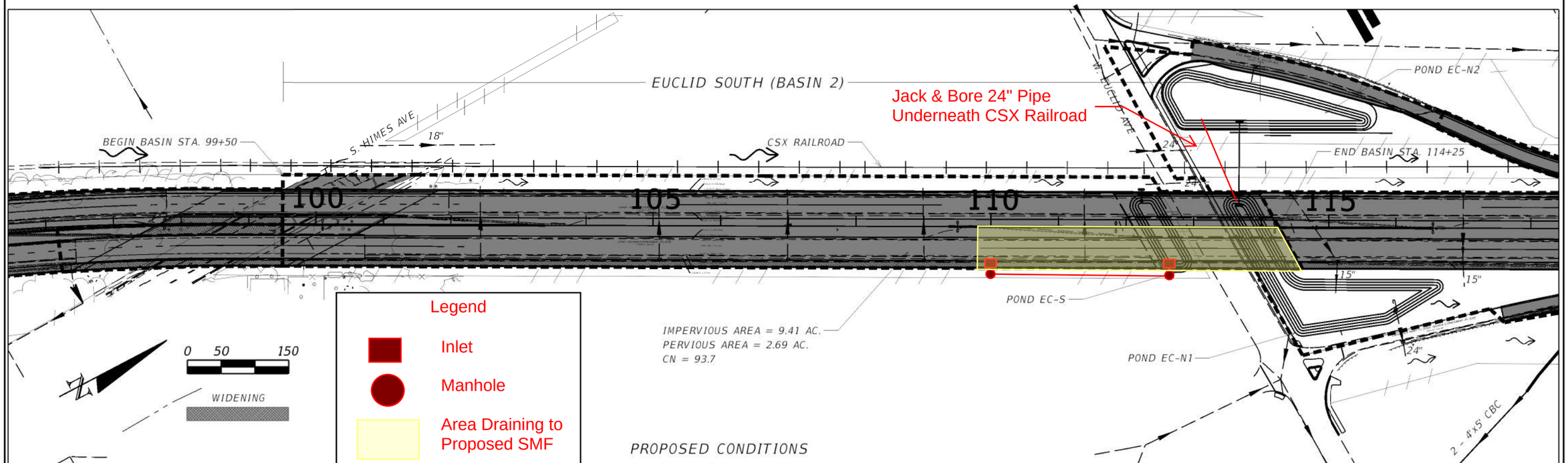
*100 year/24 hour, NOAA Atlas-14 rainfall data

Total Runoff Volume Required	
Treatment Volume Required:	0.10 ac.-ft.
Attenuation Volume* (V_A):	0.77 ac.-ft.
Total:	**0.87 ac.-ft.**

Basin 2: Euclid
Basin Limits:
Sta. 99+50 to 127+63 (Existing)
Sta. 99+50 to 130+05 (Proposed)



EXISTING CONDITIONS



PROPOSED CONDITIONS

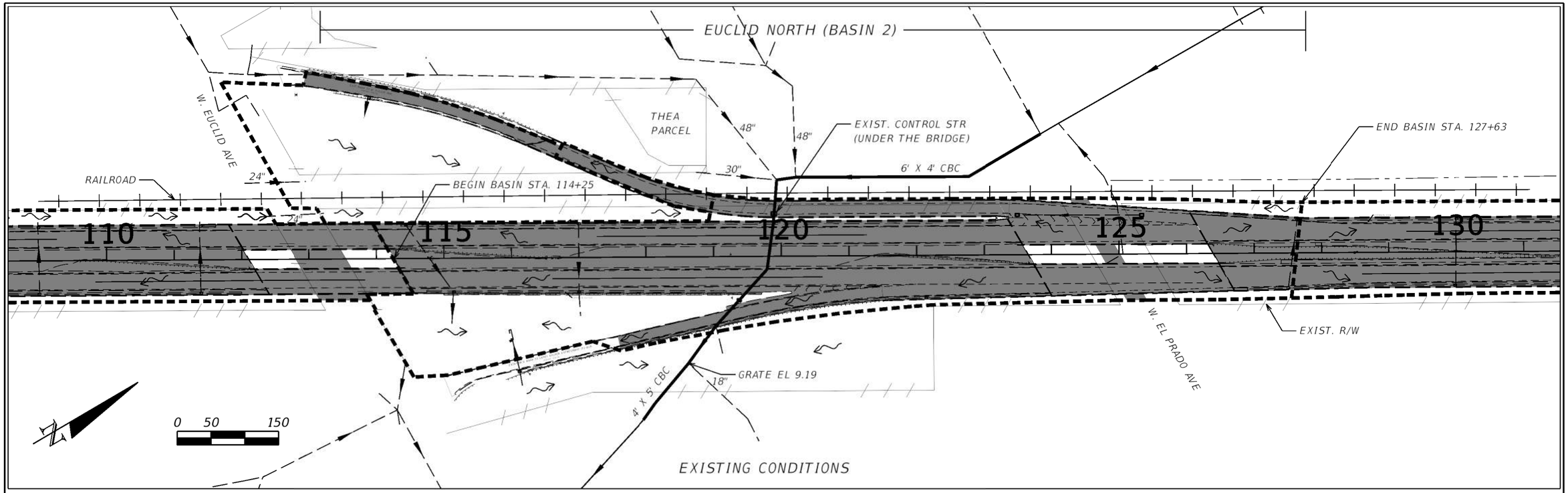
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

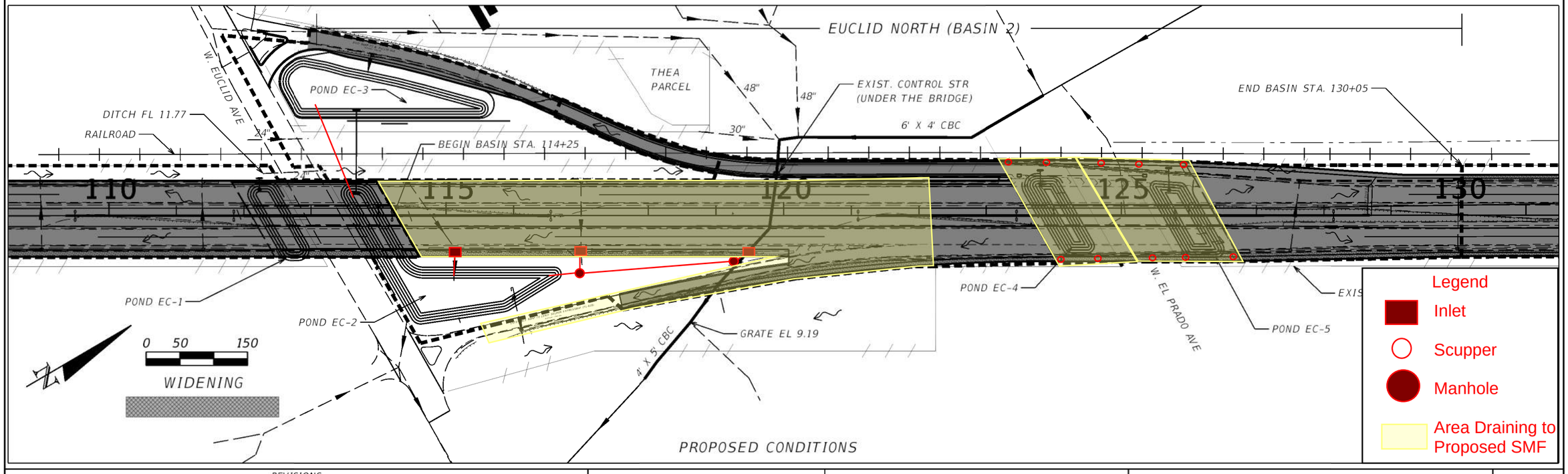
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO.
SR 618	HILLSBOROUGH	HI-0012

PRE/POST BASIN MAP
EUCLID S (2)

SHEET NO.





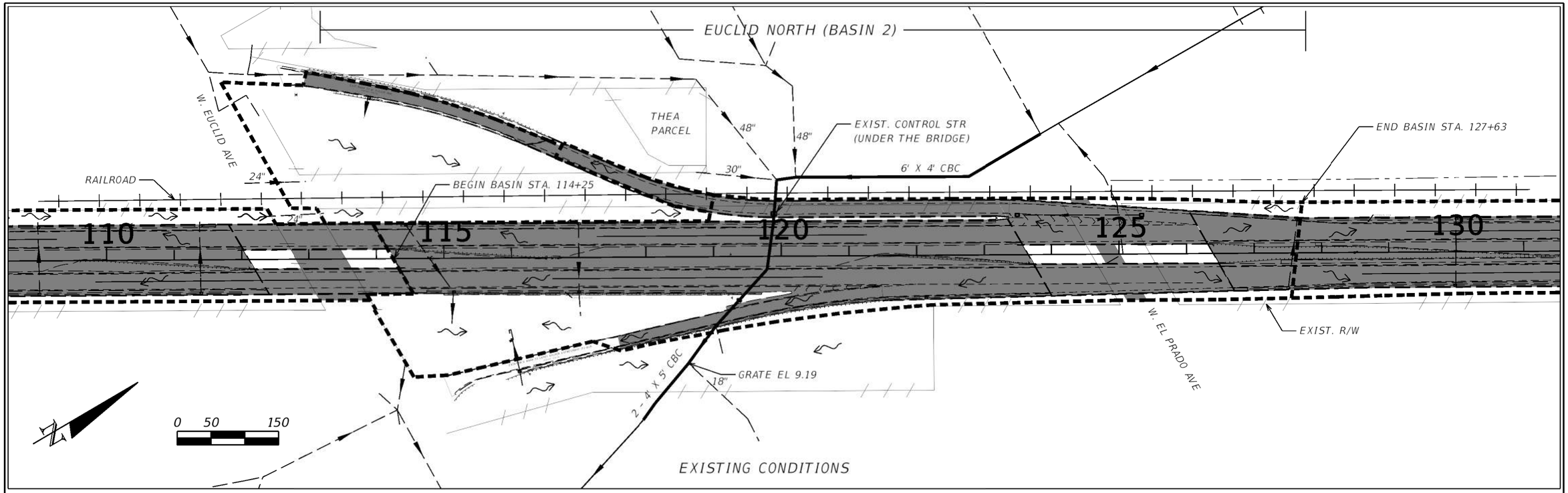
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

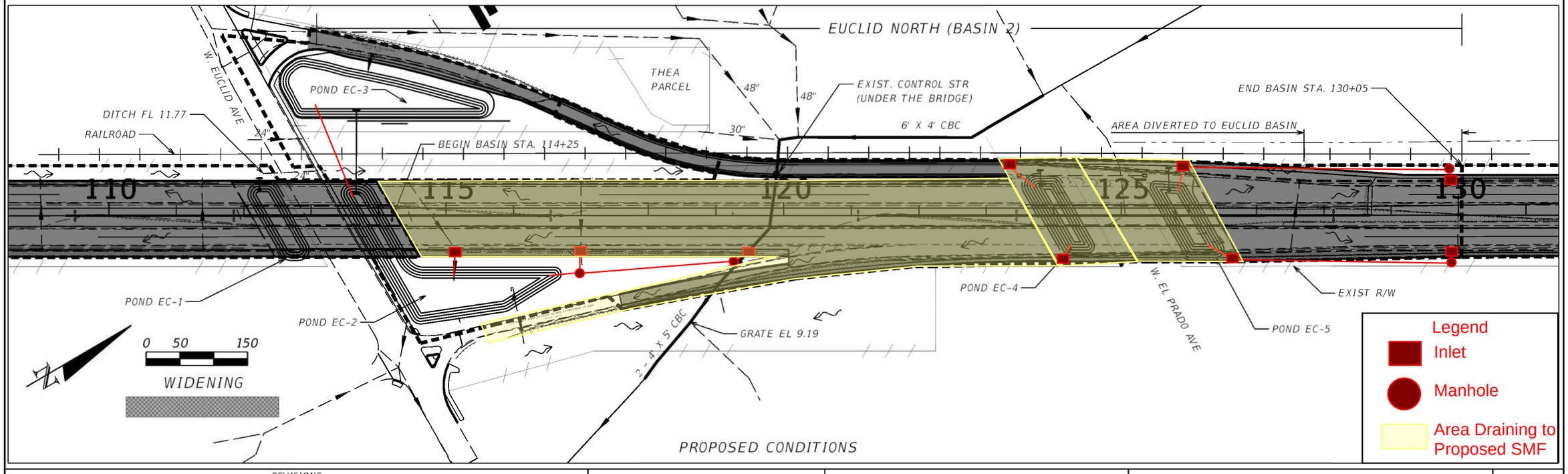
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO.
SR 618	HILLSBOROUGH	HI-0012

PRE/POST BASIN MAP
EUCLID N (3)

SHEET NO.





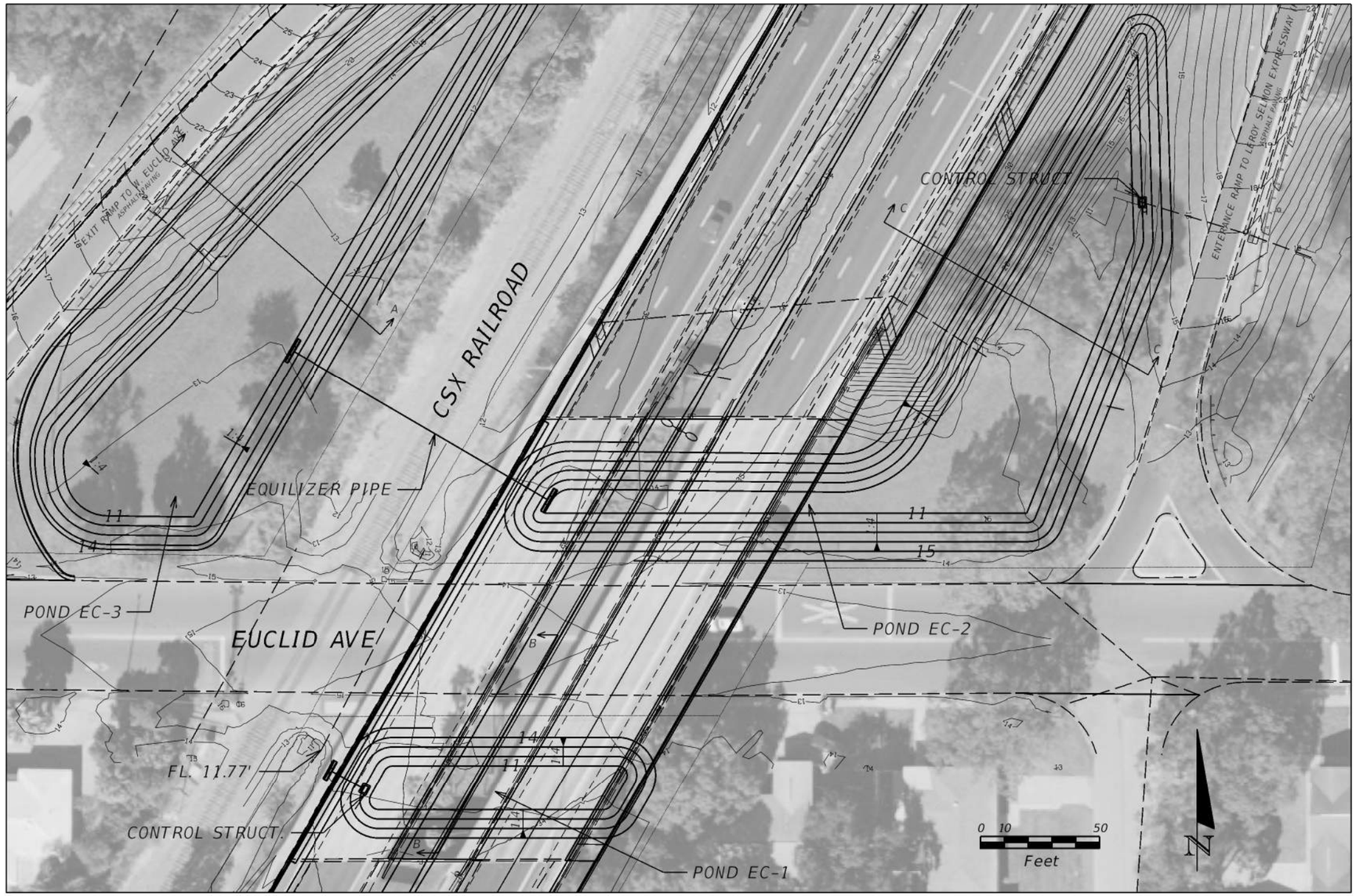
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

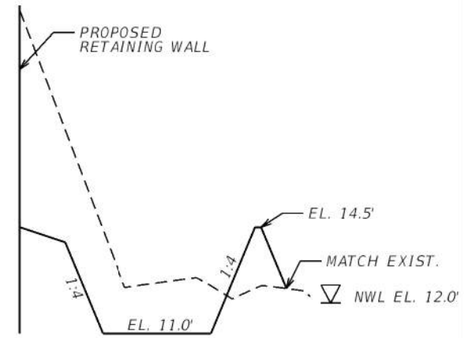
ROAD NO.	COUNTY	THEA PROJECT NO.
SR 618	HILLSBOROUGH	HI-0012

PRE/POST BASIN MAP
EUCLID N (3)

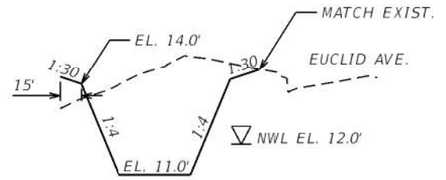
SHEET NO.



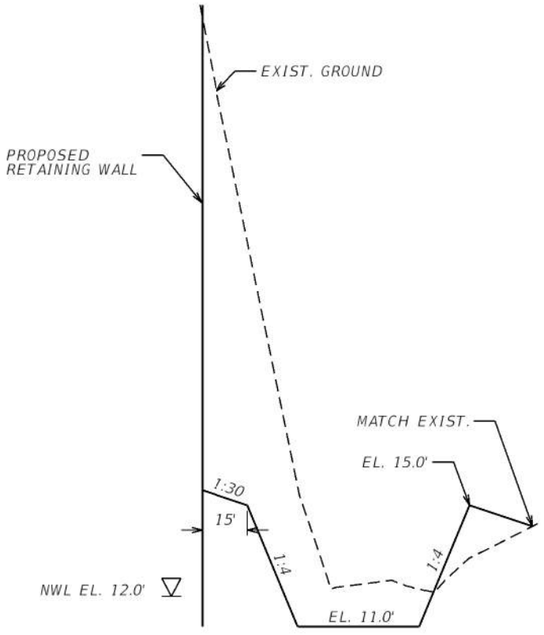
PLAN VIEW
NTS



SECTION A-A
NTS



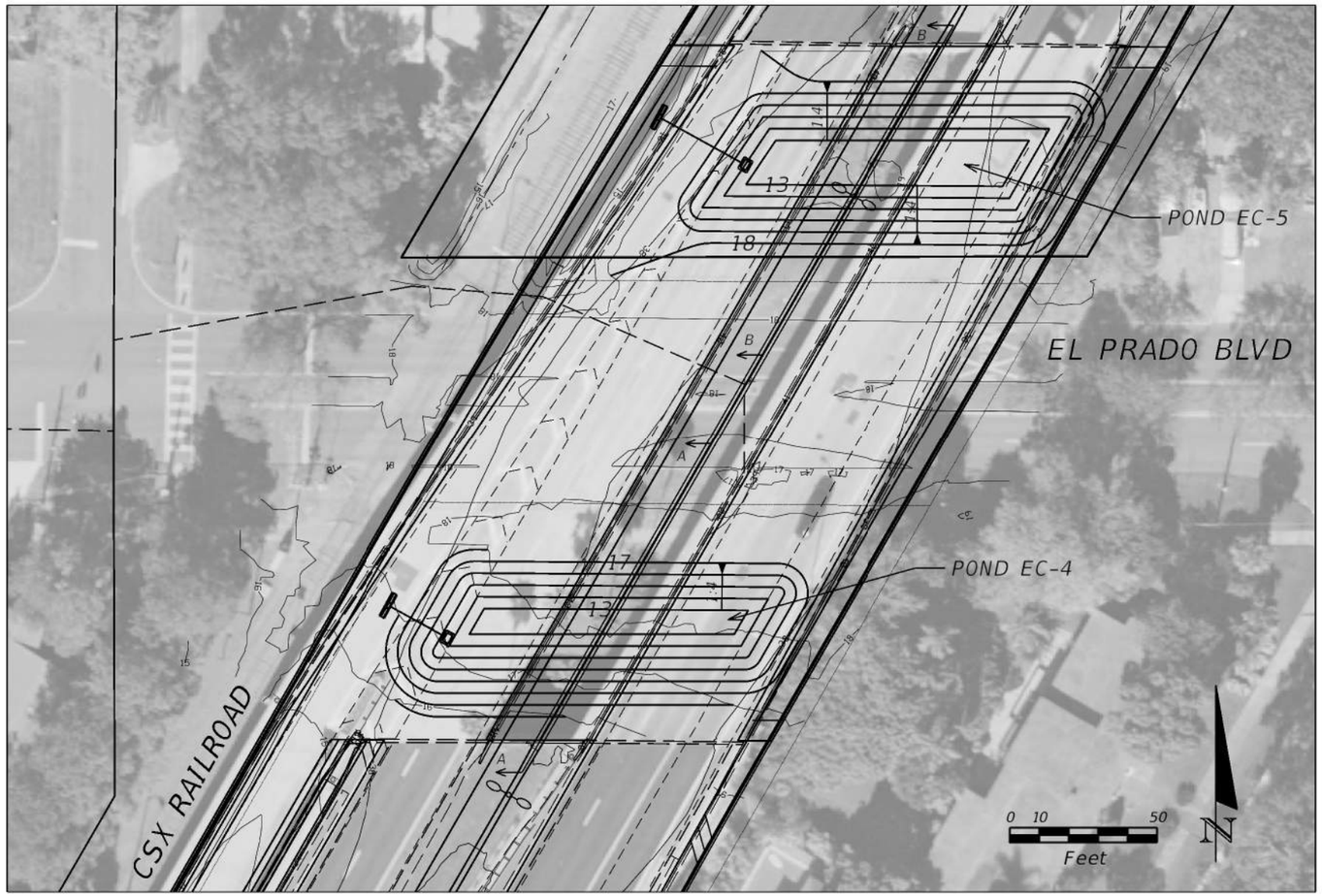
SECTION B-B
NTS

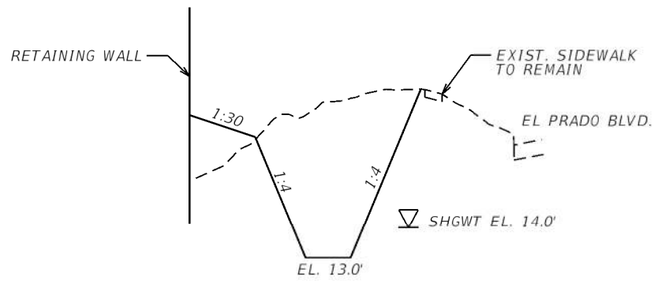


SECTION C-C
NTS

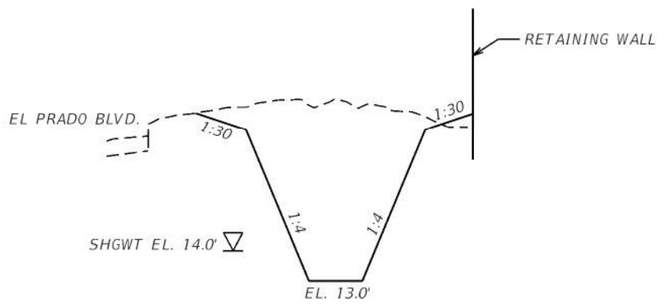
EUCLID AVE (EUCLID BASIN)

REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	POND DETAILS (1)	





SECTION A-A
NTS



SECTION B-B
NTS

EL PRADO BLVD (EUCLID BASIN)

REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	POND DETAILS (2)	

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Euclid	Location:	Tampa, FL		

Euclid Hydrologic Calculations

Existing Conditions

Total Impervious Area	
Impervious Roadway:	7.69 ac.
Impervious Other:	
Total:	7.69 ac.

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Open Space (Good)	A	39	0.16 ac.
Open Space (Good)	B	61	0.17 ac.
Open Space (Good)	C	74	3.06 ac.
Impervious		98	7.69 ac.
		Total Area:	11.08 ac.

Weighted CN: **90.0**

Proposed Conditions

Total Impervious Area	
Impervious Roadway:	9.41 ac.
Impervious Other:	
Total:	9.41 ac.

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Open Space (Good)	A	39	0.09 ac.
Open Space (Good)	B	61	0.16 ac.
Open Space (Good)	C	74	1.75 ac.
Impervious		98	9.41 ac.
Water Surface		100	0.69 ac.
		Total Area:	12.10 ac.

Weighted CN: **93.7**

Treatment Calculations	
Governing Agency:	SWFWMD
Treatment Method:	Wet Detention
Online or Offline:	Online
OFW:	No
Impaired Waterbody:	No
Open or Closed Basin	Open
Type of Project:	Roadway Widening

Treatment Area (New Imp.):	1.72 ac.
Treatment Area (Restriping):	0.76 ac.
Treatment Depth*:	1.0 in.
Treatment Volume Req. (New Imp.):	**0.14 ac.-ft.**
Treatment Volume Req. (Restriping):	**0.06 ac.-ft.**

* Dry Retention Criteria - 0.5 inch over DCIA
Wet Detention Criteria - 1.0 inch over DCIA

Attenuation Calculations	
Rainfall Depth*:	11.2 in.

Summary of Runoff	Existing	Proposed
Total Basin Area (LT and RT):	11.08 ac.	12.10 ac.
Weighted CN (LT and RT):	90.0	93.7
Soil Retention (S):	1.1 in.	0.7 in.
Runoff Depth (Q_R):	10.0 in.	10.4 in.
Runoff Volume:	9.2 ac.-ft.	10.5 ac.-ft.

Post-Pre Attenuation Volume (V_A): 1.32 ac.-ft.

*100 year/24 hour, NOAA Atlas-14 rainfall data

Total Runoff Volume Required	
Treatment Volume Required:	0.21 ac.-ft.
Attenuation Volume* (V_A):	1.32 ac.-ft.
Total:	**1.53 ac.-ft.**

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Euclid	Location:	Tampa, FL		

EuclidPond Analysis

Pond EC - 1

Full Parcel Size: **0.00 ac.**
Required Size: **0.19 ac.**

Stage-Storage Calculations

Treatment System:	Wet Detention	Berm Width:	0.0 ft.
SHGWT Elevation**:	12.0 ft.	Freeboard (DHW to inside TOB)	1.0 ft.
Existing Ground Elevation (average):	14.0 ft.	Side Slopes:	4 : 1
Ex. Low Edge of Pavement Elevation:	13.0 ft.	Pond Bottom (length to width):	4 : 1

Pond Configuration

Description	Elev.	Area	Incr. Volume	Total Volume
Existing Ground (tie-in):	14.0 ft.	0.189 ac.		
Top of Bank (outside edge):	15.0 ft.	0.150 ac.		
Top of Bank (inside edge):	15.0 ft.	0.150 ac.	0.1 ac.-ft.	0.37 ac.-ft.
Design High Water:	14.0 ft.	0.120 ac.	0.15 ac.-ft.	0.23 ac.-ft.
Treatment (Weir):	12.5 ft.	0.079 ac.	0.04 ac.-ft.	0.08 ac.-ft.
Control (Orifice):	12.0 ft.	0.067 ac.	0.0 ac.-ft.	0.05 ac.-ft.
Pond Bottom:	11.0 ft.	0.025 ac.	0.0 ac.-ft.	0.00 ac.-ft.

**West ditch south of Euclid Ave is dry with FL of 11.77'

Provided Treatment Volume (ac-ft)	Required Treatment Volume (ac-ft)
0.04 ac.-ft.	0.21 ac.-ft.
Provided Attenuation Volume (ac-ft)	**Required Attenuation Volume (ac-ft)**
0.15 ac.-ft.	1.32 ac.-ft.

Pond EC - 2

Full Parcel Size: **0.00 ac.**
Required Size: **0.56 ac.**

Stage-Storage Calculations

Treatment System:	Wet Detention	Berm Width:	0.0 ft.
SHGWT Elevation:	12.0 ft.	Freeboard (DHW to inside TOB)	1.0 ft.
Existing Ground Elevation (average):	14.0 ft.	Side Slopes:	4 : 1
Ex. Low Edge of Pavement Elevation:	13.0 ft.	Pond Bottom (length to width):	4 : 1

Pond Configuration

Description	Elev.	Area	Incr. Volume	Total Volume
Existing Ground (tie-in):	14.0 ft.	0.559 ac.		
Top of Bank (outside edge):	15.0 ft.	0.490 ac.		
Top of Bank (inside edge):	15.0 ft.	0.490 ac.	0.7 ac.-ft.	1.43 ac.-ft.
Design High Water:	13.5 ft.	0.410 ac.	0.44 ac.-ft.	0.76 ac.-ft.
Treatment (Weir):	12.3 ft.	0.330 ac.	0.09 ac.-ft.	0.31 ac.-ft.
Control (Orifice):	12.0 ft.	0.260 ac.	0.2 ac.-ft.	0.23 ac.-ft.
Pond Bottom:	11.0 ft.	0.190 ac.	0.0 ac.-ft.	0.00 ac.-ft.

Provided Treatment Volume (ac-ft)	Required Treatment Volume (ac-ft)
0.09 ac.-ft.	0.21 ac.-ft.
Provided Attenuation Volume (ac-ft)	**Required Attenuation Volume (ac-ft)**
0.44 ac.-ft.	1.32 ac.-ft.

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Euclid	Location:	Tampa, FL		

Pond EC - 3

Full Parcel Size: **0.00 ac.**
Required Size: **0.62 ac.**

Stage-Storage Calculations

Treatment System:	Wet Detention	Berm Width:	0.0 ft.
SHGWT Elevation:	12.0 ft.	Freeboard (DHW to inside TOB)	1.0 ft.
Existing Ground Elevation (average):	13.0 ft.	Side Slopes:	4 : 1
Ex. Low Edge of Pavement Elevation:	14.0 ft.	Pond Bottom (length to width):	4 : 1

Pond Configuration

Description	Elev.	Area	Incr. Volume	Total Volume
Existing Ground (tie-in):	13.0 ft.	0.621 ac.		
Top of Bank (outside edge):	14.5 ft.	0.515 ac.		
Top of Bank (inside edge):	14.5 ft.	0.515 ac.	0.4 ac.-ft.	1.2 ac.-ft.
Design High Water:	13.5 ft.	0.369 ac.	0.40 ac.-ft.	0.7 ac.-ft.
Treatment (Weir):	12.3 ft.	0.296 ac.	0.09 ac.-ft.	0.3 ac.-ft.
Control (Orifice):	12.0 ft.	0.279 ac.	0.2 ac.-ft.	0.2 ac.-ft.
Pond Bottom:	11.0 ft.	0.220 ac.	0.0 ac.-ft.	0.0 ac.-ft.

Provided Treatment Volume (ac-ft)	Required Treatment Volume (ac-ft)
0.09 ac.-ft.	0.21 ac.-ft.
Provided Attenuation Volume (ac-ft)	**Required Attenuation Volume (ac-ft)**
0.40 ac.-ft.	1.32 ac.-ft.

Pond EC - 4

Full Parcel Size: **0.00 ac.**
Required Size: **0.18 ac.**

Stage-Storage Calculations

Treatment System:	Wet Detention	Berm Width:	0.0 ft.
SHGWT Elevation:	14.0 ft.	Freeboard (DHW to inside TOB)	1.0 ft.
Existing Ground Elevation (average):	17.0 ft.	Side Slopes:	4 : 1
Ex. Low Edge of Pavement Elevation:	17.0 ft.	Pond Bottom (length to width):	4 : 1

Pond Configuration

Description	Elev.	Area	Incr. Volume	Total Volume
Existing Ground (tie-in):	17.0 ft.	0.183 ac.		
Top of Bank (outside edge):	18.0 ft.	0.145 ac.		
Top of Bank (inside edge):	18.0 ft.	0.145 ac.	0.1 ac.-ft.	0.4 ac.-ft.
Design High Water:	17.0 ft.	0.114 ac.	0.19 ac.-ft.	0.2 ac.-ft.
Treatment (Weir):	14.5 ft.	0.035 ac.	0.02 ac.-ft.	0.0 ac.-ft.
Control (Orifice):	14.0 ft.	0.038 ac.	0.0 ac.-ft.	0.0 ac.-ft.
Pond Bottom:	13.0 ft.	0.018 ac.	0.0 ac.-ft.	0.0 ac.-ft.

Provided Treatment Volume (ac-ft)	Required Treatment Volume (ac-ft)
0.02 ac.-ft.	0.21 ac.-ft.
Provided Attenuation Volume (ac-ft)	**Required Attenuation Volume (ac-ft)**
0.19 ac.-ft.	1.32 ac.-ft.

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Euclid	Location:	Tampa, FL		

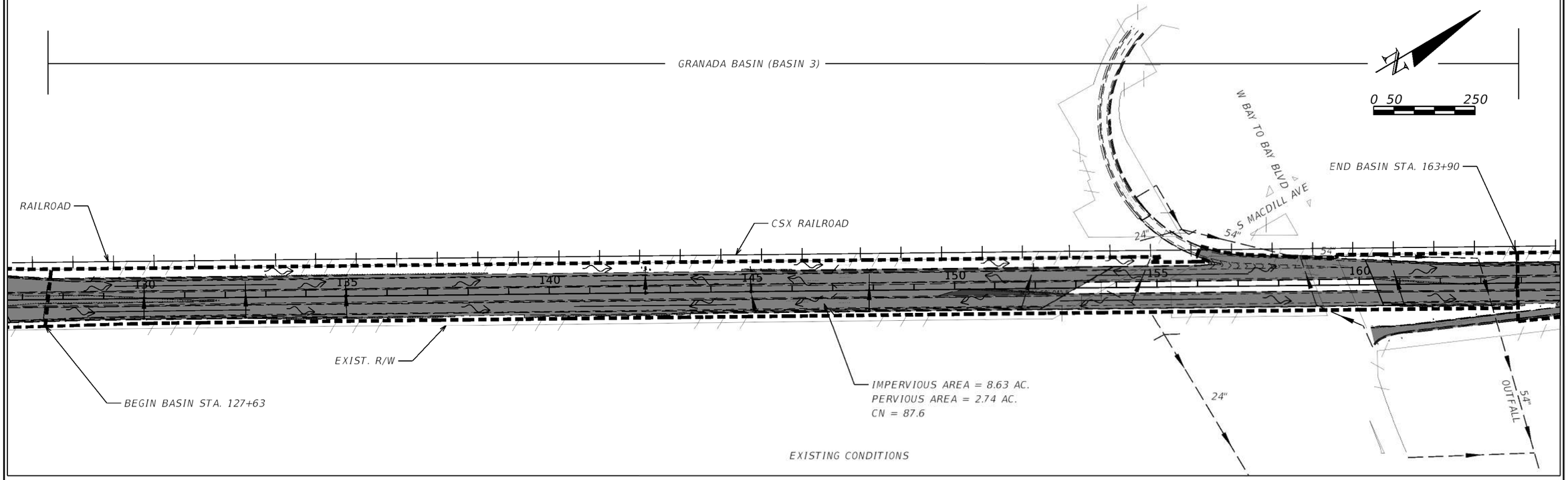
Pond EC - 5				Full Parcel Size:	0.00 ac.
Stage-Storage Calculations				Required Size:	0.17 ac.
Treatment System:	Wet Detention	Berm Width:	0.0 ft.		
SHGWT Elevation**:	14.0 ft.	Freeboard (DHW to inside TOB)	1.0 ft.		
Existing Ground Elevation (average):	18.0 ft.	Side Slopes:	4 : 1		
Ex. Low Edge of Pavement Elevation:	18.0 ft.	Pond Bottom (length to width):	4 : 1		

Pond Configuration				
Description	**Elev.**	**Area**	**Incr. Volume**	**Total Volume**
Existing Ground (tie-in):	18.0 ft.	0.170 ac.		
Top of Bank (outside edge):	17.5 ft.	0.150 ac.		
Top of Bank (inside edge):	17.0 ft.	0.130 ac.	0.1 ac.-ft.	0.3 ac.-ft.
Design High Water:	16.0 ft.	0.100 ac.	0.16 ac.-ft.	0.2 ac.-ft.
Treatment (Weir):	14.3 ft.	0.090 ac.	0.02 ac.-ft.	0.0 ac.-ft.
Control (Orifice):	14.0 ft.	0.050 ac.	0.0 ac.-ft.	0.0 ac.-ft.
Pond Bottom:	13.0 ft.	0.000 ac.	0.0 ac.-ft.	0.0 ac.-ft.

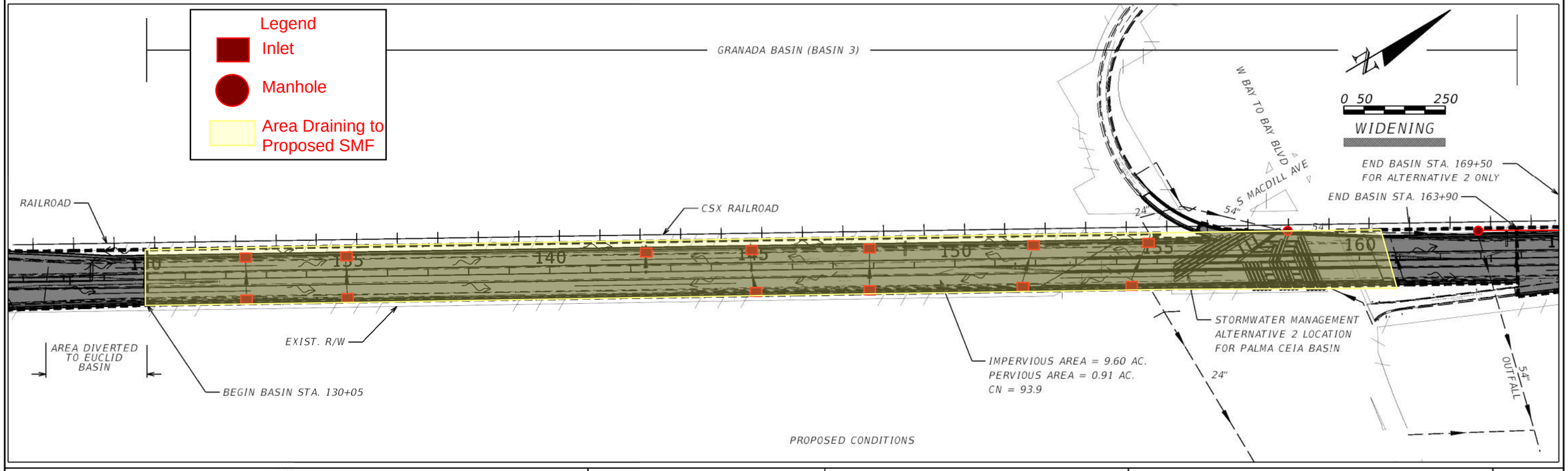
Provided Treatment Volume (ac-ft)	Required Treatment Volume (ac-ft)
0.02 ac.-ft.	0.21 ac.-ft.
Provided Attenuation Volume (ac-ft)	**Required Attenuation Volume (ac-ft)**
0.16 ac.-ft.	1.32 ac.-ft.

**Wabasso soils B/D, SHGWT > 60"

Basin 3: Granada
Basin Limits:
Sta. 127+63 to 163+90 (Existing)
Sta. 130+05 to 163+90 (Proposed)



EXISTING CONDITIONS



PROPOSED CONDITIONS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO.
SR 618	HILLSBOROUGH	HI-0012

PRE/POST BASIN MAP GRANADA (4)

SHEET NO.

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Granada	Location:	Tampa, FL		

Granada Hydrologic Calculations

Existing Conditions

Total Impervious Area	
Impervious Roadway:	8.63 ac.
Impervious Other:	0.00 ac.
Total:	8.63 ac.

Curve Number

Description	Soil Group	CN	Area
Open Space (Good)	A	39	1.06 ac.
Open Space (Good)	B	61	0.97 ac.
Open Space (Good)	C	74	0.23 ac.
Impervious		98	8.63 ac.
Open Space (Poor)	A	68	0.48 ac.
		Total Area:	11.37 ac.

Weighted CN: **87.6**

Proposed Conditions

Total Impervious Area	
Impervious Roadway:	9.60 ac.
Impervious Other:	0.00 ac.
Total:	9.60 ac.

Curve Number

Description	Soil Group	CN	Area
Open Space (Good)	A	39	0.45 ac.
Open Space (Good)	B	61	0.45 ac.
Open Space (Good)	C	74	0.01 ac.
Impervious		98	9.60 ac.
	1	**Total Area:**	10.51 ac.

Weighted CN: **93.9**

Treatment Calculations	
Governing Agency:	SWFWMD
Treatment Method:	Wet Detention
Online or Offline:	Online
OFW:	No
Impaired Waterbody:	No
Open or Closed Basin	Open
Type of Project:	Roadway Widening

Treatment Area (New Imp.):	0.97 ac.
Treatment Area (Restriping):	1.10 ac.
Treatment Depth*:	1.0 in.
Treatment Volume Req. (New Imp.):	**0.08 ac.-ft.**
Treatment Volume Req. (Restriping):	**0.09 ac.-ft.**

* Dry Retention Criteria - 0.5 inch over DCIA
Wet Detention Criteria - 1.0 inch over DCIA

Attenuation Calculations	
Rainfall Depth*:	11.2 in.

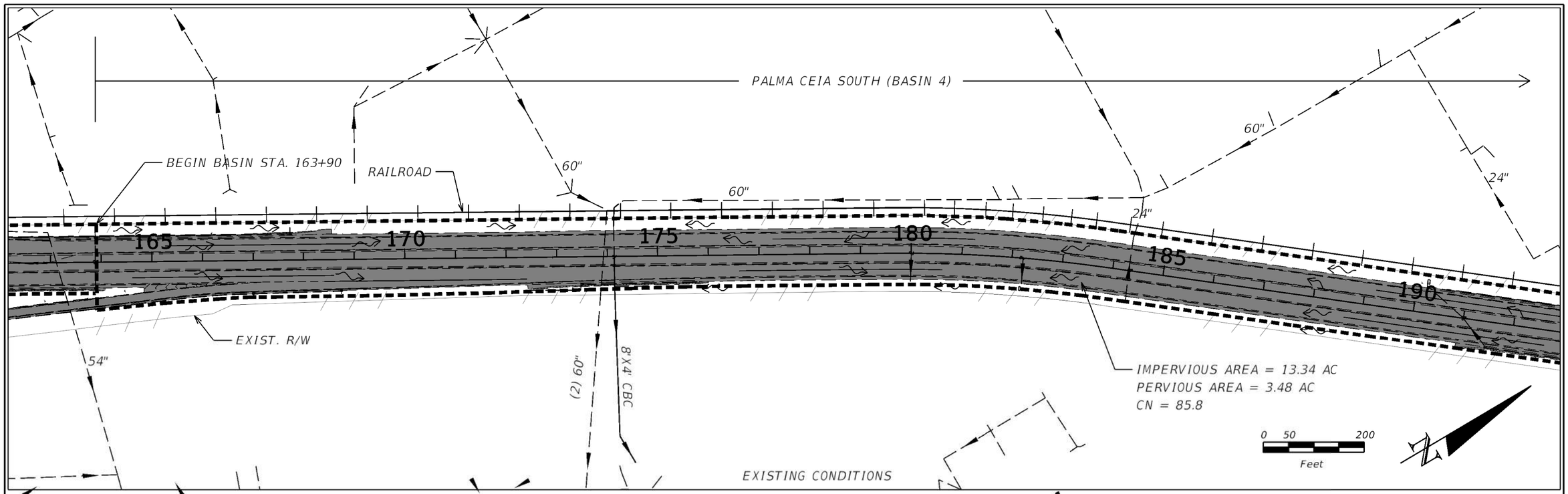
Summary of Runoff	Existing	Proposed
Total Basin Area (LT and RT):	11.37 ac.	10.51 ac.
Weighted CN (LT and RT):	87.6	93.9
Soil Retention (S):	1.4 in.	0.7 in.
Runoff Depth (Q_R):	9.7 in.	10.5 in.
Runoff Volume:	9.2 ac.-ft.	9.2 ac.-ft.

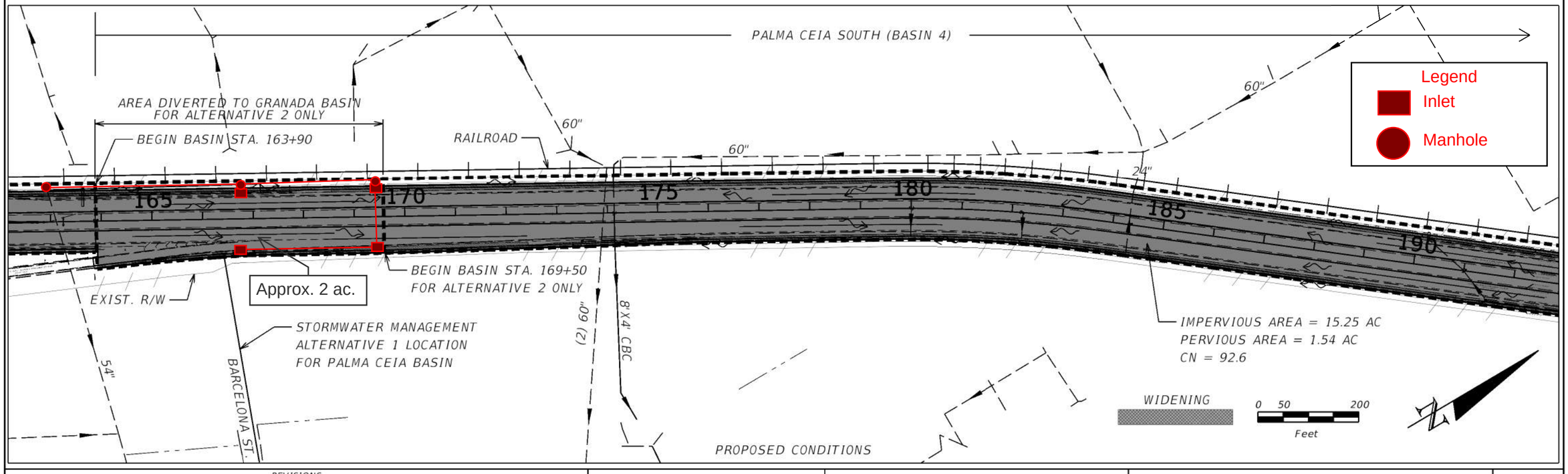
Post-Pre Attenuation Volume (V_A): 0.00 ac.-ft.

*100 year/24 hour, NOAA Atlas-14 rainfall data

Total Runoff Volume Required	
Treatment Volume Required:	0.17 ac.-ft.
Attenuation Volume* (V_A):	0.00 ac.-ft.
Total:	**0.17 ac.-ft.**

Basin 4: Palma Ceia
Basin Limits: Sta. 163+90 to 217+55





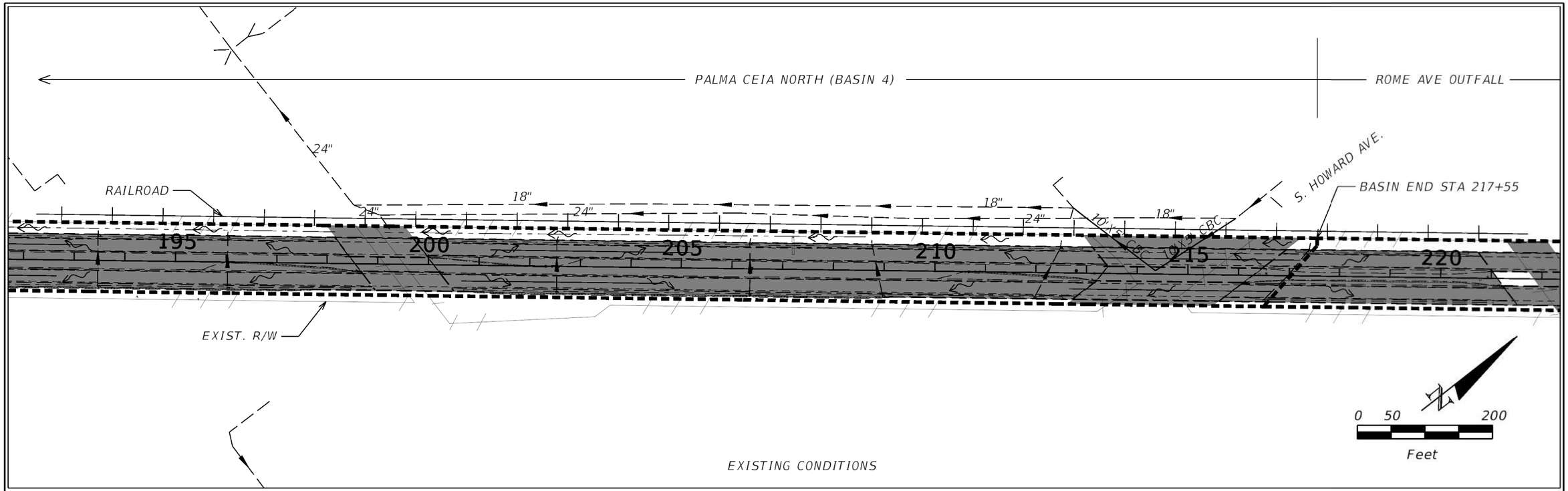
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

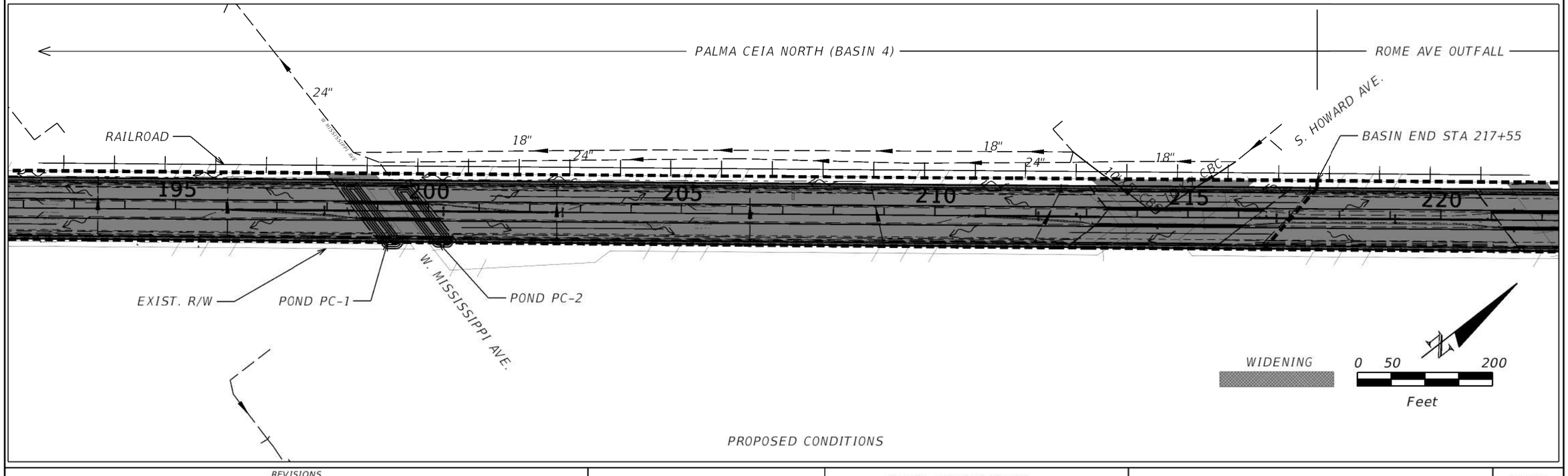
ROAD NO.	COUNTY	THEA PROJECT NO.
SR 618	HILLSBOROUGH	HI-0012

PRE/POST BASIN MAP
PALMA CEIA S (6)

SHEET NO.



EXISTING CONDITIONS



PROPOSED CONDITIONS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO.
SR 618	HILLSBOROUGH	HI-0012

PRE/POST BASIN MAP
PALMA CEIA N (6)

SHEET NO.

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Palma Ceia	Location:	Tampa, FL		

Palma Ceia Hydrologic Calculations

Existing Conditions

Total Impervious Area	
Impervious Roadway:	13.34 ac.
Impervious Other:	0.00 ac.
Total:	13.34 ac.

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Open Space (Good)	A	39	3.48 ac.
Impervious		98	13.34 ac.
		Total Area:	16.82 ac.

Weighted CN: **85.8**

Proposed Conditions

Total Impervious Area	
Impervious Roadway:	15.25 ac.
Impervious Other:	0.00 ac.
Total:	15.25 ac.

2

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Open Space (Good)	A	39	1.54 ac.
Impervious		98	15.25 ac.
		Total Area:	16.79 ac.

Weighted CN: **92.6**

Treatment Calculations	
Governing Agency:	SWFWMD
Treatment Method:	Wet Detention
Online or Offline:	Online
OFW:	No
Impaired Waterbody:	No
Open or Closed Basin	Open
Type of Project:	Roadway Widening

Treatment Area (New Imp.):	1.91 ac.
Treatment Area (Restriping):	2.07 ac.
Treatment Depth*:	1.0 in.
Treatment Volume Req. (New Imp.):	**0.16 ac.-ft.**
Treatment Volume Req. (Restriping):	**0.17 ac.-ft.**

* Dry Retention Criteria - 0.5 inch over DCIA
Wet Detention Criteria - 1.0 inch over DCIA

Attenuation Calculations	
Rainfall Depth*:	11.2 in.

Summary of Runoff	Existing	Proposed
Total Basin Area (LT and RT):	16.82 ac.	16.79 ac.
Weighted CN (LT and RT):	85.8	92.6
Soil Retention (S):	1.7 in.	0.8 in.
Runoff Depth (Q_R):	9.4 in.	10.3 in.
Runoff Volume:	13.2 ac.-ft.	14.4 ac.-ft.

Post-Pre Attenuation Volume (V_A): 1.18 ac.-ft.

*100 year/24 hour, NOAA Atlas-14 rainfall data

Total Runoff Volume Required	
Treatment Volume Required:	0.33 ac.-ft.
Attenuation Volume* (V_A):	1.18 ac.-ft.
Total:	**1.51 ac.-ft.**

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Palma Ceia	Location:	Tampa, FL		

Palma Ceia Pond Analysis

W Mississippi Ave - South Pond

Stage-Storage Calculations

Treatment System:	Wet Detention	Berm Width:	15.0 ft.
SHGWT Elevation:	14.5 ft.	Freeboard (DHW to inside TOB)	1.0 ft.
Existing Ground Elevation (average):	20.0 ft.	Side Slopes:	4 : 1
Ex. Low Edge of Pavement Elevation:	19.0 ft.	Pond Bottom (length to width):	5 : 1

Full Parcel Size: 0.00 ac.
Required Size: 0.11 ac.

Pond Configuration

Description	Elev.	Area	Incr. Volume	Total Volume
Existing Ground (tie-in):	20.0 ft.	0.110 ac.		
Top of Bank (outside edge):	20.0 ft.	0.110 ac.		
Top of Bank (inside edge):	19.0 ft.	0.080 ac.	0.1 ac.-ft.	0.1 ac.-ft.
Design High Water:	18.0 ft.	0.052 ac.	0.02 ac.-ft.	0.1 ac.-ft.
Treatment (Weir):	17.6 ft.	0.042 ac.	0.04 ac.-ft.	0.0 ac.-ft.
Control (Orifice):	16.0 ft.	0.006 ac.	0.0 ac.-ft.	0.0 ac.-ft.
Pond Bottom:	15.0 ft.	-0.013 ac.	0.0 ac.-ft.	0.0 ac.-ft.

Provided Treatment Volume (ac-ft)	Required Treatment Volume (ac-ft)
0.04 ac.-ft.	0.33 ac.-ft.
Provided Attenuation Volume (ac-ft)	**Required Attenuation Volume (ac-ft)**
0.02 ac.-ft.	1.18 ac.-ft.

Mississippi Ave - North Pond

Stage-Storage Calculations

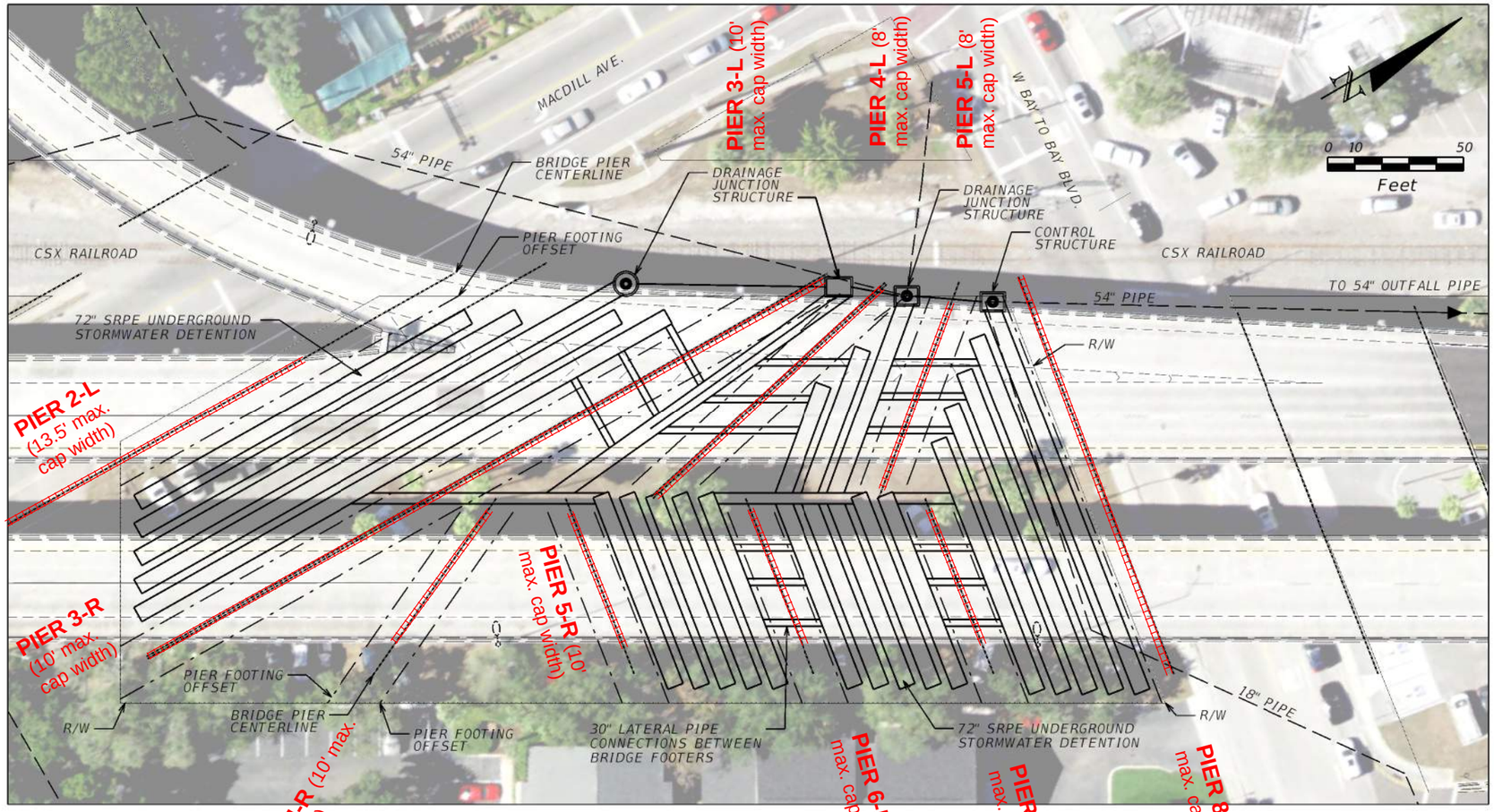
Treatment System:	Wet Detention	Berm Width:	15.0 ft.
SHGWT Elevation:	12.0 ft.	Freeboard (DHW to inside TOB)	1.0 ft.
Existing Ground Elevation (average):	12.5 ft.	Side Slopes:	4 : 1
Ex. Low Edge of Pavement Elevation:	15.0 ft.	Pond Bottom (length to width):	2 : 1

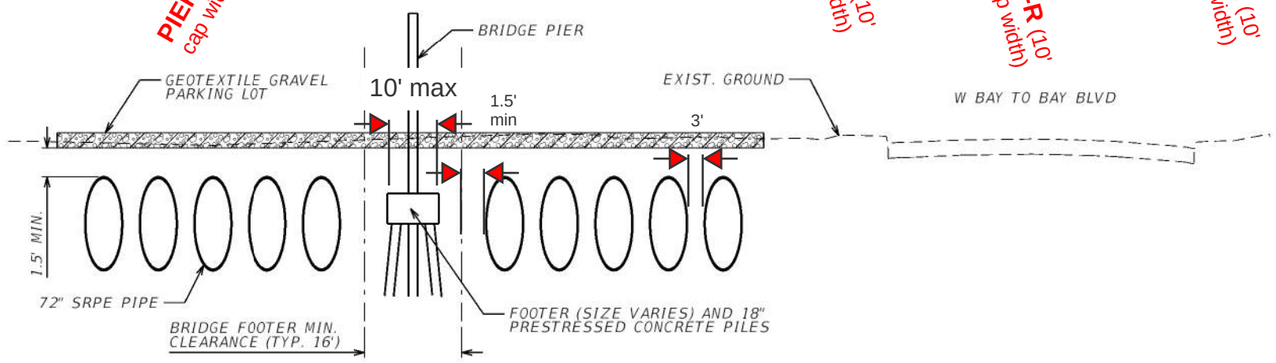
Full Parcel Size: 0.00 ac.
Required Size: 0.12 ac.

Pond Configuration

Description	Elev.	Area	Incr. Volume	Total Volume
Existing Ground (tie-in):	20.0 ft.	0.120 ac.		
Top of Bank (outside edge):	20.0 ft.	0.120 ac.		
Top of Bank (inside edge):	19.0 ft.	0.090 ac.	0.1 ac.-ft.	0.1 ac.-ft.
Design High Water:	18.0 ft.	0.060 ac.	0.03 ac.-ft.	0.1 ac.-ft.
Treatment (Weir):	17.5 ft.	0.040 ac.	0.04 ac.-ft.	0.0 ac.-ft.
Control (Orifice):	16.0 ft.	0.010 ac.	0.0 ac.-ft.	0.0 ac.-ft.
Pond Bottom:	15.0 ft.	0.000 ac.	0.0 ac.-ft.	0.0 ac.-ft.

Provided Treatment Volume (ac-ft)	Required Treatment Volume (ac-ft)
0.04 ac.-ft.	0.33 ac.-ft.
Provided Attenuation Volume (ac-ft)	**Required Attenuation Volume (ac-ft)**
0.03 ac.-ft.	1.18 ac.-ft.





NOTES:

1. UNDERGROUND STORMWATER VAULT SYSTEM DESIGNED USING CONTECH DUROMAXX 72" SRPE OR EQUIVALENT PIPES. THIS DESIGN REPRESENTS ALTERNATIVE 2 FOR MANAGING STORMWATER WITHIN THE PALMA CEIA BASIN.

2. PRELIMINARY PIPE SYSTEM SHOWN PROVIDES 1.54 AC-FT. OF OF STORAGE BETWEEN ELEVATIONS 7.0 AND 13.0 (NAVD 88).

3. VOLUME CALCULATION:
   PIPE SIZE = 72"
   INSIDE DIAMETER = 70.9 IN. = 5.91 FT.
   TOTAL PIPE LENGTH = 2450 FT.
   PROVIDED VOLUME = 67171.6 FT3 = 1.54 AC-FT.

4. LATERAL PIPE CONNECTIONS (30") AND ADDITIONAL DRAINAGE JUNCTION BOXES ARE PROVIDED TO ASSURE ADEQUATE HYDRAULIC CONNECTIVITY.

REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			STORMWATER VAULT TYPICAL DETAIL	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		

SECTION	CONTRACT	SOUTH CROSSTOWN EXPRESSWAY	SHEET NO.
10002	9505		A-1
By: WACO		TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY	Date: 1974

Note:
Prior to starting excavation for pier footings near the existing railroad (Lines "A" & "C"), the Contractor shall provide railroad embankment protection. See Special Provisions.

Sta. 55+00
El. 45.35
-0.80%
+5.00%
300' V.C.

RAMP "A"

Sta. 114+80
El. 18.36
+1.400%
-1.396%
100' V.C.

BAY TO BAY BLVD.

500' V.C.
-25%
0.00%
Sta. 153+00
El. 18.00

R.R.⌀ LINE "A"

Sta. 57+00
El. 18.00
500' V.C.
0.00%
+0.25%
250' V.C.
0.00%
Sta. 53+00
El. 17.00

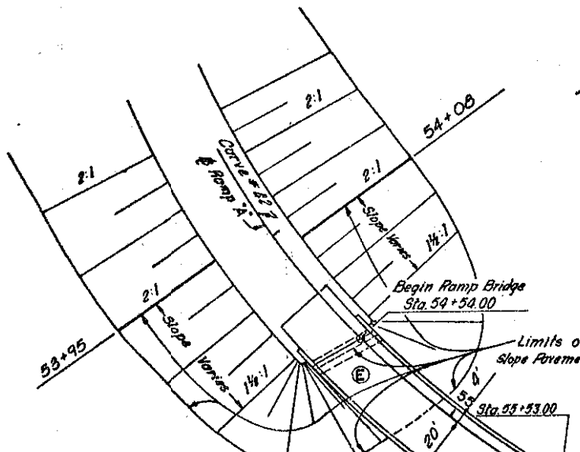
R.R.⌀ LINE "C"

Sta. 21+40
El. 19.09
+0.2990%
-0.3000%
100' V.C.

MACDILL AVE.

Sta. 156+00
El. 52.00
+3.00%
-3.00%
600' V.C.

EXPRESSWAY PROFILE GRADE



Curve #42

Δ = 90°27'17.5"
D = 16°30'00"
R = 347.247'
T = 350.015'
L = 548.211'
e = .008½
P.I. Sta. 55+13.98
P.C. Sta. 51+65.97
P.T. Sta. 57+12.18
Sta. 156+09.29 = Line "A"
Sta. 21+48.31 = Macdill

Curve #51

Δ = 12°00'00"
D = 4°00'00"
R = 1032.3965'
T = 150.66'
L = 300.21
P.I. Sta. 117+22.67
P.C. Sta. 115+72.01
P.T. Sta. 118+72.22

Sta. 115+30.02 ℄ Bay To Bay
Sta. 20+10.53 ℄ Macdill
Sta. 159+00.95 Line "A"
Sta. 116+75.49 Bay To Bay

PLAN

Curve #7

Δ = 31°15'
D = 15°
L = 208.33'
T = 107.14'
R = 383.065'
P.I. Sta. 54+28.46
P.C. Sta. 53+21.32
P.T. Sta. 55+29.65

Curve #8

Δ = 25°31'31"
D = 15°
L = 170.17'
T = 86.17'
R = 383.065'
P.I. Sta. 56+36.51
P.C. Sta. 56+09.74
P.T. Sta. 57+79.91

Notes:

1. Ⓕ - Fixed end
   Ⓔ - Expansion end
2. Drive one unloaded 18" Prestressed Concrete Test Pile (65' long) at End Bent 1-A and (40 long) at Piers 1-A, 2-A, 1-L, 2-L, 8-L, 6-L, 1-R, 2-R, 3-R, 5-R, 7-R and 9-R in the position of a permanent plumb pile, located as directed by the Engineer.

LAYOUT SHEET

NO.	REVISION
	TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY
	SOUTH CROSSTOWN EXPRESSWAY
	EXPRESSWAY OVER MACDILL AVE. & BAY TO BAY BLVD.

J. E. GREINER COMPANY — CONSULTING ENGINEERS

MADE W.G. DATE 12-13-74
CHECKED [illegible] DATE 12-13-74

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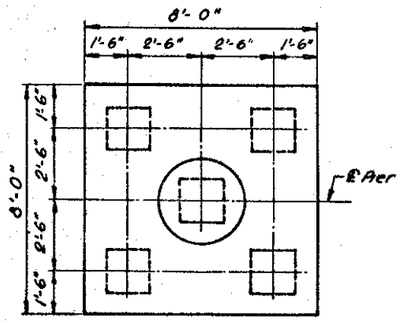
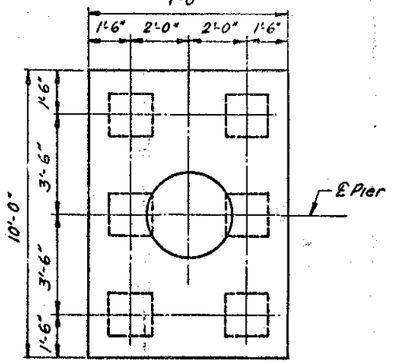
SECTION	CONTRACT	SOUTH CROSSTOWN EXPRESSWAY	SHEET NO.
10002	3503		A-3
By: WACO		TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY	Date: 1974



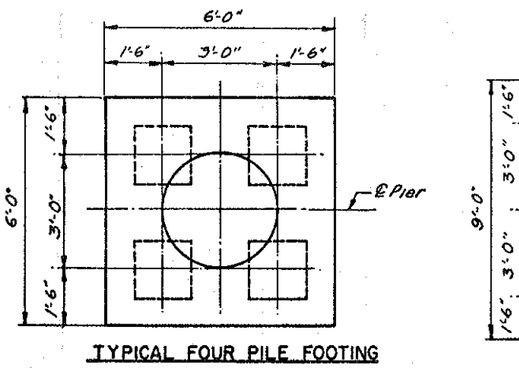
TYPICAL FIVE PILE FOOTING



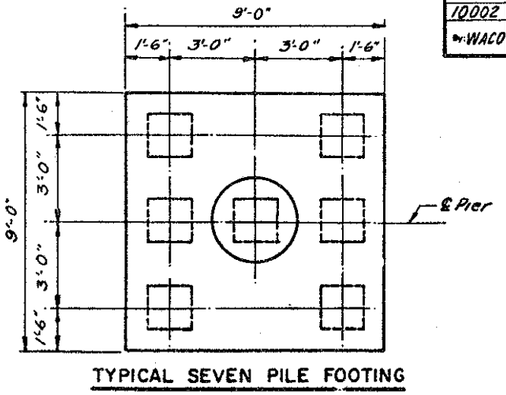
TYPICAL SIX PILE FOOTING

FOOTERS ADJACENT TO VAULT

TYPICAL TEN PILE FOOTING



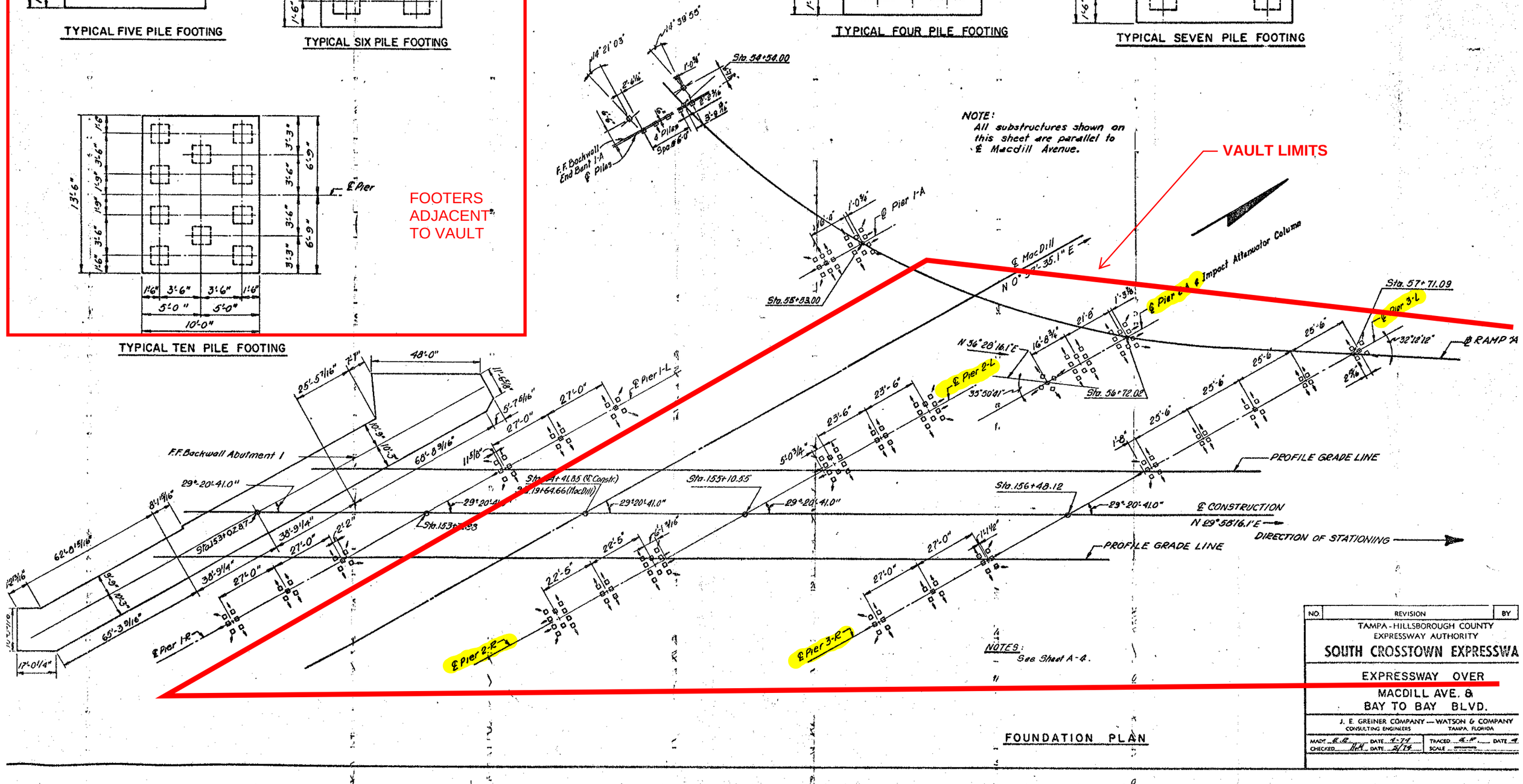
TYPICAL FOUR PILE FOOTING



TYPICAL SEVEN PILE FOOTING

NOTE:
All substructures shown on this sheet are parallel to ℄ Macdill Avenue.

VAULT LIMITS



FOUNDATION PLAN

NO.	REVISION	BY

TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY

SOUTH CROSSTOWN EXPRESSWAY

EXPRESSWAY OVER MACDILL AVE. & BAY TO BAY BLVD.

J. E. GREINER COMPANY — WATSON & COMPANY
CONSULTING ENGINEERS
TAMPA, FLORIDA

MADE E.G. DATE 4-74 TRACED E.P. DATE 4
CHECKED [illegible] DATE 5/74 SCALE

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SECTION	CONTRACT	SOUTH CROSSTOWN EXPRESSWAY	SHEET
10002	3509		A-2
By: WACO		TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY	Date: 19

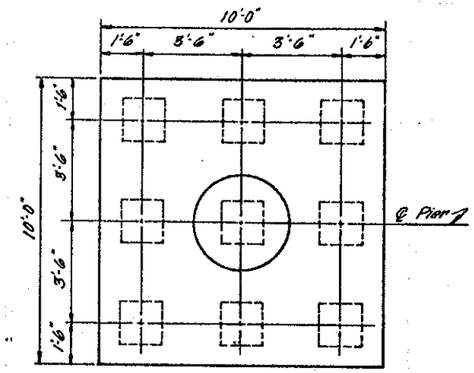
NOTES

PILE FOOTINGS

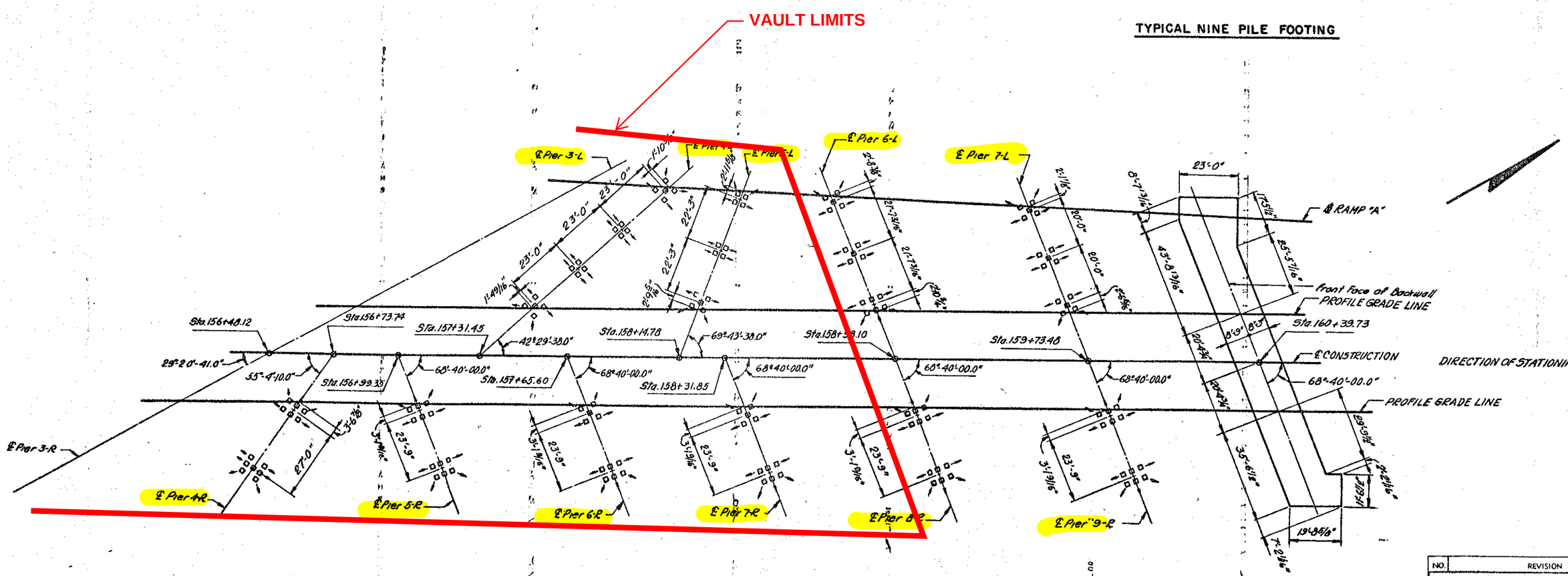
1- All Piles are 16"ø Prestressed Concrete Piles.
2- Design Loads : 45 Tons.
3- Piles shown with an Arrow shall be battered in the direction indicated as follows:
Pier Piles (interior) 1"/Foot
Pier Piles (outside Corners) 1½"/Foot
4- For Pile details see Prestressed Concrete Piles, Standard Drawing No. 4.
5- Pile locations shown are at bottom of footings.

ABUTMENT FOOTINGS

1- Foundation preparation for footings shall be in accordance with the Special Provisions.
2- All costs of foundation preparation are to be included in the cost of Class II Concrete (Substructure).



TYPICAL NINE PILE FOOTING



FOUNDATION PLAN

NO.	REVISION

TAMPA - HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY

SOUTH CROSSTOWN EXPRESSW

EXPRESSWAY OVER MACDILL AVE. & BAY TO BAY BLVD.

J. E. GREINER COMPANY — WATSON & COMPAI
CONSULTING ENGINEERS TAMPA, FLORIDA

MADE E.K. DATE 4-7-4 TRACED C.K. DAT
CHECKED H.H. DATE 6/74 SCALE

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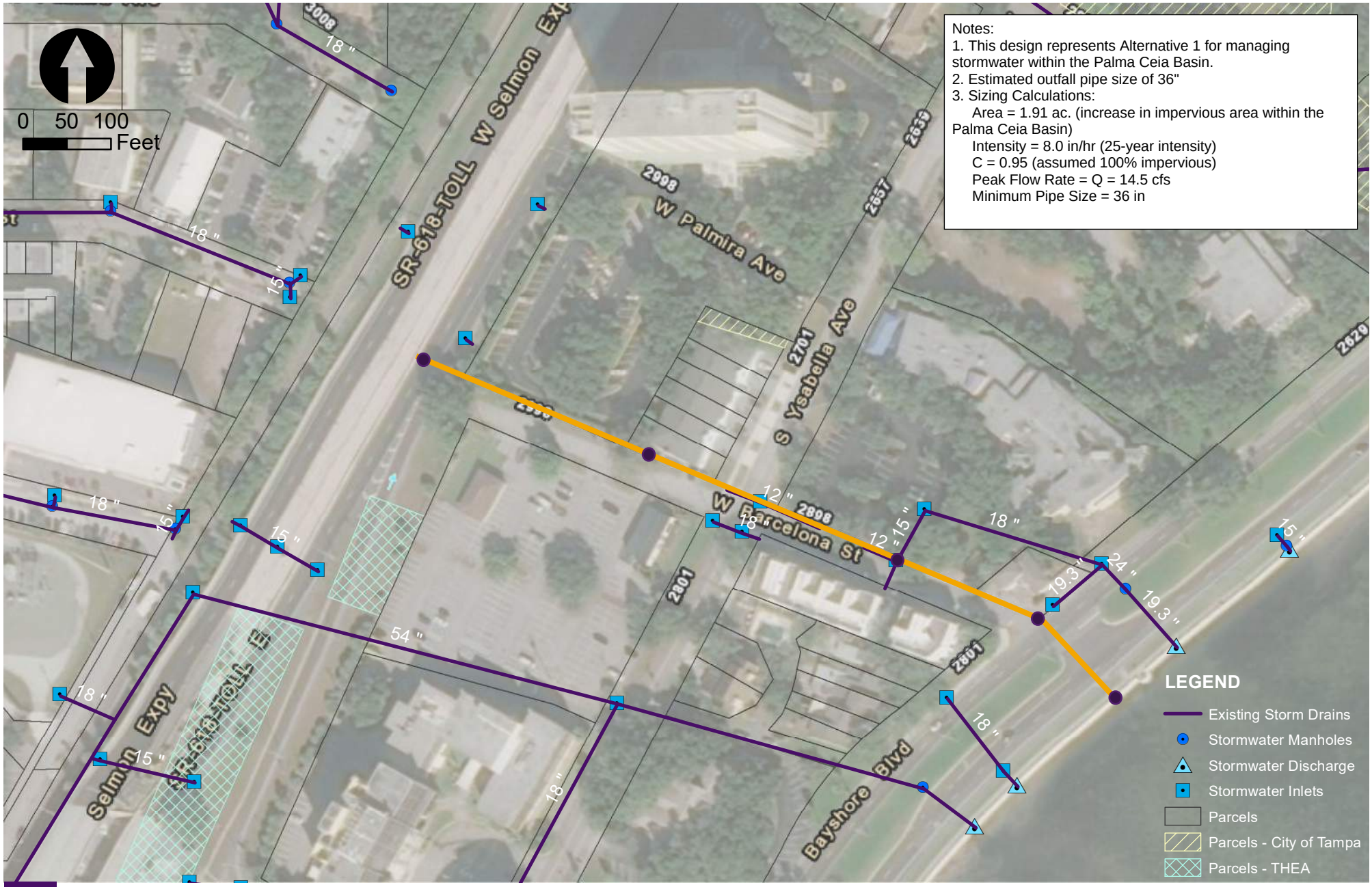
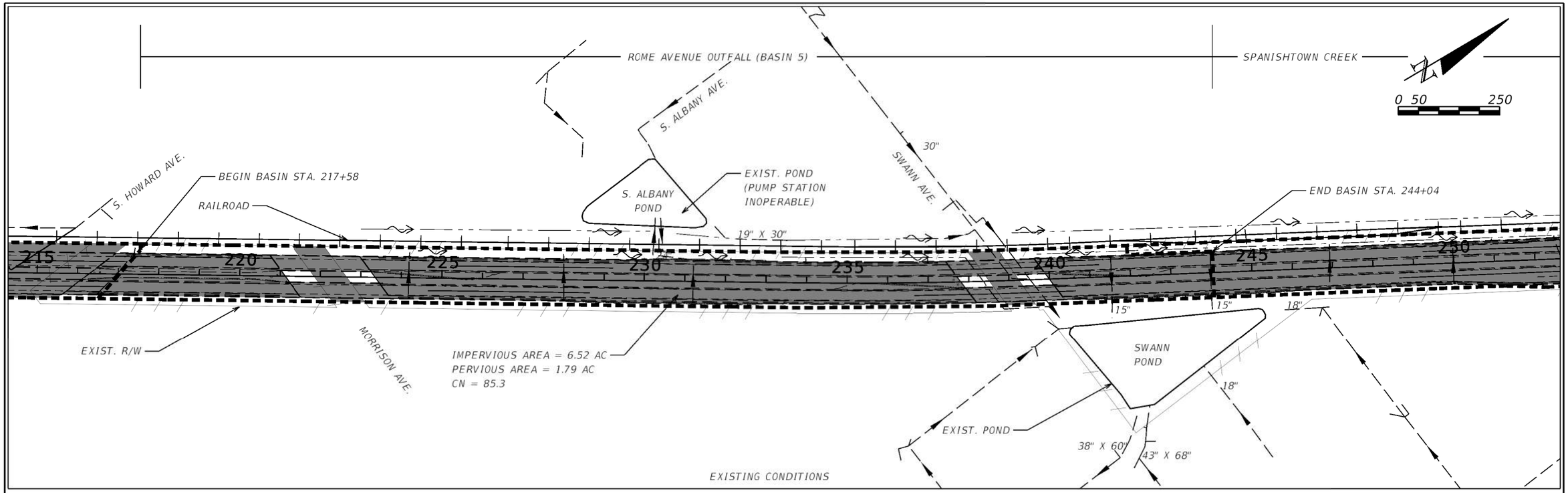


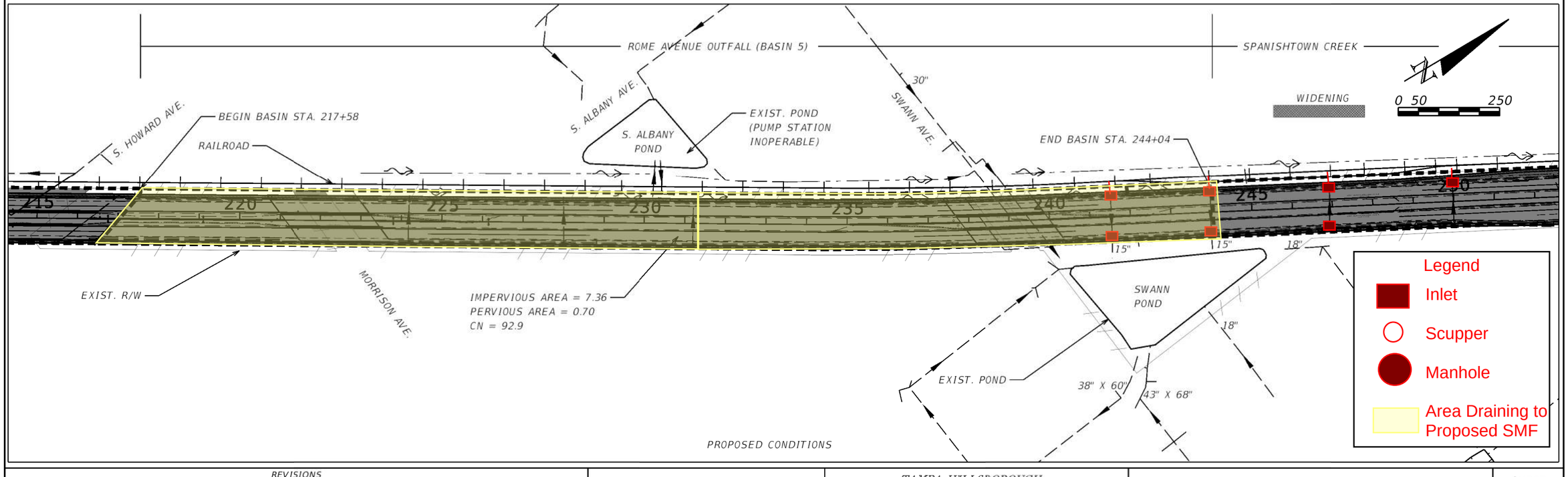
SELMON EXPRESSWAY | South Selmon PD&E Study

PALMA CEIA ALTERNATIVE 1: NEW OUTFALL

SOUTH SELMON PD&E STUDY: POND SITING REPORT

Basin 5: Rome Ave. Outfall
Basin Limits: Sta. 217+55 to 244+04





REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO.
SR 618	HILLSBOROUGH	HI-0012

PRE/POST BASIN MAP
ROME AVE (7)

SHEET NO.

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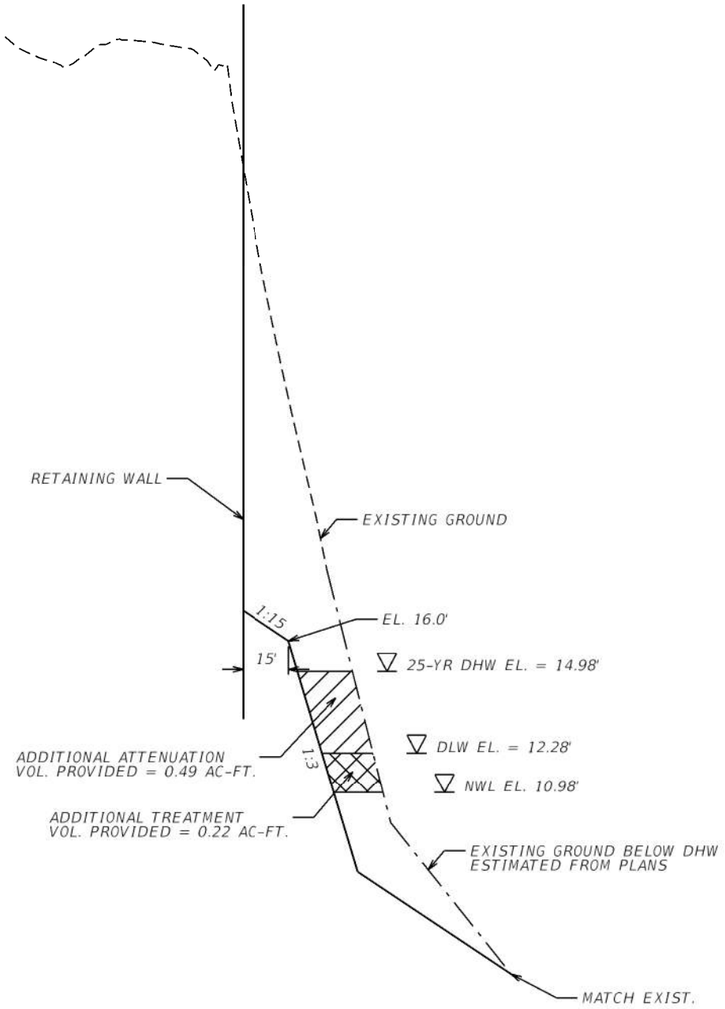
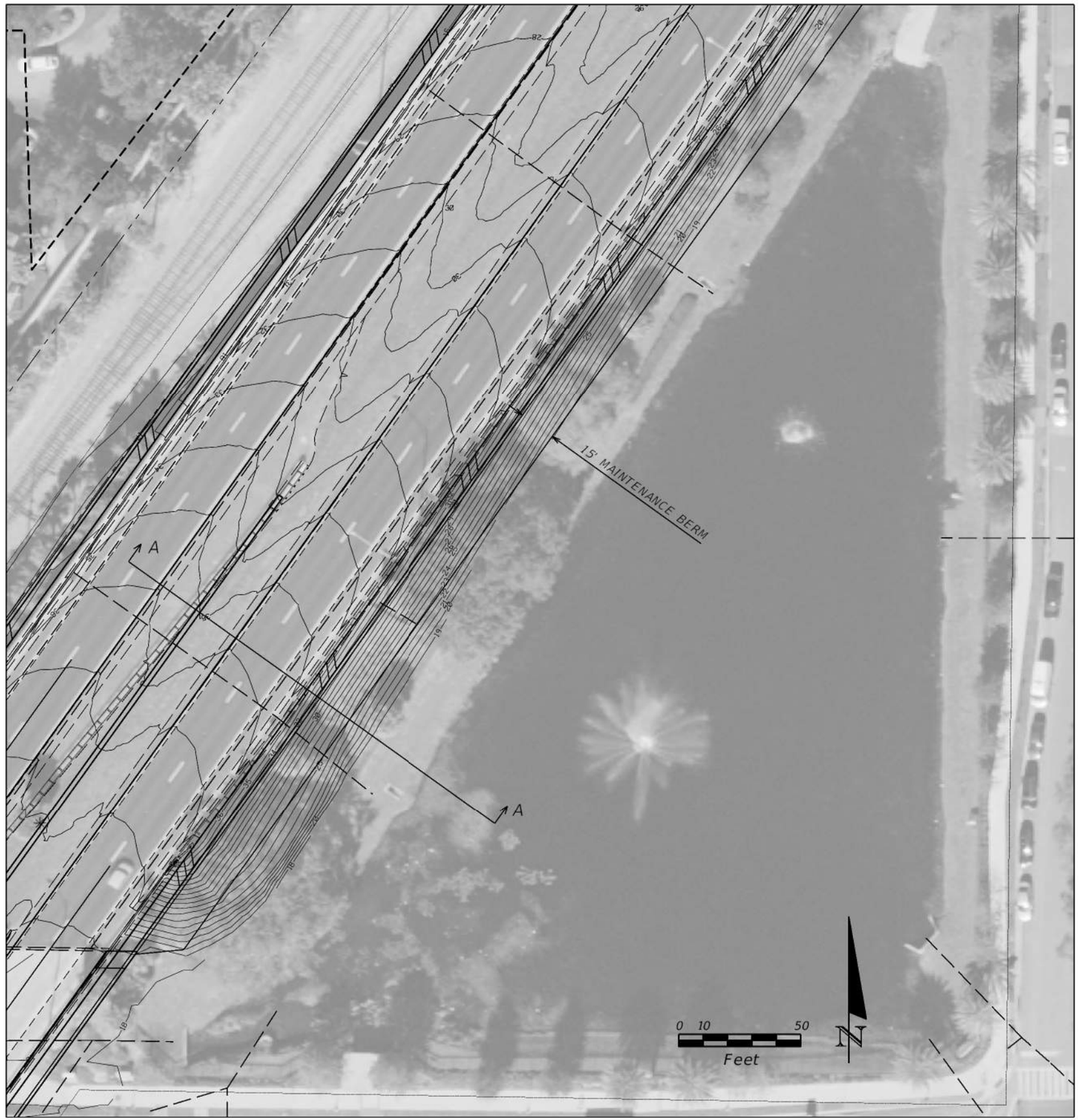


SECTION A-A
NTS



SWANN POND (ROME AVE BASIN)

REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	POND DETAILS (3)	

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Rome Ave. Outfall	Location:	Tampa, FL		

Rome Ave. Outfall Hydrologic Calculations

Existing Conditions

Total Impervious Area	
Impervious Roadway:	6.52 ac.
Impervious Other:	0.00 ac.
Total:	6.52 ac.

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Open Space (Good)	A	39	1.79 ac.
Impervious		98	6.52 ac.
		Total Area:	8.31 ac.

Weighted CN: 85.3

Proposed Conditions

Total Impervious Area	
Impervious Roadway:	7.36 ac.
Impervious Other:	0.00 ac.
Total:	7.36 ac.

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Open Space (Good)	A	39	0.70 ac.
Impervious		98	7.36 ac.
		Total Area:	8.06 ac.

Weighted CN: 92.9

1

Treatment Calculations	
Governing Agency:	SWFWMD
Treatment Method:	Wet Detention
Online or Offline:	Online
OFW:	No
Impaired Waterbody:	No
Open or Closed Basin	Open
Type of Project:	Roadway Widening

Treatment Area (New Imp.):	0.84 ac.
Treatment Area (Restriping):	0.87 ac.
Treatment Depth*:	1.0 in.
Treatment Volume Req. (New Imp.):	**0.07 ac.-ft.**
Treatment Volume Req. (Restriping):	**0.07 ac.-ft.**

* Dry Retention Criteria - 0.5 inch over DCIA
Wet Detention Criteria - 1.0 inch over DCIA

Attenuation Calculations	
Rainfall Depth*:	11.2 in.

Summary of Runoff	Existing	Proposed
Total Basin Area (LT and RT):	8.31 ac.	8.06 ac.
Weighted CN (LT and RT):	85.3	92.9
Soil Retention (S):	1.7 in.	0.8 in.
Runoff Depth (Q_R):	9.4 in.	10.3 in.
Runoff Volume:	6.5 ac.-ft.	6.9 ac.-ft.

Post-Pre Attenuation Volume (V_A): 0.45 ac.-ft.

*100 year/24 hour, NOAA Atlas-14 rainfall data

Total Runoff Volume Required	
Treatment Volume Required:	0.14 ac.-ft.
Attenuation Volume* (V_A):	0.45 ac.-ft.
Total:	**0.59 ac.-ft.**

Existing Attenuation Volume (ac-ft.)	2.32
Existing Treatment Volume (ac-ft.)	4.07

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Rome Ave. Outfall	Location:	Tampa, FL		

Rome Ave. Outfall Pond Analysis

Swann Pond Expansion

Stage-Storage Calculations

Treatment System:	Wet Detention	Berm Width:	15.0 ft.
SHGWT Elevation:	11.0 ft.	Freeboard (DHW to inside TOB)	1.0 ft.
Existing Ground Elevation (average):	13.0 ft.	Side Slopes:	3 : 1
Ex. Low Edge of Pavement Elevation:	15.0 ft.	Pond Bottom (length to width):	1 : 1

Full Parcel Size: **0.00 ac.**
Required Size: **0.00 ac.**

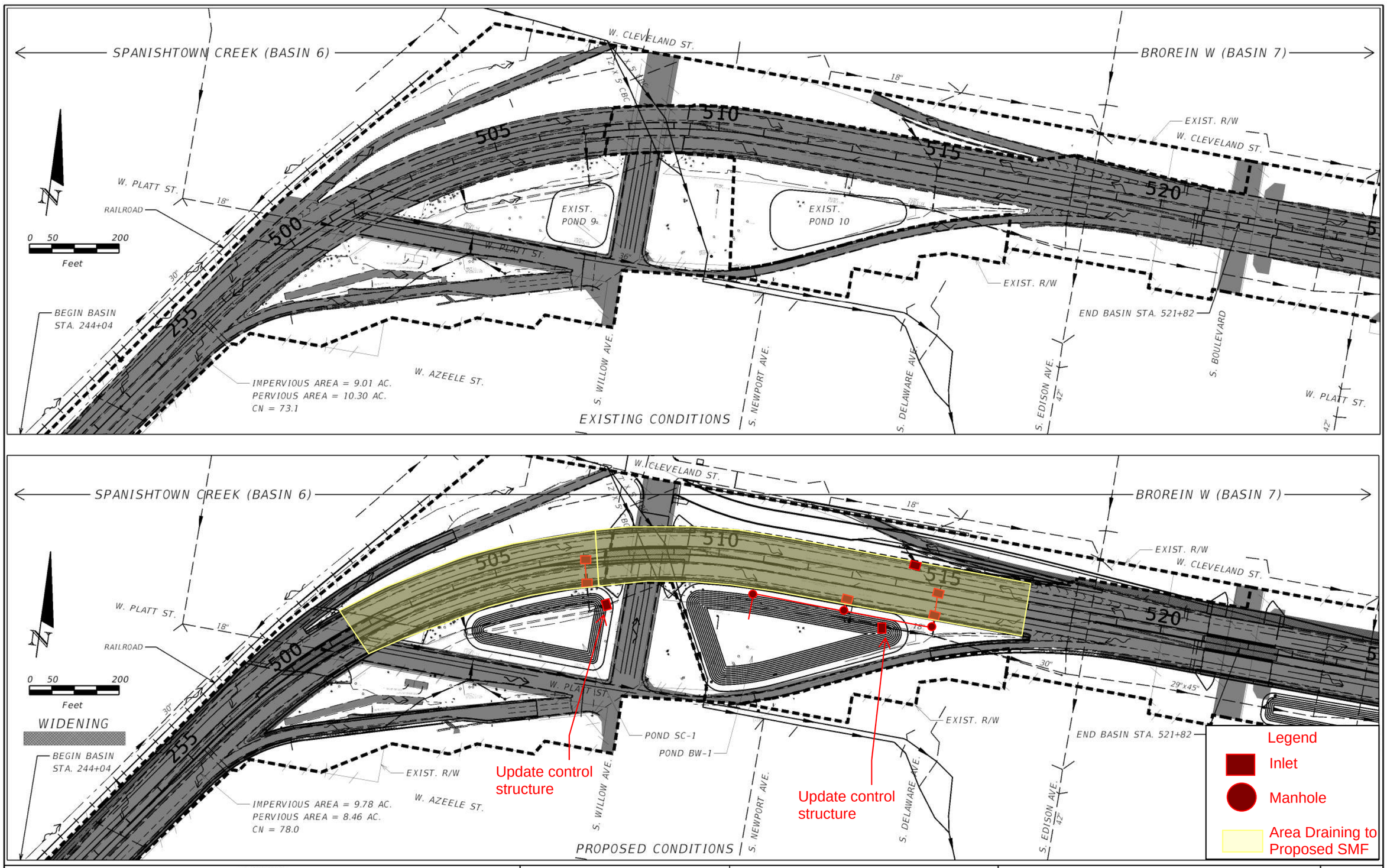
Pond Configuration

Description	Elev.	Area	Incr. Volume	Total Volume
Existing Ground (tie-in):	13.0 ft.	2.751 ac.		
Top of Bank (outside edge):	16.5 ft.	2.427 ac.		
Top of Bank (inside edge):	16.0 ft.	2.000 ac.	2.0 ac.-ft.	20.9 ac.-ft.
Design High Water:	15.0 ft.	1.920 ac.	4.56 ac.-ft.	18.9 ac.-ft.
Treatment (Weir):	12.5 ft.	1.726 ac.	2.54 ac.-ft.	14.4 ac.-ft.
Control (Orifice):	11.0 ft.	1.613 ac.	11.8 ac.-ft.	11.8 ac.-ft.
Pond Bottom:	2.0 ft.	1.024 ac.	0.0 ac.-ft.	0.0 ac.-ft.

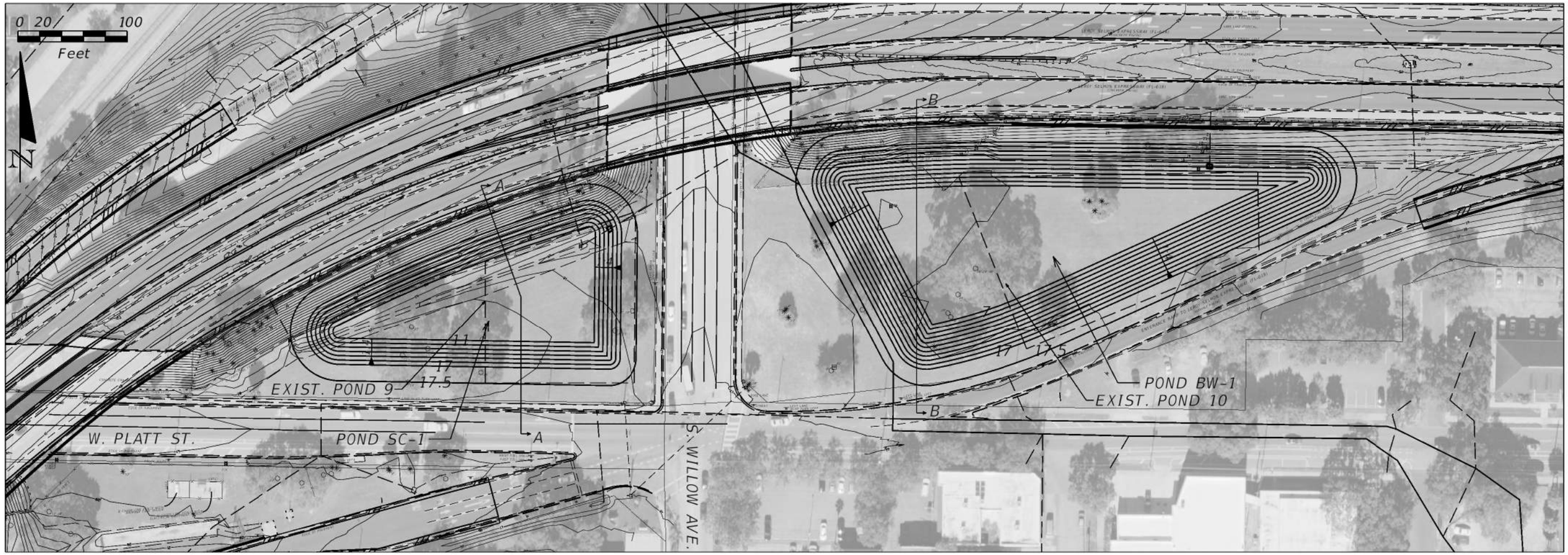
Provided Treatment Volume (ac-ft)*	Required Treatment Volume (ac-ft)
0.22 ac.-ft.	0.14 ac.-ft.
Provided Attenuation Volume (ac-ft)*	**Required Attenuation Volume (ac-ft)**
0.49 ac.-ft.	0.45 ac.-ft.

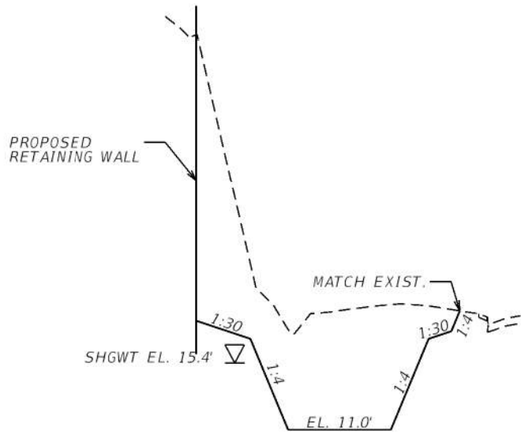
*Provided volumes are the proposed expansion volumes minus the existing pond volumes

Basin 6: Spanishtown Creek
Basin Limits: Sta. 244+04 to 507+50

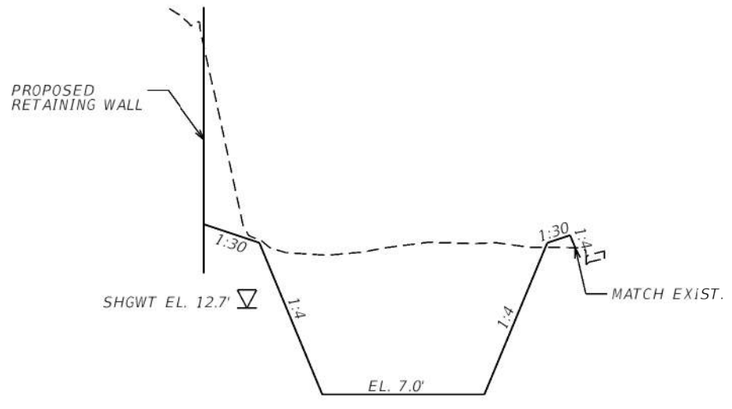


REVISIONS				TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY			PRE/POST BASIN MAP SPANISHTOWN CREEK (8)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	THEA PROJECT NO.		
				SR 618	HILLSBOROUGH	HI-0012		





SECTION A-A
NTS



SECTION B-B
NTS

WILLOW AVE (SPANISHTOWN / BROREIN W BASINS)

REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			POND DETAILS (4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		

Project:	Selmon Expressway PSR	Prepared by:	AJM	Date:	10/23/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/29/2020
Basin Name:	Spanishtown Creek	Location:	Tampa, FL		

Spanishtown Creek Hydrologic Calculations

Existing Conditions

Total Impervious Area	
Impervious Roadway:	9.01 ac.
Impervious Other:	0.00 ac.
Total:	9.01 ac.

Curve Number

Description	Soil Group	CN	Area
Open Space (Good)	A	39	4.56 ac.
Open Space (Good)	B	61	5.74 ac.
Impervious		98	9.01 ac.
		Total Area:	19.31 ac.

Weighted CN: 73.1

Proposed Conditions

Total Impervious Area	
Impervious Roadway:	10.30 ac.
Impervious Other:	-0.52 ac.
Total:	9.78 ac.

Curve Number

Description	Soil Group	CN	Area
Open Space (Good)	A	39	3.50 ac.
Open Space (Good)	B	61	4.30 ac.
Impervious		98	9.78 ac.
Water Surface		100	0.66 ac.
		Total Area:	18.24 ac.

Weighted CN: 78.0

Treatment Calculations

Governing Agency:	SWFWMD
Treatment Method:	Wet Detention
Online or Offline:	Online
OFW:	No
Impaired Waterbody:	No
Open or Closed Basin	Open
Type of Project:	Roadway Widening

Treatment Area (New Imp.):	0.77 ac.
Treatment Area (Restriping):	1.07 ac.
Treatment Depth*:	1.0 in.
Treatment Volume Req. (New Imp.):	**0.06 ac.-ft.**
Treatment Volume Req. (Restriping):	**0.09 ac.-ft.**

* Dry Retention Criteria - 0.5 inch over DCIA
Wet Detention Criteria - 1.0 inch over DCIA

Attenuation Calculations

Rainfall Depth*:	11.2 in.

Summary of Runoff	Existing	Proposed
Total Basin Area (LT and RT):	19.31 ac.	18.24 ac.
Weighted CN (LT and RT):	73.1	78.0
Soil Retention (S):	3.7 in.	2.8 in.
Runoff Depth (Q_R):	7.7 in.	8.4 in.
Runoff Volume:	12.5 ac.-ft.	12.8 ac.-ft.

Post-Pre Attenuation Volume (V_A): 0.33 ac.-ft.

*100 year/24 hour, NOAA Atlas-14 rainfall data

Total Runoff Volume Required	
Treatment Volume Required:	0.15 ac.-ft.
Attenuation Volume* (V_A):	0.33 ac.-ft.
Total:	**0.49 ac.-ft.**

Existing Attenuation Volume (ac-ft.)	0.1
Existing Treatment Volume (ac-ft.)	0.28

Project:	Selmon Expressway PSR	Prepared by:	AJM	Date:	10/23/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/29/2020
Basin Name:	Spanishtown Creek	Location:	Tampa, FL		

Spanishtown Creek Pond Analysis

Pond SC-1

Stage-Storage Calculations

Treatment System:	Wet Detention	Berm Width:	15.0 ft.
SHGWT Elevation**:	15.4 ft.	Freeboard (DHW to inside TOB)	1.0 ft.
Existing Ground Elevation (average):	18.0 ft.	Side Slopes:	4 : 1
Ex. Low Edge of Pavement Elevation:	17.0 ft.	Pond Bottom (length to width):	4 : 1

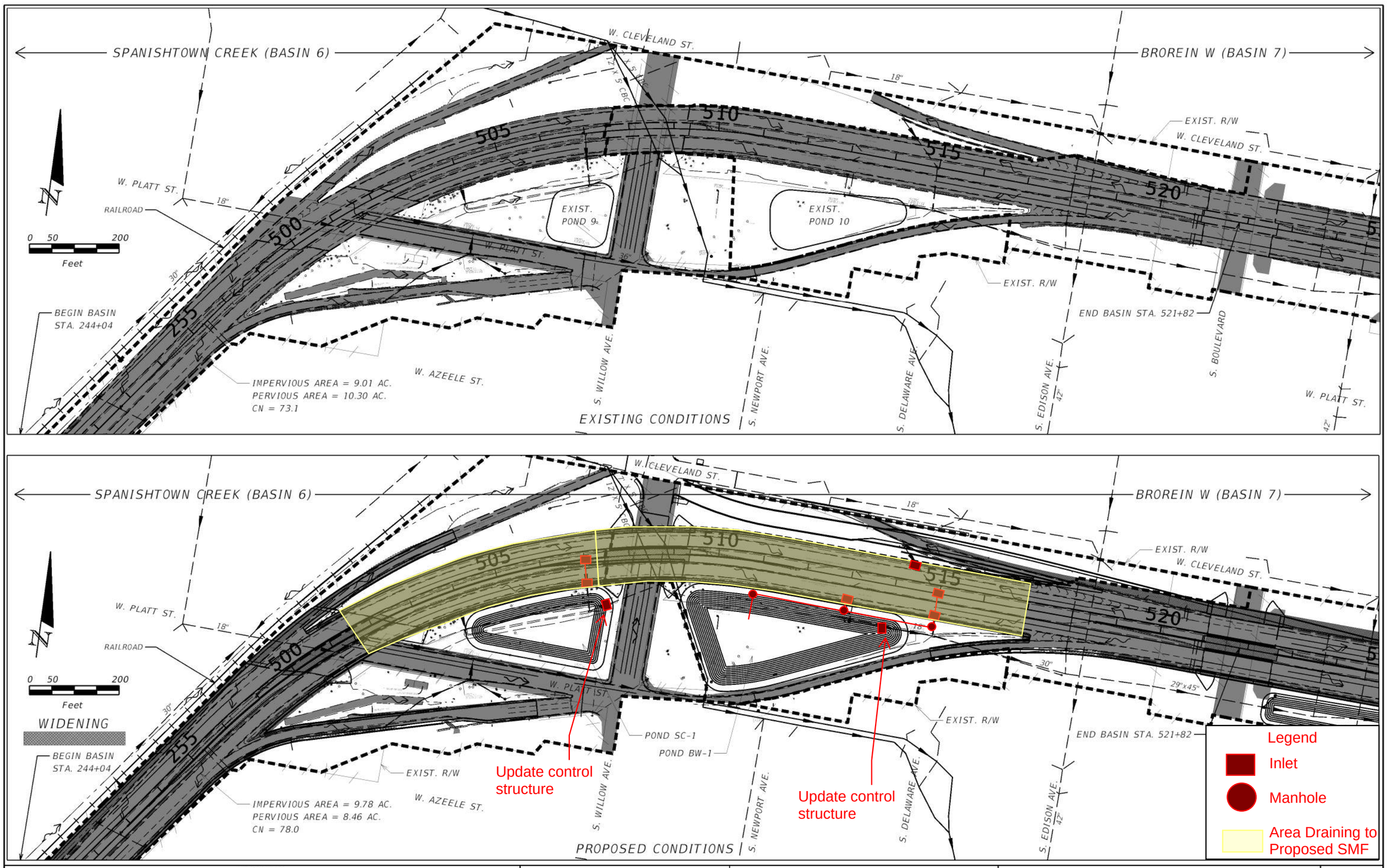
Pond Configuration

Description	Elev.	Area	Incr. Volume	Total Volume
Existing Ground (tie-in):	18.0 ft.	1.103 ac.		
Top of Bank (outside edge):	18.5 ft.	1.056 ac.		
Top of Bank (inside edge):	18.0 ft.	0.729 ac.	0.7 ac.-ft.	3.8 ac.-ft.
Design High Water:	17.0 ft.	0.660 ac.	0.83 ac.-ft.	3.1 ac.-ft.
Treatment (Weir):	15.7 ft.	0.619 ac.	0.19 ac.-ft.	2.3 ac.-ft.
Control (Orifice):	15.4 ft.	0.619 ac.	2.1 ac.-ft.	2.1 ac.-ft.
Pond Bottom:	11.0 ft.	0.350 ac.	0.0 ac.-ft.	0.0 ac.-ft.

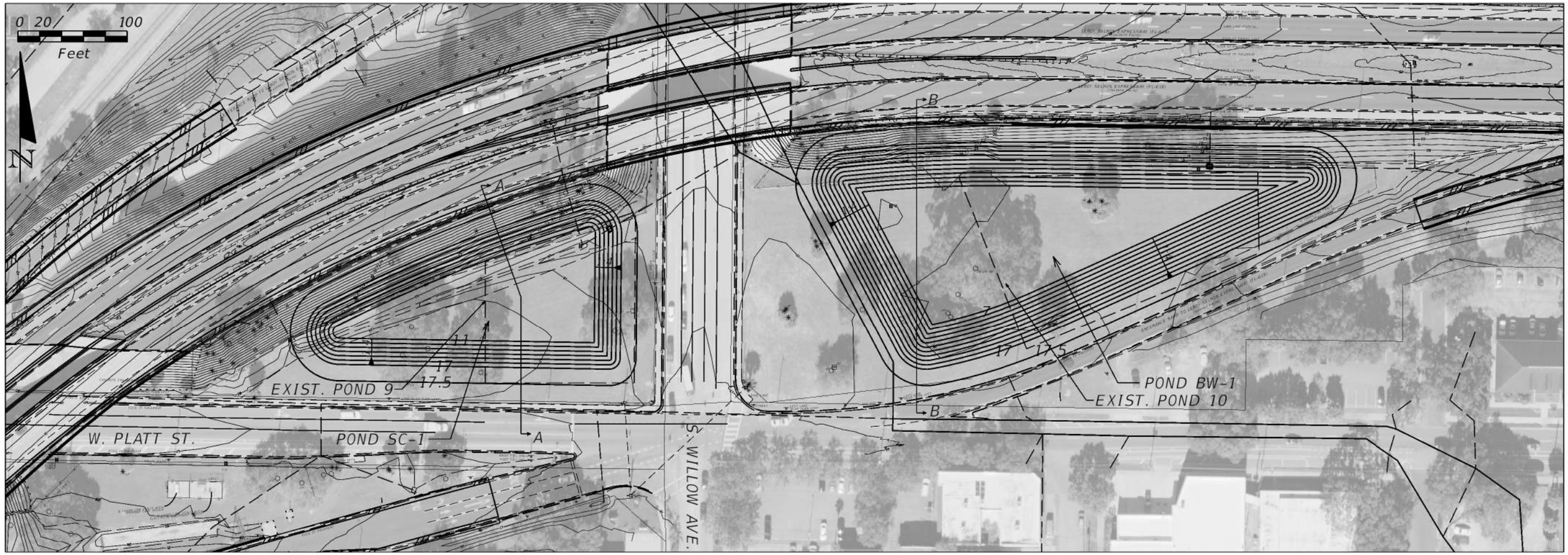
Provided Treatment Volume (ac-ft)	Required Treatment Volume (ac-ft)
0.19 ac.-ft.	0.15 ac.-ft.
Provided Attenuation Volume (ac-ft)	**Required Attenuation Volume (ac-ft)**
0.83 ac.-ft.	0.33 ac.-ft.

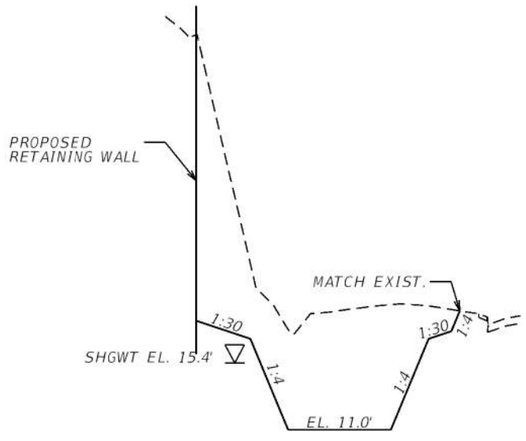
**SHGWT EL = 15.38 (existing permitted Pond 9)

Basin 7: Brorein West
Basin Limits: Sta. 507+50 to 551+50

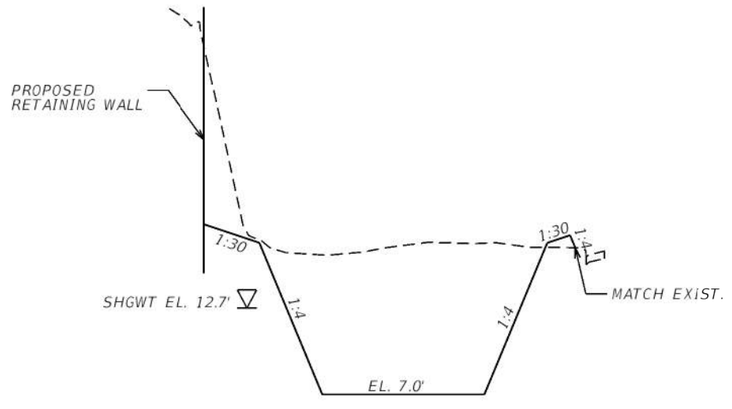


REVISIONS				TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY			PRE/POST BASIN MAP SPANISHTOWN CREEK (8)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	THEA PROJECT NO.		
				SR 618	HILLSBOROUGH	HI-0012		





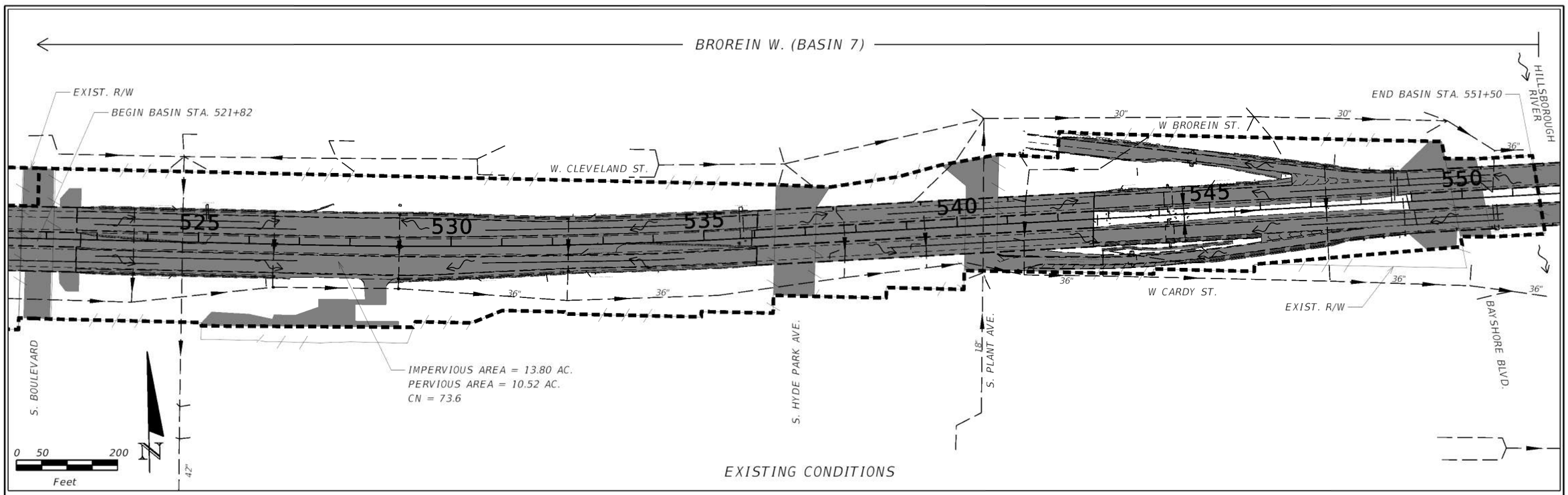
SECTION A-A
NTS

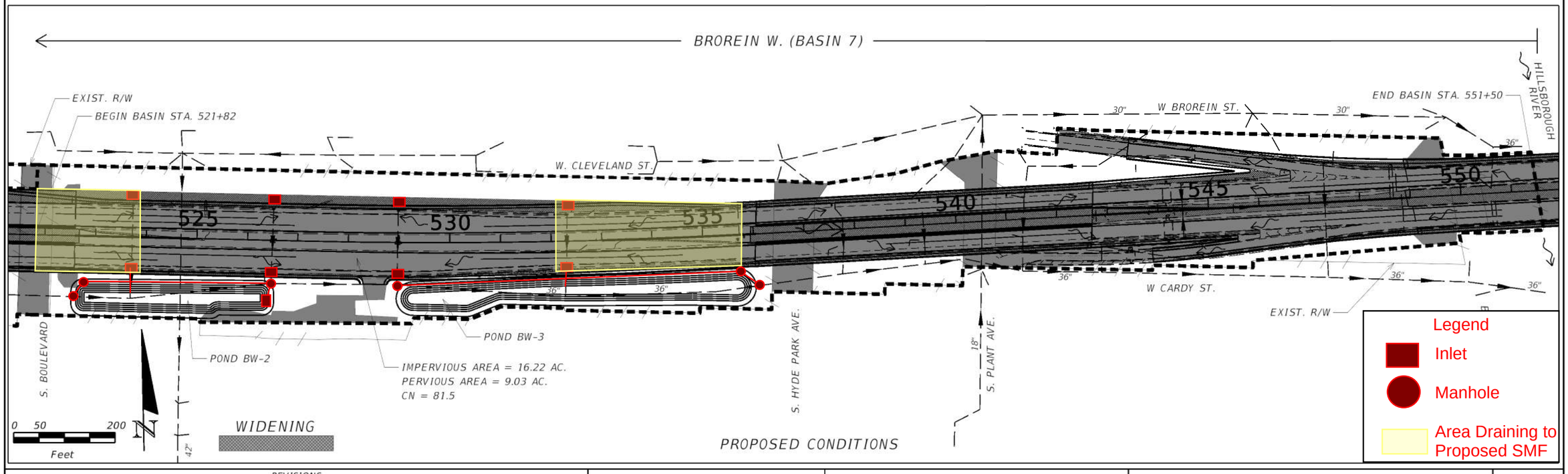


SECTION B-B
NTS

WILLOW AVE (SPANISHTOWN / BROREIN W BASINS)

REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			POND DETAILS (4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		





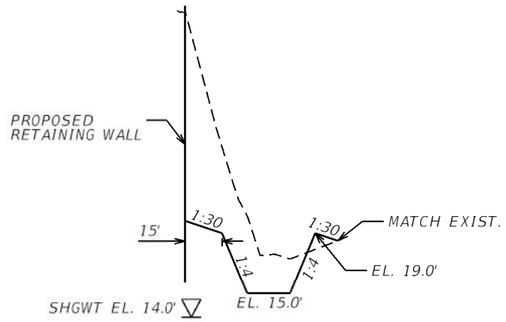
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO.
SR 618	HILLSBOROUGH	HI-0012

PRE/POST BASIN MAP
BROREIN W. (9)

SHEET NO.



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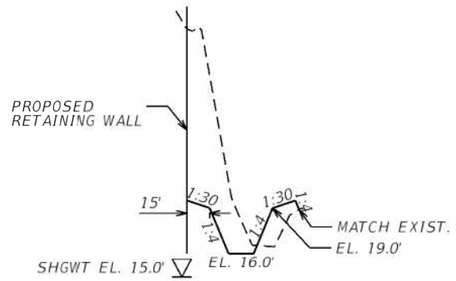
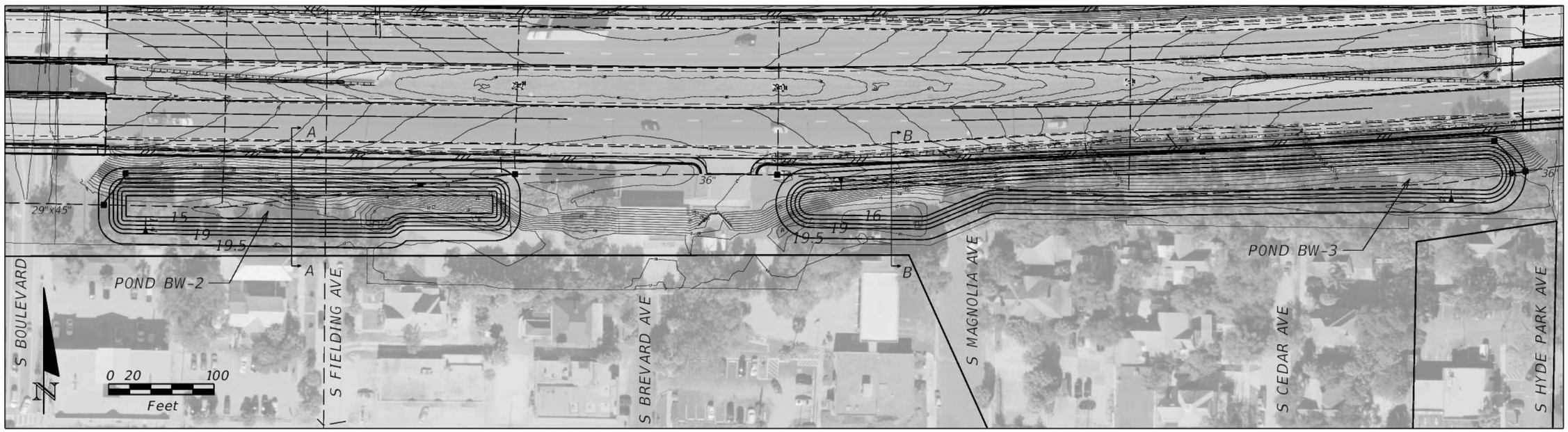
NTS



SECTION B-B
NTS



TOLL PLAZA (BROREIN W BASIN)

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			POND DETAILS (5)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		

Project:	Selmon Expressway PSR	Prepared by:	AJM	Date:	10/23/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/29/2020
Basin Name:	Brorein West	Location:	Tampa, FL		

Brorein West Hydrologic Calculations

Existing Conditions

Total Impervious Area	
Impervious Roadway:	13.80 ac.
Impervious Other:	0.00 ac.
Total:	13.80 ac.

Curve Number

Description	Soil Group	CN	Area
Open Space (Good)	A	39	9.24 ac.
Impervious		98	13.80 ac.
Open Space (Good)	B	61	1.28 ac.
		Total Area:	24.32 ac.

Weighted CN: 73.6

Proposed Conditions

Total Impervious Area	
Impervious Roadway:	16.22 ac.
Impervious Other:	0.00 ac.
Total:	16.22 ac.

Curve Number

Description	Soil Group	CN	Area
Open Space (Good)	A	39	6.68 ac.
Impervious		98	16.22 ac.
Open Space (Good)	B	61	0.71 ac.
Water Surface		100	1.64 ac.
	17.44	**Total Area:**	25.25 ac.

Weighted CN: 81.5

Treatment Calculations

Governing Agency:	SWFWMD
Treatment Method:	Wet Detention
Online or Offline:	Online
OFW:	No
Impaired Waterbody:	No
Open or Closed Basin	Open
Type of Project:	Roadway Widening

Treatment Area (New Imp.):	2.42 ac.
Treatment Area (Restriping):	0.53 ac.
Treatment Depth*:	1.0 in.
Treatment Volume Req. (New Imp.):	**0.20 ac.-ft.**
Treatment Volume Req. (Restriping):	**0.04 ac.-ft.**

* Dry Retention Criteria - 0.5 inch over DCIA
Wet Detention Criteria - 1.0 inch over DCIA

Attenuation Calculations

Rainfall Depth*:	11.2 in.

Summary of Runoff	Existing	Proposed
Total Basin Area (LT and RT):	24.32 ac.	25.25 ac.
Weighted CN (LT and RT):	73.6	81.5
Soil Retention (S):	3.6 in.	2.3 in.
Runoff Depth (Q_R):	7.8 in.	8.9 in.
Runoff Volume:	15.8 ac.-ft.	18.7 ac.-ft.

Post-Pre Attenuation Volume (V_A): 2.83 ac.-ft.

*100 year/24 hour, NOAA Atlas-14 rainfall data

Total Runoff Volume Required	
Treatment Volume Required:	0.25 ac.-ft.
Attenuation Volume* (V_A):	2.83 ac.-ft.
Total:	**3.07 ac.-ft.**

Existing Attenuation Volume (ac-ft.)	0.18
Existing Treatment Volume (ac-ft.)	0.39

Project:	Selmon Expressway PSR	Prepared by:	AJM	Date:	10/23/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/29/2020
Basin Name:	Brorein West	Location:	Tampa, FL		

Brorein West Pond Analysis

Pond BW-3

Stage-Storage Calculations

Treatment System:	Dry Retention	Berm Width:	0.0 ft.
SHGWT Elevation**:	15.0 ft.	Freeboard (DHW to inside TOB)	1.0 ft.
Existing Ground Elevation (average):	17.0 ft.	Side Slopes:	4 : 1
Ex. Low Edge of Pavement Elevation:	19.0 ft.	Pond Bottom (length to width):	4 : 1

Pond Configuration

Description	Elev.	Area	Incr. Volume	Total Volume
Existing Ground (tie-in):	17.0 ft.	0.297 ac.		
Top of Bank (outside edge):	19.5 ft.	0.185 ac.		
Top of Bank (inside edge):	19.0 ft.	0.185 ac.	0.2 ac.-ft.	0.4 ac.-ft.
Design High Water:	18.0 ft.	0.152 ac.	0.07 ac.-ft.	0.2 ac.-ft.
Treatment (Weir):	17.5 ft.	0.126 ac.	0.16 ac.-ft.	0.2 ac.-ft.
Control (Orifice):	16.0 ft.	0.093 ac.	0.0 ac.-ft.	0.0 ac.-ft.
Pond Bottom:	16.0 ft.	0.093 ac.	0.0 ac.-ft.	0.0 ac.-ft.

Provided Treatment Volume (ac-ft)	Required Treatment Volume (ac-ft)
0.16 ac.-ft.	0.25 ac.-ft.
Provided Attenuation Volume (ac-ft)	**Required Attenuation Volume (ac-ft)**
0.07 ac.-ft.	2.83 ac.-ft.

Pond BW-2

Stage-Storage Calculations

Treatment System:	Wet Detention	Berm Width:	0.0 ft.
SHGWT Elevation**:	14.0 ft.	Freeboard (DHW to inside TOB)	1.0 ft.
Existing Ground Elevation (average):	16.0 ft.	Side Slopes:	4 : 1
Ex. Low Edge of Pavement Elevation:	19.0 ft.	Pond Bottom (length to width):	1 : 1

**SHGWT estimated 2.0' below ground surface;

Pond Configuration

Description	Elev.	Area	Incr. Volume	Total Volume
Existing Ground (tie-in):	16.0 ft.	0.653 ac.		
Top of Bank (outside edge):	19.5 ft.	0.454 ac.		
Top of Bank (inside edge):	19.0 ft.	0.454 ac.	0.4 ac.-ft.	1.3 ac.-ft.
Design High Water:	18.0 ft.	0.379 ac.	0.53 ac.-ft.	0.9 ac.-ft.
Treatment (Weir):	16.5 ft.	0.334 ac.	0.37 ac.-ft.	0.4 ac.-ft.
Control (Orifice):	15.0 ft.	0.165 ac.	0.0 ac.-ft.	0.0 ac.-ft.
Pond Bottom:	15.0 ft.	0.165 ac.	0.0 ac.-ft.	0.0 ac.-ft.

Provided Treatment Volume (ac-ft)	Required Treatment Volume (ac-ft)
0.37 ac.-ft.	0.25 ac.-ft.
Provided Attenuation Volume (ac-ft)	**Required Attenuation Volume (ac-ft)**
0.53 ac.-ft.	2.83 ac.-ft.

Project:	Selmon Expressway PSR	Prepared by:	AJM	Date:	10/23/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/29/2020
Basin Name:	Brorein West	Location:	Tampa, FL		

Pond BW-1

Stage-Storage Calculations

Treatment System:	Wet Detention	Berm Width:	15.0 ft.
SHGWT Elevation**:	12.7 ft.	Freeboard (DHW to inside TOB)	1.0 ft.
Existing Ground Elevation (average):	17.0 ft.	Side Slopes:	4 : 1
Ex. Low Edge of Pavement Elevation:	17.0 ft.	Pond Bottom (length to width):	4 : 1

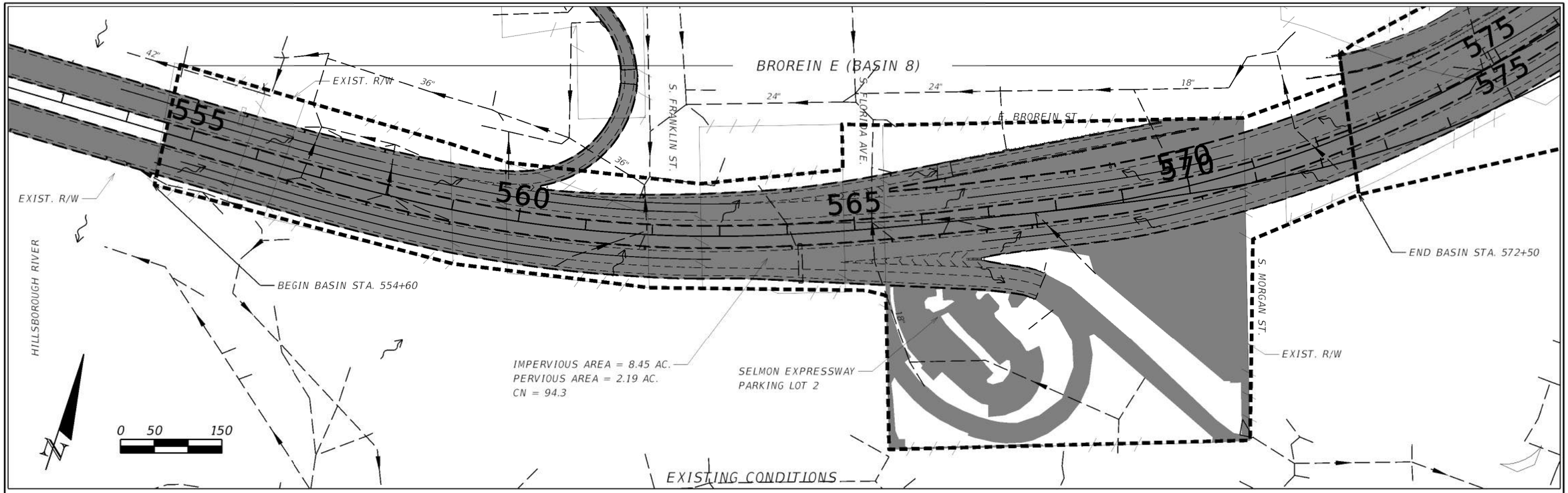
Pond Configuration

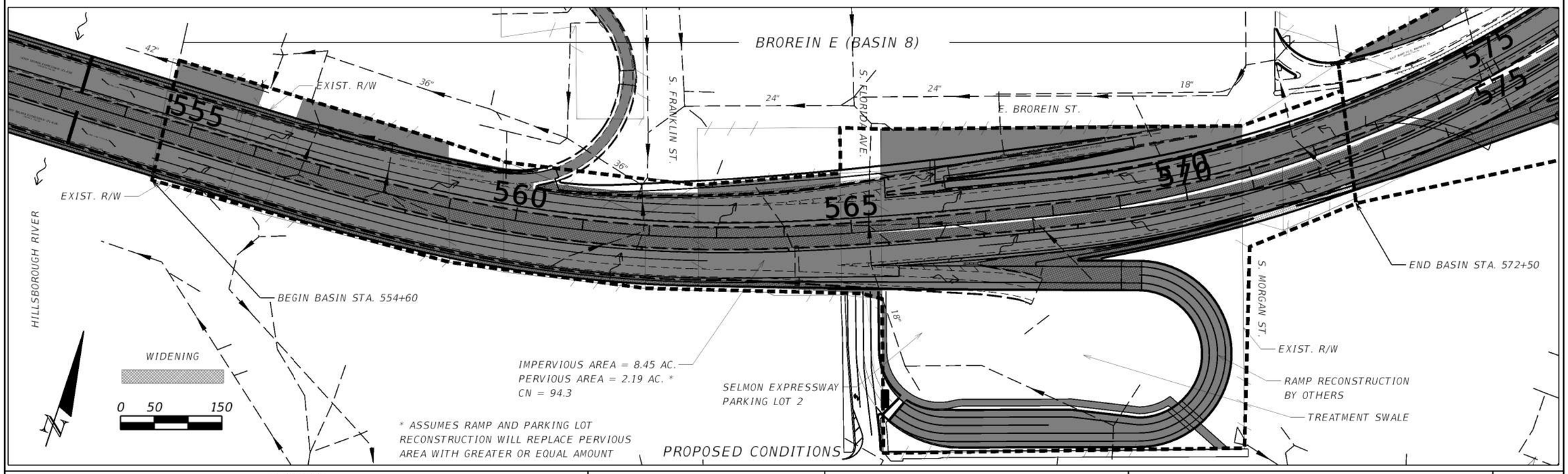
Description	Elev.	Area	Incr. Volume	Total Volume
Existing Ground (tie-in):	17.0 ft.	2.025 ac.		
Top of Bank (outside edge):	17.5 ft.	1.961 ac.		
Top of Bank (inside edge):	17.0 ft.	1.500 ac.	1.4 ac.-ft.	10.1 ac.-ft.
Design High Water:	16.0 ft.	1.395 ac.	2.87 ac.-ft.	8.6 ac.-ft.
Treatment (Weir):	13.7 ft.	1.100 ac.	1.08 ac.-ft.	5.7 ac.-ft.
Control (Orifice):	12.7 ft.	1.066 ac.	4.7 ac.-ft.	4.7 ac.-ft.
Pond Bottom:	7.0 ft.	0.566 ac.	0.0 ac.-ft.	0.0 ac.-ft.

**SHGWT EL = 12.65 (existing permitted Pond 10)

Provided Treatment Volume (ac-ft)	Required Treatment Volume (ac-ft)
1.08 ac.-ft.	0.25 ac.-ft.
Provided Attenuation Volume (ac-ft)	**Required Attenuation Volume (ac-ft)**
2.87 ac.-ft.	2.83 ac.-ft.

Basin 8: Brorein East
Basin Limits: Sta. 554+60 to 572+50





REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO.
SR 618	HILLSBOROUGH	HI-0012

PRE/POST BASIN MAP
BROREIN E (10)

SHEET NO.

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Hills. River Bridge	Location:	Tampa, FL		

Hills. River Bridge Hydrologic Calculations

Existing Conditions

Total Impervious Area	
Impervious Roadway:	0.67 ac.
Impervious Other:	0.00 ac.
Total:	0.67 ac.

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Impervious		98	0.67 ac.
		Total Area:	0.67 ac.

Weighted CN: **98.0**

Proposed Conditions

Total Impervious Area	
Impervious Roadway:	1.03 ac.
Impervious Other:	0.00 ac.
Total:	1.03 ac.

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Impervious		98	1.03 ac.
		Total Area:	1.03 ac.

Weighted CN: **98.0**

Treatment Calculations	
Governing Agency:	SWFWMD
Treatment Method:	Wet Detention
Online or Offline:	Online
OFW:	No
Impaired Waterbody:	No
Open or Closed Basin	Open
Type of Project:	Roadway Widening

Treatment Area (New Imp.):	0.36 ac.
Treatment Area (Restriping):	0.00 ac.
Treatment Depth*:	1.0 in.
Treatment Volume Req. (New Imp.):	**0.03 ac.-ft.**
Treatment Volume Req. (Restriping):	**0.00 ac.-ft.**

* Dry Retention Criteria - 0.5 inch over DCIA
Wet Detention Criteria - 1.0 inch over DCIA

Attenuation Calculations	
Rainfall Depth*:	0.0 in.

Summary of Runoff	Existing	Proposed
Total Basin Area (LT and RT):	0.67 ac.	1.03 ac.
Weighted CN (LT and RT):	98.0	98.0
Soil Retention (S):	0.2 in.	0.2 in.
Runoff Depth (Q_R):	0.0 in.	0.0 in.
Runoff Volume:	0.0 ac.-ft.	0.0 ac.-ft.

Post-Pre Attenuation Volume (V_A): 0.00 ac.-ft.

*No Attenuation is required due to direct discharge to Hillsborough River

Total Runoff Volume Required	
Treatment Volume Required:	0.03 ac.-ft.
Attenuation Volume* (V_A):	0.00 ac.-ft.
Total:	**0.03 ac.-ft.**

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Brorein East	Location:	Tampa, FL		

Brorein East Hydrologic Calculations

Existing Conditions

Total Impervious Area	
Impervious Roadway:	6.42 ac.
Impervious Other:	0.00 ac.
Total:	6.42 ac.

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Open Space (Good)	D	80	2.19 ac.
Impervious (Roadway)		98	6.42 ac.
Impervious		98	2.03 ac.
		Total Area:	10.64 ac.

Weighted CN: **94.3**

Proposed Conditions

Total Impervious Area	
Impervious Roadway:	7.81 ac.
Impervious Other:	0.00 ac.
Total:	7.81 ac.

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Open Space (Good)	D	80	2.19 ac.
Impervious (Roadway)		98	7.81 ac.
Impervious		98	0.64 ac.
		Total Area:	10.64 ac.

Weighted CN: **94.3**

Treatment Calculations	
Governing Agency:	SWFWMD
Treatment Method:	Wet Detention
Online or Offline:	Online
OFW:	No
Impaired Waterbody:	No
Open or Closed Basin	Open
Type of Project:	Roadway Widening

Treatment Area (New Imp.):	1.39 ac.
Treatment Area (Restriping):	0.00 ac.
Treatment Depth*:	1.0 in.
Treatment Volume Req. (New Imp.):	**0.12 ac.-ft.**
Treatment Volume Req. (Restriping):	**0.00 ac.-ft.**

* Dry Retention Criteria - 0.5 inch over DCIA
Wet Detention Criteria - 1.0 inch over DCIA

Attenuation Calculations	
Rainfall Depth*:	11.2 in.

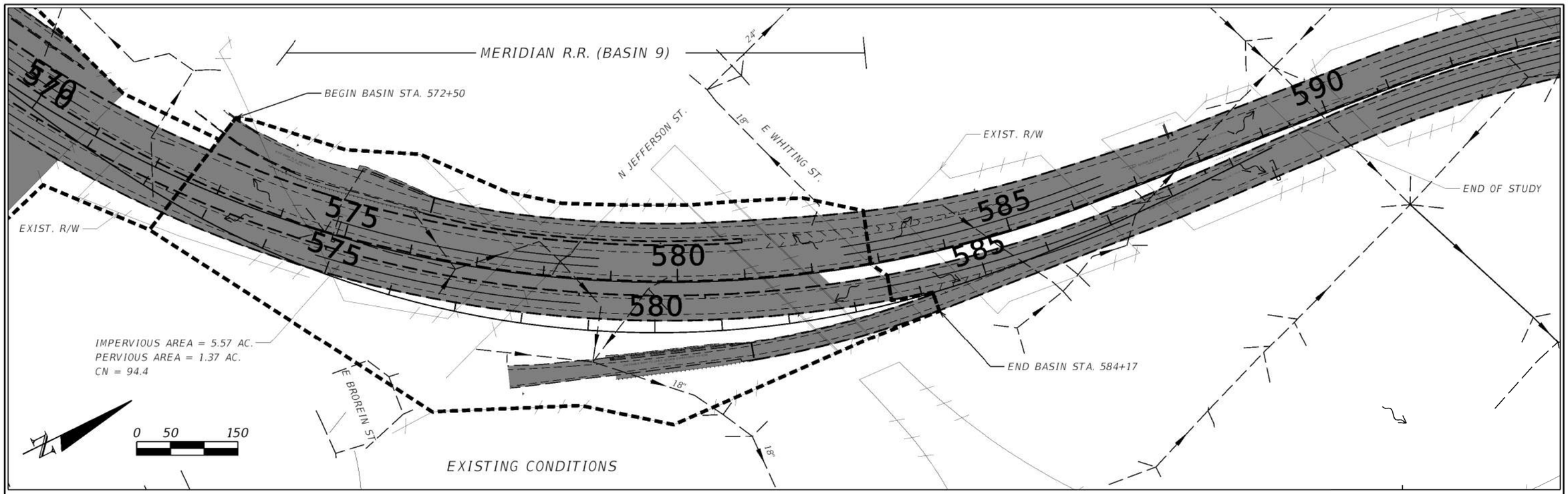
Summary of Runoff	Existing	Proposed
Total Basin Area (LT and RT):	10.64 ac.	10.64 ac.
Weighted CN (LT and RT):	94.3	94.3
Soil Retention (S):	0.6 in.	0.6 in.
Runoff Depth (Q_R):	10.5 in.	10.5 in.
Runoff Volume:	9.3 ac.-ft.	9.3 ac.-ft.

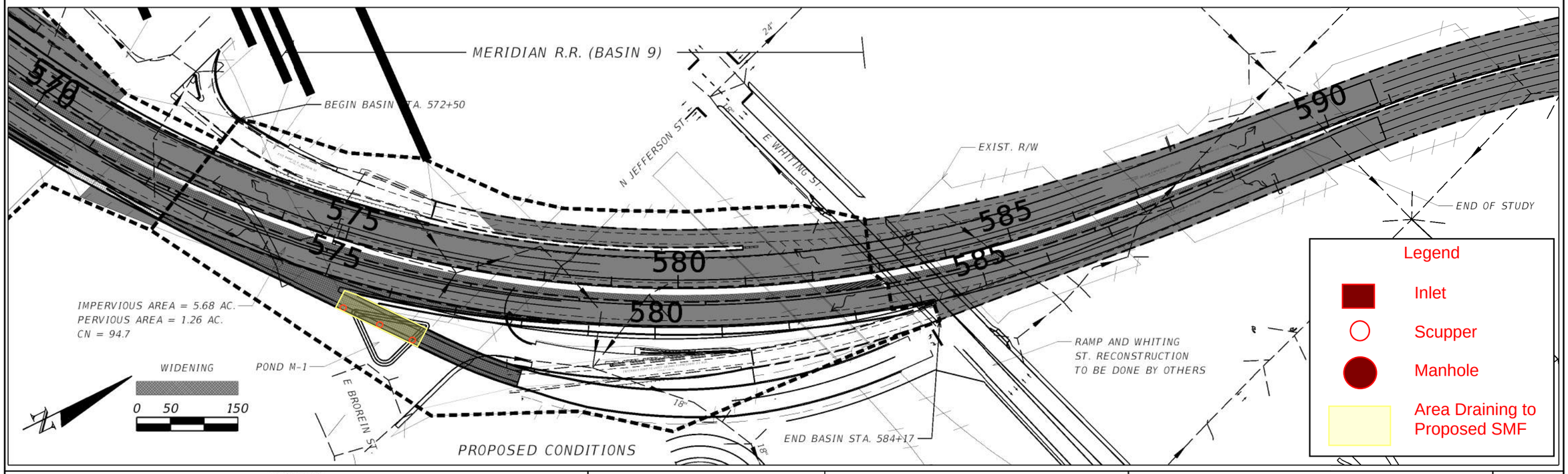
Post-Pre Attenuation Volume (V_A): 0.00 ac.-ft.

*100 year/24 hour, NOAA Atlas-14 rainfall data

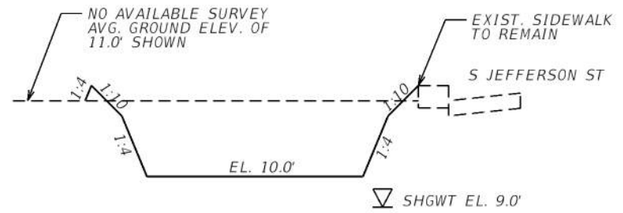
Total Runoff Volume Required	
Treatment Volume Required:	0.12 ac.-ft.
Attenuation Volume* (V_A):	0.00 ac.-ft.
Total:	**0.12 ac.-ft.**

Basin 9: Meridian R.R
Basin Limits: Sta. 572+50 to 584+17





REVISIONS				TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY			PRE/POST BASIN MAP MERIDIAN R.R. (11)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	THEA PROJECT NO.		
				SR 618	HILLSBOROUGH	HI-0012		



SECTION A-A
NTS

S JEFFERSON ST (MERIDIAN BASIN)

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

POND DETAILS (6)

SHEET NO.

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Meridian R.R	Location:	Tampa, FL		

Meridian R.R Hydrologic Calculations

Existing Conditions

Total Impervious Area	
Impervious Roadway:	2.90 ac.
Impervious Other:	0.00 ac.
Total:	2.90 ac.

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Open Space (Good)	D	80	1.37 ac.
Impervious (Roadway)		98	2.90 ac.
Impervious		98	2.67 ac.
		Total Area:	6.94 ac.

Weighted CN: **94.4**

Proposed Conditions

Total Impervious Area	
Impervious Roadway:	3.56 ac.
Impervious Other:	0.00 ac.
Total:	3.56 ac.

Curve Number			
Description	**Soil Group**	**CN**	**Area**
Open Space (Good)	D	80	1.26 ac.
Impervious (Roadway)		98	3.56 ac.
Impervious		98	2.12 ac.
		Total Area:	6.94 ac.

Weighted CN: **94.7**

Treatment Calculations	
Governing Agency:	SWFWMD
Treatment Method:	Dry Retention
Online or Offline:	Online
OFW:	No
Impaired Waterbody:	No
Open or Closed Basin	Open
Type of Project:	Roadway Widening

Treatment Area (New Imp.):	0.66 ac.
Treatment Area (Restriping):	0.00 ac.
Treatment Depth*:	0.5 in.
Treatment Volume Req. (New Imp.):	**0.03 ac.-ft.**
Treatment Volume Req. (Restriping):	**0.00 ac.-ft.**

* Dry Retention Criteria - 0.5 inch over DCIA
Wet Detention Criteria - 1.0 inch over DCIA

Attenuation Calculations	
Rainfall Depth*:	11.2 in.

Summary of Runoff	Existing	Proposed
Total Basin Area (LT and RT):	6.94 ac.	6.94 ac.
Weighted CN (LT and RT):	94.4	94.7
Soil Retention (S):	0.6 in.	0.6 in.
Runoff Depth (Q_R):	10.5 in.	10.6 in.
Runoff Volume:	6.1 ac.-ft.	6.1 ac.-ft.

Post-Pre Attenuation Volume (V_A): 0.02 ac.-ft.

*100 year/24 hour, NOAA Atlas-14 rainfall data

Total Runoff Volume Required	
Treatment Volume Required:	0.03 ac.-ft.
Attenuation Volume* (V_A):	0.02 ac.-ft.
Total:	**0.05 ac.-ft.**

Project:	Selmon Expressway PSR	Prepared by:	JFG	Date:	5/8/2020
Project Number:	HI-0012	Checked by:	JCL	Date:	10/20/2020
Basin Name:	Meridian R.R	Location:	Tampa, FL		

Meridian R.R Pond Analysis

Pond M-1

Stage-Storage Calculations

Treatment System:	Wet Detention	Berm Width:	0.0 ft.
SHGWT Elevation**:	9.0 ft.	Freeboard (DHW to inside TOB)	1.0 ft.
Existing Ground Elevation (average):	11.0 ft.	Side Slopes:	4 : 1
Ex. Low Edge of Pavement Elevation:	12.5 ft.	Pond Bottom (length to width):	1 : 1

Pond Configuration

Description	Elev.	Area	Incr. Volume	Total Volume
Existing Ground (tie-in):	11.0 ft.	0.168 ac.		
Top of Bank (outside edge):	12.5 ft.	0.124 ac.		
Top of Bank (inside edge):	12.0 ft.	0.124 ac.	0.1 ac.-ft.	0.2 ac.-ft.
Design High Water:	11.0 ft.	0.097 ac.	0.05 ac.-ft.	0.1 ac.-ft.
Treatment (Weir):	10.5 ft.	0.087 ac.	0.04 ac.-ft.	0.0 ac.-ft.
Control (Orifice):	10.0 ft.	0.072 ac.	0.0 ac.-ft.	0.0 ac.-ft.
Pond Bottom:	10.0 ft.	0.072 ac.	0.0 ac.-ft.	0.0 ac.-ft.

Provided Treatment Volume (ac-ft)	Required Treatment Volume (ac-ft)
0.04 ac.-ft.	0.03 ac.-ft.
Provided Attenuation Volume (ac-ft)	**Required Attenuation Volume (ac-ft)**
0.05 ac.-ft.	0.02 ac.-ft.

**Seasonal high groundwater table estimated at 2.0' below ground surface.
Waterfront District Conceptual Permit (4942679.000) shows groundwater estimate at 4.5' below ground surface on 3/10/2015

NOAA Atlas 14, Volume 9, Version 2
Location name: Tampa, Florida, USA*
Latitude: 27.9373°, Longitude: -82.4783°
Elevation: 18.33 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.546** (0.474-0.638)	**0.612** (0.530-0.715)	**0.715** (0.617-0.839)	**0.796** (0.682-0.939)	**0.902** (0.736-1.09)	**0.979** (0.776-1.21)	**1.05** (0.797-1.34)	**1.12** (0.803-1.48)	**1.21** (0.822-1.64)	**1.26** (0.836-1.77)
10-min	**0.799** (0.694-0.934)	**0.895** (0.777-1.05)	**1.05** (0.903-1.23)	**1.17** (0.999-1.38)	**1.32** (1.08-1.60)	**1.43** (1.14-1.77)	**1.54** (1.17-1.96)	**1.64** (1.18-2.16)	**1.77** (1.20-2.40)	**1.85** (1.22-2.59)
15-min	**0.975** (0.846-1.14)	**1.09** (0.947-1.28)	**1.28** (1.10-1.50)	**1.42** (1.22-1.68)	**1.61** (1.31-1.95)	**1.75** (1.39-2.16)	**1.88** (1.42-2.39)	**2.00** (1.43-2.63)	**2.15** (1.47-2.93)	**2.26** (1.49-3.16)
30-min	**1.47** (1.27-1.72)	**1.65** (1.43-1.93)	**1.93** (1.67-2.27)	**2.15** (1.85-2.54)	**2.44** (1.99-2.96)	**2.65** (2.10-3.28)	**2.85** (2.16-3.63)	**3.04** (2.18-4.00)	**3.27** (2.23-4.45)	**3.43** (2.27-4.79)
60-min	**1.89** (1.65-2.21)	**2.15** (1.86-2.51)	**2.55** (2.20-2.99)	**2.88** (2.47-3.40)	**3.31** (2.71-4.03)	**3.64** (2.89-4.51)	**3.95** (3.00-5.05)	**4.26** (3.06-5.63)	**4.66** (3.18-6.36)	**4.95** (3.27-6.92)
2-hr	**2.32** (2.03-2.69)	**2.65** (2.31-3.08)	**3.17** (2.75-3.70)	**3.60** (3.10-4.22)	**4.18** (3.44-5.07)	**4.62** (3.69-5.70)	**5.06** (3.86-6.43)	**5.49** (3.97-7.21)	**6.06** (4.16-8.23)	**6.47** (4.31-8.99)
3-hr	**2.53** (2.21-2.92)	**2.89** (2.52-3.34)	**3.48** (3.03-4.04)	**3.99** (3.45-4.66)	**4.70** (3.89-5.71)	**5.27** (4.23-6.51)	**5.84** (4.48-7.43)	**6.44** (4.68-8.46)	**7.24** (5.00-9.84)	**7.87** (5.25-10.9)
6-hr	**2.93** (2.58-3.36)	**3.29** (2.89-3.78)	**3.95** (3.46-4.56)	**4.57** (3.97-5.30)	**5.54** (4.65-6.78)	**6.36** (5.17-7.91)	**7.27** (5.64-9.29)	**8.26** (6.07-10.9)	**9.68** (6.76-13.2)	**10.8** (7.29-14.9)
12-hr	**3.42** (3.02-3.90)	**3.72** (3.29-4.25)	**4.40** (3.87-5.04)	**5.13** (4.48-5.91)	**6.38** (5.47-7.92)	**7.54** (6.21-9.44)	**8.87** (6.97-11.4)	**10.4** (7.73-13.8)	**12.7** (8.96-17.3)	**14.6** (9.89-20.0)
24-hr	**3.90** (3.47-4.42)	**4.31** (3.83-4.89)	**5.21** (4.61-5.94)	**6.19** (5.43-7.08)	**7.86** (6.78-9.74)	**9.42** (7.80-11.7)	**11.2** (8.86-14.3)	**13.2** (9.91-17.5)	**16.3** (11.6-22.1)	**18.9** (12.9-25.6)
2-day	**4.40** (3.94-4.96)	**5.11** (4.56-5.76)	**6.48** (5.76-7.33)	**7.84** (6.92-8.91)	**10.0** (8.62-12.2)	**11.9** (9.91-14.7)	**14.1** (11.2-17.8)	**16.5** (12.4-21.5)	**20.0** (14.3-26.8)	**22.9** (15.7-30.9)
3-day	**4.90** (4.39-5.49)	**5.60** (5.02-6.29)	**7.01** (6.25-7.90)	**8.41** (7.45-9.53)	**10.7** (9.24-13.0)	**12.7** (10.6-15.6)	**15.0** (11.9-18.9)	**17.6** (13.2-22.8)	**21.3** (15.3-28.5)	**24.5** (16.8-32.8)
4-day	**5.34** (4.80-5.98)	**6.00** (5.39-6.72)	**7.35** (6.57-8.26)	**8.73** (7.75-9.86)	**11.0** (9.56-13.4)	**13.1** (10.9-16.0)	**15.4** (12.3-19.4)	**18.0** (13.6-23.4)	**21.9** (15.8-29.3)	**25.2** (17.4-33.7)
7-day	**6.43** (5.81-7.15)	**7.05** (6.36-7.85)	**8.36** (7.50-9.33)	**9.71** (8.65-10.9)	**12.0** (10.4-14.4)	**14.0** (11.8-17.0)	**16.4** (13.1-20.4)	**19.0** (14.5-24.5)	**22.9** (16.6-30.5)	**26.3** (18.2-35.0)
10-day	**7.36** (6.66-8.15)	**8.06** (7.29-8.94)	**9.47** (8.52-10.5)	**10.9** (9.72-12.2)	**13.2** (11.5-15.7)	**15.2** (12.8-18.3)	**17.5** (14.1-21.7)	**20.1** (15.3-25.7)	**23.9** (17.3-31.5)	**27.0** (18.8-35.9)
20-day	**10.0** (9.14-11.0)	**11.2** (10.2-12.4)	**13.2** (12.0-14.6)	**15.0** (13.5-16.7)	**17.6** (15.2-20.4)	**19.7** (16.5-23.2)	**21.9** (17.6-26.6)	**24.2** (18.5-30.4)	**27.4** (19.9-35.6)	**30.0** (21.0-39.5)
30-day	**12.5** (11.4-13.7)	**14.0** (12.8-15.4)	**16.6** (15.1-18.3)	**18.7** (16.9-20.7)	**21.7** (18.7-24.8)	**23.9** (20.1-27.9)	**26.2** (21.0-31.4)	**28.4** (21.7-35.3)	**31.4** (22.8-40.4)	**33.7** (23.7-44.3)
45-day	**15.7** (14.4-17.2)	**17.7** (16.2-19.4)	**20.9** (19.1-22.9)	**23.5** (21.2-25.9)	**26.9** (23.2-30.6)	**29.4** (24.8-34.1)	**31.9** (25.7-38.1)	**34.4** (26.3-42.4)	**37.5** (27.3-47.8)	**39.7** (28.1-52.0)
60-day	**18.7** (17.2-20.4)	**21.0** (19.2-22.9)	**24.6** (22.5-26.9)	**27.5** (24.9-30.2)	**31.4** (27.2-35.5)	**34.3** (28.9-39.6)	**37.0** (29.9-44.1)	**39.8** (30.5-48.9)	**43.3** (31.6-55.1)	**45.8** (32.4-59.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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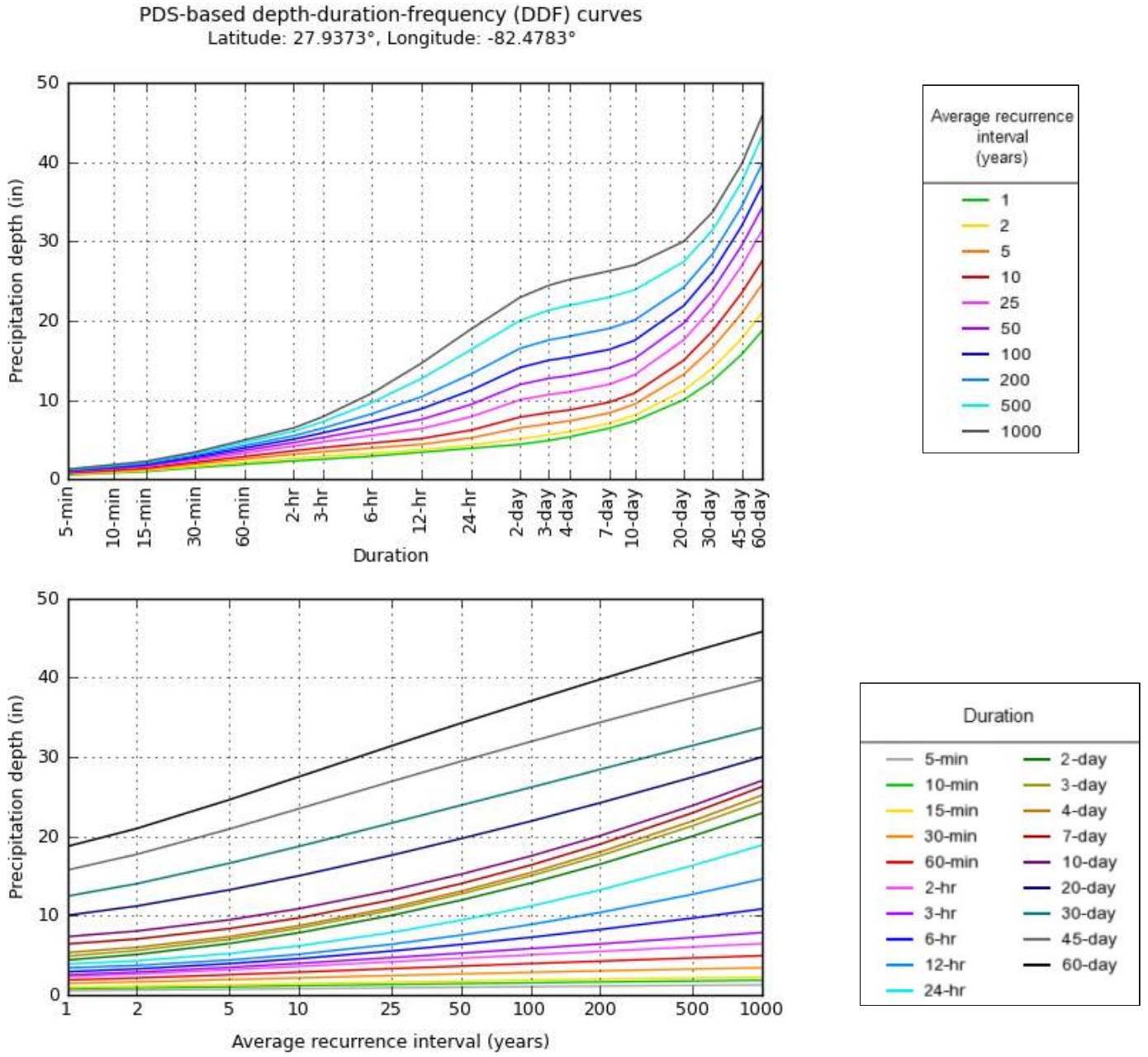
PF graphical



NOAA Atlas 14, Volume 9, Version 2

Created (GMT): Fri Dec 18 18:37:47 2020

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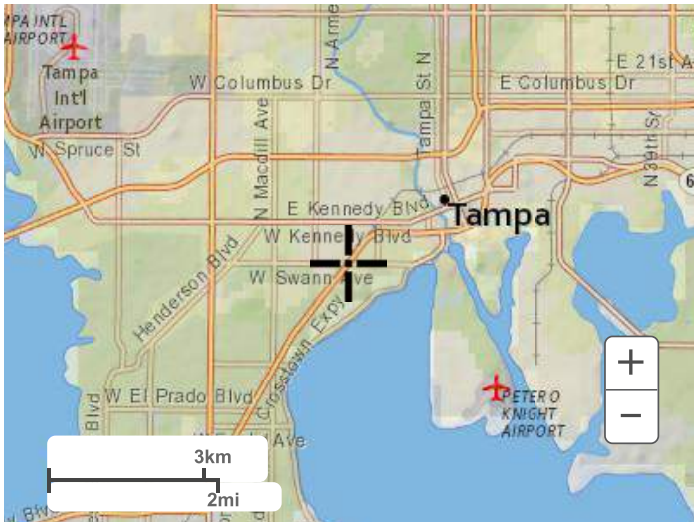
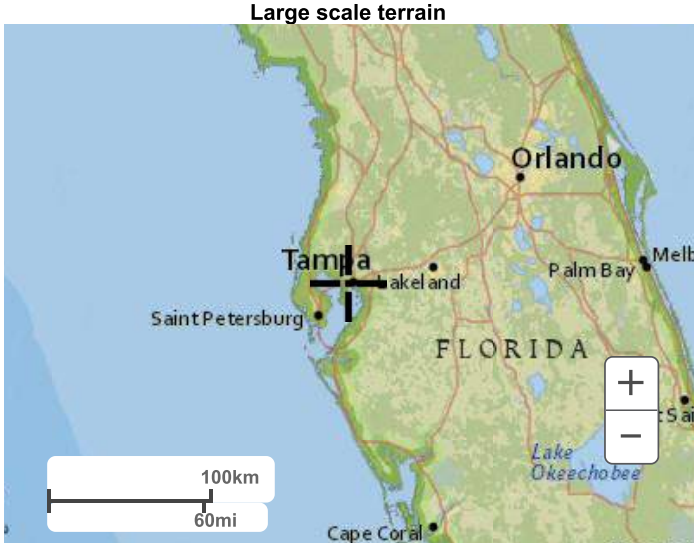
Maps & aerials

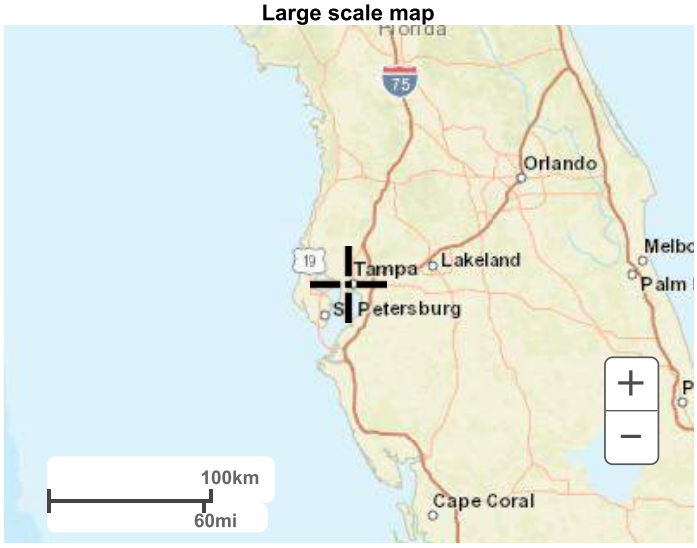
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

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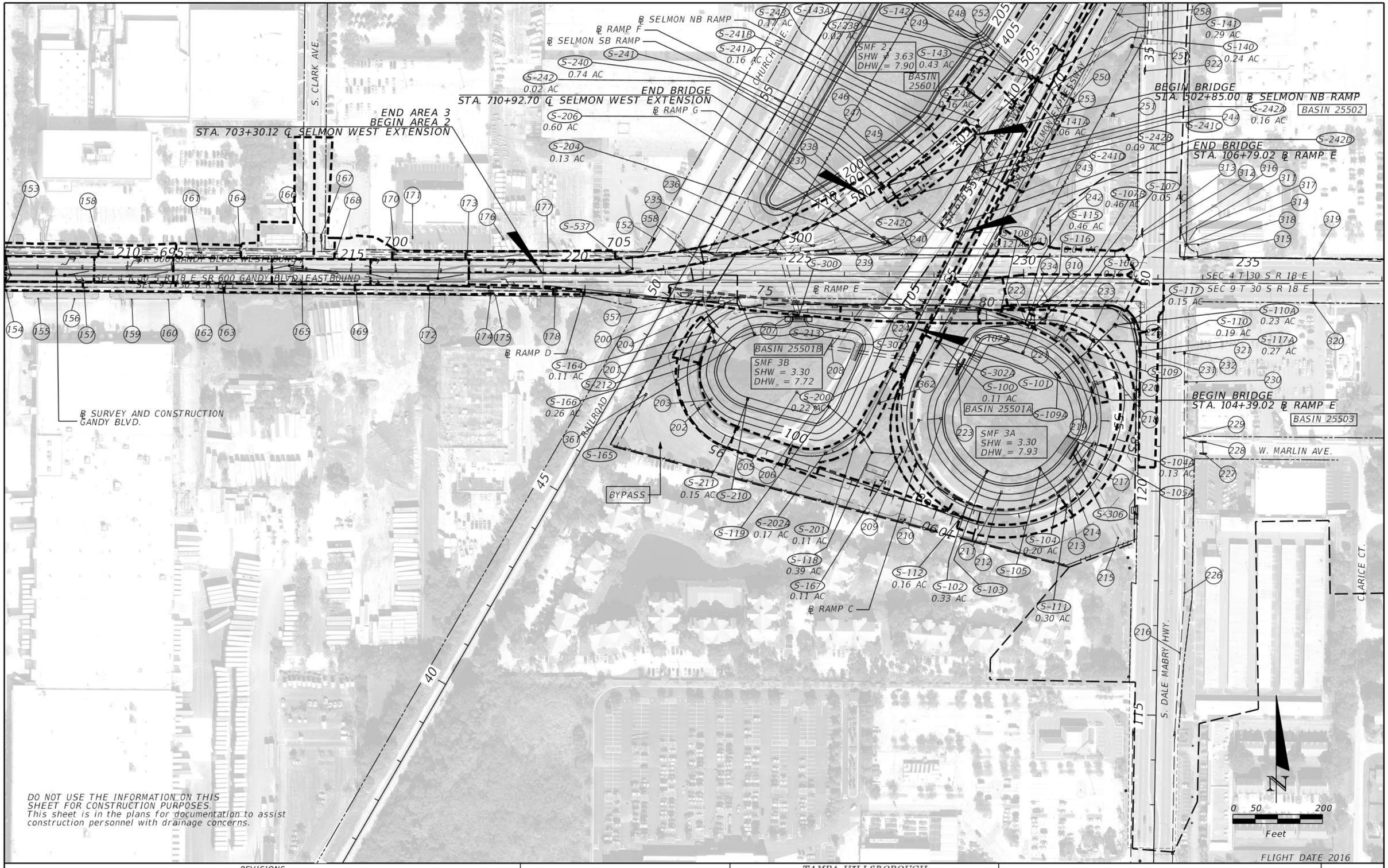
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Appendix D - Previous Construction Projects Drainage Maps



DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES.
This sheet is in the plans for documentation to assist construction personnel with drainage concerns.

RELEASED FOR CONSTRUCTION

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AECOM Technical Services, Inc.
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

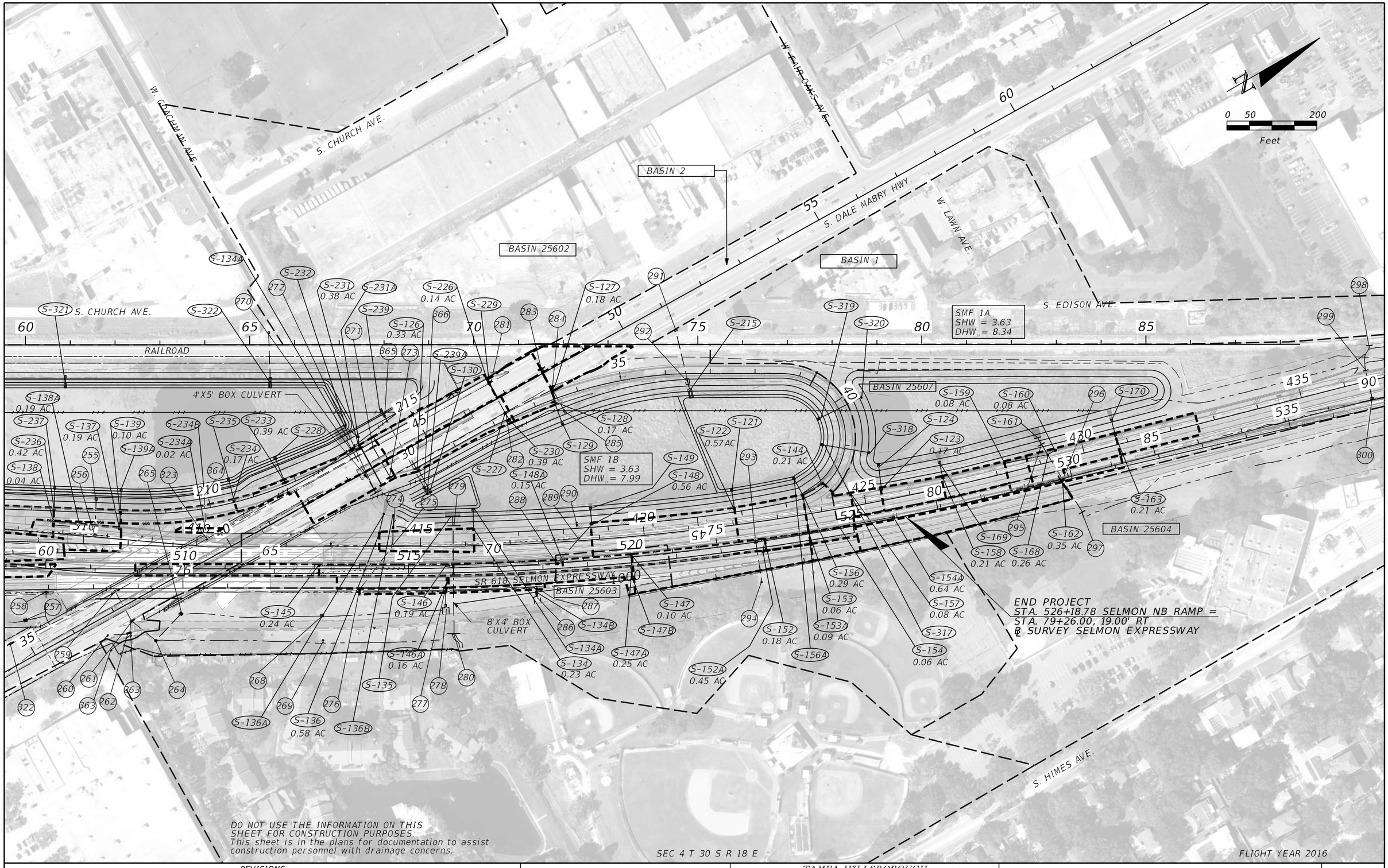
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	0-17-00217 439023-1-52-01

DRAINAGE MAP (4)

SHEET NO. A2-5

ryan.casey 7/5/2018 3:56:36 PM c:\pwworking\aecom_ds16_na\ryan.casey@aecom.com\dms27850\DRMPRD04.DGN



RELEASED FOR CONSTRUCTION

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AECOM Technical Services, Inc.
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	O-17-00217 439023-1-52-01

DRAINAGE MAP (5)

SHEET NO. A2-6

Jarred.Robinson 6/21/2018 7:53:53 AM c:\pwworking\aecom_ds16_na\jarred.robinson@aecom.com\dms27850\DRMPRD05.DGN

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FLIGHT DATE 2016

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AECOM Technical Services, Inc.
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	0-17-00217 439023-1-52-01

DRAINAGE MAP (6)

SHEET NO. A2-7

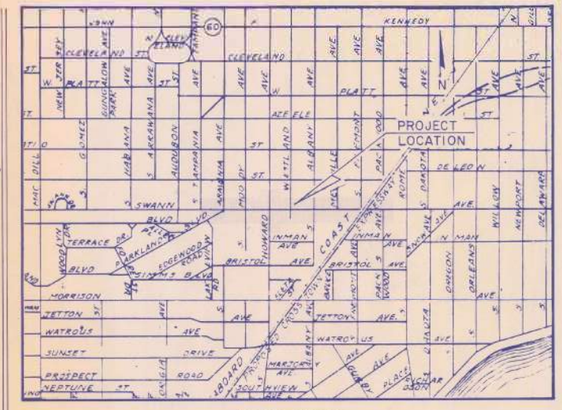
Jarred.Robinson 6/21/2018 7:54:43 AM c:\pwworking\aecom_ds16_na\jarred.robinson@aecom.com\dms27850\DRMPRD06.DGN

CITY OF TAMPA

ROADWAY AND DRAINAGE IMPROVEMENTS

SWANN AVENUE

ARMENIA AVENUE TO WESTLAND AVENUE



VICINITY MAP
Scale 1" = 1000'

INDEX OF SHEETS

Sheet No.	Description
1	Cover Sheet and Vicinity Map
2	

402417

FLORIDA LAND DESIGN & ENGINEERING INC.
planning / engineering / landscape architecture
2007 pan am circle suite 200 tampa, florida 33607 (813) 875-1115

FILE NO.

JOB NO.

Department of Public Works
City of Tampa, Florida

D.P.W. NO. 6895

These Documents Do Not Contain Exempt Information

Imaged As Is

Approx. Selmon Expy contributing area = 2.70+0.95+0.81 = **4.46 acres**

Pond Area = 2.38 acres

Offsite contributing area = 5.72+0.88+1.04+0.77+4.28+1.75+5.38+3.62+1.21+1.23+0.92+9.16+5.33+1.15+1.46+1.10+0.65+3.00+4.40+0.75+0.60+1.30+0.46+0.23+1.13+1.80+0.60+1.39 = **65.77 acres**

Total Contributing Drainage Area = 72.6 acres

Selmon Expy cont. drainage area

POND 2.38 AC

LEGEND

- EXIST. DRAINAGE STRUCTURES
- PROPOSED
- MAJOR DRAINAGE DIVIDE
- MINOR DRAINAGE DIVIDE

Southwest Florida Water Management District
RECEIVED
AUG 08 1997
PROCESSED & RECORDED
Brooksville, Florida

DRAINAGE MAP

PUBLIC WORKS DEPARTMENT

CITY OF TAMPA, FLORIDA

SWANN AVENUE

ARMENIA AVE TO WESTLAND AVE

2

FLORIDA LAND DESIGN & ENGINEERING INC.

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2007 pan am circle suite 200 tampa florida 33607 (813) 875-1115

No.	Date	REVISION	By

Designed: A.P.F. Date: | Drawn: J.A.N. Date: 7-12-97 | Checked: Date:

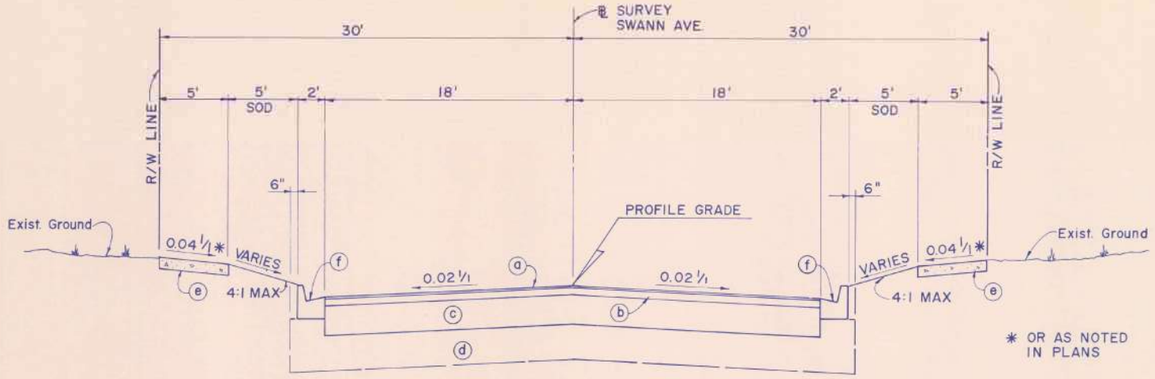
Reviewed: Date: | Approved: Date: | Scale: 1" = 200'

Field Book:

SHEET of

Not Sealed

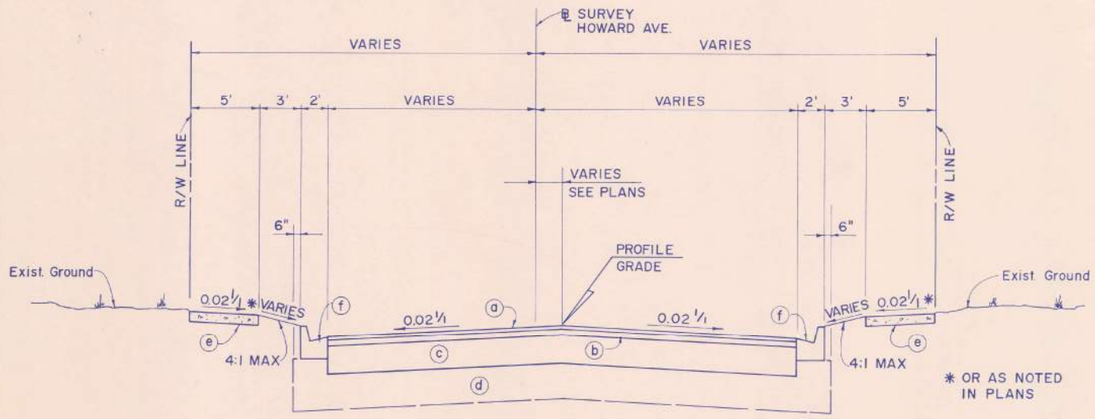
Imaged As Is



SWANN AVENUE

LEGEND

ⓐ TYPE FC-4 ASPHALTIC CONCRETE FRICTION COURSE, 1" THICK.
ⓑ TYPE S-1 ASPHALTIC CONCRETE, 2" THICK, WITH TACK COAT.
ⓒ LIMEROCK BASE, DOUBLE COURSE (LBR 40), 10" THICK (PRIMED)
ⓓ TYPE C STABILIZATION, 75 PSI, FBV, 12" THICK.
ⓔ 4" THICK REINFORCED CONCRETE SIDEWALK.
ⓕ STD. CONCRETE CURB & GUTTER.



HOWARD AVENUE

LEGEND

ⓐ TYPE FC-4 ASPHALTIC CONCRETE FRICTION COURSE, 1" THICK.
ⓑ TYPE S-1 ASPHALTIC CONCRETE, 2" THICK, WITH TACK COAT.
ⓒ LIMEROCK BASE, DOUBLE COURSE (LBR 40), 10" THICK (PRIMED)
ⓓ TYPE C STABILIZATION, 75 PSI, FBV, 12" THICK.
ⓔ 4" THICK REINFORCED CONCRETE SIDEWALK.
ⓕ STD. CONCRETE CURB & GUTTER.

TYPICAL SECTIONS, NOTES

PUBLIC WORKS DEPARTMENT
CITY OF TAMPA, FLORIDA

SWANN AVENUE
ARMENIA AVE TO WESTLAND AVE

FLORIDA LAND DESIGN & ENGINEERING INC.
planning / engineering / landscape architecture
2007 pan am cir tampa florida 33607 ph(813)875-1405

No.	Date	REVISION	By

Designed: A.P.F.	Date:	Drawn: S.A.K.	Date:	Checked:	Date:
Reviewed:	Date:	Approved:	Date:	Scale:	
Field Book:					
				SHEET	of

Not Sealed Imaged As Is

AF 12087

SWANN AVE.

BEGIN CONSTRUCTION STA. 0+25.00

1-Sty. Masonry Bldg.

ARMENIA AVE.

PARKLAND BLVD.

60' R/W

T29S-R18E

Scale 1"= 20'

MOODY AVE.

40' R/W

T.B.M. #1 Elev. 19.71
Cut on ℄ face 10' Conc. A/W to St. John Greek Orthodox Church S.E. Cor. Armenia Ave. & Swann Ave.

STA. 6+00

MATCH LINE

NOTE. ALL EXIST. STORM SEWER SYSTEMS TO BE REMOVED EXCEPT WHERE NOTED.

① STA. 0+67 (LT)
CONST. INLET TYPE B-R-1
F.L. 14.80

② STA. 1+22 (RT)
CONST. INLET TYPE B-R-2
F.L. 14.04

STA. 1+32 (LT)
CONST. INLET TYPE B-R-1
F.L. 19.00

④ STA. 1+40 (5' LT)
CONST. M.H. TYPE J-7T
(3.5' x 4.5' I.D.)
F.L. 13.96

⑤ STA. 4+15 (LT)
CONST. INLET TYPE B-R-1
F.L. 15.75

⑥ STA. 4+07
CONST. INLET TYPE B-R-1
INV. 18" (W) 15.63
F.L. 15.13

⑦ 4+02 (RT)
CONST. INLET TYPE B-R-1
F.L. 16.00

⑧ STA. 4+58 (RT)
CONST. INLET TYPE B-R-1
F.L. 15.78

⑨ STA. 4+10 (5' LT)
CONST. M.H. TYPE J-7T
(3.5' x 6' I.D.)
INV. 24" (N) 15.06
INV. 15" (S) 15.66
F.L. 13.42

0 10 20 40 60
Scale

BEGIN CONSTRUCTION MATCH EXISTING STA. 0+25

+25 P.V.I. (NO V.C.) EL. 18.55

Survey Line Profile

+0.3481 % PROFILE GRADE LINE

+30 P.V.I. (NO V.C.) EL. 19.96

(-) 0.30 %

0+00 1+00 2+00 3+00 4+00 5+00 6+00

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2007 pan am circle suite 200 tampa, florida 33607 (813) 875-1115

PUBLIC WORKS DEPARTMENT
CITY OF TAMPA, FLORIDA

SWANN AVENUE
ARMENIA AVE TO WESTLAND AVE.

4

No.	Date	REVISION	By
1	4-18-83	8" V.C.P. San. on Moody Ave. from Swann Ave. to North removed as per Bob Sloan	P.S.F.

Designed: A.P.F. Date: | Drawn: J.S.H. Date: 3-29-82 | Checked: Date:
Reviewed: Date: | Approved: Date: | Scale: H"= 20' Hor., V"= 2' Ver.
FIELD BOOK: 1982-5
FILE No. A-2-73 | JOB No. 6895 | SHEET of

Imaged As Is Not Sealed

AP 12987

(18) STA. 4+44 (LT.) (@ HOWARD AVE.)
CONST. INLET TYPE B-R-1
F.L. 15.25

(19) STA. 4+38 (RT.) (@ HOWARD AVE.)
CONST. INLET TYPE B-R-1
F.L. 15.15

(28) STA. 10+66 (LT.)
CONST. INLET TYPE B-R-2
F.L. 16.35

(29) STA. 11+38 (LT.)
CONST. INLET TYPE B-R-2
INV. 15" (W) 16.07
F.L. 15.82

(20) STA. 4+44 (@ HOWARD AVE.)
CONST. M.H. TYPE J-7T
(3.5' x 4.5' I.D.)
INV. 15" (W) 15.19
INV. 15" (E) 15.03
F.L. 13.09

MATCH LINE — STA. 5+00

SWANN AVE.

STA. 6+00

CONST. 40' OF 15" R.C.P.

STA 7+52.83 SWANN AVE ℄ =
STA 4+00 ℄ "B" FROM SOUTH

T29S-R18E

CONST. 70' OF 15" R.C.P.

END PAVT WIDENING
STA. 11+42.00
MATCH EXISTING

STA. 12+00

+80 ℄ 20' D/W

+80 ℄ 22' D/W

+80 ℄ 30' D/W

(PROP R/W LINE)

CONST. 20' OF 15" R.C.P.

CONST. 22' OF 36" R.C.P.

1-Sty Masonry Bldg

BEGIN PAVT TRANS

CONST. CONC. D/W

CONST. 5' CONC. S/W

CONST. 18' OF 8" D.I.P.

CONST. STD. CONC CURB & GUTTER

CONST. 5' CONC. S/W

CONST. 17' OF 18" R.C.P.

CONST. 393' OF 43"x68" R.C.P.

SURVEY ℄

CONST. CONC. D/W

CONST. 5' CONC. S/W

CONST. 30' OF 24" R.C.P.

CONST. 40' OF 30" R.C.P.

CONST. 60' OF 15" R.C.P.

(24) STA. 3+57 (LT.) (@ HOWARD AVE.)
CONST. INLET TYPE B-R-1
F.L. 15.25
INV. 15" (W) 15.25

(26) STA. 3+65 (8' LT.) (@ HOWARD AVE.)
CONST M.H. TYPE J-7T
(3.5' x 4' I.D.)
INV. 15" (W) 15.21
INV. 18" (E) 14.93
F.L. 14.74

(27) STA. 7+46 (6' LT.)
CONST. M.H. TYPE J-7T
(4.5' x 7.5' I.D.)
INV. 30"(S) 14.66
INV. 36"(N) 13.05
F.L. 13.03

HOWARD AVE.

PROP R/W

CONST. 25' OF 15" R.C.P.

CONST. 15' OF 15" R.C.P.

STA. 7+62.78 SWANN AVE ℄ =
STA 4+00 ℄ "B" TO NORTH

MATCH LINE — STA. 3+00

(25) STA. 3+55 (RT.) (@ HOWARD AVE.)
CONST INLET TYPE B-R-1
F.L. 15.00

(39) STA. 9+22 (5' LT.)
CONST. CONFLICT M.H. TYPE J-7T
(4' x 7.5' I.D.)
F.L. 12.85

(32) STA. 10+70 (RT.)
CONST. INLET TYPE B-R-1
F.L. 16.15

WESTLAND AVE.

(31) STA. 11+30 (RT.)
CONST. INLET TYPE B-R-1
INV. 15" (W) 15.97
F.L. 15.22

(32) STA. 11+38 (5' LT.)
CONST. M.H. TYPE J-7T
(4' x 7.5' I.D.)
INV. 18" (N) 15.77
INV. 24" (S) 15.16
F.L. 12.63

MATCH LINE

Scale 1" = 20'

0 10 20 40 60
Scale

Survey Line Profile

(-) 10.30 %

+ 0.30 %

PROFILE GRADE LINE

+00 PVI (NO V.C.)
EL. 19.15

+42.00 PVI (NO V.C.)
EL. 20.98

END PAVT WIDENING
STA. 11+42.00
MATCH EXISTING

E. Grate Inlet
E. Storm M.H.
E. Storm M.H. #27
E. Storm M.H.
E. Inlet
E. Conflict M.H. #39
E. Storm M.H. #32

8" Gas
8" Water
24" R.C.P.
34"x53" R.C.P. @ (-) 0.10%
21" R.C.P.
15" R.C.P.
12" R.C.P.
30" R.C.P. (S)
36" R.C.P. (N)
12"x18" C.M.P.
43"x68" R.C.P. @ (-) 0.10%
8" D.I.P.
8" P.C.P. Sam
6" Water
18" R.C.P. (N)
24" R.C.P. (S)

6+00 7+00 8+00 9+00 10+00 11+00 12+00

PUBLIC WORKS DEPARTMENT
CITY OF TAMPA, FLORIDA

SWANN AVENUE
ARMENIA AVE TO WESTLAND AVE

FLORIDA LAND DESIGN & ENGINEERING INC.
planning / engineering / landscape architecture
2007 panama circle suite 200 tampa, florida 33607 (813) 875-1215

No.	Date	REVISION	By

Designed: A.P.K.	Date:	Drawn: J.S.W.	Date: 3-29-82	Checked:	Date:
Reviewed:	Date:	Approved:	Date:	Scale: 1"=20' Hor., 1"=2' Ver.	
FIELD BOOK: 1982-5					
FILE No. A-2-73	JOB No. 6895	SHEET	5		

Not Sealed — Imaged As Is

AP 12087

Scale 1" = 20'

SWANN AVE.

AVE

MELVILLE AVE.

STA. 12+00

STA. 18+00

MATCH LINE

MATCH LINE

ALBANY

8" Palm

8" Palm

95' Conc. S/W

Asphalt Drive

San M.H.

8" San Sewer

GTE U.G.

10" Oak

12" Oak

GTE U.G.

Exist. 6" Conc. Curb

Exist. 10" Water

+26.45

CONST. 287' OF 43"x68" R.C.P.

89°27'40"

33

13

14

Nail

1' High Conc. Curb

1' High Conc. Curb

GTE U.G.

5' Conc. S/W

Exist. 6" Conc. Curb

Asphalt D/W

15

16

17

Conc. Pool

Planters

Planters

Tree

Planters

GTE U.G.

Exist. 6" Conc. Curb

CONST. 335' OF 43x68" R.C.P.

+59.00

89°27'40"

34

Exist. 6" Water

Exist. 8" Water

Exist. 40'± Asphalt Pav't

Exist. 6" Conc. Curb

5.5' Asphalt S/W

5' CL Fence

San M.H.

5' Asphalt S/W

5' CL. Fence

Asphalt Drive

Conc. Drive

26" Oak

9" Trees

9" Trees

Conc. Drive

15" Palm

4" Tree

6' CL Fence

Asphalt Parking

Conc. Drive

(33) STA. 14+25 (5' LT)
CONST. M.H. TYPE J-7T
(4'x7.5' I.D.)
F.L. 12.35

(34) STA. 17+60 (5' LT)
CONST. M.H. TYPE J-7T
(4'x7.5' I.D.)
F.L. 12.01

0 10 20 40 60
Scale

& San M.H.

& STORM M.H. #33

& Abandoned M.H.

& STORM M.H. #34

Survey Line Profile

10" Water

8" Water

8" Water

8" Water

8" Water

8" Water

8" Water

8" San Sewer

6" Water

Abandoned 8" San Sewer

43"x 68" R.C.P.
@ (-) 0.10%

43"x 68" R.C.P.
@ (-) 0.10%

+60.5

+25
12.35

+60
12.01

12+00

13+00

14+00

15+00

16+00

17+00

18+00

22
20
18
16
14
12
10
8
6
4

PUBLIC WORKS DEPARTMENT
CITY OF TAMPA, FLORIDA

SWANN AVENUE

ARMENIA AVE TO WESTLAND AVE.

FLORIDA LAND DESIGN & ENGINEERING INC.
planning / engineering / landscape architecture
2007 pan am circle suite 200 tampa, florida 33607 (813) 875-1115

No.	Date	REVISION	By

Designed:	Date:	Drawn:	Date:	Checked:	Date:
Reviewed:	Date:	Approved:	Date:	Scale:	
FIELD BOOK:					
FILE No.		JOB No.		SHEET	of

Not Sealed

Imaged As Is

AP 13261

SWANN AVE

FREMONT AVE.

AVE

Scale 1"=20'

MATCH LINE STA. 18+00

MATCH LINE STA. 23+00

Anchor D/W

Curb D/W

8' Sod

Exist. G.T.E. Cable

Exist. 6' Conc. Curb

CONST. 335' OF 43"x68" R.C.P.

SURVEY ℄

Exist. 8" Water

Abandoned 8" San.

Abandoned San. M.H.

5' Asph. S/W

5' LL Fence

I.R. (Fd)

Exist. 18" R.C.P. (To Remain)

Storm M.H.

Exist. 8" Water

89°23'00"

124°58'00"

Exist. 8" Conc. Curb & Gutter

Exist. 8" Conc. Ditch

4' Conc. Headwall

Conc. Ditch

(19x30" R.C.P.

Exist. 36" R.C.P. (To Remain)

18" R.C.P.

Grate Inlet

Exist. Grate Inlet (To Remain)

Exist. 30" R.C.P. (To Remain)

Palm

5' Conc. S/W

Exist. 18" R.C.P. (To Remain)

CONST. 222' OF 43"x68" R.C.P.

Exist. 8" Water

Exist. 8" Conc. Curb & Gutter

5' Conc. S/W

Exist. Endwall (To Remain)

Exist. 18" C.M.P. (To Remain)

5' 18" C.M.P.

Conc. Ditch Pav't

19 20 21 22

35

(35) STA. 20+96 (5' LT)
CONST. M.H. TYPE J-7T
(4'x12' I.D.)
INV. EXIST. 24" 15.35
FL. 11.68

0 10 20 40 60
Scale

Survey Line Profile

Abandoned San. M.H.

8" Water

Abandoned 8" San.

18" R.C.P.

43"x68" R.C.P. @ (-) 0.10%

Exist. 24" R.C.P.

Storm M.H. #35

INV. 43"x68" 11.68
INV. EXIST. 24" 15.35

E. Water

E. Endwall

E. Grate Inlet

E. Grate Inlet

E. Grate Inlet

E. Storm M.H.

18" C.M.P.

18" C.M.P.

18" R.C.P.

8" Water

36" R.C.P.

30" R.C.P.

43"x68" R.C.P. @ (-) 0.10%

22 20 18 16 14 12 10 8 6

18+00 19+00 20+00 21+00 22+00 23+00

FLORIDA LAND DESIGN & ENGINEERING INC.
planning / engineering / landscape architecture
2007 pan am circle suite 200 tampa, florida 33607 (813) 875-1115

PUBLIC WORKS DEPARTMENT
CITY OF TAMPA, FLORIDA

SWANN AVENUE

ARMENIA AVE TO WESTLAND AVE

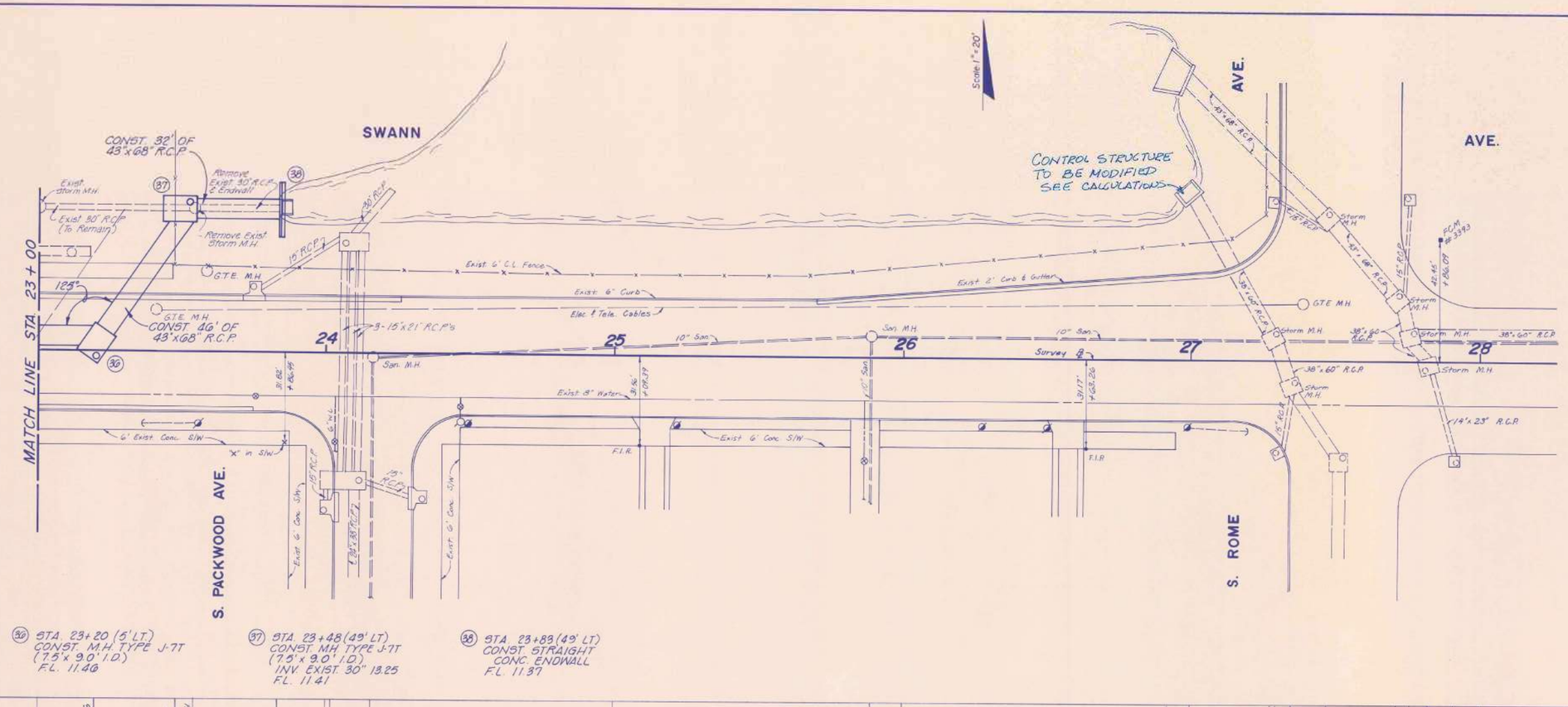
RECEIVED NOV 29 1967 Tallahassee, Florida

Designed: A.P.F. Date:	Drawn: S.A.N. Date:	Checked: Date:
Reviewed: Date:	Approved: Date:	Scale:
FIELD BOOK:		
FILE No.	JOB No.	SHEET 7 of

No. Date REVISION By

Not Sealed

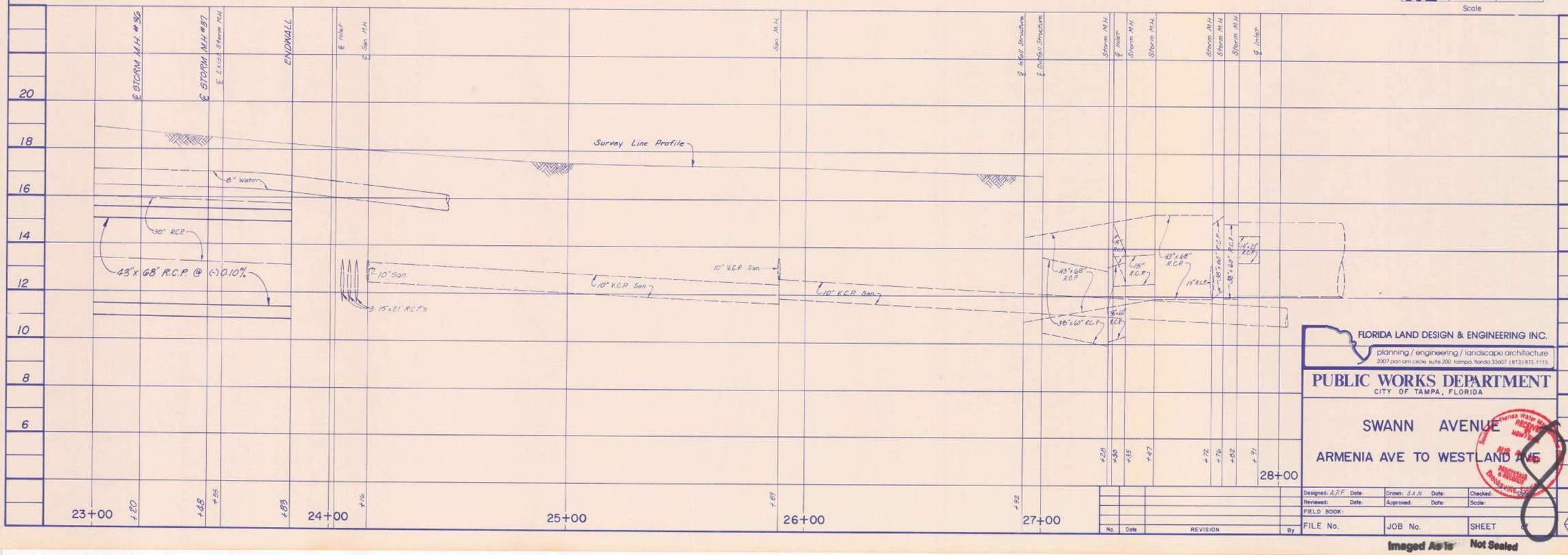
Imaged As Is



(30) STA. 23+20 (5' LT.)
CONST. M.H. TYPE J-7T
(7.5'x 9.0' I.D.)
F.L. 11.46

(37) STA. 23+48 (49' LT.)
CONST. M.H. TYPE J-7T
(7.5'x 9.0' I.D.)
INV. EXIST. 30" 13.25
F.L. 11.41

(38) STA. 23+83 (49' LT.)
CONST. STRAIGHT
CONC. ENDWALL
F.L. 11.37



FLORIDA LAND DESIGN & ENGINEERING INC.
planning / engineering / landscape architecture
2007 pan-am circle suite 200 tampa, florida 33607 (813) 875-1115

PUBLIC WORKS DEPARTMENT
CITY OF TAMPA, FLORIDA

SWANN AVENUE

ARMENIA AVE TO WESTLAND AVE

Designed: A.P.F. Date:	Drawn: S.A.N. Date:	Checked: Date:
Reviewed: Date:	Approved: Date:	Scale:
FIELD BOOK:		
FILE No.	JOB No.	SHEET

No.	Date	REVISION	By

Imaged As Is Not Sealed

DRAINAGE MAP

Dist.	State	County	Route	Proj.	Sheet No.
3	Fla.	HILLSBOROUGH			5

BRIDGE

EXIST. GROUND

EXIST. GROUND LINE

MAINTAIN MIN. FF EL. 12.5

30" R.C.P. INV. EL. 4.4

BRIDGE

EXIST. GROUND

END CONSTRUCTION
STATE JOB NO. 10002-3501
STA. 111+44

STA. 107+50 MATCH LINE

SEE INSERT A FOR STA. 107+50 MATCH LINE

INSERT A

INSERT B

SCALE: 1"=200'

BEGIN CONSTRUCTION
STATE JOB NO. 10002-3501
STA. 50+35.36

MATCH EXIST PAVT. CURB AND GUTTER STA. 44+20.00

MATCH EXIST PAVT. STA. 11+75.00

MATCH EXIST PAVT. STA. 89+10.00

MATCH EXIST PAVT. STA. 114+15.00

MATCH EXIST PAVT. CURB AND GUTTER STA. 70+14.23

SEE INSERT B

FUTURE EXTENSION

POSSIBLE FUTURE DRAINAGE AREA TO 7'X6' B.C.

10' Canal

PARKING LOT

COMM. BLDG.

EXISTING DRAINAGE STRUCTURES

NO.	TYPE	FLOW LINE	TOP EL.	PIPES IN	PIPES OUT
(1)	M.H.	3.44	10.57	2/5'-4" BOX CULVERT	
(2)	M.H.	5.23	9.40	2/18" R.C.P.	36"X28" ELL.
(3)	INLET	7.16	--	--	24"
(4)	M.H.	7.36	--	18" R.C.P.	24"
(5)	M.H.	12"-6.95	14.0	2/12"+24" R.C.P.	42" R.C.P.
		12"-6.80			
		24"-5.84			
		42"-6.58			
(6)	CURB INLET	--	11.21	12" R.C.P.	15" R.C.P.
(7)	CURB INLET	15"-5.65	10.92	15" TO 31" X 48" CULVERT	
		CULV.-4.06			
(8)	DROP INLET	24"-8.57	11.80	24" R.C.P.	24" R.C.P.
		24"-8.41			
(9)	CURB INLET	4.50	11.48	12" R.C.P. TO 48"X38" CULVERT	
(10)	DROP INLET	5.98	10.76	--	30" R.C.P.
(11)	DROP INLET	24"-8.12	11.38	24"+30" R.C.P.	30" R.C.P.
		30"-5.88			
(12)	DROP INLET	7.24	10.97	--	8" V.C.P.
(13)	DROP INLET	5.87	11.65	15" R.C.P.	18" R.C.P.
(14)	M.H.	7.82	10.52	12" R.C.P.	18" R.C.P.
(15)	CURB INLET	8.88	10.67	--	12" R.C.P.
(16)	M.H.	5.00	12.00	3'X3' BOX CULVERT	
(17)	DROP INLET	7.90	12.02	12" R.C.P.	12" R.C.P.
(18)	NO INFORMATION				
(19)	DROP INLET	7.80	12.40	--	12" R.C.P.
(20)	M.H.	--	13.11	3'X3' BOX CULVERT	
(21)	DROP INLET	7.97	12.83	--	12" R.C.P.
(22)	CURB INLET	7.84	12.85	--	15" R.C.P.

NO.	TYPE	FLOW LINE	TOP EL.	PIPES IN	PIPES OUT
(23)	M.H.	16"-6.51	13.11	2/18"+30"R.C.P.	3'X3' BOX CULVERT
		30"-5.76			
		18"-7.14			
		CULV.-5.64			
(24)	10'X3' BOX CUL.	6.00	11.01	--	--
(25)	M.H.	--	11.84	12"+96"R.C.P.	36" R.C.P.
(26)	M.H.	7.12-7.70	14.04	36"+18"R.C.P.	36" R.C.P.
(27)	OUTLET	6.71	--	96" R.C.P.	--
(28)	CUL. EXIT	6.11	--	--	DITCH 5'X4'
(29)	CULV. INLET	7.58	--	DITCH	-- BOX CUL.
(30)					
(31)					
(32)	CURB INLET	7.80	12.48	--	12"
(33)	OUTLET	6.80	9.33	44"X66"R.C.P.	--
(34)	M.H.	24"-6.94	12.65	24" 2/30"R.C.P.	44"X66"RCP
		30"-6.82			
		30"-6.85			
		44"X66"-			
		6.80			

LAN SET INCLUDES:
SIGNING PLANS
LIGHTING PLANS
STRUCTURE PLANS
SANITARY SEWER RELOCATION PLANS

FOR INDEX OF PLANS, SEE APPROPRIATE PLAN SET.

SECTION	CONTRACT	SOUTH CROSSTOWN EXPRESSWAY	SHEET
10002	3502		
BY WACO	TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY		DATE 1974

TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY

—PLANS OF PROPOSED—

SOUTH CROSSTOWN EXPRESSWAY

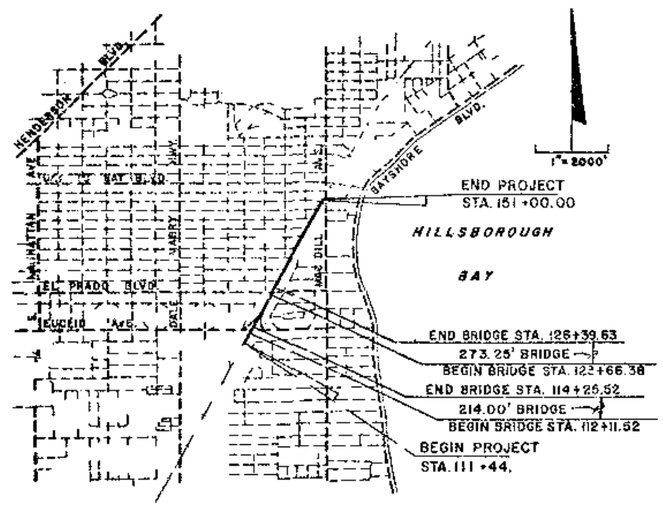
HILLSBOROUGH COUNTY TAMPA FLORIDA

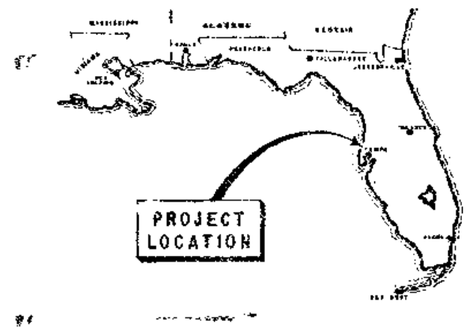
STATE JOB NO 10002-3502-032

STATE ROAD NO 449

SHEET NO.	TITLE
	Key Map
	Drainage Map
	Control Map
	Typical Sections
	Miscellaneous Details
	Drainage Details (Inlet Type SW)
	Summary of Quantities
8-10	Plan and Profiles (Mainline)
	Concordia Ave. Relocation
12-16	Interchange Details and Profiles
17-22	Drainage Structures
23-24	Special Box Culvert Details
25	Soil Classification Sheet
26-49	Roadway Cross-Sections
50-55C, 56-59	Approach Slabs and Special Details
60	Borrow Area I
R/W-1-R/W-2	Right of Way Maps

INDEX NO.	STANDARD DRAWING
194	Standard Abreviations (2 Sheets)
195	Standard Symbols for Key Maps and Plan Sheets (3 Sheets)
1101-W	Miscellaneous Roadway Construction Details (2 Sheets)
1129-G	U-Endwalls for Pipe Culverts (3 Sheets)
2300-R	Guardrail Construction (4 Sheets)
5010-H	Superelevation Details
5016-B	Turnout Details
5047-G	Inlet, Manhole and Junction Box Types and (2 Sheets)
5049-A	Inlet Type
5072-G	Details Fencing (2 Sheets)
5073-L	Standard Details for Ramp Terminals (3 Sheets)
5080-G	Curb, Curb and Gutter and Traffic Separator (2 Sheets)
5096-A	Shoulder Gutter Inlet Type
5061-E	Miscellaneous Drainage Details (2 Sheets)
5046-D	Standard Ditch Bottom Inlets





ATTENTION
REVISED SHEETS
IF ANY
DIRECTLY BEHIND
KEY SHEET

GENERAL SPECIFICATIONS

FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION- 1973 OR AS MODIFIED BY THE CONTRACT SPECIAL PROVISIONS.

LENGTH OF PROJECT		
	LIN. FT.	MILES
ROADWAY	3,468.75	0.657
BRIDGES	487.25	0.092
NET LENGTH	3,956.00	0.749
EXCEPTIONS	0.00	0.000
GROSS LENGTH	3,956.00	0.749

ATTENTION IS DIRECTED TO THE FACT THAT SOME OF THESE PLANS MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE TAKEN INTO CONSIDERATION WHEN OBTAINING SCALED DATA.

APPROVAL RECOMMENDED 2-25-74

James F. Lawson
A.E. GREINER CO. INC.-WATSON AND COMPANY

APPROVED 2-26-74

BY Bob Castle

TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY

CONTRACT NO. 2

EUCLID AVENUE TO MAC DILL AVENUE

WATSON AND COMPANY

CONSULTING ENGINEERS TAMPA, FLORIDA

SUBMITTED Robert D. Crane DATE 2-11-74

DRAINAGE MAP

Contract #

Dist.	State	County	Route	Proj.	Sheet No.
8	Fla.	Hillsborough	449	10002-3502	2

BEGIN STATE JOB NO. 10002-3502
STA. 111+44.00

END STATE JOB NO. 10002-3502
STA. 151+00.00

PROFILE GRADE

LINE "A"

scale: 1"=200'

SECTION	CONTR.
10002	3503
By WACO	TAMPA-HILLSBO. EXPRESSWAY A

THIS CONTRACT INCLUDES:

1. ROADWAY PLANS
2. ROADWAY SIGNING PLANS
3. TRAFFIC SIGNAL PLANS
4. LIGHTING PLANS.
5. BRIDGE AND RETAINING WALL PLANS.
6. SANITARY SEWER RELOCATION PLANS.

FOR INDEX OF PLANS-SEE APPROPRIATE PLAN SETS.

TAMPA - HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY

— PLANS OF PROPOSED —

STATE JOB NO. 10002-3503-032

SOUTH CROSSTOWN EXPRESSWAY

STATE ROAD NO. 449

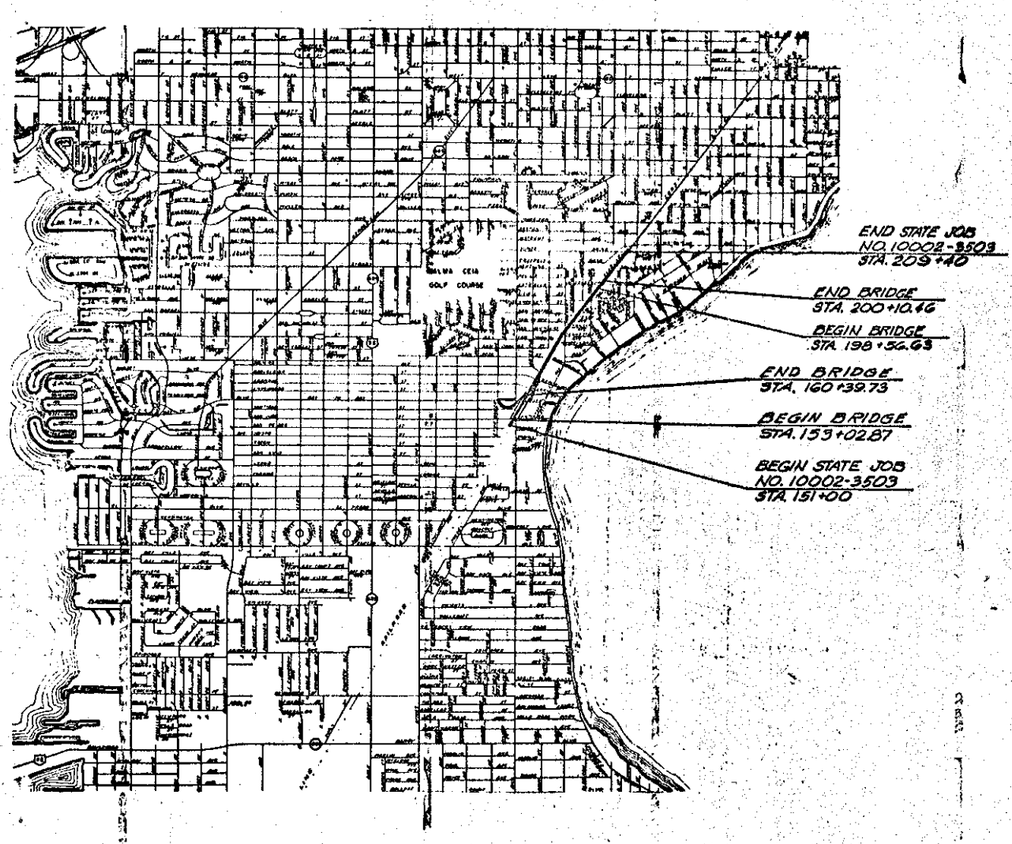
HILLSBOROUGH COUNTY TAMPA, FLORIDA

INDEX OF ROADWAY PLANS

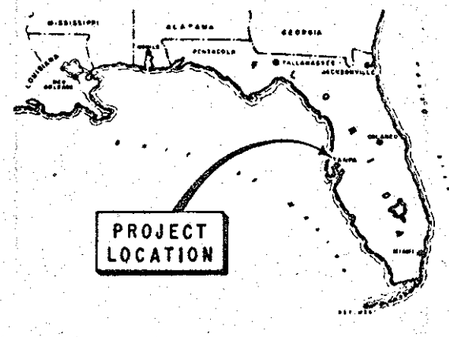
Sheet No.	Sheet Description
1	Key Map
2-3	Drainage Maps
4	Alignment Control
5-6	Typical Sections
7	Miscellaneous Details
8	Drainage Details (Inlet Type BW).
9	Summary of Quantities
10	Mass Diagram
11-14	Plan and Profiles (Mainline)
15-16	Plan and Profiles (Bay to Bay)
17-19	Interchange
20-27	Drainage Structures
28	Soil Classification Sheet
29-53	Cross Sections
54-61	Approach Slab Details
62-64	Vehicular Impact Attenuator
65	Project Information Sign
66	Borrow Area One
67-70	Right-of-Way Maps

Standard Drawings

Index No.	
194	Standard Abbreviations (2 sheets)
195	Standard Symbols for Key Maps and Plan Sheets (3 sheets)
1101-W	Miscellaneous Roadway Construction Details (2 sheets)
1129-G	U-Endwalls for Pipe Culverts (3 sheets)
2300-R	Guardrail Construction (4 sheets)
5010-H	Superelevation Details
5016-B	Turnout Details
5047-G	Inlet, Manhole, and Junction Box Types P and J (2 sheets)
5049-A	Inlet, Type Z
5061-E	Miscellaneous Drainage Details (2 sheets)
5072-G	Details of Fencing (2 sheets)
5073-L	Standard Details for Ramp Terminals (3 sheets)
5080-G	Curb, Curb and Gutter and Traffic Separator (2 sheets)
5086-A	Shoulder Gutter Inlet Type Y



2000 FT.



LENGTH OF PROJECT		
	LIN. FT.	MILES
ROADWAY	4949.31	0.937
BRIDGES	890.69	0.169
NET LENGTH	5840.00	1.106
EXCEPTIONS	00.00	0.000
GROSS LENGTH	5840.00	1.106

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

GENERAL SPECIFATIONS

FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION - 1973 OR AS MODIFIED BY THE CONTRACT SPECIAL PROVISIONS.

APPROVAL RECOMMENDED MAY 15, 1974

BY Donald R Henderson
J.E. GREINER CO. INC. — WATSON AND COMPANY

APPROVED MAY 16, 1974

BY Bob Lester
CHAIRMAN

TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY

CONTRACT NO. 3

FROM SOUTH OF MACDILL AVE.
TO SOUTH OF WATROUS AVE.

WATSON AND COMPANY
CONSULTING ENGINEERS TAMPA FLA.

SUBMITTED W Dale Lester DATE 5/14/74

DRAINAGE MAP

Dist.	State	County	Route	Proj.	Sheet
3	Fla.	HILLSBOROUGH	449	10002-3503	2

(154+00) P.I. El. 32.00

3.00%

CONST. 736.86 BRIDGE

STA. 151+00 BEGIN 10B

BEG. BRIDGE STA. 153+40.87

END BRIDGE STA. 160+39.73

HILBE & HAZEL AVE.

-1.35%

ESM 10.58%

.01399%

6'x4' Conc. Box

SCALE: 1"=100'

SAN JUAN ST.

ESPERANZA ST.

SANTIAGO

PLUG

S-6

S-7

S-6A

S-5

S-4

S-4A

S-3

S-2

S-1

S-8

S-9

S-10

S-11

0.61Ac.

0.31Ac.

0.42Ac.

0.82Ac.

0.13Ac.

0.10Ac.

0.29Ac.

0.91Ac.

0.33Ac.

0.28 Ac.

0.35Ac.

0.23Ac.

0.25 Ac.

0.17Ac.

0.48 Ac.

0.22Ac.

0.49Ac.

0.20Ac.

0.72Ac.

0.14Ac.

0.07Ac.

1.51Ac.

1.18Ac.

0.31Ac.

EMPERADO ST.

GRANADA ST.

BARCELONA ST.

PALMIRA AVE.

SAN JOSE AVE.

OBRAPIA

SAN CARLOS

SAN MIGUEL ST.

SAN NICOLAS ST.

BAY TO

Ditch

BEGIN BRIDGE STA. 54+54.00

END BRIDGE STA. 160+39.73

REG. BRIDGE STA. 153+40.87

MASON ST.

MAC

BLVD.

YSABELLA AVE.

CONSTRUCTION LINE "B"

S.C.L. R.R. LINE "A"

Existing Ditch to Remain

Entering Ditch

Jct. Box

S-20

S-19

S-19A

S-18

S-17

S-15

S-51

S-50

S-21

S-21A

S-22

S-23

S-23A

S-24

S-25

S-26

S-27

S-28

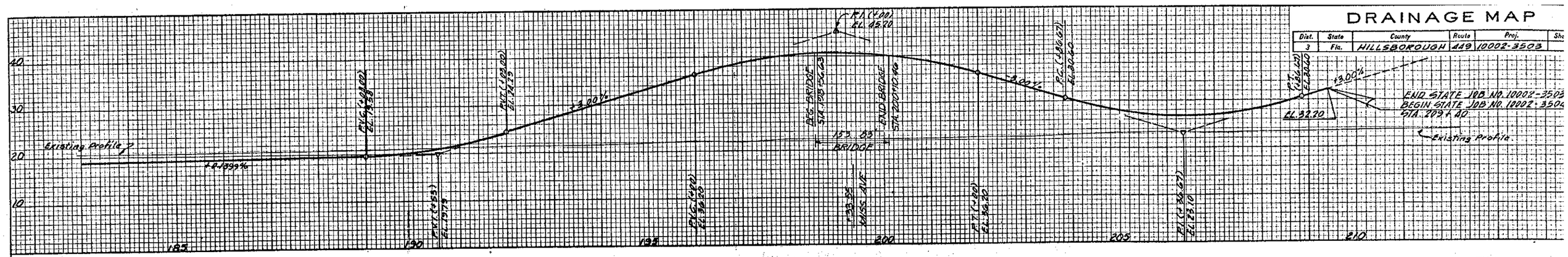
8'x4' Box

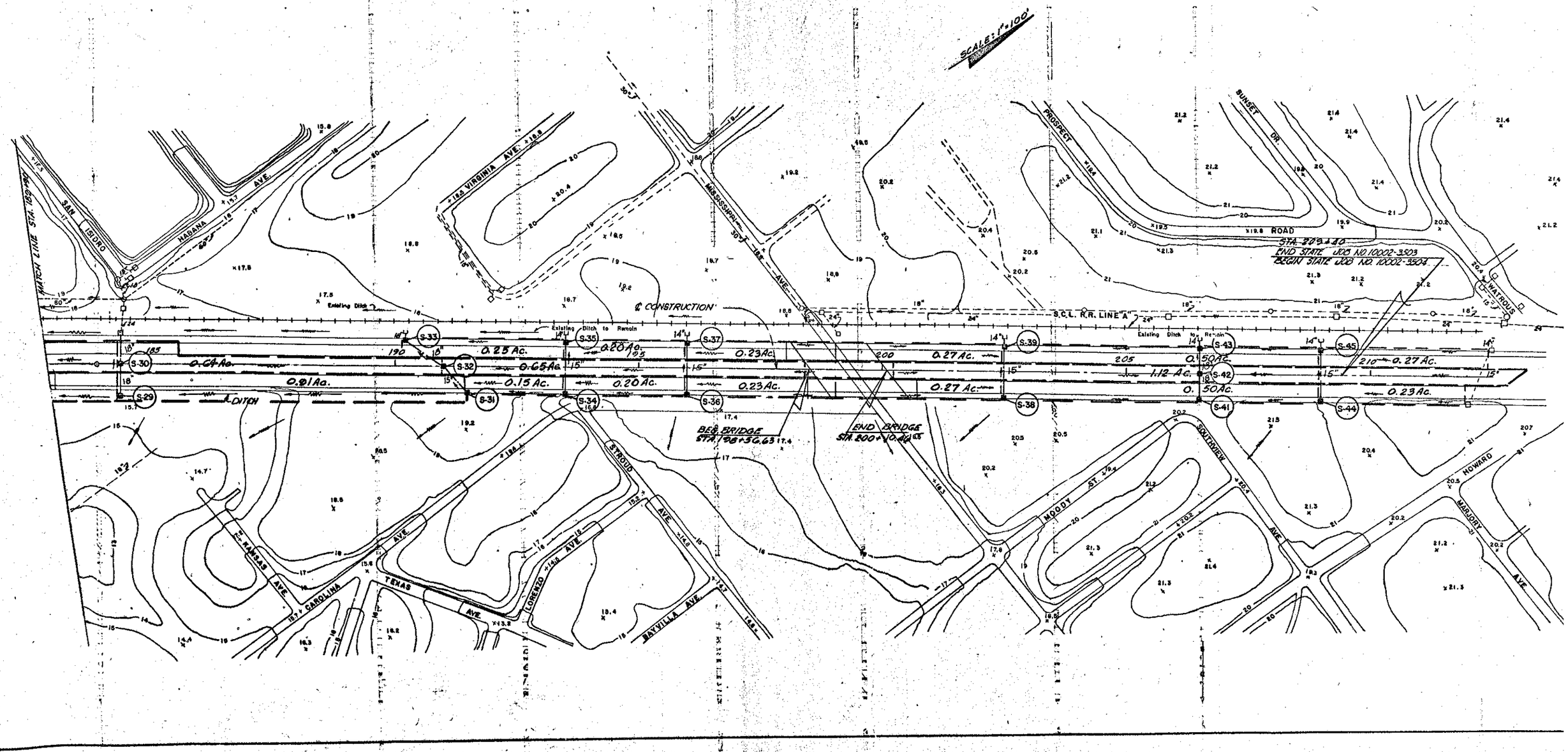
6'x4' Box

STA. 151+00 BEGIN STATE JOB NO. 10002-3503 END STATE JOB NO. 10002-3502

DRAINAGE MAP

Dist.	State	County	Route	Proj.	Sh
3	Fla.	HILLSBOROUGH	449	10002-3503	





SECTION	CONTRACT	SOUTH CROSSTOWN EXPRESSWAY	SHEET NO.
10002	3504		S-1
By WACO	TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY		Date 1973

TAMPA - HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY

— PLANS OF PROPOSED —

STATE JOB NO. 10002-3504

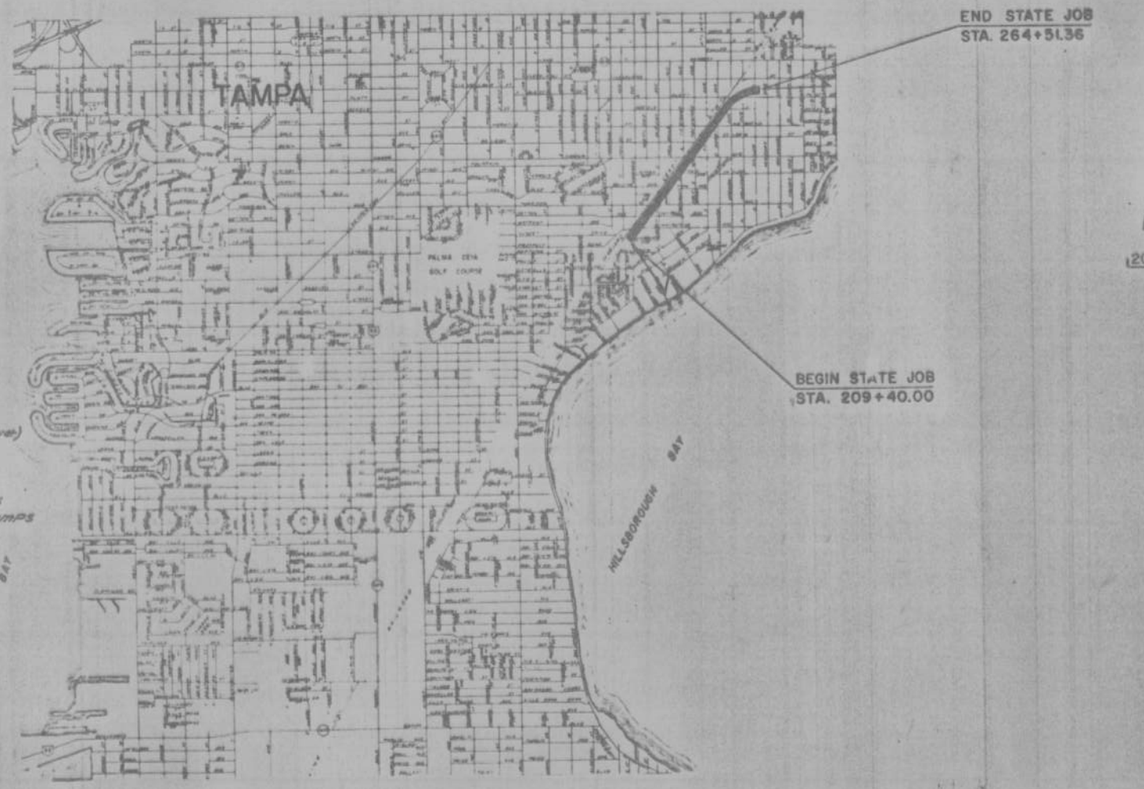
SOUTH CROSSTOWN EXPRESSWAY

STATE ROAD NO. 449

HILLSBOROUGH COUNTY TAMPA, FLORIDA

INDEX OF SHEETS

SHEET NO.		
S1	-	Key Sheet
S2		Summary Of Quantities
S3	- S6	Sign Legend and Location
S7	- S9	Sign Detail and Cross-Section (Overhead Sign)
S10	- S11	Detail Layouts (Large Signs)
S12		Sign Details
S13		Detail Layout of Crosstown Expressway Trailblazer.
S14	- S15	Standard Drawing 1 and 2 Typical Section for Type "C" Signs.
S16		Index 17303 Typical Cross-Sections.
S17	- S21	Index 17305 Detail Layouts of Type "C" Signs.
S22		Index 17309 24" Florida Route Marker.
S23		Index 17320 Arrow Layouts and Quantities.
S24	- S29	Index 9535 Type "A", "B" and "C" Supports for Ground Signs (Alum. and Steel Break-Away) (Sheets 1 thru 6 of 2)
S30		Index 9972 (2 of 6) Trusses for Overhead Sign
S31		Index 10959 (1 of 1) Bridge Span Truss for Overhead Sign
S32		Index 7834 (2 of 2) Trusses for Overhead Sign
S33		Index 11201 (1 of 2) Footing for Overhead Sign Trusses
S34		Index 11144 (1 of 2) Walkway Detail for Alum. Overhead sign
S35		Index 11201 (2 of 2) Footing for Overhead Sign Trusses
S36		Index 11226 (1 of 1) Trusses for Overhead Signs (Alum. Cantilever)
S37		Index 7463 (1 of 3) Type A Support for Ground Signs
S38		Standard Drawing No. 12 Pavement Markings Typical Exit Ramps
S39		Standard Drawing No. 13 Pavement Markings Typical Entrance Ramps
S40		Index 16669 (1 of 2) Truss for Overhead Sign
S41		Index 16669 (2 of 2) Truss for Overhead Signs
S42		Index 17341 External Lighting for Signs (M.V.)
S43	- S47	Index Type "C" Frangible Supports (Alum.)
S48		Index Footing Type "C" Frangible Supports
S49		Index Sign Posts for Delineators



2000 FT.

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

GENERAL SPECIFICATIONS

FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION - 1973 OR AS MODIFIED BY THE CONTRACT SPECIAL PROVISIONS.

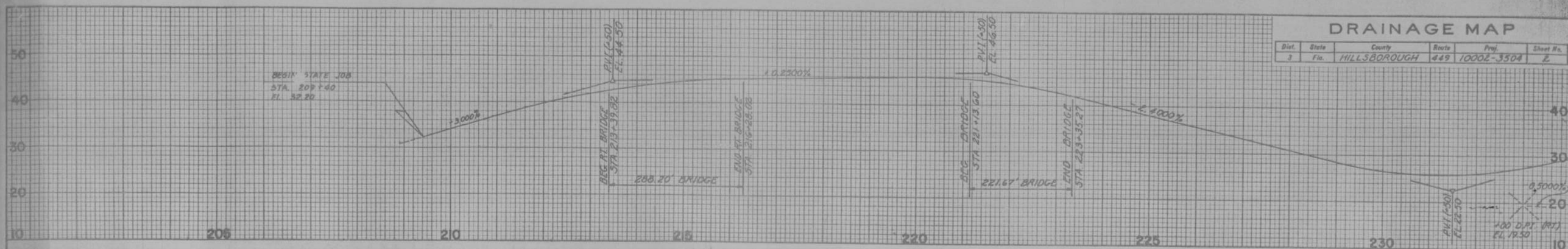
ROADWAY SIGNING

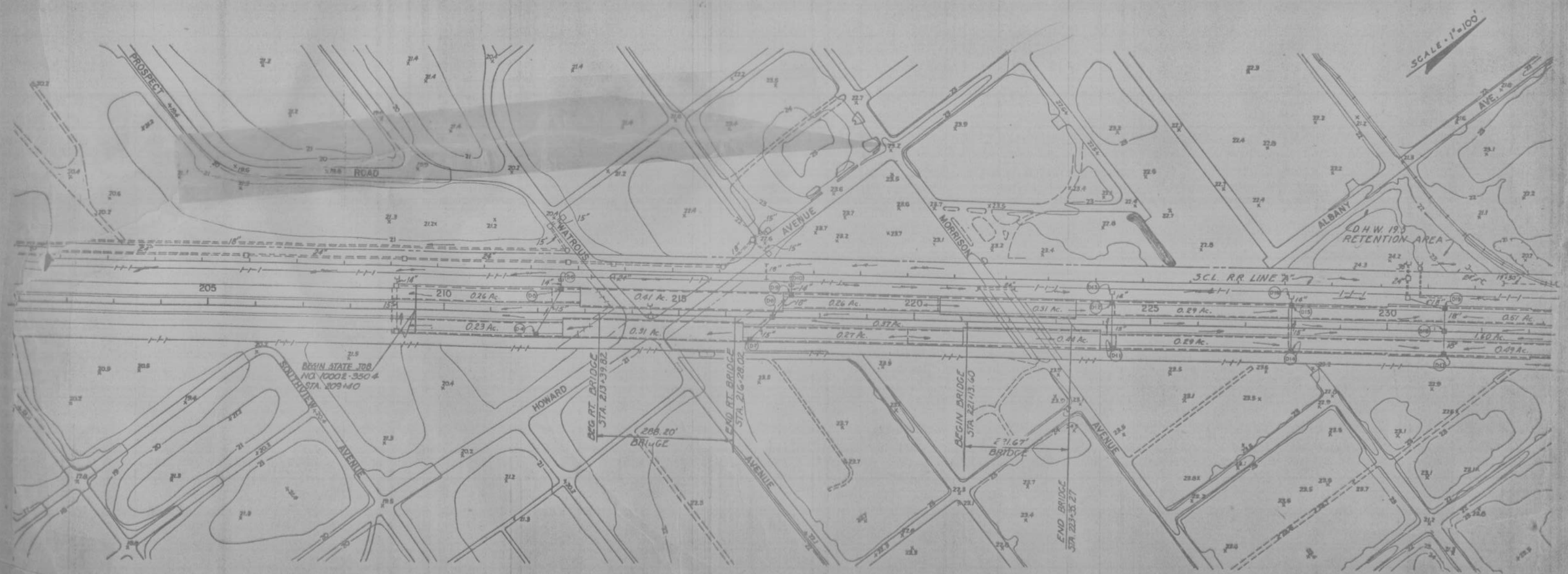
CONTRACT NO. 4

WATROUS AVE. TO WILLOW AVE.

DRAINAGE MAP

Dist.	State	County	Route	Proj.	Sheet No.
3	Fla.	HILLSBOROUGH	449	10002-3504	2





Dist.	State	County	Route	Proj.	Sheet No.
3	Fla.	HILLSBOROUGH	449	10002 - 3505	2

STATE JOB NO. 10002-3505

PROFILE ALONG EXPRESSWAY

(+41.05) PI 39.00

-2.1680%

17LOO' BRIDGE

BEG. BRIDGE STA. 509+26.15

END BRIDGE STA. 509+26.15

EXISTING 12.5' X 9'S.S.

AREA TO BE FILLED

EXISTING 18" R.C.P. S.S.

EXISTING 36" R.C.P. S.S.

BEG. BRIDGE STA. 521+04.78

END BRIDGE STA. 522+58.78

(-)3.0000%

+1.0000%

+2.7870%

(+25.18) PI 30+

Existing 12" R.C.P.S.S.

Existing 15" R.C.P.S.S.

Existing 18" R.C.P.S.S.

Existing 24" R.C.P.S.S.

Existing 30" R.C.P.S.S.

Existing 36" R.C.P.S.S.

0 10 20 30 40

507 510 515 520 525 530 535

E-1 Manhole 36" R.C.P. F.L. S. 2.58

E-2 Manhole 36" R.C.P. F.L. N. 6.66

E-3 Manhole 42" R.C.P. F.L. S. 9.05

E-4 Manhole 42" R.C.P. F.L. N. 9.36

E-5 Inlet 18" R.C.P. W 15" R.C.P. N. F.L. 12.53

KENNEDY BLVD.

BEGIN JOB STA. 506 + 50

STATE No. 10002-3505

CLEVELAND AVE.

Scale: 1" = 100'

ORLEANS AVE.

WILLOW AVE.

NEWPORT AVE.

DELAWARE AVE. (TO BE CLOSED)

PLATT ST.

EDISON AVE.

SOUTH BLVD.

FIELDING AVE. (TO BE CLOSED)

BREVARD AVE. (TO BE CLOSED)

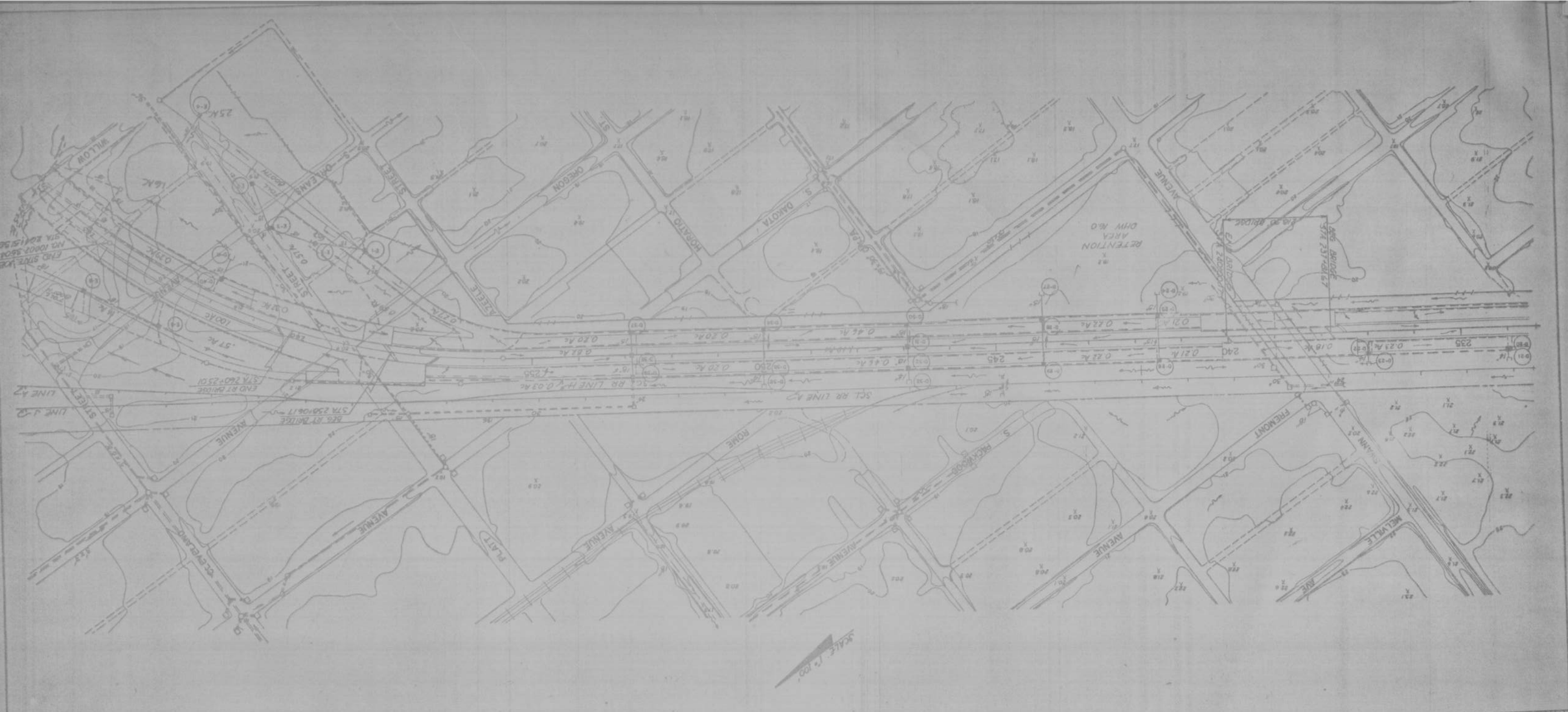
MAGNOLIA AVE. (TO BE CLOSED)

CEDAR AVE. (TO BE CLOSED)

Future Edge of Toll Plaza

LEGEND

- Exist. Manhole
- Exist. Inlet
- Exist. Storm Sewer
- Exist Str. No.
- Proposed Manhole
- Proposed Inlet
- Proposed Storm Sewer
- Direction Of Flow
- Drainage Boundary
- Proposed Str. No.


DRAINAGE MAP
SCALE 1" = 100'
PROFILE ALONG CENTERLINE
END BRIDGE
STA 240+00.17
210.30' BRIDGE
EXISTING BRIDGE
STA 237+96.47
END PROJECT
STA 243+00
EL 1355.8
EL 1355.6
EL 1355.4
EL 1355.2
EL 1355.0
EL 1354.8
EL 1354.6
EL 1354.4
EL 1354.2
EL 1354.0
EL 1353.8
EL 1353.6
EL 1353.4
EL 1353.2
EL 1353.0
EL 1352.8
EL 1352.6
EL 1352.4
EL 1352.2
EL 1352.0
EL

SECTION	CONTRACT	SOUTH CROSSTOWN EXPRESSWAY	SHEET NO.
10002	3505		T-1
by WACO	TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY		DATE 1974

TAMPA - HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY

—PLANS OF PROPOSED—

SOUTH CROSSTOWN EXPRESSWAY

STATE JOB NO. 10002-3505

HILLSBOROUGH COUNTY TAMPA, FLORIDA

STATE ROAD NO. 449

TRAFFIC SIGNALS

SHEET NO.	INDEX OF SHEETS
T-1	KEY SHEET
T-2	BILL OF MATERIALS & SUMMARY OF QUANTITIES.
T-3	GENERAL NOTES.
T-4	CONVENTIONAL SIGNAL SYMBOLS.
T-5 - T-7	INSTALLATION DETAILS.
T-8	POLE SCHEDULE.
T-9 - T-10	SIGNALIZATION PLAN.
T-11	INDEX NO. 9821 - PRESTRESSED CONCRETE POLES.
T-12	STEEL STRAIN POLE DETAIL.

GENERAL SPECIFICATIONS

FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION - 1973 OR AS MODIFIED BY THE CONTRACT SPECIAL PROVISIONS.

REVISIONS

SHEETS T-2, T-8, T-9 & T-10 (REVISED 4-17-74)

APPROVAL RECOMMENDED

BY

APPROVED

BY CHAIRMAN

TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY

CONTRACT NO. 5

WILLOW AVENUE TO BAYSHORE BOULEVARD

APPROVED DATE

DRAINAGE MAP

Dist.	State	County	Route	Proj.	Sheet No.
7	Fla.	HILLSBOROUGH	449	3505	5

STATE JOB NO. 10002-3505

665.00' BRIDGE

(-)0.5000%

PROFILE ALONG EXPRESSWAY

+2.0000%

F.A.D. PROJECT
STA. 548+72.00

BEG. BRIDGE STA. 35+42.59

END BRIDGE STA. 41+07.59

PROFILE ALONG STORM SEWER

Seawall
N.H.W. 1.63'

KENNEDY BLVD.

GRAND CENTRAL AVE.

W. BROREIN ST.

CLEVELAND ST.

CARD ST.

PLATT ST.

HYDE PARK PLACE

MAGNOLIA AVE.

CEDAR AVE.

HYDE PARK AVE.

PLANT AVE.

PARKER ST.

BAYSHORE BLVD.

Hillsborough River

END JOB
STA. 548+72.00

BEG. BRIDGE
STA. 35+04.59

END BRIDGE
STA. 42+09.59

Scale: 1"=100'

S-2 Manhole
15" R.C.P.
F.L. EL. 14.71

S-7 Inlet
15" R.C.P.
F.L. EL. 11.67

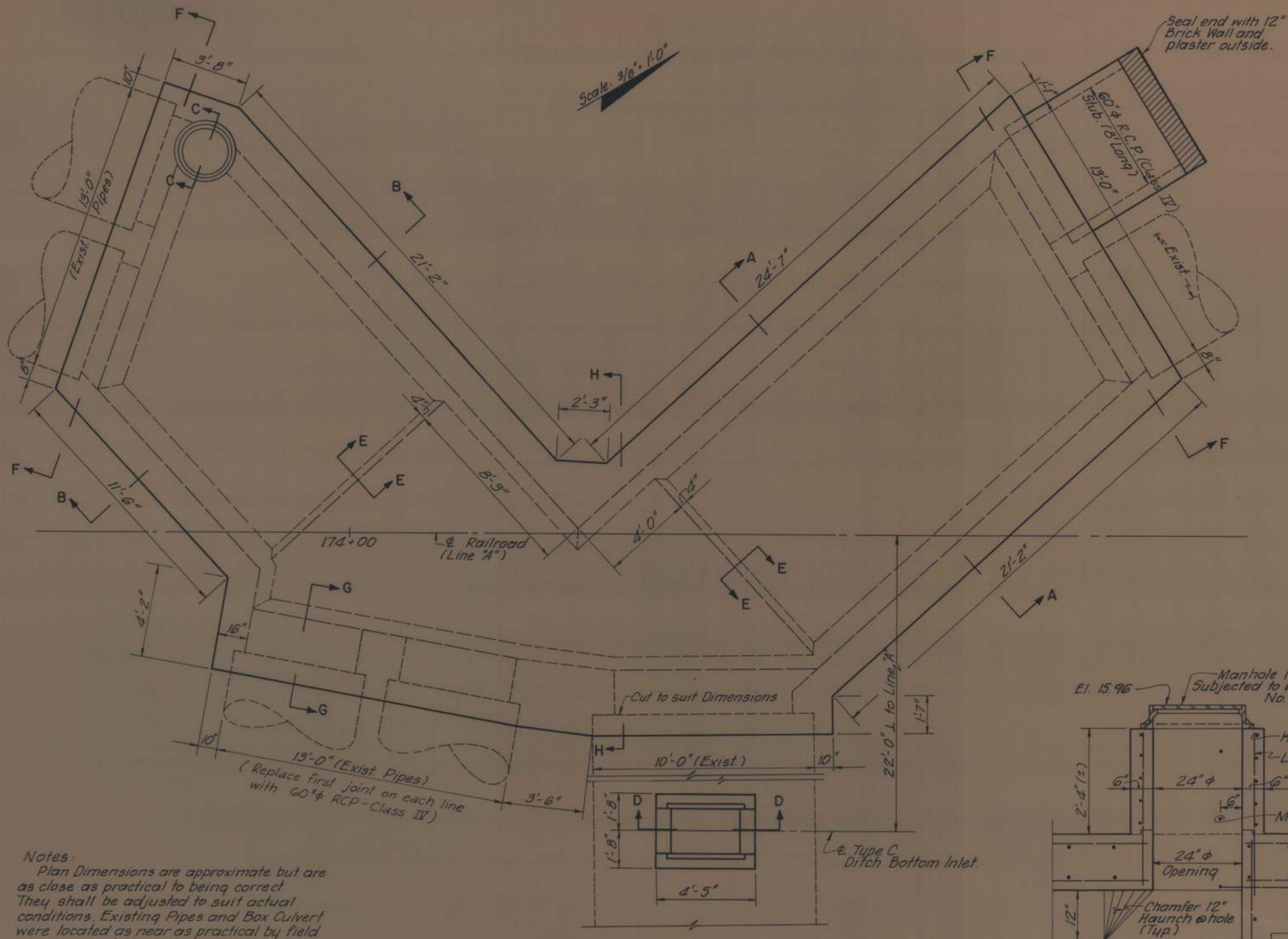
LEGEND

Exist. Manhole	○
Exist. Inlet	□
Exist. Storm Sewer	----------
Exist. Str. No.	1-36
Proposed Manhole	●
Proposed Inlet	■
Proposed Storm Sewer	————
Direction Of Flow	——→——
Drainage Boundary	[— — —]
Proposed Str. No.	(20)

WATSON AND COMPANY
ENGINEERING DIVISION
3013 HORATIO STREET
TAMPA FLORIDA

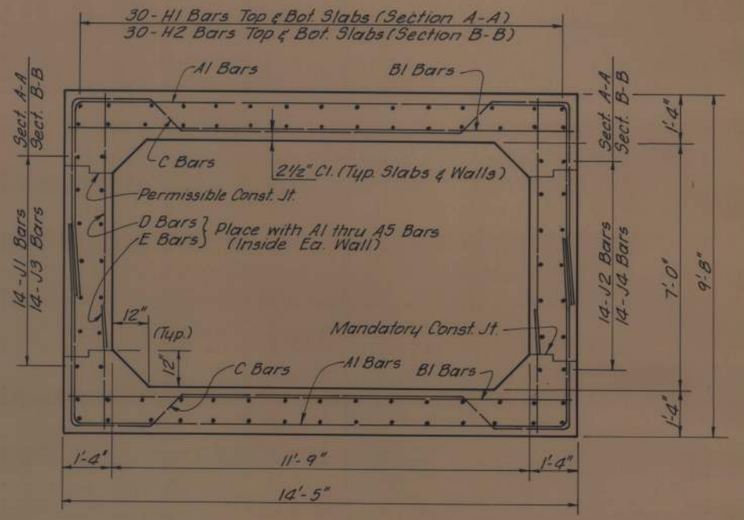
SECTION	CONTRACT	SOUTH CROSSTOWN EXPRESSWAY	SHEET NO.
10002	3510		166
By: WACO		TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY	Date: 2-73

STATE JOB No. 10002-3510

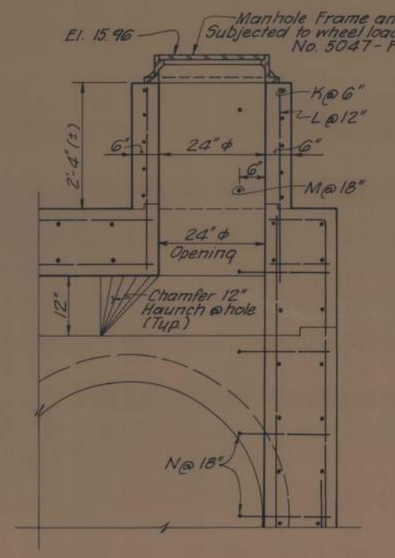


PLAN

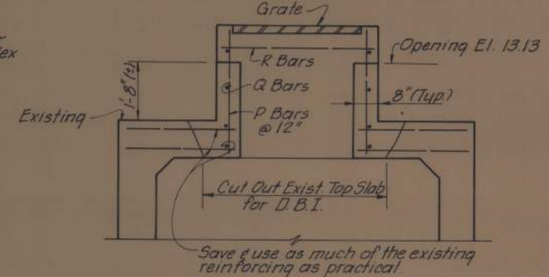
Notes:
Plan Dimensions are approximate but are as close as practical to being correct They shall be adjusted to suit actual conditions. Existing Pipes and Box Culvert were located as near as practical by field measurements and old plans. The end lengths of the existing Pipes (60"ϕ), a portion of the existing Box Culvert and the existing Junction Box are to be removed.
Existing invert elevations are to be matched as close as practical with the top of the bottom slab.
Live Load – COOPER E-72.



SECTIONS A-A & B-B
Scale 1/2" = 1'-0"



SECTION C-C
Scale: 3/4" = 1'-0"



SECTION D-D
Scale: 1/2" = 1'-0"

Work this sheet with sheets 167 & 168.

APR 21 1976

NO.	REVISION	BY	DATE

TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY

SOUTH CROSSTOWN EXPRESSWAY

STORM SEWER JUNCTION BOX STA. 174 ± (LINE "A")

J. E. GREINER COMPANY — WATSON & COMPANY
CONSULTING ENGINEERS TAMPA, FLORIDA

MADE E.A.M. DATE 9/72 | TRACED P.K. DATE 9/72
CHECKED P.K. DATE 9/72 | SCALE AS shown

AS BUILT DRAWINGS

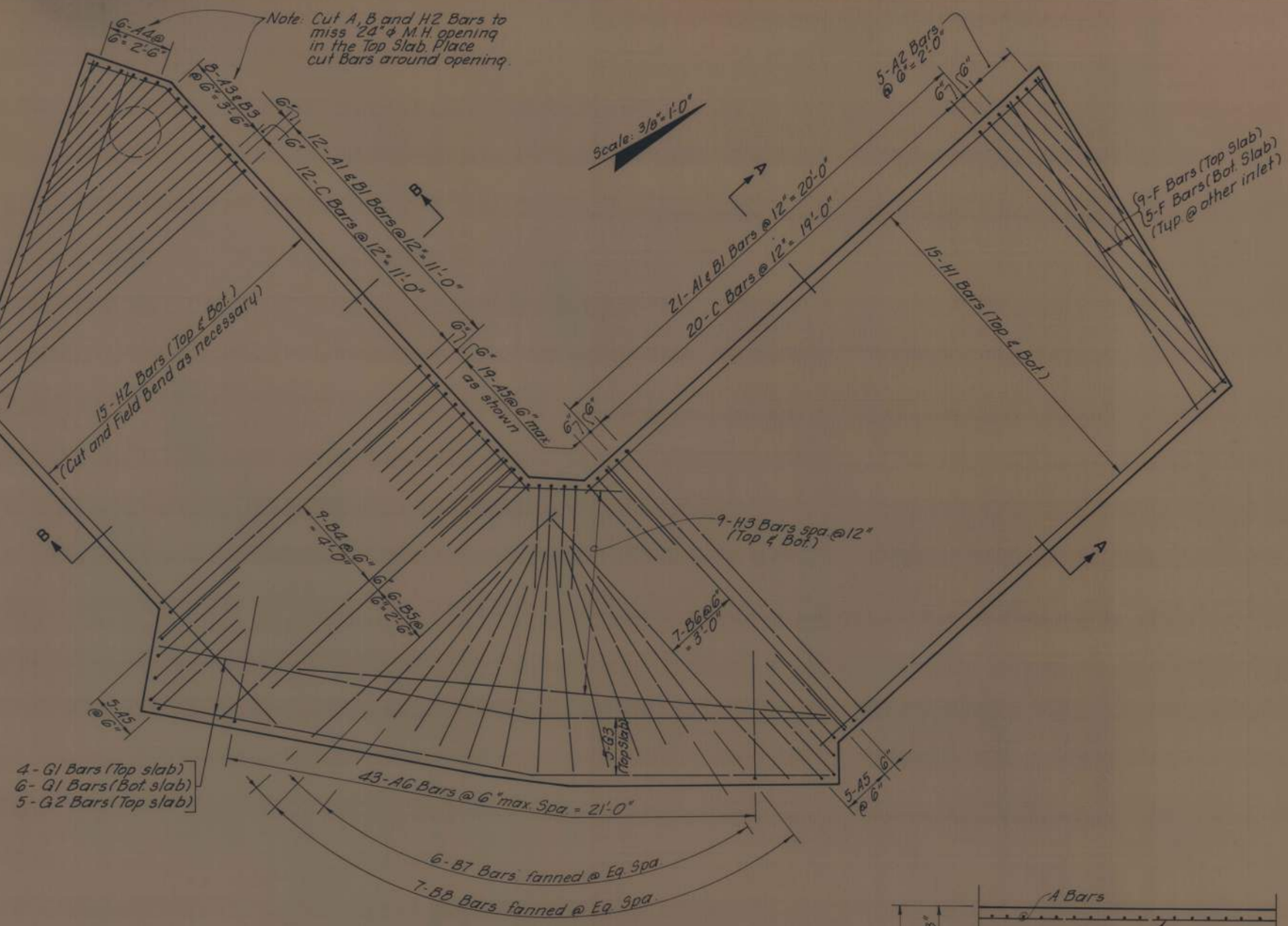
Contract Nos. 3A & 3B

84/1

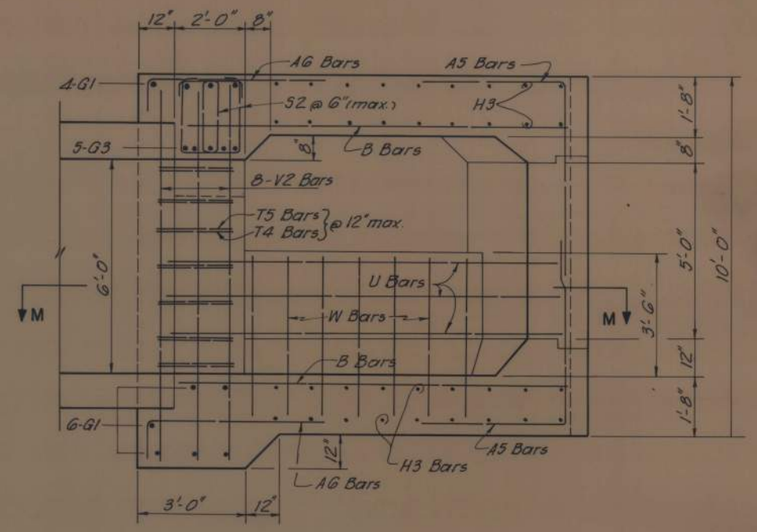
Palma Ceia Basin Outfall Junction

WATSON AND COMPANY
ENGINEERING DIVISION
3013 HORATIO STREET
TAMPA FLORIDA

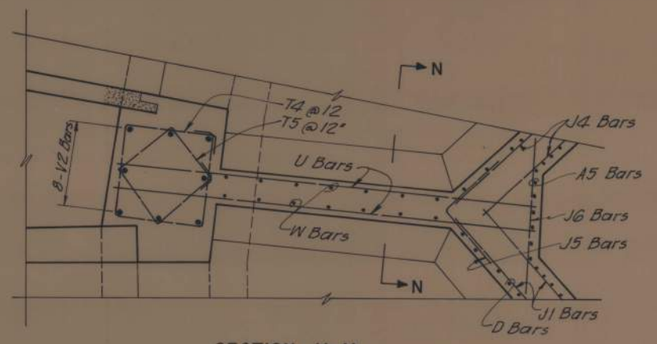
SECTION	CONTRACT	SOUTH CROSSTOWN EXPRESSWAY	SHEET NO.
10002	3510		167
By WACO		TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY	Date 2-73



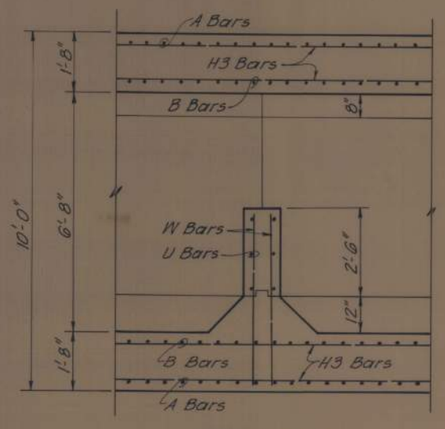
TOP AND BOTTOM SLAB PLAN



SECTION H-H



SECTION M-M



SECTION N-N

APR 21 1976

NO.	REVISION	BY	DATE

TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY

SOUTH CROSSTOWN EXPRESSWAY

STORM SEWER
JUNCTION BOX
STA. 174 ± (LINE "A")

J. E. GREINER COMPANY — WATSON & COMPANY
CONSULTING ENGINEERS TAMPA, FLORIDA

MADE E.A.M. DATE 9/72 | TRACED P.K. DATE 9/72
CHECKED P.K. DATE 9/72 | SCALE 1/2" = 1'-0"

Work this sheet with sheets 166 & 168.

AS BUILT DRAWINGS
Contract Nos. 9A & 9B

84/1

Appendix E: SWFWMD Pre-Application Notes

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

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

FILE NUMBER:

PA 407937

Date:	09/30/2020		
Time:	09:00		
Project Name:	Selmon Expressway		
District Engineer:	Scott VanOrsdale		
District ES:	Lauren Greenawalt		
Attendees:	Carlos Lopez, Steve Schnell, Alexander Miller (HDR); Alphonse Stewart, James Drapp (HNTB)		
County:	Hillsborough	**Sec/Twp/Rge:**	23, 24, 26, 27, 34/29/18; 03, 04/30/18
Total Land Acreage:	N/A	**Project Acreage:**	100 + acres

Prior On-Site/Off-Site Permit Activity:

- 21192.003; paved the median; formal treat not required for paving median. Two were provided to offset the existing treatment loss for paving median.
- Please review other permits within and adjacent to the project. GIS shows numerous ERPs adjacent and within the project area. Any existing permits impacted by the project will need to be

Project Overview:

- Widening for the Selmon Expressway from Downtown to South Dale Mabry to accommodate additional travel lanes.
- There will be an interim condition to be constructed and a complete buildout designed in the stormwater management system
- Discussed getting credit for existing impervious that is DCIA to the new pavement. Per Section 4.5 A.H.V.II for Alterations to Existing Public Roadway Projects, DICA is determined to be the new impervious and existing impervious that is proposed to be connected to the stormwater management system.
- Portions of the roadway already receive partial or direct treatment from previously permits issued; it may be possible to only treat the new impervious (including new travel lanes) if equivalent treatment concepts are used to strategically locate the pond(s) so that the minimum treatment requirement may be for an area equivalent to the new impervious area only. This is discussed in more detail below.
- Design alternatives may also be considered if cases of extreme hardship. The design alternatives would need to meet or exceed the presumptive design criteria outlined in the water quality section.

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

- Provide the limits of jurisdictional wetlands and surface waters. Roadside ditches or other water conveyances, including permitted and constructed water conveyance features, can be claimed as surface waters per Chapter 62-340 F.A.C. if they do not meet the definition of a swale as stated under Rule 403.803 (14) F.S.
- Provide appropriate mitigation using UMAM for impacts, if applicable.
- The site is located in the Tampa Bay ERP Basin. Mitigation Banks that serve this area include the Mangrove Point, Nature Coast, and Tampa Bay mitigation banks. For an interactive map of permitted mitigation banks and their service areas, use this LINK.
- If the wetland mitigation is appropriate and the applicant is proposing to utilize mitigation bank credit as wetland mitigation, the following applies: Provide letter or credit availability or, if applicable, a letter of reservation from the wetland mitigation bank. The wetland mitigation bank current credit ledgers can be found out the following link: https://www.swfwmd.state.fl.us/business/epermitting/environmental-resource-permit, Go to “ERP Mitigation Bank Wetland Credit Ledgers”
- Demonstrate elimination and reduction of wetland impacts.
- Maintain minimum 15 foot, average 25 foot wetland conservation area setback or address secondary impacts.

- As of October 1, 2017, the District will no longer send a copy of an application that does not qualify for a State Programmatic General Permit (SPGP) to the U.S. Army Corps of Engineers. If a project does not qualify for a SPGP, you will need to apply separately to the Corps using the appropriate federal application form for activities under federal jurisdiction. Please see the Corps' Jacksonville District Regulatory Division Sourcebook for more information about federal permitting. Please call your local Corps office if you have questions about federal permitting. Link: http://www.saj.usace.army.mil/Missions/Regulatory/Source-Book/

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

- Existing roadway/intersections – Selmon Expressway
- Watersheds – Lower Peninsula for southwestern portion of the project.
- WBIDs need to be independently verified by the consultant - WBID 1640 – Rattlesnake Ditch; not impaired at this time. WBID 1609 – Direct Runoff to Bay; Tampa WBID impaired for nutrients. WBID 1443 E – Hillsborough River; TMDL for Fecal Coliform, BMAP for Fecal Coliform, impaired for Iron. WBID 1584 A1 – Ybor City Drain; impaired for Fecal Coliform.
- Portions of the project discharging to impaired waters.
- Document/justify SHWE's at pond locations, wetlands, and OSWs.
- Determine normal pool elevations of wetlands.
- Determine 'pop-off' locations and elevations of wetlands.
- Provide documentation to support tailwater conditions for quality and quantity design
- Proposed control structures in wetlands should be consistent with existing 'pop-off' elevations of wetlands; demonstrate no adverse impacts to wetland hydroperiod for up to 2.33yr mean annual storm.
- Minimum flows and levels of receiving waters shall not be disrupted.
- Contamination issues need to be resolved with the FDEP. Check FDEP MapDirect layer for possible contamination points within/adjacent to the project area. Several contamination sites located near the roadway. Please use link to identify the contamination sites. FDEP MapDirect Link
  Please verify with FDEP if any have current contamination issues.
  For known contamination within the site or within 500' beyond the proposed stormwater management system:
  - after the application is submitted, please contact FDEP staff listed below and provide them with the ERP Application ID # along with a mounding analysis (groundwater elevation versus distance) of the proposed stormwater management system that shows the proposed groundwater mound will not adversely impact the contaminated area. FDEP will review the plans submitted to the District and mounding analysis to determine any adverse impacts. Provide documentation from FDEP that the proposed construction will not result in adverse impacts. This is required prior to the ERP Application being deemed complete.
  - If a SWMS is to be constructed within a contamination zone area, a groundwater sample collected from the first aquifer water bearing zone (i.e. zone of saturation or first zone that the water table is encountered) will most likely be required.
  For known offsite contamination between 500' and 1500' beyond the site:
  - FDEP may also require a mounding analysis (groundwater elevation versus distance) for the proposed stormwater systems. SWFWMD will issue the permit when contamination sites are located outside the 500 ft radius prior to concurrence from DEP, however, it is the Permittee's responsibility to resolve contaminated site assessment concerns with the FDEP prior to beginning any construction activities. A permit condition will be used to reiterate this. You are advised to contact DEP as soon as possible, preferably during permit application period.
  FDEP Contacts:
  - For projects located within Citrus, Hernando, Pasco, Hillsborough, Pinellas, Manatee, Polk and Hardee Counties: Yanisa Angulo yanisa.angulo@floridadep.gov
- Stormwater retention and detention systems are classified as moderate sanitary hazards with respect to public and private drinking water wells. Stormwater treatment facilities shall not be constructed within 100 feet of an existing public water supply well and shall not be constructed within 75 feet of an existing private drinking water well. Subsection 4.2, A.H.V.II.
- Any wells on site should be identified and their future use/abandonment must be designated.

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

- Demonstrate that post development peak discharges from proposed project area will not cause an adverse impact for a 25-year, 24-hour storm event.
- Demonstrate that site will not impede the conveyance of contributing off-site flows.
- Demonstrate that the project will not increase flood stages up- or down-stream of the project area(s).

- Provide equivalent compensating storage for all 100-year, 24-hour riverine floodplain impacts if applicable. Providing cup-for-cup storage in dedicated areas of excavation is the preferred method of compensation. if no impacts to flood conveyance are proposed and storage impacts and compensation occur within the same basin. In this case, tabulations should be provided at 0.5-foot increments to demonstrate encroachment and compensation occur at the same levels. Otherwise, storage modeling will be required to demonstrate no increase in flood stages will occur on off-site properties, using the mean annual, 10-year, 25-year, and 100-year storm events for the pre- and post-development conditions.
- Please be aware that if there is credible historical evidence of past flooding or the physical capacity of the downstream conveyance or receiving waters indicates that the conditions for issuance will not be met without consideration of storm events of different frequency or duration, applicants shall be required to provide additional analyses using storm events of different duration or frequency than the 25-year 24-hour storm event, or to adjust the volume, rate or timing of discharges. [Section 3.0 Applicant's Handbook Volume II]

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

- Applicant must demonstrate a net improvement for the parameters of concern by performing a pre/post pollutant loading analysis based on existing land use and the proposed land use.
- Also, replace treatment function of existing ditches to be filled.
- Presumptive Water Quality Treatment for Alterations to Existing Public Roadway Projects:
  -Refer to Section 4.5 A.H.V.II for Alterations to Existing Public Roadway Projects.
  -Refer to Sections 4.8, 4.8.1 and 4.8.2 A.H.V.II for Compensating Stormwater Treatment, Overtreatment, and Offsite Compensation.
  -All co-mingled existing & new impervious that is proposed to be connected to a treatment pond will require treatment for an area equal to the co-mingled existing & new impervious (times ½" for dry treatment or 1" for wet treatment). This applies whether or not equivalent treatment concepts are used.
  -However, if equivalent treatment concepts are used it is possible to strategically locate the pond(s) so that the minimum treatment requirement may be for an area equivalent to the new impervious area only. That is, co-mingled existing & new impervious that is not connected to a treatment pond may bypass treatment (as per Section 4.5(2), A.H.V.II); if the 'total impervious area' that is connected to the treatment pond(s) is at least equivalent to the area of new impervious only. The 'total impervious area' that is connected to the pond(s) may be composed of co-mingled existing & new impervious.
  -Offsite impervious not required to be treated; but may be useful to be treated when using equivalent treatment concepts.
  -Existing treatment capacity displaced by any road project will require additional compensating volume. Refer to Subsection 4.5(c), A.H.V.II.
- Will acknowledge compensatory treatment to offset pollutant loads associated with portions of the project area that cannot be physically treated.
- Provide additional 50% treatment for any direct discharges to OFW. Refer to ERP Applicant's Handbook Vol. II Subsection 4.1(f).
- Please be advised that although use of isolated wetlands for ERP treatment purposes is permittable as per Section 4.1(a)(3), A.H.V.II, use of isolated wetlands for treatment purposes may not necessarily meet US Army Corps criteria.

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

- N/A

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

- The permit must be issued to entity that owns or controls the property.
- Provide evidence of ownership or control by deed, easement, contract for purchase, etc. Evidence of ownership or control must include a legal description. A Property Appraiser summary of the legal description is NOT acceptable.

Application Type and Fee Required:

- SWERP – Sections A, C, and E of the ERP Application.
- < 640 acres of project area and < 50 acre of wetland or surface water impacts - $3,105.75, Online Submittal
- Consult the fee schedule for different thresholds.

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

- An application for an individual permit to construct or alter a dam, impoundment, reservoir, or appurtenant work, requires that a notice of receipt of the application must be published in a newspaper within the affected area. Provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP can be in accordance with the language provided in Rule 40D-1.603(10), F.A.C.

- Provide a copy of the legal description (of all applicable parcels within the project area) in one of the following forms:
  a. Deed with complete Legal Description attachment.
  b. Plat.
  c. Boundary survey of the property(ies) with a sketch.

- The plans and drainage report submitted electronically must include the appropriate information required under Rules 61G15-23.005 and 61G15-23.004 (Digital), F.A.C. The following text is required by the Florida Board of Professional Engineers (FBPE) to meet this requirement when a digitally created seal is not used and must appear where the signature would normally appear:

  ELECTRONIC (Manifest): *[NAME] State of Florida, Professional Engineer, License No. [NUMBER] This item has been electronically signed and sealed by [NAME] on the date indicated here using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies*

  DIGITAL: *[NAME] State of Florida, Professional Engineer, License No. [NUMBER]; This item has been digitally signed and sealed by [NAME] on the date indicated here; Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.*
- Provide soil erosion and sediment control measures for use during construction. Refer to ERP Applicant's Handbook Vol. 1 Part IV Erosion and Sediment Control.
- Demonstrate that excavation of any stormwater ponds does not breach an aquitard (see Subsection 2.1.1, A.H.V.II) such that it would allow for lesser quality water to pass, either way, between the two systems. In those geographical areas of the District where there is not an aquitard present, the depth of the pond(s) shall not be excavated to within two (2) feet of the underlying limestone which is part of a drinking water aquifer. [Refer to Subsection 5.4.1(b), A.H.V.II]
- If lowering of SHWE is proposed, then burden is on Applicant to demonstrate no adverse onsite or offsite impacts as per Subsection 3.6, A.H.V.II. Groundwater drawdown 'radius of influence' computations may be required to demonstrate no adverse onsite or offsite impacts. Please note that new roadside swales or deepening of existing roadside swales may result in lowering of SHWE. Proposed ponds with control elevation less than SHWE may result in adverse lowering of onsite or offsite groundwater.

Disclaimer: The District ERP pre-application meeting process is a service made available to the public to assist interested parties in preparing for submittal of a permit application. Information shared at pre-application meetings is superseded by the actual permit application submittal. District permit decisions are based upon information submitted during the application process and Rules in effect at the time the application is complete.

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

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

FILE NUMBER:

PA 405334

Date:	01/30/2018		
Time:	10:00		
Project Name:	South Selmon Interim Safety		
District Engineer:	Rob McDaniel		
District ES:			
Attendees:	Al Stewart, (HNTB) Joel Brown (SWFWMD)		
County:	Hillsborough	**Sec/Twp/Rge:**	19/29/19; 3,4 /30/18
Total Land Acreage:	3.8 miles	**Project Acreage:**	3.8 miles

Prior On-Site/Off-Site Permit Activity:

- 21192.001 and 002; 19654.007 for toll booth improvements.

Project Overview:

- Fill the depressed, grassed median, replace with a paved shoulder and a concrete barrier wall between Himes and just west of the Hillsborough River.

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

- N/A

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

- Since the depressed grass median will be filled and paved, the current function of this storage must be mitigated.

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

- Formal water quantity attenuation is not required for the proposed shoulder construction activity; exempt per Rule 62-330.051(4)(c), F.A.C.
- However, existing function of the depressed, grass median will need to be maintained.

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

- Formal water quality treatment is not required for the proposed shoulder construction activity; exempt per Rule 62-330.051(4)(c), F.A.C.
- Although the grassed median is not a formal water quality stormwater treatment system, it does provide some function to runoff from its contributing area. This function will need to be maintained or mitigated.

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

- N/A

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

Application Type and Fee Required:

- Request for verification of Exempt Activities – $100 fee
- If mitigation of the function provided by the grassed swale areas will be achieved by the creation of newly constructed dedicated areas, this may require an Individual ERP.

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

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

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

FILE NUMBER:

PA 405335

Date:	01/30/2018		
Time:	11:00		
Project Name:	South Selmon Future Widening		
District Engineer:	Rob McDaniel		
District ES:	None		
Attendees:	Al Stewart (HNTB), Joel Brown (SWFWMD)		
County:	Hillsborough	**Sec/Twp/Rge:**	19/29/19; 3,4 /30/18
Total Land Acreage:	4 miles	**Project Acreage:**	4 miles

Prior On-Site/Off-Site Permit Activity:

- 21192.001 and 002; 19654.007 for toll booth improvements.

Project Overview:

- Additional travel lanes between Himes and Morgan Street. Possibly may build elevated lanes.

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

- N/A

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

- Existing roadway/intersections –
- Watersheds
- WBIDs need to be independently verified by the consultant -
- WBID 1443E – Hillsborough River. Delisted for nutrients and dissolved oxygen.
- WBID 1609 – Interbay Peninsula, Direct Runoff to Bay. Net improvement is required.
- Provide documentation to support tailwater conditions for quality and quantity design
- Any wells on site should be identified and their future use/abandonment must be designated.

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

- Demonstrate that post development peak discharges from proposed project area will not cause an adverse impact for a 25-year, 24-hour storm event.
- Demonstrate that site will not impede the conveyance of contributing off-site flows.
- Demonstrate that the project will not increase flood stages up- or down-stream of the project area(s).
- No impacts to riverine floodplain are anticipated.
- Please be aware that if there is credible historical evidence of past flooding or the physical capacity of the downstream conveyance or receiving waters indicates that the conditions for issuance will not be met without consideration of storm events of different frequency or duration, applicants shall be required to provide additional analyses using storm events of different duration or frequency than the 25-year 24-hour storm event, or to adjust the volume, rate or timing of discharges. [Section 3.0 Applicant's Handbook Volume II]

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

- Provide water quality treatment for entire project area and all contributing off-site flows.
- Portions of the project discharge to an impaired water body, must provide a net environmental improvement.
- Applicant must demonstrate a net improvement for the parameters of concern by performing a pre/post pollutant loading analysis based on existing land use and the proposed land use.
- Also, replace treatment function of existing ditches to be filled.
- Presumptive Water Quality Treatment for Alterations to Existing Public Roadway Projects:
  -Refer to Section 4.5 A.H.V.II for Alterations to Existing Public Roadway Projects.
  -Refer to Sections 4.8, 4.8.1 and 4.8.2 A.H.V.II for Compensating Stormwater Treatment, Overtreatment, and Offsite Compensation.

-All co-mingled existing & new impervious that is proposed to be connected to a treatment pond will require treatment for an area equal to the co-mingled existing & new impervious (times ½" for dry treatment or 1" for wet treatment). This applies whether or not equivalent treatment concepts are used.
-However, if equivalent treatment concepts are used it is possible to strategically locate the pond(s) so that the minimum treatment requirement may be for an area equivalent to the new impervious area only. That is, co-mingled existing & new impervious that is not connected to a treatment pond may bypass treatment (as per Section 4.5(2), A.H.V.II); if the 'total impervious area' that is connected to the treatment pond(s) is at least equivalent to the area of new impervious only. The 'total impervious area' that is connected to the pond(s) may be composed of co-mingled existing & new impervious.
-Offsite impervious not required to be treated; but may be useful to be treated when using equivalent treatment concepts.
-Existing treatment capacity displaced by any road project will require additional compensating volume. Refer to Subsection 4.5(c), A.H.V.II.

- Will acknowledge compensatory treatment to offset pollutant loads associated with portions of the project area that cannot be physically treated.
- Please be advised that although use of isolated wetlands for ERP treatment purposes is permittable as per Section 4.1(a)(3), A.H.V.II, use of isolated wetlands for treatment purposes may not necessarily meet US Army Corps criteria.
- Net improvement
  -Refer to rule 62-330.301(2), F.A.C.
  -Tampa Bay is designated as a Category 4b waterbody (impaired, but no TMDL required); therefore, net improvement (for nutrients) is required for discharges to Tampa Bay.
  -The application must demonstrate a net improvement for nutrients. Applicant may demonstrate a net improvement for the parameters of concern by performing a pre/post pollutant loading analysis based on existing land use and the proposed land use. Refer to ERP Applicant's Handbook Vol. II Subsection 4.1(g).
  -Effluent filtration is known to be ineffective for treating nutrient related impairments, unless special nutrient adsorption media provided. However, please note special nutrient adsorption media has extremely low conductivity values compared to typical sand type effluent filtration filter media. Note: if treatment volume required for net improvement is less than the treatment volume required for 'presumptive' treatment, then use of effluent filtration is ok.

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

- N/A

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

- The permit must be issued to entity that owns or controls the property, Tampa Hillsborough Expressway Authority.
- Provide evidence of ownership or control by deed, easement, contract for purchase, etc. Evidence of ownership or control must include a legal description. A Property Appraiser summary of the legal description is NOT acceptable.

Application Type and Fee Required:

- SWERP New Individual – Sections A, C, and E of the ERP Application.
- Consult the fee schedule for different thresholds.

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

- An application for an individual permit to construct or alter a dam, impoundment, reservoir, or appurtenant work, requires that a notice of receipt of the application must be published in a newspaper within the affected area. Provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP can be in accordance with the language provided in Rule 40D-1.603(10), F.A.C.

- Provide a copy of the legal description (of all applicable parcels within the project area) in one of the following forms:
  a. Deed with complete Legal Description attachment.
  b. Plat.
  c. Boundary survey of the property(ies) with a sketch.

- The plans and drainage report submitted electronically must include the appropriate information required under Rule 61G15-23.005(4)(c), F.A.C. The following text is acceptable to the Florida Board of Professional Engineers (FBPE) to meet this requirement and must appear where the signature would normally appear:

  [Licensee] State of Florida, Professional Engineer, License No. X
  This item has been electronically signed and sealed by [Licensee, PE] on [DATE] using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies
- Provide soil erosion and sediment control measures for use during construction. Refer to ERP Applicant's Handbook Vol. 1 Part IV Erosion and Sediment Control.
- Demonstrate that excavation of any stormwater ponds does not breach an aquitard (see Subsection 2.1.1, A.H.V.II) such that it would allow for lesser quality water to pass, either way, between the two systems. In those geographical areas of the District where there is not an aquitard present, the depth of the pond(s) shall not be excavated to within two (2) feet of the underlying limestone which is part of a drinking water aquifer. [Refer to Subsection 5.4.1(b), A.H.V.II]

Disclaimer: The District ERP pre-application meeting process is a service made available to the public to assist interested parties in preparing for submittal of a permit application. Information shared at pre-application meetings is superseded by the actual permit application submittal. District permit decisions are based upon information submitted during the application process and Rules in effect at the time the application is complete.

Appendix F: Existing ERP Excerpts

Swann Pond Beautification Project

ERP Exemption

Southwest Florida Water Management District
2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
TDD only: 1-800-231-6103 (FL only)
On the Internet at *WaterMatters.org*

An Equal Opportunity Employer

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

July 07, 2014

City of Tampa Stormwater Division
Attn: Alex Awad
306 East Jackson Street, 6N
Tampa, FL 33602

Subject:	**Project Evaluation - Project Exempt**	
	Project Name:	Swann Pond
	File Number:	698252
	County:	HILLSBOROUGH
	Sec/Twp/Rge:	S23/T29S/R18E
Reference:	Rule 62-330, Florida Administrative Code (F.A.C.)	
	Subsection 373.406(6), Florida Statutes (F.S.)	

Dear Mr. Awad:

The District has reviewed the information you submitted for the project referenced above and has determined that an Environmental Resource Permit (ERP) **will not be required** for the proposed removal of an existing sidewalk and the construction of a new sidewalk adjacent to city streets, as well as installation of landscaping and decorative fencing around the perimeter of an existing stormwater pond constructed under permit number 40002417.000. [Rules 62-330.051(4)(c) and 62-330.051(2), F.A.C.]

The information received by the District will be kept on file to support the District's determination regarding your project. This information is available for viewing or downloading through the District's Application and Permit Search Tools located at www.WaterMatters.org/permits.

The District's determination that your project does not require an ERP is only applicable pursuant to the statutes and rules in effect at the time the information was submitted and may not be valid in the event subsequent changes occur in the applicable rules and statutes. Additionally, this notification does not mean that the District has determined that your project is permanently exempt from permitting requirements. Any subsequent change you make in the project's operation may necessitate further evaluation or permitting by the District. Therefore, you are advised to contact the District before beginning the project and before beginning any activity which is not specifically described in your submittal. Your timely pursuit of this activity is encouraged to avoid any potential rule changes that could affect your request.

This letter constitutes notice of Intended Agency Action of the project referenced above. The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing notice of agency action will close the window for filing a petition for hearing. Legal requirements and

instructions for publishing notice of agency action, as well as a noticing form that can be used is available from the District's website at www.WaterMatters.org/permits/noticing. If you publish notice of agency action, a copy of the affidavit of publishing provided by the newspaper should be sent to the Regulation Division at the District Service Office that services this permit or other agency action, for retention in the File of Record for this agency action.

If you have questions regarding this matter, please contact Richard Alt in the Tampa Service Office, extension 2045. Please reference the Project Name and Inquiry/Permit Number in future communications concerning this project.

Sincerely,

Michelle K. Hopkins, P.E.
Bureau Chief
Environmental Resource Permit Bureau
Regulation Division

Enclosures:	Notice of Rights
cc:	File of Record

Notice of Rights

Administrative Hearing

1. You or any person whose substantial interests are or may be affected by the District's intended or proposed action may request an administrative hearing on that action by filing a written petition in accordance with Sections 120.569 and 120.57, Florida Statutes (F.S.), Uniform Rules of Procedure Chapter 28-106, Florida Administrative Code (F.A.C.) and District Rule 40D-1.1010, F.A.C. Unless otherwise provided by law, a petition for administrative hearing must be filed with (received by) the District within 21 days of receipt of written notice of agency action. "Written notice" means either actual written notice, or newspaper publication of notice, that the District has taken or intends to take agency action. "Receipt of written notice" is deemed to be the fifth day after the date on which actual notice is deposited in the United States mail, if notice is mailed to you, or the date that actual notice is issued, if sent to you by electronic mail or delivered to you, or the date that notice is published in a newspaper, for those persons to whom the District does not provide actual notice.

2. Pursuant to Subsection 373.427(2)(c), F.S., for notices of intended or proposed agency action on a consolidated application for an environmental resource permit and use of sovereignty submerged lands concurrently reviewed by the District, a petition for administrative hearing must be filed with (received by) the District within 14 days of receipt of written notice.

3. Pursuant to Rule 62-532.430, F.A.C., for notices of intent to deny a well construction permit, a petition for administrative hearing must be filed with (received by) the District within 30 days of receipt of written notice of intent to deny.

4. Any person who receives written notice of an agency decision and who fails to file a written request for a hearing within 21 days of receipt or other period as required by law waives the right to request a hearing on such matters.

5. Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding District intended or proposed action is not available prior to the filing of a petition for hearing.

6. A request or petition for administrative hearing must comply with the requirements set forth in Chapter 28-106, F.A.C. A petition for a hearing must: (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's intended action or proposed action, (2) state all material facts disputed by the person requesting the hearing or state that there are no material facts in dispute, and (3) otherwise comply with Rules 28-106.201 and 28-106.301, F.A.C. Chapter 28-106, F.A.C., can be viewed at www.flrules.org or at the District's website at www.WaterMatters.org/permits/rules.

7. A petition for administrative hearing is deemed filed upon receipt of the complete petition by the District Agency Clerk at the District's Tampa Service Office during normal business hours, which are 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding District holidays. Filings with the District Agency Clerk may be made by mail, hand-delivery or facsimile transfer (fax). The District does not accept petitions for administrative hearing by electronic mail. Mailed filings must be addressed to, and hand-delivered filings must be delivered to, the Agency Clerk, Southwest Florida Water Management District, 7601 US Hwy 301, Tampa, FL 33637-6759. Faxed filings must be transmitted to the District Agency Clerk at (813) 987-6746. Any petition not received during normal business hours shall be filed as of 8:00 a.m. on the next business day. The District's acceptance of faxed petitions for filing is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation, available for viewing at www.WaterMatters.org/about.

Judicial Review

1. Pursuant to Sections 120.60(3) and 120.68, F.S., a party who is adversely affected by District action may seek judicial review of the District's action. Judicial review shall be sought in the Fifth District Court of Appeal or in the appellate district where a party resides or as otherwise provided by law.

2. All proceedings shall be instituted by filing an original notice of appeal with the District Agency Clerk within 30 days after the rendition of the order being appealed, and a copy of the notice of appeal, accompanied by any filing fees prescribed by law, with the clerk of the court, in accordance with Rules 9.110 and 9.190 of the Florida Rules of Appellate Procedure (Fla. R. App. P.). Pursuant to Fla. R. App. P. 9.020(h), an order is rendered when a signed written order is filed with the clerk of the lower tribunal.

Swann Avenue Fountain Park

Tampa, FL

90 % Construction Documents Set

April 15, 2014

Proj. No. 12023

COOPER JOHNSON SMITH ARCHITECTS, INC.
102 SOUTH 12TH STREET - TAMPA, FLORIDA 33602
FL LIC AA C002035 www.cjsarch.com

STRUCTURAL ENGINEERING:

MILLER STRUCTURAL ENGINEERING, INC.
320 West Kennedy Blvd. Suite 700
Tampa, Florida 33606
813/259-9116

LANDSCAPE ARCHITECTURE

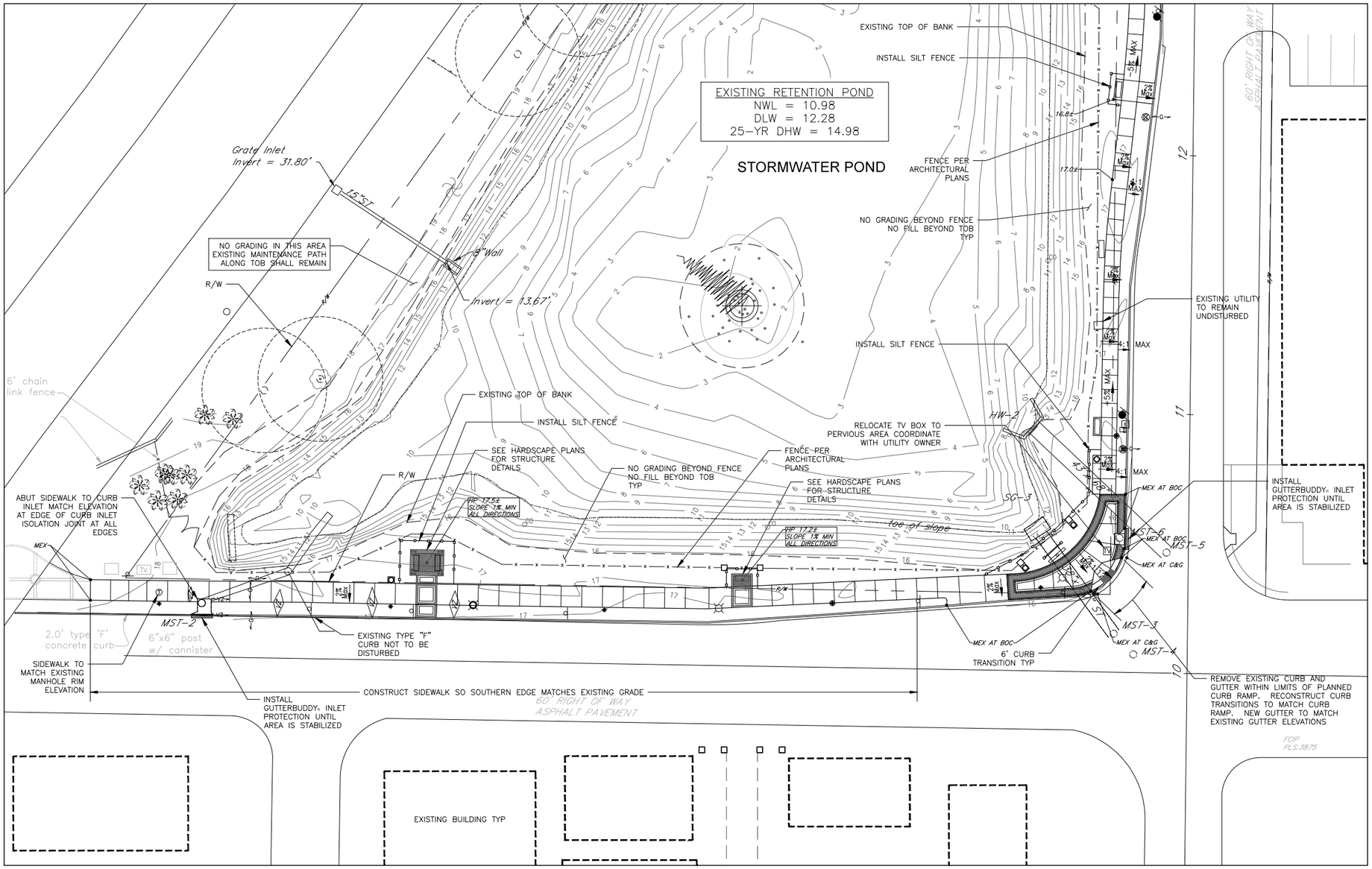
DAVID CONNER & ASSOCIATES
100 Madison St. Suite 200
Tampa, Florida 33602
813/258-1997

ELECTRICAL ENGINEERING

DIAMONDBACK ENGINEERING
1801 North Himes Avenue
Tampa, Florida 33607
813/350-0080

CIVIL ENGINEERING

5M CIVIL, LLC
12315 Wycliff Place
Tampa, Florida 33626
813/404-8872



PAVING, GRADING AND DRAINAGE NOTES:

1. ELEVATIONS SHOWN ON THE PLANS FOR PROPOSED IMPROVEMENTS ARE BASED ON LIMITED ELEVATION DATA (SHOWN CONTOURS). ACCORDINGLY SPOT ELEVATIONS INDICATED HEREIN ARE APPROXIMATE AND WILL VARY BASED ON FIELD CONDITIONS. ANY DISCREPANCIES THAT ARISE DURING CONSTRUCTION SHOULD BE ADDRESSED TO THE OWNER'S REPRESENTATIVE FOR CLARIFICATION.
2. SIDEWALK SHALL BE CONSTRUCTED PER FDOT DESIGN STANDARD INDEX 310. WIDTH SHALL BE AS SPECIFIED ON THE HARDSCAPE PLANS.
3. REFER TO LANDSCAPING PLANS FOR STABILIZATION OF DISTURBED AREAS.
4. SUBJECT PROPERTY IS LOCATED IN FLOOD ZONE X ACCORDING TO FLOOD INSURANCE RATE MAP COMMUNITY PANEL NO. FEMA 12057C0353H BEARING AN EFFECTIVE DATE OF AUGUST 28, 2008.
5. LONGITUDINAL SLOPE OF SIDEWALK SHALL NOT EXCEED 5% IN ACCORDANCE WITH ADA REQUIREMENTS.
6. CONTRACTOR SHALL REMOVE AND DISPOSE OF FILL UNDERNEATH EXISTING SIDEWALK.
7. UNSUITABLE MATERIALS CONSISTING OF BUT NOT LIMITED TO BROKEN CONCRETE AND ASPHALT MILLINGS SHALL BE REMOVED AND DISPOSED AT THE CONTRACTORS EXPENSE.

STORMWATER MANAGEMENT SYSTEM CALCS

1. EXISTING IMPERVIOUS AREA = 1,992 SF
2. PLANNED SIDEWALK AREA = 7,402 SF
3. ADDITIONAL IMPERVIOUS AREA =5,410 SF
4. PER SWFWMD PERMIT 402417.02:
   4.1. THE PROJECT DRAINAGE AREA IS 34.28 ACRES
   4.2. THE CN FOR THE DRAINAGE AREA IS 87.1.
5. EXISTING SOILS CONSISTS OF TAVARES SANDS HSG A
6. PERVIOUS CN=49, IMPERVIOUS CN=98
7. PLANNED PROJECT AREA = 0.36% OF CONTRIBUTING AREA
8. CN INCREASE = .0036*(98-49) = 0.18
9. REVISED CN = 87.28.
10. P25YR-24HR= 8 IN
11. PER NRCS RUNOFF FORMULA Q FOR CN OF 87.1= 6.46 IN
12. Q FOR CN OF 87.28 = 6.48 IN
13. DELTA Q= 0.02 IN * 34.28 AC = 0.057 AC-FT
14. EXISTING POND AREA AT DHW = 1.73 AC
15. RESULTING INCREASE FROM ADDITIONAL RUNOFF = 0.03 FT OR 0.4 INCHES. THIS IS AN INSIGNIFICANT INCREASE AND WELL WITHIN THE ERROR TOLERANCES OF STANDARD HYDROLOGIC AND HYDRAULIC CALCULATIONS.

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Landscape Architecture
Urban | Environmental Design
DAVID CONNER AND ASSOCIATES
100 Madison St, Suite 200 · Tampa, FL 33602
Tel. (813)258-1997 · Facsimile (813)254-4194
LC0000319 · LA0001327
FBPR Certificate of Authorization No.: 26929
5M CIVIL LLC
12315 Wycliff Pl
Tampa, FL 33626
P:(813) 404-8872
www.5mcivil.com
Professional Civil Engineering Services
JESUS A. MERLY P.E. NO. 58113
FLORIDA PROFESSIONAL ENGINEER

F.E. Lykes Foundation
TAMPA, FL

SWANN AVENUE FOUNTAIN PARK

NOTIFY LANDSCAPE ARCHITECT IMMEDIATELY IN EVENTS OF DISCREPANCIES, OMISSIONS, AND/OR CONFLICTS IN THE DRAWINGS OR SPECIFICATIONS. THE CONTRACTOR IS NOT AUTHORIZED TO SCALE THE DRAWINGS. ALL QUESTIONS IN REFERENCE TO CONTRACT DOCUMENTS SHALL BE IMMEDIATELY DIRECTED TO THE LANDSCAPE ARCHITECT.

5M CIVIL PROJECT NO.: 131203
DRAWN BY: JAM
CHECKED BY: JAM
CAD File: PGD.DWG

90% CONSTRUCTION DOCUMENTS

2014-04-15

REVISIONS:

Drawing Title:
PAVING, GRADING AND DRAINAGE PLAN

Drawing No.:
C-001

PAVING, GRADING AND DRAINAGE NOTES:

1. ELEVATIONS SHOWN ON THE PLANS FOR PROPOSED IMPROVEMENTS ARE BASED ON LIMITED ELEVATION DATA (SHOWN CONTOURS). ACCORDINGLY SPOT ELEVATIONS INDICATED HEREIN ARE APPROXIMATE AND WILL VARY BASED ON FIELD CONDITIONS. ANY DISCREPANCIES THAT ARISE DURING CONSTRUCTION SHOULD BE ADDRESSED TO THE OWNER'S REPRESENTATIVE FOR CLARIFICATION.
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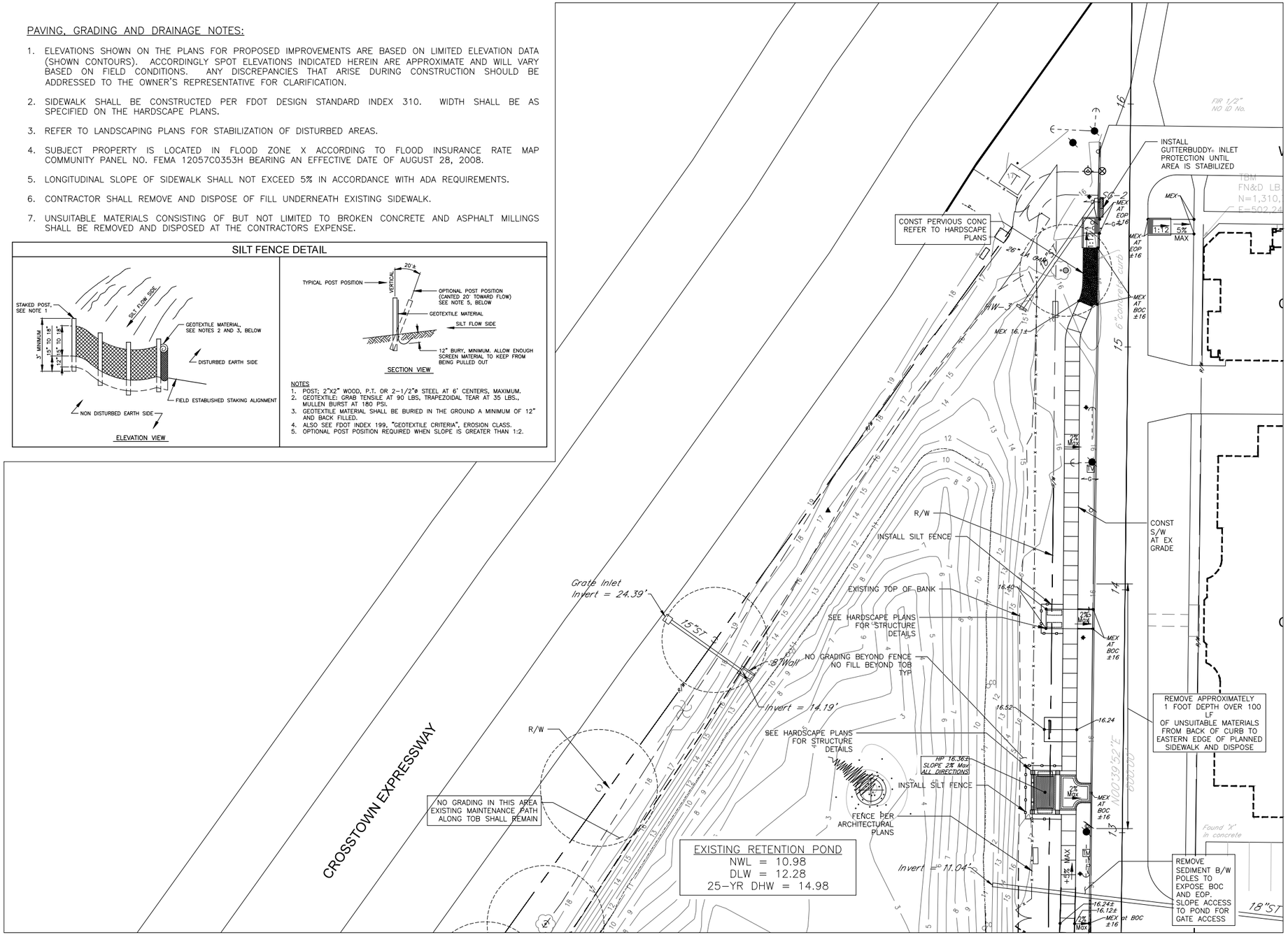
SILT FENCE DETAIL

NOTES
1. POST; 2"X2" WOOD, P.T. OR 2-1/2"ø STEEL AT 6' CENTERS, MAXIMUM.
2. GEOTEXTILE: GRAB TENSILE AT 90 LBS, TRAPEZOIDAL TEAR AT 35 LBS., MULLEN BURST AT 180 PSI.
3. GEOTEXTILE MATERIAL SHALL BE BURIED IN THE GROUND A MINIMUM OF 12" AND BACK FILLED.
4. ALSO SEE FDOT INDEX 199, "GEOTEXTILE CRITERIA", EROSION CLASS.
5. OPTIONAL POST POSITION REQUIRED WHEN SLOPE IS GREATER THAN 1:2.



MATCHLINE C-1

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100 Madison St, Suite 200 · Tampa, FL 33602
Tel. (813)258-1977 · Facsimile (813)254-4194
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5M CIVIL PROJECT NO.: 13-005
DRAWN BY: JAM
CHECKED BY: JAM
CAD File: PGD.DWG

90% CONSTRUCTION DOCUMENTS

2014-04-15

REVISIONS:

Drawing Title:
PAVING, GRADING AND DRAINAGE PLAN

Drawing No.:
C-002

MATCHLINE - SEE SHEET L301

CROSSTOWN EXPRESSWAY

SOUTH ROME AVENUE

S W A N N A V E N U E

EXISTING PLANTING

TRI DA1 | 22 | #1

TRI DA1 | 22 | #1

43 | HAM PA2 | #3

1 | JAC ACU | #30

2 | TAX DI4 | #30

3 | SAB P15 | Field Grown

3 | SAL BAB | #30

CLEAR MAINTENANCE ACCESS

3 | QUE VX8 | B & B

31 | HAM PA2 | #3

1 | SAL BAB | #30

2 | TAX DI4 | #30

QUE VI2 | 2 | B & B

BAHIA SOD

ST. AUGUSTINE SOD

54 | LIR ME1 | #1

8 | CRI AQ4 | #15

111 | AGA AF2 | #1

2 | QUE VX8 | B & B

108 | LIR ME1 | #1

4 | CRI AQ4 | #15

2 | PHO D15 | Collected

top of slope

LIMITS OF SOD REPAIR

BAHIA SOD

ST. AUGUSTINE SOD

2 | CRI AQ4 | #15

2 | LAG MU3 | #60

541 | RHA IA2 | #3

ST. AUGUSTINE SOD

2 | LAG MU3 | #60

7 | ANN UAL | 6" pot

2 | PHO D15 | Collected

3 | CRI AQ4 | #15

71 | ANN UAL | 6" pot

3 | CRI AQ4 | #15

7 | ANN UAL | 6" pot

N

0 10 20 40 60

Landscape Architecture

Urban | Environmental Design

DAVID CONNER AND ASSOCIATES

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PROFESSIONAL OF RECORD:
DAVID CONNER
FLORIDA LICENSE LANDSCAPE ARCHITECT
0001327

F.E. Lykes
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SWANN AVENUE FOUNTAIN PARK

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DCA PROJECT NO.: 13-005
DRAWN BY: JG/DC
CHECKED BY: DC
CAD File:

90% CONSTRUCTION DOCUMENTS

2014-04-15

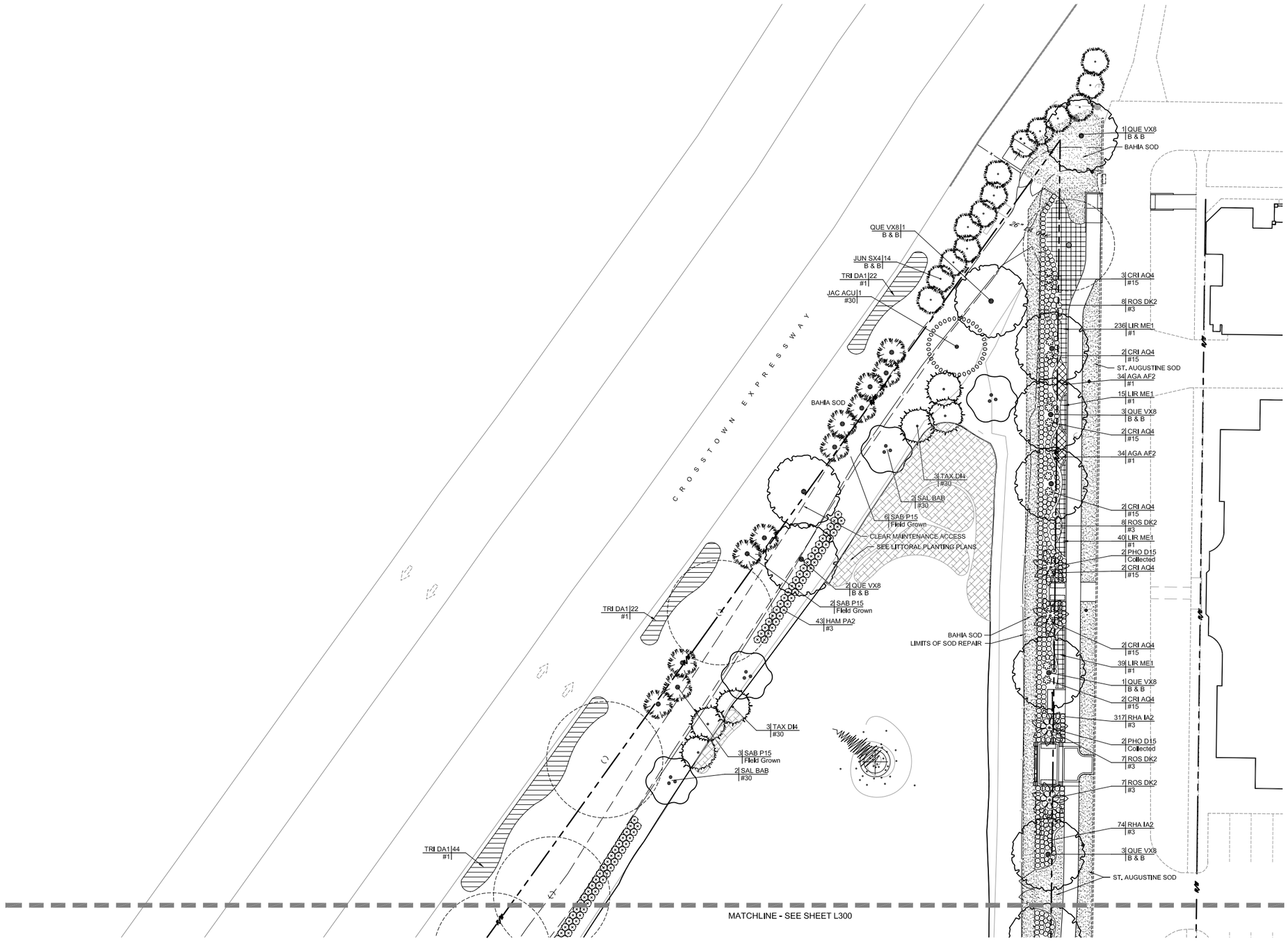
REVISIONS:

Drawing Title:

PLANTING PLAN

Drawing No.:

L300



Landscape Architecture

Urban | Environmental Design

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0001327

F.E. Lykes
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TAMPA, FL

SWANN AVENUE FOUNTAIN PARK

NOTIFY LANDSCAPE ARCHITECT IMMEDIATELY IN EVENTS OF DISCREPANCIES, OMISSIONS, AND/OR CONFLICTS IN THE DRAWINGS OR SPECIFICATIONS. THE CONTRACTOR IS NOT AUTHORIZED TO SCALE THE DRAWINGS. ALL QUESTIONS IN REFERENCE TO CONTRACT DOCUMENTS SHALL BE IMMEDIATELY DIRECTED TO THE LANDSCAPE ARCHITECT.

DCA PROJECT NO.: 13-005
DRAWN BY: JG/DC
CHECKED BY: DC
CAD File:

90% CONSTRUCTION DOCUMENTS

2014-04-15

REVISIONS:

Drawing Title:

PLANTING PLAN

Drawing No.:

L301

West Selmon Extension Project

ERP # 43011759.006

Southwest Florida Water Management District
2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

An Equal Opportunity Employer

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

May 18, 2018

FDOT District 7
Attn: Virginia Creighton
11201 N. McKinley Drive
Tampa, FL 33612

Tampa Hillsborough Expressway Authority
Attn: David May
1104 E. Twiggs Street, Suite 300
Tampa, FL 33602

Subject: **Notice of Intended Agency Action - Approval**
ERP Individual Construction Major Modification

Project Name:	Selmon Western Extension Major Modification
App ID/Permit No:	761309 / 43011759.006
County:	Hillsborough
Sec/Twp/Rge:	S09/T30S/R18E, S05/T30S/R18E, S04/T30S/R18E, S07/T30S/R18E, S08/T30S/R18E

Dear Permittee(s):

The Southwest Florida Water Management District (District) has completed its review of the application for Environmental Resource Permit modification. Based upon a review of the information you have submitted, the District hereby gives notice of its intended approval of the application.

The File of Record associated with this application can be viewed at http://www18.swfwmd.state.fl.us/erp/erp/search/ERPSearch.aspx and is also available for inspection Monday through Friday, except for District holidays, from 8:00 a.m. through 5:00 p.m. at the District's Tampa Service Office, 7601 U.S. Highway 301 North, Tampa, Florida 33637.

If you have any questions or concerns regarding the application or any other information, please contact the Environmental Resource Permit Bureau in the Tampa Service Office.

Sincerely,

Michelle K. Hopkins, P.E.
Bureau Chief
Environmental Resource Permit Bureau
Regulation Division

cc: ESA Scheda
C. Bradley Carver, P.E., AECOM

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Dear Permittee(s):

The Southwest Florida Water Management District (District) is in receipt of your application for the Environmental Resource Permit modification. Based upon a review of the information you submitted, the application is approved.

Please refer to the attached Notice of Rights to determine any legal rights you may have concerning the District's agency action on the permit application described in this letter.

If approved construction plans are part of the permit, construction must be in accordance with these plans. These drawings are available for viewing or downloading through the District's Application and Permit Search Tools located at www.WaterMatters.org/permits.

The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing notice of agency action will close the window for filing a petition for hearing. Legal requirements and instructions for publishing notices of agency action, as well as a noticing form that can be used, are available from the District's website at www.WaterMatters.org/permits/noticing. If you publish notice of agency action, a copy of the affidavit of publication provided by the newspaper should be sent to the District's Tampa Service Office for retention in this permit's File of Record.

If you have any questions or concerns regarding your permit or any other information, please contact the Environmental Resource Permit Bureau in the Tampa Service Office.

Sincerely,

Michelle K. Hopkins, P.E.
Bureau Chief
Environmental Resource Permit Bureau
Regulation Division

Enclosures: Approved Permit w/Conditions Attached
As-Built Certification and Request for Conversion to Operation Phase
Notice of Authorization to Commence Construction
Notice of Rights

cc: ESA Scheda
C. Bradley Carver, P.E., AECOM

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE

INDIVIDUAL CONSTRUCTION MAJOR MODIFICATION
PERMIT NO. 43011759.006

EXPIRATION DATE: **May 18, 2023** **PERMIT ISSUE DATE:** **May 18, 2018**

This permit is issued under the provisions of Chapter 373, Florida Statutes, (F.S.), and the Rules contained in Chapter 62-330, Florida Administrative Code, (F.A.C.). The permit authorizes the Permittee to proceed with the construction of a surface water management system in accordance with the information outlined herein and shown by the application, approved drawings, plans, specifications, and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District). Unless otherwise stated by permit specific condition, permit issuance constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341. All construction, operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Administrative Code and the conditions of this permit.

PROJECT NAME: Selmon Western Extension Major Modification

GRANTED TO: FDOT District 7
Attn: Virginia Creighton
11201 N. McKinley Drive
Tampa, FL 33612

OTHER PERMITTEES: Tampa Hillsborough Expressway Authority
Attn: David May
1104 E. Twiggs Street, Suite 300
Tampa, FL 33602

ABSTRACT: This permit authorization is for the modification of the stormwater management system previously permitted under Permit Nos. 40011759.001 and 43011759.004. The proposed construction includes infrastructure improvements planned within the interchange area (east of the CSX rail) and modifications to the previously permitted stormwater management facilities (Ponds 1, 2, 3A and 3B). Modifications to previously permitted Pond 1 (proposed to be split into Pond 1A and Pond 1B) and Pond 2 (40011759.001) will allow for development of new impervious area (4.23 acres) associated with the extension of the Leroy Selmon Expressway (LSE). The 4.23 acres of new impervious area will drain to Ponds 1A, 1B and 2. Existing Pond 1 and Pond 2 (previously permitted under Permit No. 40011759.001) as well as Ponds 3A and 3B (previously permitted under Permit No. 43011759.004) will now be tracked under this modification, 43011759.006. Ponds 3A and 3B will provide compensatory water quality treatment and water quantity attenuation of existing impervious area that will offset the construction of the new impervious area (6.66 acres) associated with the extension of the LSE. Of the 6.66 acres, 4.98 acres of impervious area will not drain to the existing or modified ponds. The project discharges to Tampa Bay (Category 4b water body); therefore, net improvement is required. A presumptive level of water quality treatment governs and will result in a net improvement for the discharge of nutrients. Water quality certification is waived as a condition of this permit. The Engineer-of-Record (EOR) has demonstrated that the post-development 25-year, 24-hour discharge rates will be limited to the pre-development 25-year, 24-hour discharge rates. The project area is located on the east and west sides of South Dale Mabry Highway at the end of the LSE in Hillsborough County. Information regarding the stormwater management system, 100-year floodplain, wetlands and/or surface waters is stated below and on the permitted construction drawings for the proposed project.

OP. & MAIN. ENTITY: Florida Department of Transportation - District 7

OTHER OP. & MAIN. ENTITY: N/A

COUNTY: Hillsborough

SEC/TWP/RGE:	S09/T30S/R18E, S05/T30S/R18E, S04/T30S/R18E, S07/T30S/R18E, S08/T30S/R18E
TOTAL ACRES OWNED OR UNDER CONTROL:	203.40
PROJECT SIZE:	101.70 Acres
LAND USE:	Road Projects
DATE APPLICATION FILED:	March 02, 2018
AMENDED DATE:	N/A

I. Water Quantity/Quality

POND No.	Area Acres @ Top of Bank	Treatment Type
1A	3.33	MAN-MADE WET DETENTION
1B	5.42	MAN-MADE WET DETENTION
2	9.81	MAN-MADE WET DETENTION
3A	2.64	MAN-MADE WET DETENTION
3B	1.72	MAN-MADE WET DETENTION
	Total: **22.92**	

Water Quantity/Quality Comments: Water quality treatment and water quantity attenuation will be provided in two new man-made wet detention ponds (Ponds 3A and 3B) and two existing man-made wet detention ponds (Pond 1 and Pond 2 previously permitted under MSSW 4011759.001 as North Pond and South Pond, respectively). Pond 1 is proposed to be split into Pond 1A and Pond 1B. Proposed ponds 3A and 3B will be hydraulically connected and will function as one pond. The Engineer-of-Record has provided calculations to show that the stormwater management system has been designed to limit the post-development 25-year, 24-hour discharge rate (after the impervious roadway surface is constructed) to the peak pre-development 25-year, 24-hour discharge rate.

The project discharges to Tampa Bay (Category 4b water body); therefore, net improvement is required. Based on net improvement calculations provided by the Engineer-of-Record, the presumptive criteria will govern for water quality treatment. Water quality certification is waived as a condition of this permit. The Engineer-of-Record has also provided calculations to show that Ponds 1A, 1B and 2 are adequately sized to treat and attenuate for an additional 4.23 acres of new impervious area. Ponds 3A and 3B are also adequately sized to offset an additional 6.66 acres of impervious area, of which 4.98 acres is allotted for the elevated roadway along Gandy Boulevard. The elevated roadway will not receive any direct treatment or attenuation. Compensatory treatment and over-attenuation of existing impervious area will be provided in Ponds 3A and 3B.

The vertical datum listed on the permitted construction drawings is NAVD 1988.
A mixing zone is not required.
A variance is not required.

II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type	Encroachment Result* (feet)
0.00	0.00	No Encroachment	N/A

***Depth of change in flood stage (level) over existing receiving water stage resulting from floodplain encroachment caused by a project that claims Minimal Impact type of compensation.

III. Environmental Considerations

Wetland/Other Surface Water Information

Wetland/Other Surface Water Name	Total Acres	Not Impacted Acres	Permanent Impacts		Temporary Impacts	
			Acres	Functional Loss*	Acres	Functional Loss*
Pond 1- Littoral	2.31	2.02	0.29	0.10	0.00	0.00
Pond 2- Littoral	2.32	1.78	0.54	0.18	0.00	0.00
Total:	**4.63**	**3.80**	**0.83**	**0.28**	**0.00**	**0.00**

*** For impacts that do not require mitigation, their functional loss is not included.**

Wetland/Other Surface Water Comments:
The project area for this ERP modification is adjacent to wetlands and surface waters that have been previously approved and reported in ERP 43011759.004, entitled Selmon West Extension (THEA PROJ# 0-16-01515), issued April 14, 2017. This permit modification reduces the impacts to Pond 1- Littoral from 0.70-acre to 0.29-acre and increases the impact to Pond 2- Littoral from 0.14-acre to 0.54-acre. The functional loss associated with these two impacts totals 0.28 unit which will be offset by the 0.28 unit of herbaceous credit purchased from Tampa Bay Mitigation Bank, as authorized under ERP 43011759.004.

Mitigation Information

Name	Creation		Enhancement		Preservation		Restoration		Enhancement +Preservation		Other	
	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain
Tampa Bay Mitigation Bank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28
Total:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.28**

Mitigation Comments:
Wetland mitigation for permanent filling and dredging impacts was provided by the purchase of 0.28-unit of freshwater herbaceous (FLUCCS 641) credits from the Tampa Bay Mitigation Bank, ERP No. 43020546.042, as authorized by ERP 43011759.004, Selmon West Extension (THEA PROJ# 0-16-01515), issued April 14, 2017.

Specific Conditions

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit may be terminated, unless the terms of the permit are modified by the District or the permit is transferred pursuant to Rule 40D-1.6105, F.A.C. In such situations, each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.

2. The Permittee shall retain the design professional registered or licensed in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The Permittee shall inform the District in writing of the name, address and phone number of the design professional so employed. This information shall be submitted prior to construction.

3. Wetland buffers shall remain in an undisturbed condition except for approved drainage facility construction/maintenance.

4. The following boundaries, as shown on the approved construction drawings, shall be clearly delineated on the site prior to initial clearing or grading activities:

   a. wetland and surface water areas

   b. wetland buffers

   c. limits of approved wetland impacts

   The delineation shall endure throughout the construction period and be readily discernible to construction and District personnel.

5. This Permit Modification No. 43011759.006, amends the previously issued Permit Nos. 40011759.001 and 43011759.004, and adds conditions. The perpetual operation, maintenance and reinspection requirements for all ponds previously permitted under 40011759.001 and 43011759.004 will be tracked under this Permit Modification No. 43011759.006, upon transfer of this permit modification to the operation phase (Condition No. 11 of Permit 43011759.004 and Tracking Condition No. 3 of Permit 40011759.001 shall be replaced by Condition No. 10 of this Permit Modification 43011759.006).

6. Certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341 is waived.

7. If limestone bedrock is encountered during construction of the stormwater management system, the District must be notified and construction in the affected area shall cease.

8. The Permittee shall notify the District of any sinkhole development in the stormwater management system within 48 hours of discovery and must submit a detailed sinkhole evaluation and repair plan for approval by the District within 30 days of discovery.

9. The Permitted Plan Set for this project includes the set received by the District on May 2, 2018.

10. The operation and maintenance entity shall provide for the inspection of the permitted project

after conversion of the permit to the operation and maintenance phase. For systems utilizing retention or wet detention, the inspections shall be performed five (5) years after operation is authorized and every five (5) years thereafter.

The operation and maintenance entity must maintain a record of each inspection, including the date of inspection, the name and contact information of the inspector, whether the system was functioning as designed and permitted, and make such record available upon request of the District.

Within 30 days of any failure of a stormwater management system or deviation from the permit, an inspection report shall be submitted using Form 62-330.311(1), "Operation and Maintenance Inspection Certification" describing the remedial actions taken to resolve the failure or deviation.

11. District staff must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters, a written dewatering plan must either have been submitted and approved with the permit application or submitted to the District as a permit prior to the dewatering event as a permit modification. A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2, F.A.C.

12. Off-site discharges during construction and development shall be made only through the facilities authorized by this permit. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the District.

13. The permittee shall complete construction of all aspects of the stormwater management system, including wetland compensation (grading, mulching, planting), water quality treatment features, and discharge control facilities prior to beneficial occupancy or use of the development being served by this system.

14. The following shall be properly abandoned and/or removed in accordance with the applicable regulations:

    a. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor.

    b. Any existing septic tanks on site shall be abandoned at the beginning of construction.

    c. Any existing fuel storage tanks and fuel pumps shall be removed at the beginning of construction.

15. All stormwater management systems shall be operated to conserve water in order to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property and to minimize dewatering of offsite property.

16. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity.

17. This permit is valid only for the specific processes, operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application. Any substantial deviation from the approved drawings, exhibits, specifications or permit conditions, including construction within the total land area but outside the approved project area(s), may constitute grounds for revocation or enforcement action by the District, unless a modification has been applied for and approved. Examples of substantial deviations include excavation of ponds, ditches or sump areas deeper than shown on the approved plans.

GENERAL CONDITIONS

1. The general conditions attached hereto as Exhibit "A" are hereby incorporated into this permit by reference and the Permittee shall comply with them.

Michelle K. Hopkins, P.E.

Authorized Signature

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

Selmon West Extension

THEA Project No. O-16-01515
FPID Number 439023-1-52-01

DRAINAGE DESIGN DOCUMENTATION

Prepared for:

Tampa Hillsborough Expressway Authority

Prepared by:

ICON Consultant Group

in association with

WSP | Parsons Brinckerhoff

February, 2017

WSP | PARSONS BRINCKERHOFF

ICON CONSULTANT GROUP INCORPORATED

SIGNATURE PAGE
PROFESSIONAL ENGINEER'S SEAL

Drainage Design Documentation
Selmon West Extension

ICON Consultant Group, Inc.
10006 N. Dale Mabry Highway, Suite 201
Tampa, Florida 33618-4422
813.962.8689 (phone)

State of Florida Authorization No.: 8230

Engineer in Responsible Charge:	Michael E. Mills, PE
Professional Registration No.:	43359

SIGN / DATE / SEAL:

The official record of this sheet is the electronic file digitally signed and sealed under Rule 61G15-23.004, F.A.C.

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LIST OF EXHIBITS

EXHIBIT NO.	EXHIBIT TITLE
Exhibit 1	Pre/Post-Development Drainage Maps
Exhibit 2	Flood Map
Exhibit 3	Previously Permitted Basin Determinations
Exhibit 4	Pre-Development Basin DCIA Determinations
Exhibit 5	Pre-Development Pond Storage Computations
Exhibit 6	Post-Development Basin DCIA Determinations
Exhibit 7	Post-Development Pond Storage and Residence Volume Computations
Exhibit 8	Pond 3A Baffle Head Loss and Treatment Volume Bleed-down Notch Sizing Calculations
Exhibit 9	Water Quality Net Improvement Calculations
Exhibit 10	Pre-Development ICPR Model Input and Routing Summary
Exhibit 11	Post-Development ICPR Model Input and Routing Summary
Exhibit 12	Pre/Post-Development Model Routing Summary Comparison Table
Exhibit 13	City of Tampa Drainage Atlas Maps
Exhibit 14	SWFWMD Pre-application Meeting Notes
Exhibit 15	FDOT and City of Tampa - Gandy Boulevard Flooding History Documentation
Exhibit 16	Gandy Boulevard Additional Impervious Areas
Exhibit 17	Permitted Pond & Proposed Impact Locations

APPENDICES

APPENDIX NO.	APPENDIX TITLE
Appendix A	Dames and Moore 1995 SR-600 Drainage Report
Appendix B	Geotechnical Report
Appendix C	Environmental Narrative Report
Appendix D	Excerpts from ERP #4011339.00

Executive Summary

The purpose of this report is to describe the proposed project stormwater management system designed to meet federal, state and local stormwater management requirements, for the proposed improvements to and the extension of the Leroy Selmon Expressway (LSE), located within the City of Tampa interbay peninsula, in Hillsborough County, Florida. The proposed project consists of the LSE construction of an elevated roadway, over existing Gandy Boulevard, extending east from Old Tampa Bay approximately 2.5 miles before merging into the existing LSE interchange, east of Dale Mabry Highway (SR-600). The proposed improvements will also warrant the construction of new on/off ramps at Gandy Boulevard and at Dale Mabry Highway, as well as the expansion and re-grading of the existing stormwater ponds located near the ramps.

The project study area is mostly developed and has been the subject of several regional drainage studies, permits and subsequent modifications. Refer to the project Drainage Maps, included in Exhibit 1. A brief history of the regional studies and related improvements include:

- South Crosstown Expressway (aka LSE) design/construction, early 1970's – original construction of the expressway and related drainage facilities.
- October, 1990 Norma Park Study (ERP#8562.00, 4-11-91), prepared by Camp Dresser and McKee, Inc. - 2.71 Square mile basin/drainage study that included the three LSE ponds. The study was prepared for the City of Tampa Public Works Department so as to identify existing flooding within the basin and to assess and develop potential solutions to alleviate said flooding.
- January, 1995 Dames & Moore modifications (ERP#11759.001, issued 5-31-95) for the widening of Dale Mabry Highway, which proposed to expand and utilize the storage within the LSE interchange, north of Gandy Blvd into formal stormwater management facilities that meet ERP rules. Regional Ponds 1 & 2 were constructed as a result of this permit provided for a significant amount of surplus water quality for its contributing drainage area.
- November, 1996 Dames & Moore pond modifications - revised Pond 2 berms to accommodate CSX railroad requirements. The modification included the regrading of the southern of the two ponds (Pond 2); which yielded additional storage within Pond 2.

The original Norma Park drainage study and related stormwater model encompassed 2.71 square miles and consisted of 6 major drainage basins, with numerous sub-basins draining to the related nodes which were then connected by links and modelled to the ultimate discharge at Old Tampa Bay. This model used a combination of MSSM and SWMM3 computer programs, but did not analyze the LSE ponds hydrodynamically, but rather used a rating curve to estimate the pond discharge. The Dames and Moore drainage model used the Norma Park study as a base but then revised it to use the SWMM4EXTRAN software and also made the needed changes to reflect the Dale Mabry Highway improvements. The currently proposed model is an ICPR model that builds on the Dames and Moore model with added modifications to reflect the currently proposed improvements and software. Since the proposed changes are to occur within Basins 5 and 6, located at the headwaters of the previous study area, the proposed model has been truncated to facilitate the analysis.

Basin 5 revisions include the interchange modifications that are located within the basin, plus the compensatory treatment and over-attenuation needed to account for the additional 5.5 acres of proposed roadway improvements that are to occur west (downstream) of the ponds, refer to Exhibit 16. The expansion of the existing ponds that are located south of Gandy Boulevard are also proposed with this modification. The proposed pond improvements include widening of the existing surface water areas (Ponds 3A and 3B)

and the addition of a control structure weir at the existing 6'x7' CBC outfall, located within the downstream Pond 3B. These two ponds are interconnected by an existing 6' x 7' CBC and are designed to provide the needed basin treatment as well as the required attenuation for all proposed improvements. In accordance with THEA, FDOT, Southwest Florida Water Management District (SWFWMD) and City of Tampa (COT) rules and regulations, the post-development peak discharge rate from the 25-year/24-hour design storm event will be limited to that of the pre-development case while also maintaining existing peak stage elevations. The 100-year/24-hour storm has been evaluated to ensure no adverse impacts will occur as a result of the proposed improvements. Additional treatment and attenuation will also be provided in the ponds to off-set potential impacts associated with the proposed roadway improvements that are to occur downstream, west of the railroad, as well as those to occur within Basin 6, north of Gandy Blvd.

Basin 6 improvements include the proposed roadway work within the basin as well as the regrading of the existing ponds needed to accommodate these improvements. The northernmost pond (Pond 1) will be regraded, pond berms will be reduced to 15 ft. minimum and side slopes will be increased to 3:1, so as to off-set the volumetric impacts associated with the construction of the new ramps. The southern pond (Pond 2) will mostly be unaffected by the proposed improvements, except for some minor berm encroachments, since the majority of the proposed roadway will be bridged over the pond area. Other than the Pond 1 regrading, no significant improvements are proposed to the stormwater management system within Basin 6. The existing pond interconnect CBC and inflow pipes will be extended as needed to accommodate the LSE widening but the Pond 2 control structure will remain the same. Treatment for the additional Basin 6 roadway impervious area is provided within the existing ponds. Attenuation for the additional impervious areas proposed within Basin 6 will be provided in the Basin 5 ponds (Ponds 3A & 3B).

The proposed project drainage basins are located within Waterbody IDs (WBID) 1609 and 1640, associated with direct runoff to Old Tampa Bay and Rattlesnake Ditch, neither of which are shown to be impaired in the FDEP Statewide BMAP or Verified Impaired listings. Per SWFWMD policies, due to parts of the Bay being impaired for nitrogen, phosphates and nutrients, net improvement water quality treatment is provided for the proposed roadway improvements within the existing and proposed ponds (Ponds 1, 2, 3A and 3B). Also, since previous Dames and Moore Ponds 1-2 construction provided planted vegetated shelves to off-set previous surface water impacts, all proposed encroachments into these existing vegetated shelves have been quantified and mitigated for, as part of the proposed improvements. Refer to the Environmental Narrative included in Appendix C.

A pre/post-development hydraulic analysis was developed for the project to demonstrate that no adverse impacts will occur, for the 25 and 100-year/24-hour storm events, as a result of the proposed improvements. See summary table on the following page.

Pre/Post-Development Routing Summary

Node Name	Node Description	Pre-Dev Peak Stage (ft.)	Post-Dev Peak Stage (ft.)	Difference In Peaks (ft.)	Pre-Dev Peak Inflow (cfs.)	Post-Dev Peak Inflow (cfs.)	Difference In Peaks (cfs.)	Pre-Dev Peak Outflow cfs	Post-Dev Peak Outflow cfs	Difference In Peaks (cfs.)
				25-year/24-hour Storm						
*10429	Bndry Node	6.75	6.75	0.00	166.26	165.65	-0.61	0	0	0.00
10432	Gandy J-box	7.35	7.37	0.02	162.12	169.46	7.34	162.12	164.13	2.01
25591A	**Pond 3A	7.9	7.88	-0.02	129.48	129.62	0.14	127.46	126.61	-0.85
25591B	**Pond 3B	7.53	7.68	0.15	127.58	127.38	-0.20	127.52	139.5	11.98
25691	**Pond 2	7.79	7.82	0.03	62.49	65.3	2.81	46.8	49.91	3.11
25692	**Pond 1	7.87	7.88	0.01	90.94	92.22	1.28	37.08	37.58	0.50
				100-year/24-hour Storm						
*10429	Bndry Node	6.75	6.75	0.00	258.44	254.63	-3.81	0	0	0.00
10432	Gandy J-box	8.19	8.2	0.01	251.18	252.03	0.85	251.18	252.03	0.85
25591A	Pond 3A	9.35	9.38	0.03	201.69	200.97	-0.72	193.19	192.02	-1.17
25591B	Pond 3B	8.6	8.92	0.32	193.82	194.8	0.98	193.36	190.04	-3.32
25691	Pond 2	8.87	8.89	0.02	101.74	105.27	3.53	75.48	73.92	-1.56
25692	Pond 1	8.97	8.98	0.01	153.45	155.55	2.10	60.9	64.96	4.06

Stormwater management facilities for this project have been designed to meet the current Environmental Resource Permit (ERP) requirements mandated by the SWFWMD. The proposed ponds provide water quality treatment to meet net improvement, as required by SWFWMD. Littoral zone mitigation is provided for the proposed impacts. Water quantity attenuation complies with THEA, FDOT, and SWFWMD criteria.

Supplemental drainage information can be found in the Dames and Moore SR-600 Improvements 1995 Drainage Report included as Appendix A

1.0 General Project Information

1.1 Introduction

The Tampa-Hillsborough Expressway Authority (THEA), proposes the extension of the existing Leroy Selmon Expressway (LSE), within the interbay peninsula of the City of Tampa, in Hillsborough County, Florida. The purpose of this report is to describe the proposed project stormwater management system designed to meet federal, state and local stormwater management requirements, for the proposed improvements. The proposed project consists of the construction of an elevated roadway over existing Gandy Boulevard that will extend east from Old Tampa Bay approximately two miles before merging into the existing LSE interchange, east of Dale Mabry Highway. The proposed improvements will warrant the construction of new on/off ramps at Gandy Boulevard and at Dale Mabry Highway, as well as the expansion and re-grading of the existing stormwater ponds located near the ramps.

Stormwater management facilities for this project have been updated/designed to meet the current Environmental Resource Permit (ERP) requirements mandated by the SWFWMD. The established criteria that guided the approach to the stormwater management system design along with the methodology and analytical procedures used are listed in this report. ***All elevations presented in this report and in the corresponding plans are based on the North American Vertical Datum of 1988 (NAVD88).***

1.2 Project Location

The proposed LSE improvement project is located within the interbay peninsula of the City of Tampa, in Hillsborough County, Florida. The project limits extend along and overtop of the existing Gandy Boulevard from Old Tampa Bay east to Dale Mabry Highway (SR-600). The project also includes the construction of new on/off ramps at Gandy Boulevard and at Dale Mabry Highway, as well as the expansion and re-grading of the existing stormwater ponds located near the ramps.

The project's physical location can be found in the vicinity of Sections 4, 5, 8 & 9; Township 30S, Range 18E. Refer to Figure 1-1A and 1-1B Project Vicinity and Location Map, on the following pages.

1.3 Project Description

The proposed project consists of the LSE construction of an elevated two-lane roadway, over existing Gandy Boulevard, extending east from Old Tampa Bay approximately 2.5 miles before merging into the LSE interchange, east of Dale Mabry Highway (SR-600). The proposed elevated roadway section consists of two-15 ft. lanes with internal and external 6 ft. -12 ft. shoulders. Refer to the Typical Roadway Sections shown in Figures 1-2A and 1-2B. The proposed improvements will also warrant the construction of new on/off ramps at Gandy Boulevard and at Dale Mabry Highway, as well as the expansion and re-grading of the existing stormwater ponds located near the ramps.

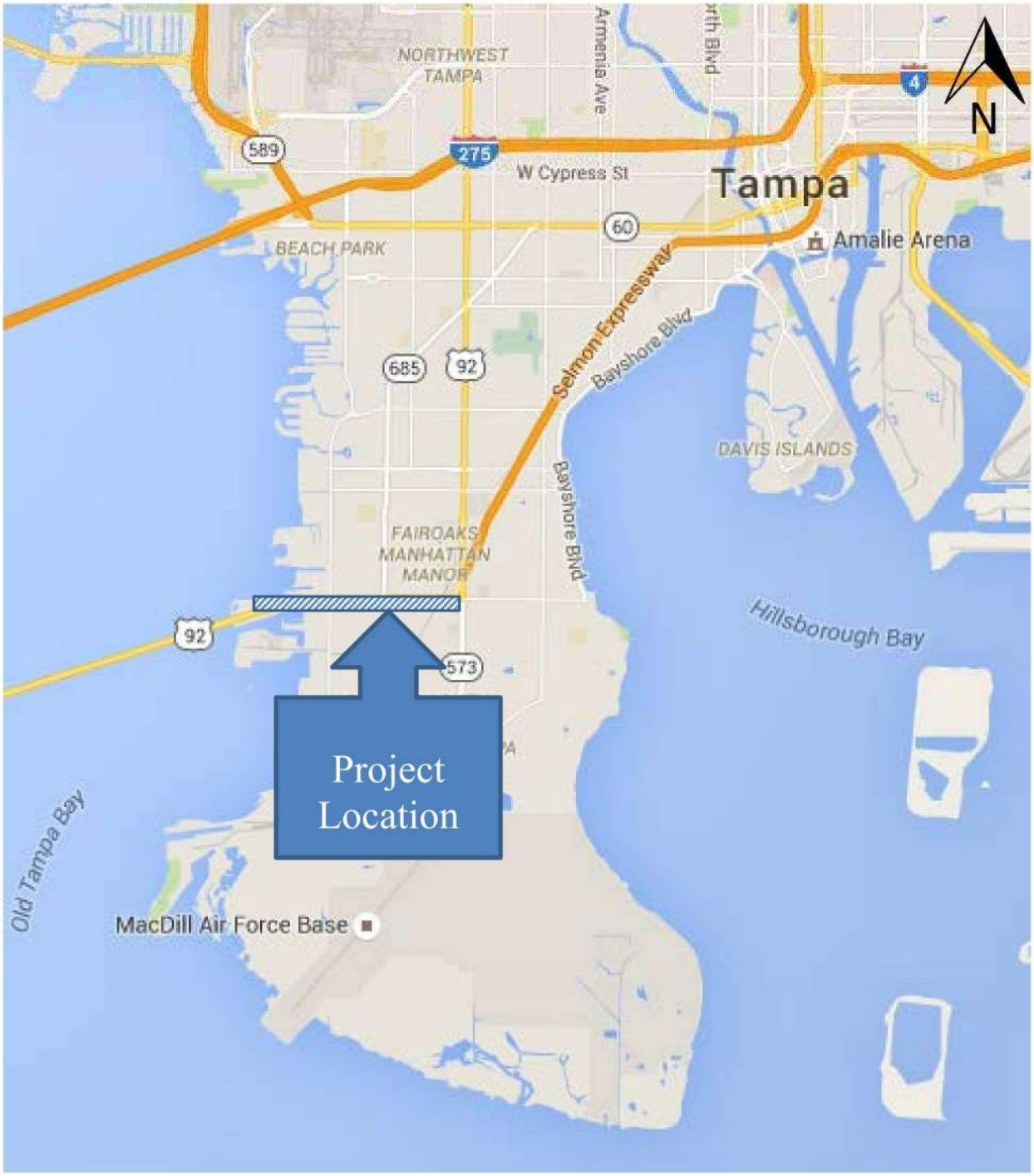


Figure 1-1A: Project Vicinity Map

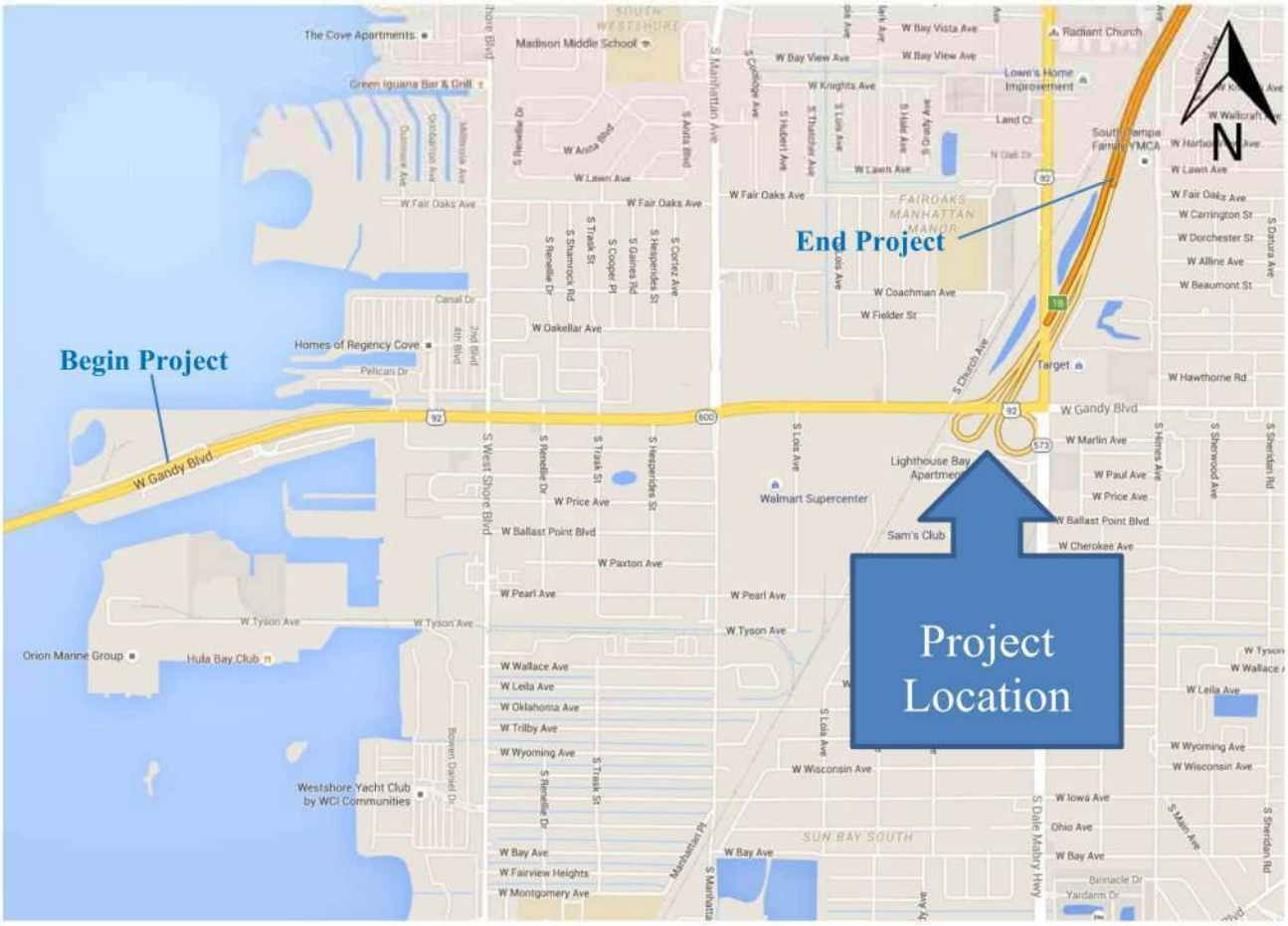
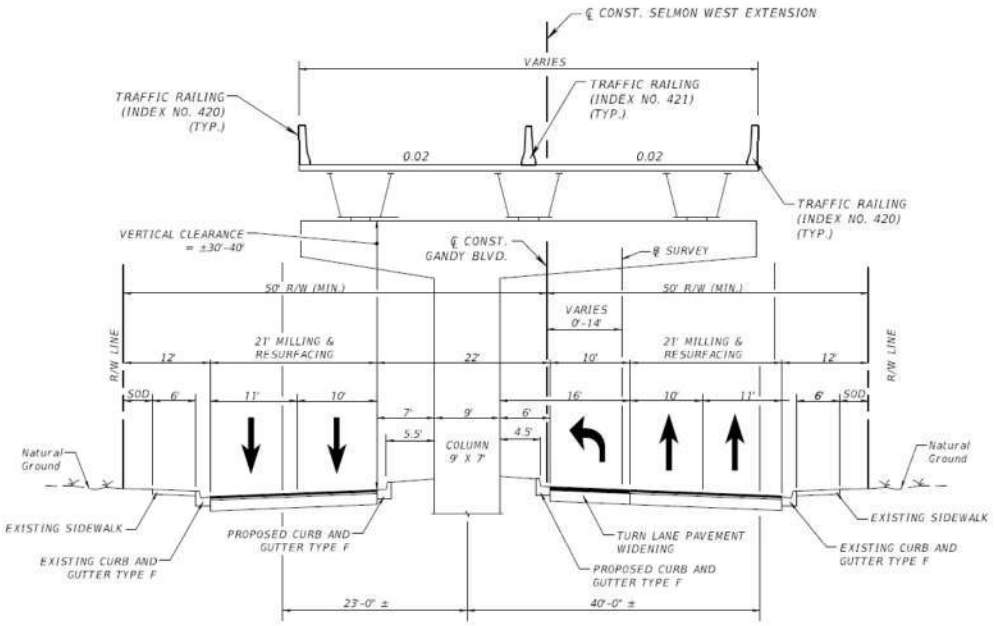


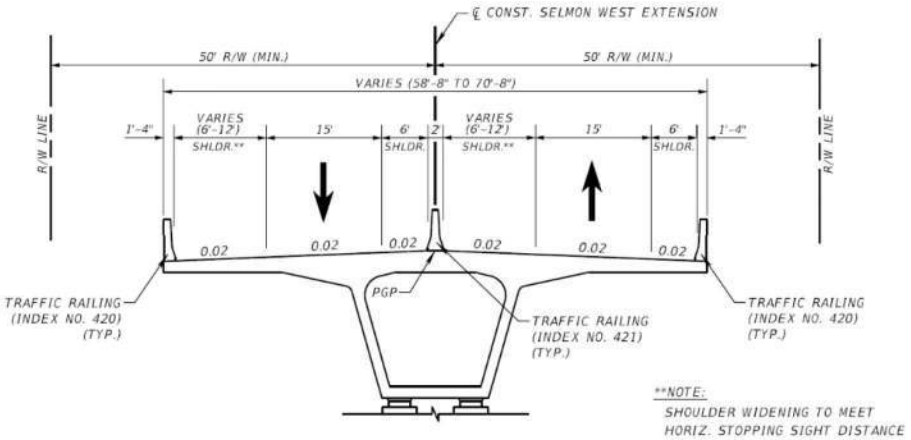
Figure 1-1B: Project Location Map



TYPICAL SECTION
GANDY BLVD. (US 92/SR 600) & ELEVATED SECTION
DESIGN SPEED = 45 MPH (AT-GRADE)
DESIGN SPEED = 50 MPH (ELEVATED)
N.T.S.

STA. 632+70.62 TO STA. 703+80.00 ℄ CONST.

Figure 1-2A: Proposed Gandy Boulevard Elevated Roadway Typical Section



TYPICAL SECTION
SELMON WEST EXTENSION (SR 618)
[SEGMENTAL BRIDGE ALTERNATIVE]
DESIGN SPEED = 50 MPH
N.T.S.

STA. 632+70.62 TO STA. 703+80.00 ℄ CONST.

Figure 1-2B: Proposed Selmon West Extension Elevated Roadway Typical Section

1.4 Watershed Description

The project corridor is located within the interbay peninsula and Rattlesnake Ditch watersheds, in Hillsborough County, Florida. Refer to the project Drainage Maps included in Exhibit 1.

The original Norma Park drainage study and related stormwater model encompassed 2.71 square miles and consisted of 6 major drainage basins, with numerous sub-basins draining to the related nodes which were then connected by links and modelled to the ultimate discharge at Old Tampa Bay. The Dames and Moore drainage model used the Norma Park study as a base but then revised it to reflect the changes needed for the Dale Mabry highway improvements. The currently proposed model builds on the Dames and Moore model with added modifications to reflect the currently proposed improvements. The proposed work involves mostly just the areas that drain to the existing expressway ponds, shown as Basins 5 and 6 on the previous and current drainage studies.

Basin 5 is roughly 348 acres in size and includes those areas that drain to the portion of the Gandy Boulevard and Dale Mabry Highway interchange located south of Gandy. The basin is mostly developed with a mix of residential and commercial uses. The basin drains to the existing pond located south of Gandy Boulevard (Pond 3) by means of various open conveyance ditches or closed storm sewer systems. The storm sewer systems are located within Dale Mabry Highway and Gandy Boulevard and extend south and east from the intersection; the main portions of which are included in the stormwater models for analysis purposes.

Basin 6 is roughly 202.5 acres in size and includes those areas draining to the existing ponds (Ponds 1-2) located north of Gandy Boulevard and west of the Expressway. The basin is mostly developed with land uses ranging from residential and commercial to open parks. Drainage flows from the sub-basin areas are conveyed to the existing ponds by way of open ditches and closed storm sewer systems; portions of which are also included in the pre/post-development stormwater models for review.

The existing interchange and pond south of Gandy Boulevard were constructed with the original expressway improvements in the early 1970's. The ponds north of Gandy Boulevard were later modified to provide treatment and attenuation for portions of the expressway as well as off-site areas. All three ponds discharge by way of two existing 6' x 7' CBC to a common junction box located underneath the adjacent Gandy Boulevard roadway. The junction box is connected to an existing 4' x 10' CBC that extends west and discharges to an open paved channel just west of South Manhattan Avenue. This paved channel conveys flows west and ultimately drains to Old Tampa Bay. No significant chronic drainage problems or flooding have been reported along Gandy Boulevard, refer to the FDOT flooding history documentation included in Exhibit 15.

1.5 Soils Information

The drainage basins currently contributing runoff to the existing project stormwater management system (Ponds 1, 2 & 3) are mostly developed highly urbanized areas with internal stormwater management facilities. Based upon a review of the Natural Resource Conservation Service (NRCS) Soil Survey for Hillsborough County, Florida; the existing soils within the study area consist mostly of Immokalee and Myakka - Urban complex soils, Urban lands and Malabar fine sands. The table below shows the soil types encountered within the study area. See Figure 1-3 and 1-4, Project Soils and Soils Map provided on the following pages. A Prelimnary Geotechnical Data Report was prepeared by Tierra, Inc. and is included in Appendix B.

Hillsborough County, Florida (FL057)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
22	Immokalee-Urban land complex	51.6	9.9%
27	Malabar fine sand	178.2	34.2%
32	Myakka-Urban land complex	238.8	45.9%
56	Urban land	39.1	7.5%
99	Water	13.1	2.5%
Totals for Area of Interest		**520.8**	**100.0%**

Figure 1-3: Project Soils

Figure 1-4: Soils Map

1.6 Floodplain

Based on current information shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Hillsborough County, Florida (FIRM Map Number 12057C0344H Map Panel 344, effective August 28, 2008), the project area lies within Zone AE (areas determined by FEMA to be located within the 100-year flood plain) and Zone X (areas determined by FEMA to be outside the 0.2% annual chance floodplain). Refer to the project FEMA FIRM included in Exhibit 2. The portion of the project located within the 100-year flood is the elevated roadway section located west of the existing railroad. Any minor encroachment into the flood plain will not require flood plain mitigation since this is a coastal flood zone.

1.7 Wetlands / Protected Species

One mangrove swamp wetland (Wetland #MG1) is located within the proposed project area. The impacts to MG1 include 0.05 acre of direct impact and 0.06 acre of secondary impact. The proposed improvements will have minimal impacts to existing surface waters. Given that previous Dames and Moore Pond 1-2 construction provided planted vegetated shelves to off-set previous surface water impacts, all proposed encroachments into these existing vegetated shelves have been quantified. Mitigation for the mangrove swamp and littoral shelf impacts will be provided through the purchase of mitigation bank credits from the Tampa Bay Mitigation Bank.

Impacts to protected plant and wildlife species are anticipated to be minimal. No impacts to protected plants are anticipated with the proposed construction. Impacts to wildlife are anticipated to affect, to a minimal extent, wading bird foraging areas. Proposed impacts to wood stork suitable forage habitat (SFH) is temporary and will be offset through the purchase of mitigation bank credits. While the presence of eastern indigo snakes is unlikely, the design-build contractor will be responsible for following the U.S. Fish and Wildlife Service (FWS) Standard Protection Measures for the Eastern Indigo Snake (August 12, 2013). For additional details regarding wetlands/surface waters and protected species relative to regulatory permitting requirements of the Southwest Florida Water Management District, U.S. Army Corps of Engineers, and associated commenting agencies, please reference the Environmental Narrative Report included in Appendix C and also submitted separately.

1.8 Field Reviews and Coordination

The project study area is mostly developed and has been the subject of several regional drainage studies, permits and subsequent modifications. The original Norma Park drainage study and later modifications by Dames and Moore were determined to be the best available information to use as a basis for the currently proposed improvement design. The existing drainage basins and proposed design concepts were established using these previously permitted drainage studies. Icon staff then conducted field investigations and stakeholder inquiries to confirm the existing basins and drainage conditions still match those previously determined.

SWFWMD pre-application meetings were held on November 4, 2015 and on April 29, 2016 at the Tampa office. The purpose of these meetings was to discuss general permitting design criteria for the proposed project. Refer to the SWFWMD pre-application meeting notes included in Exhibit 14.

ICON staff contacted Mr. Harvey Hunt, with the FDOT Tampa Operations Office, regarding known historical flooding/drainage issues along the project corridor. Mr. Hunt had his staff check and later reported that based on discussions with FDOT Maintenance employees in the Tampa office, no chronic

flooding issues were reported along the project corridor. Refer to the FDOT Gandy Boulevard Flooding History Documentation included in Exhibit 15.

ICON staff also contacted Alex Awad and John Early of the City of Tampa Stormwater Department regarding known historical drainage problems reported along the project corridor. They provided a map which identifies reported drainage problems within the basin. Refer to the City of Tampa Drainage Atlas Maps included in Exhibit 15. Again no significant chronic drainage problems were reported along the project corridor.

The project stormwater management system was reviewed on June 7, 2016, following a rain event related to Tropical Storm Colin. No flooding was observed near the existing pond areas or in the adjacent rights of way.

1.9 Reference and Resource Information

Existing Studies/ Plans/ Reports:

- South Crosstown Expressway (aka LSE) design/construction, early 1970's – original construction of the expressway and related stormwater management system.
- October, 1990 Norma Park Study (ERP#8562.00, 4-11-91), prepared by Camp Dresser and McKee, Inc. - 2.71 Square mile basin/drainage study that included the three LSE ponds. The study was prepared for the City of Tampa Public Works Department so as to identify existing flooding within the basin and to assess and develop potential solutions to alleviate said flooding.
- Gandy Bridge Replacement Project (ERP #4011339.00, issued 12-20-93) for the replacement of the westbound Gandy Bridge, and the reconstruction of the approaches on either end in both Hillsborough and Pinellas Counties.
- January, 1995 Dames & Moore modifications (ERP#11759.001, issued 5-31-95) for the widening of Dale Mabry Highway, which also revised the previously constructed LSE ponds located north of Gandy Blvd. (Ponds 1 & 2).
- November, 1996 Dames & Moore pond modifications - revised Pond 2 berms to accommodate CSX railroad requirements. The modification included the regrading of the southern of the two ponds (Pond 2); which yielded an additional 1.95 ac-ft of pond storage, from normal water level to the top of bank elevation, and 0.95 Ac. of additional area at the pond normal water level.
- City of Tampa Drainage Atlas Maps
- South Crosstown Expressway Construction plans
- Gandy Boulevard resurfacing and drainage improvement plans
- Gandy Sherwood Villas construction plans
- Himes Avenue Sports Complex construction plans
- South Tampa YMCA – Phase 1 construction plans
- ERP 430200091.005 – Aristocrat Apartments ERP permit
- Dale Mabry Crossings Parking Expansion plans
- Express Oil Change (Dale Mabry Hwy.) plans
- South Dale Mabry Medical plans
- Gandy Commons construction plans

Maps & Surveys:

- SWFWMD aerial / topographic maps
- Published Topographic LiDAR Mapping
- Federal Emergency Management Agency (FEMA) Maps
- Soil Survey of Hillsborough County, United States Department of Agriculture
- Project-specific aerials and survey

2.0 Existing Drainage Characteristics

The project corridor is located within the interbay peninsula and Rattlesnake Ditch watersheds, in Hillsborough County, Florida. The project study area is mostly developed and has been the subject of several regional drainage studies, permits and subsequent modifications. Refer to the project Pre-Development Regional Drainage Map included in Exhibit 1. A brief history of the regional studies and related improvements include:

- South Crosstown Expressway (aka LSE) design/construction, early 1970's – original construction of the expressway and related stormwater management system.
- October, 1990 Norma Park Study (ERP#8562.00, 4-11-91), prepared by Camp Dresser and McKee, Inc. - 2.71 Square mile basin/drainage study that included the LSE Interchange. The study was prepared for the City of Tampa Public Works Department so as to identify existing flooding within the basin and to assess and develop potential solutions to alleviate said flooding.
- January, 1995 Dames & Moore modifications (ERP#11759.001, issued 5-31-95) for the widening of Dale Mabry Highway, which proposed to expand and utilize the storage within the LSE interchange, north of Gandy Blvd into formal stormwater management facilities that meet ERP rules. Regional Ponds 1 & 2 were constructed as a result of this permit provided for a significant amount of surplus water quality for its contributing drainage area.
- November, 1996 Dames & Moore pond modifications - revised Pond 2 berms to accommodate CSX railroad requirements. The modification included the regrading of the southern of the two ponds (Pond 2); which yielded additional storage within Pond 2.

The original Norma Park drainage study and related stormwater model encompassed 2.71 square miles and consisted of 6 major drainage basins, with numerous sub-basins draining to the related nodes which were then connected by links and modelled to the ultimate discharge at Old Tampa Bay. The Dames and Moore drainage model used the Norma Park study as a base but then revised it to reflect the changes needed for the Dale Mabry highway improvements. The currently proposed model builds on the Dames and Moore model with added modifications to reflect the currently proposed improvements. The proposed work involves mostly just the areas that drain to the existing expressway ponds, shown as Basins 5 and 6 on the previous and current drainage studies.

Basin 5 is roughly 348 acres in size and includes those areas that drain to the portion of the Gandy Boulevard and Dale Mabry Highway interchange located south of Gandy. The basin is mostly developed with a mix of residential and commercial uses. The basin drains to the existing pond located south of Gandy Boulevard (Pond 3) by means of various open conveyance ditches or closed storm sewer systems. The storm sewer systems are located within Dale Mabry Highway and Gandy Boulevard and extend south and east from the intersection; the main portions of which are included in the stormwater models for analysis purposes.

Basin 6 is roughly 202.5 acres in size and includes those areas draining to the existing ponds (Ponds 1-2) located north of Gandy Boulevard and west of the Expressway. The basin is mostly developed with land uses ranging from residential and commercial to open parks. Drainage flows from the sub-basin areas are conveyed to the existing ponds by way of open ditches and closed storm sewer systems; portions of which are also included in the pre/post-development stormwater models for review.

The existing interchange and pond south of Gandy Boulevard were constructed with the original expressway improvements in the early 1970's. The ponds north of Gandy Boulevard were later modified to provide treatment and attenuation for portions of the expressway as well as off-site areas. All three ponds

discharge by way of two existing 6' x 7' CBC to a common junction box located underneath the adjacent Gandy Boulevard roadway. The junction box is connected to an existing 4' x 10' CBC that extends west along the north right of way of Gandy Blvd. where it then increases to a double 6' x 4' CBC west of Clark Ave. The CBC then increases to a double 8' x 4' at Manhattan Ave. and extends west approximately 1000 feet, where it then discharges to an open paved channel north of Gandy. This paved channel conveys flows west and ultimately drains to Old Tampa Bay. Some flooding was reported in news articles for this downstream conveyance system last year, but these were related to an unusually wet summer and the temporary obstruction of an existing culvert by floating debris. The incident was reported by the maintenance department of the FDOT, refer to the flooding history documentation included in Exhibit 15. No other significant/chronic drainage problems or flooding have been reported along Gandy Boulevard, related to the conveyance capacity of the system.

2.1 Existing Drainage West of Leroy Selmon Expressway

Runoff along the eastern causeway of the Gandy Bridge from the bridge approach to approximately 300 ft. west of Bridge Street (Sta. 637+80) is conveyed to the existing median and roadside ditches via overland flow or existing drainage inlets located along the barrier wall. The existing ditches provide treatment prior to discharging to Old Tampa Bay. These ditches were permitted (ERP #4011339.00, issued 12-20-93) to be dry retention treatment ponds during the Gandy Bridge Replacement Project, which included replacing the westbound Gandy Bridge, and reconstruction of the approaches in either end in both Hillsborough and Pinellas Counties. Attenuation was not provided since the runoff directly discharged to Old Tampa Bay. The table below summarizes the required and permitted treatment volumes of the ponds from the ERP #4011339.00. Refer to Exhibit 17 for a depiction of the permitted pond locations and Appendix D to view excerpts of ERP #4011339.00.

Pond Number	Treatment Volume (ac-ft)		Treatment Type
	Required	Permitted	
H1	0.05	0.08	Dry Retention
H2	0.15	0.16	Dry Retention
H3	0.10	0.16	Dry Retention
H4	0.16	0.19	Dry Retention
H5	0.19	0.23	Dry Retention
H6	0.15	0.17	Dry Retention
H7	0.03	0.04	Dry Retention
Total	**0.83**	**1.03**	

From the causeway area to the CSX railroad located just west of the LSE, the runoff from Gandy Blvd. is collected by existing curb inlets, and conveyed to the existing open channel and concrete box culvert storm drain system located to the north of the Gandy Boulevard right-of-way. A concrete box culvert collects the runoff from the existing storm drain system from the CSX rail road to approximately 400 ft. east of S. Trask St (Sta. 688+00 LT), then the system transitions to an open concrete channel that discharges to Old Tampa Bay. Runoff collected from Gandy Blvd. within these limits are not treated or attenuated prior to discharging to Old Tampa Bay.

3.0 Proposed Drainage Design

The proposed drainage design approach is broken into two separate scenarios; the Regional Pond Modifications and the new Net Improvement Ponds.

- The Regional Pond Modifications uses the previously approved Dames and Moore 1995 permit that includes Ponds 1 and 2 which were designed, permitted and constructed with surplus water quality treatment volume. Ponds 1 and 2 will be modified to accommodate the interchange improvements occurring within their contributing drainage area which is Basin 6 of the previous study area.

- The new Net Improvement Ponds utilize two new infield ponds (3A and 3B) to provide for net improvement associated with the basin improvements as well as the elevated roadway construction occurring west of the interchange, above Gandy Blvd and all the way to Tampa Bay. These ponds are designed to provide attenuation and treatment in excess of the proposed improvements nutrient loading for the basin as well as approximately 5.5 acres of new impervious along Gandy Blvd.

Basin 5 revisions include the addition of the new roadway that is located within the basin, plus an additional 5.5 acres of proposed roadway improvements that are to occur west of the railroad to the Bay, as well as the expansion of the existing ponds that are located south of Gandy Blvd. The proposed pond improvements include widening of the existing surface water areas (Ponds 3A and 3B) and the addition of a control structure weir at the existing 6'x 7' CBC outfall located within the improved Pond 3B. These ponds are designed to provide the needed treatment for Basin 5 and the 5.5 acres of improvements to the west, as well as the attenuation for all proposed improvements. In accordance with Southwest Florida Water Management District, FDOT and THEA rules and regulations, the post-development peak discharge rate from the 25-year/24-hour design storm event will be limited to that of the pre-development case. The 100-year/24-hour storm has been evaluated to ensure no adverse impacts will occur as a result of the proposed improvements.

Basin 6 improvements include the proposed roadway work within the basin as well as the regrading of the existing ponds needed to accommodate these improvements. The northernmost pond (Pond 1) will be regraded, pond berms will be reduced to 15 ft. minimum and side slopes will be increased to 3:1, so as to off-set the volumetric impacts associated with the construction of the new ramps. The southern pond (Pond 2) will mostly be unaffected (no net loss in storage) by the proposed improvements, except for some minor berm encroachments, since the majority of the roadway will be elevated in this area. Other than the Pond 1 regrading, no significant improvements are proposed to the stormwater management system within Basin 6. The existing pond interconnect CBC and inflow pipes will be extended as needed to accommodate the LSE widening but the Pond 2 control structure will remain the same. Treatment for the additional Basin 6 impervious is provided in Ponds 1 & 2. Attenuation for the additional impervious areas proposed within Basin 6 will be provided in the Basin 5 ponds (Ponds 3A & 3B).

The proposed project drainage basins are located within Waterbody IDs (WBID) 1609 and 1640, associated with direct runoff to Old Tampa Bay and Rattlesnake Ditch, neither of which are shown to be impaired in the FDEP Statewide BMAP or Verified Impaired listings.

Pursuant to SWFWMD pre-application meeting, due to parts of the Bay being impaired for nitrogen, phosphates and nutrients, net improvement water quality treatment was requested for the proposed roadway improvements.

To meet the attenuation requirements for the overall project within Ponds 1, 2, 3A and 3B, a model based upon the watershed model developed for the Dames & Moore permit was created in ICPR. A pre/post-development hydraulic analysis was developed for the project to demonstrate that no adverse impacts will occur, for the 25 and 100-year/24-hour storm events, as a result of the proposed improvements. Over attenuation is proposed within the ponds which is upstream of the improvements proposed on Gandy Blvd to the west. See Pre/Post-Development Routing Summary in Section 5.0 of this report.

3.1 Design Criteria

Agencies having jurisdiction over the design of the stormwater management system include THEA, FDOT, and the SWFWMD.

Design Frequency

Open basins – Attenuation of the pre/post-development peak discharge rates, for the 25-year/24-hour design storm event, without adversely increasing the peak stage elevations in the existing ponds. The criteria apply to both Basins 5 and 6 and ponds 1, 2 & 3.

Treatment

The project's water quality treatment requirements will be managed in two ways; utilizing the Regional Pond Modification opportunity and providing new Net Improvement Ponds. Refer to Exhibit 7 for supporting documentation/calculations pertaining to water quality treatment.

Regional Pond 1 & 2 Modification: The 1995 and 1996 Dames & Moore permits provided for surplus wet detention water quality treatment based on 1" of runoff. To satisfy the water quality treatment requirements for the proposed improvements within the existing LSE/Gandy Blvd Interchange Basin, the extraction of the surplus treatment credits from Pond 1 and Pond 2 are proposed.

Presumptive: Page 34 of the approved/permitted Dames & Moore report (Appendix A) indicates that the roadway drainage area required to be treated was 24.54 acres (wet detention treatment volume = 2.045 ac-ft). However, the volume of treatment provided within Pond 1 and Pond 2 was 6.83 ac-ft. The surplus volume previously provided was 4.78 ac-ft (6.83 ac-ft – 2.05 ac-ft).

The currently proposed roadway improvements add 3.16 acres of impervious vehicular use area to the basin requiring 0.26 ac-ft of additional treatment volume for a total requirement of 2.31 ac-ft. (2.05 ac-ft + 0.26 ac-ft). The total treatment volume provided after the proposed pond modification is 6.70 ac-ft. (see Exhibits 6 & 7). The currently proposed surplus volume is 4.39 ac-ft (6.70 ac-ft – 2.31 ac-ft).

Presumptive Treatment (Ponds 1 & 2):

Pond 1 and Pond 2	**Permitted**	**Proposed Conditions**
Treatment Volume Provided	6.83 ac-ft (81.96 acres)	6.70 ac-ft (80.4 acres)

Treatment Volume Required	2.05 ac-ft (24.54 acres)	2.31 ac-ft (24.54 acres + 3.16 ac)
Surplus Volume	4.78 ac-ft (57.42 acres)	4.39 ac-ft (52.74 acres)

Net Improvement: Due to the SWFWMD request to provide net improvement water quality treatment, Ponds 1 and 2 were evaluated to determine the effects of the previous and currently proposed improvements and the related net water quality requirements. The ponds efficiency and related residence volume was also evaluated and the resulting surplus capacity was then quantified. The following steps were followed in performing the mentioned analysis:

- The net improvement requirements for the previous 1995-96 Dale Mabry improvements were calculated.
- The currently proposed net improvement was determined.
- The surplus net improvement pond capacity was then calculated by subtracting the previously required volume from that currently provided.

Net Improvement Treatment (Ponds 1 & 2):

Pond 1 and Pond 2	**Permitted**	**Proposed Conditions**
Treatment Volume Provided	n/a	N-382.77 kg/yr & P–93.42 kg/yr
TV Previously Required	n/a	N–31.98 kg/yr & P–4.60 kg/yr (+5.5 ac)
Surplus Volume Provided	n/a	N–350.79 kg/yr & P–88.82 kg/yr

Looking at the net improvement water quality treatment currently provided by Ponds 1 & 2 we see that a total of 382.77 kg/yr of nitrogen and 93.42 kg/yr of phosphorus is removed, while 28.72 kg/yr of nitrogen and 4.13 kg/yr of phosphorus removal was required by the previous 1995-96 Dale Mabry improvements. Therefore, the surplus net improvement provided by Ponds 1 & 2 is be 354.05 kg/yr of nitrogen and 89.29 kg/yr of phosphorus. Refer to the Water Quality Net Improvement Calculations, Exhibit 9.

Net Improvement Ponds 3A/3B: As explained in 3.0 above, although the FDEP Verified List showed no impairments for either project WBIDs; per SWFWMD policies, due to parts of Old Tampa Bay being impaired for nitrogen, phosphates and nutrients, net improvement water quality treatment is provided for the proposed roadway improvements within the proposed ponds (Ponds 3A and 3B) to address the new impervious proposed west of S. Dale Mabry Highway within the Gandy Blvd right-of-way. Ponds 3A/3B are designed with surplus presumptive treatment volume storage of approximately 2.813-3 ac-ft. Refer to the project Post-Development Pond Storage and Residence Volume Computations shown in Exhibit 7.

Please note that treatment to meet said net improvement is provided for not just the increase in vehicular use areas within Pond 3A/3B Basin, but also for 5.5 acres of roadway improvements to occur west of the ponds to the Bay. Net improvement calculations, using UCF's BMPTRAINS calculation spreadsheet, are included in Exhibit 9. The calculations demonstrate that the residence volume provided within Ponds 3A & 3B (14.7 ac-ft) far exceeds that required to achieve water quality net improvement for the project. The actual removal of nitrogen (N) and phosphorus (P) achieved (576.82 kg/yr and 144.64 kg/yr, respectively) far exceeds that required by the currently proposed improvements (N-47.2 kg/yr and P-6.79 kg/yr) resulting in a surplus removal of N-529.6 kg/yr and P-137.8 kg/yr by the stormwater management system. Refer to water quality net improvement calculations shown in Exhibit 9. The Pond 3, bleed-down notch was sized per SWFWMD presumptive criteria requirements (1/2 volume in no less than 24-hours), see notch calculations shown in Exhibit 8.

Pond 3A/3B	**Permitted**	**Proposed Conditions**
Treatment Volume Provided	n/a	N-576.82 kg/yr & P–144.64 kg/yr
Treatment Volume Required	n/a	N–47.2 kg/yr & P–6.79 kg/yr (+5.5 ac)
Surplus Volume	n/a	N–529.62 kg/yr & P–137.85 kg/yr

Tailwater

In order to simplify the proposed project stormwater modeling, the previously approved Dames & Moore drainage model was truncated at the existing 4' x 10' CBC, located approximately 500 ft. downstream of the existing pond outfalls. A Time/Stage boundary node was introduced at this downstream location (Node 10429) with an ultimate peak stage set to the CBC inside crown of pipe elevation of 6.75 (the downstream 4' x 10' CBC is assumed to be flowing full throughout the pond peak stages for the design storm events). The following steps were followed in establishing the timing of this time/stage relationship:

- The model was first run with a free discharge (boundary Time/Stage was set to the CBC invert elevation for the total run time).
- The computed discharge rates for each time step was then used to calculate flow depths in the downstream 4' x 10' CBC, for both the 25-year and 100-year/24-hour storms.
- A final time/stage relationship was then established and used as the boundary node input (at Node 10429) for both storms events to ensure the 4' x 10' CBC will be completely submerged throughout the timing of the critical pond stages. Refer to the ICPR model input summary boundary conditions, Exhibits 10 & 11.
- The same relative tailwater conditions are used for both the pre-development and post-development condition models.

Pond Normal Water Elevations

The normal water elevations for each pond was established by the previous drainage designs. The current drainage design uses those normal water levels previously approved. Please note that these elevations have been adjusted to reflect the current NAVD88 datum (subtract 0.87 ft. from NGVD elevations).

3.2 Design Approach

The proposed pond modifications have been designed to accommodate the project improvements and meet regulatory requirements. The ponds south of Gandy Boulevard (Ponds 3A & 3B) have been sized to provide the needed treatment and attenuation, for all the proposed roadway improvements, to meet the regulatory requirements of THEA, FDOT, and SWFWMD.

Conveyance

The proposed roadway runoff will be collected and conveyed to the proposed stormwater management facilities or for direct discharge to the existing storm drain system that outfalls to the Bay. These conveyance systems will be designed as part of the final roadway design-build project and a permit modification will be obtained if necessary.

Impervious Area

The previously permitted drainage designs for the study area established the directly connected impervious areas for each basin, used in the corresponding calculations. These impervious areas have been updated to reflect the currently proposed improvements. Refer to the Pre/Post-Development Basin Determinations include in Exhibit 4 and Exhibit 6.

Water Quantity Attenuation

In accordance with SWFWMD and FDOT rules and regulations, the post-development peak discharge rate from the 25-year/24-hour design storm event will be limited to that of the pre-development case while also maintaining existing peak stage elevations in ponds 1, 2 & 3A. The 100-year/24-hour storm will also be evaluated to ensure no adverse impacts will occur from the proposed improvements. Additional attenuation is also to be provided in Ponds 3A & 3B to off-set potential impacts associated with the proposed 5.5 Ac. roadway improvements and existing treatment volume reduction that are to occur west of the ponds. These Ponds will also accommodate roadway improvements that are to occur within Basin 6, north of Gandy Blvd. Refer to the Pre/Post-Development Model Routing Summary Table shown in Exhibit 12.

3.3 Proposed Drainage West of Leroy Selmon Expressway

Roadway improvements within the Gandy Blvd. causeway area includes milling and resurfacing at the Begin Project limit (Sta. 600+66.58), and reconstruction along the causeway includes widening and shifting out the roadway alignment to accommodate ramps for the elevated roadway. The reconstruction of the causeway area will impact the existing treatment ponds H4 thru H7. Conservatively, it is assumed that the impacts will result in a total loss of approximately 0.63 ac-ft of permitted treatment volume. The Table below includes the permitted and proposed treatment volume provided along the causeway area. It is anticipated that the future drainage design will convey the proposed roadway runoff to the open pervious areas for pre-treatment prior to discharging to Old Tampa Bay. The 0.63 ac-ft of lost treatment volume will be compensated for in proposed ponds within the LSE Interchange area. The Post-Development Pond Storage and Residence Volume Computations provided in Exhibit 7 demonstrates that there is a surplus of approximately 4.0 ac-ft of presumptive treatment volume provided in the proposed design.

Pond Number	Treatment Volume (ac-ft)		Comment
	Permitted	Proposed	
H1	0.08	0.08	No Proposed Impact
H2	0.16	0.16	No Net Impact Proposed
H3	0.16	0.16	No Net Impact Proposed
H4	0.19	0.00	Proposed for Impact
H5	0.23	0.00	Proposed for Impact
H6	0.17	0.00	Proposed for Impact
H7	0.04	0.00	Proposed for Impact
Total	**1.03**	**0.40**	

The proposed elevated roadway includes bridge piers located within the limits of the existing median to minimize impacts to Gandy Blvd. As such, the curb and gutter section of the Gandy Blvd. and the associated storm drain system from the causeway are to the CSX crossing will generally not be impacted. Proposed deck drains will be provided along the elevated roadway to collect and convey the runoff to the existing storm drain system along Gandy Blvd. The proposed runoff will not be treated or attenuated prior to discharging into the Bay.

The roadway improvements from the eastern Gandy Bridge causeway to the CSX railroad will result in approximately 4.56 ac of additional impervious area. Summation of the Gandy Boulevard Additional Impervious Areas are located in Exhibit 16. Throughout this report, 5.50 ac of additional impervious area was conservatively assumed for the roadway improvements west of the CSX railroad. The 5.50 ac of additional impervious area is represented as sub-basin Selmon West-Off in the Post Development Basin DCIA Determination located in Exhibit 6.

4.0 Stormwater Model

The original Norma Park drainage study and related stormwater model encompassed 2.71 square miles and consisted of 6 major drainage basins, with numerous sub-basins draining to the related nodes which were then connected by links and modelled to the ultimate discharge at Old Tampa Bay. This model used a combination of MSSM and SWMM3 computer programs, but did not analyze the ponds hydrodynamically, but rather used a rating curve to estimate the pond discharge. The Dames and Moore drainage model used

the Norma Park study as a base but then revised it to use the SWMM4EXTRAN software and also made the needed changes to fit the software needs as well as reflect those needed for the Dale Mabry highway improvements. The currently proposed model is an ICPR model that builds on the Dames and Moore modifications to reflect the currently proposed improvements and software, as follows:

- Model was truncated to include only the subject basins (Basins 5 & 6) and a time/stage node was introduced 500 ft. downstream of the pond outfalls (Node 10429).
- Model was adjusted for datum change from NGVD29 to NAVD88 by lowering all pertinent elevations by 0.87 ft.
- Model basin determinations were adjusted to reflect current project conditions.
- Pond stage/areas and storm sewer elevations were adjusted to reflect field surveyed information.
- Pond 3 was divided into two lobes (3A and 3B) for analysis purposes.
- The existing Pond 3A, outfall weir/skimmer was added to the existing conditions model to match field surveyed information.
- Off-site roadway improvement basin areas were added to the pre/post-development models to account for the proposed 5.5 Ac. improvements to occur west of the pond area

Pre/Post-development model input and routing summaries are included in Exhibits 10-12.

5.0 Design Results/Summary

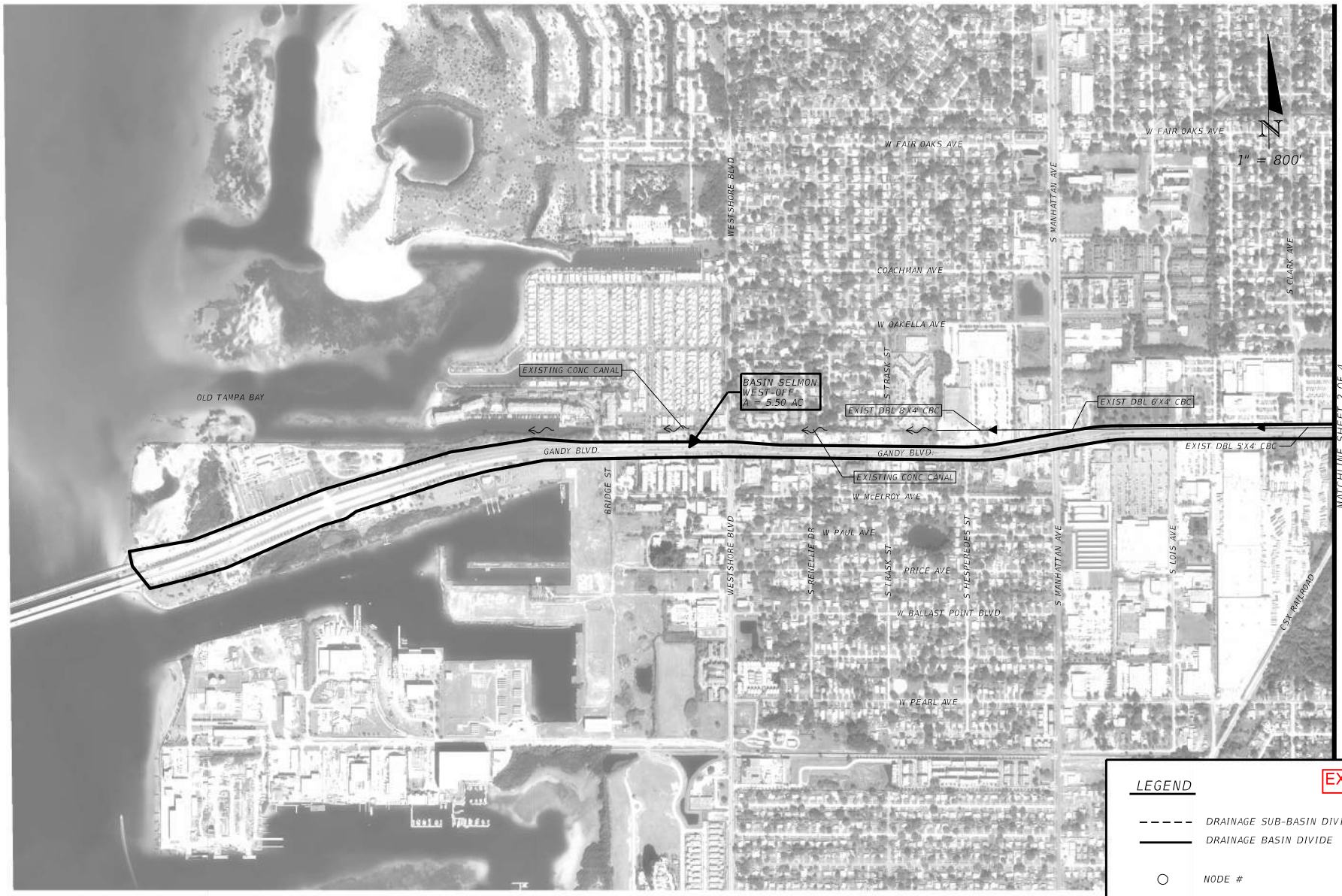
A revised pre/post-development hydraulic analysis was developed for this project, using similar modeling concepts/assumptions as that previously approved and permitted with prior improvements, to demonstrate that no adverse impacts will occur for the 25 and 100-year/24-hour storm events as a result of the proposed improvements. See summary table below.

Pre/Post-Development Routing Summary

Node Name	Node Description	Pre-Dev Peak Stage (ft.)	Post-Dev Peak Stage (ft.)	Difference In Peaks (ft.)	Pre-Dev Peak Inflow (cfs.)	Post-Dev Peak Inflow (cfs.)	Difference In Peaks (cfs.)	Pre-Dev Peak Outflow cfs	Post-Dev Peak Outflow cfs	Difference In Peaks (cfs.)
				25-year/24-hour Storm						
*10429	Bndry Node	6.75	6.75	0.00	166.26	165.65	-0.61	0	0	0.00
10432	Gandy J-box	7.35	7.37	0.02	162.12	169.46	7.34	162.12	164.13	2.01
25591A	**Pond 3A	7.9	7.88	-0.02	129.48	129.62	0.14	127.46	126.61	-0.85
25591B	**Pond 3B	7.53	7.68	0.15	127.58	127.38	-0.20	127.52	139.5	11.98
25691	**Pond 2	7.79	7.82	0.03	62.49	65.3	2.81	46.8	49.91	3.11
25692	**Pond 1	7.87	7.88	0.01	90.94	92.22	1.28	37.08	37.58	0.50
				100-year/24-hour Storm						
*10429	Bndry Node	6.75	6.75	0.00	258.44	254.63	-3.81	0	0	0.00
10432	Gandy J-box	8.19	8.2	0.01	251.18	252.03	0.85	251.18	252.03	0.85
25591A	Pond 3A	9.35	9.38	0.03	201.69	200.97	-0.72	193.19	192.02	-1.17
25591B	Pond 3B	8.6	8.92	0.32	193.82	194.8	0.98	193.36	190.04	-3.32
25691	Pond 2	8.87	8.89	0.02	101.74	105.27	3.53	75.48	73.92	-1.56
25692	Pond 1	8.97	8.98	0.01	153.45	155.55	2.10	60.9	64.96	4.06
*	Boundary Node									
	Increase in stage due to new control structure is still below the existing roadway low edge of pavement elevation of 11.0 (at existing inlet).									
**	Pond top of bank is set 1 ft. minimum above 25-year DHW elevation									

Stormwater management facilities for this project have been designed to meet the current Environmental Resource Permit (ERP) requirements mandated by the SWFWMD. The proposed ponds provide water quality treatment to meet net improvement, as required by SWFWMD. Littoral zone mitigation is provided for the proposed impacts. Water quantity attenuation complies with THEA, FDOT, and SWFWMD criteria.

EXHIBIT 1
PRE/POST-DEVELOPMENT DRAINAGE MAPS



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10006 N. DALE MABRY HWY., SUITE 201
TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8230

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600 & SR 618	HILLSBOROUGH	439023-1-52-01

PRE-DEVELOPMENT REGIONAL DRAINAGE MAP (1)

SHEET NO. 1 OF 4

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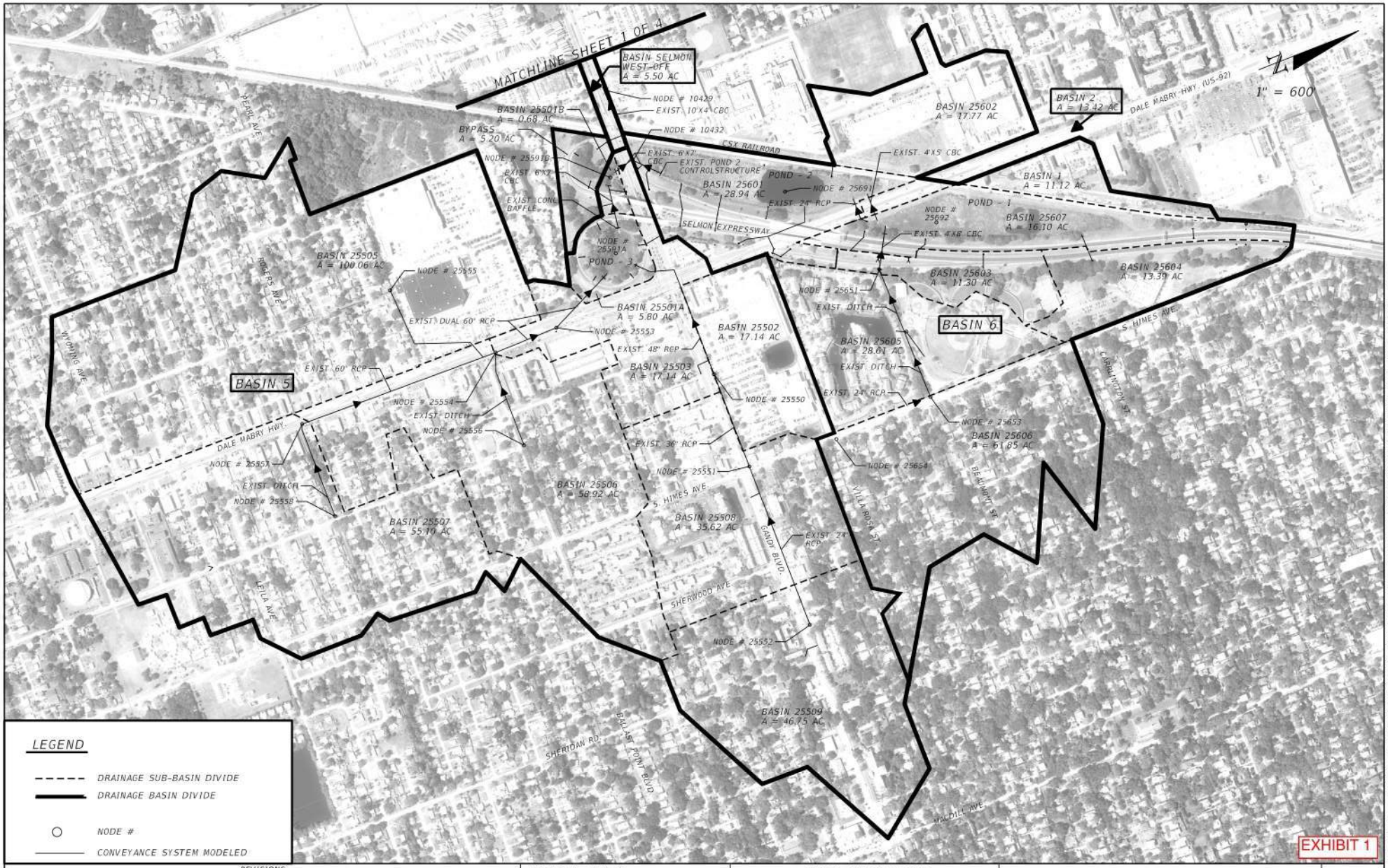

REVISIONS			
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CERTIFICATE OF AUTHORIZATION NO. 8230

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600 & SR 618	HILLSBOROUGH	439023-1-52-01

PRE-DEVELOPMENT REGIONAL DRAINAGE MAP (2)

SHEET NO. 2 OF 4

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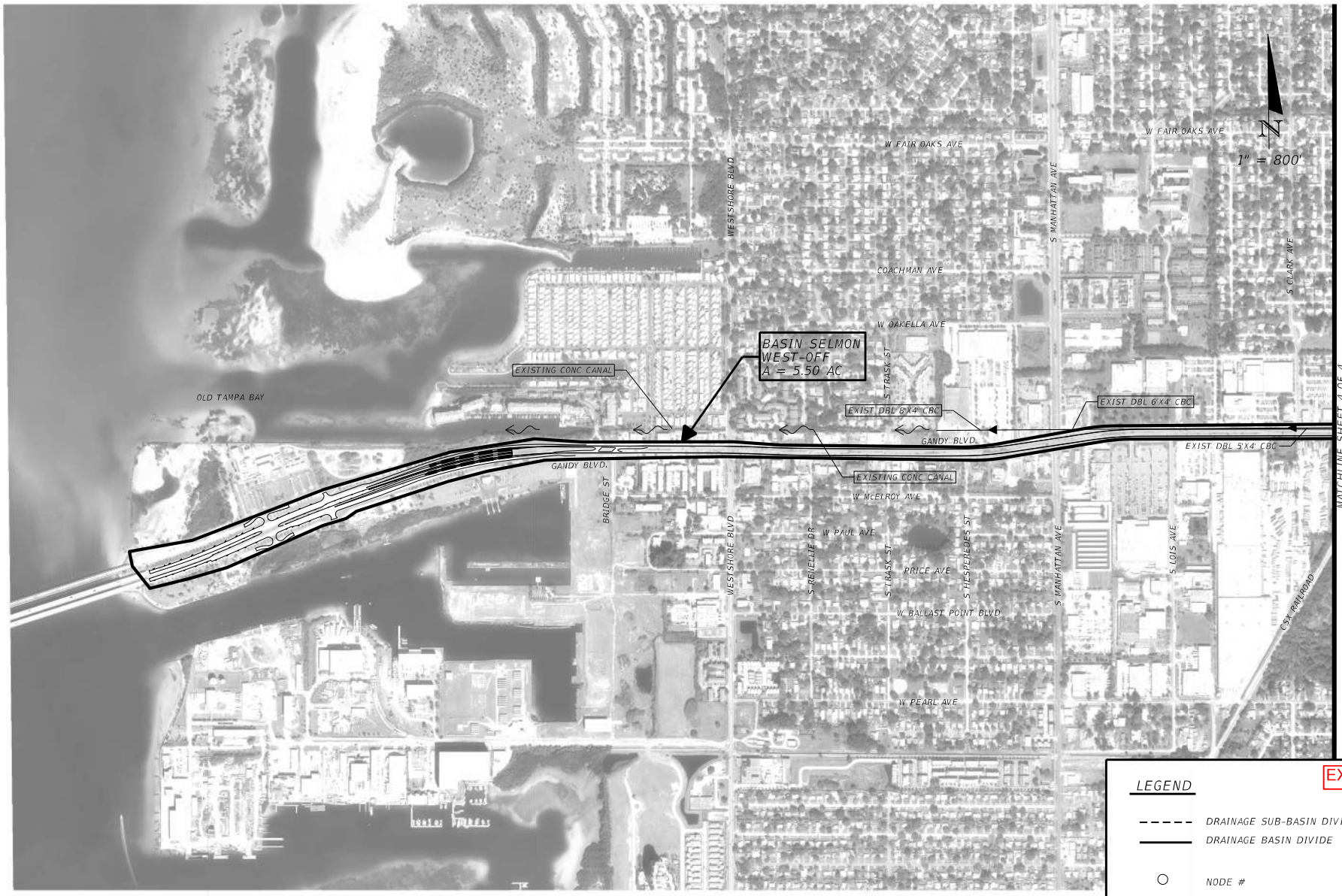

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TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8230

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600 & SR 618	HILLSBOROUGH	439023-1-52-01

POST-DEVELOPMENT REGIONAL DRAINAGE MAP (1)

SHEET NO. 3 OF 4

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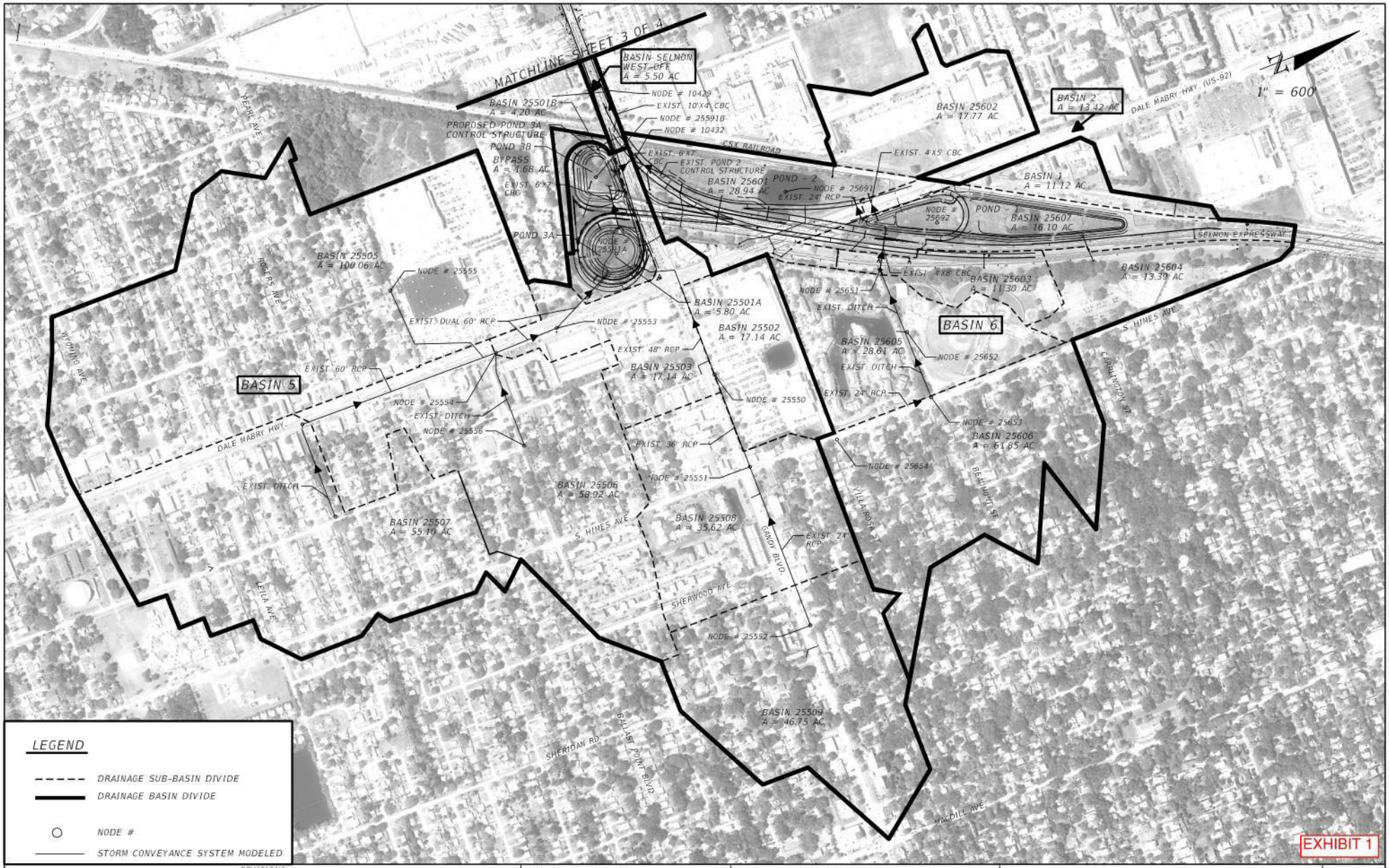

EXHIBIT 1

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MICHAEL E. MILLS, P.E.
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TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8230

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600 & SR 618	HILLSBOROUGH	439023-1-52-01

POST-DEVELOPMENT REGIONAL DRAINAGE MAP (2)

SHEET NO. 4 OF 4

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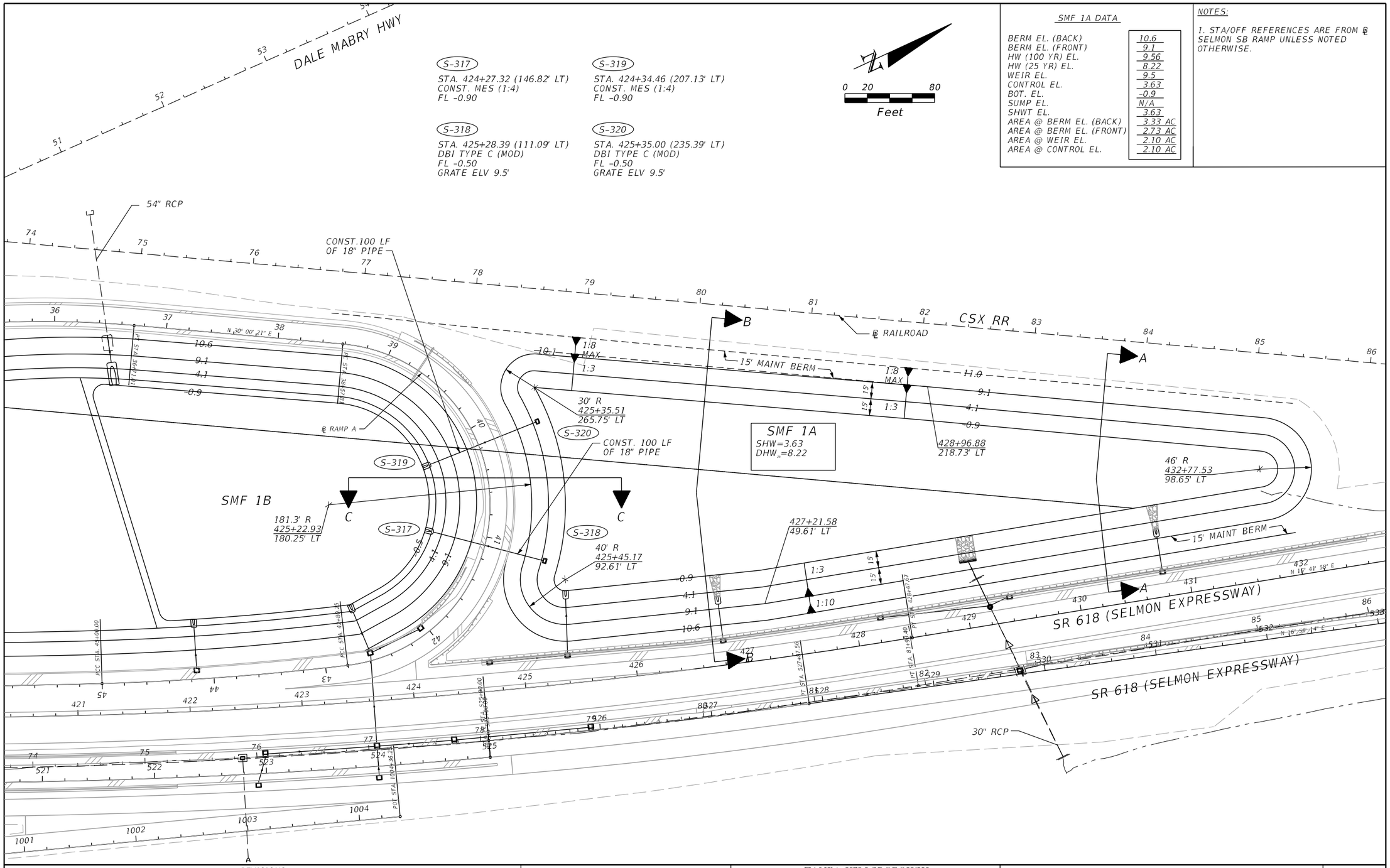

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HW (25 YR) EL.	8.22
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BOT. EL.	-0.9
SUMP EL.	N/A
SHWT EL.	3.63
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AREA @ BERM EL. (FRONT)	2.73 AC
AREA @ WEIR EL.	2.10 AC
AREA @ CONTROL EL.	2.10 AC

NOTES:

1. STA/OFF REFERENCES ARE FROM ℄ SELMON SB RAMP UNLESS NOTED OTHERWISE.

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7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	O-17-00217 439023-1-52-01

STORMWATER MANAGEMENT FACILITY 1A PLAN

SHEET NO. A2-202

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SHWT EL.	3.63
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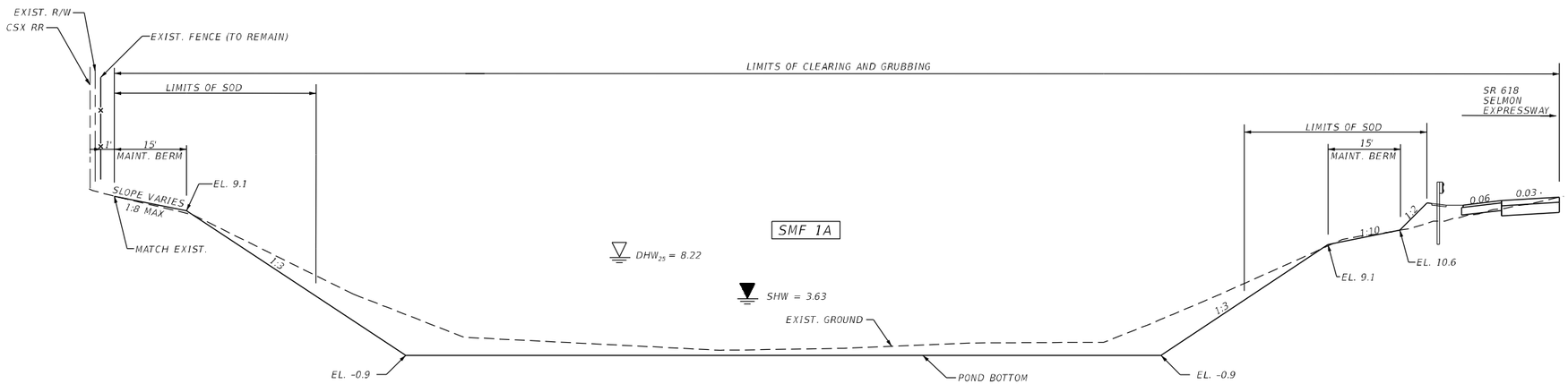
AREA @ CONTROL EL.	2.10 AC



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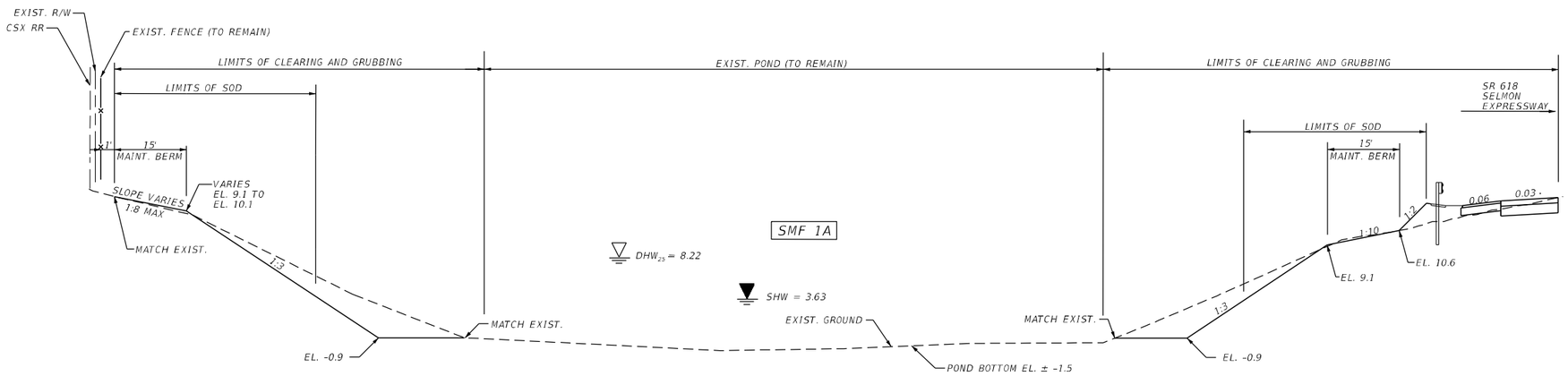

TYPICAL SECTION B-B
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TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	O-17-00217 439023-1-52-01

STORMWATER MANAGEMENT FACILITY 1A TYPICALS

SHEET NO. A2-203

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S-215
STA. 74+82.40 (102.21' RT)
℄ RAILROAD
CONST. MES (1:4)
FL 0.80

S-239A
STA. 214+43.68 (156.65' RT)
℄ RAMP F
CONST. MES (1:4)
FL 1.30

S-136B
STA. 414+39.40 (69.38' RT)
℄ SELMON SB RAMP
CONST. MES (1:4)
FL 8.50

0 20 80
Feet

SMF 1B DATA

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BERM EL. (FRONT)	9.1
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HW (25 YR) EL.	7.91
WEIR EL.	N/A
CONTROL EL.	3.6
LITTORAL SHELF EL.	2.0
BOT. EL.	2.0
SUMP EL.	-0.9
SHWT EL.	3.63
AREA @ BERM EL. (BACK)	5.42 AC
AREA @ BERM EL. (FRONT)	4.66 AC
AREA @ WEIR EL.	N/A
AREA @ CONTROL EL.	3.86 AC

NOTES:

1. STA/OFF REFERENCES ARE FROM ℄ SELMON SB RAMP UNLESS NOTED OTHERWISE.

CSX RR
15' CSX-RR EASEMENT
EXIST. R/W
℄ RAILROAD
SMF 2
18" RCP
24" RCP
54" RCP
CONST. 24 LF OF 54" PIPE W/ CONC. JACKET
DALE MABRY HWY
RAMP A
15' MAINT BERM
1:10 MAX
1:3
1:10
EXIST. SUMP
EXIST. SLIDING GATE (TO REMAIN)
SMF 1B
SHW=3.63
DHW=7.91
807.7' R
5452' R
2415' R
116' R
8.7' R
5' R
EXISTING LITTORAL SHELF
(ORIGINAL SWFWMD PERMIT # 4011579.01)
SR 618 (SELMON EXPRESSWAY)
SR 618 (SELMON EXPRESSWAY)

414+70.42 126.93' LT
414+91.96 51.32' LT
414+94.06 92.21' LT
416+12.37 161.67' LT
416+19.42 54.04' LT
416+34.04 87.90' LT
416+66.12 224.61' LT
418+49.90 286.48' LT
420+09.82 319.06' LT
421+22.18 54.04' LT
421+73.90 317.69' LT
423+55.04 294.28' LT
423+55.67 60.21' LT
423+86.68 74.31' LT
424+55.84 195.04' LT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AECOM Technical Services, Inc.
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Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	0-17-00217 439023-1-52-01

STORMWATER MANAGEMENT FACILITY 1B PLAN

SHEET NO. A2-204

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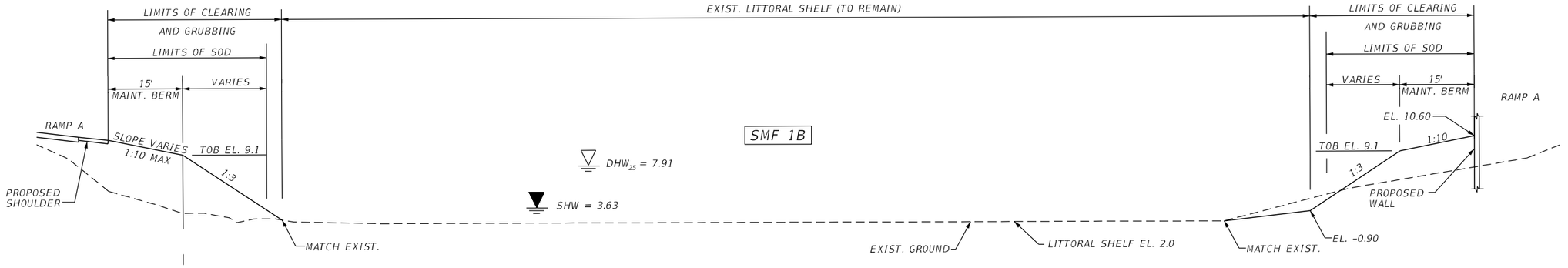

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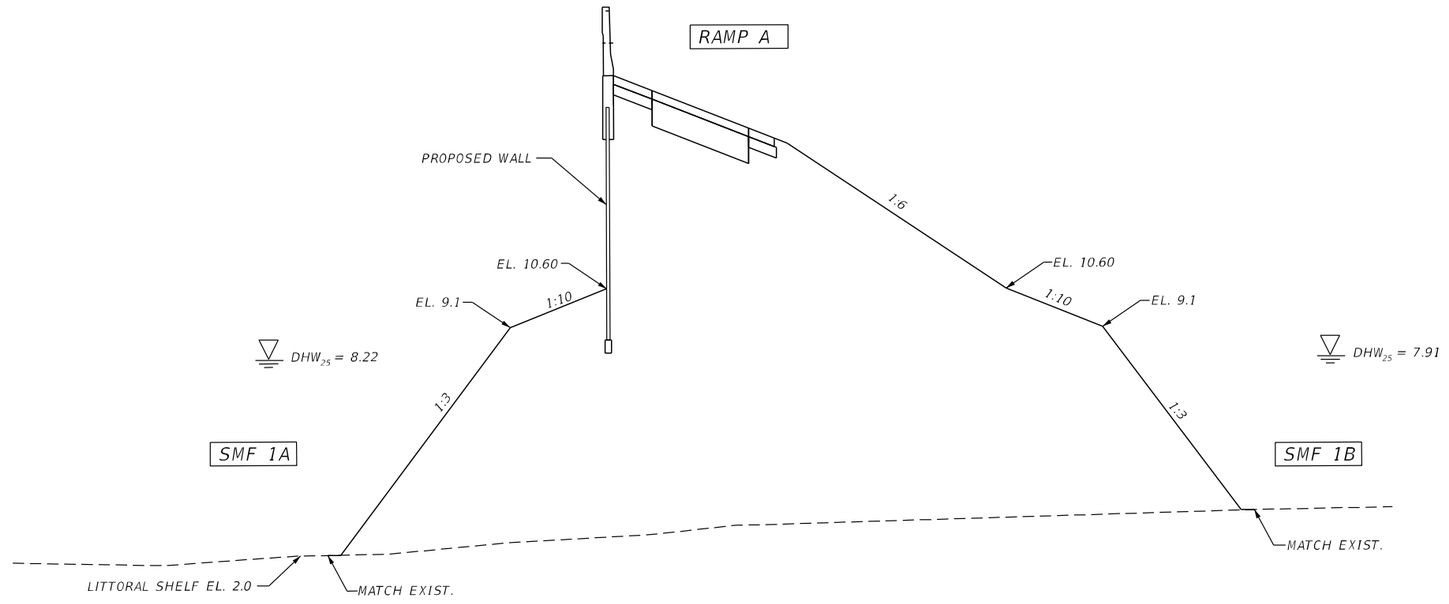

TYPICAL SECTION C-C
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HW (25 YR) EL.	7.91
WEIR EL.	N/A
CONTROL EL.	3.6
LITTORAL SHELF EL.	2.0
BOT. EL.	2.0
SUMP EL.	-0.9
SHWT EL.	3.63
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AREA @ BERM EL. (FRONT)	4.66 AC
AREA @ WEIR EL.	N/A
AREA @ CONTROL EL.	3.86 AC

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C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

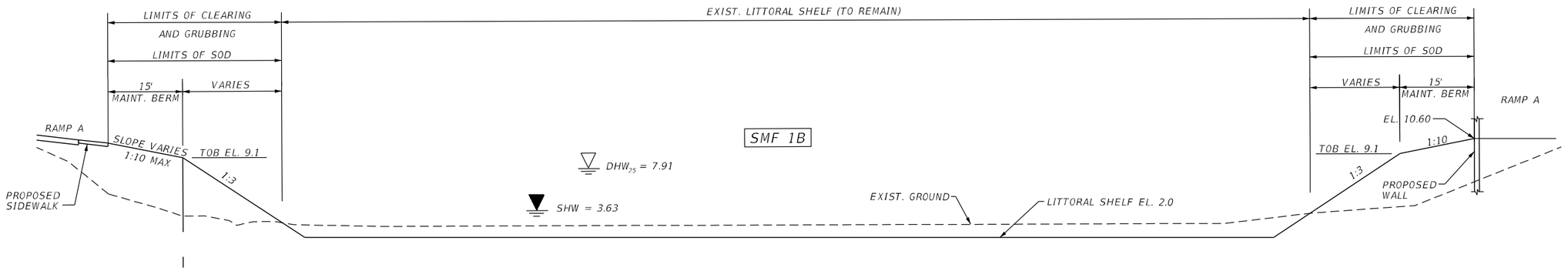
ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	0-17-00217 439023-1-52-01

STORMWATER MANAGEMENT FACILITY 1B TYPICALS

SHEET NO.
A2-205

Jarred.Robinson 6/21/2018 8:29:26 AM c:\pwworking\aecom_ds16_na\jarred.robinson@aecom.com\dms27850\DRDTRD102.DGN

SMF 1B DATA	
BERM EL. (BACK)	10.6
BERM EL. (FRONT)	9.1
HW (100 YR) EL.	9.05
HW (25 YR) EL.	7.91
WEIR EL.	N/A
CONTROL EL.	3.6
LITTORAL SHELF EL.	2.0
BOT. EL.	2.0
SUMP EL.	-0.9
SHWT EL.	3.63
AREA @ BERM EL. (BACK)	5.42 AC
AREA @ BERM EL. (FRONT)	4.66 AC
AREA @ WEIR EL.	N/A
AREA @ CONTROL EL.	3.86 AC



TYPICAL SECTION E-E
N.T.S

RELEASED FOR CONSTRUCTION

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DATE	DESCRIPTION	DATE	DESCRIPTION

AECOM Technical Services, Inc.
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	O-17-00217 439023-1-52-01

STORMWATER MANAGEMENT FACILITY 1B TYPICALS

SHEET NO. A2-206

Jarred.Robinson 6/21/2018 3:06:34 PM c:\pwworking\aecom_ds16_na\jarred.robinson@aecom.com\dms27850\DRDTRD102.DGN

S-142
STA. 58+46.51 (304.12' RT)
℄ RAILROAD
CONST. MES (1:4)
FL -2.00

S-321
STA. 74+82.40 (89.47' RT)
℄ RAILROAD
CONST. MES (1:4)
FL -2.00

S-322
STA. 65+46.14 (84.70' RT)
℄ RAILROAD
CONST. MES (1:4)
FL -2.00

S-239
STA. 67+94.6 (147.60' RT)
℄ RAILROAD
CONST. MES (1:4)
FL 1.00

S-234B
STA. 63+97.71 (323.07' RT)
℄ RAILROAD
CONST. MES (1:4)
FL 2.96

0 30 120
Feet

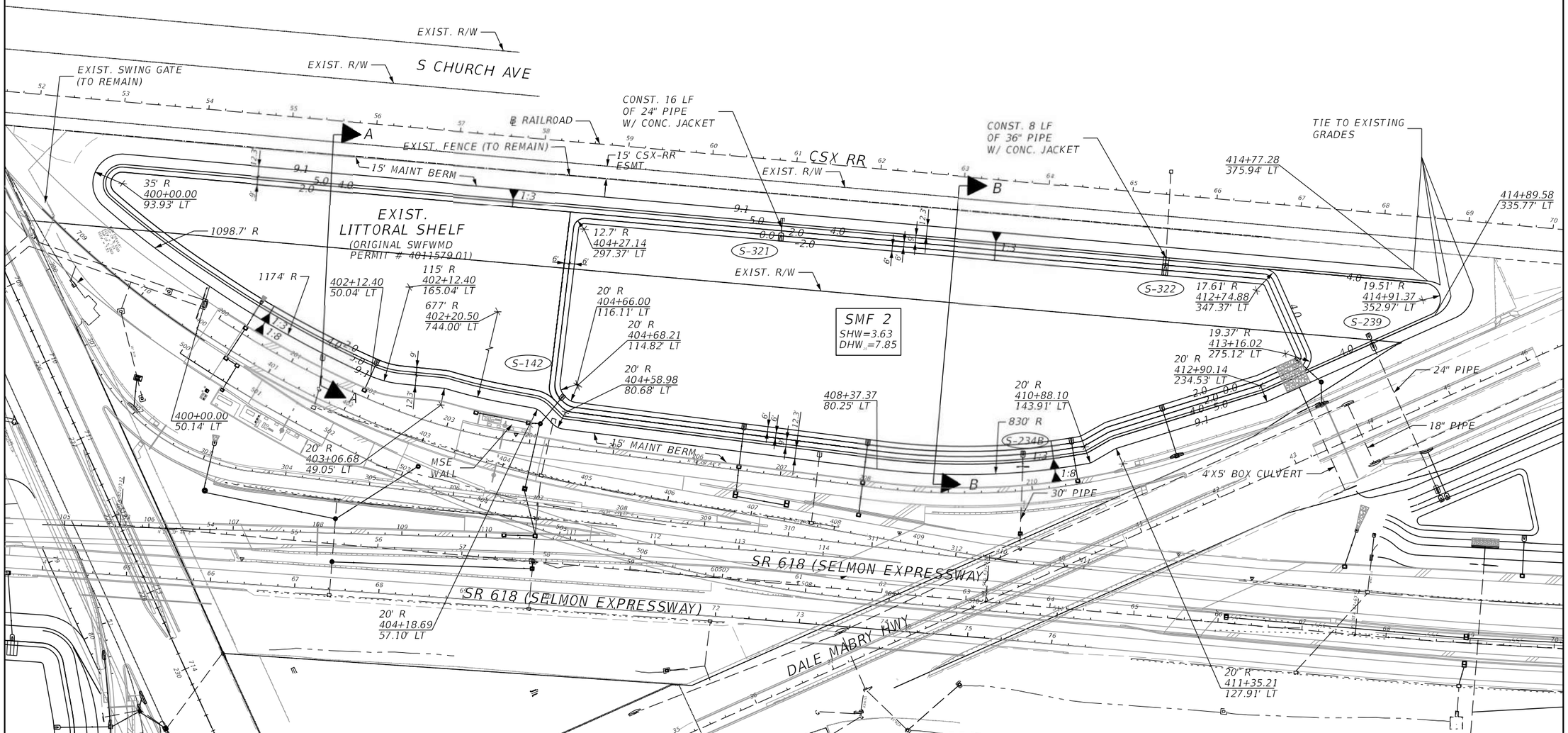
SMF 2 DATA

BERM EL. (BACK)	10.97
BERM EL. (FRONT)	9.1
HW (100 YR) EL.	8.95
HW (25 YR) EL.	7.85
WEIR EL.	4.1
CONTROL EL.	3.63
LITTORAL SHELF EL.	2.0
BOT. EL.	-2.0
SUMP EL.	N/A
SHWT EL.	3.63
AREA @ BERM EL. (BACK)	9.81 AC
AREA @ BERM EL. (FRONT)	8.23 AC
AREA @ WEIR EL.	7.63 AC
AREA @ CONTROL EL.	6.91 AC

NOTES:

1. STA/OFF REFERENCES ARE FROM ℄ SELNON SB RAMP UNLESS NOTED OTHERWISE.

2. FOR CONTROL STRUCTURE DETAIL, SEE DRAINAGE STRUCTURE DETAILS.



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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AECOM Technical Services, Inc.
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

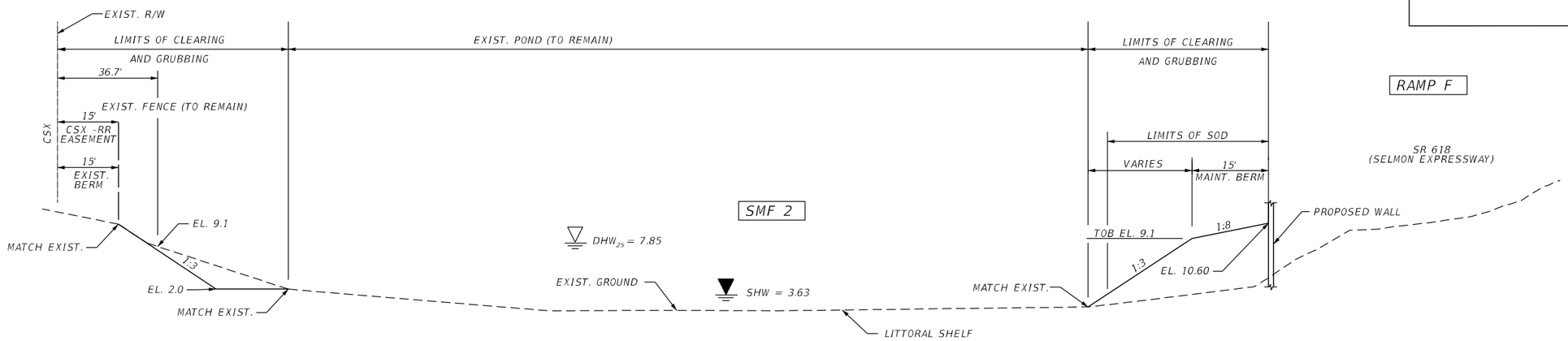
ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	0-17-00217 439023-1-52-01

STORMWATER MANAGEMENT FACILITY 2 PLAN

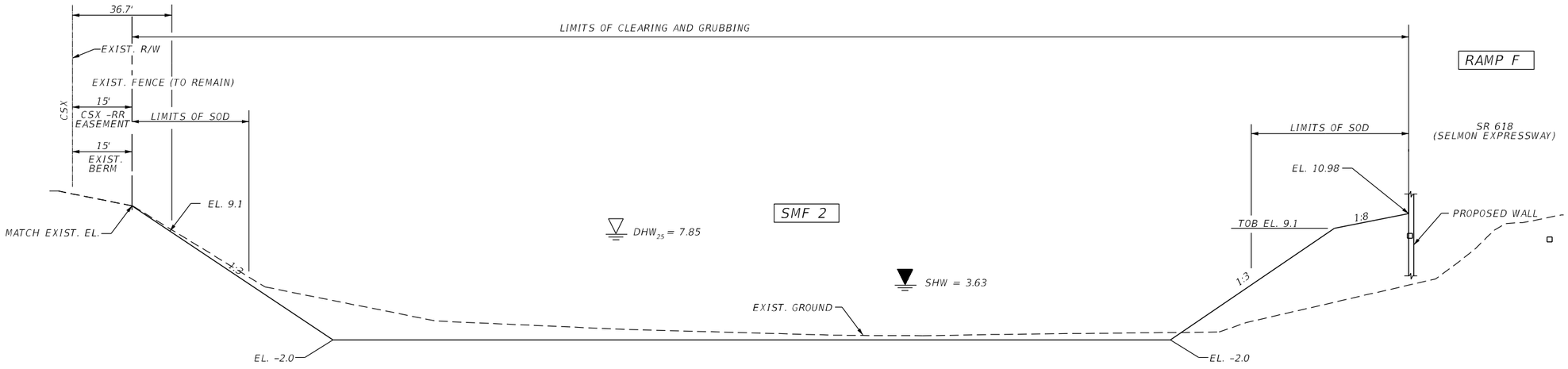
SHEET NO. A2-207

Jarred.Robinson 6/21/2018 8:29:29 AM c:\pwworking\aecom_ds16_na\jarred.robinson@aecom.com\dms27850\DRDTRD201.DGN

SMF 2 DATA	
BERM EL. (BACK)	10.97
BERM EL. (FRONT)	9.1
HW (100 YR) EL.	8.95
HW (25 YR) EL.	7.85
WEIR EL.	4.1
CONTROL EL.	3.63
LITTORAL SHELF EL.	2.0
BOT. EL.	-2.0
SUMP EL.	N/A
SHWT EL.	3.63
AREA @ BERM EL. (BACK)	9.81 AC
AREA @ BERM EL. (FRONT)	8.23 AC
AREA @ WEIR EL.	7.63 AC
AREA @ CONTROL EL.	6.91 AC



TYPICAL SECTION A-A
N.T.S



TYPICAL SECTION B-B
N.T.S

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AECOM Technical Services, Inc.
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	O-17-00217 439023-1-52-01

STORMWATER MANAGEMENT FACILITY 2 TYPICALS

SHEET NO. A2-208

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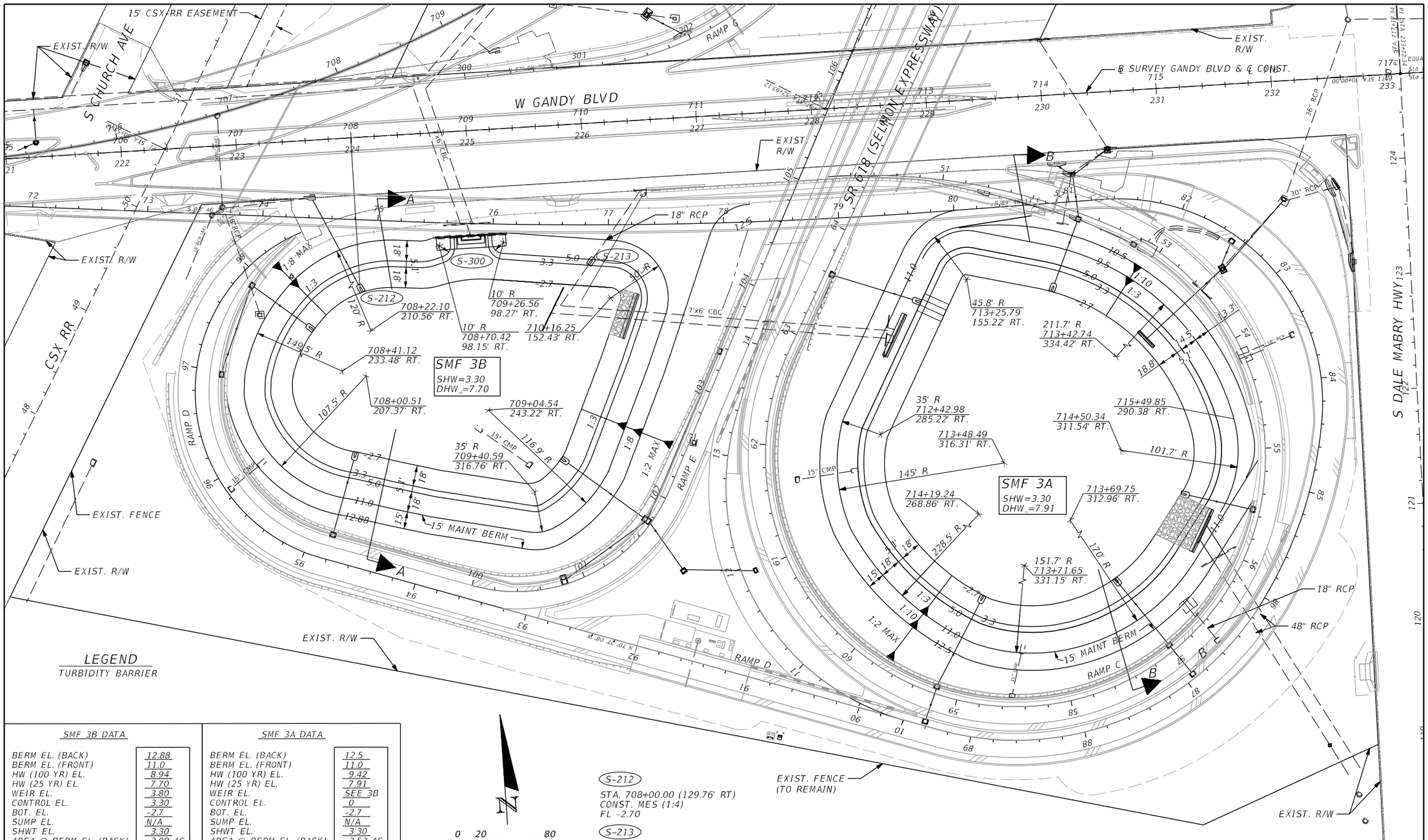

SMF 3B DATA	
BERM EL. (BACK)	12.88
BERM EL. (FRONT)	11.0
HW (100 YR) EL.	8.94
HW (25 YR) EL.	7.70
WEIR EL.	3.80
CONTROL EL.	3.30
BOT. EL.	-2.7
SUMP EL.	N/A
SHWT EL.	3.30
AREA @ BERM EL. (BACK)	2.09 AC
AREA @ BERM EL. (FRONT)	1.72 AC
AREA @ WEIR EL.	1.27 AC
AREA @ CONTROL EL.	1.24 AC

SMF 3A DATA	
BERM EL. (BACK)	12.5
BERM EL. (FRONT)	11.0
HW (100 YR) EL.	9.42
HW (25 YR) EL.	7.91
WEIR EL.	SEE 3B
CONTROL EL.	0
BOT. EL.	-2.7
SUMP EL.	N/A
SHWT EL.	3.30
AREA @ BERM EL. (BACK)	2.53 AC
AREA @ BERM EL. (FRONT)	2.14 AC
AREA @ WEIR EL.	1.71 AC
AREA @ CONTROL EL.	1.67 AC

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AECOM Technical Services, Inc.
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	0-17-00217 439023-1-52-01

STORMWATER MANAGEMENT FACILITIES 3A & 3B PLAN

SHEET NO. A2-209

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ryan.casey 7/5/2018 4:06:17 PM c:\pwworking\aecom_ds16_na\ryan.casey@aecom.com\dms27850\DRDTRD301.DGN

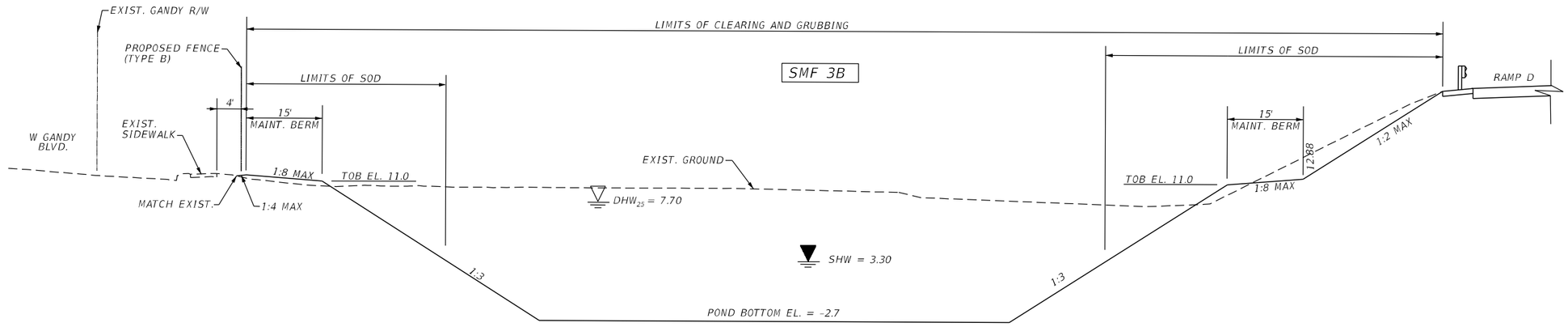
SMF 3B DATA	
BERM EL. (BACK)	12.88
BERM EL. (FRONT)	11.0
HW (100 YR) EL.	8.94
HW (25 YR) EL.	7.70
WEIR EL.	3.80
CONTROL EL.	3.30
BOT. EL.	-2.7
SUMP EL.	N/A
SHWT EL.	3.30
AREA @ BERM EL. (BACK)	2.09 AC
AREA @ BERM EL. (FRONT)	1.72 AC
AREA @ WEIR EL.	1.27 AC
AREA @ CONTROL EL.	1.24 AC

SMF 3A DATA	
BERM EL. (BACK)	12.5
BERM EL. (FRONT)	11.0
HW (100 YR) EL.	9.42
HW (25 YR) EL.	7.91
WEIR EL.	SEE 3B
CONTROL EL.	0
BOT. EL.	-2.7
SUMP EL.	N/A
SHWT EL.	3.30
AREA @ BERM EL. (BACK)	2.53 AC
AREA @ BERM EL. (FRONT)	2.14 AC
AREA @ WEIR EL.	1.71 AC
AREA @ CONTROL EL.	1.67 AC

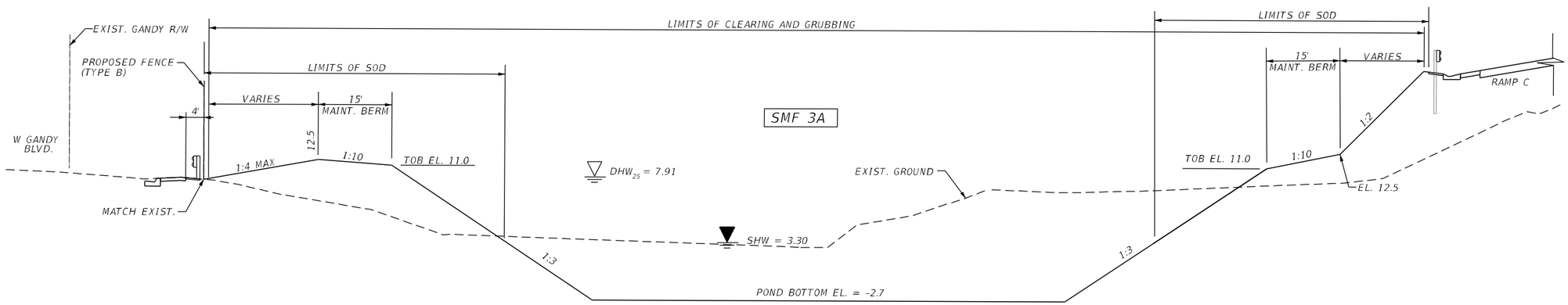
NOTES:

1. STA/OFF REFERENCES ARE FROM ℄ SURVEY GANDY BLVD. & ℄ CONST. UNLESS NOTED OTHERWISE.

2. FOR CONTROL STRUCTURE DETAIL, SEE DRAINAGE STRUCTURE DETAILS.



TYPICAL SECTION A-A
N.T.S



TYPICAL SECTION B-B
N.T.S

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AECOM Technical Services, Inc.
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	0-17-00217 439023-1-52-01

SMF 3A & 3B TYPICALS

SHEET NO. A2-210

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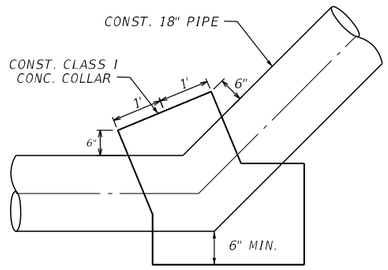
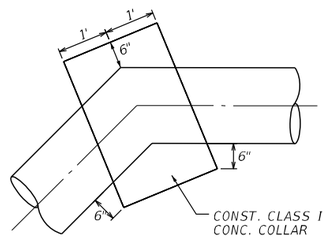


THRUST BLOCK DETAIL
NTS

NOTES:

1. IF THE CLEARANCE OF THE PIPE JOINT IS LESS THAN 3 FEET OVER ANOTHER PIPE, THE WIDTH OF THRUST BLOCK WILL BE THE LOWER PIPE PLUS 1 FOOT MINIMUM.
2. CONSTRUCT SAND CEMENT RIPRAP PER FDOT INDEX 281.
3. UTILIZE PLASTIC EROSION MAT ON ALL 1:2 SLOPES.



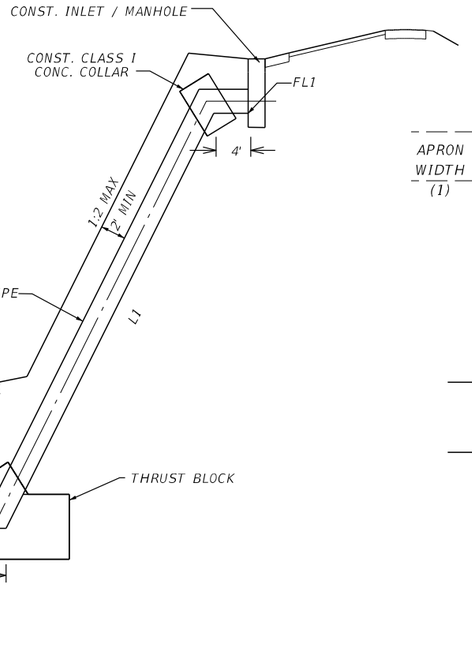
CONCRETE COLLAR DETAIL
NTS

GUTTER DRAINS

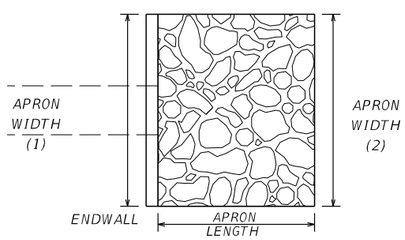
STR. NO.	STATION	SIDE	℄ / ℄	L1	L2	PIPE TOTAL LENGTH	GRATE/RIM EL.	FL1	FL2	FL3	MES STR. NO.	MES STA.
S-100	63+60.00	RT.	℄ RAMP C	53	23	80	32.58	28.00	5.20	5.00	S-101	63+70.00
S-102	59+20.00	RT.	℄ RAMP C	70	12	86	25.20	18.70	-2.50	-2.70	S-103	59+00.00
S-104	57+00.00	RT.	℄ RAMP C	54	11	69	17.71	13.30	-2.50	-2.70	S-105	57+00.00
S-104A	55+55.00	RT.	℄ RAMP C	47	16	67	12.79	5.50	-2.50	-2.70	S-105A	55+55.00
S-122	44+15.00	RT.	℄ RAMP A	16	22	42	12.62	5.30	-0.70	-0.90	S-121	44+15.00
S-123	425+40.00	LT.	℄ SELMON SB RAMP	22	26	52	13.67	7.80	-0.70	-0.90	S-124	425+43.76
S-126	30+03.00	RT.	℄ RAMP A	33	22	59	13.05	8.50	-0.70	-0.90	S-130	30+03.00
S-128	47+86.92	RT.	℄ DALE MABRY	36	14	54	13.76	7.20	-2.80	-3.00	S-129	47+79.19
S-164	97+90.00	RT.	℄ RAMP D	29	28	61	10.76	5.50	-2.50	-2.70	S-165	98+03.83
S-201	101+75.00	LT.	℄ RAMP E	57	26	87	22.45	14.00	-2.50	-2.70	S-119	101+75.00
S-211	94+80.00	RT.	℄ RAMP D	55	13	72	19.00	14.50	-2.50	-2.70	S-210	94+80.00
S-233	211+77.00	LT.	℄ RAMP F	33	22	59	12.44	7.60	-1.80	-2.00	S-228	211+77.00
S-234	210+55.00	LT.	℄ RAMP F	32	12	48	13.61	6.50	-1.80	-2.00	S-235	210+55.00

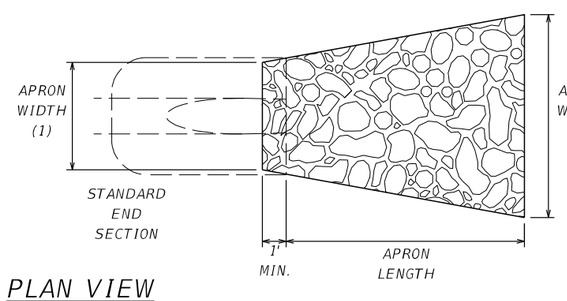
RIPRAP APRONS

STR. NO.	RIPRAP CLASS	USE D50 (in.)	APRON LENGTH (ft)	APRON DEPTH (ft)	APRON WIDTH (1) (ft)	APRON WIDTH (2) (ft)	REMARKS
S-101	1	5.0	23.1	1.5	5.00	10.0	18" PIPE
S-136A	1	5.0	28.5	1.50	3.00	10.0	12" PIPE
S-135	1	5.0	8.00	1.50	32.0	32.0	8'X4' CBC
S-142	1	5.0	6.00	1.50	4.50	8.50	18" PIPE
S-149	1	5.0	6.00	1.50	4.50	8.50	18" PIPE
S-161	1	5.0	21.1	1.50	13.0	13.0	30" PIPE
S-169	1	5.0	18.7	1.50	4.50	10.0	18" PIPE
S-170	1	5.0	21.2	1.50	4.50	10.0	18" PIPE
S-232A	1	5.0	32.5	1.50	29.0	29.0	5'X4' CBC
S-241	1	5.0	4.00	1.50	3.00	5.67	12" PIPE
S-302	1	5.0	11.6	1.50	40.5	40.5	7' X 6' CBC
S-306	1	5.0	32.0	1.50	40.5	40.5	DBL 48" PIPE

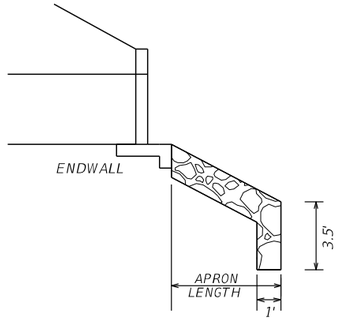


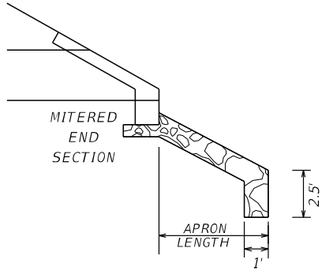
GUTTER DRAIN TYPICAL
NTS





PLAN VIEW
NTS





PROFILE VIEW
NTS

RIPRAP APRON DETAIL
NTS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AECOM Technical Services, Inc.
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	0-17-00217 439023-1-52-01

DRAINAGE DETAILS (1)

SHEET NO.
A2-211

cindy.floyd 7/9/2018 12:00:13 PM c:\pwworking\aecom_ds16_na\cindy.floyd@aecom.com\dms27850\DRDTRD401_A2.DGN

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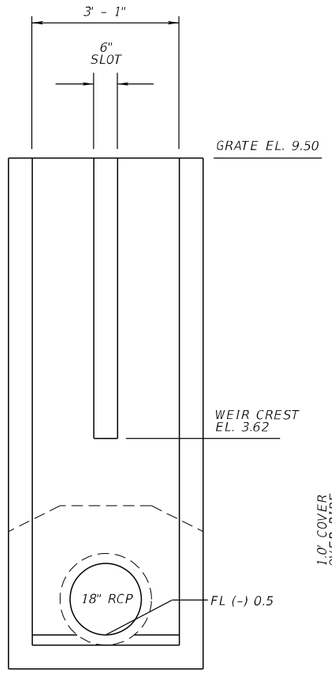
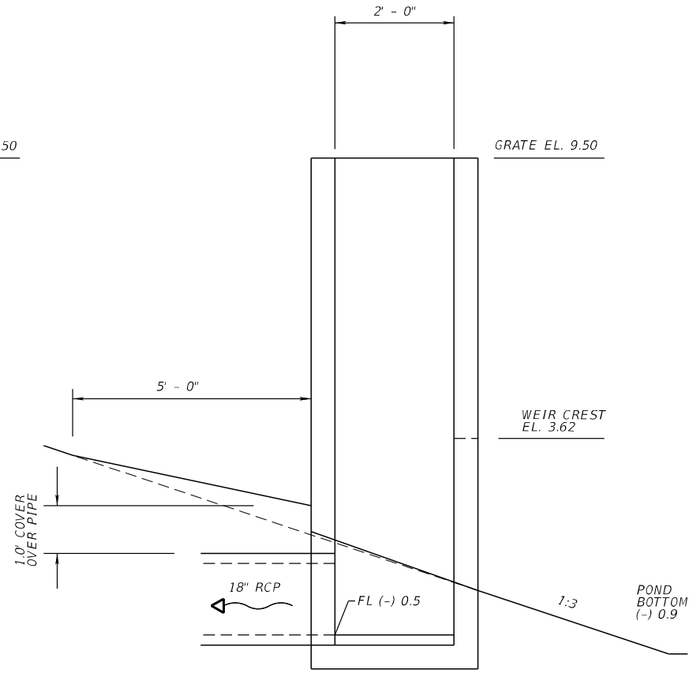
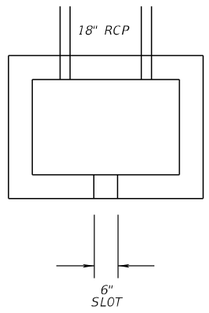


ELEVATION VIEW
NTS



SECTION
NTS



PLAN VIEW
NTS

S-318 AND S-320

TYPE C (MODIFIED) DITCH BOTTOM INLET

SEE STORMWATER MANAGEMENT FACILITY 1A PLAN FOR LOCATIONS

SMF 1A CONTROL STRUCTURES

S-318 AND S-320

NOTE: BLEED DOWN DEVICE AND SKIMMERS ARE PROVIDED ON EXISTING CONTROL STRUCTURE FROM SMF 2 (DOWNSTREAM INTERCONNECTED POND)

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	0-17-00217 439023-1-52-01

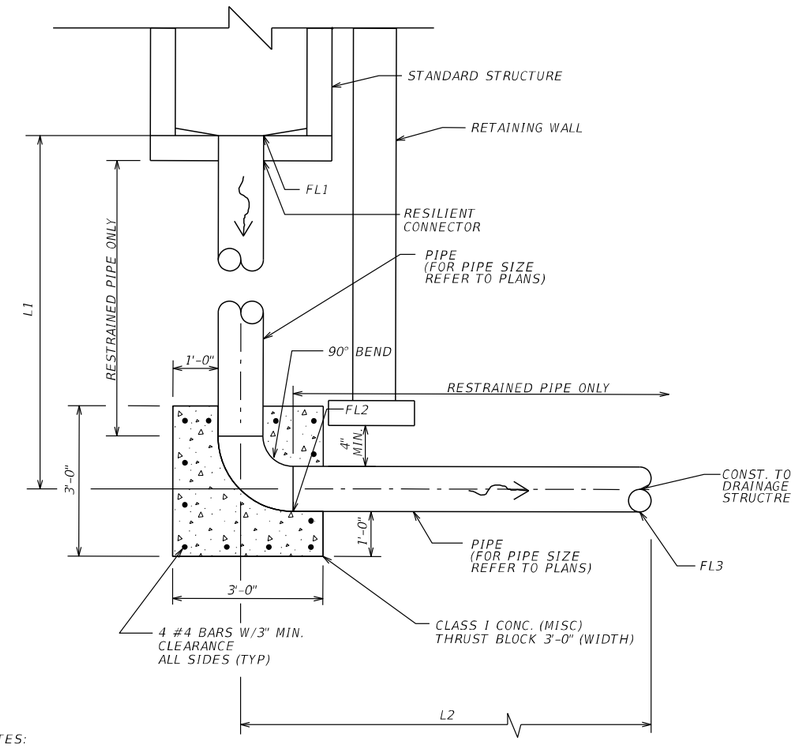
DRAINAGE DETAILS (2)

SHEET NO.
A2-212

ryan.casey 7/6/2018 9:59:44 AM c:\pwworking\aecom_ds16_na\ryan.casey@aecom.com\dms27850\DRDTRD401_A2.DGN

DROP STRUCTURES

STR. NO.	℄/℄	L1	L2	PIPE TOTAL LENGTH	GRATE EL.	FL1	FL2	FL3	DS STR. NO.
S-110	RAMP D	33	25	58	42.02	39.40	6.7	6.5	S-109
S-134	SELMON SB RAMP	19	44	63	22.46	18.30	-0.50	-0.90	S-134A
S-136	SELMON NB RAMP	16	42	58	29.43	25.00	9.30	9.10	S-136A
S-139	RAMP F	21	45	66	23.96	19.20	-1.7	-2.0	S-139A
S-143	RAMP E	29	46	75	27.60	23.10	5.80	5.60	S-143A
S-236	RAMP F	28	45	73	30.11	25.80	-1.7	-2.0	S-237
S-238	RAMP F	28	35	63	34.66	30.20	2.2	2.0	S-239
S-240	RAMP F	39	35	74	45.77	41.00	2.20	2.00	S-241
S-241A	RAMP F	36	36	72	42.50	38.00	2.20	2.00	S-241B



NOTES:

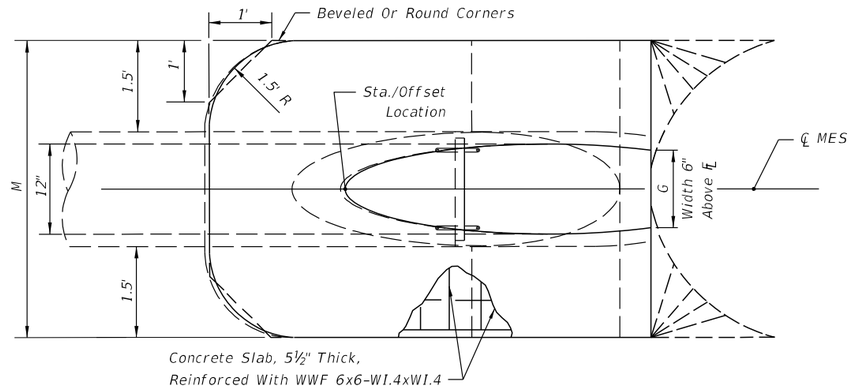
1. IF THE CLEARANCE OF THE PIPE BEND IS LESS THAN 3'-0" OVER ANOTHER PIPE THE WIDTH OF THE THRUST BLOCK WILL BE NO LESS THAN THE OUTSIDE DIAMETER OF THE LOWER PIPE PLUS 1'-0".

DROP INLET DETAIL
NTS

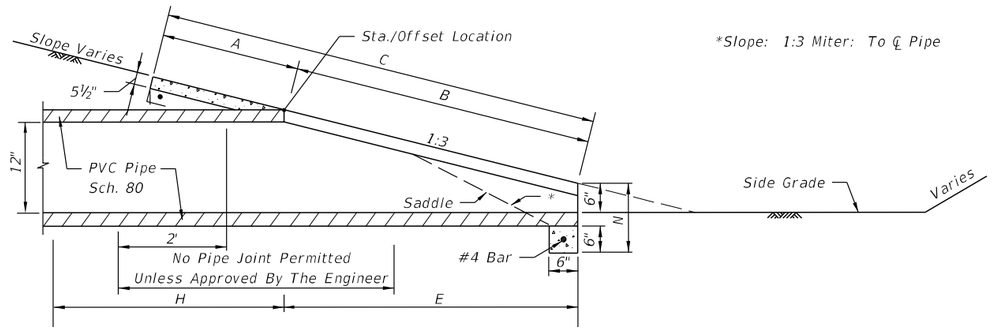
DIMENSIONS AND QUANTITIES

NOMINAL SIZE (IN.)	ACTUAL SIZE (IN.)	A (FT.)	B (FT.)	C (FT.)	E (FT.)	F (FT.)	G (FT.)	H (FT.)	M (FT.)	N (FT.)	CONCRETE SLAB (CY)	SODDING (SY)
12	11.294	1.581	3.523	5.104	3.344	6.007	0.941	4.000	4.060	1.061	0.25	20

BASED ON SCHEDULE 80 PVC PIPE



TOP-VIEW SINGLE PIPE



*Slope: 1:3 Miter: To ℄ Pipe

SECTION

GENERAL NOTES:

1. USE CONCRETE MITERED END SECTIONS. CONCRETE JACKET SHALL BE CONSTRUCTED IN ACCORDANCE WITH INDEX NO. 280.
2. CLASS NS CONCRETE CAST-IN-PLACE REINFORCED SLABS ARE REQUIRED.

12" MITERED END SECTION
NTS

RELEASED FOR CONSTRUCTION

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AECOM Technical Services, Inc.
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

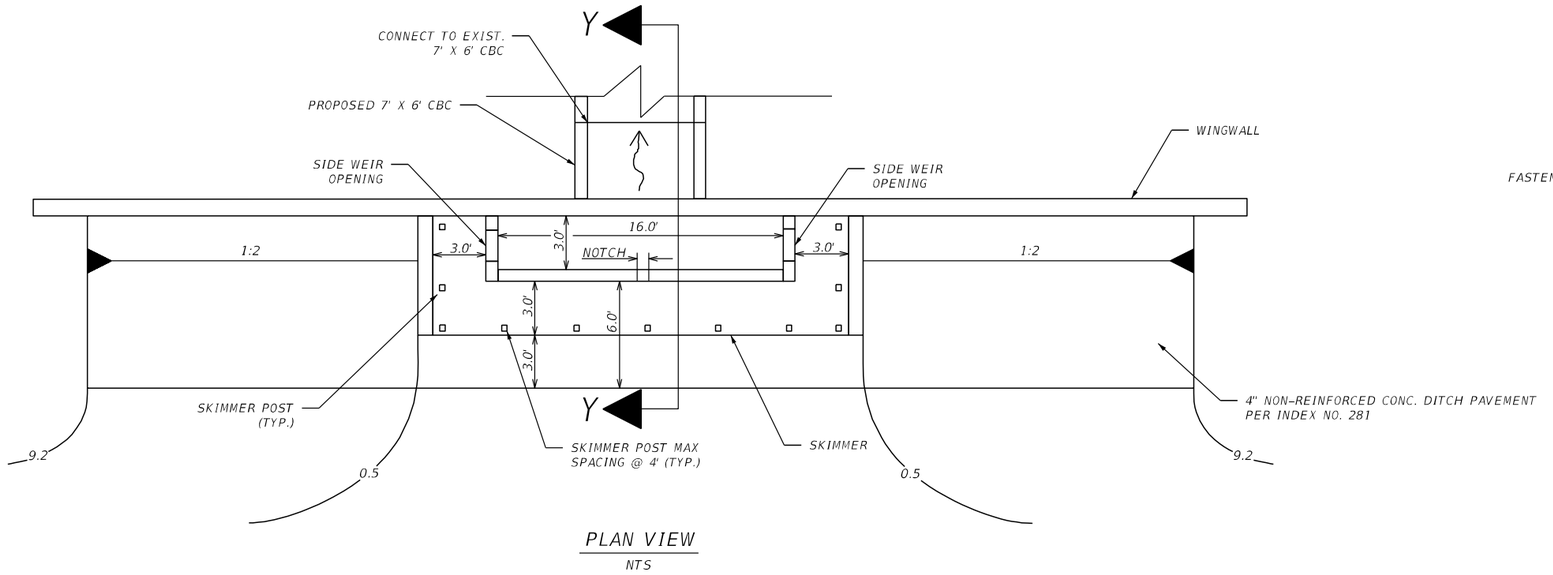
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	O-17-00217 439023-1-52-01

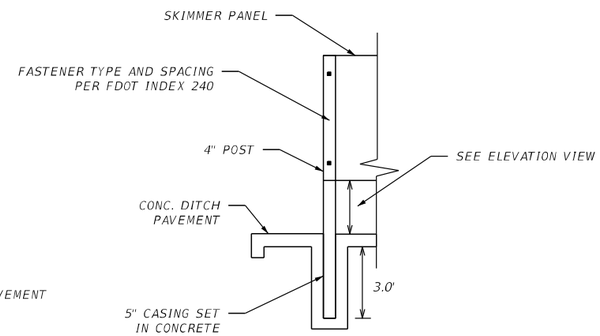
DRAINAGE DETAILS (3)

SHEET NO. A2-213

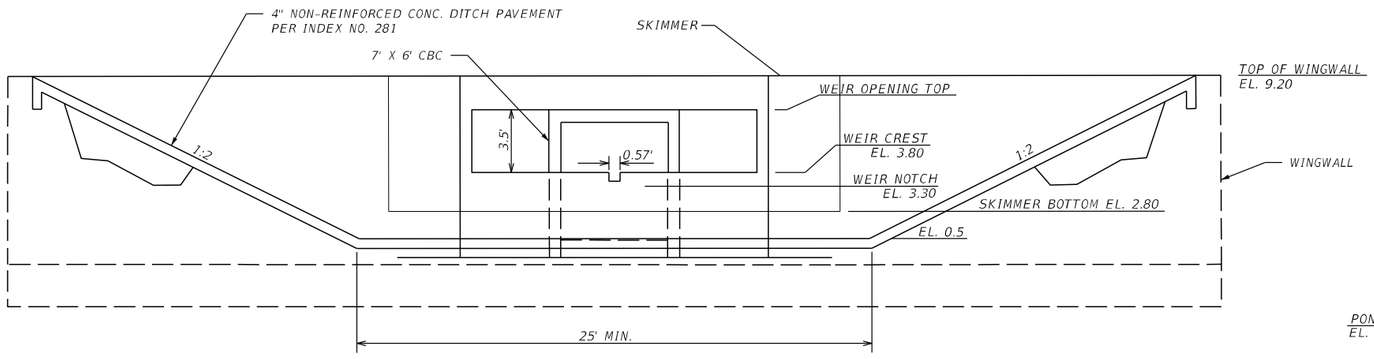
ryan.casey 7/5/2018 4:06:42 PM c:\pwworking\aecom_ds16_na\ryan.casey@aecom.com\dms27850\DRDTRD401_A2.DGN



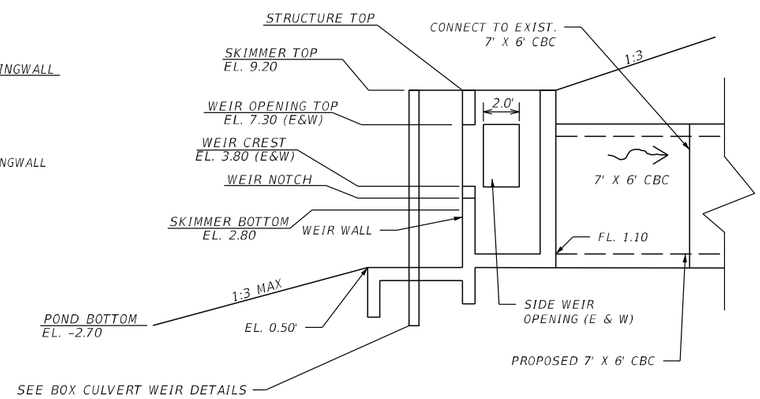
PLAN VIEW
NTS



SKIMMER POST DETAIL
NTS



ELEVATION VIEW
NTS



SECTION Y-Y
NTS

S-300

SMF 3B CONTROL STRUCTURE

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AECOM Technical Services, Inc.
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 8115
C. Bradley Carver, P.E. No. 49460

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT NO. FDOT FINANCIAL PROJECT ID
SR 618 SR 600	HILLSBOROUGH	0-17-00217 439023-1-52-01

DRAINAGE DETAILS (4)

SHEET NO.
A2-214

Jarred.Robinson 6/21/2018 8:30:38 AM c:\pwworking\aecom_ds16_na\jarred.robinson@aecom.com\dms27850\DRDTRD401_A2.DGN

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

South Selmon Expressway
Median Safety Project

ERP # 43021192.003

Southwest Florida Water Management District
2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

An Equal Opportunity Employer

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

August 14, 2019

Tampa Hillsborough Expressway Authority
Attn: David May
1104 E. Twiggs St., Suite 300
Tampa, FL 33602

Subject: **Notice of Intended Agency Action - Approval**
ERP Individual Construction

Project Name:	South Selmon Expressway Median Safety
App ID/Permit No:	785772 / 43021192.003
County:	Hillsborough
Sec/Twp/Rge:	S26/T29S/R18E, S23/T29S/R18E, S34/T29S/R18E, S27/T29S/R18E, S24/T29S/R18E, S03/T30S/R18E

Dear Permittee(s):

The Southwest Florida Water Management District (District) has completed its review of the application for Environmental Resource Permit. Based upon a review of the information you have submitted, the District hereby gives notice of its intended approval of the application.

The File of Record associated with this application can be viewed at http://www18.swfwmd.state.fl.us/erp/erp/search/ERPSearch.aspx and is also available for inspection Monday through Friday, except for District holidays, from 8:00 a.m. through 5:00 p.m. at the District's Tampa Service Office, 7601 U.S. Highway 301 North, Tampa, Florida 33637.

If you have any questions or concerns regarding the application or any other information, please contact the Environmental Resource Permit Bureau in the Tampa Service Office.

Sincerely,

David Kramer, P.E.
Manager
Environmental Resource Permit Bureau
Regulation Division

cc: Edward Kory, P.E., Parsons

Southwest Florida Water Management District
2379 Broad Street, Brooksville, Florida 34604-6899
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August 14, 2019

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Dear Permittee(s):

The Southwest Florida Water Management District (District) is in receipt of your application for the Environmental Resource Permit. Based upon a review of the information you submitted, the application is approved.

Please refer to the attached Notice of Rights to determine any legal rights you may have concerning the District's agency action on the permit application described in this letter.

If approved construction plans are part of the permit, construction must be in accordance with these plans. These drawings are available for viewing or downloading through the District's Application and Permit Search Tools located at www.WaterMatters.org/permits.

The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing notice of agency action will close the window for filing a petition for hearing. Legal requirements and instructions for publishing notices of agency action, as well as a noticing form that can be used, are available from the District's website at www.WaterMatters.org/permits/noticing. If you publish notice of agency action, a copy of the affidavit of publication provided by the newspaper should be sent to the District's Tampa Service Office for retention in this permit's File of Record.

If you have any questions or concerns regarding your permit or any other information, please contact the Environmental Resource Permit Bureau in the Tampa Service Office.

Sincerely,

David Kramer, P.E.
Manager
Environmental Resource Permit Bureau
Regulation Division

Enclosures: Approved Permit w/Conditions Attached
As-Built Certification and Request for Conversion to Operation Phase
Notice of Authorization to Commence Construction
Notice of Rights

cc: Edward Kory, P.E., Parsons

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE

INDIVIDUAL CONSTRUCTION
PERMIT NO. 43021192.003

EXPIRATION DATE: **August 14, 2024** **PERMIT ISSUE DATE:** **August 14, 2019**

This permit is issued under the provisions of Chapter 373, Florida Statutes, (F.S.), and the Rules contained in Chapter 62-330, Florida Administrative Code, (F.A.C.). The permit authorizes the Permittee to proceed with the construction of a surface water management system in accordance with the information outlined herein and shown by the application, approved drawings, plans, specifications, and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District). Unless otherwise stated by permit specific condition, permit issuance constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341. All construction, operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Administrative Code and the conditions of this permit.

PROJECT NAME:	South Selmon Expressway Median Safety
GRANTED TO:	Tampa Hillsborough Expressway Authority Attn: David May 1104 E. Twiggs St., Suite 300 Tampa, FL 33602
OTHER PERMITTEES:	N/A

ABSTRACT: This permit authorization is for the construction of a new stormwater management system to serve a proposed safety-improvement project for the South Selmon Expressway (SR 618). The project proposes safety improvements which include the addition of a median barrier and wider inside paved shoulders, and the milling and resurfacing of the existing the existing travel lanes between north of Himes Avenue to west of Hyde Park Avenue. The existing grassed median will be filled and paved with the construction of the permanent median barrier. The project lies within a mostly developed urban area. Runoff from the roadway is generally conveyed by shoulder gutter inlets to roadside ditches, which drain to the City of Tampa stormwater conveyance system. There are ten (10) outfalls which traverse SR 618 within the project limits and ten (10) corresponding drainage basins. The proposed drainage design approach involves meeting pre- versus post-development attenuation requirements in the existing roadside ditches and in proposed Ponds 9 and 10. Equivalent water quality treatment will be provided in Ponds 9 and 10 to mitigate for the lost water quality function from the filling of the existing median ditch. No adverse water quality or quantity impacts are anticipated.

OP. & MAIN. ENTITY:	Tampa Hillsborough Expressway Authority
OTHER OP. & MAIN. ENTITY:	N/A
COUNTY:	Hillsborough
SEC/TWP/RGE:	S26/T29S/R18E, S23/T29S/R18E, S34/T29S/R18E, S27/T29S/R18E, S24/T29S/R18E, S03/T30S/R18E
TOTAL ACRES OWNED OR UNDER CONTROL:	70.00
PROJECT SIZE:	70.00 Acres
LAND USE:	Road Projects
DATE APPLICATION FILED:	July 05, 2019
AMENDED DATE:	N/A

I. Water Quantity/Quality

POND No.	Area Acres @ Top of Bank	Treatment Type
9	0.35	ON-LINE RETENTION
10	0.45	ON-LINE RETENTION
	Total: **0.80**	

Water Quantity/Quality Comments:

Although the addition of median pavement does not formally require water quality treatment, the loss of treatment provided by the existing grassed median will be offset through compensatory treatment in two on-line retention ponds.

In existing conditions, approximately 4.59 acres of pavement, which includes travel lanes, paved shoulders and miscellaneous asphalt, drain to the median. The baseline for identifying the existing level of water quality treatment system was 0.25" of runoff from the 4.59 acres (0.10 ac-ft). Pond 9 will be located in the infield area at the northwest corner of Platt Street and Willow Avenue and will provide treatment for the first 0.50" of runoff from the contributing area. The total contributing area for Basin 9 is 2.36 acres of which 1.42 acres is existing/proposed pavement. Pond 10 will be located in the infield area at the northeast corner of Platt Street and Willow Avenue and will provide treatment for the first 0.50" of runoff from the contributing area. The contributing area for Basin 10 is 4.33 acres of which 1.99 acres is existing/proposed pavement. The pavement to be treated consists of existing paved shoulder, super elevated roadway and proposed paved median. The total provided water quality treatment volume of 0.28 ac-ft exceeds the required water quality treatment volume of 0.10 ac-ft. The ponds will also provide the required water quantity attenuation. For the improvements in Basins 1 through 8, water quantity attenuation will be provided by regrading ditches and making adjustments to existing inlet tops. All elevations reference NAVD 88.
A mixing zone is not required.
A variance is not required.

II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type	Encroachment Result* (feet)
0.00	0.00	No Encroachment	N/A

*****Depth of change in flood stage (level) over existing receiving water stage resulting from floodplain encroachment caused by a project that claims Minimal Impact type of compensation.

III. Environmental Considerations

No wetlands or other surface waters exist within the project area.

Specific Conditions

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit may be terminated, unless the terms of the permit are modified by the District or the permit is transferred pursuant to Rule 40D-1.6105, F.A.C. In such situations, each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.

2. The Permittee shall retain the design professional registered or licensed in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The Permittee shall inform the District in writing of the name, address and phone number of the design professional so employed. This information shall be submitted prior to construction.

3. For dry bottom retention systems, the retention area(s) shall become dry within 72 hours after a rainfall event. If a retention area is regularly wet, this situation shall be deemed to be a violation of this permit.

4. If limestone bedrock is encountered during construction of the stormwater management system, the District must be notified and construction in the affected area shall cease.

5. The Permittee shall notify the District of any sinkhole development in the stormwater management system within 48 hours of discovery and must submit a detailed sinkhole evaluation and repair plan for approval by the District within 30 days of discovery.

6. The Permitted Plan Set for this project includes: the set received by the District on July 25, 2019.

7. The operation and maintenance entity shall provide for the inspection of the permitted project after conversion of the permit to the operation and maintenance phase. For systems utilizing retention or wet detention, the inspections shall be performed five (5) years after operation is authorized and every five (5) years thereafter.

   The operation and maintenance entity must maintain a record of each inspection, including the date of inspection, the name and contact information of the inspector, whether the system was functioning as designed and permitted, and make such record available upon request of the District.

   Within 30 days of any failure of a stormwater management system or deviation from the permit, an inspection report shall be submitted using Form 62-330.311(1), “Operation and Maintenance Inspection Certification” describing the remedial actions taken to resolve the failure or deviation.

8. District staff must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters, a written dewatering plan must either have been submitted and approved with the permit application or submitted to the District as a permit prior to the dewatering event as a permit modification. A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2, F.A.C.

9. Off-site discharges during construction and development shall be made only through the facilities authorized by this permit. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the District.

10. The permittee shall complete construction of all aspects of the stormwater management system, including wetland compensation (grading, mulching, planting), water quality treatment features, and discharge control facilities prior to beneficial occupancy or use of the development being served by this system.

11. The following shall be properly abandoned and/or removed in accordance with the applicable regulations:

    a. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor.

b. Any existing septic tanks on site shall be abandoned at the beginning of construction.

c. Any existing fuel storage tanks and fuel pumps shall be removed at the beginning of construction.

12. All stormwater management systems shall be operated to conserve water in order to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property and to minimize dewatering of offsite property.

13. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity.

14. This permit is valid only for the specific processes, operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application. Any substantial deviation from the approved drawings, exhibits, specifications or permit conditions, including construction within the total land area but outside the approved project area(s), may constitute grounds for revocation or enforcement action by the District, unless a modification has been applied for and approved. Examples of substantial deviations include excavation of ponds, ditches or sump areas deeper than shown on the approved plans.

15. This permit does not authorize the Permittee to cause any adverse impact to or "take" of state listed species and other regulated species of fish and wildlife. Compliance with state laws regulating the take of fish and wildlife is the responsibility of the owner or applicant associated with this project. Please refer to Chapter 68A-27 of the Florida Administrative Code for definitions of "take" and a list of fish and wildlife species. If listed species are observed onsite, FWC staff are available to provide decision support information or assist in obtaining the appropriate FWC permits. Most marine endangered and threatened species are statutorily protected and a "take" permit cannot be issued. Requests for further information or review can be sent to FWCConservationPlanningServices@MyFWC.com.

GENERAL CONDITIONS

1. The general conditions attached hereto as Exhibit "A" are hereby incorporated into this permit by reference and the Permittee shall comply with them.

David Kramer, P.E.

Authorized Signature

Drainage Design Report

Tampa Hillsborough Expressway Authority

South Selmon Expressway (SR 618) Median Safety Improvement from Himes Avenue to Hyde Park Avenue
(M.P. 1.000 to M.P. 4.877)

Hillsborough County
THEA Project ID O-00518

PARSONS
5100 West Lemon Street Suite 145
Tampa, FL, 33609

Prepared By:
Edward J. Kory, P.E.

PARSONS

Professional Engineer's Certificate

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Parsons Transportation Group, Inc., a Florida corporation under Section 471.023, Florida Statutes, to offer engineering services to the public through a Professional Engineer, duly licensed under Chapter 471, Florida Statutes, Certificate of Authorization (CA) Number 1838, by the State of Florida, Department of Professional Regulation and Board of Professional Engineers and that I have prepared or approved the evaluation, findings, opinions and conclusions or technical advice hereby reported in this Drainage Design Report for :

Project:	THEA Project No. O-00518 South Selmon Expressway (SR 618) Median Safety Improvements
Location:	Hillsborough County, Florida
Tampa-Hillsborough Expressway Authority (THEA) Project Manager:	David A. May, P.E. Tampa-Hillsborough Expressway Authority (THEA) 1104 E. Twiggs Street, Suite 300 Tampa, Florida 33609
Report Prepared by:	Parsons Transportation Group, Inc. 5100 W. Lemon Street, Suite 145 Tampa, Florida 33609 Certificate of Authorization No.1838 Vendor No. F360982270

The official record of this document has been electronically signed and sealed using Digital Signature as required by 61G15-23.004 F.A.C. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

This document has been digitally signed and sealed by:
Engineer of Record:

Edward J. Kory, P.E.
P.E. No. 53178
201 East Pine Street, Suite 900
Orlando, Florida 32801
Certificate of Authorization No. 1838

Edward J Kory
Digitally signed by Edward J Kory
Date: 2019.07.03 16:31:33 -04'00'

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LIST OF EXHIBITS

EXHIBIT NO.	EXHIBIT TITLE
Exhibit 1	Project Drainage Maps
Exhibit 2	Flood Maps
Exhibit 3	Pre-Development Basin Calculations
Exhibit 4	Post-Development Basin DCIA Determinations
Exhibit 5	Water Quality Calculations
Exhibit 6	ICPR Model Input and Routing Summary
Exhibit 7	SWFWMD Pre-Application Meeting Notes

APPENDICES

APPENDIX NO.	APPENDIX TITLE
Appendix A	Geotechnical Report
Appendix B	Environmental Narrative Report
Appendix C	Storm Drain/Spread Calculations

Executive Summary

The purpose of this report is to describe the proposed project stormwater management system designed to meet federal, state and local stormwater management requirements, for the proposed improvements to the South Selmon Expressway (SR 618), located within the City of Tampa Interbay Peninsula, in Hillsborough County, Florida. The project proposes safety improvements which include adding a median barrier and wider inside paved shoulders to prevent crossover accidents, provide a refuge for disabled vehicles, and a corridor for emergency vehicles. It is the intent that these safety improvements be constructed such that the Authority has maximum flexibility for future capacity improvements on the Selmon Expressway. The purpose of this report is to describe the proposed project stormwater management system designed to meet federal, state and local stormwater management requirements, for the proposed safety improvements.

The project corridor is a mostly developed urban area. Runoff from the roadway is typically conveyed by shoulder gutter inlets to roadside ditches, which drain to catch basins. These catch basins are part of the local, City of Tampa (COT) stormwater conveyance system. The COT stormwater conveyance systems drain to Hillsborough Bay or the Hillsborough River. There are ten (10) outfalls which traverse SR 618 within the limits of this project. Please refer to the project Drainage Maps, included in Exhibit 1. A brief summary of the individual basins are listed below:

- Basin 1 (From Stations 100+00 to 125+10) Runoff from SR 618 is conveyed by COT storm sewer located between W Euclid Avenue and W Bay Villa Avenue to Hillsborough Bay.
- Basin 2 (From Stations 125+10 to 163+89) Runoff from SR 618 is conveyed to Hillsborough Bay by COT storm sewer north along the west side of the project to a 54-inch pipe which crosses under SR 618 north of the interchange at W Bay to Bay Boulevard.
- Basin 3 (From Stations 163+89 to 184+25) Runoff from SR 618 is conveyed by COT storm sewer which crosses under SR 618 at Station 174+13 and discharges to Hillsborough Bay north of Rubideaux Street.
- Basin 4 (From Stations 184+25 to 199+00) Runoff from SR 618 is conveyed by COT storm sewer located on the west side of the railway tracks, that drains south to the pipe crossing under SR 618 at Station 174+13 and discharges to Hillsborough Bay through the same storm sewer system at Basin 3.
- Basin 5 (From Stations 199+00 to 217+40) Runoff from SR 618 is conveyed west by COT storm sewer located on W Mississippi Avenue and south along S Habana Avenue. This pipe system connects to the same storm sewer system used by Basin 4 at the corner of S Habana Avenue and W San Isidro Street. This COT storm sewer located on the west side of the railway tracks drains south to the pipe crossing under SR 618 at Station 174+13 and discharges to the Hillsborough Bay through the same storm sewer system at Basin 3.
- Basin 6 (From Stations 217+40 to 234+00) Runoff from SR 618 is conveyed west by COT storm sewer to an existing pond located west of the railway tracks near Station 230+50.
- Basin 7 (From Stations 234+00 to 244+00) Runoff from SR 618 is conveyed east along the north side of W Swann Avenue by COT storm sewer to an existing pond located at the corner of W Swann Avenue and S Rome Avenue.
- Basin 8 (From Stations 244+00 to 501+00) Runoff from SR 618 is conveyed north along the west side of railway tracks by COT storm sewer connects to a storm sewer system on W Platt Street, which drains east to Hillsborough Bay.
- Basin 9 (From Stations 501+00 to 507+00) Runoff from SR 618 is conveyed to a catch basin located in the infield area on the west side of S Willow Avenue, north of Platt Street and south of SR 618. This catch basin drains to the same COT storm sewer system as Basin 8 does, and drains to the

Hillsborough Bay.

- Basin 10 (From Stations 507+00 to 535+00) Runoff from SR 618 is conveyed by inlets and pipes to a COT storm sewer system that drains east to the Hillsborough River.

Below is a brief description of the proposed drainage improvements with each basin to address pre /post discharge rates.

Basin 1 revisions include regrading the left side swale back to its original configuration and modifying the existing ditch bottom inlet which drains the existing roadside swale located on the west side of SR 618 at Station 119+00 to attenuate runoff before it enters the COT storm sewer system crossing under SR 618. In addition, the existing ditch bottom inlet located on the east side of the entrance ramp at W Euclid Avenue will be raised to attenuate runoff prior to it entering the same COT storm sewer system in this basin.

Basin 2 revisions include regrading the left side swale back to its original configuration and modifying the existing ditch bottom inlet which drains the existing roadside swale located on the west side of SR 618 at Station 154+00 to attenuate runoff before it enters the COT storm sewer system running north west of the railway tracks.

Basin 3 revisions include regrading the left side swale back to its original configuration and modifying the existing ditch bottom inlet which drains the existing roadside swale located on the west side of SR 618 at Stations 173+00 and 175+00 to attenuate runoff before it enters the COT storm sewer system crossing under SR 618 at Station 174+13.

Basin 4 revisions include regrading the left side swale back to its original configuration and modifying the existing ditch bottom inlet which drains the existing roadside swale located on the west side of SR 618 at Station 185+00 to attenuate runoff before it enters the COT storm sewer system which drains south along the west side of the railway tracks to the pipe crossing under SR 618 at Station 174+13.

Basin 5 revisions include regrading the left side swale back to its original configuration and modifying the existing ditch bottom inlet which drains the existing roadside swale located on the west side of SR 618 at Station 200+00 to attenuate runoff before it enters the COT storm sewer system which drains west along W Mississippi Avenue.

Basin 6 revisions include regrading the left side swale back to its original configuration and modifying the existing ditch bottom inlet located in the west side ditch, east of, and upstream from the existing pond located west of the railway tracks at Station 230+50 to attenuate runoff before it enters the pond.

Basin 7 revisions include regrading the left side swale to create additional storage volume upstream of the existing ditch bottom inlet located in the west side ditch, east of, and upstream from the existing pond located west of the railway tracks at Station 237+50 to attenuate runoff before it enters the pond. The will be a slight increase in runoff of 0.80 cfs. It should be noted that the overall existing basin draining to the pond is 86.24 acres, so the increase in runoff from this project will be insignificant.

Basin 8 revisions include regrading the left side swale to create additional storage volume upstream of the existing pipe outlet under the railway tracks. The pipe outlet is located on the west side of SR 618 at Station 252+00 and is part of the COT storm sewer system which drains east along W Platt Street. There will be a small increase in runoff of 1.56 cfs. However, both Basins 8 and 9 discharge to the same COT storm sewer system. Since the post-development discharge from Basin 9 will be reduce by 4.42 cfs, there will be an overall net reduction of 2.86 cfs to the COT drainage system.

of W Platt Street and S Willow Avenue to attenuate runoff before it enters the COT storm sewer system which drains east along W Platt Street. In addition, Pond 9 will provide water quality treatment for the existing paved shoulders and super elevated roads that drained to the existing median which is being removed.

Basin 10 revisions include creating a dry retention pond (Pond 10) in the infield area at the northeast corner of W Platt Street and S Willow Avenue to attenuate runoff before it enters the COT storm sewer system which drains north to the Hillsborough River, west of W Platt Street. In addition, Pond 10 will provide water quality treatment for the existing paved shoulders and super elevated roads that drained to the existing median which is being removed to mitigate the treatment lost.

Pre/Post-Development Routing Summary

Basin ID	Node Name	Node Description	Pre-Dev Peak Stage (ft.)	Post-Dev Peak Stage (ft.)	Difference in Peaks (ft.)	Allowable Peak Stage (ft.)	Railway Elevation (ft.)	Pre-Dev Peak Inflow (cfs)	Post-Dev Peak Inflow (cfs)	Difference in Peaks (cfs)	Pre-Dev Peak Outflow (cfs)	Post-Dev Peak Outflow (cfs)	Difference in Peaks (cfs)
	25-Year/24-Hour Storm Event												
1	Ditch_1S	Ditch/BNDY	10.24	11.67	1.43	13.134	14.634	19.79	21.1	1.31	19.66	18.15	-1.51
1	Ditch_1N	Ditch/BNDY	10.91	11.87	0.96	13.25	14.75	26.15	27.62	1.47	25.58	26.62	1.04
2	Ditch_2	Ditch/BNDY	15.64	15.61	-0.03	15.634	17.134	52.35	57.48	5.13	40.91	40.59	-0.32
3	Ditch_3_LT	Ditch/BNDY	13.28	14.25	0.97	15.134	16.634	12.78	17.47	4.69	12.62	11.77	-0.85
3	Ditch_3_RT	Ditch/BNDY	8.24	8.2	-0.04	10.134	N/A	18.78	18.37	-0.41	18.73	18.32	-0.41
4	Ditch_4	Ditch/BNDY	15.57	17.04	1.47	17.5	19	22.15	25.2	3.05	22	20.81	-1.19
5	Ditch_5	Ditch/BNDY	17.59	18.55	0.96	18.5	20	22.55	26.8	4.25	22.54	22.41	-0.13
6	Ditch_6A	Ditch/BNDY	19.72	20.19	0.47	20.134	21.634	14	16.33	2.33	19.89	18.87	-1.02
7	Ditch_7A	Ditch/BNDY	17.76	17.82	0.06	18.1	19.6	2.83	3.83	1	8	8.8	0.8
8	Ditch_8_S	Ditch/BNDY	17.27	17.42	0.15	17.5	19	17.54	21.06	3.52	14.28	15.84	1.56
9	Infield 9/Pond 9	Pond/BNDY	16.96	17.9	0.94	19	N/A	10.44	10.94	0.5	10.28	5.86	-4.42
10	Pond 10		N/A	16.97	N/A			N/A	18.34	N/A	56.91	54.45	-2.46
	100-Year/24-Hour Storm Event												
1	Ditch_1S	Ditch/BNDY	10.38	12.1	1.72	13.134	14.634	28.19	29.35	1.16	27.73	26.45	-1.28
1	Ditch_1N	Ditch/BNDY	11.46	12.39	0.93	13.25	14.75	38.72	40.17	1.45	35.16	35.01	-0.15
2	Ditch_2	Ditch/BNDY	16.47	16.28	-0.19	15.634	17.134	76.87	81.72	4.85	49.07	47.4	-1.67
3	Ditch_3_LT	Ditch/BNDY	13.45	14.64	1.19	15.134	16.634	19.6	25.94	6.34	19.24	16.61	-2.63
3	Ditch_3_RT	Inlets	9.58	9.2	-0.38	10.134	N/A	27.87	25.65	-2.22	27.74	25.54	-2.2
4	Ditch_4	Ditch/BNDY	15.94	17.32	1.38	17.5	19	32.89	35.8	2.91	31.7	31.7	0
5	Ditch_5	Ditch/BNDY	17.78	19.02	1.24	18.5	20	34.61	38.9	4.29	34.53	29.8	-4.73
6	Ditch_6A	Ditch/BNDY	20.86	20.93	0.07	20.134	21.634	22.23	24.72	2.49	25.32	25.65	0.33
7	Ditch_7A	Ditch/BNDY	18.02	18.06	0.04	18.1	19.6	4.94	6.24	1.3	12.32	12.78	0.46
8	Ditch_8_S	Ditch/BNDY	17.93	18.04	0.11	17.5	19	26.73	30.22	3.49	19.87	20.53	0.66
9	Infield 9/Pond 9	Pond/BNDY	17.01	18.57	1.56	19	N/A	15.28	15.76	0.48	15.1	6.53	-8.57
10	Pond 10		N/A	17.6	N/A			N/A	27.73	N/A	84.91	75.88	-9.03

1.0 General Project Information

1.1 Introduction

The Tampa-Hillsborough Expressway Authority (Authority), proposes safety improvements to add median barrier and wider inside paved shoulders to prevent crossover accidents, provide a refuge for disabled vehicles, and a corridor for emergency vehicles. It is the intent that this safety improvement be constructed such that the Authority has maximum flexibility for future capacity improvements on the Selmon Expressway. The purpose of this report is to describe the proposed project stormwater management system designed to meet federal, state and local stormwater management requirements, for the proposed improvements.

Stormwater management facilities for this project have been designed to meet the Environmental Resource Permit (ERP) requirements mandated by the SWFWMD. The established criteria that guided the approach to the stormwater management system design along with the methodology and analytical procedures used are listed in this report. ***All elevations presented in this report and in the corresponding plans are based on the North American Vertical Datum of 1988 (NAVD88).***

1.2 Project Location

The proposed project corridor is located within the Interbay Peninsula of the City of Tampa, in Hillsborough County, Florida. The project limits extend along the Selmon Expressway from Himes Avenue to Hyde Park Avenue.

The project's physical location can be found in the vicinity of Sections 23, 24, 26, 27 & 34; Township 29S, Range 18E and Sections 3 and 4; Township 30S; Range 18E. Refer to Figure 1-1 Project Location Map, on the following pages.

1.3 Project Description

The proposed project consists of milling and resurfacing the existing travel lanes and ramp lanes adjacent to the travel lanes. The ramp limits will extend to the limits of the on/off ramp gores. Cross slope corrections will be conducted at areas where existing cross slope is outside of the tolerances specified in the Florida Design Manual (FDM) for interstate facilities, excluding superelevation transitions, superelevated areas and bridge deck areas. The existing median will be filled in, paved and a permanent median barrier will be constructed. Please see the Typical Roadway Section shown in Figures 1-2.

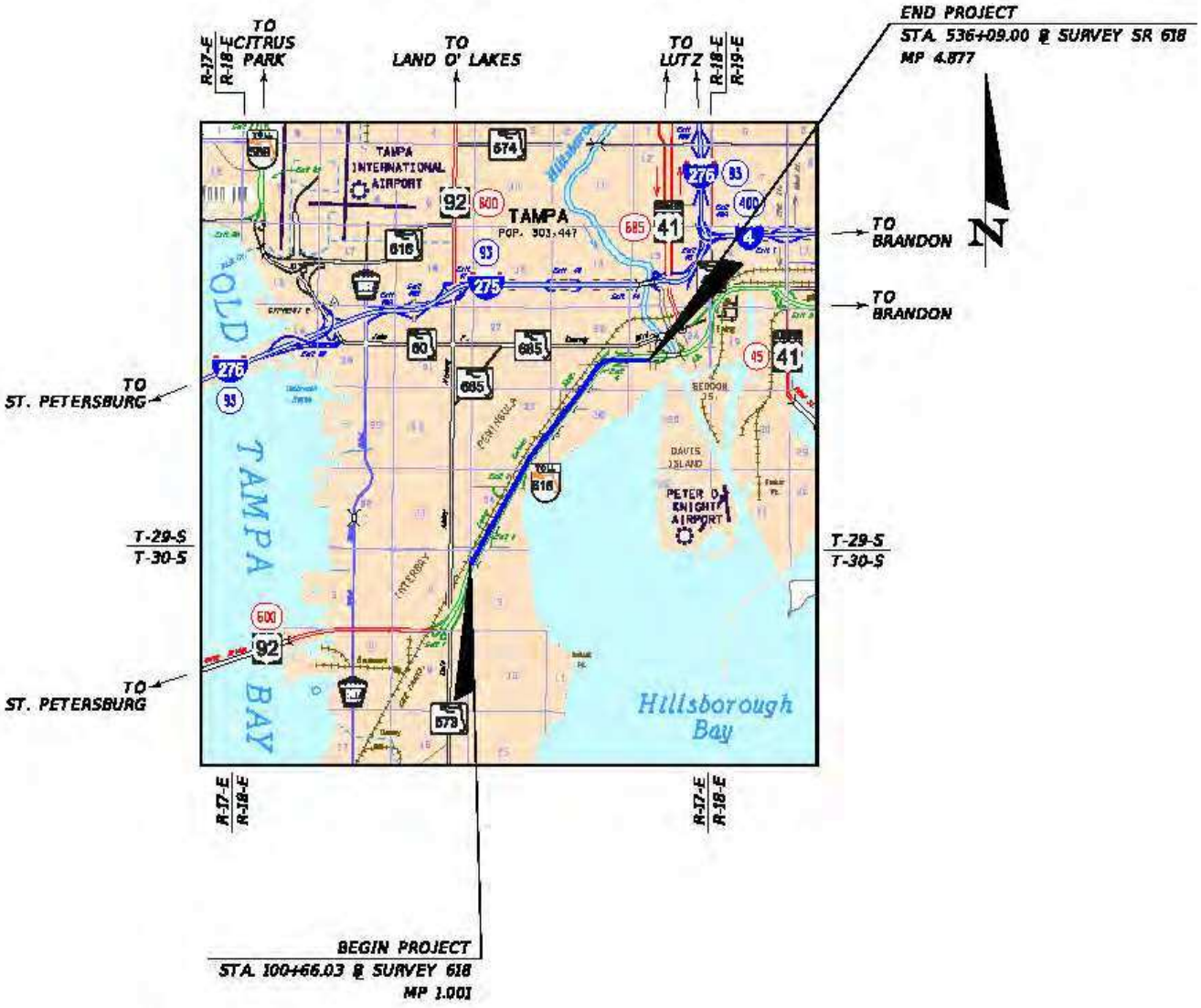

Figure 1-1: Project Location Map

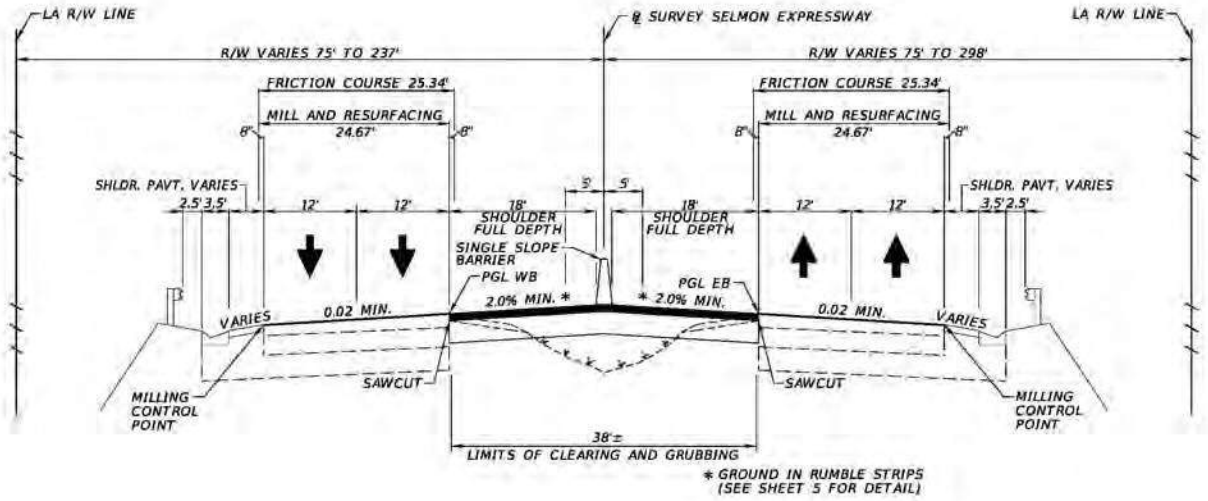

Figure 1-2: Proposed South Selmon Expressway (SR 618) Roadway Typical Section

1.4 Watershed Description

The project corridor is located within the Interbay Peninsula in Hillsborough County, Florida. Refer to the project Drainage Maps included in Exhibit 1.

Basin 1 consist of 10.27 acres. stormwater runoff drains through an internal drainage system into a City of Tampa (COT) stormwater conveyance system that outlets to Hillsborough Bay. Upstream of this basin, an offsite area of 260.43 acres of mainly mixed residential and commercial properties are collected by existing curb inlets and conveyed by local storm COT storm drain system to the major COT storm drain system trunk line that carries this off-site runoff and the project on-site runoff to Hillsborough Bay.

Basin 2 consist of 11.96 acres. stormwater runoff drains through an internal drainage system into a City of Tampa (COT) stormwater conveyance system that outlets to Hillsborough Bay. Upstream of this basin, an offsite area of 109.02 acres of mainly mixed residential and commercial properties are collected by existing curb inlets and conveyed by local storm COT storm drain system to the major COT storm drain system trunk line that carries this off-site runoff and the project on-site runoff to Hillsborough Bay.

Basins 3, 4, and 5 consists of 7.77, 5.23 and 5.91 acres respectively. Stormwater runoff is collected and conveyed through an internal drainage system into a City of Tampa (COT) stormwater conveyance system that outlets to Hillsborough Bay. Upstream of this basin, an offsite area of 638.14 acres of mainly mixed residential and commercial properties are collected by existing curb inlets and conveyed by local storm COT storm drain system to the major COT storm drain system trunk line that carries this off-site runoff and the project on-site runoff to Hillsborough Bay.

Basins 6 and 7 consists of 6.11 and 2.39 acres respectively. Stormwater runoff drains through internal drainage systems to a City of Tampa (COT) stormwater conveyance system that outlets to Hillsborough Bay. Upstream of this basin, an offsite area of 77.74 acres of mainly mixed residential and commercial properties are collected by existing curb inlets and conveyed by local storm COT storm drain system to the major COT storm drain system trunk line that carries this off-site runoff and the project on-site runoff to Hillsborough Bay.

Basins 8 and 9 consists of 4.50 and 2.36 acres respectively. Stormwater runoff drains through internal drainage systems to a City of Tampa (COT) stormwater conveyance system that outlets to Hillsborough Bay. Upstream of this basin, an offsite area of 385.78 acres of mainly mixed residential and commercial properties are collected by existing curb inlets and conveyed by local storm COT storm drain system to the major COT storm drain system trunk line that carries this off-site runoff and the project on-site runoff to Hillsborough Bay.

Basin 10 consist of 13.51 acres. The collected stormwater is conveyed through an internal drainage system to Hillsborough River.

1.5 Soils Information

The drainage basins within the project corridor are mostly developed highly urbanized areas with internal stormwater management facilities. Based upon a review of the Natural Resource Conservation Service (NRCS) Soil Survey for Hillsborough County, Florida; the existing soils within the study area consist mostly of Ona-, Tavares- and Wabasso - Urban Land Complex soils. The table below shows the soil types encountered within the study area. See Figure 1-3 and 1-4, Project Soils and Soils Map provided on the following pages. A Preliminary Geotechnical Data Report was prepared by Tierra, Inc. and is included in Appendix B.

Hillsborough County, Florida			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
22	Immokalee-Urban Land Complex	3.71	5.81%
32	Ona-Urban Land Complex	32.01	50.11%
34	Myakka-Urban Land Complex	2.39	3.74%
55	Tavares-Urban Land Complex	16.84	26.36%
58	Wabasso-Urban Land Complex	8.92	13.97%
Totals for Area of Interest (AOI)		63.88	100.00%

Figure 1-3: Project Soils

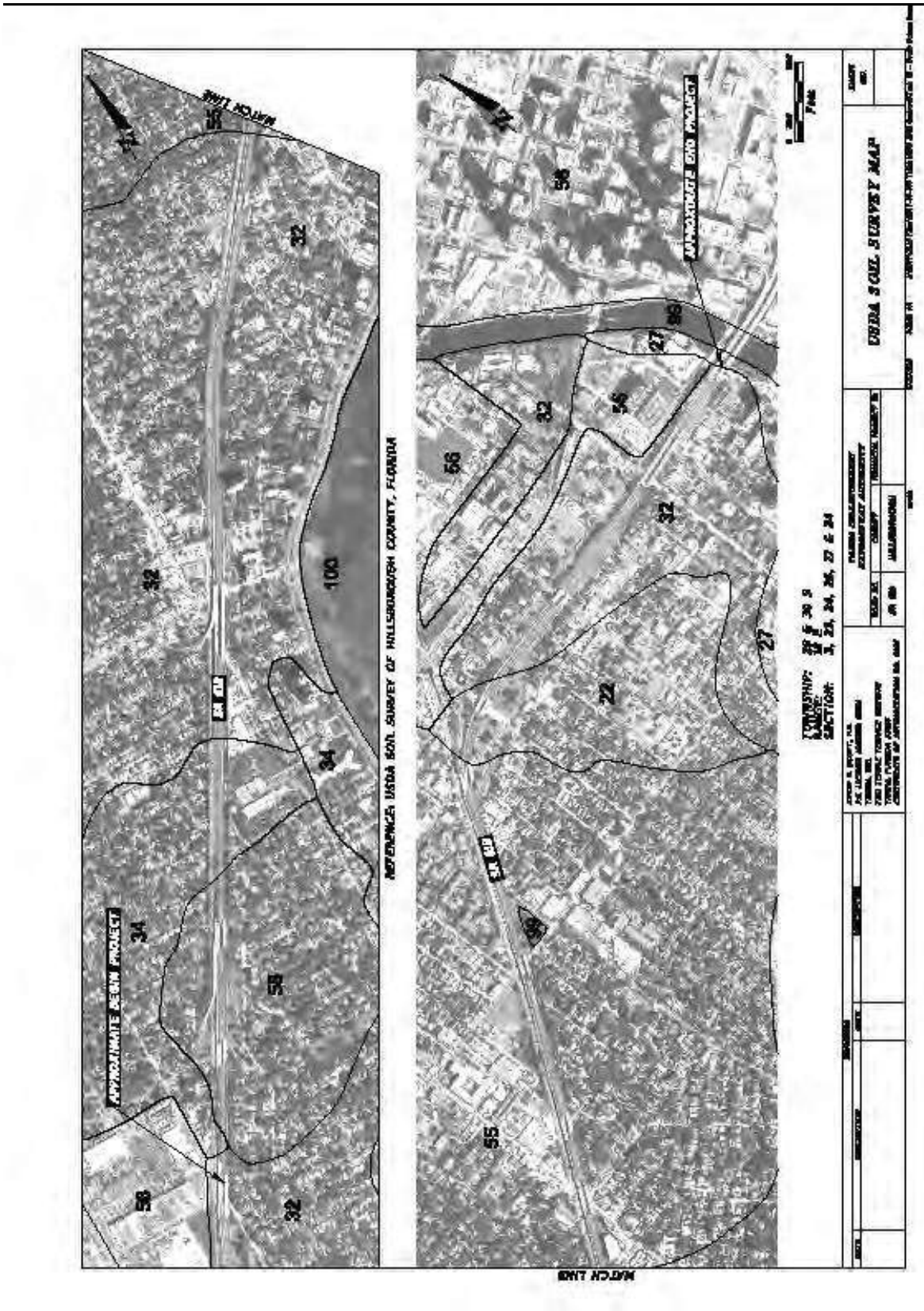

Figure 1-4: Soils Map

1.6 Floodplain

Based on current information shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Hillsborough County, Florida (FIRM Map Numbers 12057C03353H Map Panel 353 and 12057C3361H Map Panel 361, effective August 28, 2008), the project area lies within Zone X (areas determined by FEMA to be outside the 0.2% annual chance floodplain). Refer to the project FEMA FIRM included in Exhibit 2.

1.7 Wetlands / Protected Species

There are no wetlands or protected species within the project corridor. See Appendix B for the Environmental memorandum.

1.8 Field Reviews and Coordination

SWFWMD pre-application meetings were held on February 5, 2019 and on May 15, 2019 at the Tampa office. The purpose of these meetings was to discuss general permitting design criteria for the proposed project. Refer to the SWFWMD pre-application meeting notes included in Exhibit 7.

1.9 Reference and Resource Information

Existing Studies/ Plans/ Reports:

- City of Tampa Stormwater GIS Shapefiles
- South Crosstown Expressway Construction plans

Maps & Surveys:

- Federal Emergency Management Agency (FEMA) Maps
- Soil Survey of Hillsborough County, United States Department of Agriculture
- Project-specific aerials and survey

2.0 Existing Drainage Characteristics

The project corridor is located within the Interbay Peninsula watershed, in Hillsborough County, Florida. The project study area is mostly developed. Refer to the project Drainage Maps included in Exhibit 1.

The project corridor consists of 9 on-site basins (Basins 1 – 9) which discharge to Hillsborough Bay via five (5) COT storm drain systems. On-site storm drainage systems convey runoff from the project sites to on-site ditches, which convey the runoff to the COT drainage systems.

There are five off-site basins to the west of the project corridor which are also conveyed by the COT drainage systems to Hillsborough Bay. These basins are mostly developed with a mix of residential and commercial uses. Local storm drainage systems convey runoff to the major COT drainage system trunk lines, which outfall to the Hillsborough Bay.

At the north end of the project Basin 10 is conveyed to the on-site storm drain conveyance systems to Hillsborough Canal.

There are three permitted stormwater management pond within the project corridor. This first pond is owned by the COT. This pond treats runoff from Swann Avenue, between Armenia Avenue and Packwood Avenue and on-site Basins 6 and 7. This pond is a wet detention pond with 750 feet of 6-inch underdrain, SWFWMD Permit No. 40002417.001.

At the northern terminus of the project there are two small ponds at the old West Toll Plaza building, SWFWMD Permit No. 44021192.001.

3.0 Proposed Drainage Design

The proposed drainage design approach is broken into two separate scenarios; meeting pre-post development attenuation requirements in the existing roadside ditches and proposed Ponds 9 and 10 and equivalent water quality treatment in Ponds 9 and 10.

- Water Quantity (attenuation) will regrade ditches and make adjustments to existing inlet tops to meet the attenuation requirements in Basins 1 thru 8. Ponds 9 and 10 will provide the required attenuation for Basins 9 and 10.
- Water quality treatment requirements will be provided in Ponds 9 and 10. These ponds will treat an equivalent volume of 0.25-inches of runoff from the existing pavement currently draining to the median.

Basin 1 improvements include modifying the inlet in the left on-site ditch at Station 119+00. This modification will provide attenuation to runoff from this ditch, prior to discharge to the COT stormwater conveyance system. In addition, the existing ditch bottom inlet in the ditch located between the northbound entrance ramp at W. Euclid Avenue and S. Drexel Avenue will be raised to provide attenuation of the onsite runoff prior to discharge to the COT stormwater conveyance system.

Basin 2 improvements include modifying the inlet in the left on-site ditch at Station 154+00. This modification will provide attenuation to runoff from this ditch, prior to discharge to the COT stormwater conveyance system.

Basin 3 improvements include modifying the inlet in the left on-site ditch at Station 174+25. This change will provide attenuation to runoff from this ditch, prior to discharge to the COT stormwater conveyance system.

Basin 4 improvements include modifying the inlet in the left on-site ditch at Station 185+00. This change will provide attenuation to runoff from this ditch, prior to discharge to the COT stormwater conveyance system.

Basin 5 improvements include modifying the inlet in the left on-site ditch at Station 200+00. This change will provide attenuation to runoff from this ditch, prior to discharge to the COT stormwater conveyance system.

Basin 6 improvements include adjustments to the existing ditch bottom inlet in the left on-site ditch at Station 230+50. The adjustments to this inlet provide attenuation to runoff from this ditch, prior to discharge to the COT stormwater conveyance system.

Basin 7 improvements include modifying the left on-site ditch south of Station 237+27. This change will provide attenuation to runoff from this ditch, prior to discharge to the COT stormwater conveyance system.

Basin 8 improvements include modifying the left on-site ditch south of Station 252+00. This change will provide attenuation to runoff from this ditch, prior to discharge to the COT stormwater conveyance system.

These ditches and ponds are designed to provide the needed treatment and attenuation for the proposed improvements as agreed to during the pre-application meetings. In accordance with Southwest Florida Water Management District, the post- development peak discharge rate from the 25-year/24-hour design storm event will be limited to that of the pre-development case. The 100-year/24-hour storm has been evaluated to ensure no adverse impacts will occur as a result of the proposed improvements. Compensatory treatment will be provided in Ponds 9 and 10 to offset the treatment value provided in the existing median ditch, which will be removed

A pre/post- development hydraulic analysis was developed for the project to demonstrate that no adverse impacts will occur, for the 25 and 100-year/24-hour storm events, as a result of the proposed improvements. See Pre/Post-Development Routing Summary in Section 5.0 of this report.

3.1 Design Criteria

Agencies having jurisdiction over the design of the stormwater management system include THEA and the SWFWMD.

Design Frequency

Open basins – Attenuation of the pre/post-development peak discharge rates, for the 25-year/24-hour design storm event.

Treatment

The project's water quality treatment requirements will be provided in two (2) new ponds, Ponds 9 and 10. By rule, water quality treatment is typically not required for these type of safety improvements (do not add additional travel lanes). In the existing condition 4.46 acres of pavement, which include travel lanes, paved shoulders and miscellaneous asphalt drain to the median. Based on the pre-application meeting with the SWFWMD, 0.25-inches of runoff from this area (4.59 acres) is recommended to help mitigate the lost water quality function from the median ditch.

Refer to Exhibit 5 for supporting documentation/calculations pertaining to water quality treatment.

Tailwater

The peak tailwater condition for the ditch models was set at the ditch bottom elevation, at or near the ditch block locations. This would set the peak stage at or below the crown of the pipe the ditch drains to. It also allows the models to be run with a free discharge. The same tailwater conditions are used for both the pre-development and post-development condition models.

Pond Normal Water Elevations

The normal water elevations for each pond was established by soil borings taken in the pond.

3.2 Design Approach

Ditch bottom inlets in the existing ditches will be modified to provide rate control. Two ponds (Ponds 9 and 10) will be constructed to provide both attenuation and compensatory treatment for the water quality function provided by the median ditch. Ponds 9 and 10 have been sized to provide the recommended treatment, for all the existing pavement that drained to the median.

Pond Outfall Conveyance

The proposed roadway runoff will be collected and conveyed to the proposed stormwater management facilities or for direct discharge to the existing storm drain system that outfalls to Hillsborough Bay or River. These conveyance systems will be designed as part of the final roadway design-build project and a permit modification will be obtained if necessary.

Impervious Area

While no formal existing stormwater management systems exist within the project limits. This project will eliminate the median ditch which provides some water quality function based on runoff flowing over its surface. Therefore, it was agreed that the loss of this ditch would be compensated by treating and equivalent volume of runoff, based on ¼" over the impervious area currently draining to the median ditch. Refer to the Pre/Post-Development Basin Determinations include in Exhibit 3 and Exhibit 4 and Water Quality Calculations in Exhibit 5.

Water Quantity Attenuation

The post-development peak discharge rate from the 25-year/24-hour design storm event will be limited to that of the pre-development case. The 100-year/24-hour storm will also be evaluated to ensure no adverse impacts will occur from the proposed improvements.

4.0 Stormwater Model

The project corridor was modeled using ICPR. Ten (10) on-site basins were modeled. Pre/Post-development model input and routing summaries are included in Exhibits 6.

5.0 Proposed Stormwater Collection and Conveyance System

Stormsewer collection and Conveyance System
The existing stormwater collection and conveyance system consist of gutter inlets located next to barrier wall, gutter inlets located adjacent to guardrail, and open swales that convey runoff to existing outfall locations. With the additional impervious area of the proposed shoulder will generate additional stormwater runoff. Therefore, our drainage approach is to analyze the different collection systems to verify that no adverse impacts result from the safety improvements. Below is a brief narrative of the types of systems and how they were analyzed.

Spread next to a Barrier Wall – With the expressway being a high-speed facility, the spread adjacent to the travel lane will be limited to the shoulder width (no spread into the travel lane). Using the FDOT spread equations and a practical factor of safety, we analyzed the spread of the existing collection systems to determine the locations that exceed criteria. The analysis revealed that even with the additional runoff generated by the additional impervious area, the spread next to barrier walls was met.

Conveyance next to guardrail – The issue at guardrail locations is not water in the travel lane, rather it is an erosion issue with the miscellaneous asphalt under the guardrail, the back slope of the fill section, and potential impacts to the adjacent property owners. The analysis involves limiting the flow within the shoulder gutter "channel" to a maximum design Conveyance Factor (K) of 28 cfs. Our preliminary analysis has identified four locations exceeding the allowable K value (please refer to the drainage maps, Volume 2, Preliminary Plans). Design cures are geared toward controlling the amount of flow to the inlet and/or addressing any erosion concerns. Our solutions for these areas, collecting the flow through the existing shoulder gutter by intercepting it with standard FDOT Type II trench drain (Index 436-001) stubbed directly into the adjacent inlet. Type II was chosen because it can be installed within the gutter location with minimal impacts to the existing facility.

Collection and Conveyance Hydraulic Analysis – Our preliminary analysis (10-year storm event) in determining the hydraulic grade line (HGL) of each of the existing collection and conveyance systems has found the system to meet FDOT/THEA criteria. This project will render the existing median ditch bottom inlet obsolete; therefore, these structures will be capped. Areas that continue to drain to the median (i.e. the superelevated areas) will be equipped with barrier wall inlets, using the existing lateral drains as outfalls.

Existing Ditches – Our design ensures that no adverse impacts (eroding velocities, higher water elevations) resulting from the additional stormwater runoff from the additional impervious area. To mitigate any potential impacts from the proposed improvements, the implantation of shallow ditch blocks within existing ditches was developed and included in the plans. These structures will control discharge rates to existing outfall locations and provide water quality treatment.

The Spread calculations can be found in Appendix C.

.

6.0 Design Results/Summary

A pre/post-development hydraulic analysis was developed for this project, ICPR to model the pre/post-development conditions, to demonstrate that no adverse impacts will occur for the 25 and 100-year/24-hour storm events as a result of the proposed improvements. See summary table below.

Pre/Post-Development Routing Summary

Basin ID	Node Name	Node Description	Pre-Dev Peak Stage (ft.)	Post-Dev Peak Stage (ft.)	Difference in Peaks (ft.)	Allowable Peak Stage (ft.)	Railway Elevation (ft.)	Pre-Dev Peak Inflow (cfs)	Post-Dev Peak Inflow (cfs)	Difference in Peaks (cfs)	Pre-Dev Peak Outflow (cfs)	Post-Dev Peak Outflow (cfs)	Difference in Peaks (cfs)
	25-Year/24-Hour Storm Event												
1	Ditch_1S	Ditch/BNDY	10.24	11.67	1.43	13.134	14.634	19.79	21.1	1.31	19.66	18.15	-1.51
1	Ditch_1N	Ditch/BNDY	10.91	11.87	0.96	13.25	14.75	26.15	27.62	1.47	25.58	26.62	1.04
2	Ditch_2	Ditch/BNDY	15.64	15.61	-0.03	15.634	17.134	52.35	57.48	5.13	40.91	40.59	-0.32
3	Ditch_3_LT	Ditch/BNDY	13.28	14.25	0.97	15.134	16.634	12.78	17.47	4.69	12.62	11.77	-0.85
3	Ditch_3_RT	Ditch/BNDY	8.24	8.2	-0.04	10.134	N/A	18.78	18.37	-0.41	18.73	18.32	-0.41
4	Ditch_4	Ditch/BNDY	15.57	17.04	1.47	17.5	19	22.15	25.2	3.05	22	20.81	-1.19
5	Ditch_5	Ditch/BNDY	17.59	18.55	0.96	18.5	20	22.55	26.8	4.25	22.54	22.41	-0.13
6	Ditch_6A	Ditch/BNDY	19.72	20.19	0.47	20.134	21.634	14	16.33	2.33	19.89	18.87	-1.02
7	Ditch_7A	Ditch/BNDY	17.76	17.82	0.06	18.1	19.6	2.83	3.83	1	8	8.8	0.8
8	Ditch_8_S	Ditch/BNDY	17.27	17.42	0.15	17.5	19	17.54	21.06	3.52	14.28	15.84	1.56
9	Infield 9/Pond 9	Pond/BNDY	16.96	17.9	0.94	19	N/A	10.44	10.94	0.5	10.28	5.86	-4.42
10	Pond 10		N/A	16.97	N/A			N/A	18.34	N/A	56.91	54.45	-2.46
	100-Year/24-Hour Storm Event												
1	Ditch_1S	Ditch/BNDY	10.38	12.1	1.72	13.134	14.634	28.19	29.35	1.16	27.73	26.45	-1.28
1	Ditch_1N	Ditch/BNDY	11.46	12.39	0.93	13.25	14.75	38.72	40.17	1.45	35.16	35.01	-0.15
2	Ditch_2	Ditch/BNDY	16.47	16.28	-0.19	15.634	17.134	76.87	81.72	4.85	49.07	47.4	-1.67
3	Ditch_3_LT	Ditch/BNDY	13.45	14.64	1.19	15.134	16.634	19.6	25.94	6.34	19.24	16.61	-2.63
3	Ditch_3_RT	Inlets	9.58	9.2	-0.38	10.134	N/A	27.87	25.65	-2.22	27.74	25.54	-2.2
4	Ditch_4	Ditch/BNDY	15.94	17.32	1.38	17.5	19	32.89	35.8	2.91	31.7	31.7	0
5	Ditch_5	Ditch/BNDY	17.78	19.02	1.24	18.5	20	34.61	38.9	4.29	34.53	29.8	-4.73
6	Ditch_6A	Ditch/BNDY	20.86	20.93	0.07	20.134	21.634	22.23	24.72	2.49	25.32	25.65	0.33
7	Ditch_7A	Ditch/BNDY	18.02	18.06	0.04	18.1	19.6	4.94	6.24	1.3	12.32	12.78	0.46
8	Ditch_8_S	Ditch/BNDY	17.93	18.04	0.11	17.5	19	26.73	30.22	3.49	19.87	20.53	0.66
9	Infield 9/Pond 9	Pond/BNDY	17.01	18.57	1.56	19	N/A	15.28	15.76	0.48	15.1	6.53	-8.57
10	Pond 10		N/A	17.6	N/A			N/A	27.73	N/A	84.91	75.88	-9.03

EXHIBIT 1
PROJECT DRAINAGE MAPS

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

0 50 200
Feet

BASIN NO. 1

BEGIN PROJECT
BEGIN CONSTRUCTION
STA 100+66.03 ℄ SR 618

RR R/W LINE
LA R/W LINE
℄ SURVEY SR 618

S. HIMES AVE.
W. EUCLID AVE.
S. CONCORDIA AVE.
S. DREXEL AVE.
S. LYNWOOD AVE.

RAMP A
RAMP B
EXIST. RETENTION AREA
RW LINE
LA RW LINE
(2)-5'x4' CBC
MATCHLINE STA. 123+00

S-116 S-117 S-118 S-119 S-120 S-121 S-122 S-123 S-124 S-125 S-126 S-127 S-128 S-129B S-130 S-131 S-5 S-6 S-7 S-7A C-2 S-8 S-9 S-9A S-10A S-10 S-11 S-11A S-30 S-31 S-31A RA-1 C-1

95 100 105 110 115 120

0.24 ac. 0.31 ac. 0.22 ac. 0.24 ac. 0.50 ac. 0.29 ac. 0.30 ac. 0.31 ac. 0.35 ac. 0.44 ac.
0.26 ac. 0.33 ac. 0.22 ac. 0.24 ac. 0.29 ac. 0.39 ac. 0.23 ac. 0.35 ac.
2.74 ac.

STATE JOB NO. 10002-3502
CONTRACT NO. 1

STATE JOB NO. 10002-3502
CONTRACT NO. 2

LEGEND:
- SURFACE FLOW DIRECTION
- BASIN DIVIDE (0.25 AC)
- EXISTING DRAINAGE
- PROPOSED STRUCTURE (T-2)
- FULL DEPTH SHLDR. WIDENING

IMAGERY DATE: 2017

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

EDWARD JAMES KORY, P.E.
P.E. LICENSE NO. 53178
PARSONS TRANSPORTATION GROUP INC.
5100 W. LEMON STREET, SUITE 145
TAMPA, FL 33609
PHONE: (813) 933-3820
CERTIFICATE OF AUTHORIZATION NO. 1838

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

DRAINAGE MAP (1)

SHEET NO. 3

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

LEGEND:
- SURFACE FLOW DIRECTION
- BASIN DIVIDE
- EXISTING DRAINAGE
- PROPOSED STRUCTURE
- FULL DEPTH SHLDR. WIDENING

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

EDWARD JAMES KORY, P.E.
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PARSONS TRANSPORTATION GROUP INC.
5100 W. LEMON STREET, SUITE 145
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PHONE: (813) 933-3820
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TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

DRAINAGE MAP (2)

SHEET NO. 4

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W. BAY TO BAY BLVD.

S. OBRAPHIA ST.

0 50 200
Feet

BASIN NO. 2

BASIN NO. 3

S. MACDILL AVE.

MATCHLINE STA. 151+00

MATCHLINE STA. 179+00

S-3A
S-3
LA R/W LINE
54" PIPE
24" PIPE
24" PIPE
S-18A
S-18
54" PIPE
S-20A
S-20
C-6
S-21-0
S-21
(2)-60" PIPE
℄ SURVEY SR 618
RR R/W LINE
S-24
S-24E
8'x4' CBC

0.40 ac. 155 0.37 ac. 0.30 ac. 160 0.38 ac. 165 0.47 ac. 170 3.35 ac. 175
0.43 ac. 0.28 ac. 0.21 ac. 0.36 ac. 0.56 ac. 0.26 ac. 0.73 ac. 0.21 ac. 0.33 ac. 1.43 ac.

S-2
S-3B
LA R/W LINE
S-17
S-19A
S-19
54" PIPE
S-21-A
S-21-B
S-22
S-22A
C-7
S-26
S-25
S-23B
S-23
S-23A

STATE JOB NO. 10002-3502 CONTRACT NO. 2

STATE JOB NO. 10002-3502 CONTRACT NO. 3

LEGEND:
- SURFACE FLOW DIRECTION
- 0.25 ac. BASIN DIVIDE
- (24) EXISTING DRAINAGE
- T-24 PROPOSED STRUCTURE
- FULL DEPTH SHLDR. WIDENING

BAYSHORE BLVD.

HILLSBOROUGH BAY

IMAGERY DATE: 2017

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

DRAINAGE MAP (3)

SHEET NO. 5

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

EDWARD JAMES KORY, P.E.
P.E. LICENSE NO. 53178
PARSONS TRANSPORTATION GROUP INC.
5100 W. LEMON STREET, SUITE 145
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PHONE: (813) 933-3820
CERTIFICATE OF AUTHORIZATION NO. 1838

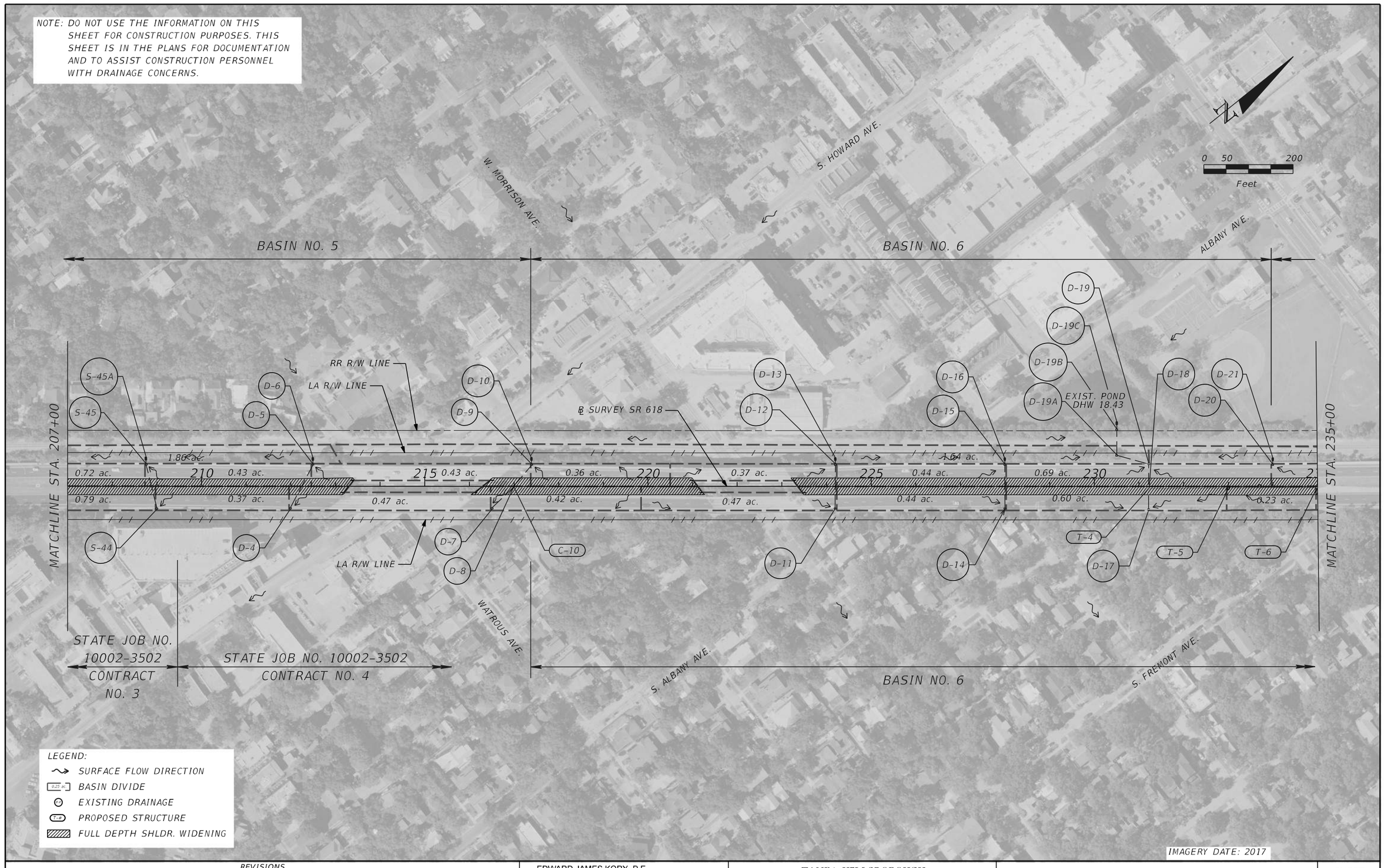
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

DRAINAGE MAP (4)

SHEET NO. 6

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



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

EDWARD JAMES KORY, P.E.
P.E. LICENSE NO. 53178
PARSONS TRANSPORTATION GROUP INC.
5100 W. LEMON STREET, SUITE 145
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TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

DRAINAGE MAP (5)

SHEET NO. 7

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

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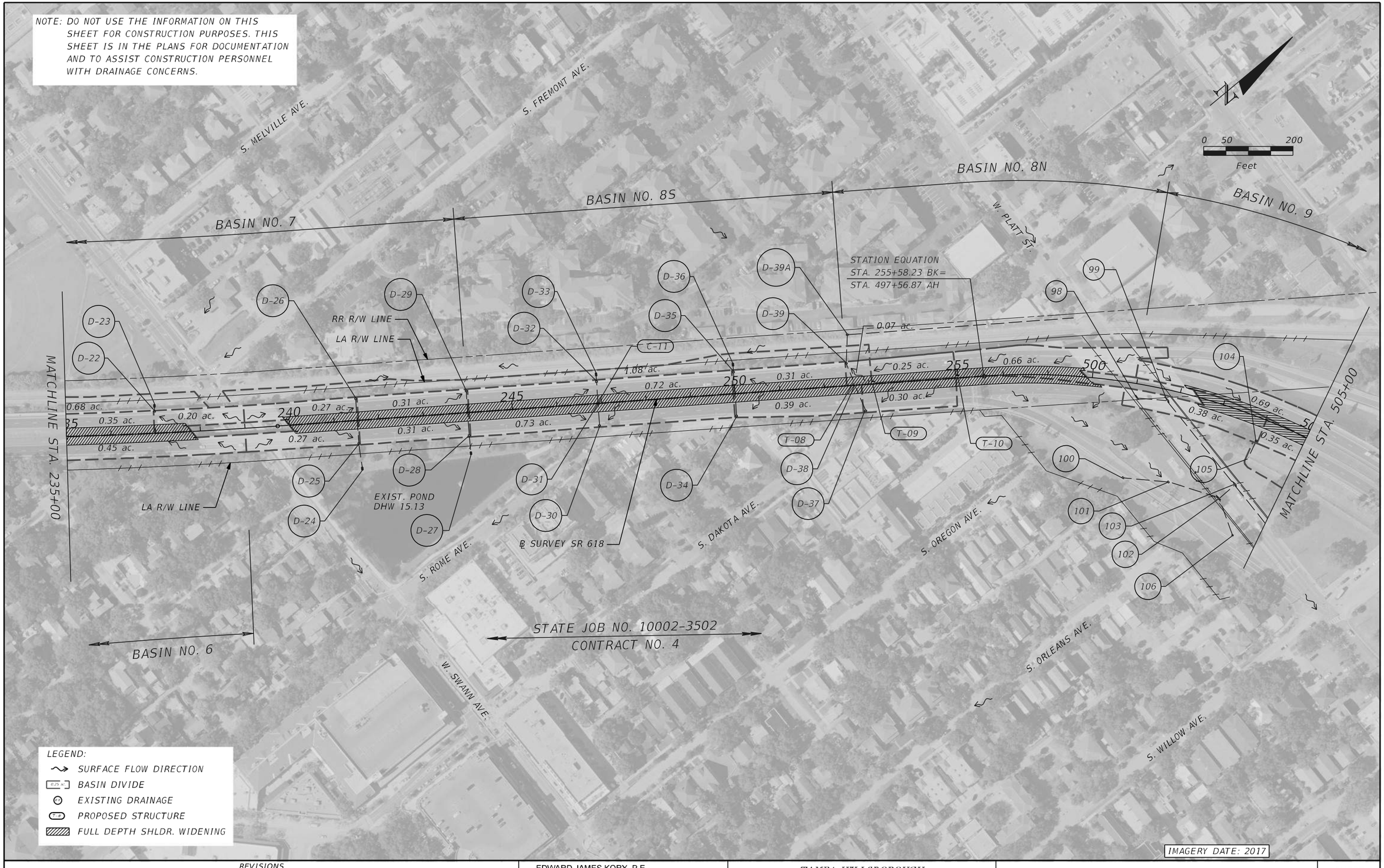

LEGEND:
- SURFACE FLOW DIRECTION
- BASIN DIVIDE
- EXISTING DRAINAGE
- PROPOSED STRUCTURE
- FULL DEPTH SHLDR. WIDENING

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

EDWARD JAMES KORY, P.E.
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5100 W. LEMON STREET, SUITE 145
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PHONE: (813) 933-3820
CERTIFICATE OF AUTHORIZATION NO. 1838

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

DRAINAGE MAP (6)

SHEET NO. 8

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

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

DRAINAGE MAP (7)

SHEET NO. 9

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

KELLER ST.

S. PLANT AVE.

HILLSBOROUGH RIVER

N

0 50 200

Feet

BASIN

NO. 10

S. HYDE PARK AVE.

LA R/W LINE

℄ SURVEY SR 618

MATCHLINE STA. 533+00

0.40 ac.

0.31 ac.

535

540

545

E. BROREIN ST.

34

30

LA R/W LINE

END PROJECT
END CONSTRUCTION
STA 536+09.00 ℄ SR 618

S. HYDE PARK AVE.

STATE JOB NO.
10002-3502
CONTRACT
NO. 5

W. PLATT ST.

CHANNELSIDE DR.

BAYSHORE BLVD.

IMAGERY DATE: 2017

LEGEND:

- SURFACE FLOW DIRECTION
- 0.25 ac. BASIN DIVIDE
- EXISTING DRAINAGE
- T-# PROPOSED STRUCTURE
- FULL DEPTH SHLDR. WIDENING

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

EDWARD JAMES KORY, P.E.
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PHONE: (813) 933-3820
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TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

DRAINAGE MAP (8)

SHEET NO. 10

Transferred to Operation

LA R/W LINE

LA R/W LINE

PLATT ST.

R 26'

18.89 18.97 19.17

+77.34
146.80' RT.
10' R

18.95 18.86 19,13

1:4

17.10 17.02 16.88 19.02

18.78 18.79 17.01

+96.21
202.49' RT.
13' R

+28.31
127.32' RT.
13' R

16.93

DRI-01

19.23

EXIST. FENCE
TO BE RELOCATED

19.21

18.88

17.12

CONST. 35 LF
OF 15" PIPE

10'

8'

T-11A

18.92 18.83 17.03

PBA-1

POND No. 9

W-5

17.09 19.03

19.18

CONST. 8 LF OF 18" PIPE

W-3

W-4

T-11

SELMON EXPRESSWAY

END APPROACH SLAB
BEGIN BRIDGE NO. 0326 & 0327
END WIDENING
STA. 507+45.99

18" RCP

15" RCP

18.88 T-12

18.89 18.87 17.12

+92.63
232.22' RT.
13' R

PBA-2

+30.91
120.46' RT.
13' R

16.87 18.94

CONST. 29 LF OF 18" PIPE

16.95 16.89

EL. 17.0

16.91

T-12A

18.83 18.90

EL. 19.0

18.89

CONST. 8 LF OF 18" PIPE

8'

10'

R 26

18.80 18.93 18.86

EL. 19.0

R 26"

18" RCP

℄ SURVEY SR 618

508

LA R/W LINE

WILLOW AVE.

0 6 30
Feet

NOTE:

POND DIMENSIONS BASED OFF THE ℄ SURVEY SR 618

A

A

SOD

10.0' 8.0' 113.0 8.0' 10.0'

LA R/W LINE

1:4

EL. 19.00

EL. 19.00

EL. 17.00

DHW25 = 17.96'

SHWT 15.38'

WILLOW AVE.

EL. 19.00

EL. 19.00

EL. 17.00

SECTION A-A
NTS

GRATE

EL 17.34

GRATE

3" CONC. PAVT.
EL 17.00

3'
TYP.

TO
T-12A

18" PIPE

SIDE VIEW

FRONT VIEW

CONST. 18" PIPE

FL 13.85

T-12

DBI TYPE D
NTS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

EDWARD JAMES KORY, P.E.
P.E. LICENSE NO. 53178
PARSONS TRANSPORTATION GROUP INC.
5100 W. LEMON STREET, SUITE 145
TAMPA, FL 33609
PHONE: (813) 933-3820
CERTIFICATE OF AUTHORIZATION NO. 1838

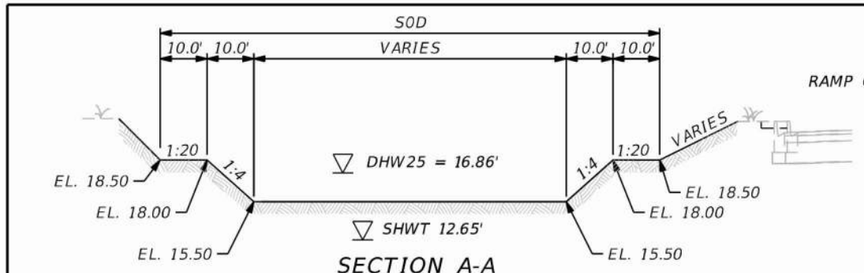
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

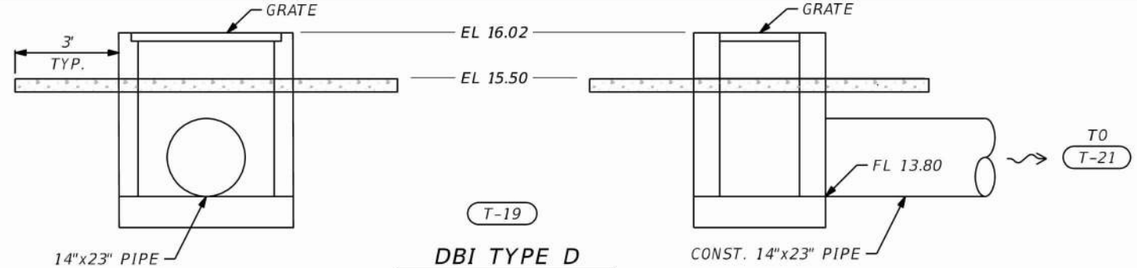
ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

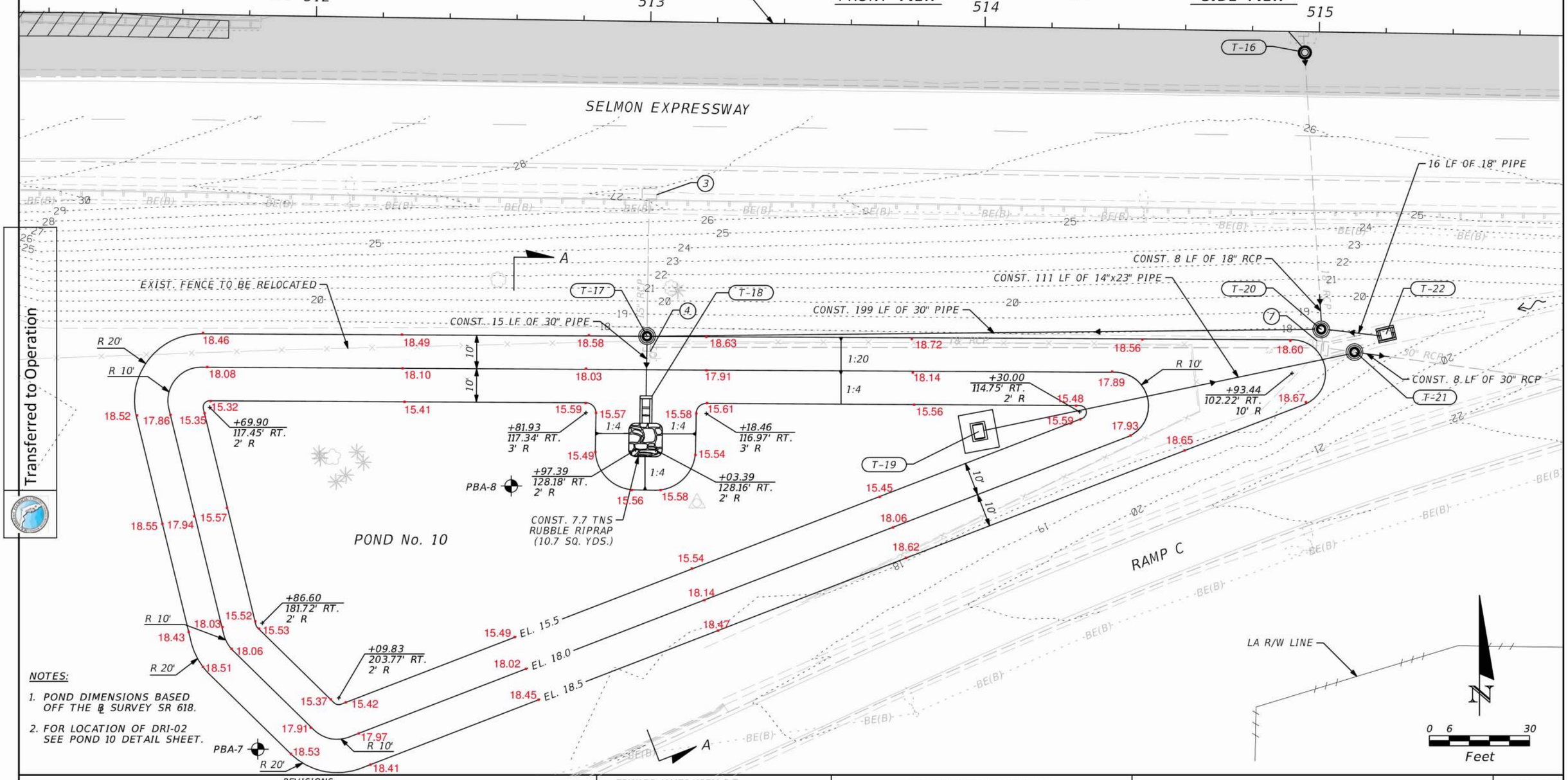
POND 9 DETAIL SHEET

SHEET NO. 93

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







NOTES:

1. POND DIMENSIONS BASED OFF THE ℄ SURVEY SR 618.
2. FOR LOCATION OF DRI-02 SEE POND 10 DETAIL SHEET.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

EDWARD JAMES KORY, P.E.
P.E. LICENSE NO. 53178
PARSONS TRANSPORTATION GROUP INC.
5100 W. LEMON STREET, SUITE 145
TAMPA, FL 33609
PHONE: (813) 933-3820
CERTIFICATE OF AUTHORIZATION NO. 1838

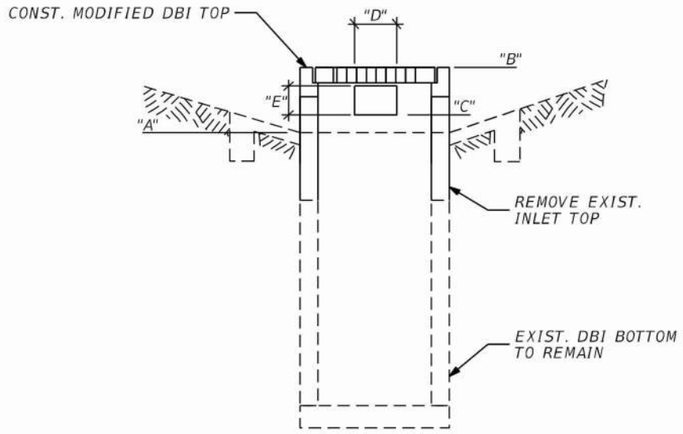
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

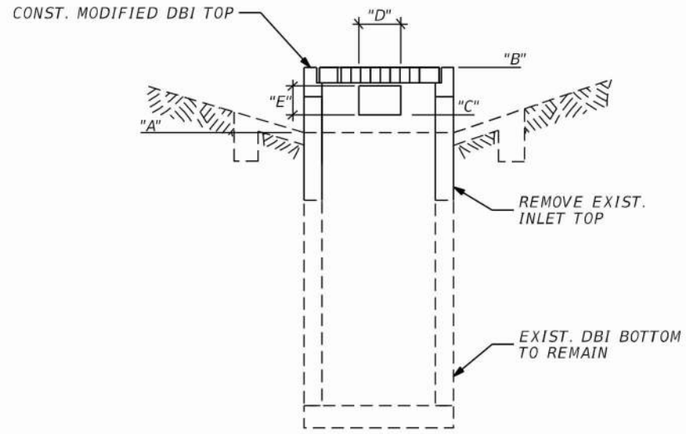
POND 10 DETAIL SHEET

SHEET NO. 94

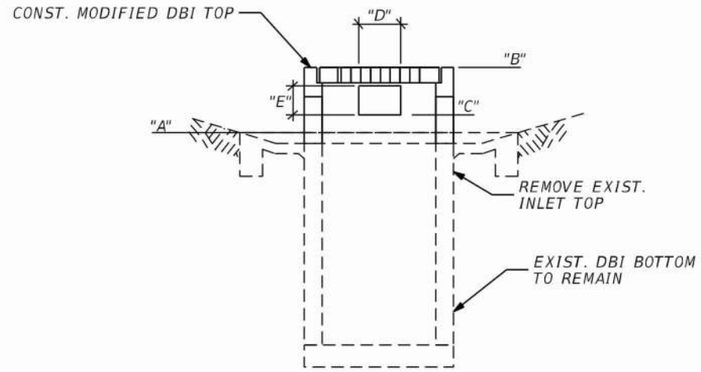
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



TYPICAL DITCH BOTTOM
TYPE A
NTS



TYPICAL DITCH BOTTOM
TYPE B
NTS



TYPICAL DITCH BOTTOM
TYPE E
NTS

Basin ID	Structure ID	Station	Offset	Side	As-Built Grate Elevation	As-Built Slot Elevation	Slot Width (inches)	Slot Depth (inches)
1	S-10A	119+91.64	59.11	LT	12.11	9.76	24	28.25
1	S-30	118+64.04	161.88	RT	9.94	N/A	N/A	N/A
3	S-24E	174+13.28	68.58	LT	14.40	12.42	12	23.75
4	S-30A	184+33.56	69.03	LT	16.77	14.41	18	28.35
5	S-38A	199+28.40	67.48	LT	18.52	17.49	36	12.35
6	D-19A	230+33.47	67.47	LT	20.22	18.16	12	24.75

Basin ID	Existing Structure ID (XX)	Proposed Structure ID (XX)	Station	Offset (ft.)	Side	DBI Type	Existing Grate Elev. (ft., NAVD) "A"	Proposed Grate Elev. (ft., NAVD) "B"	Slot Elev. (ft., NAVD) "C"	Slot Width (inches) "D"	Number of Slots	Slot Direction	Slot Depth (inches) "E"
1	S-10A	S-10A	119+91.64	59.11	LT	E	9.59	12.00	9.59	24	1	BK	28.90
1	S-30	S-30	118+64.04	161.88	RT	B	9.08	10.00	N/A	N/A	N/A	N/A	N/A
3	S-24E	S-24E	174+13.43	67.91	LT	A	~~12.75~~ 12.05	14.25	~~12.75~~ 12.05	12	2	AH & BK	~~18.00~~ 26.40
4	S-30A	S-30A	184+33.56	69.03	LT	A	~~14.00~~ 14.43	16.75	~~14.00~~ 14.43	18	1	AH	~~23.40~~ 27.84
5	S-38A	S-38A	199+28.40	67.48	LT	B	~~17.00~~ 17.28	18.50	~~17.00~~ 17.28	44	1	AH	~~18.00~~ 14.64
6	D-19A	D-19A	230+33.47	67.47	LT	E	~~18.00~~ 17.97	20.00	~~18.00~~ 17.97	12	1	BK	~~24.00~~ 24.36

1 1 1

Transferred to Operation

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REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION
10/16/19	1 MODIFIED GRATE & SLOT ELEVATIONS		

EDWARD JAMES KORY, P.E.
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PHONE: (813) 933-3820
CERTIFICATE OF AUTHORIZATION NO. 1838

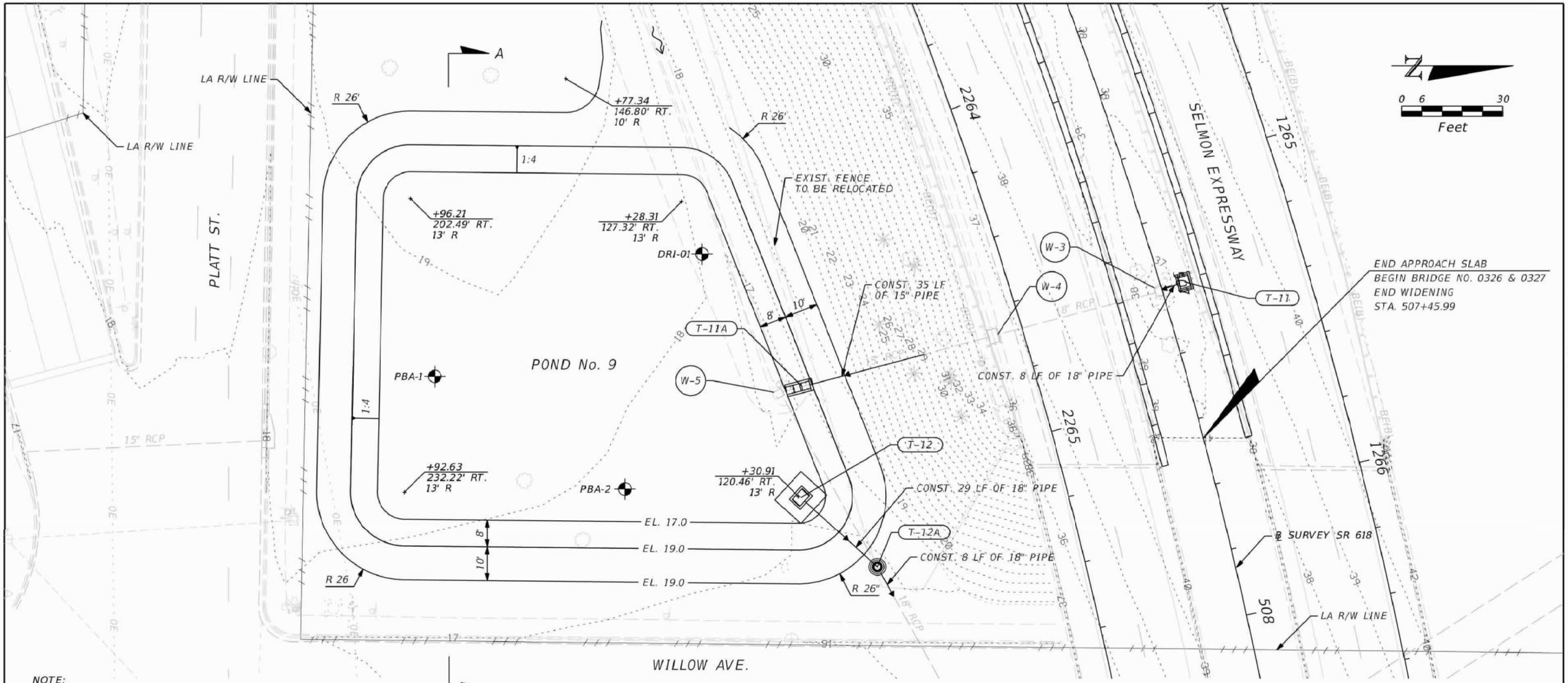
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

MODIFIED DITCH BOTTOM INLET DETAIL SHEET

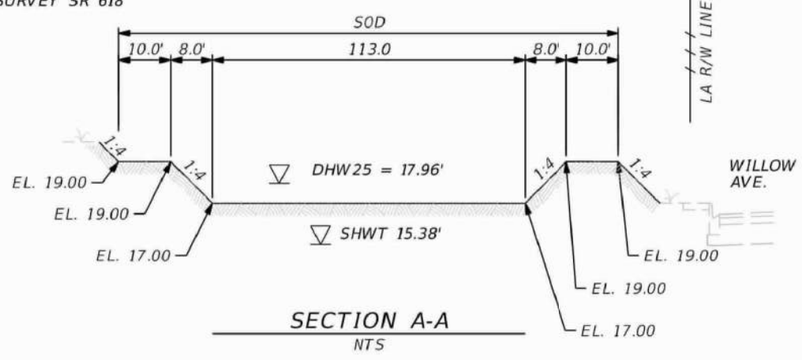
SHEET NO. 95

PERMITTED DRAWINGS SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT (SWFWMD)
For construction permits, the Permittee shall notify the District
in writing when construction begins.

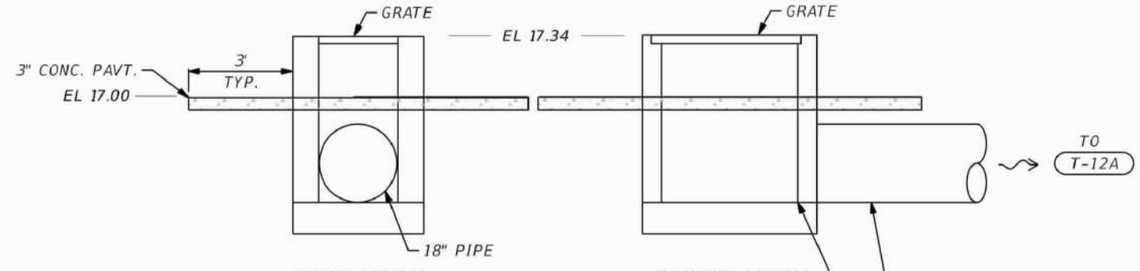


NOTE:

POND DIMENSIONS BASED OFF THE ℄ SURVEY SR 618



SECTION A-A
NTS



T-12
DBI TYPE D
NTS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

EDWARD JAMES KORY, P.E.
P.E. LICENSE NO. 53178
PARSONS TRANSPORTATION GROUP INC.
5100 W. LEMON STREET, SUITE 145
TAMPA, FL 33609
PHONE: (813) 933-3820
CERTIFICATE OF AUTHORIZATION NO. 1838

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

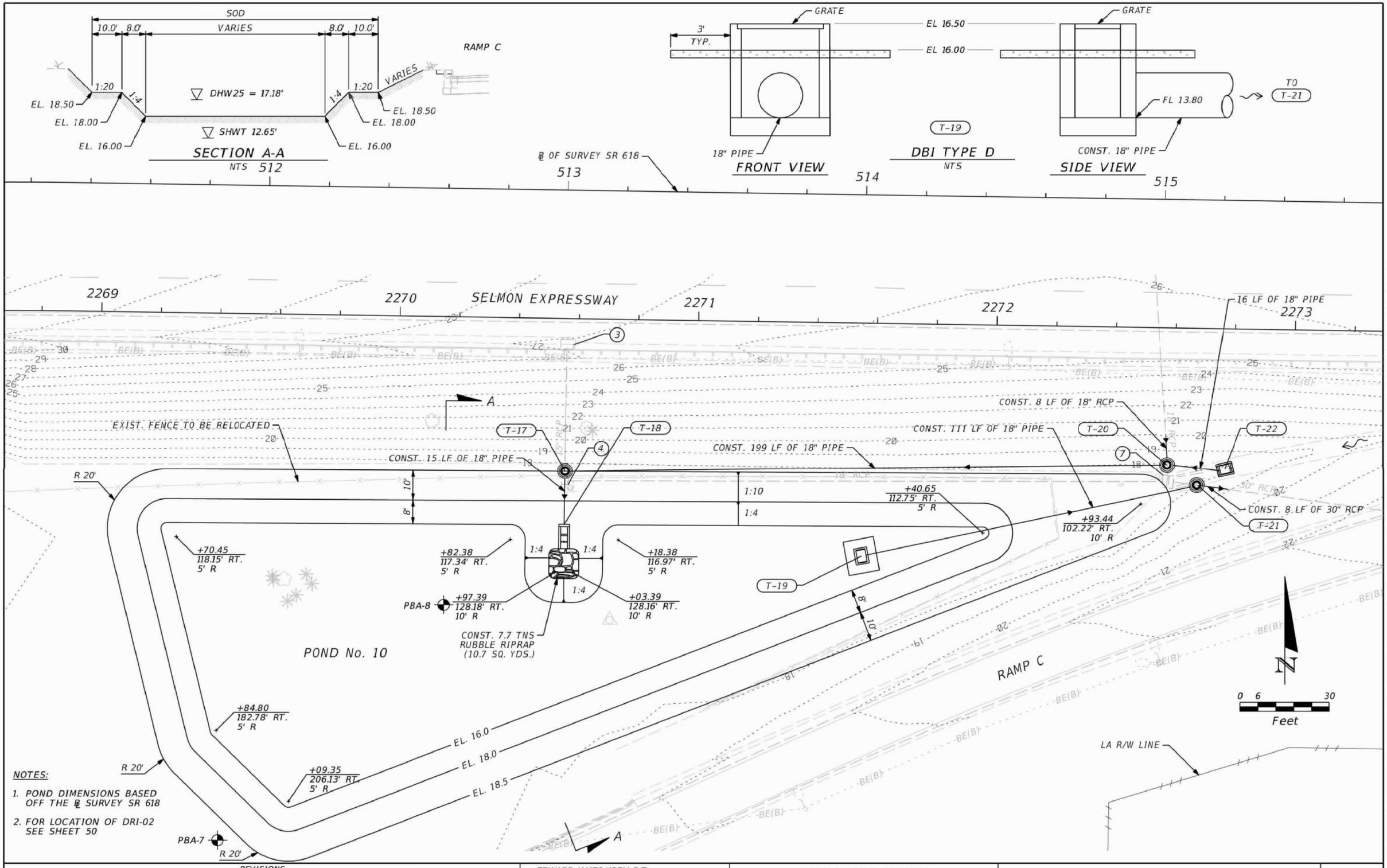
ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

POND 9 DETAIL SHEET

SHEET NO. 84

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

PERMITTED DRAWINGS SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT (SWFWMD)
For construction permits, the Permittee shall notify the District in writing when construction begins.



NOTES:

1. POND DIMENSIONS BASED OFF THE ℄ SURVEY SR 618
2. FOR LOCATION OF DRI-02 SEE SHEET 50

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

EDWARD JAMES KORY, P.E.
P.E. LICENSE NO. 53178
PARSONS TRANSPORTATION GROUP INC.
5100 W. LEMON STREET, SUITE 145
TAMPA, FL 33609
PHONE: (813) 933-3820
CERTIFICATE OF AUTHORIZATION NO. 1838

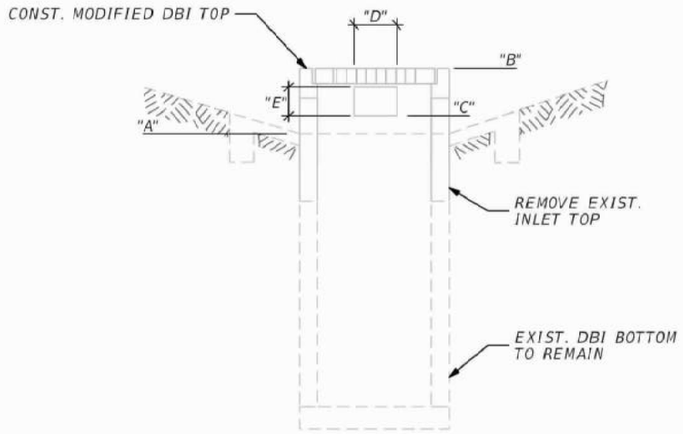
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

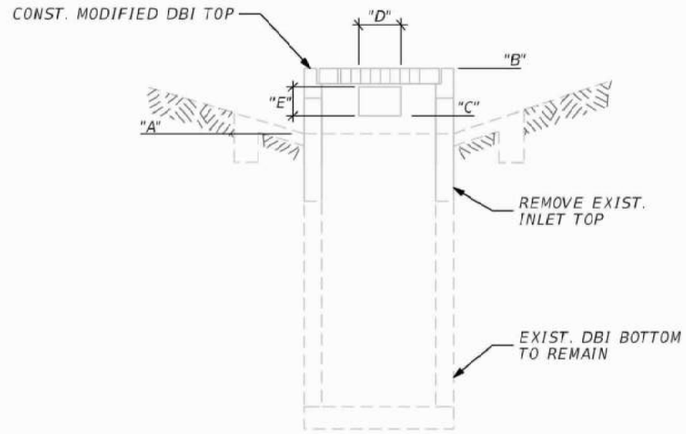
POND 10 DETAIL SHEET

SHEET NO. 85

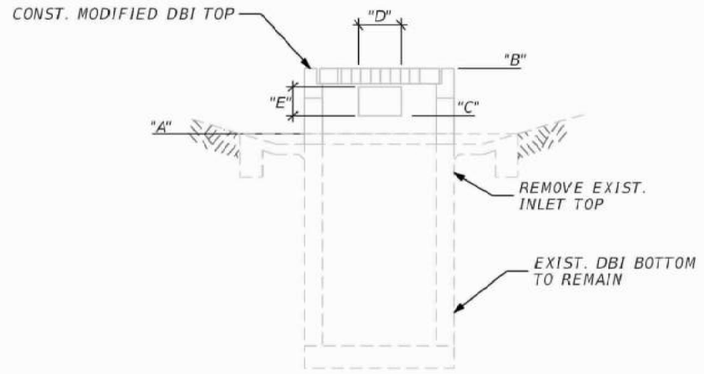
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



TYPICAL DITCH BOTTOM
TYPE A
NTS



TYPICAL DITCH BOTTOM
TYPE B
NTS



TYPICAL DITCH BOTTOM
TYPE E
NTS

Basin ID	Existing Structure ID (XX)	Proposed Structure ID (XX)	Station	Offset (ft.)	Side	DBI Type	Existing Grate Elev. (ft., NAVD) "A"	Proposed Grate Elev. (ft., NAVD) "B"	Slot Elev. (ft., NAVD) "C"	Slot Width (inches) "D"	Number of Slots	Slot Direction	Slot Depth (inches) "E"
1	S-10A	S-10A	119+91.64	59.11	LT	E	9.65	12.00	9.65	24	1	BK	28.20
1	S-30	S-30	118+64.04	161.88	RT	A	10.06	11.00	N/A	N/A	N/A	N/A	N/A
3	S-24E	S-24E	174+13.43	67.91	LT	A	12.75	14.25	12.75	12	2	AH & BK	18.00
4	S-30A	S-30A	184+33.56	69.03	LT	A	14.80	16.75	14.80	18	1	AH	23.40
5	S-38A	S-38A	199+28.40	67.48	LT	B	17.00	18.50	17.00	44	1	AH	18.00
6	D-19A	D-19A	230+33.47	67.47	LT	E	18.00	20.00	18.00	12	1	BK	24.00

PERMITTED DRAWINGS SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT (SWFWMD)
For construction permits, the Permittee shall notify the District
in writing when construction begins.

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REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

EDWARD JAMES KORY, P.E.
P.E. LICENSE NO. 53178
PARSONS TRANSPORTATION GROUP INC.
5100 W. LEMON STREET, SUITE 145
TAMPA, FL 33609
PHONE: (813) 933-3820
CERTIFICATE OF AUTHORIZATION NO. 1838

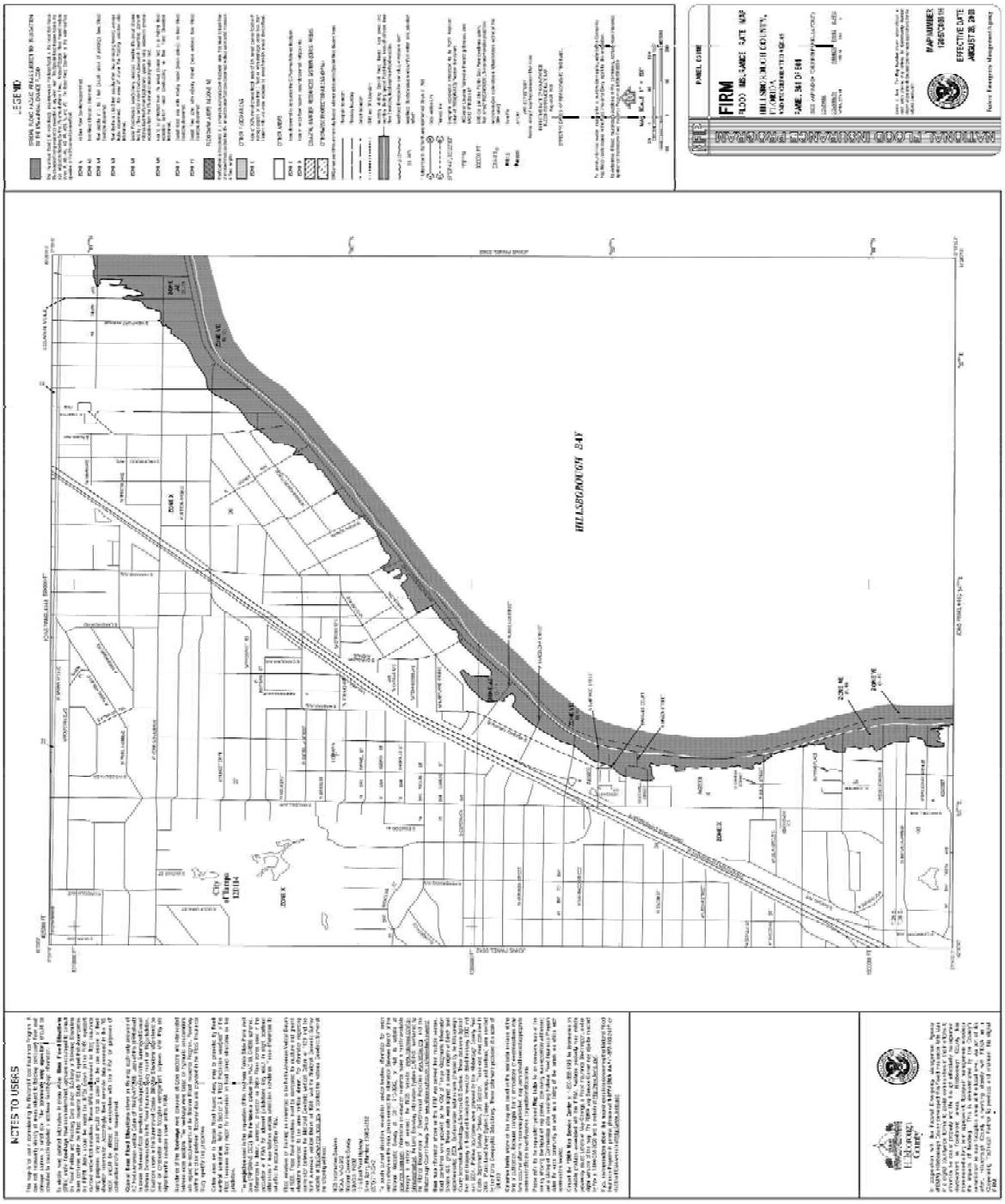
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	THEA PROJECT #
SR 618	HILLSBOROUGH	O-00518

MODIFIED DITCH BOTTOM INLET DETAIL SHEET

SHEET NO. 86

EXHIBIT 2
FLOOD MAP


NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
HILLSBOROUGH BAY

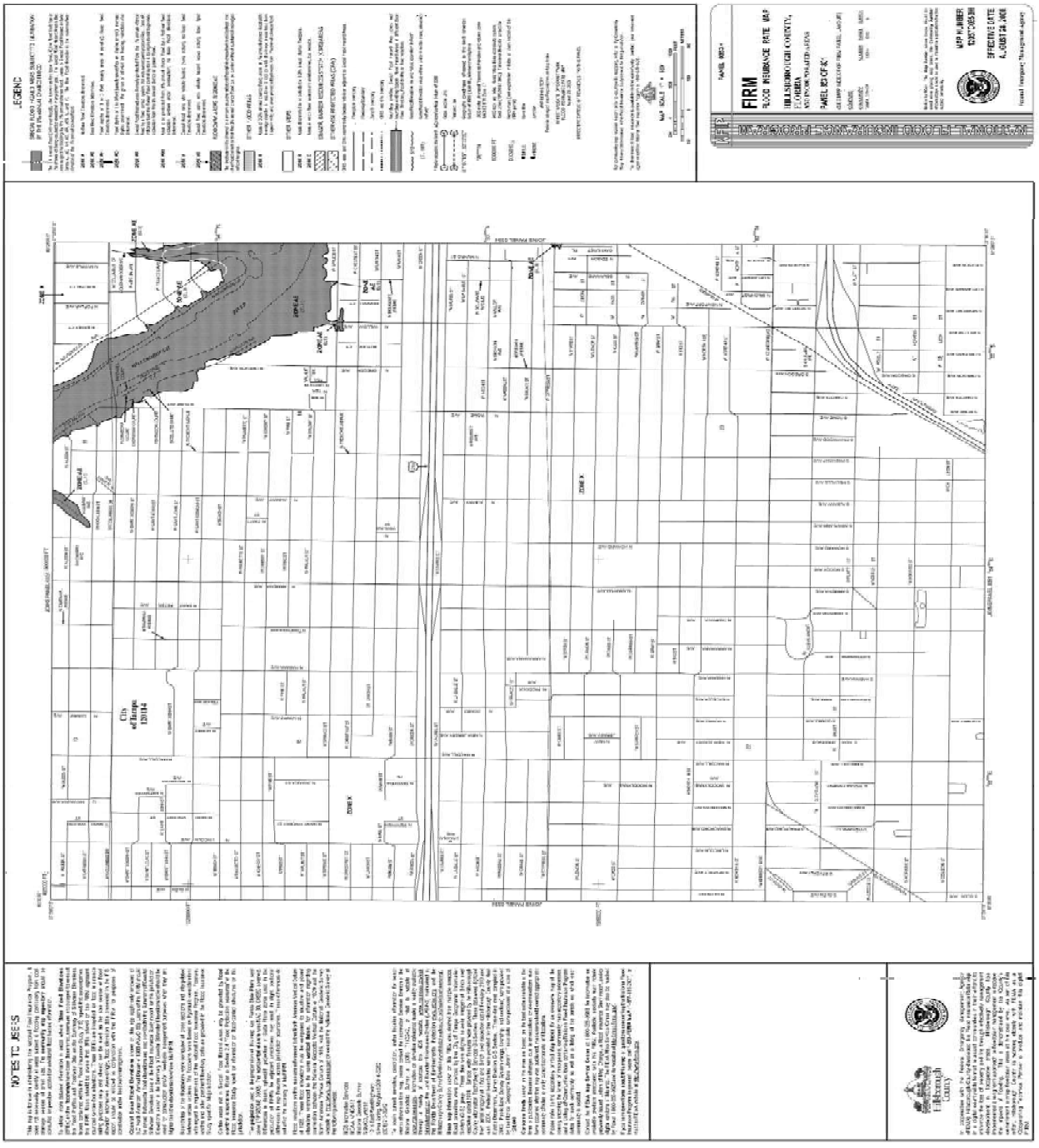

FIRM
FLOOD INSURANCE RATE MAP
HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS
PANEL 0310F
NOTES TO USERS
LEGEND

EXHIBIT 3
PRE-DEVELOPMENT BASIN COMPUTATIONS

SOUTH SELMON SAFETY PROJECT
PRE-DEVELOPMENT BASIN DETERMINATIONS

Pre-Development Conditions:

ICPR-Basin ID	Basin ID	Basin Area (acres)	DCIA (acres)	Perv. Area (acres)	Weighted CN	25-Year Runoff (acre-feet)	Remarks
Basin_1S_Pre	1	4.14	2.72	1.42	85.31	2.24	Basin drains to left side ditch
Basin_1N_Pre	1	6.13	2.88	3.25	78.38	2.90	Basin drains to ditch adjacent to northbound entrance ramp
Basin_2_Pre	2	11.96	6.06	5.90	79.76	5.81	Basin drains to left side ditch - ditch block added
Basin_3LT_S	3	1.67	0.78	0.89	78.28	0.79	Basin drains to left side ditch - ditch block added
Basin_3LT_N	3	1.67	0.32	1.35	68.09	0.62	Basin drains to left side ditch - ditch block added
Basin_3RT	3	4.43	2.04	2.39	78.04	2.08	Basin drains directly to outfall from right side ditch
Basin_4_Pre	4	5.23	2.40	2.83	78.01	2.45	Basin drains to left side ditch - ditch block added
Basin_5_Pre	5	5.91	3.04	2.87	73.08	2.48	Basin drains to left side ditch - ditch block added
Basin_6A_Pre	6	4.1	2.06	2.04	68.64	1.54	Basin drains to left side ditch - adjust inlet top
Basin_6B_Pre	6	2.01	1.51	0.50	83.32	1.05	Basin drains directly to outfall
Basin_7A_Pre	7	1.08	0.40	0.68	60.85	0.33	Basin drains to left side ditch - ditch block added
Basin_7B_Pre	7	0.54	0.46	0.08	89.26	0.31	Basin drains directly to existing pond
Basin_7C_Pre	7	0.62	0.49	0.13	85.63	0.34	Basin drains directly to existing pond
Basin_8_S_Pre	8	3.22	1.54	1.68	67.22	1.17	Basin drains to left side ditch - ditch block added
Basin_8_N_Pre	8	1.28	1.13	0.15	91.09	0.77	Basin drains directly to outfall
Basin_9_Pre	9	2.36	1.24	1.12	80.41	1.16	Basin drains to Pond 9
Basin_10	10	4.33	1.46	2.87	73.48	2.28	Basin drains to Pond 10
Basin_10_Pre	10	9.18	4.16	5.02	77.77	5.25	Basin drains directly to outfall

EXHIBIT 4
POST-DEVELOPMENT BASIN COMPUTATIONS

SOUTH SELMON SAFETY PROJECT
POST-DEVELOPMENT BASIN DETERMINATIONS

Post-Development Conditions:

ICPR-Basin ID	Basin ID	Basin Area (acres)	DCIA (acres)	Perv. Area (acres)	Weighted CN	25-Year Runoff (acre-feet)	Remarks
Basin_1S_Pst	1	4.14	3.33	0.81	90.76	2.46	Basin drains to left side ditch - ditch block added
Basin_1N_Pst	1	6.13	3.39	2.74	81.46	3.08	Basin drains to ditch adjacent to northbound entrance ramp - adjust inlet top
Basin_2_Pst	2	11.96	7.98	3.98	85.69	6.51	Basin drains to left side ditch - ditch block added
Basin_3LT_S	3	2.09	1.2	0.89	82.24	1.07	Basin drains to left side ditch - ditch block added
Basin_3LT_N	3	2.04	0.69	1.35	73.51	0.87	Basin drains to left side ditch - ditch block added
Basin_3RT	3	3.64	2.83	0.81	89.77	2.13	Basin drains directly to outfall from right side ditch
Basin_4_Pst	4	5.23	3.52	1.71	85.90	2.86	Basin drains to left side ditch - ditch block added
Basin_5_Pst	5	5.91	4.05	1.86	81.85	2.99	Basin drains to left side ditch - ditch block added
Basin_6A_Pst	6	4.1	2.50	1.60	74.98	1.80	Basin drains to left side ditch - adjust inlet top
Basin_6B_Pst	6	2.01	1.97	0.04	96.83	1.32	Basin drains directly to outfall
Basin_7A_Pst	7	1.23	0.55	0.68	65.38	0.42	Basin drains to left side ditch - ditch block added
Basin_7B_Pst	7	0.54	0.54	0.00	98.00	0.36	Basin drains directly to existing pond
Basin_7C_Pst	7	0.62	0.62	0.00	98.00	0.41	Basin drains directly to existing pond
Basin_8_S_Pst	8	3.22	2.14	1.08	78.21	1.52	Basin drains to left side ditch - ditch block added
Basin_8_N_Pst	8	1.28	1.28	0.00	98.00	0.85	Basin drains directly to outfall
Basin_9_Pst	9	2.36	1.42	0.94	83.26	1.23	Basin drains to Pond 9
Basin_10	10	4.33	1.99	2.34	78.00	2.03	Basin drains to Pond 10
Basin_10_Pst	10	9.18	5.54	3.64	83.33	4.79	Basin drains directly to outfall

EXHIBIT 5
WATER QUALITY CALCULATIONS

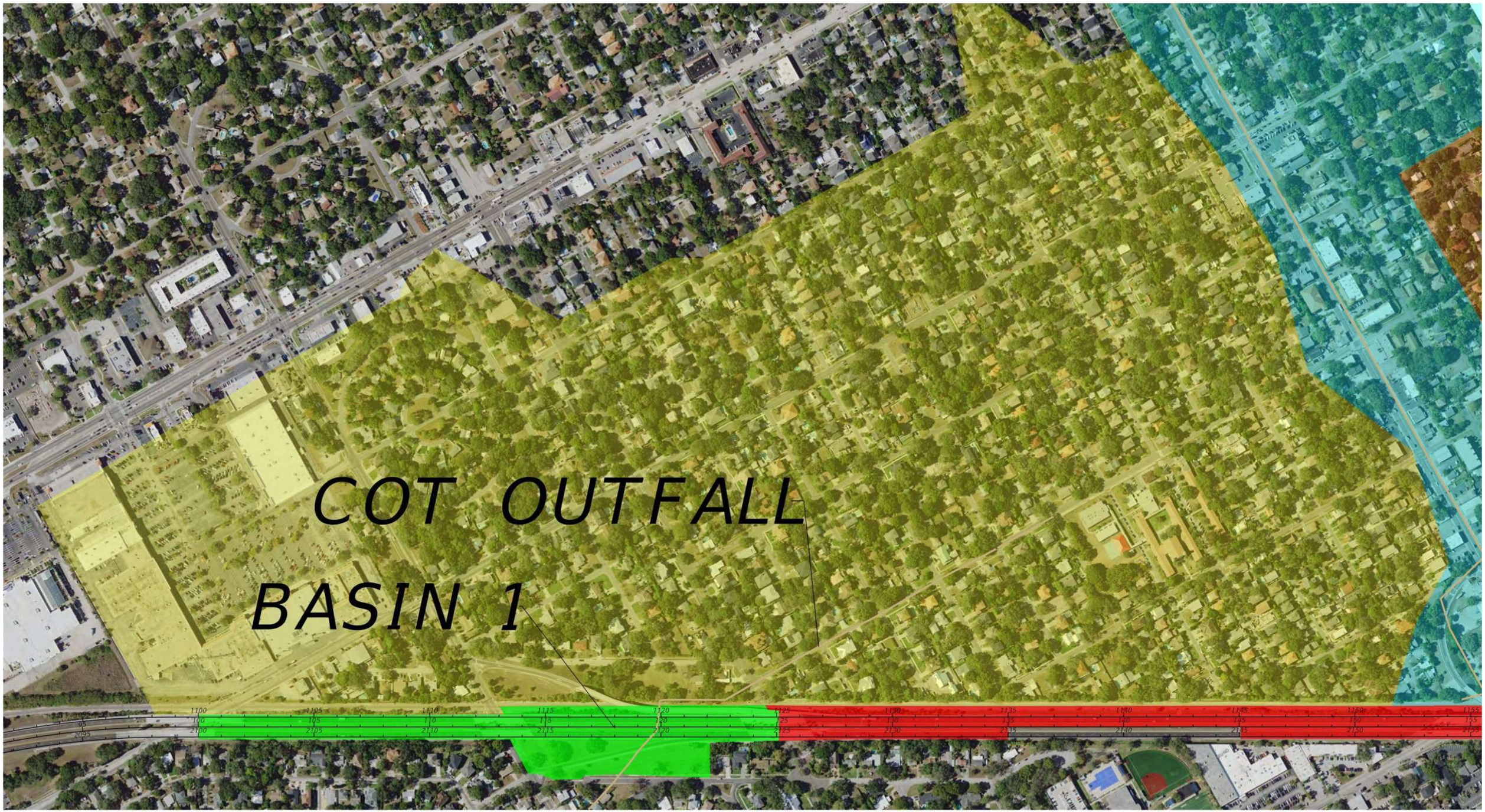
SOUTH SELMON SAFETY PROJECT
WATER QUALITY TREATMENT REQUIREMENTS

Water Quality Treatment Volumes:

Basin ID	Existing Pavement Draining to Median (acres)	Required Water Quality (acre-feet)	Existing/ Proposed Pavement Draining to Pond (acres)	Existing/ Proposed Pavement Treated (acres)	Provided Water Quality (acre-feet)	Remarks
1	0.18	0.004				Compensatory Treatment Provided in Ponds 9 and 10
2	0.28	0.006				Compensatory Treatment Provided in Ponds 9 and 10
3	0.43	0.009				Compensatory Treatment Provided in Ponds 9 and 10
4	0.17	0.004				Compensatory Treatment Provided in Ponds 9 and 10
5	0.13	0.003				Compensatory Treatment Provided in Ponds 9 and 10
6	0.49	0.010				Compensatory Treatment Provided in Ponds 9 and 10
7	0.14	0.003				Compensatory Treatment Provided in Ponds 9 and 10
8	0.69	0.014				Compensatory Treatment Provided in Ponds 9 and 10
9	0.65	0.014	1.42	0.35	0.073	Pond Treats 0.35 acres of 1.42 acres of pavement
10	1.41	0.029	1.99	0.86	0.179	Pond Treats 0.86 acres of 1.99 acres of pavement
Totals	4.59	0.095	3.410	1.21	0.252	

Notes: 1. Required water quality treatment volume based on treating 1/4" from existing pavement draining into median.
2. Provided water quality treatment volume based on treating 2.5" from portion of proposed pavement area draining to ponds

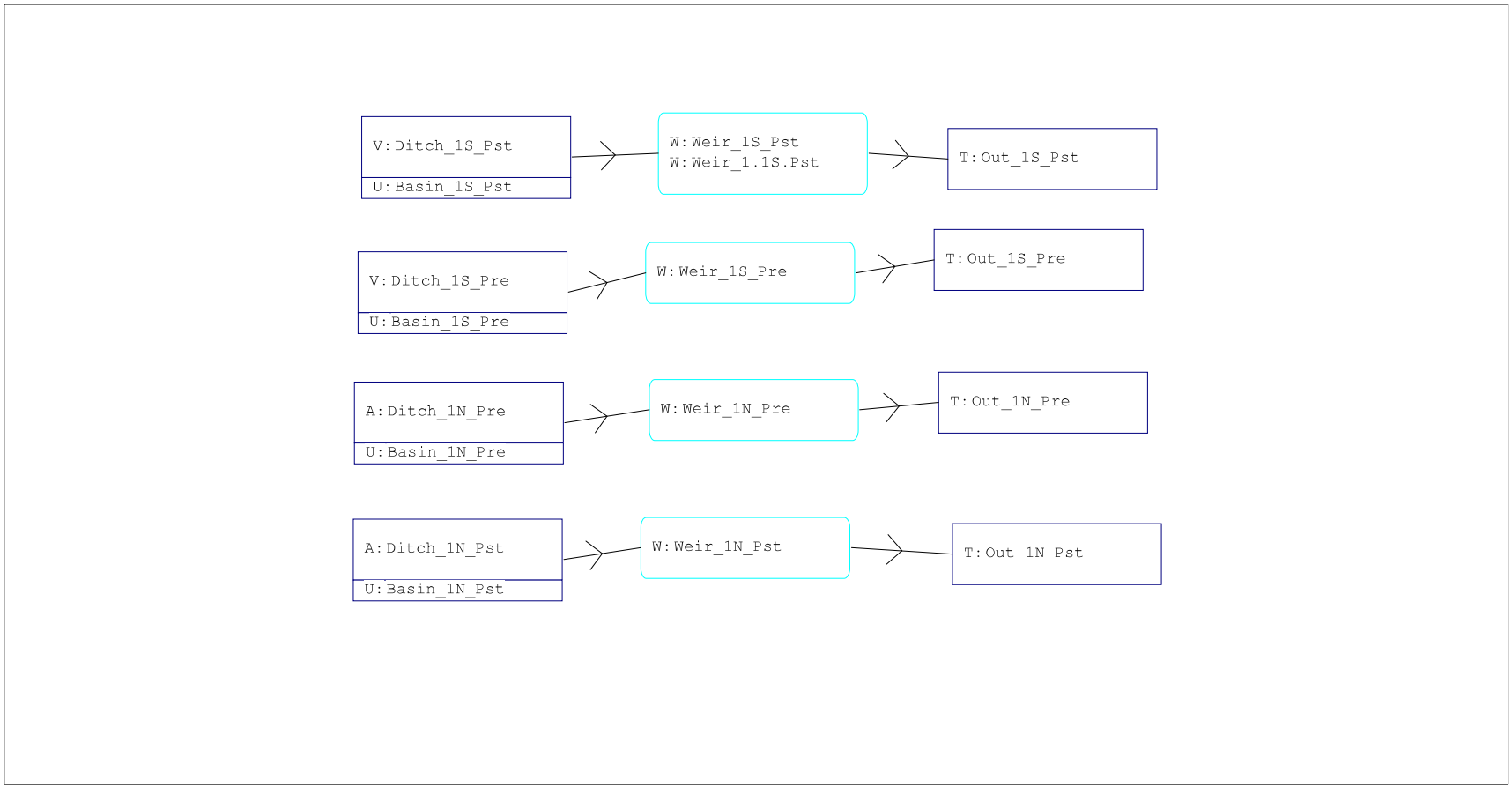
EXHIBIT 6
ICPR MODEL INPUT AND ROUTING SUMMARY

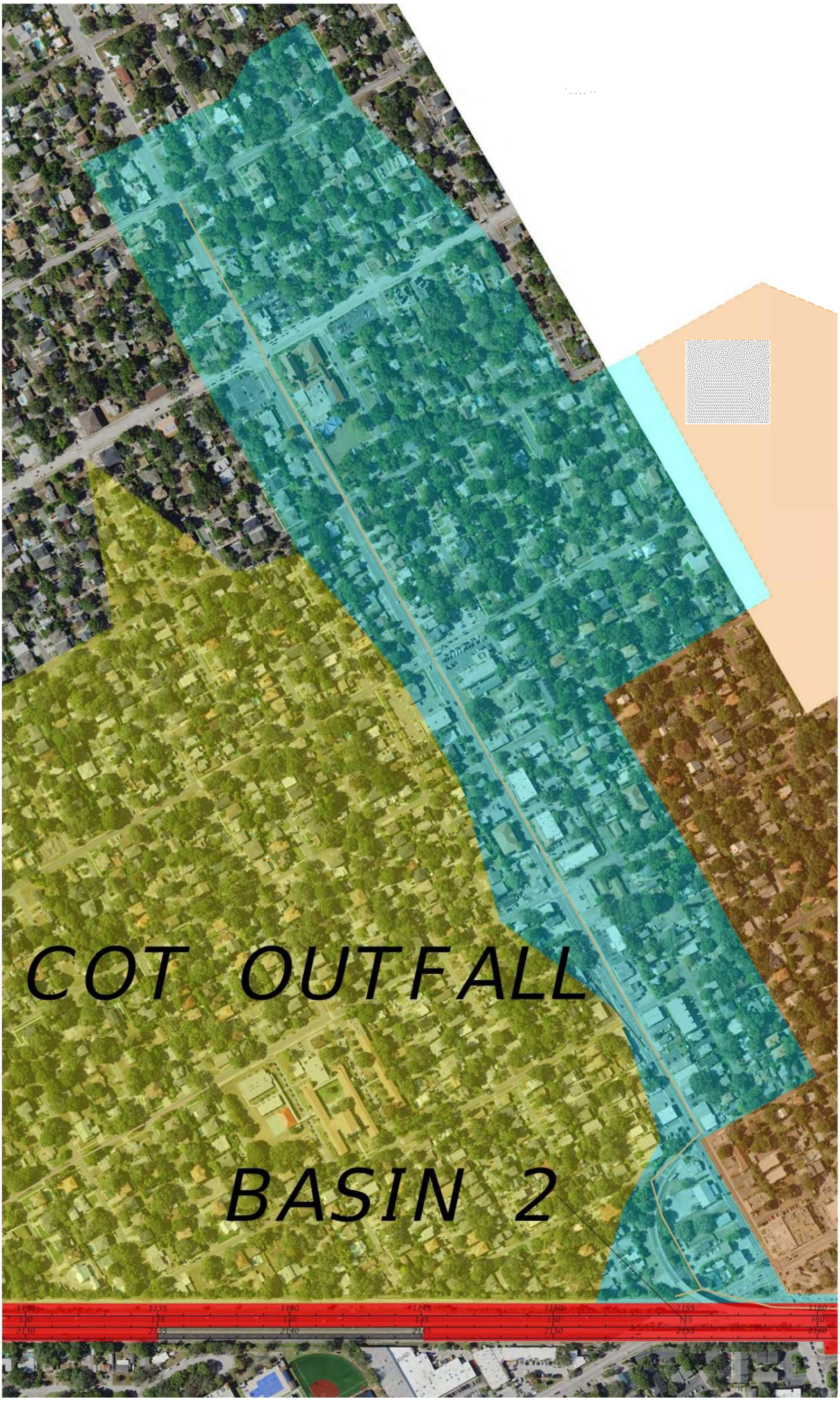

COT OUTFALL
BASIN 1

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench

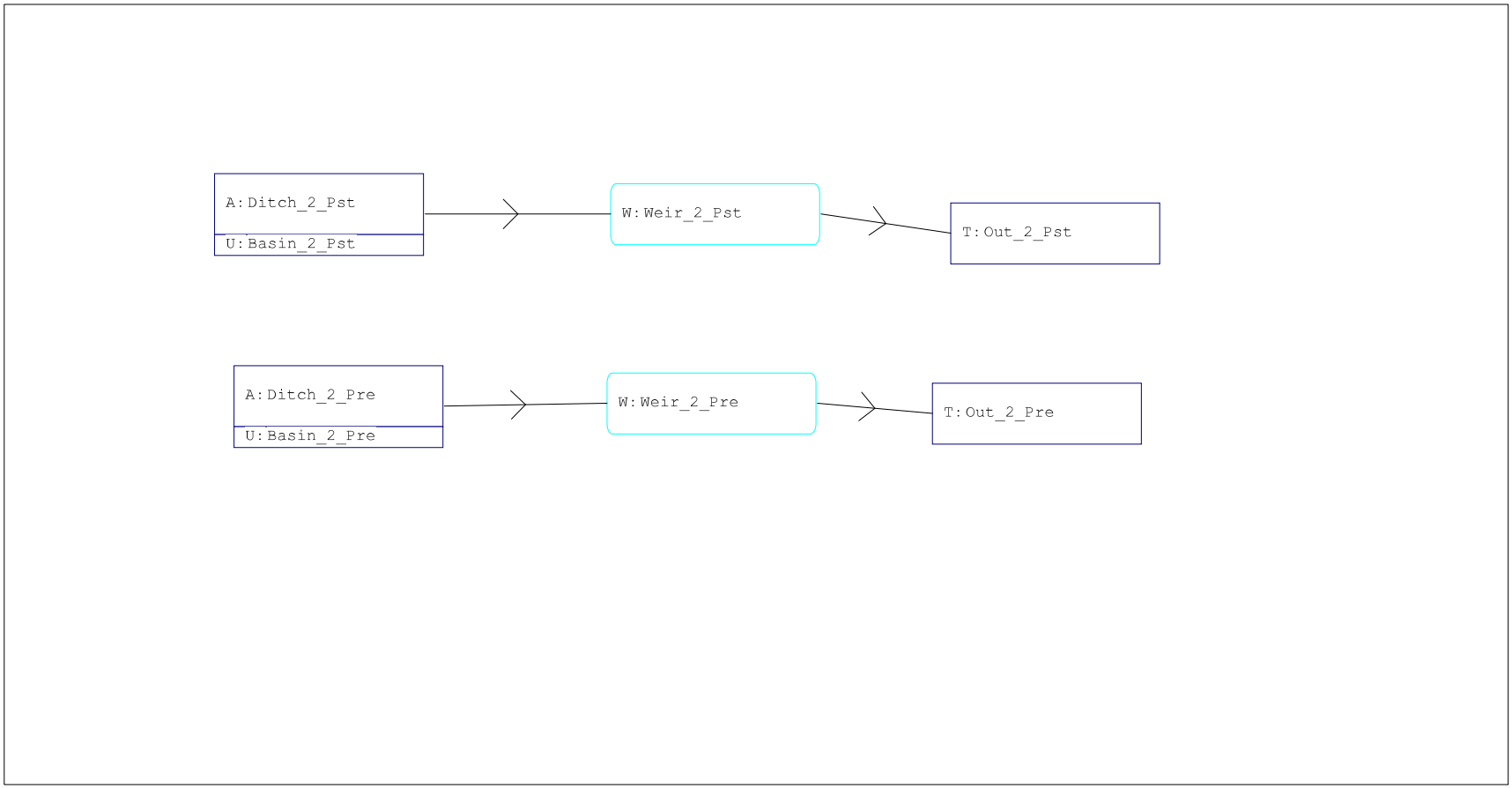



COT OUTFALL
BASIN 2

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench

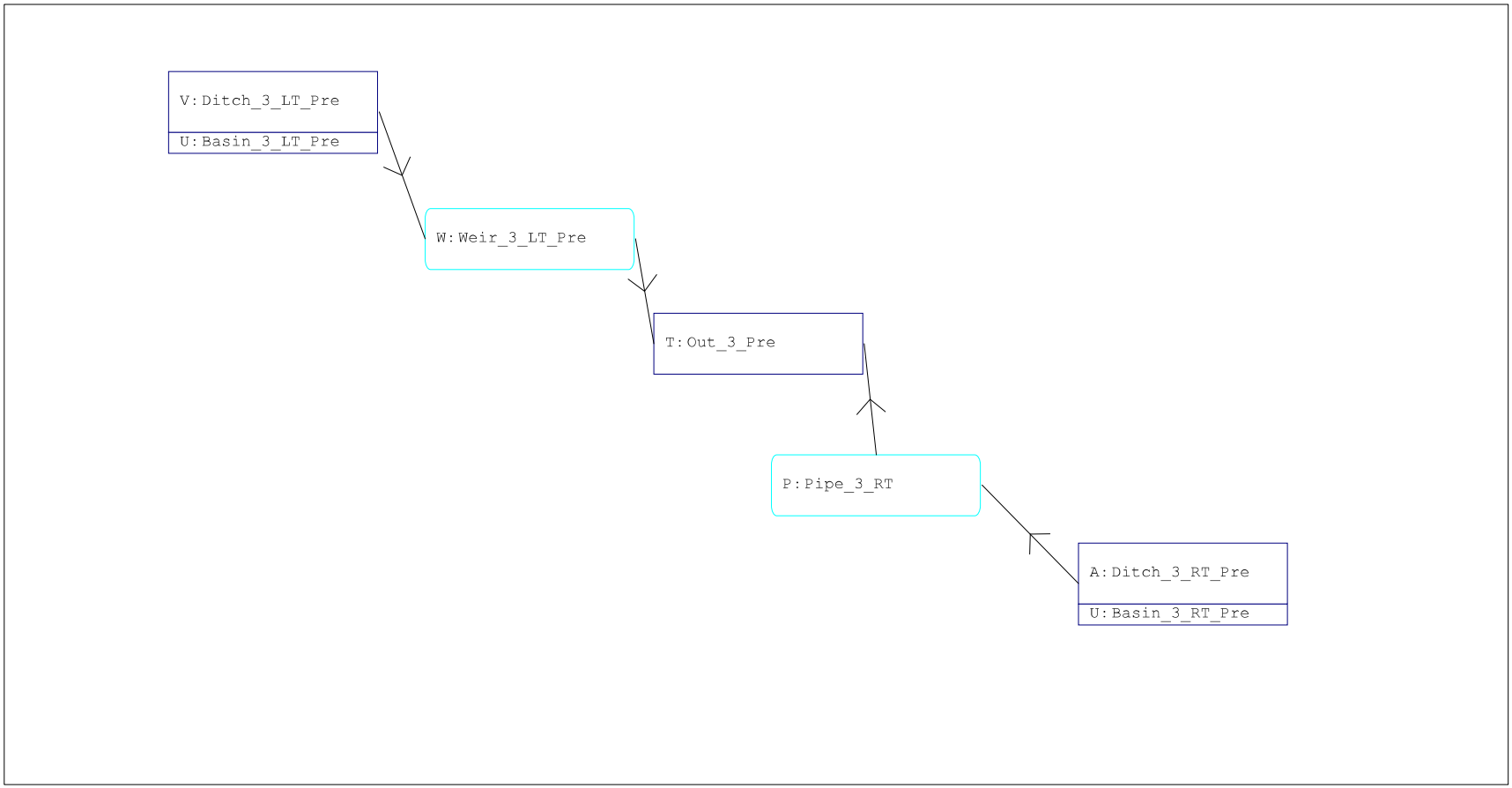


COT OUTFALL BASIN 3

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

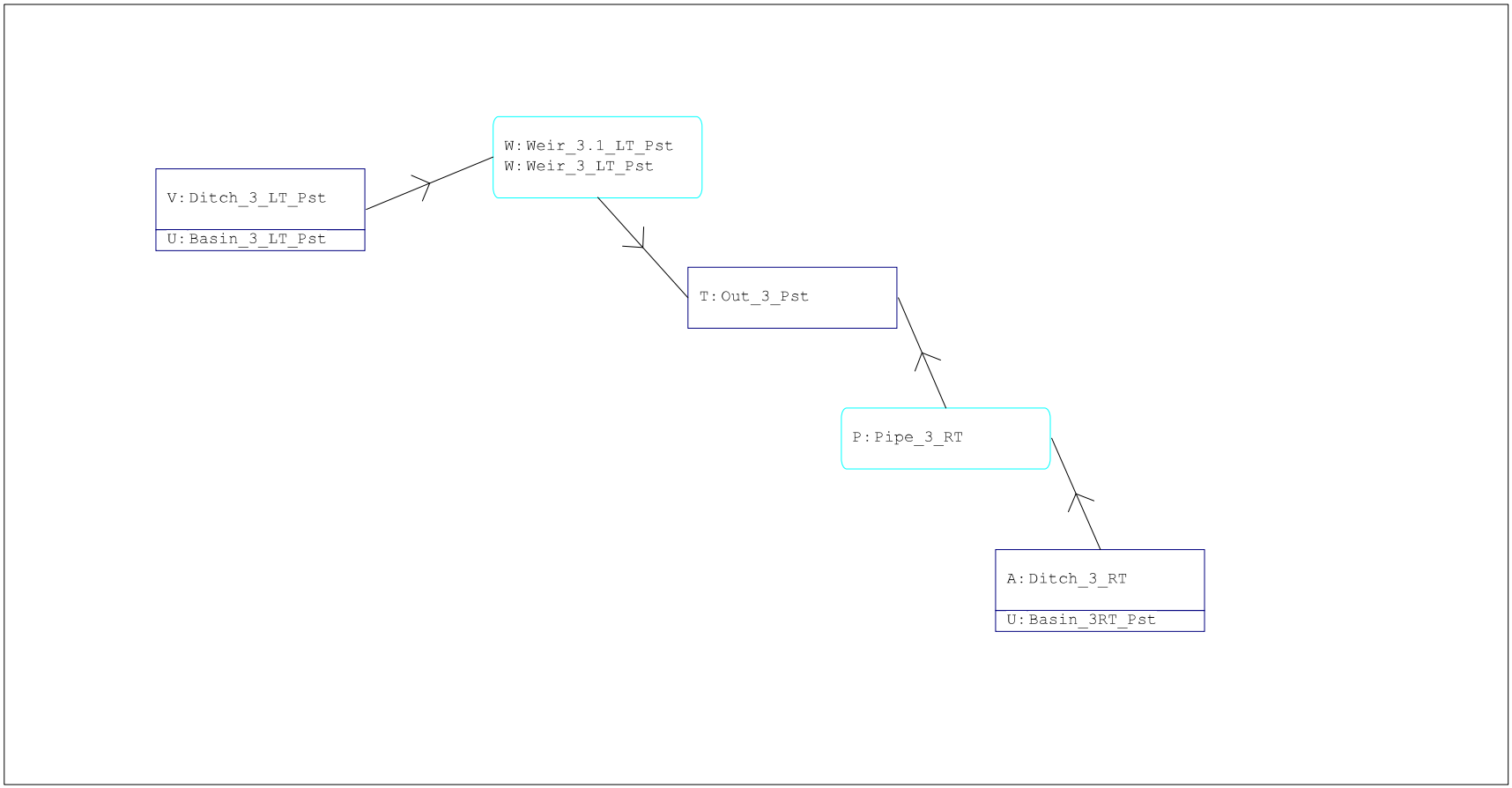
Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench

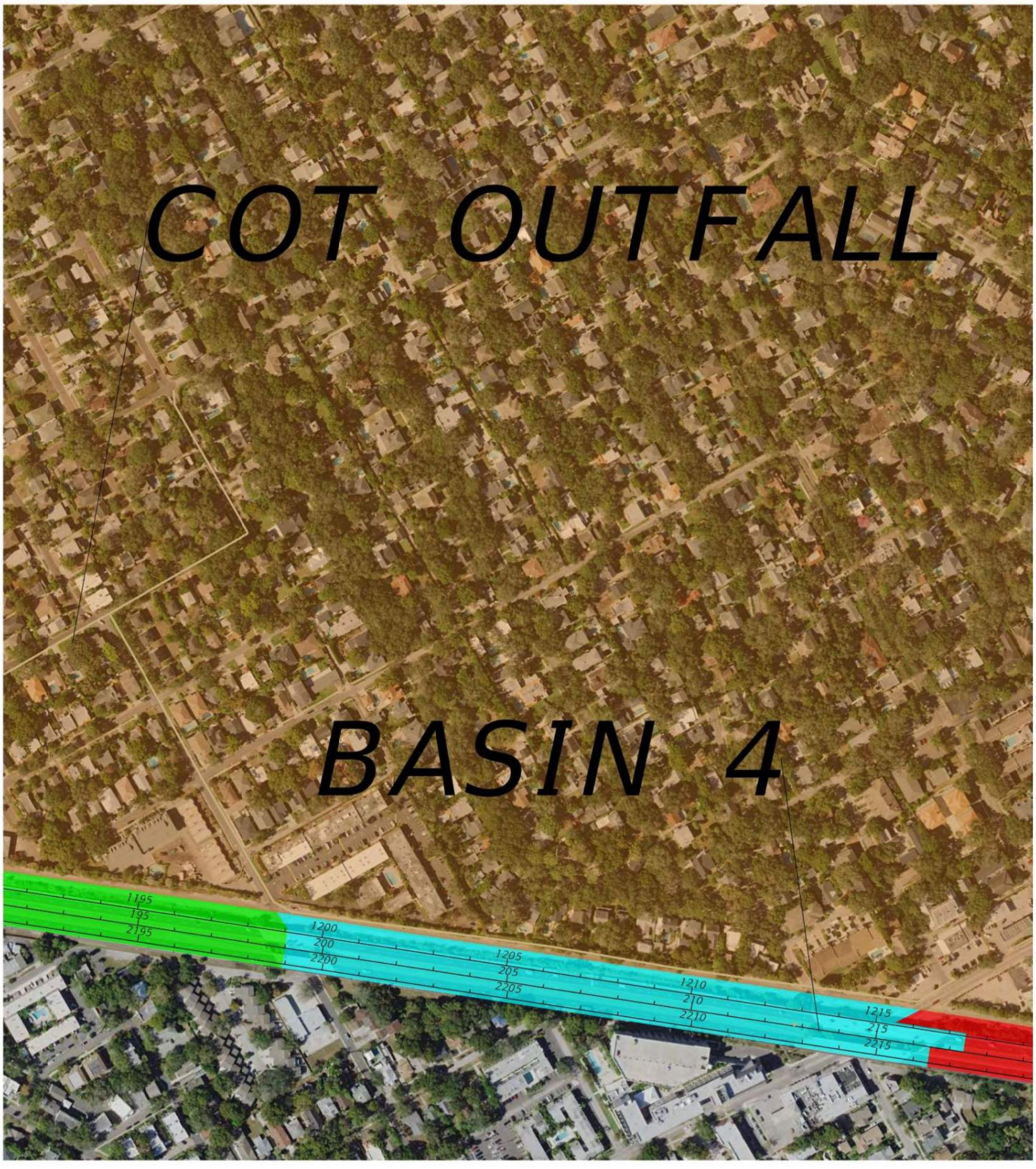


Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench

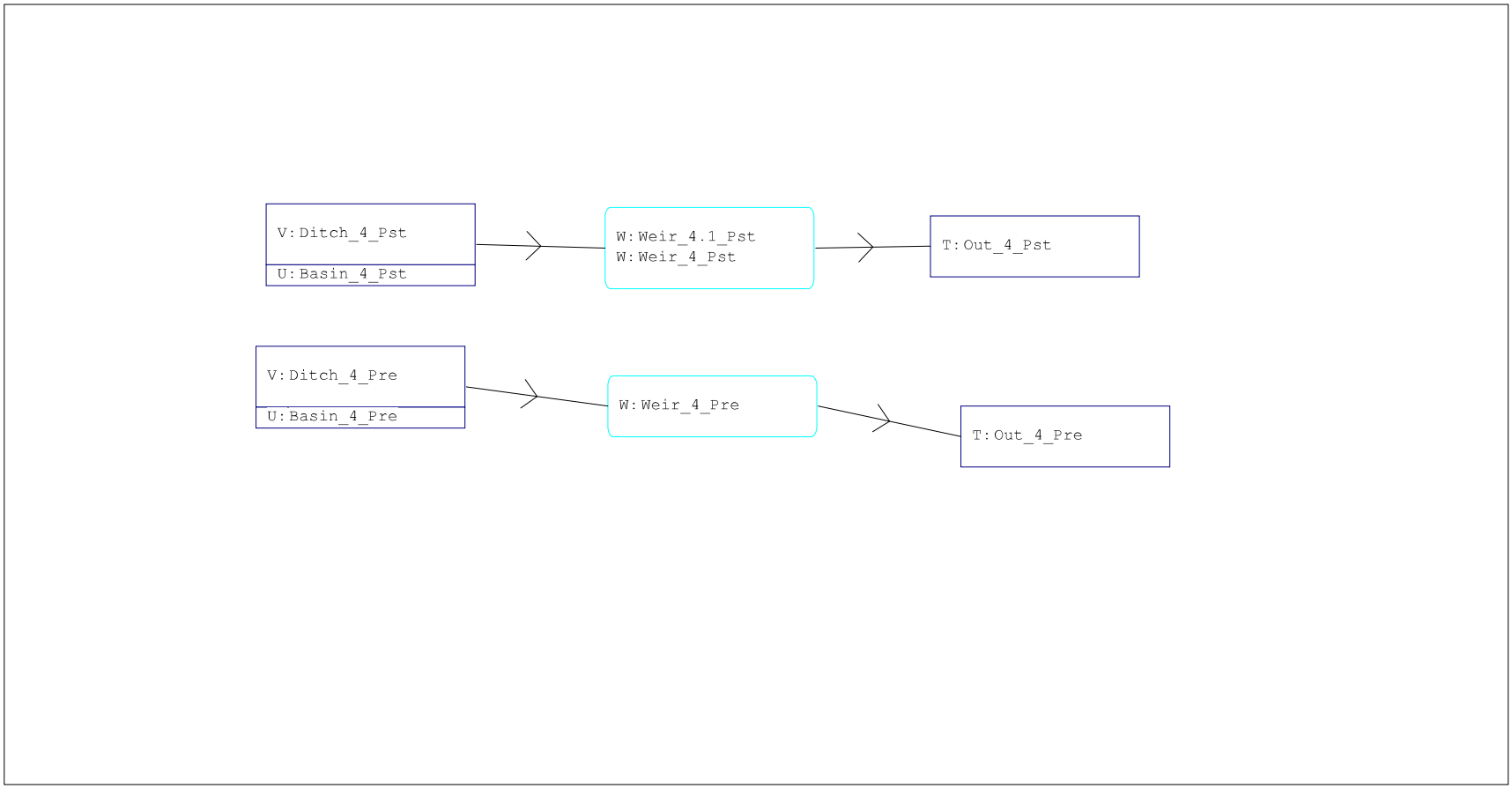



COT OUTFALL
BASIN 4
1195
195
2195
1200
200
2200
1205
205
2205
1210
210
2210
1215
215
2215

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench

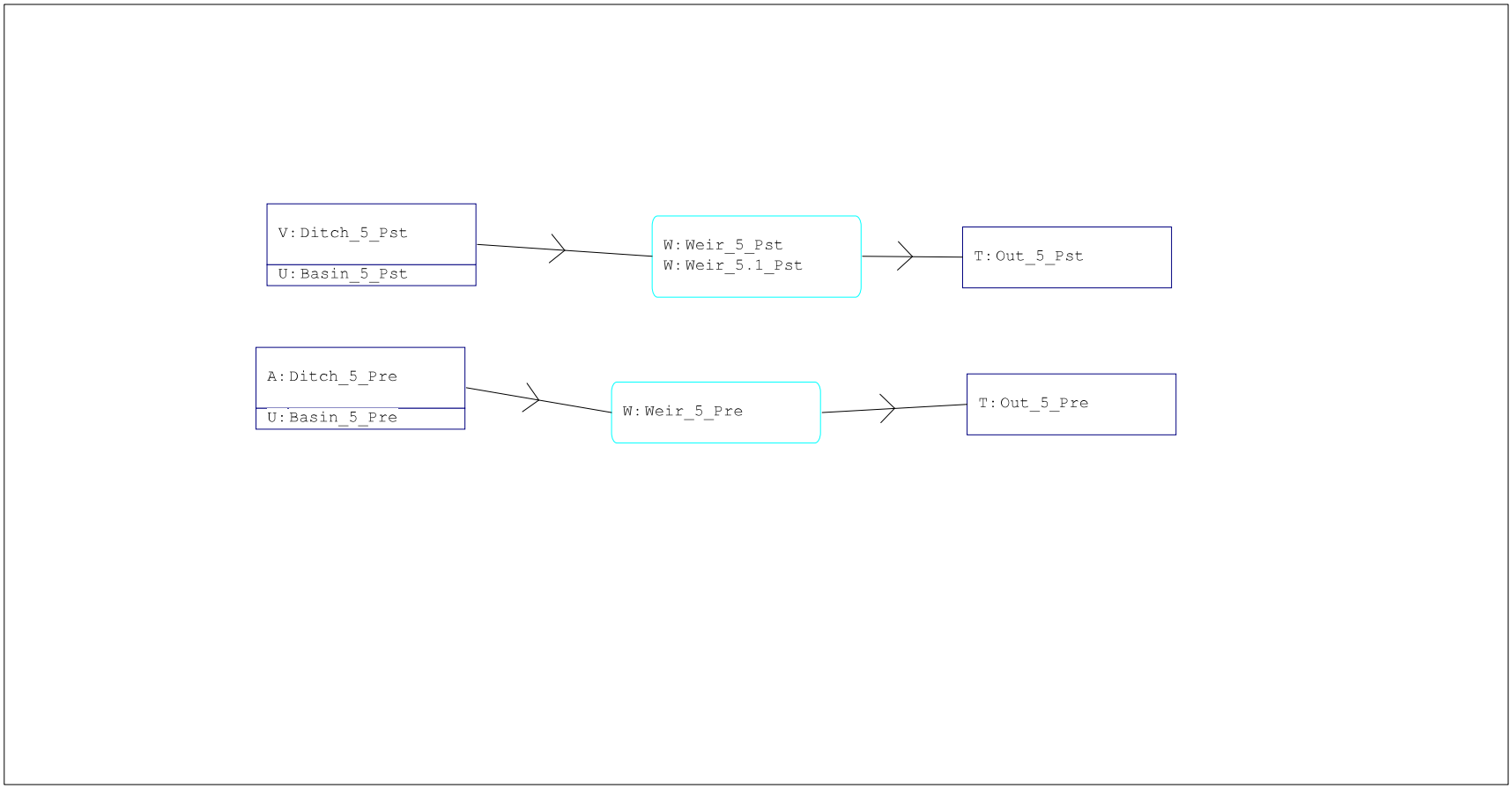


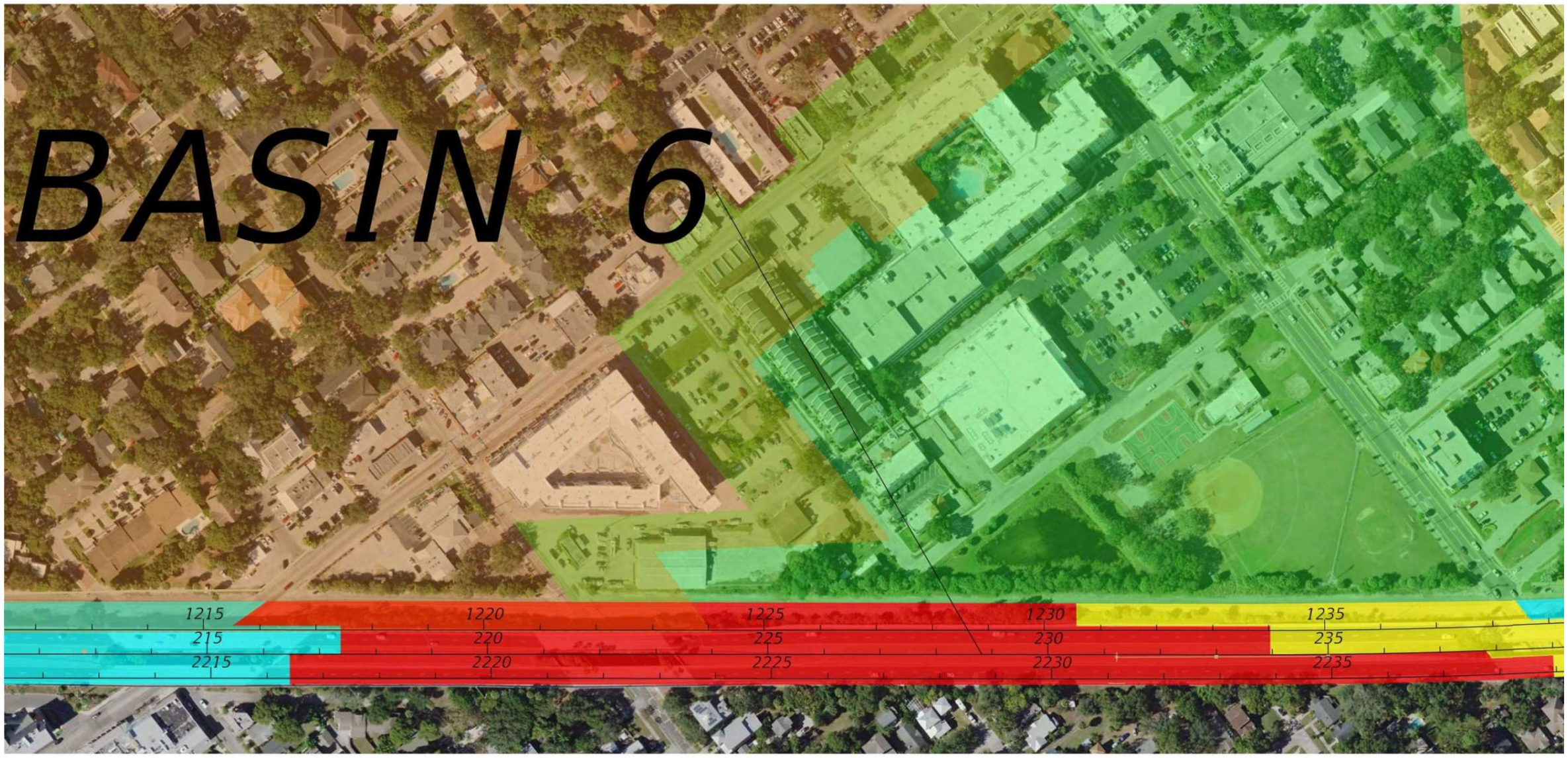
COT OUTFALL
BASIN 5
1215
1220
1225
1230
1235
215
220
225
230
235
2215
2220
2225
2230
2235

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench

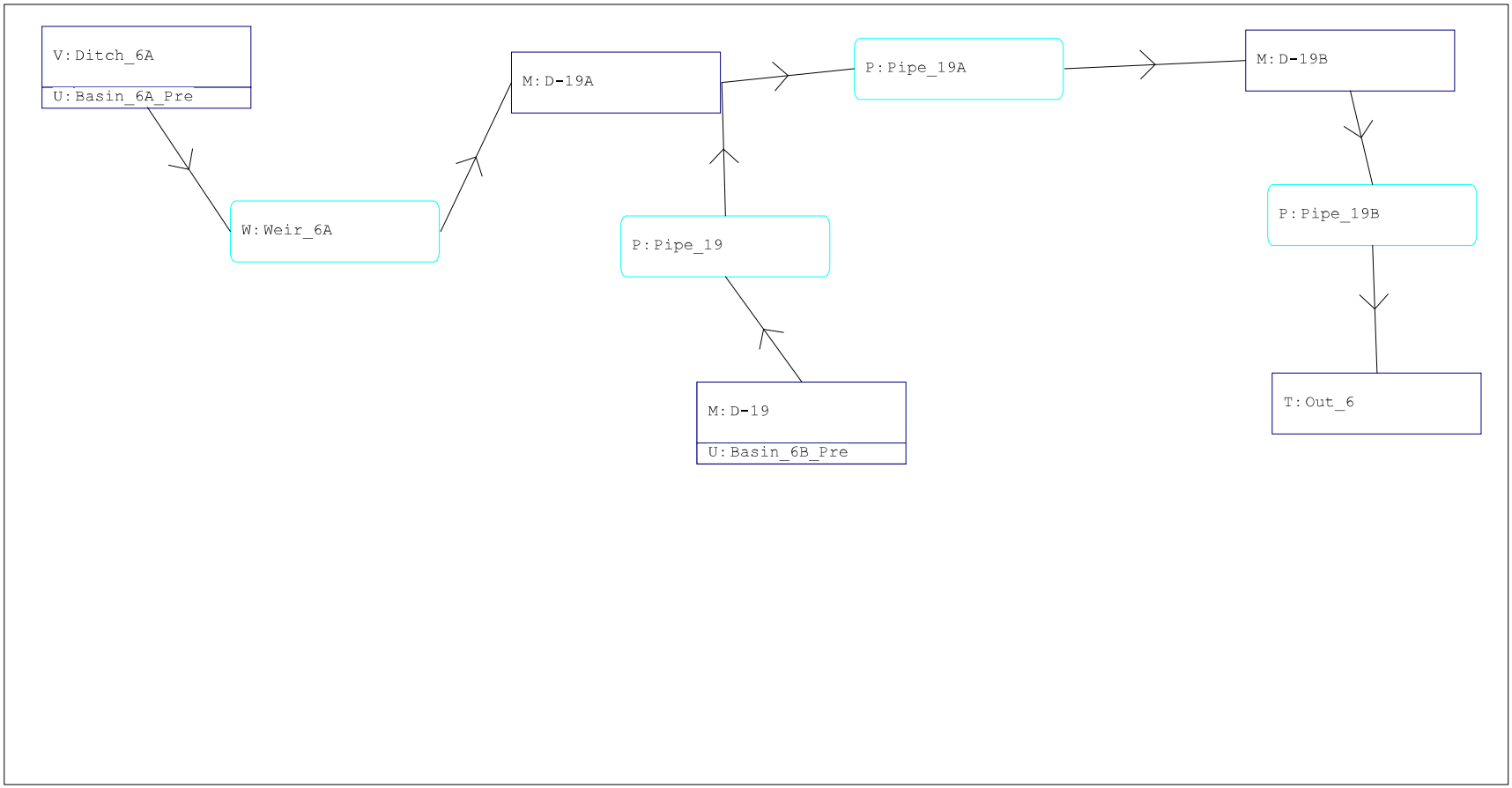



BASIN 6
1215
215
2215
1220
220
2220
1225
225
2225
1230
230
2230
1235
235
2235

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

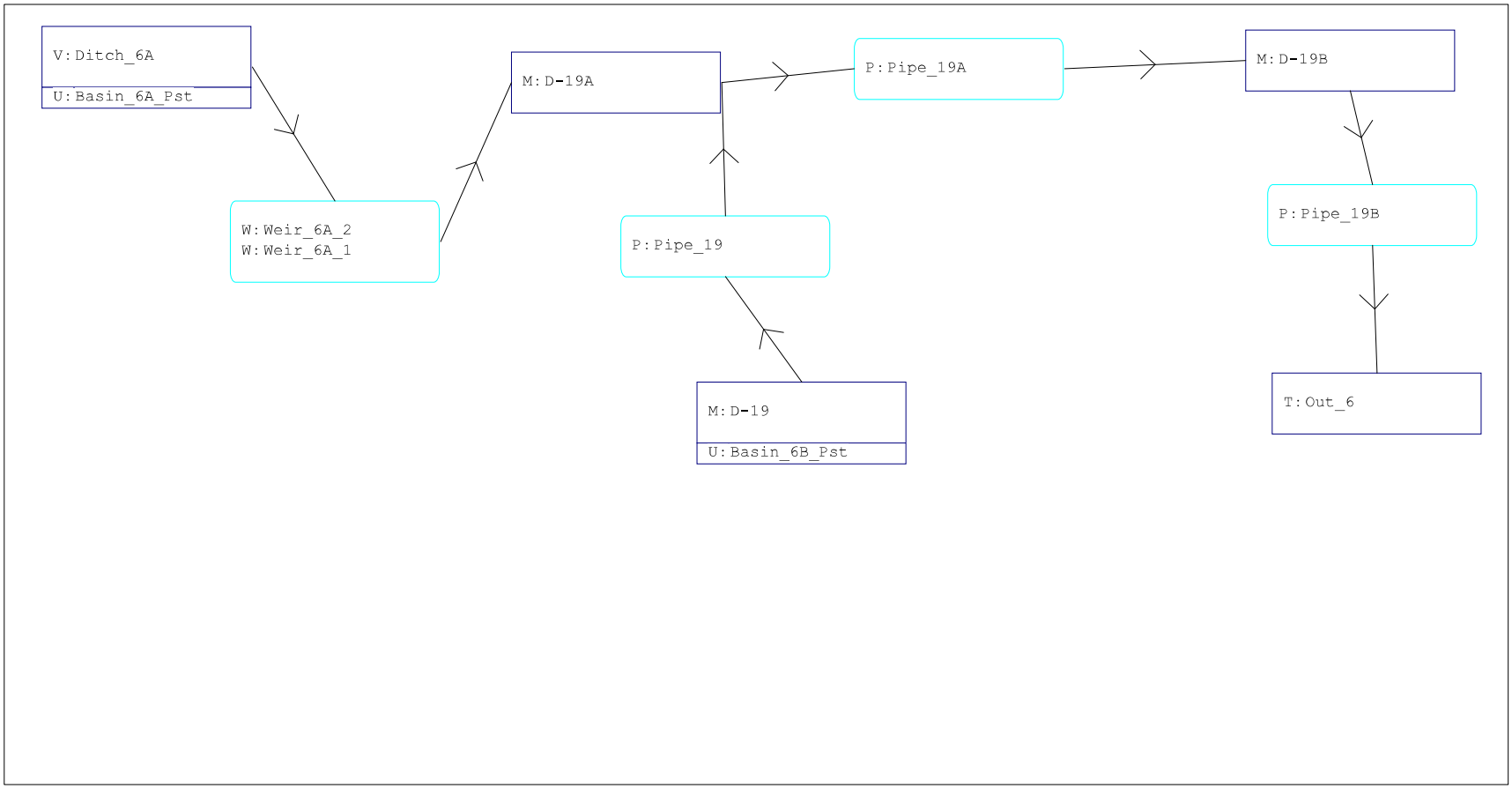
Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench

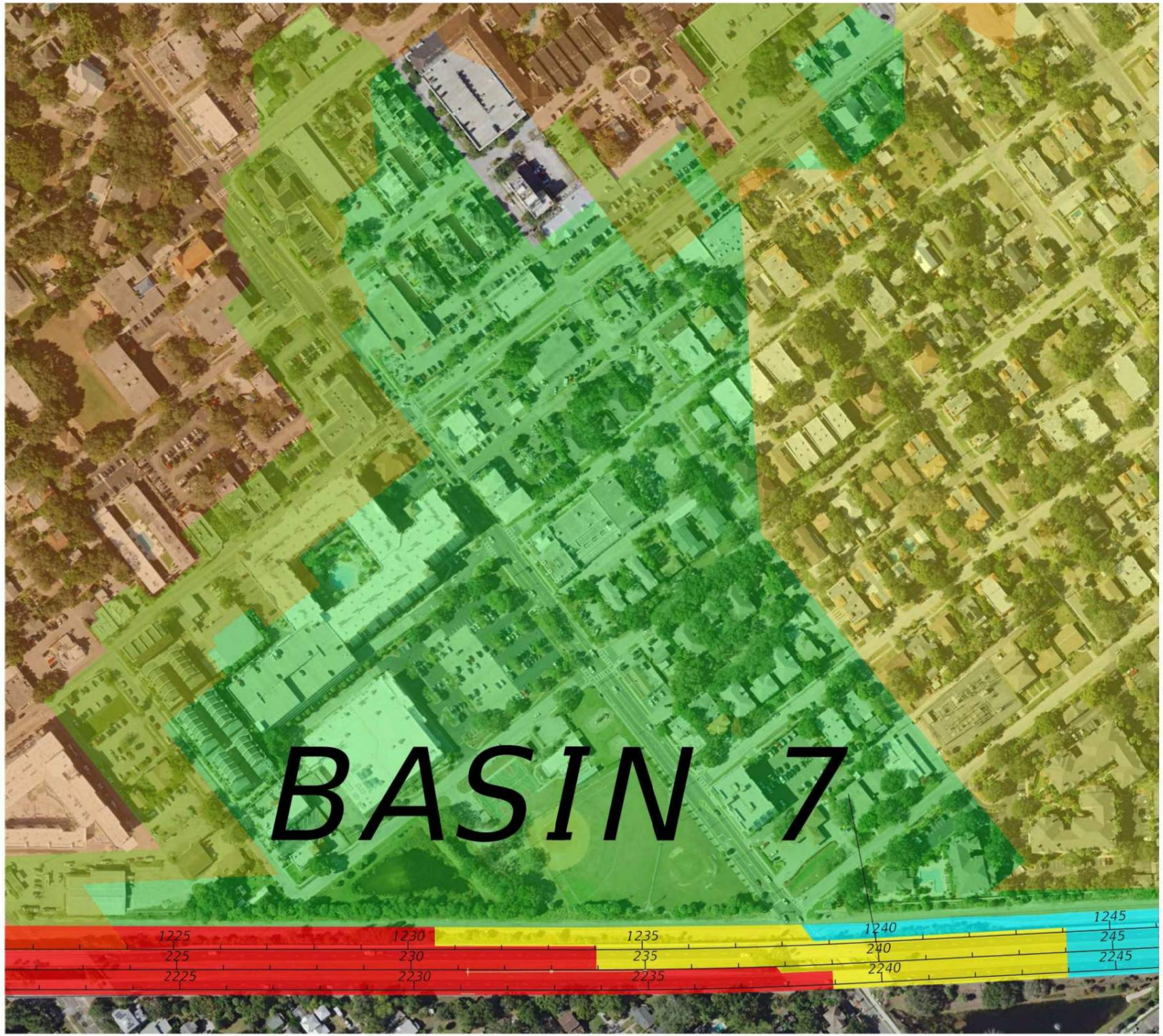


Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench

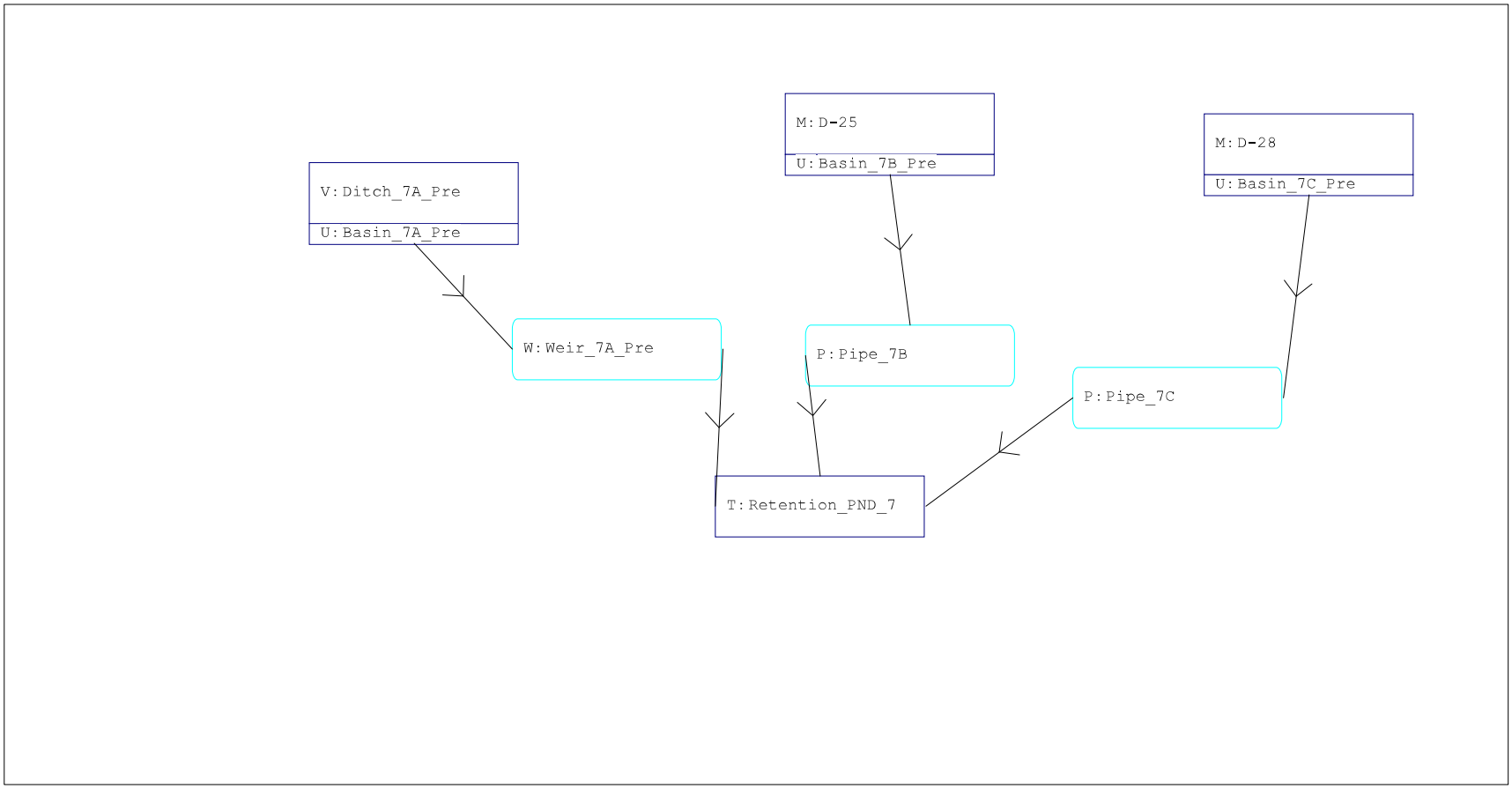



BASIN 7
1225
225
2225
1230
230
2230
1235
235
2235
1240
240
2240
1245
245
2245

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

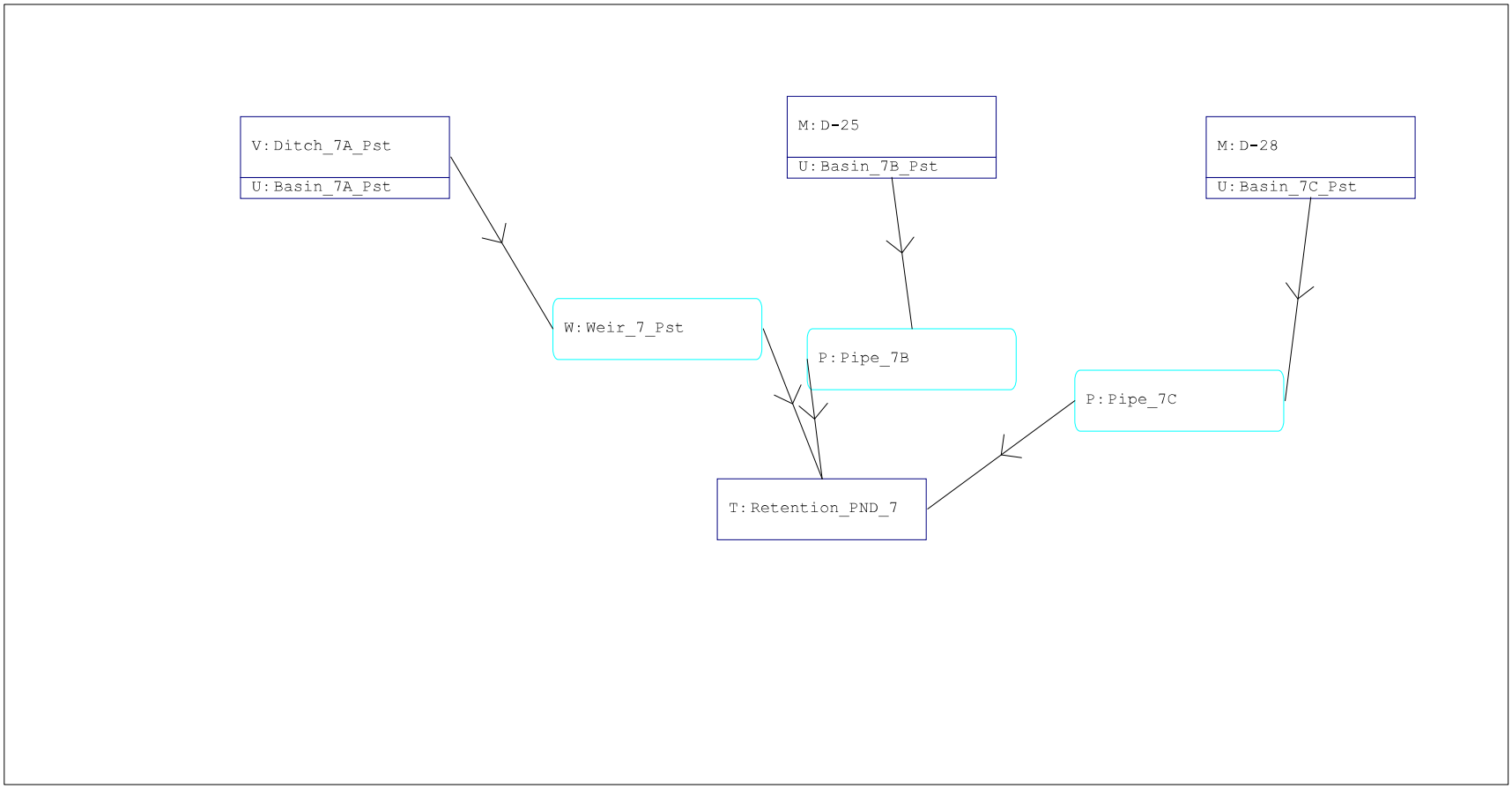
Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench

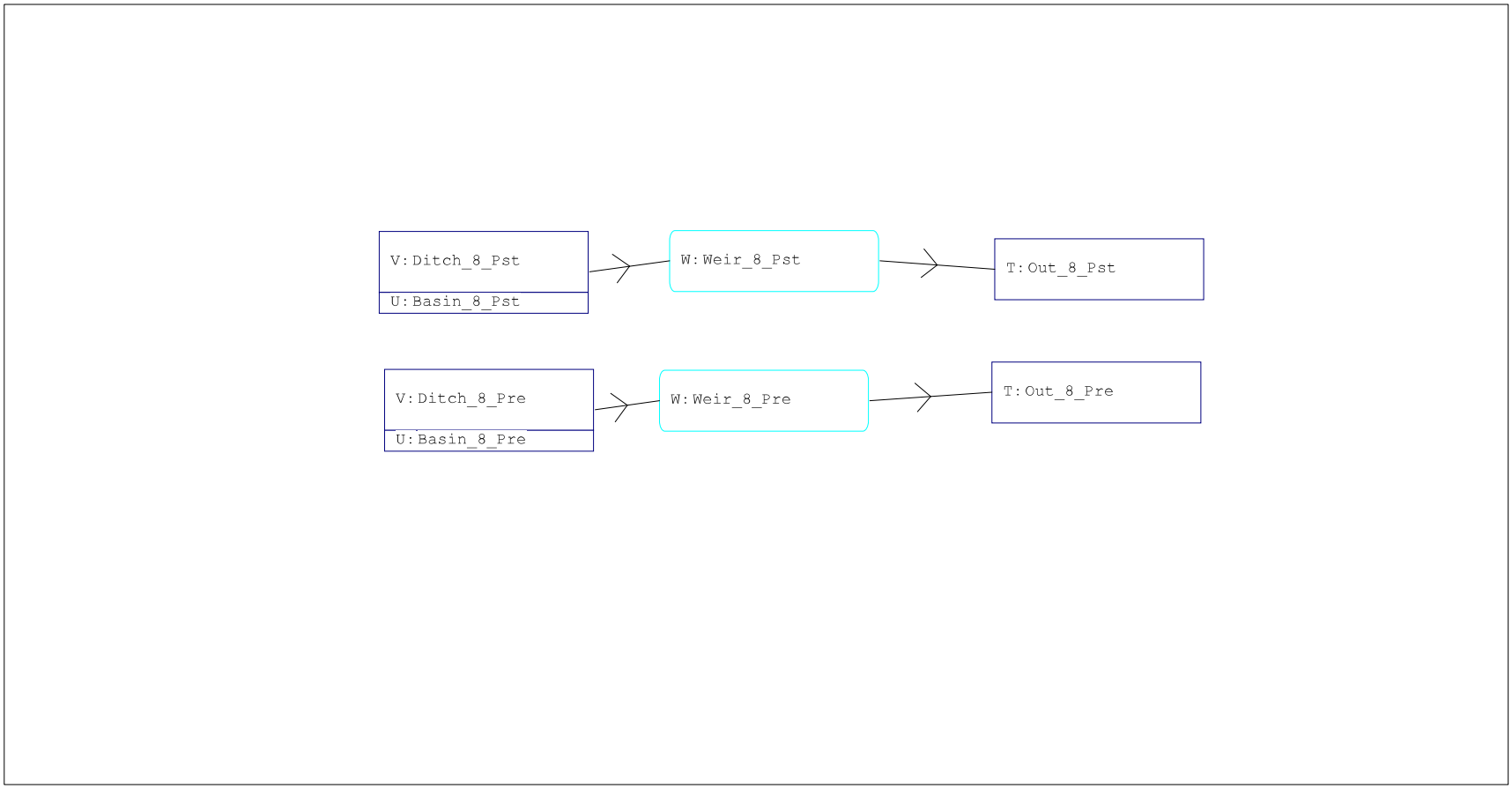


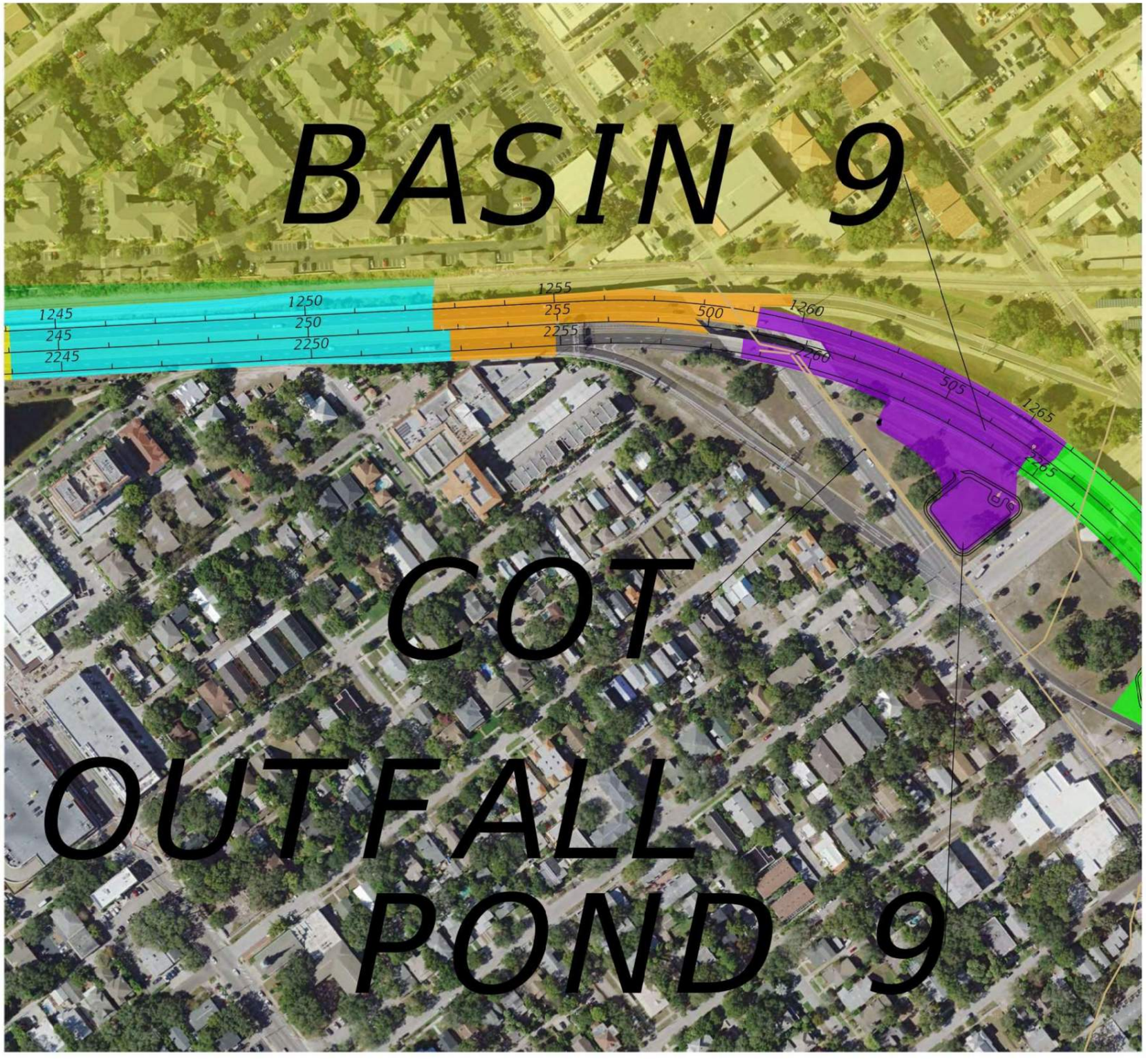
COT OUTFALL
BASIN 8N
BASIN 8S
1235
235
2235
1240
240
2240
1245
245
2245
1250
250
2250
1255
255
2255

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench

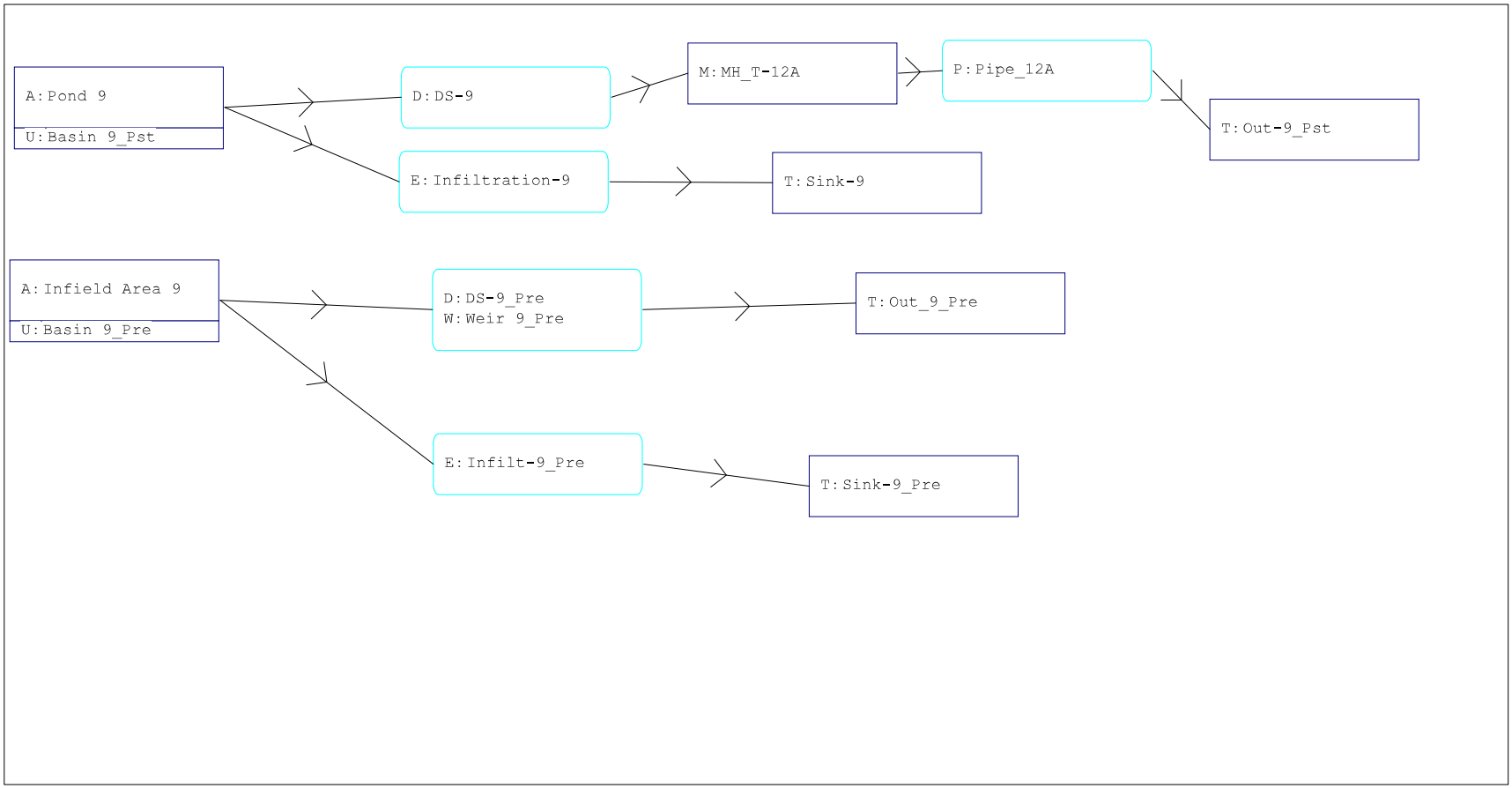



BASIN 9
1245
245
2245
1250
250
2250
1255
255
2255
500
1260
260
505
1265
265
COT
OUTFALL
POND 9

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



OUTFALL TO
HILLSBOROUGH
CANAL
BASIN 10
1265
1270
1275
1280
1285
1290
1295
510
515
520
525
530
535
540
545
2265
2270
2275
2280
2285
2290

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench

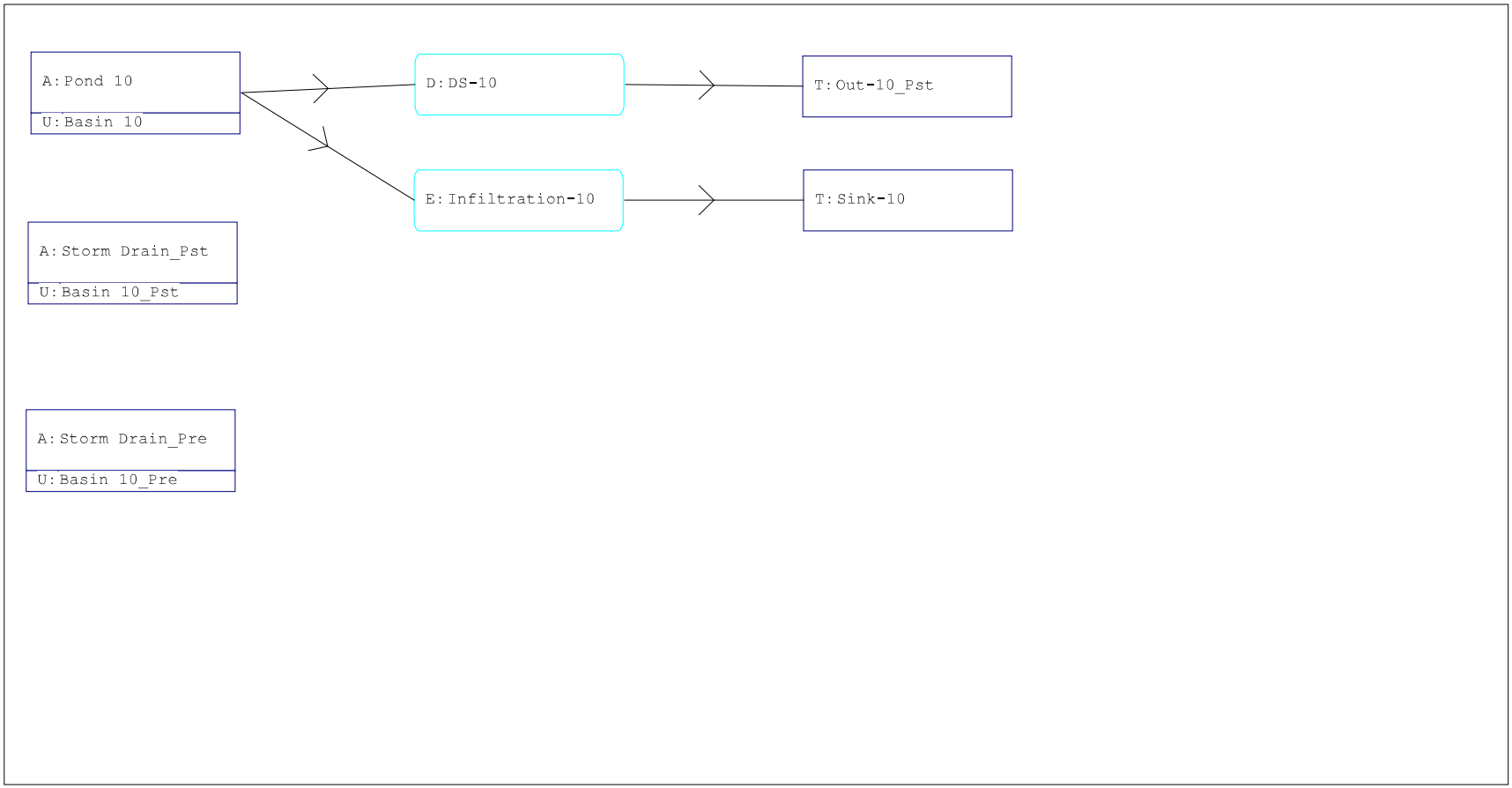


EXHIBIT 7
SWFWMD PRE-APPLICATION MEETING NOTES

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

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

FILE NUMBER:

PA 406420

Date:	02/05/2019		
Time:	11:00		
Project Name:	South Selmon Expressway (SR618) Median Safety Improvement		
District Engineer:	Rob McDaniel		
District ES:	Al Gagne		
Attendees:	Kyle Harper, Murray Santoro, Edward Kory, Blake Meinecke, Al Stewart		
County:	Hillsborough	**Sec/Twp/Rge:**	24/29/19
Total Land Acreage:	3.7 miles	**Project Acreage:**	3.7 miles

Prior On-Site/Off-Site Permit Activity:

- PA 405334, ERP No. 21192.001 and .02; ERP No. 19654.007

Project Overview:

- Median improvements for the Crosstown Expressway, including pavement widening and barrier wall, between Himes and Hyde Park Avenue. Depressed grass median will be replaced with paved shoulder.

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

- Provide the limits of jurisdictional wetlands/surface waters. It appears that the only surface water impacts may be a few drainage ditches. Use top of bank to delineate and quantify area of impacts to these ditches.
- No mitigation will be required for impacts to drainage ditches that were cut from upland areas.
- As of October 1, 2017, the District will no longer send a copy of an application that does not qualify for a State Programmatic General Permit (SPGP) to the U.S. Army Corps of Engineers. If a project does not qualify for a SPGP, you will need to apply separately to the Corps using the appropriate federal application form for activities under federal jurisdiction. Please see the Corps' Jacksonville District Regulatory Division Sourcebook for more information about federal permitting. Please call your local Corps office if you have questions about federal permitting. Link: http://www.saj.usace.army.mil/Missions/Regulatory/Source-Book/.

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

- WBIDs need to be independently verified by the consultant
- Contamination issues need to be resolved with the FDEP. Check FDEP MapDirect layer for possible contamination points within the project area. FDEP MapDirect Link
- Stormwater retention and detention systems are classified as moderate sanitary hazards with respect to public and private drinking water wells. Stormwater treatment facilities shall not be constructed within 100 feet of an existing public water supply well and shall not be constructed within 75 feet of an existing private drinking water well. Subsection 4.2, A.H.V.II.
- Any wells on site should be identified and their future use/abandonment must be designated.
- High water data, flooding complaints or issues onsite or nearby should be considered.

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

- Formal water quantity attenuation is not required for the proposed shoulder construction activity; exempt per Rule 62-330.051(4)(c), F.A.C. At the time, or prior to, the new median shoulders being converted to new travel lanes, formal water quantity attenuation will be required.
- However, existing function of the depressed, grass median will need to be maintained.

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

- Formal water quality treatment is not required for the proposed shoulder construction activity; exempt per Rule 62-330.051(4)(c), F.A.C. At the time, or prior to, the new median shoulders being converted to new travel lanes, formal water quality will be required.
- Although the grassed median is not a formal water quality stormwater treatment system, it does provide some function to runoff from its contributing area. This function will need to be maintained or mitigated.

- Portions of the expressway do not contribute to the median area, while other portions do contribute runoff to the median. Delineate the areas of contribution and then quantify a volume of retention within the median. Some parts of the median may function mostly as conveyance with a minimal amount of retention.
- Existing storage at the Willow Exit ramps may be expanded to offset the loss of water quality function within the median.

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

- N/A

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

- The permit must be issued to entity that owns or controls the property.
- Provide evidence of ownership or control by deed, easement, contract for purchase, etc. Evidence of ownership or control must include a legal description. A Property Appraiser summary of the legal description is NOT acceptable.

Application Type and Fee Required:

- SWERP Individual – Sections A, C, and E of the ERP Application.
- Consult the fee schedule for different thresholds.

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

- An application for an individual permit to construct or alter a dam, impoundment, reservoir, or appurtenant work, requires that a notice of receipt of the application must be published in a newspaper within the affected area. Provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP can be in accordance with the language provided in Rule 40D-1.603(10), F.A.C.

- Provide a copy of the legal description (of all applicable parcels within the project area) in one of the following forms:
  a. Deed with complete Legal Description attachment.
  b. Plat.
  c. Boundary survey of the property(ies) with a sketch.

- The plans and drainage report submitted electronically must include the appropriate information required under Rules 61G15-23.005 and 61G15-23.004 (Digital), F.A.C. The following text is required by the Florida Board of Professional Engineers (FBPE) to meet this requirement when a digitally created seal is not used and must appear where the signature would normally appear:

  ELECTRONIC (Manifest): *[NAME] State of Florida, Professional Engineer, License No. [NUMBER] This item has been electronically signed and sealed by [NAME] on the date indicated here using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies*

  DIGITAL: *[NAME] State of Florida, Professional Engineer, License No. [NUMBER]; This item has been digitally signed and sealed by [NAME] on the date indicated here using a Digital Signature; Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.*
- Provide soil erosion and sediment control measures for use during construction. Refer to ERP Applicant's Handbook Vol. 1 Part IV Erosion and Sediment Control.
- Demonstrate that excavation of any stormwater ponds does not breach an aquitard (see Subsection 2.1.1, A.H.V.II) such that it would allow for lesser quality water to pass, either way, between the two systems. In those geographical areas of the District where there is not an aquitard present, the depth of the pond(s) shall not be excavated to within two (2) feet of the underlying limestone which is part of a drinking water aquifer. [Refer to Subsection 5.4.1(b), A.H.V.II]
- If lowering of SHWE is proposed, then burden is on Applicant to demonstrate no adverse onsite or offsite impacts as per Subsection 3.6, A.H.V.II. Groundwater drawdown 'radius of influence' computations may be required to demonstrate no adverse onsite or offsite impacts. Please note that new roadside swales or deepening of existing roadside swales may result in lowering of SHWE. Proposed ponds with control elevation less than SHWE may result in adverse lowering of onsite or offsite groundwater.

Disclaimer: The District ERP pre-application meeting process is a service made available to the public to assist interested parties in preparing for submittal of a permit application. Information shared at pre-application meetings is superseded by the actual permit application submittal. District permit decisions are based upon information submitted during the application process and Rules in effect at the time the application is complete.

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

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

FILE NUMBER:

PA 406716

Date:	05/15/2019		
Time:	10:00		
Project Name:	South Selmon Expressway (SR 618) Median Safety		
District Engineer:	David Kramer, Rob McDaniel		
District ES:	Jeff Glas		
Attendees:	Edward Kory, Murray Santoro, Ted Davidson, Paul Bedard, Matt Lowe, Stoney Morgado		
County:	Hillsborough	**Sec/Twp/Rge:**	23, 24, 26, 27, 34/29/18
Total Land Acreage:	ROW	**Project Acreage:**	15+ acres (3.7 miles)

Prior On-Site/Off-Site Permit Activity:

- Previous pre-apps 406420, 405333(or 5) and 405334

Project Overview:

- Previously pre-app meeting on 02/05/2019.
- This is a design build project. Currently an exemption under review (App. # 781844) for the milling and resurfacing phase of this project.
- Individual permit application to be submitted sometime in May for the shoulder/median/barrier wall improvements.
- Discussion on 5/15 confirmed direction given at 2/5/19 meeting.

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

- Provide the limits of jurisdictional wetlands/surface waters. It appears that the only surface water impacts may be a few drainage ditches. Use top of bank to delineate and quantify area of impacts to these ditches.
- No mitigation will be required for impacts to drainage ditches that were cut from upland areas.
- As of October 1, 2017, the District will no longer send a copy of an application that does not qualify for a State Programmatic General Permit (SPGP) to the U.S. Army Corps of Engineers. If a project does not qualify for a SPGP, you will need to apply separately to the Corps using the appropriate federal application form for activities under federal jurisdiction. Please see the Corps' Jacksonville District Regulatory Division Sourcebook for more information about federal permitting. Please call your local Corps office if you have questions about federal permitting. Link: http://www.saj.usace.army.mil/Missions/Regulatory/Source-Book/

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

- Tampa Bay and Hillsborough River Watersheds.
- Any wells within project area should be identified and their future use/abandonment must be designated.

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

- Formal water quantity attenuation is not required for the proposed shoulder construction activity; exempt per Rule 62-330.051(4)(c), F.A.C. At the time, or prior to, the new median shoulders being converted to new travel lanes, formal water quantity attenuation will be required.
- However, existing function of the depressed, grass median will need to be maintained.

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

- Formal water quality treatment is not required for the proposed shoulder construction activity; exempt per Rule 62-330.051(4)(c), F.A.C. At the time, or prior to, the new median shoulders being converted to new travel lanes, formal water quality will be required.
- Although the grassed median is not a formal water quality stormwater treatment system, it does provide some function to runoff from its contributing area. This function will need to be maintained or mitigated.
- Portions of the expressway do not contribute to the median area, while other portions do contribute runoff to the median. Delineate the areas of contribution and then quantify a volume of retention within the median. Some parts of the median may function mostly as conveyance with a minimal amount of retention.

- Compensatory treatment and water quantity ponds to be created at Willow Exit ramps to offset the loss of water quality function within the median.

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

- N/A

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

- Demonstrate ownership or control of the entire project area.

Application Type and Fee Required:

- Individual ERP – Sections A, C and E of the ERP Application - $2492.00

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

- An application for an individual permit to construct or alter a dam, impoundment, reservoir, or appurtenant work, requires that a notice of receipt of the application must be published in a newspaper within the affected area. Provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP can be in accordance with the language provided in Rule 40D-1.603(10), F.A.C.

- The plans and drainage report submitted electronically must include the appropriate information required under Rules 61G15-23.005 and 61G15-23.004 (Digital), F.A.C. The following text is required by the Florida Board of Professional Engineers (FBPE) to meet this requirement when a digitally created seal is not used and must appear where the signature would normally appear:

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- Provide soil erosion and sediment control measures for use during construction. Refer to ERP Applicant's Handbook Vol. 1 Part IV Erosion and Sediment Control.

Disclaimer: The District ERP pre-application meeting process is a service made available to the public to assist interested parties in preparing for submittal of a permit application. Information shared at pre-application meetings is superseded by the actual permit application submittal. District permit decisions are based upon information submitted during the application process and Rules in effect at the time the application is complete.

Southwest Florida Water Management District
2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
TDD only: 1-800-231-6103 (FL only)
On the Internet at WaterMatters.org

An Equal Opportunity Employer

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

April 22, 2019

Tampa Hillsborough Expressway Authority
Attn: David May
1104 E. Twiggs Street, Suite 300
Tampa, FL 33602

Subject:	**Project Evaluation - Project Exempt**	
	Project Name:	South Selmon Expressway (SR 618) Median Safety
	File Number:	781844
	County:	Hillsborough
	Sec/Twp/Rge:	S24/T29S/R18E, S23/T29S/R18E, S26/T29S/R18E, S27/T29S/R18E, S34/T29S/R18E
Reference:	Rule 62-330, Florida Administrative Code (F.A.C.)	

Dear Mr. May:

The District has reviewed the information you submitted for the project referenced above and has determined that an Environmental Resource Permit (ERP) **will not be required** for the proposed safety improvement project in the corridor between Himes Avenue and Hyde Park Avenue. This phase of the two-phase project consists of milling and resurfacing the existing travel lanes within the project area. [Rule 62-330.051(4)(d), F.A.C.]

The information received by the District will be kept on file to support the District's determination regarding your application. This information is available for viewing or downloading through the District's Application and Permit Search Tools located at www.WaterMatters.org/permits.

The District's determination that your project does not require an ERP is only applicable pursuant to the statutes and rules in effect at the time the information was submitted and may not be valid in the event subsequent changes occur in the applicable rules and statutes. Additionally, this notification does not mean that the District has determined that your project is permanently exempt from permitting requirements. Any subsequent change you make in the project's operation may necessitate further evaluation or permitting by the District. Therefore, you are advised to contact the District before beginning the project and before beginning any activity which is not specifically described in your submittal. Your timely pursuit of this activity is encouraged to avoid any potential rule changes that could affect your request.

This letter constitutes notice of Intended Agency Action of the project referenced above. The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing

notice of agency action will close the window for filing a petition for hearing. Legal requirements and instructions for publishing notice of agency action, as well as a noticing form that can be used is available from the District's website at www.WaterMatters.org/permits/noticing. If you publish notice of agency action, a copy of the affidavit of publishing provided by the newspaper should be sent to the Regulation Division at the District Service Office that services this permit or other agency action, for retention in the File of Record for this agency action.

If you have questions regarding this matter, please contact Robin McGill in the Tampa Service Office, extension 2072. Please reference the Project Name and Inquiry/Permit Number in future communications concerning this project.

Sincerely,

Michelle K. Hopkins, P.E.
Bureau Chief
Environmental Resource Permit Bureau
Regulation Division

Enclosures:	Notice of Rights
cc:	Edward Kory, P.E. Parsons

Notice of Rights

Administrative Hearing

1. You or any person whose substantial interests are or may be affected by the District's intended or proposed action may request an administrative hearing on that action by filing a written petition in accordance with Sections 120.569 and 120.57, Florida Statutes (F.S.), Uniform Rules of Procedure Chapter 28-106, Florida Administrative Code (F.A.C.) and District Rule 40D-1.1010, F.A.C. Unless otherwise provided by law, a petition for administrative hearing must be filed with (received by) the District within 21 days of receipt of written notice of agency action. "Written notice" means either actual written notice, or newspaper publication of notice, that the District has taken or intends to take agency action. "Receipt of written notice" is deemed to be the fifth day after the date on which actual notice is deposited in the United States mail, if notice is mailed to you, or the date that actual notice is issued, if sent to you by electronic mail or delivered to you, or the date that notice is published in a newspaper, for those persons to whom the District does not provide actual notice.

2. Pursuant to Subsection 373.427(2)(c), F.S., for notices of intended or proposed agency action on a consolidated application for an environmental resource permit and use of sovereignty submerged lands concurrently reviewed by the District, a petition for administrative hearing must be filed with (received by) the District within 14 days of receipt of written notice.

3. Pursuant to Rule 62-532.430, F.A.C., for notices of intent to deny a well construction permit, a petition for administrative hearing must be filed with (received by) the District within 30 days of receipt of written notice of intent to deny.

4. Any person who receives written notice of an agency decision and who fails to file a written request for a hearing within 21 days of receipt or other period as required by law waives the right to request a hearing on such matters.

5. Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding District intended or proposed action is not available prior to the filing of a petition for hearing.

6. A request or petition for administrative hearing must comply with the requirements set forth in Chapter 28-106, F.A.C.A petition for a hearing must: (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's intended action or proposed action, (2) state all material facts disputed by the person requesting the hearing or state that there are no material facts in dispute, and (3) otherwise comply with Rules 28-106.201 and 28-106.301, F.A.C. Chapter 28-106, F.A.C., can be viewed at www.flrules.org or at the District's website at www.WaterMatters.org/permits/rules.

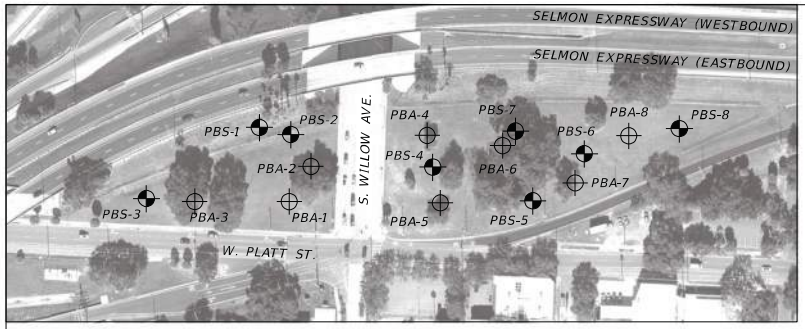
7. A petition for administrative hearing is deemed filed upon receipt of the complete petition by the District Agency Clerk at the District's Tampa Service Office during normal business hours, which are 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding District holidays. Filings with the District Agency Clerk may be made by mail, hand-delivery or facsimile transfer (fax). The District does not accept petitions for administrative hearing by electronic mail. Mailed filings must be addressed to, and hand-delivered filings must be delivered to, the Agency Clerk, Southwest Florida Water Management District, 7601 US Hwy 301, Tampa, FL 33637-6759. Faxed filings must be transmitted to the District Agency Clerk at (813) 367-9776. Any petition not received during normal business hours shall be filed as of 8:00 a.m. on the next business day. The District's acceptance of faxed petitions for filing is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation, available for viewing at www.WaterMatters.org/about.

Judicial Review

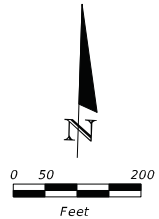
1. Pursuant to Sections 120.60(3) and 120.68, F.S., a party who is adversely affected by District action may seek judicial review of the District's action. Judicial review shall be sought in the Fifth District Court of Appeal or in the appellate district where a party resides or as otherwise provided by law.

2. All proceedings shall be instituted by filing an original notice of appeal with the District Agency Clerk within 30 days after the rendition of the order being appealed, and a copy of the notice of appeal, accompanied by any filing fees prescribed by law, with the clerk of the court, in accordance with Rules 9.110 and 9.190 of the Florida Rules of Appellate Procedure (Fla. R. App. P.). Pursuant to Fla. R. App. P. 9.020(h), an order is rendered when a signed written order is filed with the clerk of the lower tribunal.

APPENDIX A
GEOTECHNICAL REPORT



BORING LOCATION PLAN



LEGEND

1. LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2. LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3. LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4. ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NP	NON-PLASTIC
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION

BOR # PBA-1
EASTING 503440
NORTHING 1311902
DATE 4/26/2018

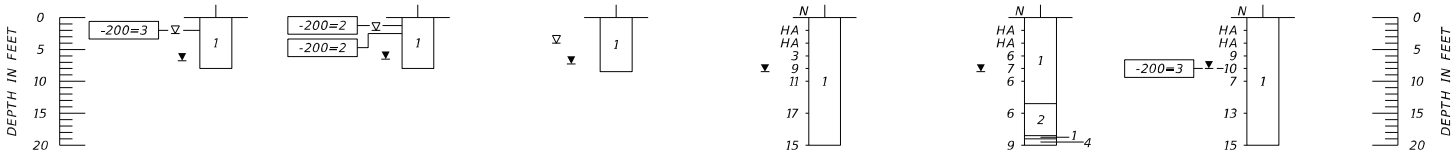
BOR # PBA-2
EASTING 503473
NORTHING 1311958
DATE 4/26/2018

BOR # PBA-3
EASTING 503293
NORTHING 1311897
DATE 4/26/2018

BOR # PBS-1
EASTING 503390
NORTHING 1312016
DATE 4/25/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25

BOR # PBS-2
EASTING 503440
NORTHING 1312007
DATE 4/25/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25

BOR # PBS-3
EASTING 503217
NORTHING 1311900
DATE 4/25/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25



	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

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REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

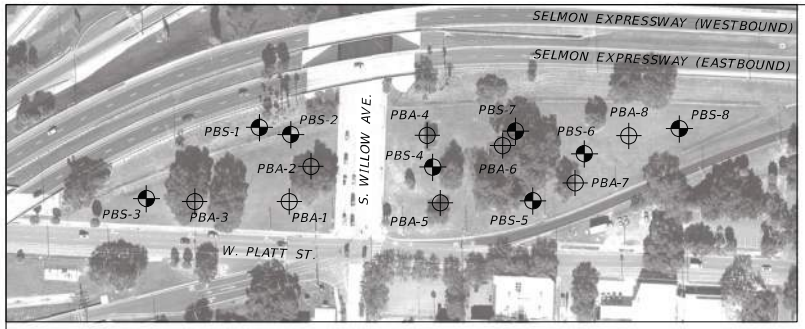
KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

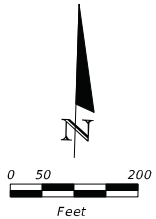
TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

SOIL SURVEY (1)
PONDS

SHEET NO.





BORING LOCATION PLAN

LEGEND

1. LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2. LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3. LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4. ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NP	NON-PLASTIC
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION

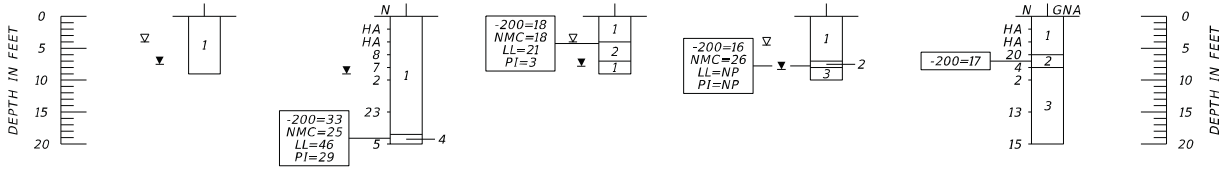
BOR # PBA-4
EASTING 503653
NORTHING 1312012
DATE 4/26/2018

BOR # PBS-4
EASTING 503663
NORTHING 1311963
DATE 4/20/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25

BOR # PBA-5
EASTING 503677
NORTHING 1311907
DATE 4/26/2018

BOR # PBA-6
EASTING 503771
NORTHING 1312000
DATE 4/26/2018

BOR # PBS-7
EASTING 503791
NORTHING 1312023
DATE 4/20/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25



	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

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DATE	DESCRIPTION	DATE	DESCRIPTION

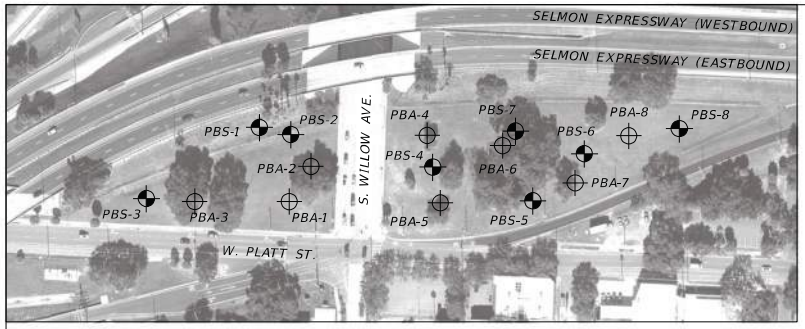
KEVIN H. SCOTT, P.E.
P.E. LICENSE NUMBER 65514
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

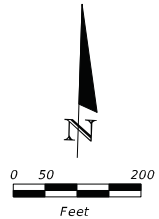
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

SOIL SURVEY (2)
PONDS

SHEET NO.



BORING LOCATION PLAN



LEGEND

1. LIGHT GRAY TO BROWN TO ORANGE-BROWN SAND TO SAND WITH SILT (A-3)
2. LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3. LIGHT BROWN SAND TO SILTY SAND WITH ROCK AND/OR CEMENTED SANDS AND/OR CLAY NODULES AND/OR SHELL FRAGMENTS (A-3/A-2-4)
4. ORANGE-BROWN SILTY SAND TO CLAYEY SAND (A-2-6/A-2-7/A-4/A-7-5/A-7-6)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
NP	NON-PLASTIC
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION

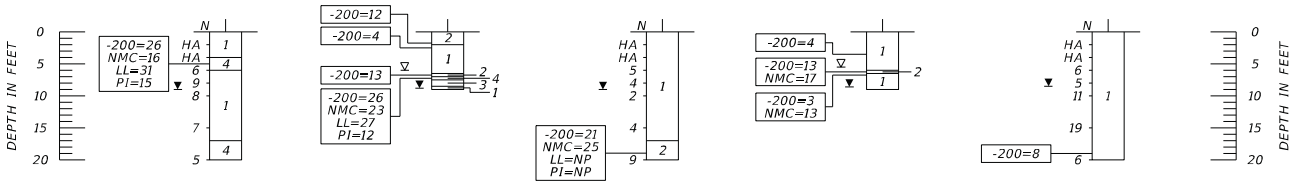
BOR # PBS-5
EASTING 503821
NORTHING 1311915
DATE 4/20/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25

BOR # PBA-7
EASTING 503886
NORTHING 1311945
DATE 4/26/2018

BOR # PBS-6
EASTING 503899
NORTHING 1311991
DATE 4/20/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25

BOR # PBA-8
EASTING 503968
NORTHING 1312021
DATE 4/26/2018

BOR # PBS-8
EASTING 504846
NORTHING 1312035
DATE 4/20/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25



	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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P.E. LICENSE NUMBER 65514
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7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 618	HILLSBOROUGH	

SOIL SURVEY (3)
PONDS

SHEET NO.

Kory, Edward

From: Davidson, Thomas E
Sent: Friday, March 15, 2019 2:00 PM
To: Ferland, Carl
Subject: FW: FW: THEA Selmon Safety DB Team Meetings
Attachments: THEA Project No. O-00518 DRI Results.pdf

Please post on PW.

Thanks,

TED

From: Annabella Cecchettini <ACecchettini@arehna.com>
Sent: Friday, March 15, 2019 1:46 PM
To: Davidson, Thomas E <Thomas.E.Davidson@parsons.com>; Kory, Edward <Edward.Kory@parsons.com>
Cc: Flynn, Brian <Brian.Flynn@parsons.com>; Garland, Ronald <Ronald.Garland@parsons.com>; thea-safetydbdoccontrol.parsons@parsons.com; Amy Guisinger <AGuisinger@arehna.com>; Kristina Lacava <KLacava@arehna.com>; Lawrence Colson <LColson@arehna.com>; Santoro, Murray <Murray.Santoro@parsons.com>
Subject: RE: FW: THEA Selmon Safety DB Team Meetings

Good Afternoon,
Attached is the infiltration information.
Please let us know if you have any questions or comments.

Thank you!

Annabella Cecchettini, E.I. Staff Geotechnical Engineer

AREHNA | Engineering, Inc.
5012 W. Lemon Street | Tampa, Florida 33609
Office: 813.944.3464 x321| Cell: 407.761.5192
email: acecchettini@arehna.com| web: www.arehna.com[arehna.com]
SBE//WMBE/DBE ▪ ACOE/AASHTO/FDOT Certified Lab

From: Davidson, Thomas E <Thomas.E.Davidson@parsons.com>
Sent: Friday, March 15, 2019 12:59 PM
To: Annabella Cecchettini <ACecchettini@arehna.com>; Kory, Edward <Edward.Kory@parsons.com>
Cc: Flynn, Brian <Brian.Flynn@parsons.com>; Garland, Ronald <Ronald.Garland@parsons.com>; thea-safetydbdoccontrol.parsons@parsons.com; Amy Guisinger <AGuisinger@arehna.com>; Kristina Lacava <KLacava@arehna.com>; Lawrence Colson <LColson@arehna.com>; Santoro, Murray <Murray.Santoro@parsons.com>
Subject: [EXTERNAL] RE: FW: THEA Selmon Safety DB Team Meetings

Jim,

Can you provide Anna with the locations where you need seasonal highs checked?

She said she already has the infiltration information that she will be providing.

Thanks,

Ted Davidson, PE
201 East Pine Street, Suite 900
Orlando, Florida 32801
Thomas.e.davidson@parsons.com - P: 407.702.6832 M: 407.415.4648

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From: Davidson, Thomas E
Sent: Friday, March 15, 2019 12:36 PM
To: 'Annabella Cecchettini' <ACecchettini@arehna.com>; 'mcurley@georgefyoung.com' <mcurley@georgefyoung.com>; Humbert, Henry <hhumbert@georgefyoung.com>
Cc: Flynn, Brian <Brian.Flynn@parsons.com>; Garland, Ronald <Ronald.Garland@parsons.com>; thea-safetydbdoccontrol.parsons@parsons.com; Amy Guisinger <AGuisinger@arehna.com>; Kristina Lacava <KLacava@arehna.com>; Lawrence Colson <LColson@arehna.com>
Subject: RE: FW: THEA Selmon Safety DB Team Meetings

Annabella,

THEA asked whether we had done locates to confirm that we would not hit any utilities or drainage. If the work is in the median, they were not overly concerned with us hitting lighting or ITS, which runs on the outside. However, those have not been located yet and would take some time. What can I tell them as far whether you have called in a locate or how you will avoid hitting any drainage structures or utilities with your hand augers?

Also, I can't remember if I mentioned it, but Kyle Harper's last day with Parsons was yesterday. You can coordinate with me and Brian Flynn, who is taking his place on the project.

Thanks,

Ted Davidson, PE
201 East Pine Street, Suite 900
Orlando, Florida 32801
Thomas.e.davidson@parsons.com - P: 407.702.6832 M: 407.415.4648

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From: Annabella Cecchettini <ACecchettini@arehna.com>
Sent: Friday, March 15, 2019 9:32 AM

To: Davidson, Thomas E <Thomas.E.Davidson@parsons.com>
Cc: Harper, Kyle <Kyle.Harper@parsons.com>; Flynn, Brian <Brian.Flynn@parsons.com>; Garland, Ronald <Ronald.Garland@parsons.com>; thea-safetydbdoccontrol.parsons@parsons.com; Amy Guisinger <AGuisinger@arehna.com>; Kristina Lacava <KLacava@arehna.com>; Lawrence Colson <LColson@arehna.com>
Subject: RE: FW: THEA Selmon Safety DB Team Meetings

Good Morning Ted,
We are scheduled to perform the DRIs and hand augers on Thursday and Friday - 3/21 & 3/22.

Regards,
Annabella Cecchettini, E.I. Staff Geotechnical Engineer

AREHNA | Engineering, Inc.
5012 W. Lemon Street | Tampa, Florida 33609
Office: 813.944.3464 x321| Cell: 407.761.5192
email: acecchettini@arehna.com| web: www.arehna.com[arehna.com][url.emailprotection.link]
SBE//WMBE/DBE ▪ ACOE/AASHTO/FDOT Certified Lab

From: Davidson, Thomas E <Thomas.E.Davidson@parsons.com>
Sent: Wednesday, March 13, 2019 3:33 PM
To: Annabella Cecchettini <ACecchettini@arehna.com>
Cc: Harper, Kyle <Kyle.Harper@parsons.com>; Flynn, Brian <Brian.Flynn@parsons.com>; Garland, Ronald <Ronald.Garland@parsons.com>; thea-safetydbdoccontrol.parsons@parsons.com
Subject: [EXTERNAL] RE: FW: THEA Selmon Safety DB Team Meetings

Thank you Annabella, that is all for now.

Ted Davidson, PE
201 East Pine Street, Suite 900
Orlando, Florida 32801
Thomas.e.davidson@parsons.com - P: 407.702.6832 M: 407.415.4648

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From: Annabella Cecchettini <ACecchettini@arehna.com>
Sent: Wednesday, March 13, 2019 3:30 PM
To: Davidson, Thomas E <Thomas.E.Davidson@parsons.com>
Cc: Amy Guisinger <AGuisinger@arehna.com>
Subject: RE: FW: THEA Selmon Safety DB Team Meetings

Good Afternoon Thomas,

The 24 pavement cores have been completed; C-100 through C-119 and CS-100 through CS-103.
Please let us know if you need anything additional.

Best Regards,

Annabella Cecchettini, E.I. Staff Geotechnical Engineer

AREHNA | Engineering, Inc.
5012 W. Lemon Street | Tampa, Florida 33609
Office: 813.944.3464 x321| Cell: 407.761.5192
email: acecchettini@arehna.com| web: www.arehna.com[arehna.com][url.emailprotection.link]
SBE//WMBE/DBE ▪ ACOE/AASHTO/FDOT Certified Lab

From: Davidson, Thomas E <Thomas.E.Davidson@parsons.com>
Sent: Wednesday, March 13, 2019 2:06 PM
To: Annabella Cecchettini <ACecchettini@arehna.com>
Cc: Amy Guisinger <AGuisinger@arehna.com>
Subject: [EXTERNAL] RE: FW: THEA Selmon Safety DB Team Meetings

Annabella,

Has the field work for the pavement cores been completed?

Thanks,

Ted Davidson, PE
201 East Pine Street, Suite 900
Orlando, Florida 32801
Thomas.e.davidson@parsons.com - P: 407.702.6832 M: 407.415.4648

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-----Original Appointment-----
From: Annabella Cecchettini <ACecchettini@arehna.com>
Sent: Wednesday, March 13, 2019 1:10 PM
To: Davidson, Thomas E
Subject: Accepted: FW: THEA Selmon Safety DB Team Meetings

When: Thursday, March 14, 2019 10:00 AM-12:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Granite's Office in Ybor City - 1302 N. 19th Street, Suite 300 & Phone Conference

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SUMMARY OF DOUBLE RING INFILTRATION TEST RESULTS

SOUTH SELMON EXPRESSWAY (SR 618) MEDIAN SAFETY IMPROVEMENTS
Hillsborough County, Florida
THEA Project No. O-00518
AREHNA Project No.: B-18-124

Test:	DRI-01	Date of Test:	January 31, 2019
Test Depth:	2 feet below ground surface		
Outer Ring Diameter:	24 inches	Test Procedure:	ASTM D-3385
Inner Ring Diameter:	12 inches		
Test Duration:	4 hours		
Soil Description:	A-3		
Groundwater Level:	GNE		

Time Increments (minutes)	Inner Ring	
	Reading (mL)	Flow (in^3)
15	5400	329.5
15	4600	280.7
15	4600	280.7
15	4600	280.7
30	9200	561.4
30	9200	561.4
30	9200	561.4
30	9200	561.4
30	9200	561.4
30	9200	561.4

Infiltration Rate: 10.0 in/hr

SUMMARY OF DOUBLE RING INFILTRATION TEST RESULTS

SOUTH SELMON EXPRESSWAY (SR 618) MEDIAN SAFETY IMPROVEMENTS
Hillsborough County, Florida
THEA Project No. O-00518
AREHNA Project No.: B-18-124

Test:	DRI-02	Date of Test:	February 1, 2019
Test Depth:	2 feet below ground surface		
Outer Ring Diameter:	24 inches	Test Procedure:	ASTM D-3385
Inner Ring Diameter:	12 inches		
Test Duration:	4 hours		
Soil Description:	FILL		
Groundwater level:	GNE		

Time Increments (minutes)	Inner Ring	
	Reading (mL)	Flow (in^3)
15	5400	329.5
15	5400	329.5
15	3600	219.7
15	5400	329.5
30	10800	659.1
30	10800	659.1
30	7200	439.4
30	5600	341.7
30	5600	341.7
30	5600	341.7

Infiltration Rate: 8.8 in/hr

Note:
During the excavation the technician encountered buried debris such concrete fragments and limerock.

APPENDIX B
ENVIRONMENTAL NARRATIVE REPORT

MEMORANDUM

TO: Kyle Harper, P.E., Parsons

FROM: Blake M. Meinecke, PWS, Quest Ecology, Inc.

SUBJECT: Tampa Hillsborough Expressway Authority
South Selmon (SR 618) Safety Improvements
Hillsborough County, Florida

DATE: March 4, 2019

CC: Vivienne Handy, PWS, Quest Ecology Inc.

INTRODUCTION

On March 1, 2019, Quest Ecology Inc. (Quest) conducted a field review of the +/-3.8 mile Tampa Hillsborough Expressway Authority (THEA) project corridor along SR 618, in Tampa, Hillsborough County, Florida. The proposed median safety improvements will occur between mile post 1.001 and mile post 4.877. The purpose of the field review was to identify any onsite wetlands, if present, and evaluate the potential for and/or presence of protected species.

METHODS

Prior to the field survey, a desktop review and database search was conducted to determine the documented presence of wetlands, hydric soils, and listed species. Resources evaluated included: The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), Natural Resource Conservation Service (NRCS) Soil Survey, USFWS Protected Species Occurrence Data, and USFWS Florida Nesting Colonies and Wood Stork Core Foraging Areas databases.

The field assessment was conducted on March 1, 2019. A jurisdictional wetland review of the site was conducted in accordance with applicable federal and state wetland criteria as set forth by the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual and Chapter 62-340, Florida Administrative Code (F.A.C.), and subsequent amendments. Specifically, the areas were examined for the presence of hydrophytic vegetation, hydric soils, and hydrologic indicators.

An informal listed wildlife species survey was conducted throughout the site during field reconnaissance.

RESULTS

UPLANDS

The project area is comprised entirely of a limited access toll-highway corridor (FLUCFCS 814). The highway median and right-of-way are vegetated by Bahia grass (*Paspalum notatum*) and are maintained by mowing. All of the soil types within the project corridor are mapped as urban-land complexes: Immokalee-Urban land complex, Myakka-Urban land complex, Ona-Urban land complex, Tavares-Urban land complex, 0 to 5 percent slopes, Urban land, 0 to 2 percent slopes, and Wabasso-Urban land complex (**Figure 1**). Two stormwater treatment areas (STAs) will be located south of SR 618 and on both sides of Willow Ave. These undeveloped upland areas (FLUCFCS 190) contain unregulated drainage swale features associated with SR 618, and are dominated by Bahia grass, with a few mature live oak (*Quercus nigra*) trees.

WETLANDS

One man-made stormwater pond is located outside of the project area near West Swann Avenue. There are no wetlands or surface waters located within the project limits.

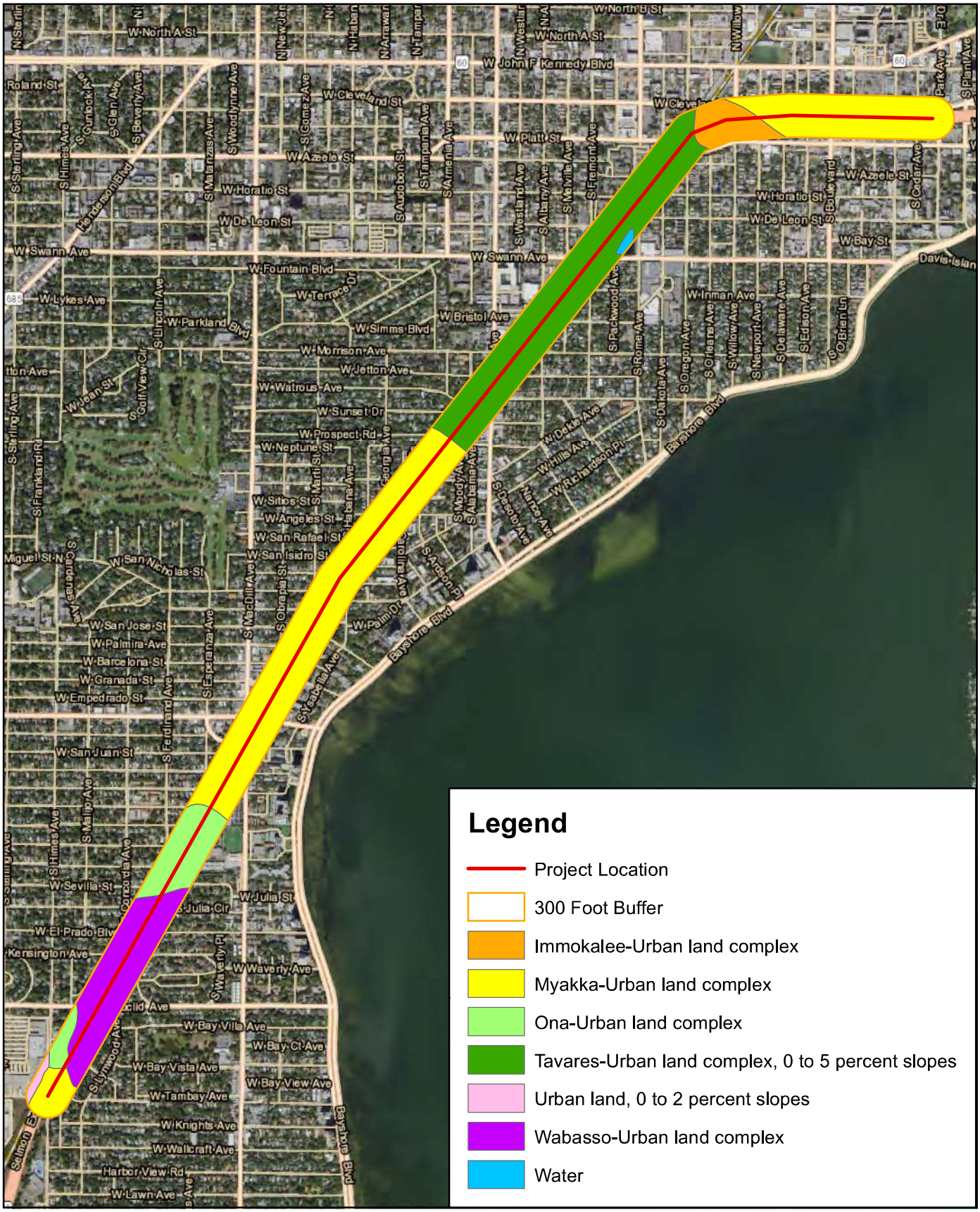
LISTED SPECIES

According to the USFWS Protected Species Occurrence Database, the project site falls within the USFWS Consultation Areas for the Florida scrub-jay (*Aphelocoma coerulescens*), the piping plover (*Charadrius melodus*), and the West Indian manatee (*Trichechus manatus*) (**Figure 2**). However suitable habitat for these species does not occur on the site nor were any scrub-jay or piping plover identified in the field.

Based on the USFWS Florida Nesting Colonies and Core Foraging Areas database, the project site is located within the Core Foraging Area (CFA) of six documented wood stork (*Mycteria Americana*) colonies (**Figure 3**). The closest nesting colony is more than 5 miles away. There are no wetlands or surface waters within the project area that provide Suitable Foraging Habitat (SFH) for this species, and no wood storks or other wading birds or nesting areas were observed within the project area.

One Bald Eagle (*Haliaeetus leucocephalus*) nest has been documented by the FWC approximately 1,600 feet east of the project corridor. According to FWC records this nest (HL026) was last active in 1999. No work is proposed within 660 feet of any active Bald Eagle nests.

No additional protected species were observed or are expected to occur. Due to the urban nature of the project corridor, the uplands are not conducive to supporting the state listed gopher tortoise and no tortoise burrows were identified during the field review.

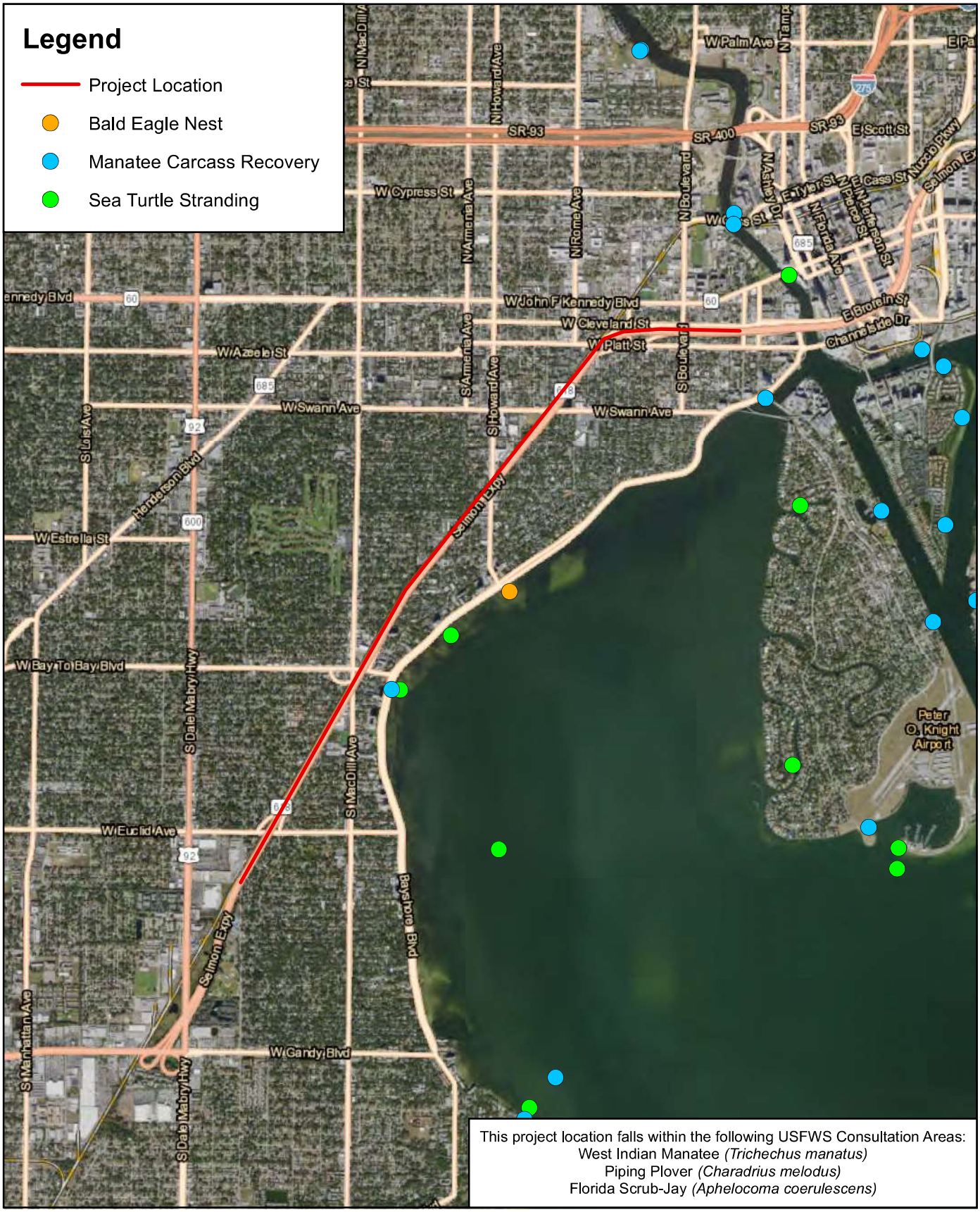


Path (E:\Mapping\Proposals\Tampa Hillsborough Expressway Authority\Maps\Fig 1 Soils.mxd) By: AQ Date: 3/4/2019

QUEST ecology

Figure 1 - Soils
THEA Safety Improments
Hillsborough County, Florida

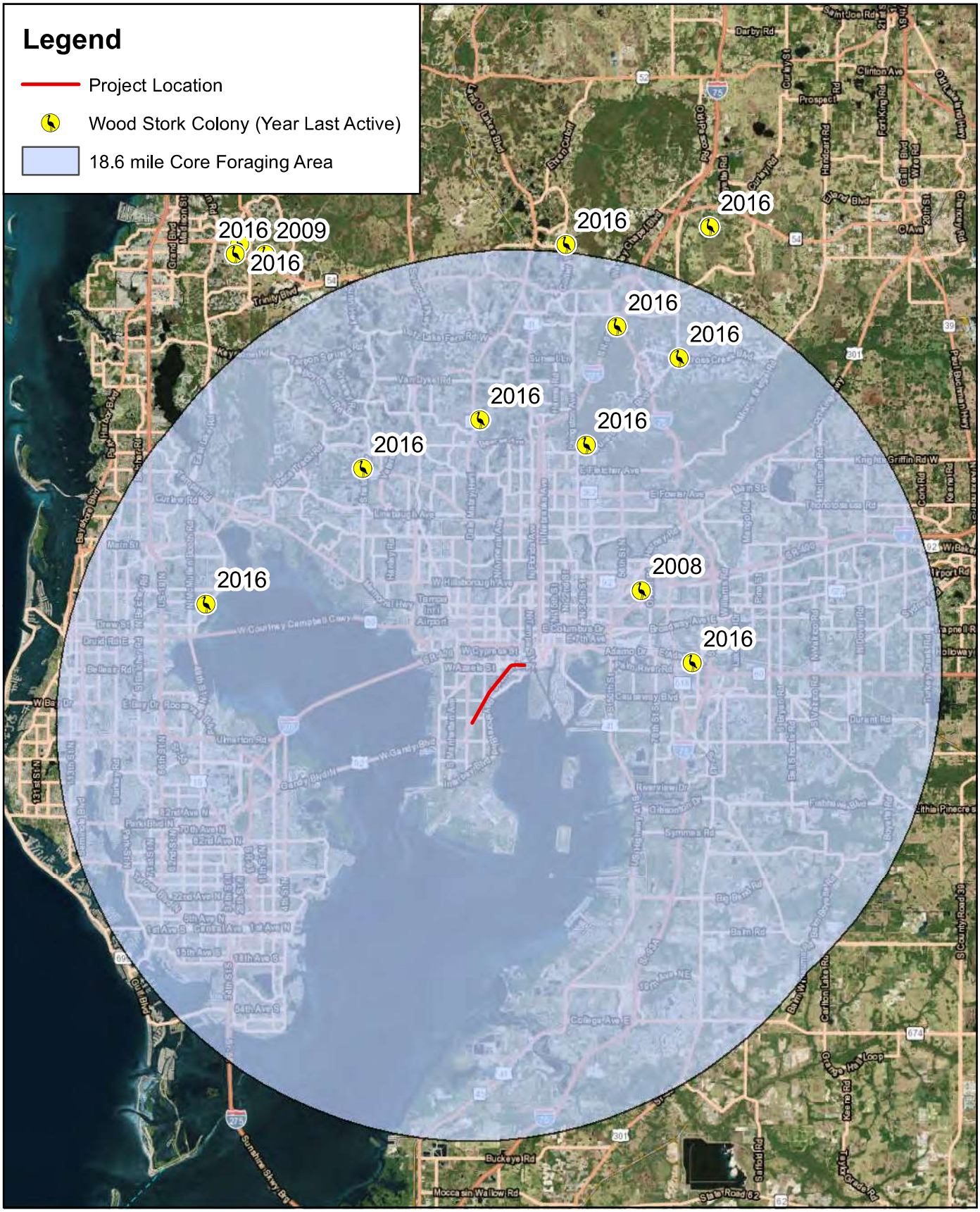
N
W E
S
0 1,000
Feet



Path (E:\Mapping\Proposals\Tampa Hillsborough Expressway Authority\Maps\Fig 2 Listed Species.mxd) By: AQ Date: 3/4/2019

QUEST ecology

Figure 2 - Listed Species
THEA Safety Improments
Hillsborough County, Florida



QUEST
ecology

Figure 3 - Wood Stork Colonies and Core Foraing Areas
THEA Safety Improments
Hillsborough County, Florida

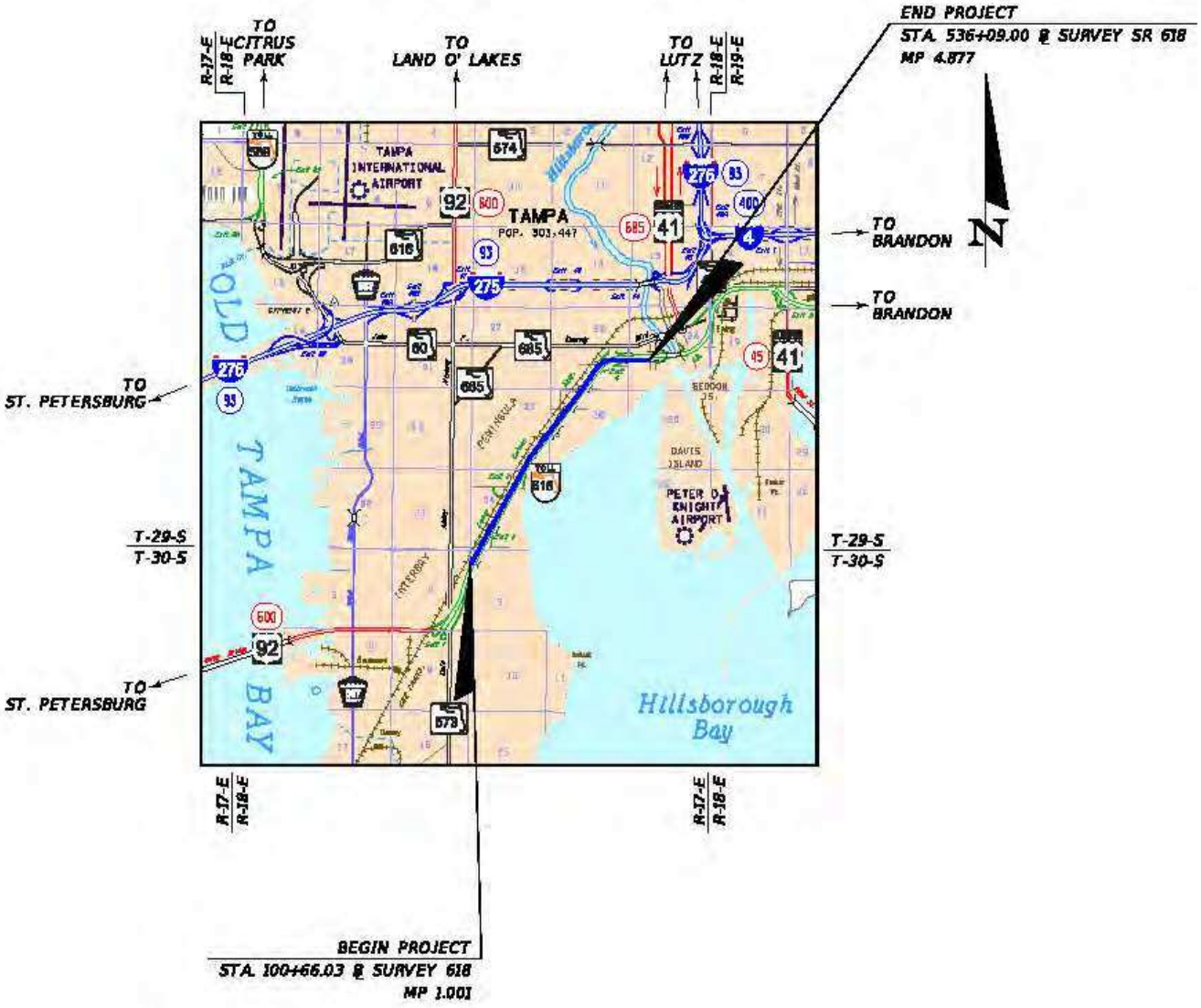
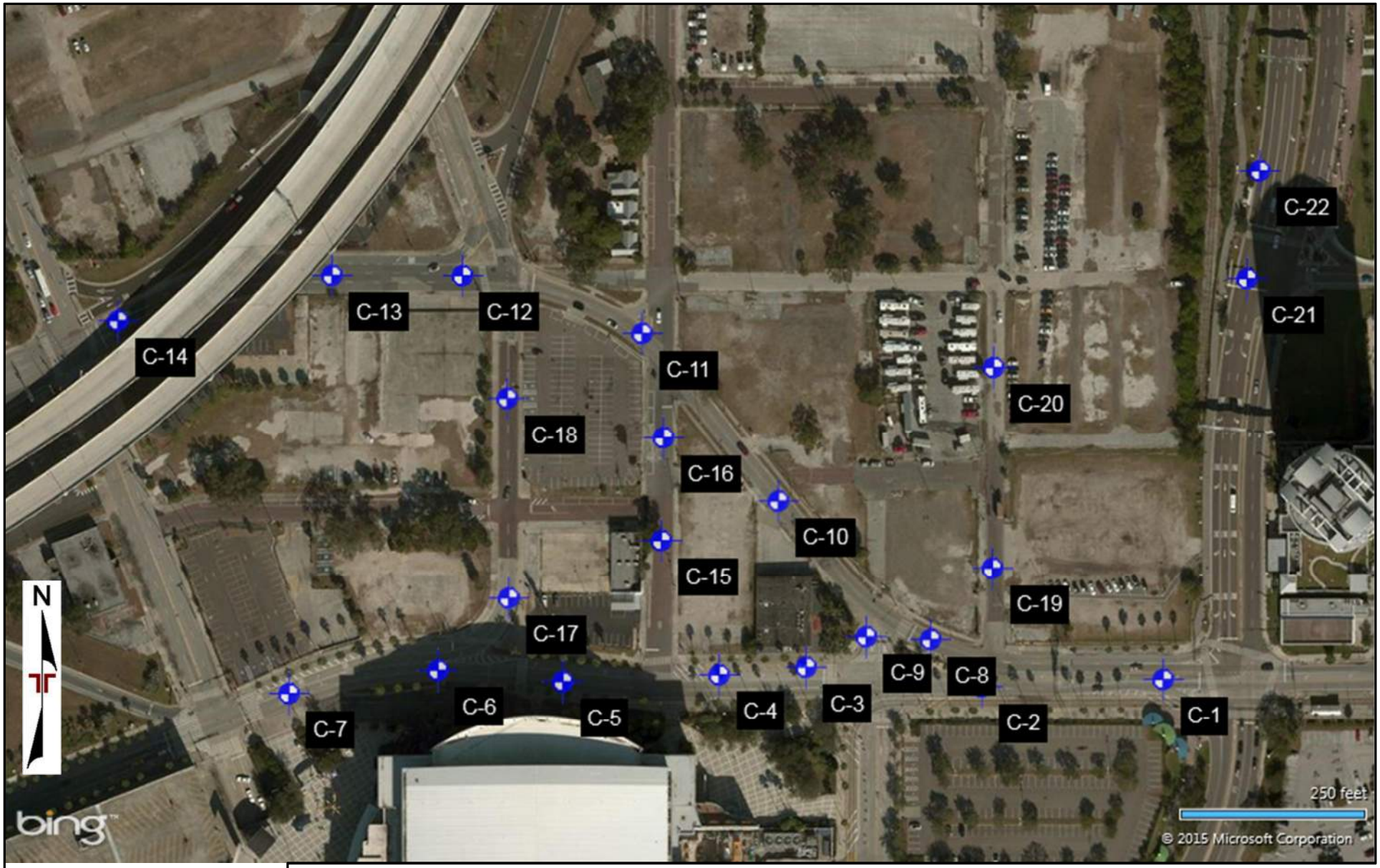


Figure 1-1: Project Location Map

Waterfront District
Conceptual Permit

ERP # 4942679.000



AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	SCK
Drawn by:	SCK
Checked by:	JKN
Approved by:	SCK

Project No.	H4155017
Scale:	AS SHOWN
File Name:	CAD
Date:	3/30/15?

Terracon
504 E. Tyler St.
Tampa, FL 33602

EXPLORATION PLAN

Waterfront District Roadway Improvements
Channelside Drive & Old Water Street
Tampa, FL

Exhibit

A-2

BORING LOG NO. C-12

PROJECT: Waterfront District Infrastructure

CLIENT: Stantec
Tampa, Florida

SITE: Waterfront Area
Tampa, Florida

LOCATION See Exhibit A-4

Latitude: 27.945033° Longitude: -82.452111°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	0.2	**2.5 INCHES ASPHALTIC CONCRETE**						
		12 INCHES LIMEROCK BASE						
	1.2	**POORLY GRADED SAND (SP)**, fine grained, white						
	2.5	**POORLY GRADED SAND (SP)**, fine grained, dark brown	5	▽				
	6.0	***Boring Terminated at 6 Feet***						

DRAFT

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Roadway core and hand auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion. hole patched with asphalt

See Exhibit A-5 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *Water initially observed at 4'6"*

Terracon
504 East Tyler Street
Tampa, Florida

Boring Started: 3/10/2015 Boring Completed: 3/10/2015

Drill Rig: N/A Driller: H Peach

Project No.: H4155017 Exhibit: A-17

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL H4155017 WATERFRONT DISTRICT ROADWAY CORES.GPJ TERRACON2012.GDT 3/31/15

Appendix G: Potential Impacts to Exist. Ditch

Widening Impacts to West Ditch Capacity
Sta. 125+00 to 255+00

6.0 Design Results/Summary

A pre/post-development hydraulic analysis was developed for this project, ICPR to model the pre/post-development conditions, to demonstrate that no adverse impacts will occur for the 25 and 100-year/24-hour storm events as a result of the proposed improvements. See summary table below.

Pre/Post-Development Routing Summary

Basin ID	Node Name	Node Description	Pre-Dev Peak Stage (ft.)	Post-Dev Peak Stage (ft.)	Difference in Peaks (ft.)	Allowable Peak Stage (ft.)	Railway Elevation (ft.)	Pre-Dev Peak Inflow (cfs)	Post-Dev Peak Inflow (cfs)	Difference in Peaks (cfs)	Pre-Dev Peak Outflow (cfs)	Post-Dev Peak Outflow (cfs)	Difference in Peaks (cfs)
	25-Year/24-Hour Storm Event												
1	Ditch_1S	Ditch/BNDY	10.24	11.67	1.43	13.134	14.634	19.79	21.1	1.31	19.66	18.15	-1.51
1	Ditch_1N	Ditch/BNDY	10.91	11.87	0.96	13.25	14.75	26.15	27.62	1.47	25.58	26.62	1.04
2	Ditch_2	Ditch/BNDY	15.64	15.61	-0.03	15.634	17.134	52.35	57.48	5.13	40.91	40.59	-0.32
3	Ditch_3_LT	Ditch/BNDY	13.28	14.25	0.97	15.134	16.634	12.78	17.47	4.69	12.62	11.77	-0.85
3	Ditch_3_RT	Ditch/BNDY	8.24	8.2	-0.04	10.134	N/A	18.78	18.37	-0.41	18.73	18.32	-0.41
4	Ditch_4	Ditch/BNDY	15.57	17.04	1.47	17.5	19	22.15	25.2	3.05	22	20.81	-1.19
5	Ditch_5	Ditch/BNDY	17.59	18.55	0.96	18.5	20	22.55	26.8	4.25	22.54	22.41	-0.13
6	Ditch_6A	Ditch/BNDY	19.72	20.19	0.47	20.134	21.634	14	16.33	2.33	19.89	18.87	-1.02
7	Ditch_7A	Ditch/BNDY	17.76	17.82	0.06	18.1	19.6	2.83	3.83	1	8	8.8	0.8
8	Ditch_8_S	Ditch/BNDY	17.27	17.42	0.15	17.5	19	17.54	21.06	3.52	14.28	15.84	1.56
9	Infield 9/Pond 9	Pond/BNDY	16.96	17.9	0.94	19	N/A	10.44	10.94	0.5	10.28	5.86	-4.42
10	Pond 10		N/A	16.97	N/A			N/A	18.34	N/A	56.91	54.45	-2.46
	100-Year/24-Hour Storm Event												
1	Ditch_1S	Ditch/BNDY	10.38	12.1	1.72	13.134	14.634	28.19	29.35	1.16	27.73	26.45	-1.28
1	Ditch_1N	Ditch/BNDY	11.46	12.39	0.93	13.25	14.75	38.72	40.17	1.45	35.16	35.01	-0.15
2	Ditch_2	Ditch/BNDY	16.47	16.28	-0.19	15.634	17.134	76.87	81.72	4.85	49.07	47.4	-1.67
3	Ditch_3_LT	Ditch/BNDY	13.45	14.64	1.19	15.134	16.634	19.6	25.94	6.34	19.24	16.61	-2.63
3	Ditch_3_RT	Inlets	9.58	9.2	-0.38	10.134	N/A	27.87	25.65	-2.22	27.74	25.54	-2.2
4	Ditch_4	Ditch/BNDY	15.94	17.32	1.38	17.5	19	32.89	35.8	2.91	31.7	31.7	0
5	Ditch_5	Ditch/BNDY	17.78	19.02	1.24	18.5	20	34.61	38.9	4.29	34.53	29.8	-4.73
6	Ditch_6A	Ditch/BNDY	20.86	20.93	0.07	20.134	21.634	22.23	24.72	2.49	25.32	25.65	0.33
7	Ditch_7A	Ditch/BNDY	18.02	18.06	0.04	18.1	19.6	4.94	6.24	1.3	12.32	12.78	0.46
8	Ditch_8_S	Ditch/BNDY	17.93	18.04	0.11	17.5	19	26.73	30.22	3.49	19.87	20.53	0.66
9	Infield 9/Pond 9	Pond/BNDY	17.01	18.57	1.56	19	N/A	15.28	15.76	0.48	15.1	6.53	-8.57
10	Pond 10		N/A	17.6	N/A			N/A	27.73	N/A	84.91	75.88	-9.03

CROSS SECTIONS

Scale 1 inch = 5 feet Vert.
1 inch = 10 feet Horiz.

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	Hillsborough	619	10002-3502	32

A-2, A-3 RDWY EXC.		MAT'L FILL	
A	V	A	V

Ditch_2

EL = 20'

DHW EL = 16.28'

15'-0"

0 sq. ft of impact

Sta. 126+39.03 End Bridge

CROSS STOCK © 1954

CROSS SECTIONS

Scale 1 inch = 5 feet Vert.
1 inch = 10 feat Horiz.

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	Hillsborough	449	10002-3502	35

STA.	A-B RWY. EXC. A	A-B RWY. EXC. V	MATL. FILL A	MATL. FILL V
137+00	58		141	
			146	52
136+00	48		160	
135+00	25		209	
134+00	6		123	
133+00	32		170	
132+00	11		240	

Ditch_2

EL = 20'

9'-3"

DHW EL = 16.28'

0 sq. ft. of impact

proposed widening limit

Scale 1 inch = 5 feet Vert.
1 inch = 10 Feet Horiz.

Fed. Road Div. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	Hillsborough	599	10302-3502	37

Ditch_2

11'-4"

EL 20'

DHW 16.28'

0 sq. ft of impact

proposed widening limit

L.A. R/W

L.A. R/W

L.A. R/W

L.A. R/W

R.R. Siding (To Remain)

A-2 A-3 RDWY. EXC.		MAT'L FILL	
A	V	A	V
		36	68
		185	241
		232	284
		255	319
		64	80

CROSS SECTIONS

Scale 1 inch = 5 feet Vert.
1 inch = 10 feet Horiz.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	Hillsborough	579	10002-3502	21

Ditch_2

8'-10"

EL 20'

DHW 16.28'

0 sq. ft of impact

proposed widening limits

1 inch = 10 feet Horiz.

Ditch_3LT

9'-1"

0 sq. ft of impact

proposed widening limit

EL 15'

DHW EL = 14.64'

℄ Ramp "B" (65+00)
+70.82 FULL SUPERELEVATION RAMP "B"

℄ Ramp "B" (64+00)
+20.82 BEGIN RAMP "B" S.E. TRANS.

℄ Ramp "A"
(43.13' LT.)

℄ Ramp "B" (63+00)

℄ COUST.

R.R. R/W

L.A. R/W

165+00	0	935
	0	438
164+00	0	1435
	0	62
163+00	0	1940
	0	70
162+00	0	2295

1 inch = 10 feet Horiz.

0 sq. ft of impact

proposed widening limits

EL = 15'

DHW = 14.64'

Ditch_3LT

10'-6"

℄ Const.

+18.92 BEGIN S.E. TRANSITION LT.

+38.92 BEGIN S.E. TRANSITION RT.

+25.89 FULL SUPERELEVATION LT.

+85.89 FULL SUPERELEVATION RT.

L.A.R/W

P.R. R/W

	X	Y
184+00	68	116
	180	352
183+00	29	74
	172	317
182+00	64	97
	207	433
181+00	48	137
	185	553
180+00	52	163
	189	68
179+00	50	207

Ditch_5

9'-0"

0 sq ft of impact

DHW EL = 17.32'

proposed widening limits

EL = 15'

Scale 1 inch = 5 feet vert.
1 inch = 10 ft Horiz.

3 | Fla | HILLSBOROUGH | 449 | 10002-3503 | 45

SUMMARY MAIN LINE
EXCAV. = 6447 CU. YDS.
EMB. = 141,436 CU. YDS.

℄ CONST.

END JOB
STA. 209+40

209+00

207+00

DHW EL = 19.02'

EL = 15'

Ditch_5

9'-2"

0 sq. ft of impact

proposed widening limit

DHW	EXC. A	EXC. V	EMB.
	0		887
		0	138
	0		978
	0		365
	0		688
		0	22
	0		548

SCALE: 1" = 5' VERT.
1" = 10' HORIZ.

SECTION	CONTRACT	SOUTH CROSSTOWN EXPRESSWAY	SHEET NO.
10002	3504		24
W. WACO	TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY		Date 1973

D-20
STA. 234+00
CONST. INLET TYPE "W"
STANDARD DRAWING NO. 21
FL. EL. 25.5

D-21
STA. 234+00
CONST. U-TYPE ENDWALL
WITH BAFFLES
INDEX NO. 1129
OUTLET EL. 18.5

CONST. 19' OF 48" C.I.P. (INCLUDES ELBOW)

LINE "A"

R/W

234+00

D-20
D-21

Ditch_6A

6.1"

DHW EL = 20.93'

EL = 20'

0 sq. ft of impact

proposed widening limit

D-19
STA. 231+22
CONST. INLET TYPE "Y"
INDEX NO. 5086
FL. EL. 17.1

D-18
STA. 231+22
CONST. INLET TYPE "Z"
INDEX NO. 5049
GRATE EL. 23.82
FL. EL. 21.1

D-17
STA. 231+22
CONST. INLET TYPE "Y"
INDEX NO. 5086
FL. EL. 21.3

CONST. 49' OF 18" PIPE

231+22

D-17
D-18
D-19

CONST. 85' OF 18" PIPE

CONNECT TO EXIST INLET

STA 230+50 (22' AT.) LINE A
EXIST. INLET TYPE "E"
INDEX NO. 5046
GRATE EL. 18.97
SLOT EL. 17.97
FL. EL. 16.0

EXIST. 48' OF 24" PIPE

STA 230+50 (28' LT.) LINE A
EXIST. INLET TYPE "E"
INDEX NO. 5046
GRATE EL. 18.97
SLOT EL. 18.77
FL. EL. 15.5

230+50 (LINE A)

4:1 & 6" PLATE 3 CROSS SECTION

SCALE: 1"= 5' VERT.
1"= 10 HORIZ.

SECTION	CONTRACT	SOUTH CROSSTOWN EXPRESSWAY	SHEET NO
10002	3504		25
By WACO	TAMPA-HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY		Date 1978

Ditch 7_A

EL = 20'

DHW EL = 18.06'

0 sq. ft of impact

proposed widening limit

1.9'-1"

D-29
STA. 244+00
CONST. INLET BW
STANDARD DRAWING NO. 21
FL. EL. 25.6

D-28
STA. 244+00
CONST. INLET TYPE "Y"
INDEX NO. 5086
FL. EL. 25.2

244+00

D-27
D-28
D-29

CONST. 38' OF
15" C.M.P.
(INCLUDES ELBOW)

CONST. ELBOW

14.0

D-27
STA. 244+00
CONST. U TYPE ENDWALL WITH BAFFLES
INDEX NO. 1129
FL. EL. 14.0

D-26
STA. 241+50
CONST. INLET TYPE BW
STANDARD DRAWING NO.
FL. EL. 33.2

D-25
STA. 241+50
CONST. INLET TYPE "Y"
INDEX NO. 5086
FL. EL. 32.8

CONST. 98' OF 15" PIPE

241+50

D-24
D-25
D-26

CONST. 52' OF
15" C.M.P.
(INCLUDES ELBOW)

CONST. ELBOW

13.8

D-24
STA. 241+50
CONST. U TYPE ENDWALL WITH BAFFLES
INDEX NO. 1129
FL. EL. 13.8

D-22
STA. 237+00
CONST. INLET TYPE BW
STANDARD DRAWING NO. 21
FL. EL. 34.3

CONST. 28' OF 18" C.I.P. (INCLUDES ELBOW)

D-23
STA. 237+00
CONST. U TYPE END-
WALL (WITH BAFFLES)
INDEX NO. 1129
OUTLET EL. 17.8

EL. 19.4

17.8

237+00

D-22
D-23

LINE "A" ℄

R/W

SCALE: 1" = 5' VERT.
1" = 10' HORIZ.

SECTION	CONTRACT	SOUTH CROSSTOWN EXPRESSWAY	SHEET NO.
10002	3504		26
By WACO	TAMPA HILLSBOROUGH COUNTY EXPRESSWAY AUTHORITY		Date 1979

D-39
STA. 252+88
CONST. INLET TYPE BW
STANDARD DRAWING NO. 21
FL. EL. 31.1

D-38
STA. 252+89
CONST. INLET TYPE Z
INDEX NO. 5049
GRATE EL. 34.25
FL. EL. 31.3

D-37
STA. 252+89
CONST. INLET TYPE BW
STANDARD DRAWING NO. 21
FL. EL. 31.6

LINE "A"
LINE "H"
R/W
36.40
36.37
36.37
36.77
31.1
CONST. 47' OF 18" PIPE
31.3
CONST. 58' OF 18" PIPE
31.6
CONST 16' OF 14" C.I.P. (INCLUDES ELBOW)
24"
16.1
16.1
252+89
B-37
B-38
B-39

D-34
STA. 250+00
CONST. INLET TYPE BW
STANDARD DRAWING NO. 21
FL. EL. 25.5

D-35
STA. 250+00
CONST. INLET TYPE BW
STANDARD DRAWING NO. 21
FL. EL. 25.1

20'-0"

LINE "H"
LINE "A"
29.54
30.06
30.06
29.58
R/W
CONST. 96' OF 15" PIPE
26.1
25.5
250+00
B-34
B-35
B-36

D-36
STA. 250+00
CONST. "U" TYPE ENDWALL WITH BAFFLES, INDEX NO. 1129
OUTLET EL. 16.2

EL = 20'

DHW EL = 18.04'

CONST. 13' OF 14" C.I.P. (INCLUDES ELBOW)
16.2

12 sq. ft x 500 LF = 0.14 ac-ft of impact

proposed widening limit

D-32
STA. 246+91
CONST. INLET TYPE BW
STANDARD DRAWING NO. 21
FL. EL. 20.7

D-31
STA. 246+91
CONST. INLET TYPE "Z"
INDEX NO. 5049
GRATE EL. 23.61
FL. EL. 20.9

D-30
STA. 246+91
CONST. INLET TYPE BW
STANDARD DRAWING NO. 21
FL. EL. 21.1

R/W
LINE "A"
25.13
24.69
25.69
25.13
R/W
D-33
STA. 246+91
CONST. "U" TYPE ENDWALL WITH BAFFLES
INDEX NO. 1129
OUTLET EL. 16.6
20.9
18.8
20.9
CONST. 47' OF 18" PIPE
21.1
CONST. 47' OF 18" PIPE
16.6
246+91
B-30
B-31
B-32
B-33
CONST. 16' OF 14" C.I.P. (INCLUDES ELBOW)

Appendix H: Modified ICPR3 Model for Gandy Basin

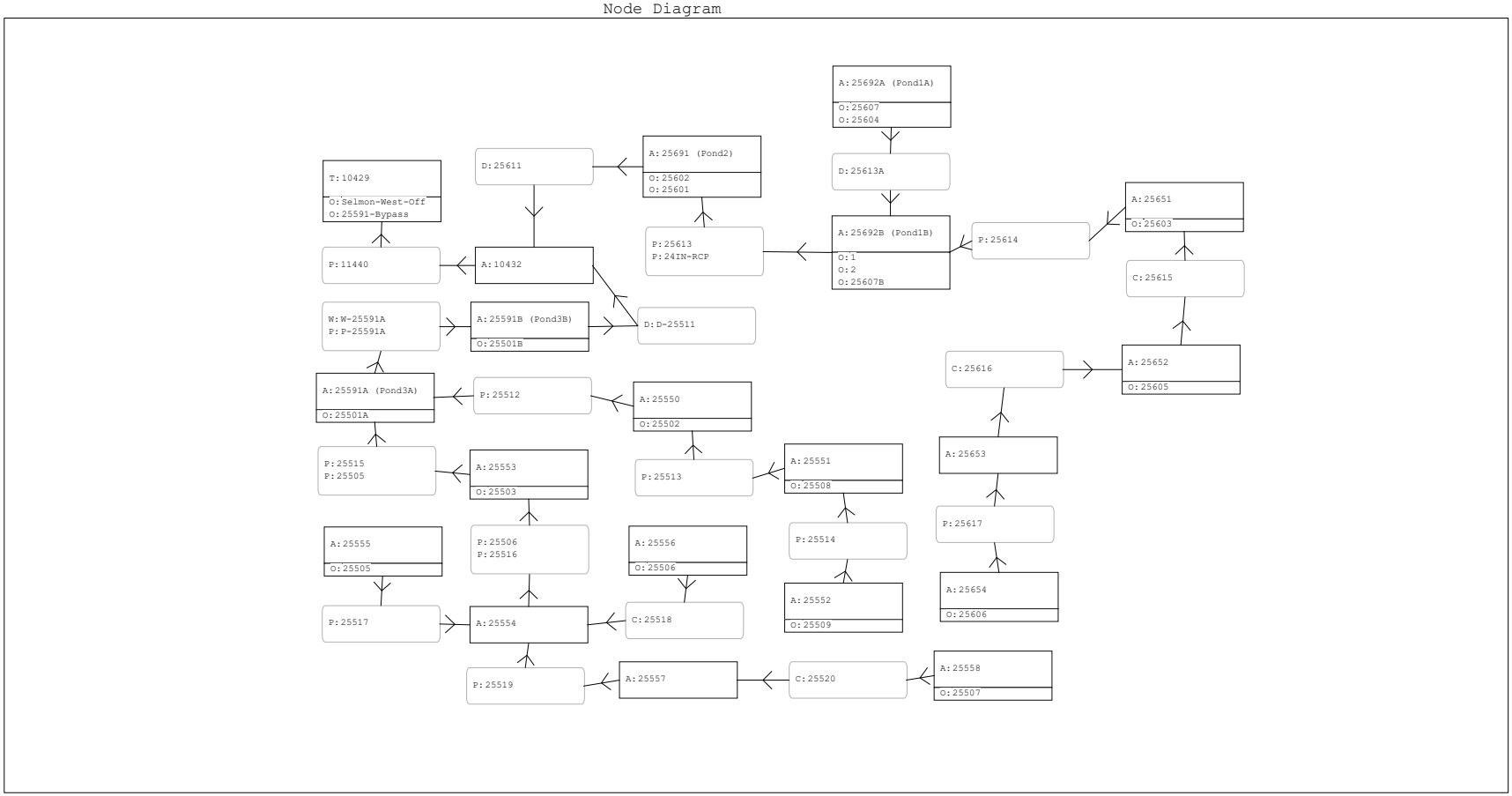
Storm Event	Node	Existing Condition Peak Stage (ft.)	Proposed Condition Peak Stage (ft.)	Difference (ft.)
010y024h	10429	6.75	6.75	0
	10432	7.14	7.14	0
	25550	8.1	8.11	0.01
	25551	8.65	8.65	0
	25552	12.9	12.9	0
	25553	7.75	7.75	0
	25554	7.85	7.85	0
	25555	8.9	8.9	0
	25556	7.87	7.87	0
	25557	10.04	10.04	0
	25558	10.28	10.28	0
	25591A (Pond3A)	7.62	7.62	0
	25591B (Pond3B)	7.48	7.48	0
	25651	7.57	7.57	0
	25652	7.58	7.58	0
	25653	7.61	7.61	0
	25654	9.72	9.72	0
	25691 (Pond2)	7.52	7.52	0
	25692A (Pond1A)	7.79	7.79	0
	25692B (Pond1B)	7.56	7.56	0
025y024h	10429	6.75	6.75	0
	10432	7.37	7.37	0
	25550	8.56	8.56	0
	25551	9.27	9.27	0
	25552	13.11	13.11	0
	25553	8.13	8.13	0
	25554	8.3	8.3	0
	25555	9.13	9.13	0
	25556	8.32	8.32	0
	25557	10.25	10.25	0
	25558	10.49	10.49	0
	25591A (Pond3A)	7.91	7.91	0
	25591B (Pond3B)	7.69	7.69	0
	25651	7.94	7.94	0
	25652	7.95	7.96	0.01
	25653	7.98	7.98	0
	25654	11.14	11.14	0
	25691 (Pond2)	7.87	7.87	0
	25692A (Pond1A)	8.23	8.23	0
	25692B (Pond1B)	7.93	7.94	0.01
100y024h	10429	6.75	6.75	0
	10432	8.21	8.21	0
	25550	10.87	10.87	0
	25551	11.8	11.8	0
	25552	13.5	13.5	0
	25553	9.94	9.94	0
	25554	10.35	10.35	0
	25555	10.81	10.81	0
	25556	10.36	10.36	0
	25557	10.8	10.8	0
	25558	11.02	11.02	0
	25591A (Pond3A)	9.41	9.41	0
	25591B (Pond3B)	8.93	8.93	0
	25651	9.09	9.09	0
	25652	9.1	9.1	0
	25653	9.1	9.1	0
	25654	12.17	12.17	0
	25691 (Pond2)	8.97	8.98	0.01
	25692A (Pond1A)	9.57	9.58	0.01
	25692B (Pond1B)	9.08	9.08	0

Gandy Basin
Pre-Development Conditions
Node Diagram

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



Interconnected Channel and Pond Routing Model (ICPR) ©2002 Streamline Technologies, Inc.

==========
==== Basins ==========
==========

Name: 1 Node: 25692B (Pond1B) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
11.120	79.00	85.30	600.00	0.004	0.078000

Basin determinations from Dames & Moore Report, See Exhibit 3
Mannings N calculated per Exhibit-6

Name: 2 Node: 25692B (Pond1B) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
13.420	79.00	84.40	2100.00	0.001	0.081000

Basin determinations from Dames & Moore Report, See Exhibit 3
Mannings N calculated per Exhibit-6

Name: 25501A Node: 25591A (Pond3A) Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
5.800	79.00	24.80	130.00	0.004	0.236000

- Non-DCIA assumed to be pervious (CN=79)
- % DCIA adjusted to reflect current existing conditions per Exhibit 6
- Basin length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25501B Node: 25591B (Pond3B) Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
4.200	79.00	26.20	130.00	0.004	0.232000

- Non-DCIA assumed to be pervious (CN=79)
- % DCIA adjusted to reflect current existing conditions per Exhibit 6
- Basin length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25502 Node: 25550 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
17.140	79.00	72.00	583.00	0.004	0.113000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25503 Node: 25553 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
17.140	79.00	5.00	598.00	0.002	0.287000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25505 Node: 25555 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
100.060	79.00	42.00	1450.00	0.003	0.191000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25506 Node: 25556 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
58.920	79.00	45.00	1317.00	0.003	0.183000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25507 Node: 25558 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
55.100	79.00	28.00	1017.00	0.001	0.227000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25508 Node: 25551 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
35.620	79.00	36.00	967.00	0.003	0.206000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25509 Node: 25552 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
46.750	79.00	38.00	867.00	0.003	0.201000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25591-Bypass Node: 10429 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
1.680	79.00	0.00	600.00	0.002	0.300000

- Adjusted to reflect current existing conditions, See Exhibit 6
(Portion of Off-ramp basin bypassing CBC, discharging downstream of Junction Node 10432)
- Non-DCIA assumed to be pervious (CN=79)
- Mannings N calculated per Exhibit 6

Name: 25601 Node: 25691 (Pond2) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
22.570	79.00	61.70	200.00	0.002	0.140000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25602 Node: 25691 (Pond2) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
17.770	79.00	30.00	1017.00	0.004	0.222000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25603 Node: 25651 Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
11.300	79.00	32.00	667.00	0.006	0.217000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25604 Node: 25692A (Pond1A) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
13.390	79.00	57.40	533.00	0.006	0.151000

- Non-DCIA assumed to be pervious (CN=79)
- Basin Area and DCIA from Dames and Moore Report, See Exhibit 3
- Basin length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25605 Node: 25652 Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
28.610	79.00	26.00	467.00	0.006	0.232000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25606 Node: 25654 Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
61.850	79.00	20.00	1667.00	0.002	0.248000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25607 Node: 25692A (Pond1A) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
9.830	79.00	50.00	1650.00	0.006	0.170000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6
- Basin 25607 split into 2 basins to reflect direct inflow to the dual pond.

Name: 25607B Node: 25692B (Pond1B) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
12.790	79.00	50.00	1650.00	0.006	0.170000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6
- Basin 25607 split into 2 basins to reflect direct inflow to the dual pond.

Name: Selmon-West-Off Node: 10429 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
5.500	79.00	100.00	500.00	0.002	0.040000

Portion of the Selmon West Extension west of R/R, not actually draining to the proposed ponds, undeveloped condition (Area for w

==========
==== Nodes ==========
==========

Name: 10429 Base Flow(cfs): 0.000 Init Stage(ft): 2.750
Group: BASE Warn Stage(ft): 7.630
Type: Time/Stage

Same as pre-dev condition

Time(hrs)	Stage(ft)
0.00	2.750
8.00	2.750
10.00	2.750
12.00	2.750
13.00	2.750
16.00	2.750
20.00	2.750
24.00	2.750
30.00	2.750

Name: 10432 Base Flow(cfs): 0.000 Init Stage(ft): 3.000
Group: BASE Warn Stage(ft): 11.130
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
1.000	0.0010
3.130	0.0010
3.960	0.0069
10.630	0.0200
11.130	2.7500
11.330	4.0000

Name: 25550 Base Flow(cfs): 0.000 Init Stage(ft): 3.960
Group: Basin-5 Warn Stage(ft): 12.130
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
3.330	0.0115
11.130	0.0115
11.630	1.0000
12.130	17.1400

Name: 25551 Base Flow(cfs): 0.000 Init Stage(ft): 4.770
Group: Basin-5 Warn Stage(ft): 13.130
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
4.770	0.0115
11.630	0.0115
12.130	1.0000
13.130	35.6200

Name: 25552 Base Flow(cfs): 0.000 Init Stage(ft): 8.370
Group: Basin-5 Warn Stage(ft): 13.630
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
8.370	0.0115
12.130	0.0115
12.630	1.0000
13.630	46.7500

Name: 25553 Base Flow(cfs): 0.000 Init Stage(ft): 3.300
Group: Basin-5 Warn Stage(ft): 12.630
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
0.000	0.0010
12.630	0.0100

Name: 25554 Base Flow(cfs): 0.000 Init Stage(ft): 3.300
Group: Basin-5 Warn Stage(ft): 12.730
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
1.130	0.0010
5.130	0.0010
12.730	0.0100

Name: 25555 Base Flow(cfs): 0.000 Init Stage(ft): 6.630
Group: Basin-5 Warn Stage(ft): 11.130
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
6.630	0.0115
10.130	0.0115
10.630	1.0000
11.130	100.0600

Name: 25556 Base Flow(cfs): 0.000 Init Stage(ft): 5.130
Group: Basin-5 Warn Stage(ft): 11.130
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
5.130	0.0010
11.130	0.0100

Name: 25557 Base Flow(cfs): 0.000 Init Stage(ft): 8.670
Group: Basin-5 Warn Stage(ft): 13.670
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
8.670	0.0010
13.670	0.0100

Name: 25558 Base Flow(cfs): 0.000 Init Stage(ft): 9.030
Group: Basin-5 Warn Stage(ft): 12.930
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
9.030	0.0010
12.930	0.0100

Name: 25591A (Pond3A) Base Flow(cfs): 0.000 Init Stage(ft): 3.300
Group: Basin-5 Warn Stage(ft): 11.000
Type: Stage/Area

Proposed Pond (3A)
Initial Stage Set at NWL

Stage(ft)	Area(ac)
-2.700	1.2700
3.300	1.6600
9.500	2.1300
10.750	2.2800

11.000	2.3100
12.500	2.7200

Name: 25591B (Pond3B) Base Flow(cfs): 0.000 Init Stage(ft): 3.300
Group: Basin-5 Warn Stage(ft): 11.000
Type: Stage/Area

Proposed Pond 3B

Stage(ft)	Area(ac)
-2.700	0.8830
3.300	1.2380
5.000	1.3410
10.000	1.6590
11.000	1.7230

Name: 25651 Base Flow(cfs): 0.000 Init Stage(ft): 4.080
Group: Basin-6 Warn Stage(ft): 10.530
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
4.080	0.0010
10.530	0.0100

Name: 25652 Base Flow(cfs): 0.000 Init Stage(ft): 4.230
Group: Basin-6 Warn Stage(ft): 9.230
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
4.230	0.0010
9.230	0.0100

Name: 25653 Base Flow(cfs): 0.000 Init Stage(ft): 5.930
Group: Basin-6 Warn Stage(ft): 10.930
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
5.930	0.0010
10.930	0.0100

Name: 25654 Base Flow(cfs): 0.000 Init Stage(ft): 7.870
Group: Basin-6 Warn Stage(ft): 12.630
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
7.870	0.0115
11.130	0.0115
11.630	1.0000
12.630	61.8500

Name: 25691 (Pond2) Base Flow(cfs): 0.000 Init Stage(ft): 3.630
Group: Basin-6 Warn Stage(ft): 9.130
Type: Stage/Area

Existing Pond-2
Adjusted for proposed revisions
Initial stage set at NWL

Stage(ft)	Area(ac)
-2.000	3.8400
0.000	4.1200
2.000	6.3400
3.630	6.9300
4.000	7.0700
5.000	7.3000
9.100	8.2800

11.000	9.8100

Name: 25692A (Pond1A) Base Flow(cfs): 0.000 Init Stage(ft): 3.630
Group: Basin-6 Warn Stage(ft): 9.100
Type: Stage/Area

Pond-1 north of Ramp A
Adjusted for proposed revisions
Initial stage set at NWL

Stage(ft)	Area(ac)
1.000	1.7090
2.000	1.9230
5.000	2.2550
9.100	2.7280
10.600	3.3330

Name: 25692B (Pond1B) Base Flow(cfs): 0.000 Init Stage(ft): 3.630
Group: Basin-6 Warn Stage(ft): 9.130
Type: Stage/Area

Pond-1 south of Ramp A
Adjusted for proposed revisions
Initial stage set at NWL

Stage(ft)	Area(ac)
-0.900	0.1940
2.000	3.6340
5.000	4.0530
9.100	4.6560
10.600	5.4200

==========
==== Pipes ====
==========

Name: 11440 From Node: 10432 Length(ft): 519.00
Group: BASE To Node: 10429 Count: 1
Friction Equation: Automatic

	UPSTREAM	DOWNSTREAM		
Geometry:	Rectangular	Rectangular	Solution Algorithm:	Most Restrictive
Span(in):	120.00	120.00	Flow:	Both
Rise(in):	48.00	48.00	Entrance Loss Coef:	0.00
Invert(ft):	3.000	2.750	Exit Loss Coef:	1.00
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular: Tapered inlet throat

Downstream FHWA Inlet Edge Description:
Rectangular: Tapered inlet throat

Name: 24IN-RCP From Node: 25692B (Pond1B) Length(ft): 220.00
Group: BASE To Node: 25691 (Pond2) Count: 1
Friction Equation: Automatic

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Most Restrictive
Span(in):	24.00	24.00	Flow:	Both
Rise(in):	24.00	24.00	Entrance Loss Coef:	0.00
Invert(ft):	1.630	1.330	Exit Loss Coef:	1.00
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

```
        Name: 25505              From Node: 25553             Length(ft): 500.00
       Group: Basin-5              To Node: 25591A (Pond3A)         Count: 1
                                                    Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM             Solution Algorithm: Most Restrictive
    Geometry: Circular       Circular                         Flow: Both
    Span(in): 60.00          60.00                  Entrance Loss Coef: 0.00
    Rise(in): 60.00          60.00                      Exit Loss Coef: 1.00
   Invert(ft): -0.400        -0.440                     Bend Loss Coef: 0.00
 Manning's N: 0.012000       0.012000                 Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dc
Bot Clip(in): 0.000          0.000                   Stabilizer Option: None
```

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

U/S invert Input from D&M-1995 study is -0.22, D/S inv. entered from topographical survey provided Dec 2017.

```
        Name: 25506              From Node: 25554             Length(ft): 450.00
       Group: Basin-5              To Node: 25553                   Count: 1
                                                    Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM             Solution Algorithm: Most Restrictive
    Geometry: Circular       Circular                         Flow: Both
    Span(in): 60.00          60.00                  Entrance Loss Coef: 0.00
    Rise(in): 60.00          60.00                      Exit Loss Coef: 1.00
   Invert(ft): 1.130         -0.170                     Bend Loss Coef: 0.00
 Manning's N: 0.012000       0.012000                 Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dc
Bot Clip(in): 0.000          0.000                   Stabilizer Option: None
```

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Input from D&M-1995 study, Approx inv. from Original Study channels slope (Table 7-1)

```
        Name: 25512              From Node: 25550             Length(ft): 1130.00
       Group: Basin-5              To Node: 25591A (Pond3A)         Count: 1
                                                    Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM             Solution Algorithm: Most Restrictive
    Geometry: Circular       Circular                         Flow: Both
    Span(in): 48.00          48.00                  Entrance Loss Coef: 0.00
    Rise(in): 48.00          48.00                      Exit Loss Coef: 1.00
   Invert(ft): 3.330         1.690                      Bend Loss Coef: 0.00
 Manning's N: 0.012000       0.012000                 Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dc
Bot Clip(in): 0.000          0.000                   Stabilizer Option: None
```

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

U/S invert Input from D&M-1995 study, D/S inv. entered from topographical survey provided Dec 2017.

```
        Name: 25513              From Node: 25551             Length(ft): 650.00
       Group: Basin-5              To Node: 25550                   Count: 1
                                                    Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM             Solution Algorithm: Most Restrictive
    Geometry: Rectangular    Rectangular                      Flow: Both
    Span(in): 36.00          36.00                  Entrance Loss Coef: 0.00
    Rise(in): 36.00          36.00                      Exit Loss Coef: 1.00
   Invert(ft): 4.770         3.330                      Bend Loss Coef: 0.00
 Manning's N: 0.010000       0.010000                 Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dc
Bot Clip(in): 0.000          0.000                   Stabilizer Option: None
```

Upstream FHWA Inlet Edge Description:
Rectangular: Tapered inlet throat

Downstream FHWA Inlet Edge Description:
Rectangular: Tapered inlet throat

Input from D&M-1995 study, Approx inv. from slopes on (Table 7-1), does not match plan

Name: 25514		From Node: 25552		Length(ft): 1200.00	
Group: Basin-5		To Node: 25551		Count: 1	
				Friction Equation: Automatic	
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Most Restrictive	
Geometry:	Circular	Circular		Flow: Both	
Span(in):	24.00	24.00		Entrance Loss Coef: 0.00	
Rise(in):	24.00	24.00		Exit Loss Coef: 1.00	
Invert(ft):	8.370	4.770		Bend Loss Coef: 0.00	
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw	
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dc	
Bot Clip(in):	0.000	0.000		Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Input from D&M-1995 study, Approx inv. from slopes on (Table 7-1), does not match plan

Name: 25515		From Node: 25553		Length(ft): 500.00	
Group: Basin-5		To Node: 25591A (Pond3A)		Count: 1	
				Friction Equation: Automatic	
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Most Restrictive	
Geometry:	Circular	Circular		Flow: Both	
Span(in):	60.00	60.00		Entrance Loss Coef: 0.00	
Rise(in):	60.00	60.00		Exit Loss Coef: 1.00	
Invert(ft):	-0.220	-0.410		Bend Loss Coef: 0.00	
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw	
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dc	
Bot Clip(in):	0.000	0.000		Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

U/S invert Input from D&M-1995 study is -0.22, D/S inv. entered from topographical survey provided Dec 2017.

Name: 25516		From Node: 25554		Length(ft): 450.00	
Group: Basin-5		To Node: 25553		Count: 1	
				Friction Equation: Automatic	
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Most Restrictive	
Geometry:	Circular	Circular		Flow: Both	
Span(in):	60.00	60.00		Entrance Loss Coef: 0.00	
Rise(in):	60.00	60.00		Exit Loss Coef: 1.00	
Invert(ft):	1.130	-0.170		Bend Loss Coef: 0.00	
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw	
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dc	
Bot Clip(in):	0.000	0.000		Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Input from D&M-1995 study, Approx inv. from slopes on (Table 7-1)

Name: 25517		From Node: 25555		Length(ft): 900.00	
Group: Basin-5		To Node: 25554		Count: 1	
				Friction Equation: Automatic	
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Most Restrictive	
Geometry:	Circular	Circular		Flow: Both	
Span(in):	60.00	60.00		Entrance Loss Coef: 0.00	
Rise(in):	60.00	60.00		Exit Loss Coef: 1.00	
Invert(ft):	6.630	1.730		Bend Loss Coef: 0.00	
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw	
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dc	
Bot Clip(in):	0.000	0.000		Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Input from D&M-1995 study, Approx inv. from slopes on (Table 7-1)

Name: 25519		From Node: 25557	Length(ft): 1350.00	
Group: Basin-5		To Node: 25554	Count: 1	
			Friction Equation: Automatic	
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive	
Geometry:	Circular	Circular	Flow: Both	
Span(in):	60.00	60.00	Entrance Loss Coef: 0.00	
Rise(in):	60.00	60.00	Exit Loss Coef: 1.00	
Invert(ft):	8.670	5.030	Bend Loss Coef: 0.00	
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw	
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc	
Bot Clip(in):	0.000	0.000	Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Input from D&M-1995 study, Approx inv. from slopes on (Table 7-1)

Name: 25613		From Node: 25692B (Pond1B)	Length(ft): 135.00	
Group: Basin-6		To Node: 25691 (Pond2)	Count: 1	
			Friction Equation: Automatic	
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive	
Geometry:	Rectangular	Rectangular	Flow: Both	
Span(in):	60.00	60.00	Entrance Loss Coef: 0.00	
Rise(in):	48.00	48.00	Exit Loss Coef: 1.00	
Invert(ft):	5.680	4.900	Bend Loss Coef: 0.00	
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw	
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc	
Bot Clip(in):	0.000	0.000	Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

CBC updated to reflect design length per proposed extension.

Name: 25614		From Node: 25651	Length(ft): 241.00	
Group: Basin-6		To Node: 25692B (Pond1B)	Count: 1	
			Friction Equation: Automatic	
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive	
Geometry:	Rectangular	Rectangular	Flow: Both	
Span(in):	96.00	96.00	Entrance Loss Coef: 0.00	
Rise(in):	48.00	48.00	Exit Loss Coef: 1.00	
Invert(ft):	4.080	3.990	Bend Loss Coef: 0.00	
Manning's N:	0.001000	0.001000	Outlet Ctrl Spec: Use dc or tw	
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc	
Bot Clip(in):	0.000	0.000	Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

Input from D&M-1995 study, D/S Inv. spprox. from Original Study (Table 7-1)

Name: 25617		From Node: 25654	Length(ft): 700.00	
Group: Basin-6		To Node: 25653	Count: 1	
			Friction Equation: Automatic	
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive	
Geometry:	Circular	Circular	Flow: Both	

Span(in):	24.00	24.00	Entrance Loss Coef: 0.00
Rise(in):	24.00	24.00	Exit Loss Coef: 1.00
Invert(ft):	7.870	5.930	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Input from D&M-1995 study

Name: P-25591A From Node: 25591A (Pond3A) Length(ft): 252.00
Group: Basin-5 To Node: 25591B (Pond3B) Count: 1
Friction Equation: Automatic
Solution Algorithm: Most Restrictive
Flow: Both

	UPSTREAM	DOWNSTREAM	
Geometry:	Rectangular	Rectangular	
Span(in):	84.00	84.00	Entrance Loss Coef: 0.00
Rise(in):	72.00	72.00	Exit Loss Coef: 1.00
Invert(ft):	0.150	0.830	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

CBC updated to reflect design length per proposed extension.

==========
==== Channels ==========
==========

Name: 25518 From Node: 25556 Length(ft): 650.00
Group: Basin-5 To Node: 25554 Count: 1

Friction Equation: Automatic
Solution Algorithm: Automatic
Flow: Both

	UPSTREAM	DOWNSTREAM	
Geometry:	Trapezoidal	Trapezoidal	
Invert(ft):	5.130	2.530	
TClpInitZ(ft):	9999.000	9999.000	Contraction Coef: 0.100
Manning's N:	0.020000	0.020000	Expansion Coef: 0.300
Top Clip(ft):	0.000	0.000	Entrance Loss Coef: 0.000
Bot Clip(ft):	0.000	0.000	Exit Loss Coef: 0.000
Main XSec:			Outlet Ctrl Spec: Use dc or tw
AuxElev1(ft):			Inlet Ctrl Spec: Use dc
Aux XSec1:			Stabilizer Option: None
AuxElev2(ft):			
Aux XSec2:			
Top Width(ft):			
Depth(ft):			
Bot Width(ft):	5.000	5.000	
LtSdSlp(h/v):	1.00	1.00	
RtSdSlp(h/v):	1.00	1.00	

Input from D&M-1995 study

Name: 25520 From Node: 25558 Length(ft): 650.00
Group: Basin-5 To Node: 25557 Count: 1

Friction Equation: Automatic
Solution Algorithm: Automatic
Flow: Both

	UPSTREAM	DOWNSTREAM	
Geometry:	Trapezoidal	Trapezoidal	
Invert(ft):	9.030	8.670	
TClpInitZ(ft):	9999.000	9999.000	Contraction Coef: 0.100
Manning's N:	0.020000	0.020000	Expansion Coef: 0.300
Top Clip(ft):	0.000	0.000	Entrance Loss Coef: 0.000
Bot Clip(ft):	0.000	0.000	Exit Loss Coef: 0.000
Main XSec:			Outlet Ctrl Spec: Use dc or tw
AuxElev1(ft):			Inlet Ctrl Spec: Use dc
Aux XSec1:			Stabilizer Option: None
AuxElev2(ft):			
Aux XSec2:			
Top Width(ft):			
Depth(ft):			
Bot Width(ft):	5.000	5.000	

```
  LtSdSlp(h/v): 2.00          2.00
  RtSdSlp(h/v): 2.00          2.00

Input from D&M-1995 study

-------------------------------------------------------------------------------------------------
          Name: 25615              From Node: 25652             Length(ft): 450.00
         Group: Basin-6              To Node: 25651                  Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
      Geometry: Trapezoidal   Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 4.930         4.130                              Flow: Both
 TClpInitZ(ft): 9999.000      9999.000                 Contraction Coef: 0.100
   Manning's N: 0.020000      0.020000                   Expansion Coef: 0.300
  Top Clip(ft): 0.000         0.000                   Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000         0.000                      Exit Loss Coef: 0.000
     Main XSec:                                       Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                        Inlet Ctrl Spec: Use dc
     Aux XSec1:                                       Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 5.000         5.000
  LtSdSlp(h/v): 1.00          1.00
  RtSdSlp(h/v): 1.00          1.00

Input from D&M-1995 study

-------------------------------------------------------------------------------------------------
          Name: 25616              From Node: 25653             Length(ft): 450.00
         Group: Basin-6              To Node: 25652                  Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
      Geometry: Trapezoidal   Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 5.930         4.930                              Flow: Both
 TClpInitZ(ft): 9999.000      9999.000                 Contraction Coef: 0.100
   Manning's N: 0.020000      0.020000                   Expansion Coef: 0.300
  Top Clip(ft): 0.000         0.000                   Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000         0.000                      Exit Loss Coef: 0.000
     Main XSec:                                       Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                        Inlet Ctrl Spec: Use dc
     Aux XSec1:                                       Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 5.000         5.000
  LtSdSlp(h/v): 1.00          1.00
  RtSdSlp(h/v): 1.00          1.00

Input from D&M-1995 study, Approx D/S inv. from Original Study channels slope (Table 7-1)

=================================================================================================
==== Drop Structures ============================================================================
=================================================================================================

          Name: 25611              From Node: 25691 (Pond2)      Length(ft): 215.00
         Group: Basin-6              To Node: 10432                  Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
      Geometry: Rectangular   Rectangular              Solution Algorithm: Most Restrictive
      Span(in): 84.00         84.00                              Flow: Both
      Rise(in): 72.00         72.00                    Entrance Loss Coef: 0.000
    Invert(ft): 1.090         1.000                       Exit Loss Coef: 1.000
  Manning's N: 0.010000       0.010000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                       Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Rectangular Box: 90° headwall w/ 3/4" chamfers

Downstream FHWA Inlet Edge Description:
Rectangular Box: 90° headwall w/ 3/4" chamfers

From field survey

*** Weir 1 of 3 for Drop Structure 25611 ***
                                                                                    TABLE
                  Count: 1                        Bottom Clip(in): 0.000
                   Type: Vertical: Mavis            Top Clip(in): 0.000
                   Flow: Both                     Weir Disc Coef: 3.200
              Geometry: Rectangular            Orifice Disc Coef: 0.600

              Span(in): 11.00                         Invert(ft): 3.620
              Rise(in): 6.00                   Control Elev(ft): 3.620
```

```
*** Weir 2 of 3 for Drop Structure 25611 ***
                                                                                TABLE
                Count: 2                        Bottom Clip(in): 0.000
                 Type: Vertical: Mavis             Top Clip(in): 0.000
                 Flow: Both                     Weir Disc Coef: 3.200
             Geometry: Rectangular            Orifice Disc Coef: 0.600

             Span(in): 22.50                         Invert(ft): 4.120
             Rise(in): 58.56                  Control Elev(ft): 4.120

*** Weir 3 of 3 for Drop Structure 25611 ***
                                                                                TABLE
                Count: 1                        Bottom Clip(in): 0.000
                 Type: Horizontal                  Top Clip(in): 0.000
                 Flow: Both                     Weir Disc Coef: 3.200
             Geometry: Rectangular            Orifice Disc Coef: 0.600

             Span(in): 78.00                         Invert(ft): 9.830
             Rise(in): 39.00                  Control Elev(ft): 9.830


-------------------------------------------------------------------------------------------------
         Name: 25613A              From Node: 25692A (Pond1A)    Length(ft): 100.00
        Group: Basin-6               To Node: 25692B (Pond1B)         Count: 2

              UPSTREAM       DOWNSTREAM                 Friction Equation: Automatic
     Geometry: Circular       Circular                  Solution Algorithm: Most Restrictive
     Span(in): 18.00          18.00                                Flow: Both
     Rise(in): 18.00          18.00                     Entrance Loss Coef: 0.000
   Invert(ft): -0.500         -0.900                        Exit Loss Coef: 1.000
  Manning's N: 0.012000       0.012000                    Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                        Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                          Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


*** Weir 1 of 2 for Drop Structure 25613A ***
                                                                                TABLE
                Count: 1                        Bottom Clip(in): 0.000
                 Type: Horizontal                  Top Clip(in): 0.000
                 Flow: Both                     Weir Disc Coef: 3.200
             Geometry: Rectangular            Orifice Disc Coef: 0.600

             Span(in): 24.00                         Invert(ft): 9.500
             Rise(in): 37.00                  Control Elev(ft): 9.500

*** Weir 2 of 2 for Drop Structure 25613A ***
                                                                                TABLE
                Count: 1                        Bottom Clip(in): 0.000
                 Type: Vertical: Mavis             Top Clip(in): 0.000
                 Flow: Both                     Weir Disc Coef: 3.200
             Geometry: Rectangular            Orifice Disc Coef: 0.600

             Span(in): 6.00                          Invert(ft): 3.620
             Rise(in): 999.00                 Control Elev(ft): 3.620


-------------------------------------------------------------------------------------------------
         Name: D-25511             From Node: 25591B (Pond3B)    Length(ft): 140.00
        Group: Basin-5               To Node: 10432                   Count: 1

              UPSTREAM       DOWNSTREAM                 Friction Equation: Automatic
     Geometry: Rectangular    Rectangular               Solution Algorithm: Most Restrictive
     Span(in): 84.00          84.00                                Flow: Both
     Rise(in): 72.00          72.00                     Entrance Loss Coef: 0.000
   Invert(ft): 1.130          1.000                         Exit Loss Coef: 1.000
  Manning's N: 0.012000       0.012000                    Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                        Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                          Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares


*** Weir 1 of 3 for Drop Structure D-25511 ***
```

```
                                                                                TABLE
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Horizontal                Top Clip(in): 0.000
                   Flow: Both                   Weir Disc Coef: 3.200
              Geometry: Rectangular          Orifice Disc Coef: 0.600

              Span(in): 192.00                      Invert(ft): 9.200
              Rise(in): 36.00                Control Elev(ft): 9.200

*** Weir 2 of 3 for Drop Structure D-25511 ***
                                                                                TABLE
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Vertical: Mavis           Top Clip(in): 0.000
                   Flow: Both                   Weir Disc Coef: 3.200
              Geometry: Rectangular          Orifice Disc Coef: 0.600

              Span(in): 6.84                        Invert(ft): 3.300
              Rise(in): 6.00                 Control Elev(ft): 3.300

*** Weir 3 of 3 for Drop Structure D-25511 ***
                                                                                TABLE
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Vertical: Mavis           Top Clip(in): 0.000
                   Flow: Both                   Weir Disc Coef: 3.200
              Geometry: Rectangular          Orifice Disc Coef: 0.600

              Span(in): 240.00                      Invert(ft): 3.800
              Rise(in): 42.00                Control Elev(ft): 3.800


================================================================================
==== Weirs =====================================================================
================================================================================

         Name: W-25591A            From Node: 25591A (Pond3A)
        Group: Basin-5               To Node: 25591B (Pond3B)
         Flow: Both                     Count: 1
         Type: Vertical: Paved      Geometry: Trapezoidal

            Bottom Width(ft): 65.00
       Left Side Slope(h/v): 3.00
      Right Side Slope(h/v): 100.00
                Invert(ft): 21.500
      Control Elevation(ft): 21.500
     Struct Opening Dim(ft): 9999.00
                                          TABLE
           Bottom Clip(ft): 0.000
              Top Clip(ft): 0.000
       Weir Discharge Coef: 2.800
     Orifice Discharge Coef: 0.600


================================================================================
==== Hydrology Simulations =====================================================
================================================================================

         Name: 010y024h
     Filename: C:\Drainage\Projects\THEA - PSR\ICPR3\010y024h.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 7.10

Time(hrs)       Print Inc(min)
--------------- ---------------
9.000           10.00
14.000          0.10
21.000          2.00
24.000          0.10
36.000          5.00
48.000          30.00

--------------------------------------------------------------------------------------------------------
         Name: 025y024h
     Filename: C:\Drainage\Projects\THEA - PSR\ICPR3\025y024h.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 8.25

Time(hrs)       Print Inc(min)
--------------- ---------------
9.000           10.00
```

14.000	0.10
21.000	2.00
24.000	0.10
36.000	5.00
48.000	30.00

Name: 100y024h
Filename: C:\Drainage\Projects\THEA - PSR\ICPR3\100y024h.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Flmod
Rainfall Amount(in): 11.25

Time(hrs)	Print Inc(min)
9.000	10.00
14.000	0.10
20.000	2.00
24.000	0.10
30.000	5.00
36.000	5.00
48.000	30.00

==========

==== Routing Simulations ==========

==========

Name: 010y024h Hydrology Sim: 010y024h
Filename: C:\Drainage\Projects\THEA - PSR\ICPR3\010y024h.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 48.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: 10 Yr Boundary Flows:

Time(hrs)	Print Inc(min)
9.000	15.000
14.000	5.000
21.000	15.000
24.000	5.000
36.000	15.000
48.000	30.000

Group	Run
BASE	Yes
Basin-5	Yes
Basin-6	Yes

Name: 025y024h Hydrology Sim: 025y024h
Filename: C:\Drainage\Projects\THEA - PSR\ICPR3\025y024h.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 48.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: 25 Yr Boundary Flows:

Time(hrs)	Print Inc(min)
9.000	15.000
14.000	5.000
21.000	15.000
24.000	5.000
36.000	15.000
48.000	30.000

Group	Run
BASE	Yes

Basin-5	Yes
Basin-6	Yes

Name: 100y024h Hydrology Sim: 100y024h
Filename: C:\Drainage\Projects\THEA - PSR\ICPR3\100y024h.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 48.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: 100 Yr Boundary Flows:

Time(hrs)	Print Inc(min)
9.000	15.000
10.000	5.000
21.000	15.000
24.000	5.000
36.000	15.000
48.000	30.000

Group	Run
BASE	Yes
Basin-5	Yes
Basin-6	Yes

==========
==== Boundary Conditions ====
==========

Name: 25 Yr Node: 10429 Type: Stage

Time(hrs)	Stage(ft)
0.000	2.750
5.000	2.850
10.000	3.250
11.000	3.450
12.000	4.000
12.500	5.150
13.000	5.600
14.000	5.900
15.000	6.250
17.500	6.750
25.000	6.750
36.000	6.750
48.000	6.750

Name: 100 Yr Node: 10429 Type: Stage

Time(hrs)	Stage(ft)
0.000	2.750
5.000	2.900
10.000	3.300
11.500	4.000
12.500	6.000
13.000	6.600
14.000	6.750
25.000	6.750
26.000	6.750
27.000	6.750
28.000	6.750
29.000	6.750
48.000	6.750

Name: 10 Yr Node: 10429 Type: Stage

Time(hrs)	Stage(ft)
0.000	2.750
5.000	2.850
10.000	3.250
11.000	3.450
12.000	4.000

12.500	5.150
13.000	5.600
14.000	5.900
15.000	6.250
17.500	6.750
22.000	6.750
25.000	6.750
48.000	6.750

Gandy Basin
Pre-Development Conditions
Node Min/Max

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
10429	BASE	010y024h	17.50	6.75	7.63	0.0032	746	20.81	131.77	0.00	0.00
10432	BASE	010y024h	20.83	7.14	11.13	0.0049	702	20.83	130.60	20.83	130.60
25550	Basin-5	010y024h	19.51	8.10	12.13	-0.0047	663	13.53	43.79	13.59	43.63
25551	Basin-5	010y024h	18.98	8.65	13.13	0.0045	610	17.63	28.38	17.83	28.35
25552	Basin-5	010y024h	20.51	12.90	13.63	-0.0073	587323	17.47	20.12	25.12	15.02
25553	Basin-5	010y024h	20.33	7.75	12.63	0.0066	522	19.65	72.71	19.56	72.39
25554	Basin-5	010y024h	20.25	7.85	12.73	-0.0026	8360	19.56	65.86	19.65	67.33
25555	Basin-5	010y024h	20.35	8.90	11.13	0.0021	2209	20.37	32.11	20.39	32.11
25556	Basin-5	010y024h	20.19	7.87	11.13	0.0010	4047	18.53	22.56	18.41	22.46
25557	Basin-5	010y024h	23.51	10.04	13.67	0.0014	6455	23.42	13.63	23.39	13.63
25558	Basin-5	010y024h	23.46	10.28	12.93	0.0012	3460	23.37	13.63	23.42	13.63
25591A (Pond3A)	Basin-5	010y024h	20.40	7.62	11.00	0.0025	86843	18.41	103.83	19.65	100.51
25591B (Pond3B)	Basin-5	010y024h	20.52	7.48	11.00	0.0025	65329	19.58	101.08	19.96	100.26
25651	Basin-6	010y024h	22.41	7.57	10.53	0.0020	3802	14.50	34.77	14.51	34.22
25652	Basin-6	010y024h	22.41	7.58	9.23	0.0018	4919	14.47	28.05	14.45	27.69
25653	Basin-6	010y024h	22.51	7.61	10.93	0.0010	2748	25.33	11.45	25.49	11.48
25654	Basin-6	010y024h	25.49	9.72	12.63	0.0017	930	25.33	11.45	25.33	11.45
25691 (Pond2)	Basin-6	010y024h	22.40	7.52	9.13	0.0008	344541	12.92	44.74	26.25	36.40
25692A (Pond1A)	Basin-6	010y024h	23.78	7.79	9.10	0.0008	112239	13.48	17.11	27.37	3.85
25692B (Pond1B)	Basin-6	010y024h	22.42	7.56	9.13	0.0011	194265	13.36	53.78	22.71	27.98
10429	BASE	025y024h	17.50	6.75	7.63	0.0032	130	19.82	166.31	0.00	0.00
10432	BASE	025y024h	19.85	7.37	11.13	-0.0223	722	17.39	174.17	19.85	164.77
25550	Basin-5	025y024h	18.34	8.56	12.13	-0.0047	663	13.16	51.69	13.23	51.54
25551	Basin-5	025y024h	17.86	9.27	13.13	0.0045	610	16.92	31.99	16.90	31.95
25552	Basin-5	025y024h	21.03	13.11	13.63	-0.0100	990860	16.70	26.19	28.83	15.70
25553	Basin-5	025y024h	19.36	8.13	12.63	0.0068	533	18.93	93.79	18.74	93.72
25554	Basin-5	025y024h	19.25	8.30	12.73	0.0031	10285	18.74	85.84	18.93	86.60
25555	Basin-5	025y024h	19.49	9.13	11.13	0.0049	2706	19.47	41.77	19.47	41.77
25556	Basin-5	025y024h	19.15	8.32	11.13	0.0013	4371	17.73	29.22	17.51	29.10
25557	Basin-5	025y024h	22.23	10.25	13.67	0.0015	6877	22.14	17.92	22.16	17.92
25558	Basin-5	025y024h	22.18	10.49	12.93	0.0014	3752	22.08	17.92	22.14	17.92
25591A (Pond3A)	Basin-5	025y024h	19.36	7.91	11.00	0.0029	87801	18.29	129.60	17.50	128.08
25591B (Pond3B)	Basin-5	025y024h	19.53	7.69	11.00	0.0029	65911	17.50	129.00	17.39	145.93
25651	Basin-6	025y024h	21.38	7.94	10.53	0.0025	3993	14.10	45.67	14.17	44.98
25652	Basin-6	025y024h	21.38	7.95	9.23	0.0021	5285	14.07	36.96	14.04	36.42
25653	Basin-6	025y024h	21.44	7.98	10.93	0.0013	2397	24.06	15.75	24.06	15.78
25654	Basin-6	025y024h	23.65	11.14	12.63	0.0021	1168	23.98	15.71	24.06	15.75
25691 (Pond2)	Basin-6	025y024h	21.37	7.87	9.13	0.0012	348201	12.80	56.80	23.08	49.23
25692A (Pond1A)	Basin-6	025y024h	22.66	8.23	9.10	0.0013	114451	13.18	21.90	26.14	4.81
25692B (Pond1B)	Basin-6	025y024h	21.39	7.93	9.13	0.0017	196647	13.11	70.41	17.38	40.01
10429	BASE	100y024h	14.00	6.75	7.63	0.0026	130	18.06	255.51	0.00	0.00
10432	BASE	100y024h	18.13	8.21	11.13	-0.0215	794	18.13	252.90	18.13	252.90
25550	Basin-5	100y024h	13.50	10.87	12.13	-0.0047	663	12.73	71.94	12.77	71.57
25551	Basin-5	100y024h	16.31	11.80	13.13	0.0066	15412	15.87	40.14	16.26	39.90
25552	Basin-5	100y024h	22.43	13.50	13.63	-0.0124	1771382	15.47	44.57	33.93	16.48
25553	Basin-5	100y024h	17.48	9.94	12.63	0.0068	590	15.77	145.87	15.59	145.46
25554	Basin-5	100y024h	17.50	10.35	12.73	0.0035	8179	15.59	148.19	15.77	133.33
25555	Basin-5	100y024h	19.28	10.81	11.13	-0.0049	1622502	17.63	70.83	21.65	75.70
25556	Basin-5	100y024h	17.49	10.36	11.13	0.0046	5828	16.37	49.27	15.59	62.11
25557	Basin-5	100y024h	19.88	10.80	13.67	0.0012	7839	19.81	31.08	19.84	31.07
25558	Basin-5	100y024h	19.85	11.02	12.93	0.0015	4496	19.77	31.08	19.81	31.08
25591A (Pond3A)	Basin-5	100y024h	17.54	9.41	11.00	0.0029	92770	13.58	200.42	16.19	190.38
25591B (Pond3B)	Basin-5	100y024h	17.75	8.93	11.00	0.0026	69341	13.93	193.02	16.88	189.47
25651	Basin-6	100y024h	18.95	9.09	10.53	0.0050	3662	13.49	77.70	13.51	76.45
25652	Basin-6	100y024h	19.10	9.10	9.23	0.0029	6400	13.48	63.14	13.49	61.87
25653	Basin-6	100y024h	18.95	9.10	10.93	0.0022	2990	30.65	18.58	17.58	19.76
25654	Basin-6	100y024h	27.44	12.17	12.63	-0.0073	1473216	22.33	27.99	30.65	18.58
25691 (Pond2)	Basin-6	100y024h	19.04	8.97	9.13	0.0031	359461	14.95	98.15	23.14	72.22
25692A (Pond1A)	Basin-6	100y024h	20.29	9.57	9.10	0.0030	127171	12.93	36.22	25.05	8.40

Gandy Basin
Pre-Development Conditions
Node Min/Max

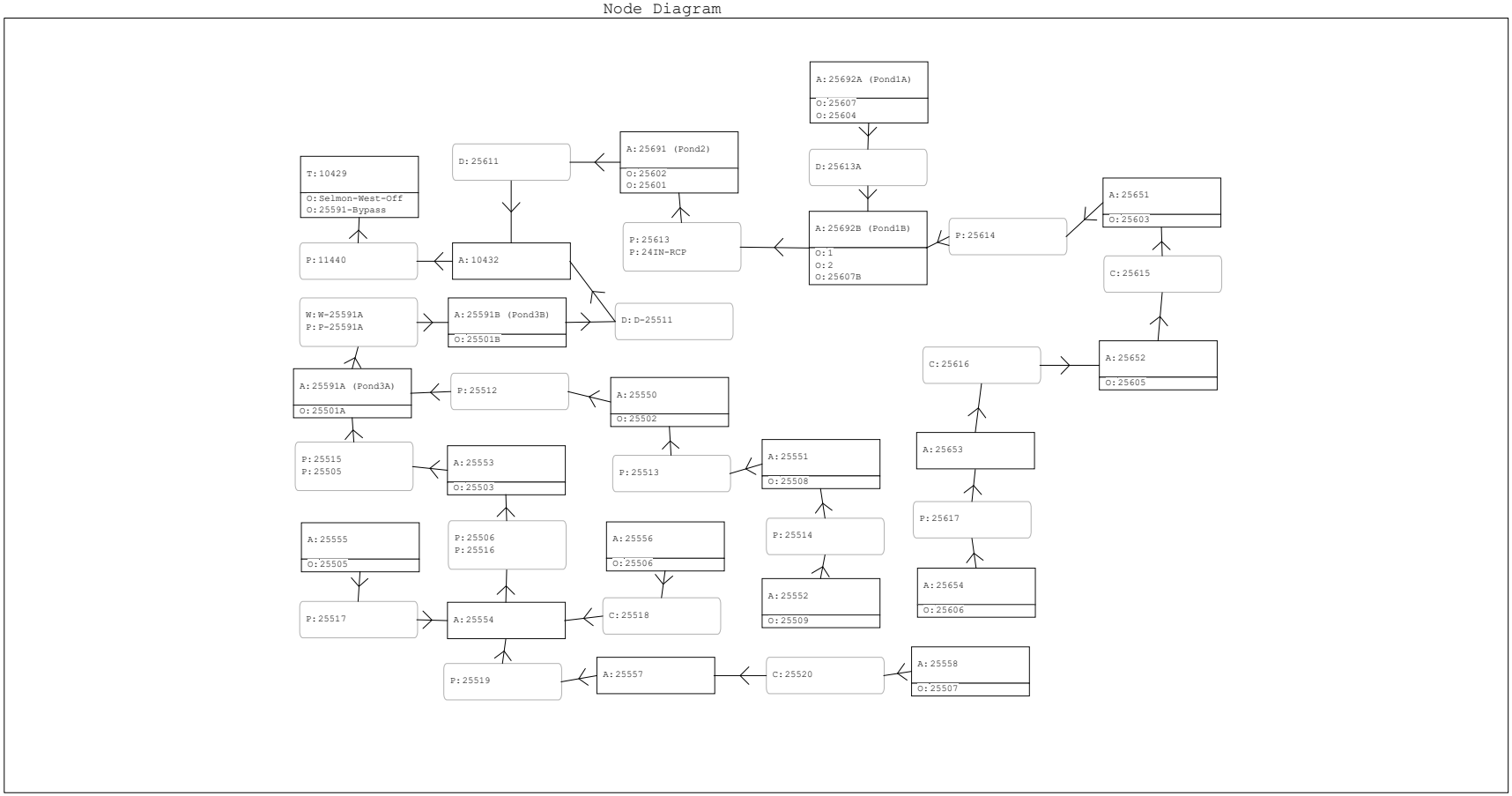
Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
25692B (Pond1B)	Basin-6	100y024h	18.95	9.08	9.13	0.0031	202974	12.70	119.30	15.46	69.24

Gandy Basin
Post-Development Conditions
Node Diagram

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



Interconnected Channel and Pond Routing Model (ICPR) ©2002 Streamline Technologies, Inc.

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==== Basins ==========
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Name: 1 Node: 25692B (Pond1B) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
11.120	79.00	85.30	600.00	0.004	0.078000

Basin determinations from Dames & Moore Report, See Exhibit 3
Mannings N calculated per Exhibit-6

Name: 2 Node: 25692B (Pond1B) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
13.420	79.00	84.40	2100.00	0.001	0.081000

Basin determinations from Dames & Moore Report, See Exhibit 3
Mannings N calculated per Exhibit-6

Name: 25501A Node: 25591A (Pond3A) Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
5.800	79.00	24.80	130.00	0.004	0.236000

- Non-DCIA assumed to be pervious (CN=79)
- % DCIA adjusted to reflect current existing conditions per Exhibit 6
- Basin length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25501B Node: 25591B (Pond3B) Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
4.200	79.00	26.20	130.00	0.004	0.232000

- Non-DCIA assumed to be pervious (CN=79)
- % DCIA adjusted to reflect current existing conditions per Exhibit 6
- Basin length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25502 Node: 25550 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
17.140	79.00	72.00	583.00	0.004	0.113000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25503 Node: 25553 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
17.140	79.00	5.00	598.00	0.002	0.287000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25505 Node: 25555 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
100.060	79.00	42.00	1450.00	0.003	0.191000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25506 Node: 25556 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
58.920	79.00	45.00	1317.00	0.003	0.183000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25507 Node: 25558 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
55.100	79.00	28.00	1017.00	0.001	0.227000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25508 Node: 25551 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
35.620	79.00	36.00	967.00	0.003	0.206000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25509 Node: 25552 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
46.750	79.00	38.00	867.00	0.003	0.201000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25591-Bypass Node: 10429 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
1.680	79.00	0.00	600.00	0.002	0.300000

- Adjusted to reflect current existing conditions, See Exhibit 6
(Portion of Off-ramp basin bypassing CBC, discharging downstream of Junction Node 10432)
- Non-DCIA assumed to be pervious (CN=79)
- Mannings N calculated per Exhibit 6

Name: 25601 Node: 25691 (Pond2) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
22.570	79.00	61.70	200.00	0.002	0.140000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25602 Node: 25691 (Pond2) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
17.770	79.00	30.00	1017.00	0.004	0.222000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25603 Node: 25651 Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
11.300	79.00	32.00	667.00	0.006	0.217000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25604 Node: 25692A (Pond1A) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
13.390	79.00	62.00	533.00	0.006	0.151000

- Non-DCIA assumed to be pervious (CN=79)
- Basin Area and DCIA from Dames and Moore Report, See Exhibit 3
- Basin length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

HDR Update: Added 0.62 acres of imperviousness
DCIA changed from 57.4% to 62.0%

Name: 25605 Node: 25652 Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
28.610	79.00	26.00	467.00	0.006	0.232000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25606 Node: 25654 Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
61.850	79.00	20.00	1667.00	0.002	0.248000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6

Name: 25607 Node: 25692A (Pond1A) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
9.830	79.00	51.20	1650.00	0.006	0.170000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6
- Basin 25607 split into 2 basins to reflect direct inflow to the dual pond.

HDR Update: Added 0.12 acres of imperviousness
DCIA changed from 50.0% to 51.2%

Name: 25607B Node: 25692B (Pond1B) Status: Onsite
Group: Basin-6 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N
12.790	79.00	50.00	1650.00	0.006	0.170000

- Non-DCIA assumed to be pervious (CN=79)
- Basin area, length and slope from Norma Park Report, See Exhibit 3
- Mannings N calculated per Exhibit 6
- Basin 25607 split into 2 basins to reflect direct inflow to the dual pond.

Name: Selmon-West-Off Node: 10429 Status: Onsite
Group: Basin-5 Type: Overland Flow

Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.250 Time Increment(min): 1.00
Max Allowable Q(cfs): 999999.000 Time Shift(hrs): 0.00

Area(ac)	Curve Num	DCIA(%)	Length(ft)	Slope(%)	Manning's N

5.500	79.00	100.00	500.00	0.002	0.040000

Portion of the Selmon West Extension west of R/R, not actually draining to the proposed ponds, undeveloped condition (Area for w

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==== Nodes ==========
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Name: 10429 Base Flow(cfs): 0.000 Init Stage(ft): 2.750
Group: BASE Warn Stage(ft): 7.630
Type: Time/Stage

Same as pre-dev condition

Time(hrs)	Stage(ft)
0.00	2.750
8.00	2.750
10.00	2.750
12.00	2.750
13.00	2.750
16.00	2.750
20.00	2.750
24.00	2.750
30.00	2.750

Name: 10432 Base Flow(cfs): 0.000 Init Stage(ft): 3.000
Group: BASE Warn Stage(ft): 11.130
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
1.000	0.0010
3.130	0.0010
3.960	0.0069
10.630	0.0200
11.130	2.7500
11.330	4.0000

Name: 25550 Base Flow(cfs): 0.000 Init Stage(ft): 3.960
Group: Basin-5 Warn Stage(ft): 12.130
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
3.330	0.0115
11.130	0.0115
11.630	1.0000
12.130	17.1400

Name: 25551 Base Flow(cfs): 0.000 Init Stage(ft): 4.770
Group: Basin-5 Warn Stage(ft): 13.130
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
4.770	0.0115
11.630	0.0115
12.130	1.0000
13.130	35.6200

Name: 25552 Base Flow(cfs): 0.000 Init Stage(ft): 8.370
Group: Basin-5 Warn Stage(ft): 13.630
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
8.370	0.0115
12.130	0.0115
12.630	1.0000
13.630	46.7500

Name: 25553 Base Flow(cfs): 0.000 Init Stage(ft): 3.300
Group: Basin-5 Warn Stage(ft): 12.630
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
0.000	0.0010
12.630	0.0100

Name: 25554 Base Flow(cfs): 0.000 Init Stage(ft): 3.300
Group: Basin-5 Warn Stage(ft): 12.730
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
1.130	0.0010
5.130	0.0010
12.730	0.0100

Name: 25555 Base Flow(cfs): 0.000 Init Stage(ft): 6.630
Group: Basin-5 Warn Stage(ft): 11.130
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
6.630	0.0115
10.130	0.0115
10.630	1.0000
11.130	100.0600

Name: 25556 Base Flow(cfs): 0.000 Init Stage(ft): 5.130
Group: Basin-5 Warn Stage(ft): 11.130
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
5.130	0.0010
11.130	0.0100

Name: 25557 Base Flow(cfs): 0.000 Init Stage(ft): 8.670
Group: Basin-5 Warn Stage(ft): 13.670
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
8.670	0.0010
13.670	0.0100

Name: 25558 Base Flow(cfs): 0.000 Init Stage(ft): 9.030
Group: Basin-5 Warn Stage(ft): 12.930
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
9.030	0.0010
12.930	0.0100

Name: 25591A (Pond3A) Base Flow(cfs): 0.000 Init Stage(ft): 3.300
Group: Basin-5 Warn Stage(ft): 11.000
Type: Stage/Area

Proposed Pond (3A)
Initial Stage Set at NWL

Stage(ft)	Area(ac)

-2.700	1.2700
3.300	1.6600
9.500	2.1300
10.750	2.2800
11.000	2.3100
12.500	2.7200

Name: 25591B (Pond3B) Base Flow(cfs): 0.000 Init Stage(ft): 3.300
Group: Basin-5 Warn Stage(ft): 11.000
Type: Stage/Area

Proposed Pond 3B

Stage(ft)	Area(ac)
-2.700	0.8830
3.300	1.2380
5.000	1.3410
10.000	1.6590
11.000	1.7230

Name: 25651 Base Flow(cfs): 0.000 Init Stage(ft): 4.080
Group: Basin-6 Warn Stage(ft): 10.530
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
4.080	0.0010
10.530	0.0100

Name: 25652 Base Flow(cfs): 0.000 Init Stage(ft): 4.230
Group: Basin-6 Warn Stage(ft): 9.230
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
4.230	0.0010
9.230	0.0100

Name: 25653 Base Flow(cfs): 0.000 Init Stage(ft): 5.930
Group: Basin-6 Warn Stage(ft): 10.930
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
5.930	0.0010
10.930	0.0100

Name: 25654 Base Flow(cfs): 0.000 Init Stage(ft): 7.870
Group: Basin-6 Warn Stage(ft): 12.630
Type: Stage/Area

Same as pre-dev condition

Stage(ft)	Area(ac)
7.870	0.0115
11.130	0.0115
11.630	1.0000
12.630	61.8500

Name: 25691 (Pond2) Base Flow(cfs): 0.000 Init Stage(ft): 3.630
Group: Basin-6 Warn Stage(ft): 9.130
Type: Stage/Area

Existing Pond-2
Adjusted for proposed revisions
Initial stage set at NWL

Stage(ft)	Area(ac)
-2.000	3.8400
0.000	4.1200

2.000	6.3400
3.630	6.9300
4.000	7.0700
5.000	7.3000
9.100	8.2800
11.000	9.8100

Name: 25692A (Pond1A) Base Flow(cfs): 0.000 Init Stage(ft): 3.630
Group: Basin-6 Warn Stage(ft): 9.100
Type: Stage/Area

Pond-1 north of Ramp A
Adjusted for proposed revisions
Initial stage set at NWL

Stage(ft)	Area(ac)
1.000	1.7090
2.000	1.9230
5.000	2.2550
9.100	2.7280
10.600	3.3330

Name: 25692B (Pond1B) Base Flow(cfs): 0.000 Init Stage(ft): 3.630
Group: Basin-6 Warn Stage(ft): 9.130
Type: Stage/Area

Pond-1 south of Ramp A
Adjusted for proposed revisions
Initial stage set at NWL

Stage(ft)	Area(ac)
-0.900	0.1940
2.000	3.6340
5.000	4.0530
9.100	4.6560
10.600	5.4200

==========
==== Pipes ====
==========

Name: 11440 From Node: 10432 Length(ft): 519.00
Group: BASE To Node: 10429 Count: 1
Friction Equation: Automatic

	UPSTREAM	DOWNSTREAM		
Geometry:	Rectangular	Rectangular	Solution Algorithm:	Most Restrictive
Span(in):	120.00	120.00	Flow:	Both
Rise(in):	48.00	48.00	Entrance Loss Coef:	0.00
Invert(ft):	3.000	2.750	Exit Loss Coef:	1.00
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular: Tapered inlet throat

Downstream FHWA Inlet Edge Description:
Rectangular: Tapered inlet throat

Name: 24IN-RCP From Node: 25692B (Pond1B) Length(ft): 220.00
Group: BASE To Node: 25691 (Pond2) Count: 1
Friction Equation: Automatic

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Most Restrictive
Span(in):	24.00	24.00	Flow:	Both
Rise(in):	24.00	24.00	Entrance Loss Coef:	0.00
Invert(ft):	1.630	1.330	Exit Loss Coef:	1.00
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:

Circular CMP: Mitered to slope

Name: 25505		From Node: 25553	Length(ft): 500.00	
Group: Basin-5		To Node: 25591A (Pond3A)	Count: 1	
			Friction Equation: Automatic	
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive	
Geometry:	Circular	Circular	Flow: Both	
Span(in):	60.00	60.00	Entrance Loss Coef: 0.00	
Rise(in):	60.00	60.00	Exit Loss Coef: 1.00	
Invert(ft):	-0.400	-0.440	Bend Loss Coef: 0.00	
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw	
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc	
Bot Clip(in):	0.000	0.000	Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

U/S invert Input from D&M-1995 study is -0.22, D/S inv. entered from topographical survey provided Dec 2017.

Name: 25506		From Node: 25554	Length(ft): 450.00	
Group: Basin-5		To Node: 25553	Count: 1	
			Friction Equation: Automatic	
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive	
Geometry:	Circular	Circular	Flow: Both	
Span(in):	60.00	60.00	Entrance Loss Coef: 0.00	
Rise(in):	60.00	60.00	Exit Loss Coef: 1.00	
Invert(ft):	1.130	-0.170	Bend Loss Coef: 0.00	
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw	
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc	
Bot Clip(in):	0.000	0.000	Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Input from D&M-1995 study, Approx inv. from Original Study channels slope (Table 7-1)

Name: 25512		From Node: 25550	Length(ft): 1130.00	
Group: Basin-5		To Node: 25591A (Pond3A)	Count: 1	
			Friction Equation: Automatic	
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive	
Geometry:	Circular	Circular	Flow: Both	
Span(in):	48.00	48.00	Entrance Loss Coef: 0.00	
Rise(in):	48.00	48.00	Exit Loss Coef: 1.00	
Invert(ft):	3.330	1.690	Bend Loss Coef: 0.00	
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw	
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc	
Bot Clip(in):	0.000	0.000	Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

U/S invert Input from D&M-1995 study, D/S inv. entered from topographical survey provided Dec 2017.

Name: 25513		From Node: 25551	Length(ft): 650.00	
Group: Basin-5		To Node: 25550	Count: 1	
			Friction Equation: Automatic	
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive	
Geometry:	Rectangular	Rectangular	Flow: Both	
Span(in):	36.00	36.00	Entrance Loss Coef: 0.00	
Rise(in):	36.00	36.00	Exit Loss Coef: 1.00	
Invert(ft):	4.770	3.330	Bend Loss Coef: 0.00	
Manning's N:	0.010000	0.010000	Outlet Ctrl Spec: Use dc or tw	
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc	
Bot Clip(in):	0.000	0.000	Stabilizer Option: None	

Upstream FHWA Inlet Edge Description:
Rectangular: Tapered inlet throat

Downstream FHWA Inlet Edge Description:
Rectangular: Tapered inlet throat

Input from D&M-1995 study, Approx inv. from slopes on (Table 7-1), does not match plan

Name:	25514	From Node:	25552	Length(ft): 1200.00
Group:	Basin-5	To Node:	25551	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Most Restrictive
Geometry:	Circular	Circular		Flow: Both
Span(in):	24.00	24.00		Entrance Loss Coef: 0.00
Rise(in):	24.00	24.00		Exit Loss Coef: 1.00
Invert(ft):	8.370	4.770		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Input from D&M-1995 study, Approx inv. from slopes on (Table 7-1), does not match plan

Name:	25515	From Node:	25553	Length(ft): 500.00
Group:	Basin-5	To Node:	25591A (Pond3A)	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Most Restrictive
Geometry:	Circular	Circular		Flow: Both
Span(in):	60.00	60.00		Entrance Loss Coef: 0.00
Rise(in):	60.00	60.00		Exit Loss Coef: 1.00
Invert(ft):	-0.220	-0.410		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

U/S invert Input from D&M-1995 study is -0.22, D/S inv. entered from topographical survey provided Dec 2017.

Name:	25516	From Node:	25554	Length(ft): 450.00
Group:	Basin-5	To Node:	25553	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Most Restrictive
Geometry:	Circular	Circular		Flow: Both
Span(in):	60.00	60.00		Entrance Loss Coef: 0.00
Rise(in):	60.00	60.00		Exit Loss Coef: 1.00
Invert(ft):	1.130	-0.170		Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Input from D&M-1995 study, Approx inv. from slopes on (Table 7-1)

Name:	25517	From Node:	25555	Length(ft): 900.00
Group:	Basin-5	To Node:	25554	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Most Restrictive
Geometry:	Circular	Circular		Flow: Both
Span(in):	60.00	60.00		Entrance Loss Coef: 0.00

Rise(in):	60.00	60.00	Exit Loss Coef: 1.00
Invert(ft):	6.630	1.730	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Input from D&M-1995 study, Approx inv. from slopes on (Table 7-1)

Name:	25519	From Node: 25557	Length(ft): 1350.00
Group:	Basin-5	To Node: 25554	Count: 1
			Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive
Geometry:	Circular	Circular	Flow: Both
Span(in):	60.00	60.00	Entrance Loss Coef: 0.00
Rise(in):	60.00	60.00	Exit Loss Coef: 1.00
Invert(ft):	8.670	5.030	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Input from D&M-1995 study, Approx inv. from slopes on (Table 7-1)

Name:	25613	From Node: 25692B (Pond1B)	Length(ft): 135.00
Group:	Basin-6	To Node: 25691 (Pond2)	Count: 1
			Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive
Geometry:	Rectangular	Rectangular	Flow: Both
Span(in):	60.00	60.00	Entrance Loss Coef: 0.00
Rise(in):	48.00	48.00	Exit Loss Coef: 1.00
Invert(ft):	5.680	4.900	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

CBC updated to reflect design length per proposed extension.

Name:	25614	From Node: 25651	Length(ft): 241.00
Group:	Basin-6	To Node: 25692B (Pond1B)	Count: 1
			Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive
Geometry:	Rectangular	Rectangular	Flow: Both
Span(in):	96.00	96.00	Entrance Loss Coef: 0.00
Rise(in):	48.00	48.00	Exit Loss Coef: 1.00
Invert(ft):	4.080	3.990	Bend Loss Coef: 0.00
Manning's N:	0.001000	0.001000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

Input from D&M-1995 study, D/S Inv. spprox. from Original Study (Table 7-1)

```
        Name: 25617              From Node: 25654             Length(ft): 700.00
       Group: Basin-6              To Node: 25653                  Count: 1
                                                          Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
    Geometry: Circular       Circular                         Flow: Both
    Span(in): 24.00          24.00                     Entrance Loss Coef: 0.00
    Rise(in): 24.00          24.00                         Exit Loss Coef: 1.00
  Invert(ft): 7.870          5.930                         Bend Loss Coef: 0.00
 Manning's N: 0.012000       0.012000                   Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                       Inlet Ctrl Spec: Use dc
Bot Clip(in): 0.000          0.000                     Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Input from D&M-1995 study

-------------------------------------------------------------------------------------------------
        Name: P-25591A           From Node: 25591A (Pond3A)    Length(ft): 252.00
       Group: Basin-5              To Node: 25591B (Pond3B)         Count: 1
                                                          Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
    Geometry: Rectangular    Rectangular                      Flow: Both
    Span(in): 84.00          84.00                     Entrance Loss Coef: 0.00
    Rise(in): 72.00          72.00                         Exit Loss Coef: 1.00
  Invert(ft): 0.150          0.830                         Bend Loss Coef: 0.00
 Manning's N: 0.012000       0.012000                   Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                       Inlet Ctrl Spec: Use dc
Bot Clip(in): 0.000          0.000                     Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

CBC updated to reflect design length per proposed extension.

=================================================================================================
==== Channels ===================================================================================
=================================================================================================

         Name: 25518             From Node: 25556             Length(ft): 650.00
        Group: Basin-5             To Node: 25554                  Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
     Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
   Invert(ft): 5.130          2.530                            Flow: Both
TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.100
  Manning's N: 0.020000       0.020000                     Expansion Coef: 0.300
 Top Clip(ft): 0.000          0.000                     Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000          0.000                         Exit Loss Coef: 0.000
    Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                           Inlet Ctrl Spec: Use dc
    Aux XSec1:                                         Stabilizer Option: None
 AuxElev2(ft):
    Aux XSec2:
Top Width(ft):
    Depth(ft):
Bot Width(ft): 5.000          5.000
 LtSdSlp(h/v): 1.00           1.00
 RtSdSlp(h/v): 1.00           1.00

Input from D&M-1995 study

-------------------------------------------------------------------------------------------------
         Name: 25520             From Node: 25558             Length(ft): 650.00
        Group: Basin-5             To Node: 25557                  Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
     Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
   Invert(ft): 9.030          8.670                            Flow: Both
TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.100
  Manning's N: 0.020000       0.020000                     Expansion Coef: 0.300
 Top Clip(ft): 0.000          0.000                     Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000          0.000                         Exit Loss Coef: 0.000
    Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                           Inlet Ctrl Spec: Use dc
    Aux XSec1:                                         Stabilizer Option: None
```

```
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 5.000          5.000
  LtSdSlp(h/v): 2.00           2.00
  RtSdSlp(h/v): 2.00           2.00

Input from D&M-1995 study

-------------------------------------------------------------------------------------------------------
          Name: 25615              From Node: 25652             Length(ft): 450.00
         Group: Basin-6              To Node: 25651                  Count: 1

                UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 4.930          4.130                               Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                  Contraction Coef: 0.100
   Manning's N: 0.020000       0.020000                    Expansion Coef: 0.300
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                       Exit Loss Coef: 0.000
     Main XSec:                                         Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                          Inlet Ctrl Spec: Use dc
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 5.000          5.000
  LtSdSlp(h/v): 1.00           1.00
  RtSdSlp(h/v): 1.00           1.00

Input from D&M-1995 study

-------------------------------------------------------------------------------------------------------
          Name: 25616              From Node: 25653             Length(ft): 450.00
         Group: Basin-6              To Node: 25652                  Count: 1

                UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 5.930          4.930                               Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                  Contraction Coef: 0.100
   Manning's N: 0.020000       0.020000                    Expansion Coef: 0.300
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                       Exit Loss Coef: 0.000
     Main XSec:                                         Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                          Inlet Ctrl Spec: Use dc
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 5.000          5.000
  LtSdSlp(h/v): 1.00           1.00
  RtSdSlp(h/v): 1.00           1.00

Input from D&M-1995 study, Approx D/S inv. from Original Study channels slope (Table 7-1)

===============================================================================================
==== Drop Structures ==========================================================================
===============================================================================================

         Name: 25611              From Node: 25691 (Pond2)      Length(ft): 215.00
        Group: Basin-6              To Node: 10432                  Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
     Geometry: Rectangular    Rectangular              Solution Algorithm: Most Restrictive
     Span(in): 84.00          84.00                               Flow: Both
     Rise(in): 72.00          72.00                    Entrance Loss Coef: 0.000
   Invert(ft): 1.090          1.000                       Exit Loss Coef: 1.000
  Manning's N: 0.010000       0.010000                  Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                      Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                        Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Rectangular Box: 90° headwall w/ 3/4" chamfers

Downstream FHWA Inlet Edge Description:
Rectangular Box: 90° headwall w/ 3/4" chamfers

From field survey

*** Weir 1 of 3 for Drop Structure 25611 ***
                                                                                    TABLE
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Vertical: Mavis           Top Clip(in): 0.000
```

```
                Flow: Both                    Weir Disc Coef: 3.200
            Geometry: Rectangular          Orifice Disc Coef: 0.600

            Span(in): 11.00                      Invert(ft): 3.620
            Rise(in): 6.00                Control Elev(ft): 3.620

*** Weir 2 of 3 for Drop Structure 25611 ***
                                                                  TABLE
               Count: 2                    Bottom Clip(in): 0.000
                Type: Vertical: Mavis         Top Clip(in): 0.000
                Flow: Both                   Weir Disc Coef: 3.200
            Geometry: Rectangular          Orifice Disc Coef: 0.600

            Span(in): 22.50                      Invert(ft): 4.120
            Rise(in): 58.56               Control Elev(ft): 4.120

*** Weir 3 of 3 for Drop Structure 25611 ***
                                                                  TABLE
               Count: 1                    Bottom Clip(in): 0.000
                Type: Horizontal              Top Clip(in): 0.000
                Flow: Both                   Weir Disc Coef: 3.200
            Geometry: Rectangular          Orifice Disc Coef: 0.600

            Span(in): 78.00                      Invert(ft): 9.830
            Rise(in): 39.00               Control Elev(ft): 9.830


-------------------------------------------------------------------------------------------------------
        Name: 25613A             From Node: 25692A (Pond1A)    Length(ft): 100.00
       Group: Basin-6              To Node: 25692B (Pond1B)         Count: 2

              UPSTREAM       DOWNSTREAM               Friction Equation: Automatic
    Geometry: Circular       Circular                Solution Algorithm: Most Restrictive
    Span(in): 18.00          18.00                              Flow: Both
    Rise(in): 18.00          18.00                   Entrance Loss Coef: 0.000
  Invert(ft): -0.500         -0.900                      Exit Loss Coef: 1.000
 Manning's N: 0.012000       0.012000                  Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                      Inlet Ctrl Spec: Use dc
Bot Clip(in): 0.000          0.000                        Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



*** Weir 1 of 2 for Drop Structure 25613A ***
                                                                  TABLE
               Count: 1                    Bottom Clip(in): 0.000
                Type: Horizontal              Top Clip(in): 0.000
                Flow: Both                   Weir Disc Coef: 3.200
            Geometry: Rectangular          Orifice Disc Coef: 0.600

            Span(in): 24.00                      Invert(ft): 9.500
            Rise(in): 37.00               Control Elev(ft): 9.500

*** Weir 2 of 2 for Drop Structure 25613A ***
                                                                  TABLE
               Count: 1                    Bottom Clip(in): 0.000
                Type: Vertical: Mavis         Top Clip(in): 0.000
                Flow: Both                   Weir Disc Coef: 3.200
            Geometry: Rectangular          Orifice Disc Coef: 0.600

            Span(in): 6.00                       Invert(ft): 3.620
            Rise(in): 999.00              Control Elev(ft): 3.620


-------------------------------------------------------------------------------------------------------
        Name: D-25511            From Node: 25591B (Pond3B)    Length(ft): 140.00
       Group: Basin-5              To Node: 10432                   Count: 1

              UPSTREAM       DOWNSTREAM               Friction Equation: Automatic
    Geometry: Rectangular    Rectangular             Solution Algorithm: Most Restrictive
    Span(in): 84.00          84.00                              Flow: Both
    Rise(in): 72.00          72.00                   Entrance Loss Coef: 0.000
  Invert(ft): 1.130          1.000                       Exit Loss Coef: 1.000
 Manning's N: 0.012000       0.012000                  Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                      Inlet Ctrl Spec: Use dc
Bot Clip(in): 0.000          0.000                        Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Rectangular Box: 0° wingwall flares

Downstream FHWA Inlet Edge Description:
```

Rectangular Box: 0° wingwall flares

*** Weir 1 of 3 for Drop Structure D-25511 ***

			TABLE
Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	192.00	Invert(ft):	9.200
Rise(in):	36.00	Control Elev(ft):	9.200

*** Weir 2 of 3 for Drop Structure D-25511 ***

			TABLE
Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	6.84	Invert(ft):	3.300
Rise(in):	6.00	Control Elev(ft):	3.300

*** Weir 3 of 3 for Drop Structure D-25511 ***

			TABLE
Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	240.00	Invert(ft):	3.800
Rise(in):	42.00	Control Elev(ft):	3.800

==== Weirs ====

Name:	W-25591A	From Node:	25591A (Pond3A)
Group:	Basin-5	To Node:	25591B (Pond3B)
Flow:	Both	Count:	1
Type:	Vertical: Paved	Geometry:	Trapezoidal
Bottom Width(ft):	65.00		
Left Side Slope(h/v):	3.00		
Right Side Slope(h/v):	100.00		
Invert(ft):	21.500		
Control Elevation(ft):	21.500		
Struct Opening Dim(ft):	9999.00		
			TABLE
Bottom Clip(ft):	0.000		
Top Clip(ft):	0.000		
Weir Discharge Coef:	2.800		
Orifice Discharge Coef:	0.600		

==== Hydrology Simulations ====

Name: 010y024h
Filename: C:\Drainage\Projects\THEA - PSR\ICPR3\HDR Update\010y024h.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Flmod
Rainfall Amount(in): 7.10

Time(hrs)	Print Inc(min)
9.000	10.00
14.000	0.10
21.000	2.00
24.000	0.10
36.000	5.00
48.000	30.00

Name: 025y024h
Filename: C:\Drainage\Projects\THEA - PSR\ICPR3\HDR Update\025y024h.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Flmod

Rainfall Amount(in): 8.25

Time(hrs)	Print Inc(min)
9.000	10.00
14.000	0.10
21.000	2.00
24.000	0.10
36.000	5.00
48.000	30.00

Name: 100y024h
Filename: C:\Drainage\Projects\THEA - PSR\ICPR3\HDR Update\100y024h.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Flmod
Rainfall Amount(in): 11.25

Time(hrs)	Print Inc(min)
9.000	10.00
14.000	0.10
20.000	2.00
24.000	0.10
30.000	5.00
36.000	5.00
48.000	30.00

==========
==== Routing Simulations ==========
==========

Name: 010y024h Hydrology Sim: 010y024h
Filename: C:\Drainage\Projects\THEA - PSR\ICPR3\HDR Update\010y024h.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 48.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: 10 Yr Boundary Flows:

Time(hrs)	Print Inc(min)
9.000	15.000
14.000	5.000
21.000	15.000
24.000	5.000
36.000	15.000
48.000	30.000

Group	Run
BASE	Yes
Basin-5	Yes
Basin-6	Yes

Name: 025y024h Hydrology Sim: 025y024h
Filename: C:\Drainage\Projects\THEA - PSR\ICPR3\HDR Update\025y024h.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 48.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: 25 Yr Boundary Flows:

Time(hrs)	Print Inc(min)
9.000	15.000
14.000	5.000
21.000	15.000
24.000	5.000
36.000	15.000

48.000 30.000

Group	Run
BASE	Yes
Basin-5	Yes
Basin-6	Yes

Name: 100y024h Hydrology Sim: 100y024h
Filename: C:\Drainage\Projects\THEA - PSR\ICPR3\HDR Update\100y024h.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 48.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: 100 Yr Boundary Flows:

Time(hrs)	Print Inc(min)
9.000	15.000
10.000	5.000
21.000	15.000
24.000	5.000
36.000	15.000
48.000	30.000

Group	Run
BASE	Yes
Basin-5	Yes
Basin-6	Yes

==========

==== Boundary Conditions ====

==========

Name: 25 Yr Node: 10429 Type: Stage

Time(hrs)	Stage(ft)
0.000	2.750
5.000	2.850
10.000	3.250
11.000	3.450
12.000	4.000
12.500	5.150
13.000	5.600
14.000	5.900
15.000	6.250
17.500	6.750
25.000	6.750
36.000	6.750
48.000	6.750

Name: 100 Yr Node: 10429 Type: Stage

Time(hrs)	Stage(ft)
0.000	2.750
5.000	2.900
10.000	3.300
11.500	4.000
12.500	6.000
13.000	6.600
14.000	6.750
25.000	6.750
26.000	6.750
27.000	6.750
28.000	6.750
29.000	6.750
48.000	6.750

Name: 10 Yr Node: 10429 Type: Stage

Time(hrs)	Stage(ft)

0.000	2.750
5.000	2.850
10.000	3.250
11.000	3.450
12.000	4.000
12.500	5.150
13.000	5.600
14.000	5.900
15.000	6.250
17.500	6.750
22.000	6.750
25.000	6.750
48.000	6.750

Gandy Basin
Post-Development Conditions
Node Min/Max

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
10429	BASE	010y024h	17.50	6.75	7.63	0.0032	746	20.80	131.92	0.00	0.00
10432	BASE	010y024h	20.83	7.14	11.13	-0.0049	702	20.83	130.75	20.83	130.75
25550	Basin-5	010y024h	19.51	8.11	12.13	-0.0047	663	13.53	43.79	13.59	43.63
25551	Basin-5	010y024h	18.98	8.65	13.13	0.0045	610	17.63	28.38	17.83	28.35
25552	Basin-5	010y024h	20.51	12.90	13.63	-0.0073	587414	17.47	20.12	25.12	15.02
25553	Basin-5	010y024h	20.30	7.75	12.63	0.0068	522	19.36	72.83	19.69	72.50
25554	Basin-5	010y024h	20.26	7.85	12.73	-0.0026	8361	19.69	65.87	19.36	67.44
25555	Basin-5	010y024h	20.35	8.90	11.13	0.0021	2209	20.37	32.11	20.45	32.11
25556	Basin-5	010y024h	20.19	7.87	11.13	0.0010	4048	18.53	22.56	18.77	22.48
25557	Basin-5	010y024h	23.51	10.04	13.67	0.0014	6455	23.42	13.63	23.39	13.63
25558	Basin-5	010y024h	23.46	10.28	12.93	0.0012	3460	23.37	13.63	23.42	13.63
25591A (Pond3A)	Basin-5	010y024h	20.41	7.62	11.00	0.0025	86848	18.87	104.10	19.61	100.51
25591B (Pond3B)	Basin-5	010y024h	20.51	7.48	11.00	0.0025	65333	19.58	101.08	19.96	100.27
25651	Basin-6	010y024h	22.39	7.57	10.53	0.0020	3803	14.50	34.76	14.51	34.22
25652	Basin-6	010y024h	22.39	7.58	9.23	0.0018	4921	14.47	28.05	14.45	27.69
25653	Basin-6	010y024h	22.49	7.61	10.93	0.0010	2749	25.33	11.45	25.50	11.48
25654	Basin-6	010y024h	25.36	9.72	12.63	0.0017	930	25.33	11.45	25.33	11.45
25691 (Pond2)	Basin-6	010y024h	22.37	7.52	9.13	0.0008	344565	12.92	44.76	26.25	36.45
25692A (Pond1A)	Basin-6	010y024h	23.74	7.79	9.10	0.0008	112264	13.43	17.42	27.34	3.86
25692B (Pond1B)	Basin-6	010y024h	22.40	7.56	9.13	0.0011	194281	13.36	53.85	22.67	28.05
10429	BASE	025y024h	17.50	6.75	7.63	0.0032	130	19.82	166.47	0.00	0.00
10432	BASE	025y024h	19.84	7.37	11.13	-0.0223	722	17.38	172.93	19.84	164.93
25550	Basin-5	025y024h	18.34	8.56	12.13	-0.0047	663	13.17	51.69	13.24	51.54
25551	Basin-5	025y024h	17.87	9.27	13.13	0.0045	610	16.91	31.99	16.89	31.95
25552	Basin-5	025y024h	21.03	13.11	13.63	-0.0100	990921	16.70	26.19	28.83	15.70
25553	Basin-5	025y024h	19.14	8.13	12.63	0.0067	533	18.83	93.75	18.64	93.50
25554	Basin-5	025y024h	19.22	8.30	12.73	0.0031	10285	18.64	85.82	18.83	86.53
25555	Basin-5	025y024h	19.49	9.13	11.13	0.0040	2706	19.47	41.77	19.47	41.77
25556	Basin-5	025y024h	19.17	8.32	11.13	0.0013	4372	17.73	29.22	17.50	29.13
25557	Basin-5	025y024h	22.21	10.25	13.67	0.0015	6877	22.14	17.92	22.19	17.92
25558	Basin-5	025y024h	22.19	10.49	12.93	0.0014	3752	22.08	17.92	22.14	17.92
25591A (Pond3A)	Basin-5	025y024h	19.35	7.91	11.00	0.0029	87805	17.58	129.49	17.50	128.06
25591B (Pond3B)	Basin-5	025y024h	19.53	7.69	11.00	0.0029	65914	17.50	128.98	17.38	144.91
25651	Basin-6	025y024h	21.37	7.94	10.53	0.0025	3994	14.11	45.67	14.17	44.97
25652	Basin-6	025y024h	21.36	7.96	9.23	0.0021	5288	14.07	36.96	14.04	36.42
25653	Basin-6	025y024h	21.43	7.98	10.93	0.0013	2398	24.10	15.76	24.10	15.79
25654	Basin-6	025y024h	23.71	11.14	12.63	0.0021	1590	23.98	15.71	24.10	15.76
25691 (Pond2)	Basin-6	025y024h	21.36	7.87	9.13	0.0012	348232	12.80	56.82	23.09	49.32
25692A (Pond1A)	Basin-6	025y024h	22.62	8.23	9.10	0.0012	114484	13.12	22.23	26.05	4.83
25692B (Pond1B)	Basin-6	025y024h	21.38	7.94	9.13	0.0017	196667	13.11	70.48	17.37	40.25
10429	BASE	100y024h	14.00	6.75	7.63	0.0026	130	18.06	255.64	0.00	0.00
10432	BASE	100y024h	18.13	8.21	11.13	-0.0215	794	18.13	253.03	18.13	253.03
25550	Basin-5	100y024h	13.50	10.87	12.13	-0.0047	663	12.73	71.94	12.77	71.57
25551	Basin-5	100y024h	16.31	11.80	13.13	0.0068	15471	15.87	40.14	16.27	39.90
25552	Basin-5	100y024h	22.43	13.50	13.63	-0.0124	1771455	15.47	44.57	33.94	16.48
25553	Basin-5	100y024h	17.48	9.94	12.63	0.0072	590	15.78	145.85	15.60	145.43
25554	Basin-5	100y024h	17.50	10.35	12.73	0.0035	8180	15.60	147.30	15.71	133.32
25555	Basin-5	100y024h	19.28	10.81	11.13	-0.0049	1624817	17.63	70.83	21.66	75.69
25556	Basin-5	100y024h	17.50	10.36	11.13	0.0042	5828	16.37	49.27	15.60	61.24
25557	Basin-5	100y024h	19.88	10.80	13.67	0.0012	7839	19.80	31.08	19.88	31.07
25558	Basin-5	100y024h	19.86	11.02	12.93	0.0015	4496	19.77	31.08	19.80	31.08
25591A (Pond3A)	Basin-5	100y024h	17.54	9.41	11.00	0.0029	92774	13.67	200.60	16.16	190.34
25591B (Pond3B)	Basin-5	100y024h	17.74	8.93	11.00	0.0026	69345	13.93	193.00	16.88	189.42
25651	Basin-6	100y024h	18.98	9.09	10.53	-0.0050	3665	13.49	77.70	13.50	76.45
25652	Basin-6	100y024h	18.97	9.10	9.23	0.0030	6405	13.48	63.14	13.49	61.87
25653	Basin-6	100y024h	18.97	9.10	10.93	0.0023	2992	30.65	18.58	22.40	18.89
25654	Basin-6	100y024h	27.44	12.17	12.63	-0.0073	1473875	22.33	27.99	30.65	18.58
25691 (Pond2)	Basin-6	100y024h	19.04	8.98	9.13	0.0031	359497	14.96	98.33	23.14	72.30
25692A (Pond1A)	Basin-6	100y024h	20.24	9.58	9.10	0.0030	127295	12.90	36.58	25.05	8.42

Gandy Basin
Post-Development Conditions
Node Min/Max

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
25692B (Pond1B)	Basin-6	100y024h	18.97	9.08	9.13	0.0031	203000	12.70	119.35	15.47	69.48

Appendix I: Correspondence

Meeting Minutes

Project:	South Selmon PD&E Study
Subject:	Stormwater Coordination with the City of Tampa
Date:	Friday, October 09, 2020
Location:	Remote – WebEx
Attendees:	Carlos Lopez (HDR) Alexander Miller (HDR) Alphonse Stewart (HNTB/THEA) Anna Quinones (THEA) Brian Pickard (THEA) Judith Villegas (THEA) Alexander Awad (City of Tampa) Ben Allushuski (City of Tampa) Steven Lopes (City of Tampa)

A coordination meeting was held for HDR to update the City of Tampa Stormwater Department on the ongoing South Selmon PD&E Study Pond Siting Report. HDR introduced the project and briefly went over the basins that would be most impacted by the project. An open discussion of various flooding and capacity issues ensued.

Alexander Awad brought up that many of the City-owned stormwater outfalls, including the Euclid and Palma Ceia system, required 50% more capacity to function correctly. He cautioned that all outfalls should be considered undersized, since flooding issues in this heavily urbanized area are frequent and ubiquitous.

Alexander Awad and Ben Allushuski also brought up modeling work that has been done in this area. Ben later provided all relevant models to HDR/THEA. Ben mentioned that within the Palma Ceia basin, significant flooding occurred in the Parkland Estates neighborhood. Some analysis was done by City staff that showed a 60” pipe, placed adjacent to THEA right-of-way, could improve the flooding in this area. HDR agreed to consider this suggestion in the Pond Siting Report. Ben also noted that the large junction box, upstream of the dual 60” and box culvert outfall within the Palma Ceia basin, had upwards of 5 feet of head loss, which was causing some of the flooding, according to his modeling.

Appendix J -
Cost Estimates

Project:	Selmon Expressway PSR	Prepared by:	AJM	Date:	3/15/2021
Project Number:	HI-0012	Checked by:	TR	Date:	3/17/2021
Basin Name:	Palma Ceia	Location:	Tampa, FL		

Alternative 1 Cost Estimates

FDOT Pay Item	Description	Quantity	Unit	Unit Price	Cost
430-175-136	PIPE CULVERT, OPT MAT, ROUND, 36" S/CD	712	LF	$140.30	$99,893.60
	UTILITY CONFLICT STRUCTURE	1	EA	$15,000.00	$15,000.00
425-2-71	MANHOLES, J-7, <10'	8	EA	$8,410.31	$67,282.48
110-1-1	CLEARING AND GRUBBING	0.5	AC	$31,259.83	$15,629.92
160-4	TYPE B STABILIZATION	1755	SY	$6.73	$11,811.15
285-706	OPTIONAL BASE GROUP 6	1755	SY	$22.17	$38,908.35
	TURNOUT CONSTRUCTION-ASPHALT/DRIVEWAY				
286-2	BASE-ASPHALT	144.8	TN	$178.94	$25,910.51
334-1-11	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	289.6	TN	$122.37	$35,438.35
	CONC. SHEET PILE PANEL	600	SF	$265.00	$159,000.00
	CONCRETE CAP	6.6	CY	$1,000.00	$6,600.00
	REINFORCING STEEL	990	LB	$2.00	$1,980.00
	CONCRETE TRAFFIC RAILING-BRIDGE	40	LF	$282.00	$11,280.00
0522-2	CONCRETE SIDEWALK AND DRIVEWAYS (6" THICK)	30	SY	$61.68	$1,850.40
0520-3	VALLEY GUTTER - CONC	50	LF	$31.96	$1,598.00
	STORMWATER BAFFLE BOX	1	EA	$53,000.00	$53,000.00
				SUBTOTAL	$545,182.76
				Mobilization (10%)	$54,518.28
				MOT (20%)	$119,940.21
				Unknowns (30%)	$215,892.37
				TOTAL	**$935,533.61**

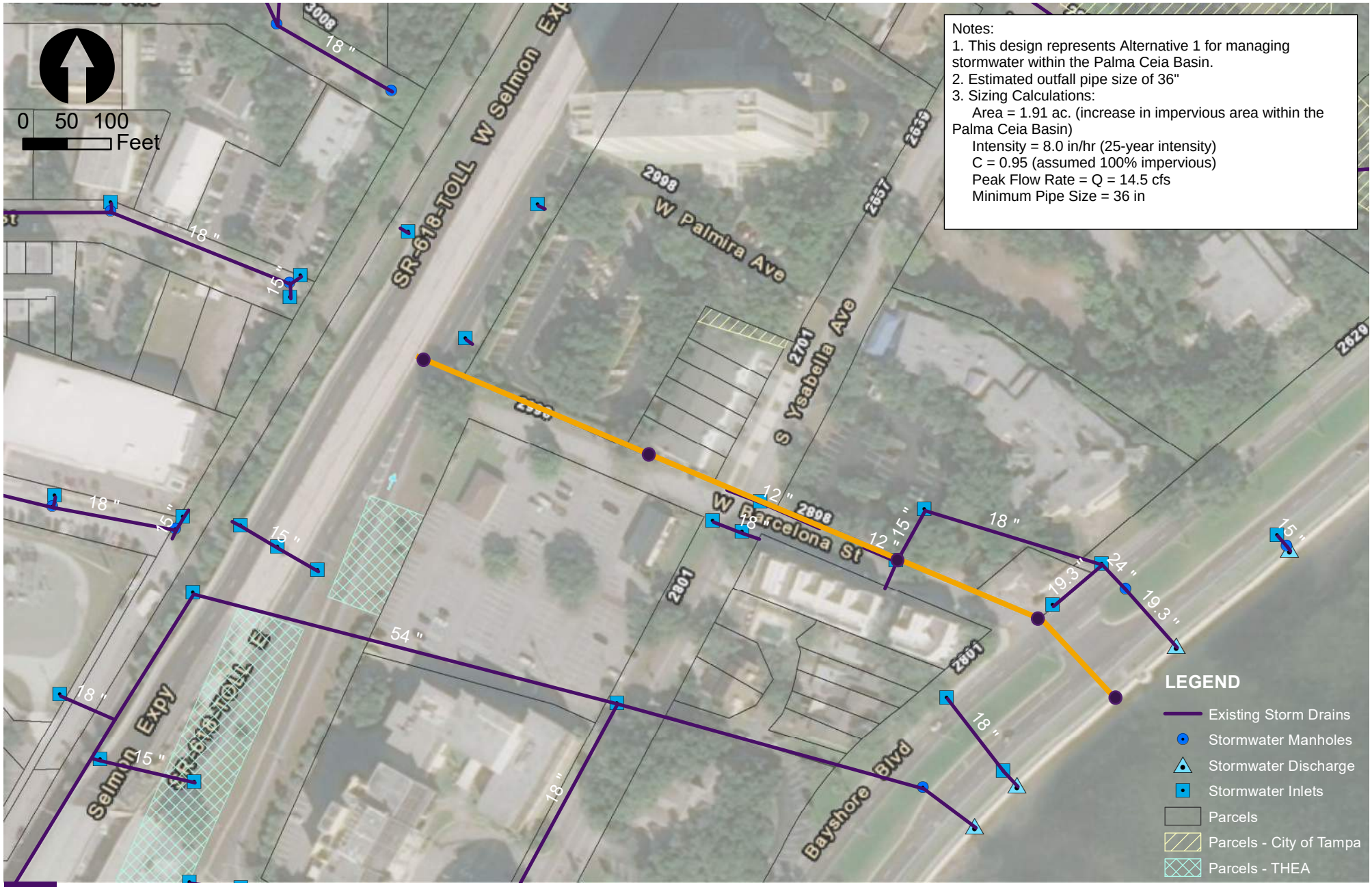
Note: Unit prices taken from higher of FDOT Area 8 twelve-month rolling average (Dec. 2019 to Nov. 2020) or TBNext-specific unit prices provided by the Tampa Hillsborough Expressway Authority. For items without an FDOT Pay Item Number, industry standard costs were used. Stormwater Baffle Box unit price provided by Contech.

Project:	Selmon Expressway PSR	Prepared by:	AJM	Date:	4/13/2021
Project Number:	HI-0012	Checked by:	CL	Date:	4/13/2021
Basin Name:	Palma Ceia	Location:	Tampa, FL		

Alternative 1 Cost Estimates

FDOT Pay Item	Description	Quantity	Unit	Unit Price	Cost
430-175-172	PIPE CULVERT, OPT MAT, ROUND, 72" S/CD	712	LF	$365.00	$259,880.00
	UTILITY CONFLICT STRUCTURE	1	EA	$15,000.00	$15,000.00
425-2-71	MANHOLES, J-7, <10'	8	EA	$8,410.31	$67,282.48
110-1-1	CLEARING AND GRUBBING	0.5	AC	$31,259.83	$15,629.92
160-4	TYPE B STABILIZATION	1755	SY	$6.73	$11,811.15
285-706	OPTIONAL BASE GROUP 6	1755	SY	$22.17	$38,908.35
	TURNOUT CONSTRUCTION-ASPHALT/DRIVEWAY				
286-2	BASE-ASPHALT	144.8	TN	$178.94	$25,910.51
334-1-11	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	289.6	TN	$122.37	$35,438.35
	CONC. SHEET PILE PANEL	600	SF	$265.00	$159,000.00
	CONCRETE CAP	6.6	CY	$1,000.00	$6,600.00
	REINFORCING STEEL	990	LB	$2.00	$1,980.00
	CONCRETE TRAFFIC RAILING-BRIDGE	40	LF	$282.00	$11,280.00
0522-2	CONCRETE SIDEWALK AND DRIVEWAYS (6" THICK)	30	SY	$61.68	$1,850.40
0520-3	VALLEY GUTTER - CONC	50	LF	$31.96	$1,598.00
	STORMWATER BAFFLE BOX	1	EA	$106,000.00	$106,000.00
				SUBTOTAL	$758,169.16
				Mobilization (10%)	$75,816.92
				MOT (20%)	$166,797.21
				Unknowns (30%)	$300,234.99
				TOTAL	**$1,301,018.28**

Note: Unit prices taken from higher of FDOT Area 8 twelve-month rolling average (Dec. 2019 to Nov. 2020) or TBNext-specific unit prices provided by the Tampa Hillsborough Expressway Authority. For items without an FDOT Pay Item Number, industry standard costs were used. Stormwater Baffle Box unit price provided by Contech. Cost estimate for 72" Stormwater Baffle Box shown above assumed to be twice as much as the 36" baffle box cost estimate provided by Contech.



SELMON EXPRESSWAY | South Selmon PD&E Study

PALMA CEIA ALTERNATIVE 1: NEW OUTFALL

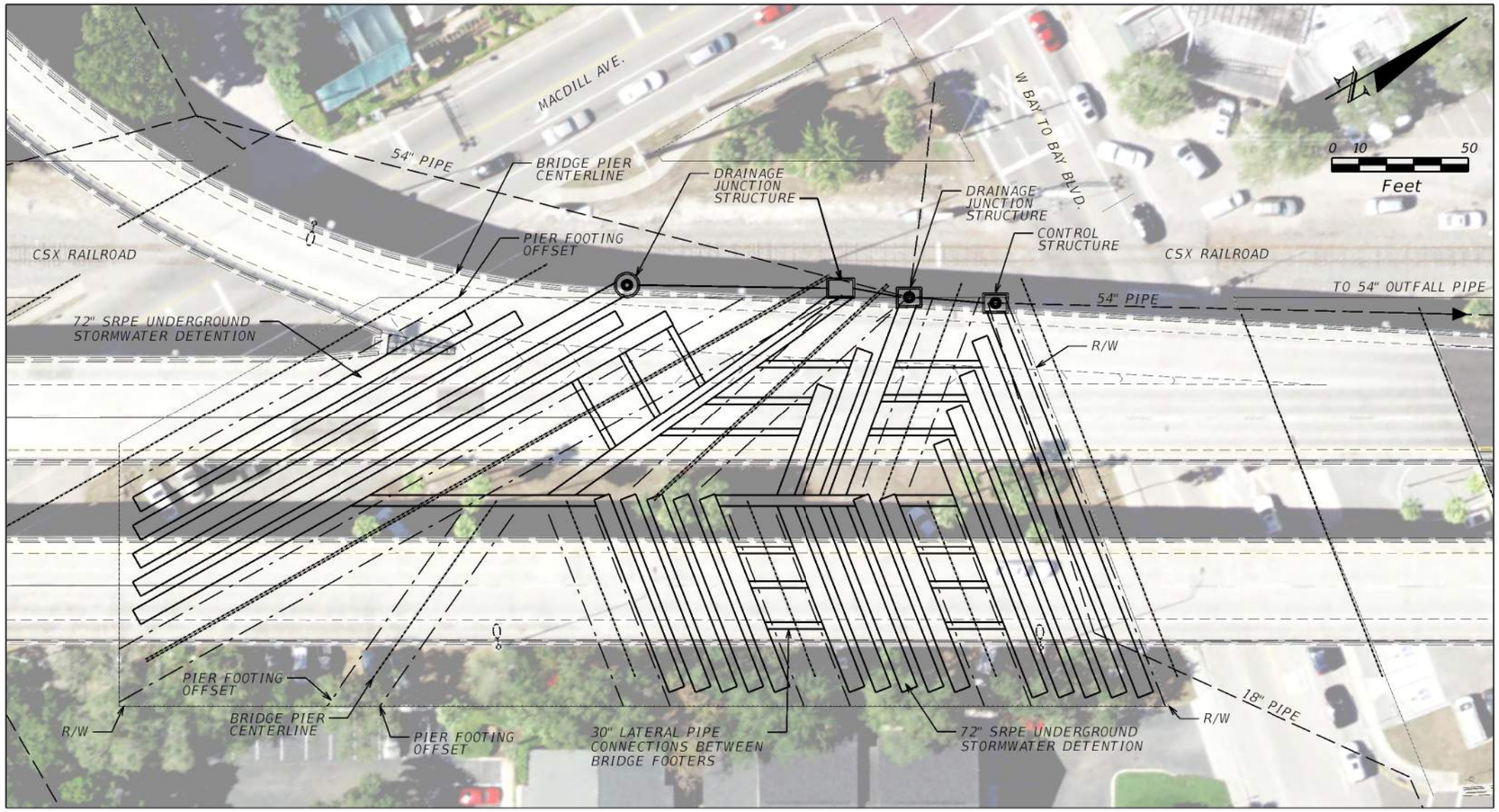
SOUTH SELMON PD&E STUDY: POND SITING REPORT

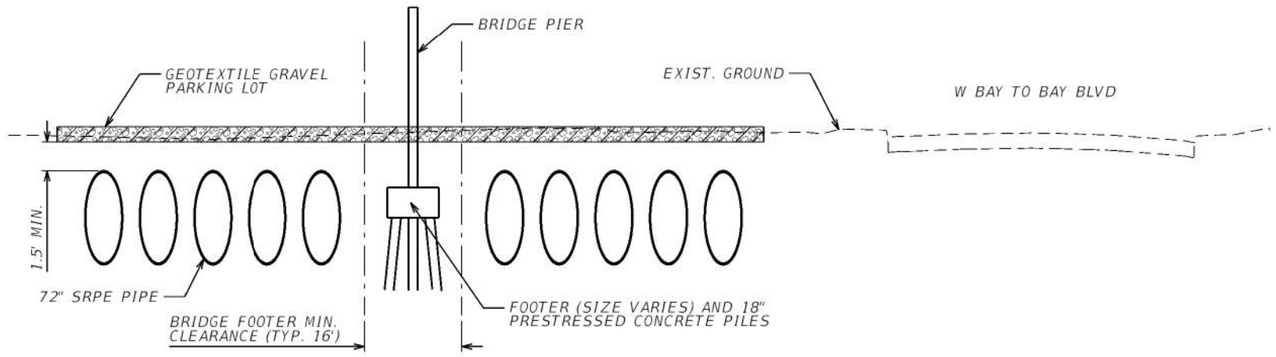
Project:	Selmon Expressway PSR	Prepared by:	AJM	Date:	11/5/2020
Project Number:	HI-0012	Checked by:	CL	Date:	2/1/2021
Basin Name:	Palma Ceia	Location:	Tampa, FL		

Alternative 2 Cost Estimates (Provided by Contech)

Description	Quantity	Unit	Unit Price	Cost
72" Duromaxx SRPE Pipe	2450	LF	-	-
HP Bell & Spigot Joint			-	-
72" Bulkheads	46	EA	-	-
36" Risers	44	EA	-	-
30" Pipe Stubs	44	EA	-	-
		SUBTOTAL*		$982,000.00
		Mobilization (10%)		$98,200.00
		MOT (0%)		$0.00
		Unknowns (10%)		$108,020.00
		TOTAL		**$1,188,220.00**

**Lump sum cost estimate provided by Contech*





NOTES:

1. UNDERGROUND STORMWATER VAULT SYSTEM DESIGNED USING CONTECH DUROMAXX 72" SRPE OR EQUIVALENT PIPES. THIS DESIGN REPRESENTS ALTERNATIVE 2 FOR MANAGING STORMWATER WITHIN THE PALMA CEIA BASIN.

2. PRELIMINARY PIPE SYSTEM SHOWN PROVIDES 1.54 AC-FT. OF OF STORAGE BETWEEN ELEVATIONS 7.0 AND 13.0 (NAVD 88).

3. VOLUME CALCULATION:
   PIPE SIZE = 72"
   INSIDE DIAMETER = 70.9 IN. = 5.91 FT.
   TOTAL PIPE LENGTH = 2450 FT.
   PROVIDED VOLUME = 67171.6 FT3 = 1.54 AC-FT.

4. LATERAL PIPE CONNECTIONS (30") AND ADDITIONAL DRAINAGE JUNCTION BOXES ARE PROVIDED TO ASSURE ADEQUATE HYDRAULIC CONNECTIVITY.

REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			STORMWATER VAULT TYPICAL DETAIL	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		

CONTECH®
ENGINEERED SOLUTIONS

DuroMaxx® Steel Reinforced Polyethylene Technology

LEED with Contech®

Sanitary & Storm Sewer | Reline | Irrigation | Stormwater/CSO/SSO Detention

DuroMaxx®
STEEL REINFORCED PE TECHNOLOGY

CONTECH®
PIPE SOLUTIONS

Key Performance Advantages

» Manufactured in accordance with ASTM F2562 and AASHTO MP-20.

The Strength of Steel. The Durability of Plastic.

It's the ideal combination of materials that makes DuroMaxx an exceptional pipe. 80 ksi steel reinforcing ribs provide the strength, and pressure rated Polyethylene Resin (PE) provides the durability. This combination of materials results in an extraordinarily strong and durable pipe. DuroMaxx is designed with a smooth waterway wall for outstanding hydraulic capacity. These materials provide the properties you can count on for long service and trouble-free performance in the most demanding environments.

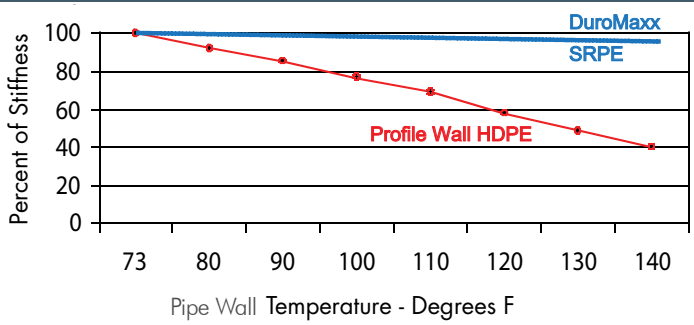
Lifelong Performance

DuroMaxx steel reinforced ribbed profile wall construction will not creep or buckle. The built-in capacity of the high strength steel eliminates concerns that have long plagued profile wall HDPE pipe. Today, it is possible to design with confidence to meet the long-term structural demands of the most difficult **sanitary & storm sewer, reline, irrigation, and stormwater/CSO/SSO detention** projects.

Temperature Effects on Strength

All flexible pipes must be designed to have adequate pipe stiffness to resist handling, installation and construction loads and to minimize deflection, ensuring a successful installation. Published pipe stiffness levels are measured at 73°F in a laboratory. The actual or apparent field pipe stiffness due to the effects of sunlight and a modest 80° temperature can produce results that are very different in the field – where it counts. A pipe wall temperature in excess of 110°results in a loss of pipe stiffness greater than 30% for a non-reinforced profile wall polyethylene pipe. Steel reinforced DuroMaxx pipe loses less than 1% of its stiffness under the same conditions because the steel provides the pipe stiffness, not the PE plastic. As a result, DuroMaxx can be twice as stiff as non-steel reinforced HDPE pipe.

Effective Pipe Stiffness vs. Temperature*



*The information in this graph is an average stiffness loss observed over several diameters of one AASHTO M-294 HDPE profile wall product.

High Strength Steel & High Performance Pressure Rated Resins

Predictable service life demands predictable material properties. DuroMaxx uses only high quality pressure rated PE resin that provides predictable engineering properties including crack resistance, tensile strength and modulus of elasticity. Hydrostatic Design Basis (HDB) testing verifies and documents important 50 and 100 year design properties that aid the professional engineer when designing piping systems.

Unlike unreinforced plastic pipes which rely fully on time/strain sensitive materials for their structural performance, DuroMaxx's steel reinforcement provides 100% of the load carrying capacity. DuroMaxx resin contains 3% carbon black which long-standing research has shown will inhibit the affects of UV degradation (strength loss and brittleness) in excess of 50 years of direct exposure to sunlight. Therefore, the strength of DuroMaxx does not diminish over time, nor is it significantly impacted by elevated summertime temperatures.

Multiple Joint Options

DuroMaxx's steel reinforced bell and spigot joint achieves a level of watertight joint performance that sets it apart from conventional pipe products. The DuroMaxx steel reinforced high performance (HP) joint is designed to meet, exceed, and maintain the highest standards of performance when tested in accordance with ASTM D3212. Additional options include: soil tight (ST) and welded coupler (WC) joints.

Hydraulic Performance

High flow rates are achieved with a smooth polyethylene waterway wall for optimal savings. Target flow rates can be assured with DuroMaxx by contacting your local Contech sales engineer for the appropriate information. Manning's "n" values will range between 0.011 to 0.013, depending on velocity and flow rate.

Savings

DuroMaxx pipe is lightweight and can be easily handled and quickly installed, often eliminating the need to use heavy construction equipment. The outside diameter (OD) of DuroMaxx is smaller than other conventional pipe materials, resulting in less trench excavation. As the two main cost drivers to install water conveyance products are manpower and machinery, DuroMaxx provides the opportunity to save in both, resulting in less overall spending. The longer lengths and easy joint assembly are just some of the DuroMaxx installation advantages. DuroMaxx should be installed in accordance with nationally accepted ASTM D2321 installation practices. Contact your local Contech representative for the DuroMaxx Installation Guide.

Fittings & Fabricated Manholes

DuroMaxx pipe is available with a full range of fabricated fittings such as elbows, tees, wyes, slope junctions and reducers. Both standard and custom fittings can be readily fabricated, which can result in fewer concrete structures and lower project costs. Manhole structures fabricated with DuroMaxx and HDPE pipe can be an excellent alternative to precast or cast-in-place concrete manholes and structures by providing greater durability and better hydraulic flow through the structure. This solution is both efficient and cost effective.

Sizes

Available in diameters from 30 to 120 inches and manufactured in standard lengths of 14 or 24 feet with bell and spigot joints, DuroMaxx has fewer joints to assemble on site, resulting in faster installation rates for the contractor. If your project requires custom lengths, contact your Contech representative for details and availability.

Pipe Dimensions & Handling Weights

Nom. Pipe Dia.(in)	Pipe OD (in)	Pipe ID (in)	Bell OD (in)	Min. Cover (ft)	Max. Cover (ft)**	Approx. Weight (lbs/ft)
30	30.9	29.5	34.0	1.0	50	18.8
36	37.1	35.4	39.9	1.0	50	23.6
42	43.2	41.3	45.8	1.0	50	27.0
48	49.5	47.2	52.3	1.0	30	30.8
54	55.5	53.2	58.2	1.0	30	36.1
60	61.4	59.1	64.1	1.0	30	42.9
66	67.8	65.0	71.6	1.5	30	56.9
72	73.7	70.9	77.6	1.5	30	65.6
84	85.9	82.7	88.9	2.0	30	76.3
96	97.8	94.5	NA*	2.0	30	87.0
108	111.3	108	NA*	2.5	25	99.7
120	121.9	118.1	NA*	3.0	25	109.0

* Currently available with welded coupler (WC) joints or plain ended with or without soil tight (ST) joints.

** The maximum cover limits shown in the table above are conservative and greater burial depths are possible. Contact your local Sales Engineer for project specific information.

Environmental Benefits

Contech is an environmentally conscious company committed to shaping the future of green building and design. Contech offers a wide range of site solutions that respond to green building and construction needs and can contribute towards LEED® and NAHB green credits. DuroMaxx has the potential to contribute to a variety of LEED credits in the categories for sustainable sites, water efficiency, materials and resources, innovation in design and regional priority. DuroMaxx consumes 35% less of the natural resources required to produce AASHTO M-294 pipe. The steel reinforcing ribs in the profile wall that provide the structural integrity for the pipe are made out of steel with recycled content levels ranging from 55-80%.

About LEED

A third party certification program, U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) Green Building Rating System™ is based on points and evaluates the overall performance of a green building project by assessing each of the materials and systems used in aggregate.

Sanitary Sewer & Yard Piping

Large diameter sanitary sewer projects can be tough to deal with for many agencies. These long interceptors or trunk lines can run for miles, from manhole to manhole, eating away at an already constrained budget. Much of the costs can be contributed to installation realities for large quantities of very large diameters. These costs can include:

- Freight and number of trucks needed.
- Number of picks and weight of those picks.
- Number of joints and procedure to meet watertight standard.
- Other material costs.

DuroMaxx provides real answers that help make the agency's and engineer's job easier. Outstanding performance and value are clearly evident when comparing DuroMaxx to a wide variety of other products such as RCP, HDPE, Polypropylene, PVC and fiberglass pipe.

Benefits

- Large diameters up to 120 inches.
- Predictable, high strength for deep covers, shape and deflection control.
- Joint tightness that meets initial testing requirements and long-term infiltration/exfiltration needs.
- Resistant to corrosive effluent.
- Smooth inner walls allow for minimum slope designs and longer runs.
- Lightweight for installation efficiency.

Shelley, Idaho
14 miles installed up to 48" diameter

DuroMaxx
Sanitary System

Barker Ranch,
Washington
3 miles
54″ & 60″ diameter

DuroMaxx
Irrigation System

Irrigation Applications

Agriculture and irrigation agencies are in need of more dependable and cost effective solutions to conserve their most valuable resource, water. Many are enclosing ditches and canals with pipe conveyance systems in remote areas of the country. These projects can be challenging to any engineer or project manager, especially when hydraulic parameters require larger diameter pipe sizes. DuroMaxx has proven solutions to these problems.

Benefits

- HDB pressure rated PE resins provide superior corrosion resistance.
- A variety of joint configurations and joint tightness levels are available to meet your specific project needs.
- Installation cost advantages important for remote locations.
- Versatile fabrication supports unique fittings and components.
- Excels in short and long-term cost analysis for irrigation applications.

100-Year Gravity Flow Capabilities
50-Year Pressurized Service Period

Diameters (in)	9 Months	Continuous (50 years)
30-42	9.5 psi	6.75 psi
48-60	12.0 psi	8.5 psi
66-120	15.0 psi*	15.0 psi

* Stated pressure capabilities based on assumed burial depth. Higher pressure may be possible. Please consult your Contech sales representative.

Direct Bury & Reline Applications

DuroMaxx drainage pipe is ideally suited for the collection and removal of stormwater from highway, urban, industrial and residential projects. Its unique combination of steel reinforcement and pressure rated PE resin allows it to perform like no other drainage pipe on the market.

Benefits

- 80 ksi high strength steel provides maximum load carrying capabilities with allowable cover limits ranging from 30 to 50 feet.
- High strength steel provides exceptional shape and deflection control even on warm, sunny days where typical corrugated HDPE drainage pipes fall short.
- Pressure rated PE resin provides unmatched durability.
- Abrasion and chemical resistance is unaffected by water pH levels unlike reinforced concrete pipe, where abrasion resistance varies with water pH levels.
- Available with soil tight, steel reinforced high performance, and welded coupler joint options. If your project requires extreme joint tightness for the life of the system, rely on the DuroMaxx steel reinforced high performance or welded coupler joints.
- While DuroMaxx may not be the least expensive storm sewer pipe on the market, it outperforms when other products fall short. Long-term, DuroMaxx's outstanding performance and durability generate value.
- The efficient wall profile makes DuroMaxx ideally suited for reline of deteriorating culverts.

Colorado Springs, Colorado

1,296 lf

96" diameter

DuroMaxx
Storm Sewer System

Monticello, Indiana
395,000 gal. storage
96", 84" & 72" diameters

DuroMaxx
CSO System

Tank Applications

Sanitary Sewer Overflow/Combined Sewer Overflow/ Pump Station Equalization Tanks/Detention

Storage tank systems are used to regulate stormwater and wastewater flow through main pipelines by acting as a buffer during peak loads. DuroMaxx systems are designed to contain the water and slowly release it into the main system over a period of time. These systems are often custom made to watertight specifications in order to suit the project requirements.

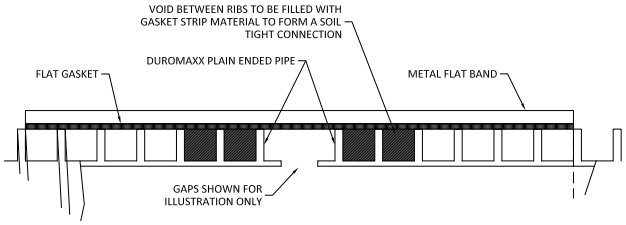
DuroMaxx tank systems can incorporate a wide range of fittings such as bends, risers, bulk headed ends, and inlet/outlet pipes. The systems can be custom manufactured to individual lengths in sizes and configurations that can be economically transported and assembled on site.

Benefits

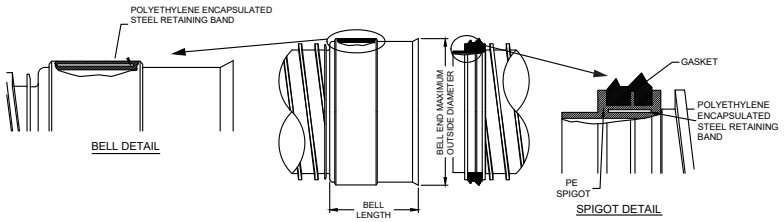
- Utilizing larger diameters whenever possible reduces storage cost per gallon. DuroMaxx is available up to 120 inches.
- Steel reinforcing results in smaller outside diameter dimensions when compared to corrugated HDPE pipe or reinforced concrete pipe. When maximum diameter selection is limited by minimal cover, DuroMaxx can typically be upsized by 6 inches or more, resulting in reduced overall water storage cost.
- A variety of joint configurations and joint tightness levels available to meet specific project needs.
- Offers a corrosion resistant system alternative to concrete in wastewater management without need for protective coatings.
- Fast, efficient installation.

The Design Behind the Performance

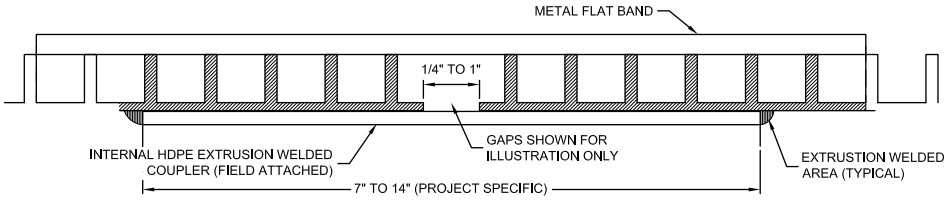
Soil Tight (ST) Joint Detail



High Performance (HP) Joint Details



Welded Coupler (WC) Joint Detail



Contech® Engineered Solutions provides innovative, cost-effective site solutions to engineers, contractors and developers on projects across North America. Our portfolio includes bridges, drainage, erosion control, retaining wall, sanitary sewer and stormwater management products.

STORMWATER SOLUTIONS

PIPE SOLUTIONS

STRUCTURE SOLUTIONS

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CONTECH® ENGINEERED SOLUTIONS

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NCSPA steel

DuroMaxxBro 3/19 MC DIGITAL

SECTION (_____)

Steel Reinforced Polyethylene (SRPE)

Underground Detention and Infiltration Standard Specification

1.0 GENERAL

1.1 This item shall govern the furnishing and installation of Steel Reinforced Polyethylene (SRPE) underground detention and infiltration systems for nominal diameters 30" (750mm) through 120" (3000mm).

1.2 Contractor shall furnish all labor, materials, equipment and incidentals necessary to install the SRPE system, appurtenances and incidentals in accordance with the Drawings and as specified herein.

1.3 A stormwater treatment device upstream of the SRPE system is recommended as the appropriate means of pretreating for the purpose of extending the maintenance interval on the SRPE system and reducing the life cycle cost. Both engineered solutions shall be provided by a single supplier/manufacturer. Filtration by wrapping a system with geotextile is not an acceptable means of pretreatment.

1.4 Applicable provisions of any Division shall govern work in this section.

1.5 Related Standards

- 1.5.1 ASTM F2562 "Standard Specification for Steel Reinforced Thermoplastic Ribbed Pipe and Fittings for Non-Pressure Drainage and Sewerage"
- 1.5.2 AASHTO Designation MP-20 Section
- 1.5.3 ASTM D3350 "Standard Specification for Polyethylene Plastics Pipe and Fittings Materials"
- 1.5.4 ASTM D3212 "Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals"
- 1.5.5 ASTM D2321 "Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications"

1.6 Site layout drawings, product specifications, materials, hydraulic storage data and supported calculations of proposed alternatives shall be submitted to the EOR for review at a minimum of 10 working days prior to bid closing.

1.7 Shop drawings shall be annotated to indicate all materials to be furnished and installed under this section, and all applicable standards for materials, required tests of materials and design assumptions for structural analysis:

- 1.7.1 Before installation of the SRPE system, Contractor shall obtain the written approval of the EOR for the stormwater system and the installation drawings.

1.8 All proposed alternatives to the SRPE system shall conform to applicable above referenced AASHTO and ASTM specifications.

2.0 MATERIALS

2.1 SRPE shall be manufactured in accordance with the applicable requirements of ASTM F2562 "Standard Specification for Steel Reinforced Thermoplastic Ribbed Pipe and Fittings for Non-Pressure Drainage and Sewerage".

2.2 Virgin high density polyethylene stress-rated resins are used to manufacture SRPE pipe and complimentary fabricated fittings. Resins shall conform to the minimum requirements of cell classification 345464C as defined and described in the latest version of ASTM D3350 "Standard Specification for Polyethylene Plastics Pipe and Fittings Materials".

2.3 Pipe lengths shall be joined on site using coupling bands, bell & spigots, or welded couplers especially designed for SRPE pipe. Joints shall meet one of the performance levels as required and specified:

2.3.1 Soil Tight Joints (30" – 120"") shall be plain ended SRPE pipe with Aluminized Type 2 (or optional Polymeric coated) CMP coupling bands and elastomeric gaskets.

2.3.2 High Performance (HP) Joints (30" – 72") shall be gasketed, bell and spigot joints where both the bell and spigot are reinforced with steel that is fully encased in stress-rated high density polyethylene (meeting the requirements set forth in the above Material Properties paragraph) and that have been laboratory tested to 10.8 psi in accordance with ASTM D3212 "Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals".

2.3.3 Welded Coupler (WC) Joints (36" – 120") shall utilize plain ended SRPE pipe joined by extrusion welded couplers. Welded couplers to be installed by Contech authorized service provider. Contractor is responsible for providing a clean, dry surface for welding as described in the Contech "SRPE Steel Reinforced PE Technology Installation Guide". The field installed welded couplers shall be capable of successfully passing field leakage testing as described in the "Contech SRPE Detention Post Installation Leak Testing Procedure".

2.4 The manufacturer of the SRPE system shall be one that has regularly been engaged in the engineering design and production of these systems for at least eight (8) years and which has a history of successful production, acceptable to the Engineer of Record (EOR). In accordance with the Drawings, the SRPE system shall be supplied by:

Contech Engineered Solutions
9025 Centre Pointe Drive
West Chester, OH, 45069
Tel: 1 800 338 1122

2.5 Sampling, testing, and inspection of PE resin, metal sheets and coils used for manufacturing the SRPE system shall be in accordance with to the above applicable referenced specifications. All fabrication of the product shall occur within the United States.

3.0 PERFORMANCE

3.1 The SRPE system proposal shall be sized in accordance to the design provided and approved by the Engineer of Record (EOR). Any Contractor deviating from the design shown on the plans, to include: material, footprint, etc., shall provide to the EOR a summary report on stage-storage curves, design calculations, HydroCAD modeling and engineering drawings.

3.2 The SRPE system shall comprise of manhole access with minimum dimensions of 24 inches diameter to provide adequate inspection and maintenance without restrictions and obstructions to entry into interior of the SRPE system. Manholes shall be provided to allow full entry into and visual inspection of the complete SRPE system, at a minimum as to allow full maintenance of the SRPE system. Cleanouts or inspection ports are not acceptable access points for maintenance and inspection nor are any other alternatives which do not allow for full entry into the system.

3.3 SRPE row spacing and stone base thickness cannot be altered with consultation from Contech Engineered Solutions, LLC.

3.4 The SRPE system shall be designed for a minimum HS-20/HS-25 final live loading conditions with the minimum pipe stiffness as shown in Table 1. The SRPE system shall meet HS-20/HS-25 loading requirements with a minimum cover measured from the top of pipe to the bottom of flexible pavement as shown in Table 1.

Table 1: Pipe Dimensions and Cover Limits

Nominal Pipe Size	**Minimum Pipe Stiffness** (Class 1)	**Outside Diameter**	**Unit Weight****	**Minimum Waterway Wall Thickness** (t_1)		**Minimum Cover*****		**Maximum Cover**	
inch	lb/in/in	in. [mm]	lbs./ft	in.	[mm]	ft.	[m]	ft.	[m]
30	28	30.9 [785]	15.5	.082	[2.08]	1	[.305]	50	[15.2]
36	22	37.1 [942]	20.8	.082	[2.08]	1	[.305]	50	[15.2]
42	20	43.2 [1097]	26.5	.082	[2.08]	1	[.305]	50	[15.2]
48	18	49.5 [1257]	29.1	.130	[3.30]	1	[.305]	30	[9.1]
54	16	55.5 [1410]	34.7	.130	[3.30]	1	[.305]	30	[9.1]
60	14	61.4 [1560]	41.6	.130	[3.30]	1	[.305]	30	[9.1]
66	14	67.8 [1722]	56.9	.220	[5.58]	1.5	{.457]	30	[9.1}
72	14	74.1[1882]	65.6	.220	[5.58]	1.5	[.457]	30	[9.1]
84	14*	85.9 [2182]	76.3	.220	[5.58]	2	[.610]	30	[9.1]
96	10*	97.8 [2484]	87.0	.220	[5.58]	2	[.610]	30	[9.1]
108	7*	111.3 [2827]	99.7	.220	[5.58]	2.5	[.762]	25	[7.6]
120	5*	121.9 [3097]	109.0	.220	[5.58]	3	[.914]	25	[7.6]

* 84”, 96”, 108” and 120” min. pipe stiffness is not currently defined in ASTM Specification F2562 for Class 1 pipe. Contech has developed the required minimum pipe stiffness for these pipe diameters.
** Approximate weights. Actual weight will vary with length and joint type.
*** Minimum and maximum cover limits are for H02/H25 loading.

3.5 The SRPE system shall be designed so as the hydraulic grade line will increase evenly throughout whereas transverse movement from one storage compartment to another shall not be permitted. All storage compartments shall be connected via manifold (or connecting pipe) versus by transporting stormwater through stone.

3.6 A stormwater pretreatment device is recommended upstream of the SRPE system as follows:

3.6.1 Infiltration: Where feasible, the selected stormwater treatment device upstream of an infiltration system shall be a filter system and have General Use Level Designation (GULD) for Basic Treatment by the Washington State Department of Ecology or demonstrate equivalent performance in independently verified field testing following a peer reviewed testing protocol, and must be sized consistent with the system producing those results.

3.6.2 Detention: Where feasible, the selected Stormwater treatment device upstream of a detention system shall be a separator system and have GULD for Pretreatment by the WADOE or demonstrate equivalent performance in independently verified field testing following a peer reviewed testing protocol, and must be sized consistent with the system producing those results.

3.6.3 Selected pretreatment stormwater device shall incorporate a physical barrier capable of capturing and retaining trash and debris (i.e.: floatable and neutrally buoyant materials) for all flows up to the treatment capacity of the device.

3.6.4 The application of wrapping a system with geotextile of any branding or material type, that allows the passage of stormwater, shall not be regarded as an acceptable treatment or pretreatment device.

3.6.5 The manufacturer of the selected Stormwater treatment device shall have been regularly engaged in the engineering design and production of systems for the physical treatment of Stormwater runoff for 15 years.

3.6.6 In order to not restrict the Owner's ability to maintain the stormwater pretreatment device, the minimum dimension providing access from the ground surface to the sump chamber shall be 20 inches in diameter.

4.0 EXECUTION

4.1 The SRPE system installation shall be in accordance with ASTM D2321 "Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications" along with Table 1 and product-specific recommendations contained in Contech Installation Guidelines for SRPE pipe, available from local Contech representative or from www.conteches.com.

4.2 For SRPE system using a welded coupler (WC) joint, Contractor is responsible for providing a clean, dry surface for welding as described in the Contech “SRPE Steel Reinforced PE Technology Installation Guide”.

4.3 The contractor shall follow Occupational Safety and Health Association (OSHA) guidelines for safe practices in executing the installation process in accordance with the manufacturer/supplier installation recommendations.

4.4 Contractor is required to participate in an on-site preconstruction meeting with the supplier prior to the scheduled delivery date of the SRPE system.

END SECTION