TAMPA BAY EXPRESS

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FDOT

I-275 (STATE ROAD 93) EXPRESS LANES

PROJECT DEVELOPMENT & ENVIRONMENT STUDY

From north of Dr. Martin Luther King Jr. Boulevard (SR 574) to north of Bearss Avenue (SR 678/CR 582)

ETDM Number: 13854

Work Program Item Segment Number: 431821-1

HILLSBOROUGH COUNTY, FLORIDA

DRAFT
POND FEASIBILITY REPORT

Prepared for:

Florida Department of Transportation
District Seven

August 2015

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This preliminary engineering report contains detailed engineering information that fulfills the purpose and need for the SR 93 (I-275) PD&E Study from north of Dr. Martin Luther King Jr. Boulevard (SR 574) to north of Bearss Avenue (SR 678/CR 582) in Hillsborough County.

This project evaluates capacity and operational improvements along Interstate 275 which includes one express lane in each direction as the Starter Project.

Prepared for:
Florida Department of Transportation
District Seven
Tampa, Florida

August 2015

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is proposing to widen the existing six-lane State Road 93 (SR 93)/Interstate 275 (I-275) from north of Dr. Martin Luther King Jr. Boulevard (SR 574) to north of Bearss Avenue (SR 678/County Road 582) in Hillsborough County, Florida. The widening will allow for one express lane in the median for both the northbound and southbound directions. The express lanes will be tolled and are included in the Tampa Bay Express Lane Master Plan (TBX Master Plan). Adding one express lane in the median for both directions is referred to as the Starter Project.

The purpose of this report is to identify and evaluate potential stormwater management facilities (SMF's) and determine their viability within the existing right-of-way. Providing all stormwater management within the existing right-of-way is critical due to the lengthy right-of-way acquisition process. Identifying right-of-way needs beyond the existing could prevent the advancement of the Starter Project.

Within the project study limits there are 13 roadway drainage basins that will be affected from the proposed improvements. One stormwater facility has been identified for each drainage basin. For drainage basins that cannot accommodate a stormwater facility due to right-of-way constraints, compensatory stormwater management has been provided in an adjacent basin. The analysis indicates that all stormwater management can be provided within the existing right-of-way. The analysis for the stormwater facilities does not include additional pavement such as slip ramps or toll gantry facilities due to on-going issues with the roadway design

In order to provide the required stormwater management within the existing right-of-way for Basin 14 and Basin 15, the proposed stormwater facilities must be constructed beneath the reconstructed bridge. This requires increasing the bridge lengths approximately 300 feet in both directions. The cost to increase the bridge length for the purpose of constructing the stormwater facilities beneath the structure is estimated at $11,700,000. The cost estimate is based on $125 per square foot of bridge. As an option during the design phase, the FDOT borrow pit located northwest of the I-275/Brearss Avenue intersection could be expanded to provide additional stormwater management and potentially offset the bridge cost. Any modification to the borrow pit should not increase the existing stages since it is connected to the adjacent water body from a culvert beneath Sinclair Hills Road.

A summary of the pond alternatives for each drainage basin is provided in **Table 1**.

Table 1
Pond Site Alternatives Summary

Basin Name	Pond Name	Pond Size (Ac)	Required Treatment / Attenuation Volume (Ac-Ft)	Required Treatment / Attenuation Volume (Ac-Ft)	Outfall Location
Basin 2	SMF 2	0.82	0.21 / 0.51	0.21 / 0.58	Hillsborough River via an existing 30" pipe
Basin 3	SMF 3	0.38	0 / 0.59	0 / 0.59	Hillsborough River via an existing inlet / pipe
Basin 7	SMF 7	0.19	0.04 / 0.12	0.04 / 0.12	Exist. Storage Basin No. 1
Basin 8	SMF 8	1.04	0.16 / 0.84	0.16 / 0.94	FDOT ROW via Exist. Pond A2
Basin 8A	-	-	-	-	Compensatory treatment/attenuation provided in Basin 9
Basin 9	SMF 9-1	0.52	0.33 / 1.56	0.33 / 1.72	Exist. Storage Basin No. 2
	SMF 9-2	0.64			SMF 9-1
	SMF 9-3	0.26			SMF 9-2
	SMF 9-4	0.19			SMF 9-3
Basin 10	SMF 10	0.70	0.16 / 1.03	0.16 / 1.11	FDOT ROW to existing storm sewer along west side of I-275
Basin 11	SMF 11	0.34	0.08 / 0.45	0.08 / 0.49	FDOT ROW to existing storm sewer along west side of I-275
Basin 12	SMF 12	0.55	0.08 / 0.52	0.08 / 0.83	FDOT ditch discharging to Curiosity Creek
Basin 13	SMF 13	1.05	0.19 / 1.33	0.90 / 1.38	Existing control structure in Exist. Pond No. 1 discharging to Curiosity Creek
Basin 14	SMF 14	1.52	0.23 / 1.14	0.23 / 1.38	FDOT ditch in the Hillsborough Reservoir drainage basin.
Basin 15	SMF 15	1.47	0.21 / 1.26	0.21 / 1.30	FDOT ditch in the Hillsborough Reservoir drainage basin.
Basin 16	No proposed are ponds in Basin 16.				

It is estimated the project will have minor floodplain encroachment in Basin 14. Compensation for the floodplain encroachment in Basin 14 will be provided on-site within existing right-of-way. The floodplain impacts and compensation are shown in **Table 2**

Table 2
Summary of Floodplain Impacts and Compensation

Basin Name	100-Year Floodplain Elevation (Ft)	Estimated Impact Volume (acre-feet)	Compensation Volume (acre-feet)	Compensation Site
Basin 14	50.1	1.65	1.65	On-Site within ROW

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1.0 INTRODUCTION

The Florida Department of Transportation (FDOT) District Seven is proposing to widen the existing six-lane State Road (SR) 93/Interstate 275 (I-275) from north of Dr. Martin Luther King (MLK) Jr. Boulevard to north of Bearss Avenue in Hillsborough County. The purpose for widening the interstate is to accommodate one express lane in the median for both the northbound and southbound direction. The two express lanes will be tolled and are included in the Tampa Bay Express Lane Master Plan (TBX Master Plan). Adding one express lane in the median for both directions is referred to as the Starter Project.

The project length is approximately 9.57 miles and lies within the jurisdiction of the Southwest Florida Water Management District (SWFWMD). The vertical datum used for this project and documented in this report and drainage calculations is the North American Vertical Datum of 1988 (NAVD 88).

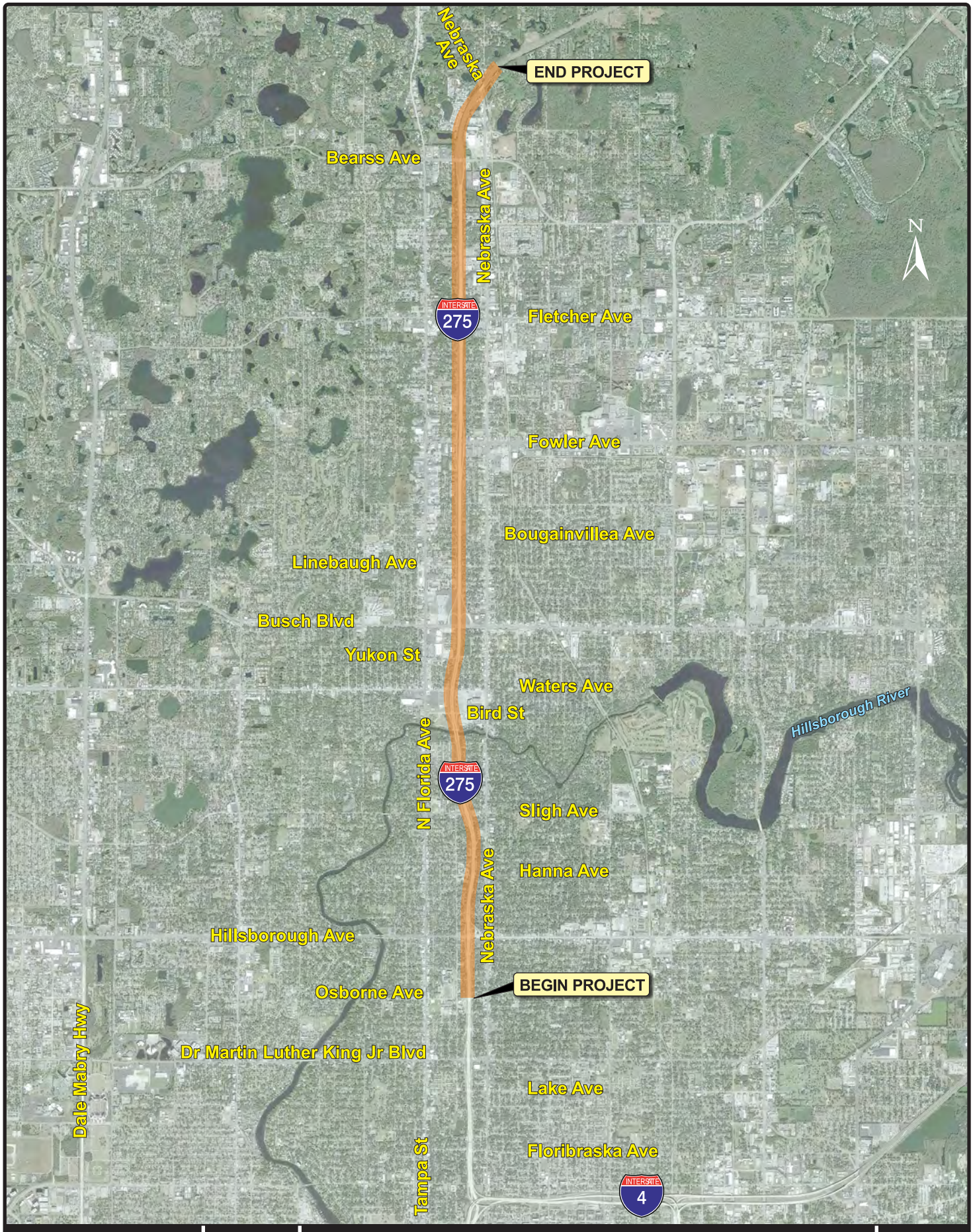
1.1 Description of Proposed Action

The purpose of this report is to identify and evaluate potential stormwater management facilities (SMF's) and determine their viability within the existing right-of-way. Providing all stormwater management within the existing right-of-way is critical due to the lengthy right-of-way acquisition process. Identifying right-of-way needs beyond the existing could prevent the progression of the Starter Project. The project location is shown on **Figure 1**.

The project is located in the sections, townships, and ranges shown in **Table 3**.

Table 3
Study Area Sections, Townships, and Ranges

Section	Township	Range
1, 12	29S	18E
36, 25, 24, 13, 12, 1	28S	18E
36	27S	18E



I-275 EXPRESS LANES PD&E STUDY

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431821-1-22-01
HILLSBOROUGH COUNTY

Not to Scale

PROJECT LOCATION MAP

Figure No.
1

1.2 Current Projects

I-275 is currently a six-lane divided limited access urban interstate. An on-going construction project between Floribraska Avenue and Yukon Street will widen the interstate shoulders and bridges, and replace the median guardrail with concrete barrier wall. When complete, the safety improvements project will improve access for emergency vehicles responding to traffic incidents.

1.3 TBX Starter Project

Within the study limits, FDOT anticipates future improvements that will add two express lanes in each direction in the median referred to as the Ultimate Project. Due to funding limitations for implementing the ultimate improvements, FDOT has identified lower-cost projects (Starter Projects) as part of the TBX Master Plan that can be implemented earlier than the Ultimate Project. The Starter Project includes one express lane in each direction within the median area of I-275. The proposed project would be constructed on the existing alignment, on the same existing horizontal and vertical geometries with the exception of the Bearss Avenue interchange which will require reconstruction. The intent of the Starter Project is to construct the two express lanes within the existing interstate median.

1.4 Existing Facility

I-275 is a limited access freeway that generally runs in a north-south direction within the project study limits. North of the project limits, I-275 connects to I-75. South of the project limits, I-275 turns to the west and travels through downtown Tampa in an east-west direction and then travels through Pinellas County and connects with I-75 in Manatee County. I-275 is part of the State Highway System and the Strategic Intermodal System. I-275 is a major evacuation route in the Tampa Bay region. I-275 is classified as an Urban Interstate.

I-275 is a six-lane divided urban typical section which varies slightly throughout the project limits (see **Figure 2**). The existing right-of-way along I-275 ranges from approximately 220 feet between Linebaugh Avenue and Bougainvillea Avenue to approximately 1,400 feet at the Busch Boulevard interchange.

There are eight interchanges within the project limits with intersections at the ramp termini. The interchanges are located at:

- Hillsborough Avenue
- Sligh Avenue
- Bird Street
- Busch Boulevard
- Fowler Avenue
- Fletcher Avenue
- Bearss Avenue

Many of the interchanges are closely spaced; many are approximately 1 mile apart. This, in combination with the lack of capacity on the I-275 mainline, creates backups along the

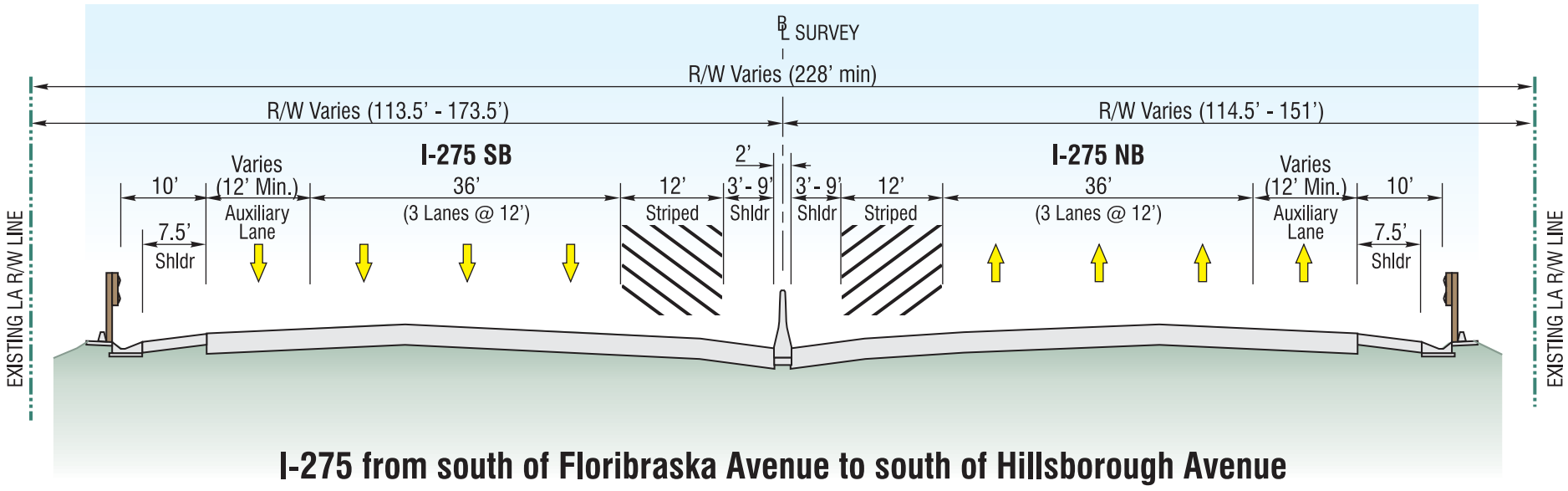
mainline. Vehicles entering I-275 from the on-ramps have difficulty entering the mainline traffic flow.

The I-275 corridor contains 18 bridges. Seventeen bridges span roadways, two bridges span both a roadway and railroad tracks, and two bridges span waterways. Only two of the bridges meet the minimum required vertical clearance of 16.5 feet.

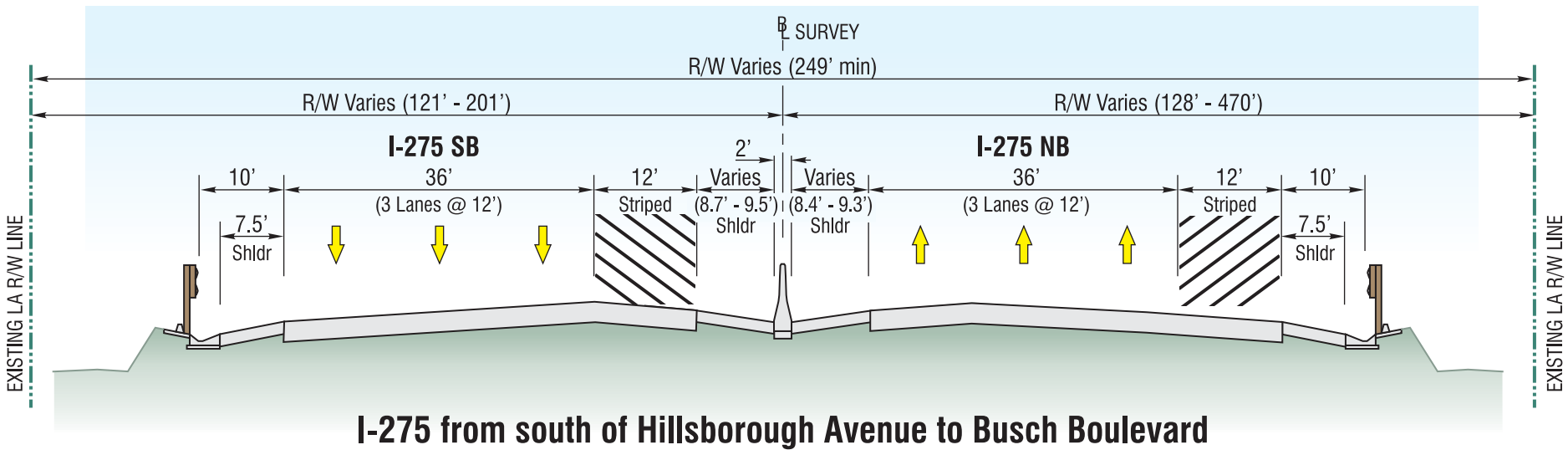
2.0 PROPOSED TYPICAL SECTION

The proposed I-275 eight-lane typical section includes six general use lanes (three in each direction) on the outside, two express lanes (one in each direction) on the inside, a 2-foot buffer with plastic delineators separating the general use lanes and the express lanes, 7.5-foot to 8.5-foot outside shoulders, 3.75-foot to 9.5-foot inside shoulders, and a 2-foot concrete barrier separating the two directions of travel. The proposed I-275 mainline typical section is shown in **Figure 3**.

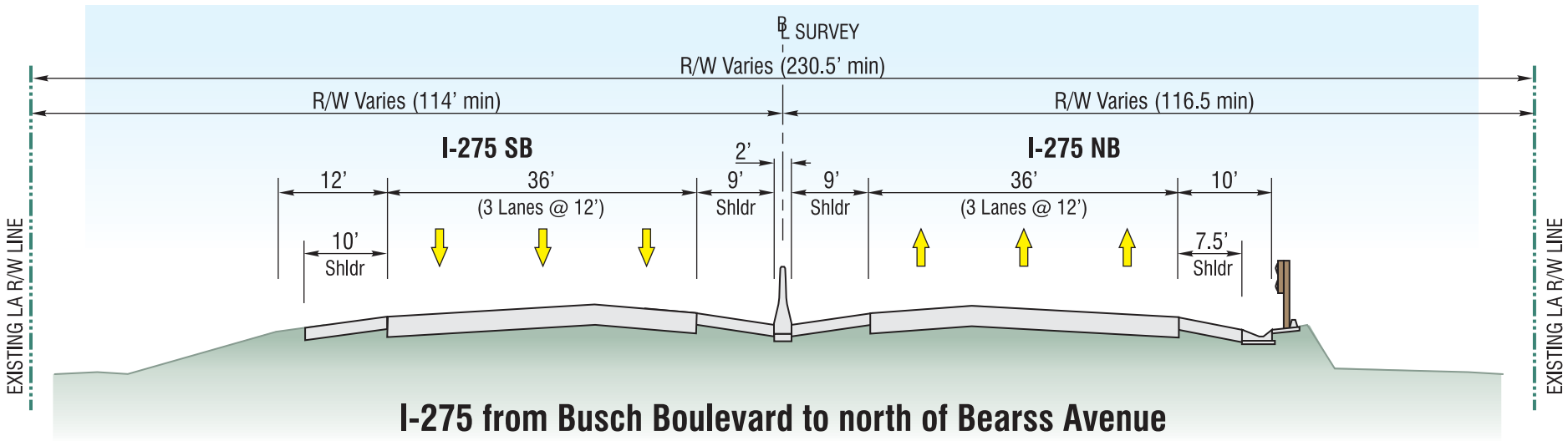
The express lanes can be used by most vehicles, including Bus Rapid Transit or Express Bus service. The exceptions are vehicles with more than two axles, commercial buses, and vehicles towing trailers.



I-275 from south of Floribraska Avenue to south of Hillsborough Avenue



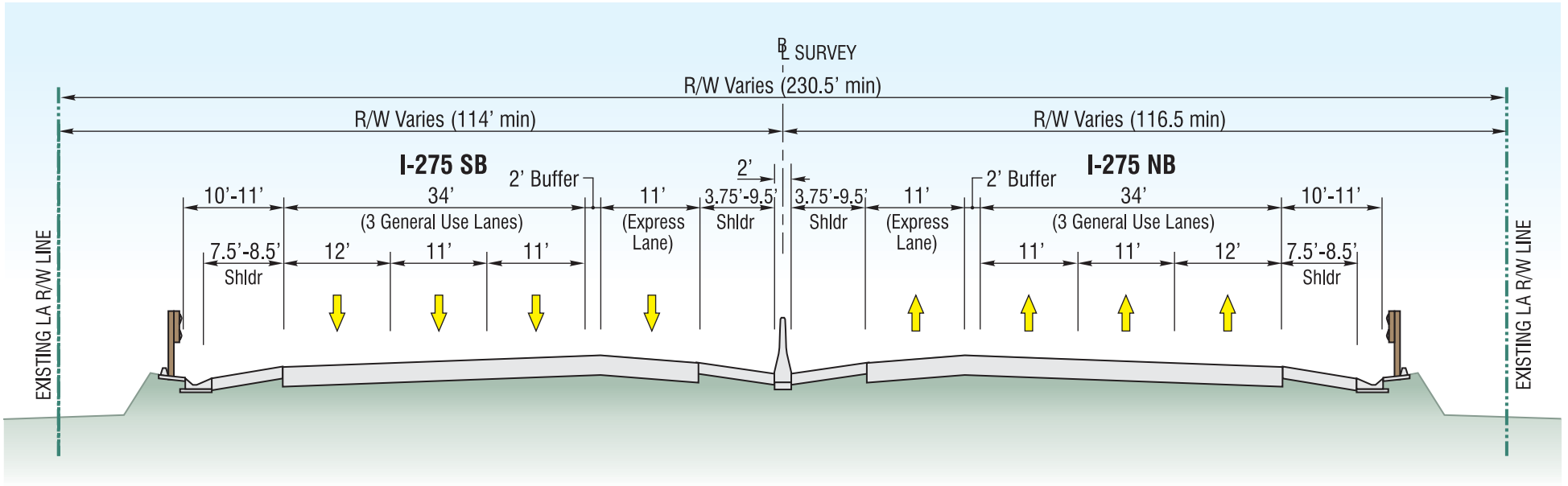
I-275 from south of Hillsborough Avenue to Busch Boulevard



I-275 from Busch Boulevard to north of Bearss Avenue

NOTE: The wider right-of-way is at the interchanges.

I-275 EXPRESS LANES PD&E STUDY *Work Program Item Segment* 431821-1 HILLSBOROUGH COUNTY	**I-275 EXISTING TYPICAL SECTIONS**	*Figure No.* 2

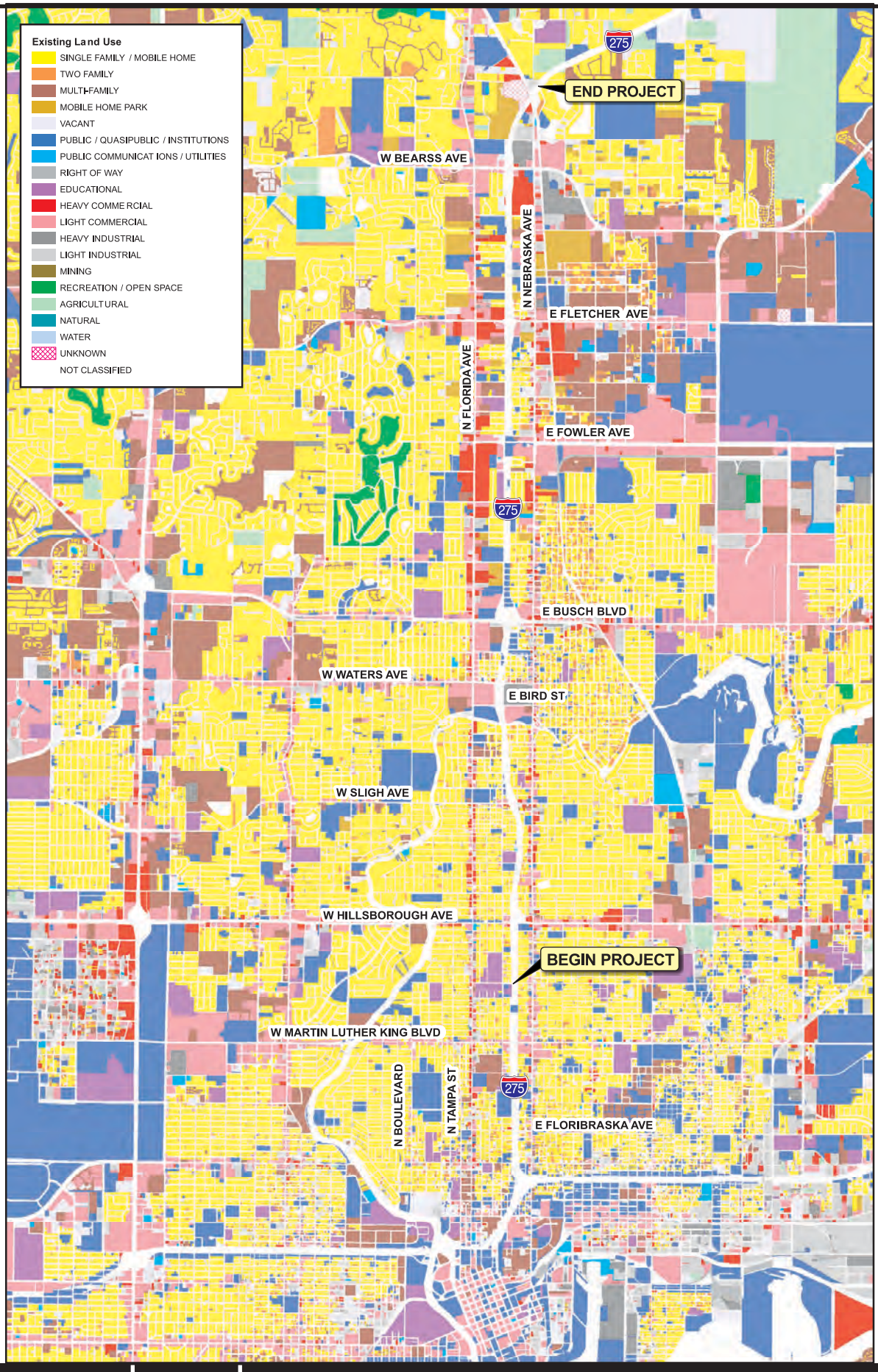


I-275 from north of MLK Boulevard to north of Bearss Avenue

I-275 EXPRESS LANES PD&E STUDY *Work Program Item Segment* 431821-1 HILLSBOROUGH COUNTY	**I-275 PROPOSED TYPICAL SECTION**	*Figure No.* 3

3.0 LAND USE

Within 500 feet of the corridor, there are four major existing land uses: high density residential, transportation, commercial/services, medium density residential, and public/semi-public. Future land-use maps from the City of Tampa (effective July 6, 2014) and Unincorporated Hillsborough County (effective October 4, 2014) indicate the majority of the land use along the project corridor is planned to be residential, office/commercial, community commercial, urban mixed use, and public/semi-public. The existing and future land uses are shown in **Figure 4** and **Figure 5**.



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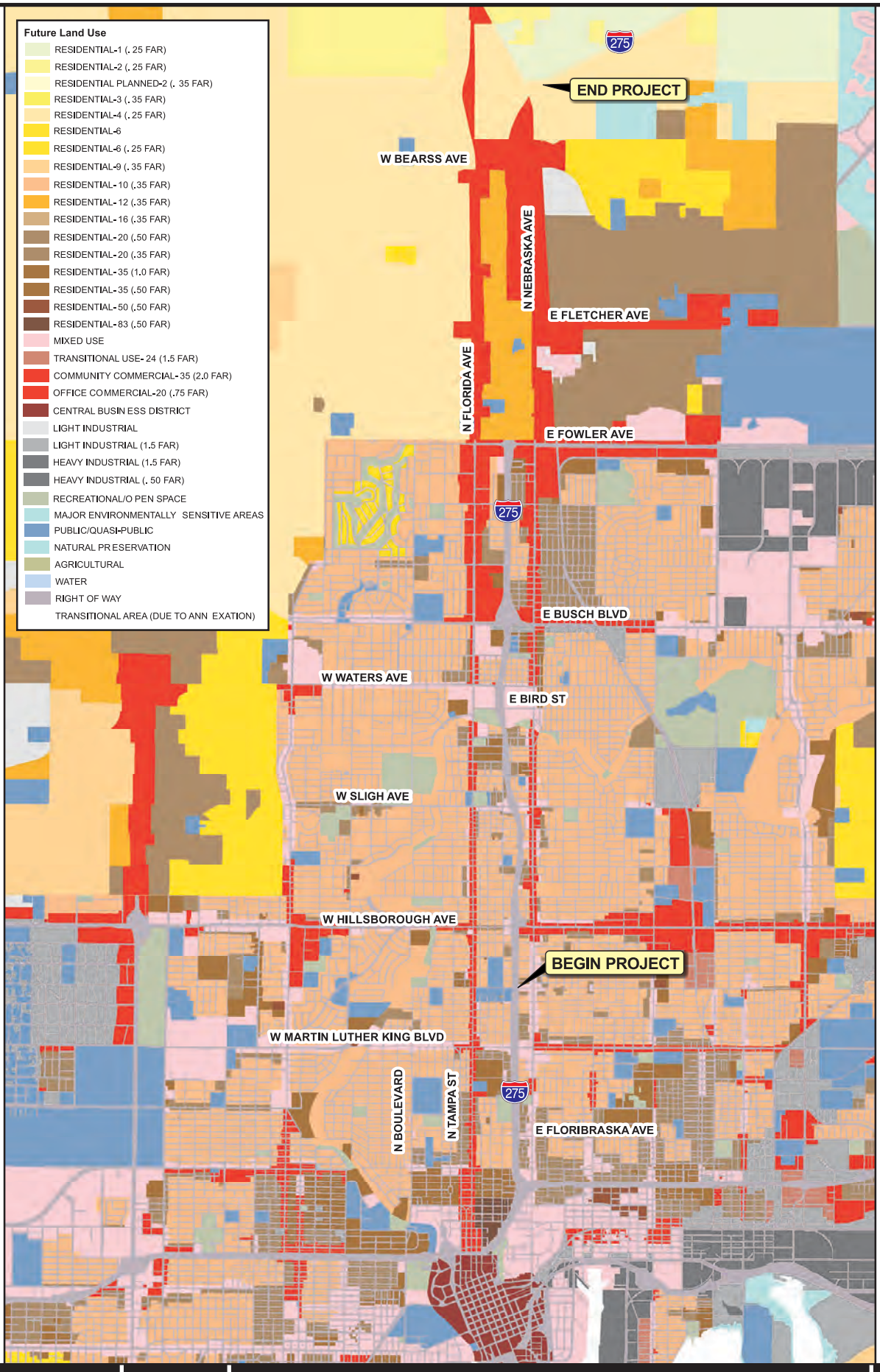
EXISTING LAND USE

Figure No.
4



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FUTURE LAND USE

Figure No.
5

4.0 EXISTING ROADWAY DRAINAGE SYSTEM

4.1 Site Investigation

Existing drainage characteristics in the study area were determined from reviewing the FDOT construction plans, FDOT Drainage Complaint History, the Straight Line Diagrams of Road Inventory, Southwest Florida Water Management District (SWFWMD) permitted plans and documentation, Natural Resources Conservation Service (NRCS) Soils data, and Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM). Field reviews were conducted to verify existing drainage structures, identify potential pond sites, and determine drainage boundaries.

4.2 Existing Ponds

Within the project limits there a several existing ponds that were either built during the original construction of I-275 or during subsequent improvement projects. **Table 4** summarizes the existing ponds within the project limits.

Table 4
Summary of Existing Pond Names and Associated Projects

Basin Name	Pond Name	Purpose for Existing Stormwater Facility	Proposed Modification
7	Exist. Storage Basin No. 1	Design during the original construction of I-275 to provide attenuation	No Modification
8	Exist. Pond A2	Designed to provide treatment & attenuation for improvements along I-275 at Busch Blvd	No Modification
8	Exist. Pond A3	Designed to provide treatment & attenuation for improvements along I-275 at Busch Blvd	No Modification
9	Exist. Storage Basin No. 2	Design during the original construction of I-275 to provide attenuation	No Modification
9	Exist. Storage Basin No. 3	Historical attenuation site	No Modification
10	Exist. Pond No. 1 East	Designed to provide treatment & attenuation for I-275 improvements between Fowler Ave and Fletcher Ave	Modify to provide additional treatment & attenuation for currently proposed improvements
10	Exist. Pond No. 1 West	Designed to provide treatment & attenuation for I-275 improvements between Fowler Ave and Fletcher Ave	Modify to provide additional treatment & attenuation for currently proposed improvements
13	Exist. Pond No. 1	Designed to provide treatment & attenuation for I-275 improvements between Fowler Ave and Fletcher Ave	No Modification
14	Exist. Pond No. 2	Designed to provide treatment & attenuation for I-275 improvements between Fowler Ave and Fletcher Ave	No Modification
16	Exist. Pond No. 3	Designed to provide treatment & attenuation for I-275 north of Bearss Ave	No Modification

4.3 Existing Drainage Patterns

I-275 lies within the jurisdiction of SWFWMD. The study area is located mainly within the Hillsborough Bay Watershed which encompasses 1,282 square miles, the remaining area of the I-275 project lies within the Coastal Old Tampa Bay Watershed which spans 338 square miles. Both watersheds ultimately drain to Tampa Bay. Both Hillsborough Bay and Coastal Old Tampa Bay Watersheds are part of the larger regional Tampa Bay watershed which encompasses 2,200 square miles. The drainage basins in the study area as delineated by SWFWMD include the Hillsborough Reservoir, Sulphur Springs, Chapman Lake Outlet, and Curiosity Creek. The only major water body within the project limits is the Hillsborough River. Based on the Efficient Transportation Decision Making (ETDM) Programming Screen, portions of the Hillsborough River are an Outstanding Florida Water (OFW). However, additional treatment is not provided in the proposed ponds since they do not discharge directly to the Hillsborough River.

4.4 Existing Cross Drains and Bridges

4.4.1 Existing Cross Drains

The *Location Hydraulics Report* (LHR) (March 2015) for this project identified 16 cross drains within the project limits. The cross drain sizes and locations were determined using existing drainage maps, permit research, and field investigations. Additional information on the existing cross drains is provided in the LHR. **Table 5** summarizes the existing cross drains.

Table 5
Existing Cross Drains

Major Cross Drains		Basin No.	Comment
Station (CL of Const.)	Size (inch)		
1810+50	(2)-54	1	Connection to Storm Sewer
1827+25	30	2	Connection to Storm Sewer
1867+60	24	3	Connection to Storm Sewer
1887+70	24	4/5	Connection to Storm Sewer
1940+00	48	7	
1974+28	36	8	
1988+41	42	9	Connection to Storm Sewer
1994+71	42		
2016+31	42		
2021+46	36		
2047+95	24	10	
2060+69	30	11	Discharge to Sink Hole
2070+46	30	12	
2094+70	24	13	
2136+24	36	14	
2157+27	36	15	

4.4.2 Existing Bridges

Within the project corridor, I-275 crosses the Hillsborough River which is the only major water body in the project area. The existing bridge (Bridge No. 100218) over the Hillsborough River was originally constructed in 1967 and later widened in 2009. The current bridge consists of five 60-foot spans with an overall bridge length of 300 feet as measured along the centerline of I-275. The overall out-to-out width of the bridge is 163 feet 1 inch. The Plan and Elevation Sheet and the Bridge Hydraulics Recommendations Sheet from the existing bridge plans are included in **Appendix A**.

4.5 Flooding Issues

Based on research of the FDOT District Seven Drainage Flood Inventory there are records identifying historic drainage/flooding issues within the project area. It is recommended that flooding complaints within and adjacent to the project area be researched during the design phase of the project.

During storm events in 2003, Central Avenue (near the I-275 southbound exit ramp at Fowler Avenue) experienced roadway flooding. As a result, residential yards and areas adjacent to a house near Fowler Avenue flooded. A recommendation was made to re-grade and lower the ditch to help relieve flooding during storm events. This work was completed and the flooding complaint (#1002042009547) was closed.

In another area on 122nd Avenue adjacent to I-275, a residential property located at 702 East 122nd Avenue (between I-275 and Taliaferro Avenue) is experiencing flooding in the front and back side of the house. Based on the flooding complaint (#1006172010814), Taliaferro Avenue is an area predisposed to flooding. Due to right-of-way constraints, maintaining the ditch along I-275 is very difficult. Improving the I-275 ditch maintainability may alleviate some of the runoff being sent offsite during heavy rainfall events. It is recommended that this area be looked at in more detail during the design phase.

The area at the west end of 126th Avenue, near the noise wall on the east side of I-275 is subject to local roadway flooding. A resident that lives on the south side of 126th Avenue was interviewed during the flood investigation. According to this resident the roadway area fills with water, then seeps into the ground after the rain stops. FDOT coordinated with Hillsborough County who agreed to survey the area to get a better idea of the existing conditions. Roadway flooding was also reported along 127th Avenue; however, it was addressed by the County. These flooding complaints (#1003282013398 and 1007022010774) should be verified and closed out during design.

There is a flooding complaint (#1012242009952) associated with April Lane and Garland Court west of I-275, south of Bearss Avenue. It is reported that the construction of an FDOT I-275 stormwater pond has worsened flooding problems in the receiving wetland system and the surrounding residential area. An alternative analysis was performed as part of the flood investigation and the recommendation was to modify the existing control structure to decrease discharge. This flooding complaint should be verified and analyzed during the design phase of the widening project.

The Flood Investigation Inventory Sheets provided by FDOT are included in **Appendix B**.

5.0 FLOODPLAINS AND REGULATORY FLOODWAYS

Information obtained from FEMA shows the project will cross through the limits of the 100-year floodplain at several locations along the project corridor. Segments where potential impacts to the 100-year floodplain could occur are shown on FEMA Map No. 12057C0214H and 12057C0204H. The FEMA maps are provided in **Appendix C**.

According to FEMA, the Hillsborough River is a regulated floodway at the I-275 bridge crossing. The base flood elevation North American Vertical Datum of 1988 (NAVD 88) of the Hillsborough River at the bridge crossing is 10.0 feet.

6.0 REGULATORY ISSUES AND DESIGN CRITERIA

The design of the SMF's is governed by the rules and criteria set forth by SWFWMD and FDOT. The criteria are established in the *State Wide Environmental Resource Permit (ERP) Applicants Handbook (2014)* Volumes I and II, the *FDOT Drainage Manual* (January 2015) and the FDOT *Stormwater Management Facility Handbook* (January 2004). The criteria as it pertains to the regulatory agency are discussed in the following sections.

A pre-application meeting was conducted with SWFWMD on Tuesday, July 21st, 2015. Based on the meeting, the project will be required to provide water quality treatment per Section 4.8 of the ERP Applicant's Handbook Volume II. The meeting minutes from the pre-application are provided in **Appendix D**.

6.1 Water Management

Water Quality

- Wet Detention
  - Treatment – One inch of rainfall from the new impervious area
- Dry Retention
  - Treatment – The first one inch of rainfall from the new impervious area

  Note: The existing dry ponds within the study limits treat one inch of rainfall from their basin areas. Therefore, the proposed dry ponds were designed to treat one inch of rainfall from the new impervious area.

Water Quantity

- Open Basin
  - Detention of the post development peak discharge rate to the pre development peak discharge rate for the SWFWMD 25-year/24-hour storm event.
- Volume Sensitive (Curiosity Creek and Hillsborough Reservoir)
  - Retain the post development runoff volume less the pre development runoff volume for the SWFWMD 100-year/24-hour storm event.

6.2 Florida Department of Transportation

The stormwater ponds were sized based on criteria established in the FDOT *Stormwater Management Facility Handbook*. The criteria used in the pond sizing are:

- A minimum 20-foot wide maintenance berm with at least 1:8 slope or flatter.
- Pond side slopes shall be at least 1:4 from the top of bank to the seasonal high water elevation. A slope of 1:2 shall be used from two feet below the seasonal high water elevation to the pond bottom.
- The radii of the inside edge of the maintenance berm shall be at least 35 feet.

A coordination meeting with FDOT District Seven Drainage staff was conducted on July 1st, 2015 to present the pond locations and their configurations. During the coordination meeting, the exceptions to the above criteria were discussed. The pond typical sections, which include the exceptions, were presented to District Seven Drainage staff. The pond typical sections have also been submitted to FDOT Maintenance for their review. The meeting minutes and pond typical sections are included in **Appendix E**.

6.3 Florida Department of Environmental Protection

The project limits were evaluated for impairment as identified by the Florida Department of Environmental Protection (FDEP). FDEP has identified three basins within the project limits that are impaired according to their Water Body Identification Numbers (WBIDs). A map showing the WBIDs and the verified impairment list is provided in **Appendix F**. The WBIDs and the impairments are summarized in **Table 6**. The pollutant loading calculations will be performed during the design phase of the project.

Table 6
FDEP Verified Impaired WBIDs

Drainage Basin	WBID	Impairment
Basin 2, Basin 3	1443 E	Dissolved Oxygen, Mercury, Nutrients
Basin 14	1443 E1	Dissolved Oxygen, Mercury, Nutrients
Basin15, Basin 16	1402	Dissolved Oxygen, Fecal Coliform, Nutrients

7.0 PROPOSED DRAINAGE BASINS & PONDS

The study area contains 13 separate roadway drainage basins. Stormwater runoff from each basin will be collected by a stormsewer system and conveyed to a proposed pond. The ponds are numbered from south to north with one pond alternative per drainage basin. All exisitng basin outfalls will be maintained following the construction of the roadway improvements. The Pond Sizing Calculations and the Drainage Maps are provided in

Appendix G and **Appendix H**, respectively. The engineering used in the pond sizing is shown in **Table 8**.

7.1 Basin 2 & SMF 2

7.1.1 Basin 2

Roadway drainage Basin 2 begins at East Hillsborough Avenue at Station 3814+78 and extends to south of East Hanna Avenue at Station 3839+00. Recent safety improvements along this segment of I-275 include an inside shoulder for both the northbound and southbound travel lanes that are separated by a concrete median barrier wall. The improvements were permitted in February 2011 under SWFWMD Application Number 644130. Based on this permit, the safety improvements were exempt from stormwater treatment. Under the proposed improvements, an auxiliary lane is proposed along the east side of I-275 between the northbound on-ramp at Hillsborough Avenue and the exit ramp at Sligh Avenue. The auxiliary lane will add a total of 2.56 acres of pavement with 1.10 acres in Basin 2 and 1.46 acres of pavement in the adjacent drainage basin referred to as Basin 3. Additional discussion on Basin 3 is provided in Section 7.2.

A storm sewer system will collect and convey an equivalent amount of roadway runoff to a proposed pond referred to as SMF 2.

7.1.2 SMF 2

SMF 2 is a 0.82-acre wet detention pond located within the loop for the interchange off-ramp from northbound I-275 to westbound East Hillsborough Avenue. According to the NRCS, the soils at the pond site are classified as Tavares Urban land with Hydrologic Soil Group A. The NRCS estimates the depth to the seasonal high water elevation at 4.75 feet. The pond will provide treatment for 2.56 acres of pavement that is currently not treated and will attenuate for the additional 1.10 acres of pavement in Basin 2. The required treatment volume for the 2.56 acres of pavement is 0.21 acre-feet which will be accomplished in 0.48 feet of pond depth. The pond will outfall to a roadside ditch along the northbound on-ramp that discharges to a 30 inch cross drain located at station 3827+26. The 30 inch cross drain ultimately discharges to the Hillsborough River.

Construction of the pond will not require additional right-of-way.

7.2 Basin 3 & SMF 3

7.2.1 Basin 3

Roadway drainage Basin 3 begins south of East Hanna Avenue at Station 3839+00 and extends north to Sligh Avenue at Station 3867+60. Recent safety improvements along this segment of I-275 include an inside shoulder for both the northbound and southbound travel lanes that are separated by a concrete median barrier wall. The improvements were permitted in February 2011 under SWFWMD Application Number 644130. Based on this permit, the safety improvements were exempt from stormwater treatment. Under the proposed improvements, 1.46 acres of additional pavement will be added to the basin. Treatment for the entire auxiliary lane is provided in SMF 2 while attention for the additional

pavement in Basin 3 will be provided in a proposed pond referred to as SMF 3. A storm sewer system will collect an equivalent amount of pavement and convey it the proposed pond.

7.2.2 SMF 3

SMF 3 is a 0.38-acre dry attenuation facility located along the east side of I-275 between E. Lambright Street and E. Knollwood Street. According to the NRCS, the soils at the attenuation facility are classified as Candler Urban land with Hydrologic Soil Group A. The NRCS estimates the depth to the seasonal high water elevation at greater than 6.56 feet. The required attenuation volume for the additional 1.46 acres of pavement in Basin 3 is 0.59 acre-feet which will be accomplished in approximately 1.95 feet of pond depth.

Construction of the attenuation facility will not require additional right-of-way.

7.3 Basin 7 & SMF 7

7.3.1 Basin 7

Roadway drainage Basin 7 begins at East Yukon Street at Station 3935+49 and extends to south of East Busch Boulevard at Station 3948+51. The basin includes a historical stormwater attenuation facility referred to as Exist. Storage Basin No. 1. The storage basin is located north of East Yukon Street on the east side of I-275 and is hydraulically connected to the storm sewer system that discharges to the Hillsborough River on the west side of I-275. Additional information regarding the storage basin could not be located.

Recent safety improvements along this segment of I-275 include an inside shoulder for both the northbound and southbound travel lanes that are separated by a concrete median barrier wall. The improvements were permitted in February 2011 under ERP Application ID 644130. Based on the permit, the safety improvements were exempt from stormwater treatment. Under the proposed improvements, approximately 0.53 acres of additional pavement will be added on I-275 south of the Busch Boulevard interchange. A proposed storm sewer system will collect and convey an equivalent amount of untreated roadway runoff to a proposed pond referred to as SMF 7.

7.3.2 SMF 7

SMF 7 is a 0.19-acre dry retention pond located southeast of I-275 and East Busch Boulevard. According to the NRCS, the soils at the pond site are classified as Tavares Urban land with Hydrologic Soil Group A. The NRCS estimates the depth to the seasonal high water elevation at 4.75 feet. The pond will treat 1.0 inch of rainfall from an equivalent amount of pavement that is currently untreated. The treatment will be accomplished in 0.04 acre-feet with a treatment depth of 0.75 feet. The proposed pond will outfall to the existing storage basin located immediately to the south.

Construction of the pond will not require additional right-of-way.

7.4 Basin 8 & SMF 8

7.4.1 Basin 8

Roadway drainage Basin 8 begins south of East Busch Boulevard at Station 3948+51 and extends north to East Linebaugh Avenue at Station 3974+90. The basin includes two existing stormwater ponds referred to as Exist. Pond A2 and Exist. Pond A3. The ponds are located in the infield area immediately north of East Busch Boulevard on the west and east side of I-275. The existing ponds were constructed during the improvements to I-275 that included the widening of the interstate from four lanes to six lanes, modifying the ramps at the East Busch Boulevard interchange, and modifying the median openings on East Busch Boulevard at the interchange. The total amount of pavement draining to Ponds A2 and A3 is 6.70 acres and 4.71 acres, respectively. The treatment volume required is 1.04 acre-feet while the treatment volume provided is 1.42 acre-feet. These improvements were approved under Application Number 38397 in April 1998. It is not anticipated that the proposed roadway widening will impact the pond volumes which will allow the ponds to continue to treat the same amount of pavement.

The proposed widening in Basin 8 will add approximately 1.94 acres of pavement to I-275. An equivalent amount of pavement will be collected and conveyed to a proposed pond referred to as SMF 8. The remaining pavement, which is currently being treated, will be conveyed to either Exist. Pond A2 or Exist. Pond A3.

7.4.2 SMF 8

SMF 8 is a 1.04-acre dry retention pond located between southbound I-275 and the southbound exit ramp. According to the NRCS, the soils at the pond site are classified as Tavares-Millhopper fine sand and Tavares Urban land with Hydrologic Soil Group A. The NRCS estimates the depth to the seasonal high water elevation at 4.75 feet. The proposed pond will outfall to the culvert that discharges to Exist. Pond A2. The proposed pond will treat 1.0 inch of rainfall from the basin which will be accomplished in 0.16 acre-feet with a treatment depth of 0.18 feet.

Construction of the pond will not require additional right-of-way.

7.5 Basin 8A & SMF 8A

7.5.1 Basin 8A

Roadway drainage Basin 8A begins at East Linebaugh Avenue at Station 3974+90 and extends north to East Bougainvillea at Station 3988+15. Recent improvements in the basin include widening the interstate from four lanes to six lanes and were performed during the East Busch Boulevard and I-275 interchange project. Due to physical constraints, the stormwater management for the widening was accomplished with compensatory treatment in Basin 8. As discussed in the previous section, the improvements project was approved under Application Number 38397 in April 1998.

Under the currently proposed widening project, approximately 0.97 acres of pavement will be added to Basin 8A. Physical constrains prevent stormwater treatment within this basin.

Therefore, compensatory treatment will be provided in Basin 9 which is located immediately to the north of Basin 8A.

7.5.2 Proposed Stormwater Management Facility

As discussed in the previous section, stormwater management is not viable option in Basin 8A. Therefore, compensatory treatment for the additional 0.97 acres of pavement will be provided in Basin 9.

7.6 Basin 9 & SMF 9-1, 9-2, 9-3, and 9-4

7.6.1 Basin 9

Roadway drainage Basin 9 begins at East Bougainvillea at Station 3988+15 and extends north to East Fowler Avenue at Station 4028+32. The basin includes a 9.2-acre historical stormwater attenuation facility referred to as Exist. Storage Basin No. 2. The storage basin is located northeast of East Bougainvillea Avenue and I-275 and was built during the original construction of the interstate. The storage basin is hydraulically connected to the existing storm sewer system on the west side of I-275 that discharges south to the Hillsborough River. Drainage maps for the original interstate construction indicate the high water elevation for the storage basin is 27.0 feet while the low water elevation is 23.0 feet. The seasonal high water elevation is estimated at approximately 25.0 feet. Recent safety improvements along this segment of I-275 include an additional turn lane for the northbound I-275 exist ramp for Fowler Avenue. The additional turn lane is approximately 1,320 feet and was exempt from permitting since the turn lane is less than 0.25 miles. The permit exemption for the safety improvements was approved in March of 2011 under ERP Application ID 645900.

Under the proposed improvements, approximately 2.95 acres of pavement will be added to the basin as a result of the widening. Since compensatory treatment will be provided for the 0.97 acres added to Basin 8A, the total area that will require stormwater management in Basin 9 is 3.92 acres. This will be accomplished from conveying an equivalent amount of untreated pavement to a series of ponds referred to as SMF 9-1, 9-2, 9-3, and 9-4.

7.6.2 SMF 9-1, 9-2, 9-3, and 9-4

The ponds are located on the east side of I-275 and will function as wet detention facilities. A wall will be required along the east side of I-275 from East Bougainvillea to approximately Station 4001+75 to construct SMF 9-1 and SMF 9-2. A typical section of the wall at SMF 9-1 is provided in **Appendix E**. The typical section has also been provided to FDOT maintenance and drainage staff.

According to the NRCS, a majority of the soil at the pond sites is classified as Zolfo fine sand with Hydrologic Soil Group A. The NRCS estimates the depth to the seasonal high water elevation at 2.75 feet. The proposed ponds will outfall to the existing storage basin located at the northeast intersection of East Bougainvillea Avenue and I-275. Treatment for the 3.92 acres of additional pavement will be provided in SMF 9-2. The proposed pond will treat 1.0 inch of rainfall which will be accomplished in 0.33 acre-feet of pond volume with a treatment depth of 0.82 feet.

As an option, the berms along the existing storage basin could be modified and/or reduced to provide additional storage. The intent of modifying the existing storage basin would be to eliminate SMF 9-1 and possibly reduce the amount of wall. During the coordination meeting with FDOT District Seven drainage staff, it was recommended that this option be explored during the design phase. The meeting minutes are provided in **Appendix E**.

The pond configurations as presented in this feasibility report will not require additional right-of-way.

7.7 Basin 10 & SMF 10

7.7.1 Basin 10

Roadway drainage Basin 10 begins at East Fowler Avenue at Station 4028+32 and extends north to 127th Avenue at Station 4054+85. The basin includes an existing treatment facility referred to as Exist. Pond No. 1 East. The existing pond is located northeast of I-275 and East Fowler Avenue adjacent to the northbound on-ramp. The pond was constructed to provide treatment for the improvements on I-275 between East Fowler Avenue and East Fletcher Avenue. The improvements included an additional travel lane in each direction and modification to two acceleration lanes and two deceleration lanes for the access ramps at East Fowler Avenue. The improvements within Basin 10 added approximately 5.76 acres of pavement that required treatment and attenuation. Exist Pond No. 1 East was designed to treat 1.0 inch of rainfall using dry retention. The facility was permitted in October 1998 under ERP Application ID 38398.

Under the proposed improvements, approximately 1.95 acres of pavement will be added to the basin. A proposed storm sewer system will collect and convey an equivalent amount of untreated roadway runoff to a roadside pond referred to as SMF 10.

7.7.2 SMF 10

SMF 10 is a 0.70-acre wet detention facility adjacent to southbound I-275 between 122nd Avenue and 124th Avenue. According to the NRCS, the soils at the pond site are classified as Candler and Zolfo fine sand with Hydrologic Soil Group A. The NRCS estimates the depth to the seasonal high water elevation between 2.75 feet and 6.56 feet. The proposed pond will treat 1.0 inch of rainfall from pavement that is not currently treated. The treatment will be accomplished in 0.16 acre-feet of pond volume with a treatment depth of 0.90 feet. The outfall for the pond is the FDOT right-of-way and ultimately to the existing stormsewer system along the west side of I-275.

The site where SMF 10 is proposed is currently providing stormwater treatment and attention that is not permitted. This is the result of an existing mitered end section with its invert set at a higher elevation than the ditch bottom. However, high water elevations have historically been witnessed in the ditch. The drainage maps from the previous improvements project have also identified the site as an area prone to flooding. Therefore, the design of a stormwater facility should ensure that additional capacity has been provided in the ditch to account for the increase volume of runoff from the new impervious pavement.

Construction of SMF 10 will not require additional right-of-way.

7.8 Basin 11 & SMF 11

7.8.1 Basin 11

Roadway drainage Basin 11 begins at 127th Avenue at Station 4054+85 and extends north to 131st Avenue at Station 4068+00. The basin includes an existing facility located at the southwest corner of Hoffman Boulevard and Central Avenue referred to as Exist. Pond No. 1 West. The existing pond was constructed to provide stormwater management for the improvements on I-275 between East Fowler Avenue and East Fletcher Avenue. The improvements included an additional travel lane in each direction and modification to two acceleration lanes and two deceleration lanes for the access ramps at East Fowler Avenue. The improvements within Basin 11 added approximately 2.32 acres of additional pavement that required treatment and attenuation. The pond was designed to treat 1.0 inch of rainfall from the additional pavement using dry retention. The pond also has the capacity to treat an additional 0.5 acres of pavement. This additional capacity (credit) will be utilized in the stormwater design for the current widening project. The existing pond was permitted in October 1998 under Application Number 38398.

Under the current widening project, approximately 0.97 acres of pavement will be added to the basin. A storm sewer system will collect and convey 0.73 acres of untreated roadway runoff to a proposed pond referred to as SMF 11. A separate stormsewer system will collect 0.24 acres of untreated pavement and covey it to Exist. Pond No. 1 West. Treatment for the 0.24 acres of pavement will be accomplished using the available credit of 0.5 acres in Exist Pond No. 1 West. No modifications to the existing pond are necessary to achieve the required treatment volume.

7.8.2 SMF 11

SMF 11 is a 0.34-acre wet detention facility located adjacent to southbound I-275 between Station 4062+00 and Station 4064+77. According to the NRCS, the soils at the pond site are classified as Zolfo fine sand with Hydrologic Soil Group A. The NRCS estimates the depth to the seasonal high water elevation at 2.75 feet. The proposed pond will treat 1.0 inch of rainfall from 0.73 acres of pavement that is not currently treated. The treatment for the additional pavement will be accomplished in 0.08 acre-feet of pond volume with a treatment depth of 0.49 feet. The pond will discharge to the FDOT right-of-way and ultimately to the stormsewer system along the west side of I-275.

To account for the remaining pavement added to Basin 11, 0.24 acres of pavement that is not currently treated will be collected and conveyed to Exist. Pond No. 1 West. As discussed in the previous section, the existing pond is capable of treating an additional 0.5 acres of pavement.

Construction of SMF 11 will not require additional right-of-way.

7.9 Basin 12 & SMF 12

7.9.1 Basin 12

Roadway drainage Basin 12 begins at Station 4068+00 and extends north to Fletcher Avenue at Station 4081+44. Previous improvements within the basin include two-lane widening to the inside median, minor shoulder reconstruction, and northbound exit ramp improvements. According to the permit, there are no existing ponds in this basin since an equivalent amount of water quality, attenuation and volume sensitive storage is provided in the basin north of Fletcher Avenue. The permit also indicates that the roadway improvements should not have a significant impact on the peak rate of runoff discharging off-site nor should it increase the peak stages within roadside areas. The facility was permitted in October 1998 under Application Number 38398.

Under the proposed improvements, approximately 0.99 acres of pavement will be added to the basin. A proposed storm sewer system will collect and convey roadway runoff to a proposed roadside pond referred to as SMF 12.

7.9.2 SMF 12

SMF 12 is a 0.55-acre wet detention facility located adjacent to southbound I-275 between Station 4065+00 and Station 4070+00. According to the NRCS, the soils at the pond site are classified as Zolfo and Myakka fine sand with Hydrologic Soil Group A and A/D, respectively. The NRCS estimates the depth to the seasonal high water elevation at 2.75 feet and 1.0 feet, respectively. The pond will treat 1.0 inch of rainfall from the basin which will be accomplished in 0.08 acre-feet of pond volume with a treatment depth of 0.35 feet. The proposed pond will outfall to the FDOT right-of-way and ultimately to Curiosity Creek through a stormsewer system located northwest of I-275 and Fletcher Avenue.

As discussed in the previous section, the existing pond outfalls to Curiosity Creek which is volume sensitive. Therefore, SMF 12 was designed to attenuate the 100-year runoff volume for the additional pavement in Basin 12.

Construction of SMF 12 will not require additional right-of-way.

7.10 Basin 13 & SMF 13

7.10.1 Basin 13

Roadway drainage Basin 13 begins at Fletcher Avenue at Station 4081+44 and extends north to Station 4112+00. The basin includes an existing treatment facility located southwest of 138th Avenue and Central Avenue referred to as Exist. Pond No. 1. The pond was constructed to provide treatment for the I-275 improvements north of East Fletcher Avenue. The improvements included two-lane widening to the inside median, minor shoulder reconstruction, and minor improvements to the southbound off-ramp at East Fletcher Avenue. The improvements added approximately 3.58 acres of pavement which are treated in the existing wet detention facility designed to treat 1.0 inch of rainfall. The pond was also designed to meet volume sensitive requirements since it discharges directly to Curiosity Creek. The facility was permitted in January 1999 under Permit Number 17978.

Under the proposed improvements, approximately 2.24 acres of pavement will be added to the basin. A storm sewer system will collect and convey an equivalent amount of untreated roadway runoff to a proposed facility referred to as SMF 13.

7.10.2 SMF 13

SMF 13 is a proposed wet detention facility that expands on Exist. Pond No. 1. Modifying the existing pond will not require additional right-of-way since the expansion will occur on property currently owned by FDOT. The existing pond was designed and permitted as a wet detention pond with a seasonal high water elevation of 38.49 feet and a control structure (weir) elevation of 39.82 feet. The expansion of the existing pond will create an additional 0.90 acre-feet of treatment volume while the required treatment volume from the additional pavement is 0.19 acre-feet. The required treatment volume is based on 1.0 inch of rainfall from pavement that is not currently being treated. The modified pond will have a total treatment depth of 1.33 feet as in the current condition. The proposed pond will continue to meet the current treatment and attenuation requirements from the previous improvements project.

As discussed in the previous section, the existing pond outfalls to Curiosity Creek which is volume sensitive. Therefore, SMF 13 was designed to attenuate the 100-year runoff volume for the additional pavement in Basin 13.

According to the FIRM's, the existing pond is located in the FEMA 100-year floodplain with an established elevation of 42 feet. The adjacent property where the expansion is proposed is also at elevation 42 feet based on GIS contour elevations. Construction of the pond will not impact the 100-year floodplain since any proposed fill will occur above elevation 42 feet. During the design phase, professional survey will be required to confirm the adjacent property, where the expansion is proposed, is at elevation 42 feet or higher. If the adjacent property is below elevation 42 feet, compensation for the 100-year floodplain impacts will be required.

Construction of SMF 13 will not require additional right-of-way.

7.11 Basin 14 & SMF 14

7.11.1 Basin 14

Roadway drainage Basin 14 begins at Station 4112+00 and extends north to Bearss Avenue at Station 4149+43. The basin includes an existing treatment facility referred to as Exist. Pond No. 2 located southwest of April Lane and the Christian Growth Fellowship property. The pond is a wet detention facility that provides treatment and attenuation for 5.51 acres of pavement. The additional pavement resulted from roadway improvements that included two additional lanes in the median, minor shoulder reconstruction and improvements to the northbound off-ramp onto Bearss Avenue. The pond discharges directly to the borrow pit located to the southeast. Based on the original drainage design documentation, the pond was designed to reduce the maximum peak discharge rate for the FDOT 100-year and the SWFWMD 25-year storm events by 15 percent and 25 percent, respectively. The facility was permitted in January 1999 under Permit Number 17978.

The currently proposed improvements in Basin 14 include roadway widening and reconstruction of the bridge over Bearss Avenue to accommodate the two additional travel lanes in the median. The improvements will add 2.75 acres of pavement to the basin. Based on coordination with SWFWMD on July 21st, 2015, the basin will only be required to treat and attenuate for the additional impervious area even though the Bearss Avenue interchange will require full reconstruction. Reference was made to Section 4.8 of the ERP Applicant's Handbook Volume II for the water quality treatment requirement. The meeting minutes from the pre-application meeting are provided in **Appendix D**.

A storm sewer system will collect and convey an equivalent amount of untreated roadway runoff to a proposed stormwater facility referred to as SMF 14.

7.11.2 SMF 14

SMF 14 is a 1.52-acre wet detention facility located immediately south of Bearss Avenue beneath the proposed bridge. According to the NRCS, the soils at the pond site are classified as Zolfo fine sand with Hydrologic Soil Group A. The NRCS estimates the depth to the seasonal high water elevation at 2.75 feet. The pond will provide treatment for the first 1.0 inch of rainfall using wet detention which will be accomplished in 0.23 acre-feet of volume with a treatment depth of 0.21 feet. The pond will outfall to the FDOT right-of-way which is in the Hillsborough Reservoir drainage basin. The estimate for extending the bridge over Bearss Avenue to construct SMF 14 is $5,850,000 and is included **Appendix G**.

Construction of SMF 14 will not require additional right-of-way.

7.12 Basin 15 & SMF 15

7.12.1 Basin 15

Roadway drainage Basin 15 begins at Bearss Avenue at Station 4149+43 and extends north to Station 4169+00. Previous roadway improvements within this basin include two-lane widening in the existing median, minor shoulder reconstruction, and minor improvements to the northbound on-ramp and the southbound off-ramp at the Bearss Avenue interchange. The basin drains to the east side of the interstate where roadside swales convey the runoff to an existing wetland system at the northeast corner of I-275 and Bearss Avenue. No stormwater facilities were constructed in this basin since all required stormwater quality and attenuation was provided in Exist. Pond No. 2. The improvements were permitted in January 1999 under Permit Number 17978.

The proposed improvements in Basin 15 include roadway widening and reconstruction of the bridge over Bearss Avenue to accommodate the two additional travel lanes in the median. The improvements will add 1.43 acres of pavement to the basin. Based on coordination with SWFWMD on July 21st, 2015, the basin will only be required to treat and attenuate for the additional impervious area even though the Bearss Avenue interchange will require full reconstruction.

A storm sewer system will collect and convey an equivalent amount of untreated roadway runoff to a proposed stormwater facility referred to as SMF 15.

7.12.2 SMF 15

SMF 15 is a 1.47-acre wet detention facility located immediately north of Bearss Avenue beneath the proposed bridge. According to the NRCS, the soils at the pond site are classified as Zolfo find sand with Hydrologic Soil Group A. The NRCS estimates the depth to the seasonal high water elevation at 2.75 feet. The pond will provide treatment for the first 1.0 inch of rainfall which will be accomplished in 0.23 acre-feet of volume with a treatment depth of 0.23 feet. The pond will outfall to the FDOT right-of-way which is in the Hillsborough Reservoir drainage basin. The estimate for extending the bridge over Bearss Avenue to construct SMF 15 is $5,850,000 and is included **Appendix G**.

Due to right-of-way constraints in Basin 16, the 1.02 acres of pavement added to Basin 16 will be diverted to Basin 15. SMF 15 will treat the 1.02 acres of diverted pavement and will retain the 100-year runoff volume. Additional discussion is provided in Section 7.13.

As an option during the design phase, the FDOT borrow pit located northwest of the I-275/ Bearss Avenue intersection could be expanded to provide additional stormwater management. The expansion would occur in the upland area and would create approximately 5.5 acre-feet of volume. This estimate is based on a seasonal high water elevation of 48.5 feet, a FEMA 100-year flood elevation of 50.3 and a plan view area of 3.06 acres.

The FDOT borrow pit is in the Chapman Lake Outlet basin which is separate from the I-275 roadway drainage basin. This will present issues during design such as retention of the 100-year runoff volume. Also, any modification to the borrow pit should not increase the existing stages since it is connected to the adjacent water body from a culvert beneath Sinclair Hills Road. The borrow pit and the upland area are shown on Drainage Map 7 which is included in **Appendix H**.

Construction of SMF 15 as shown on the drainage map will not require additional right-of-way.

7.13 Basin 16

7.13.1 Basin 16

Roadway drainage Basin 16 begins at Station 4169+00 and extends north to Nebraska Avenue at Station 4183+50. Historically, roadway runoff was directed to a swale along the east side of I-275 that discharged to a wetland system connected to a Hillsborough County borrow pit. The original wetland/borrow pit system did not have a positive outfall and would overtop the northeast berm. The runoff that overtopped the berm would discharge to the east and into the Nebraska Avenue stormsewer system.

Recent improvements within this basin include two additional lanes in the median and shoulder reconstruction. The original wetland/borrow pit system was modified as a stormwater management facility to provide treatment and attenuation for the recent roadway improvements. The stormwater facility was designed using closed basin criteria since the original system did not have a positive outfall. To minimize the amount of discharge over the pond banks, a control structure was installed with the grate set at the overtopping elevation. The control structure discharges directly to the storm sewer system on Nebraska

Avenue. The modified system is referred to as Exist. Pond No. 3 and was permitted in January 1999 under Permit Number 17978.

Under the proposed improvements, approximately 1.02 acres of pavement will be added to Basin 16. An equivalent amount of untreated pavement will be collected and diverted to Basin 15. The intent is to not increase the amount of runoff discharging to Exist. Pond No.3 due to its limited capacity.

7.13.2 Proposed Stormwater Management Facility

There are no proposed stormwater management facilities in Basin 16 or proposed modification to the existing facility. As discussed in previous sections, 1.02 acres of pavement will be diverted to Basin 15 due to the limited capacity of Exist Pond No. 3. The intent is to not increase the amount of runoff discharging to the existing pond or the stormsewer system on Nebraska Avenue. SMF 15 will treat 1.0 inch of rainfall from the diverted pavement and will retain the 100-year runoff volume.

There are no proposed right-of-way requirements in Basin16.

8.0 FLOODPLAIN COMPENSATION SITES

The proposed roadway improvements have potential for impacts to the 100-year floodplain from widening the roadway. A preliminary analysis indicates that 1.65 acre-feet of floodplain will be impacted in Basin 14. The impact will be compensated within the existing right-of-way between Station 4101+69 Lt. and Station 4121+10 Lt. The calculations for the estimated floodplain impact and compensation are included in **Appendix G**. The floodplain impact is summarized in **Table 7**.

Table 7
Summary of Floodplain Impacts and Compensation

Basin Name	100-Year Floodplain Elevation (Ft)	Estimated Impact Volume (acre-feet)	Compensation Volume (acre-feet)	Compensation Site
Basin 14	50.1	1.65	1.65	On-Site within ROW

Table 8
Pond Engineering Data & Analysis Summary

Basin Name	Pond Name	Approximate Pond Location Station to Station	Pond Offset Lt / Rt	Estimated SHWT[1] Elevation (Ft)	Low Edge of Pavement (Ft)	10 Year HGL[2] (Ft)	10 Year Pond Stage (Ft)	Outfall Location	Roadway Drainage Basin Area (Ac)	Pond Area at Top of Berm (Ac)	Method of Treatment	Required Treatment / Attenuation Volume (Ac-Ft)	Provided Treatment/ Attenuation Volume (Ac-Ft)	Comments
Basin 2	SMF 2	3815+00 to 3817+33	Rt	32.25	40.0	38.27	33.90	Hillsborough River via an existing 30" pipe	2.56	0.82	Wet	0.21 / 0.51	0.21 / 0.58	Treatment for Basin 2 and Basin 3 is provided in SMF 2.
Basin 3	SMF 3	3852+58 to 3856+00	Rt	39.44	50.0	48.50	46.90	Hillsborough River via an existing inlet / pipe	1.46	0.38	Dry	0 / 0.59	0 / 0.59	Attenuation facility for additional pavement added to Basin 3.
Basin 7	SMF 7	3944+20 to 3947+67	Rt	15.25	56.0	54.93	18.90	Exist. Storage Basin No. 1	0.53	0.19	Dry	0.04 / 0.12	0.04 / 0.12	
Basin 8	SMF 8	3955+45 to 3959+47	Lt	17.25	26.0	24.85	22.20	FDOT ROW via Exist. Pond A2	1.94	1.04	Dry	0.16 / 0.84	0.16 / 0.94	
Basin 8A	-	-	-	-	-	-	-	-	-	-	-	-	-	No proposed ponds in Basin 8A. Compensatory treatment in Basin 9.
Basin 9	SMF 9-1	3993+25 to 4001+63	Rt	25.00	-	-	26.90	Exist. Storage Basin No. 2	3.92	0.52	Wet	0.33 / 1.56	0.33 / 1.72	Wall required for construction
	SMF 9-2	4001+72 to 4005+33	Rt	25.25	-	-	26.80	SMF 9-1		0.64	Wet			Wall required for construction
	SMF 9-3	4001+72 to 4005+33	Rt	28.75	-	-	29.80	SMF 9-2		0.26	Wet			
	SMF 9-4	4005+42 to 4008+30	Rt	30.00	33.0	31.36	30.80	SMF 9-3		0.19	Wet			
Basin 10	SMF 10	4040+78 to 4047+35	Lt	30.75	35.0	33.98	33.90	FDOT ROW to existing storm sewer along west side of I-275	1.95	0.70	Wet	0.16 / 1.03	0.16 / 1.11	
Basin 11	SMF 11	4062+00 to 4064+77	Lt	36.25	40.0	38.98	38.70	FDOT ROW to existing storm sewer along west side of I-275	0.97	0.34	Wet	0.08 / 0.45	0.08 / 0.49	
Basin 12	SMF 12	4065+00 to 4070+00	Lt	36.25	40.0	38.98	38.40	FDOT ditch discharging to Curiosity Creek	0.99	0.55	Wet	0.08 / 0.52	0.08 / 0.83	
Basin 13	SMF 13	4091+36 to 4094+35	Lt	38.49	45.0	43.84	41.25	Existing control structure in Exist. Pond No. 1 discharging to Curiosity Creek	2.24	1.05	Wet	0.19 / 1.33	0.90 / 1.38	Expand on existing pond referred to as Exist. Pond No. 1.
Basin 14	SMF 14	4145+55 to 4148+45	Cl	49.25	53.0	51.42	50.6	FDOT ditch in the Hillsborough Reservoir drainage basin.	2.75	1.52	Wet	0.23 / 1.14	0.23 / 1.38	
Basin 15	SMF 15	4150+28 to 4153+13	Cl	52.25	56.0	54.92	53.70	FDOT ditch in the Hillsborough Reservoir drainage basin.	2.45	1.47	Wet	0.21 / 1.25	0.21 / 1.30	Basin 15 = 1.43 ac. Plus 1.02 ac diverted from Basin 16
Basin 16	No Proposed Pond in Basin 16	-	-	-	-	-	-	-	-	-	-	-	-	1.02 acres diverted to SMF 15 for treatment and retention of the 100-year runoff volume. No modification to Exist. Pond No. 3 nor will additional pavement be routed through the existing pond.

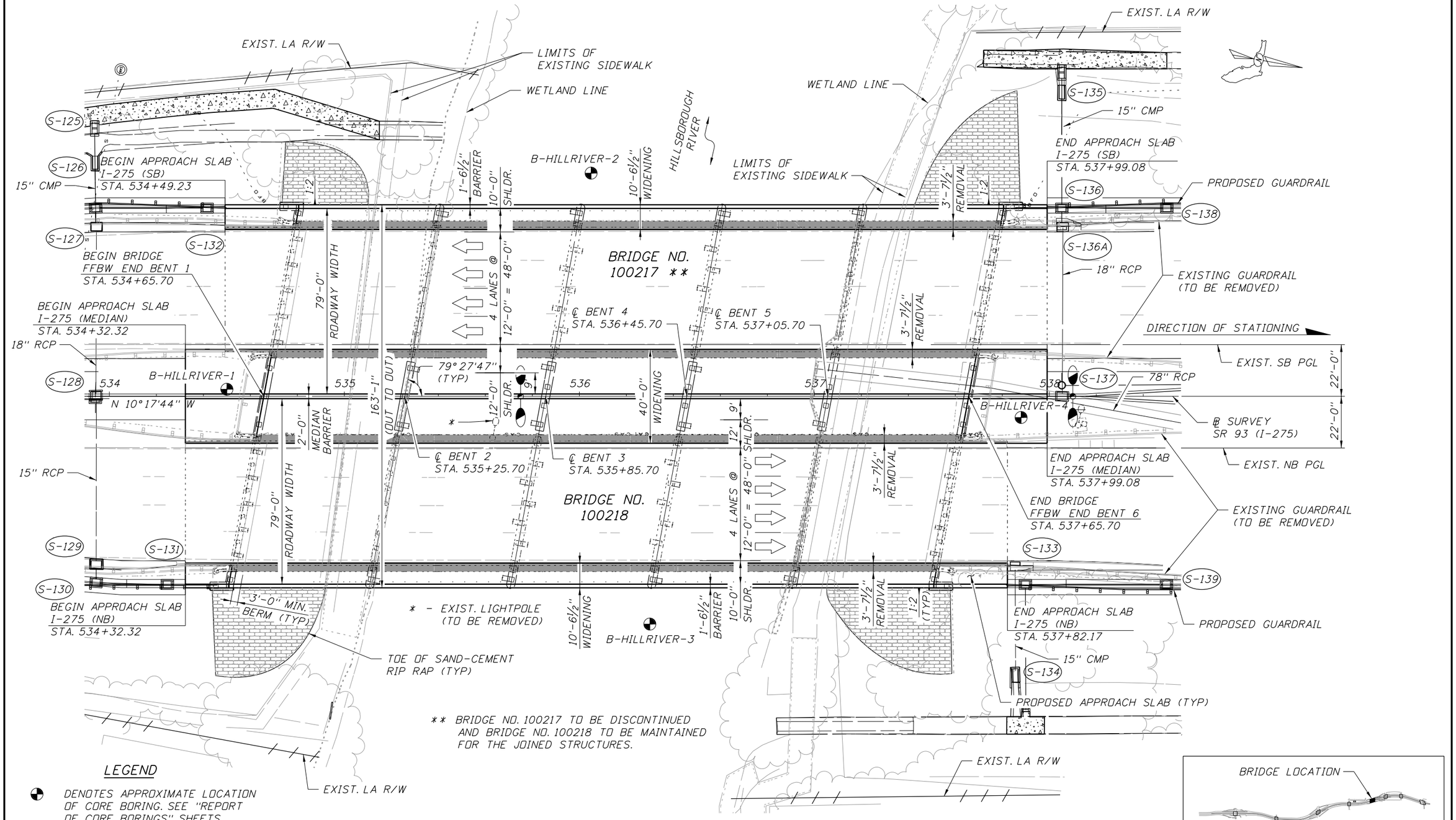
Note: [1]Seasonal High Water Table (SHWT)
[2]Hydraulic Grade Line (HGL)

9.0 CONCLUSION

The intent of this report is to identify one pond alternative within the existing right-of-way for each drainage basin. The analysis indicates that there is a viable option to provide stormwater management within the existing right-of-way for the Starter Project. The analysis does not include additional pavement such as slip ramps or toll gantry facilities due to on-going issues with the roadway design.

It is estimated that the project will impact the 100-year floodplain in Basin 14. The impacts are estimated at 1.65 acre-feet and will be compensated within the existing right-of-way.

Appendix A
Existing Bridge Data



PLAN

NOTES:

1. FOR DISPOSITION OF EXISTING UTILITIES, SEE UTILITY ADJUSTMENT SHEETS.

BRIDGE NO. 100218

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Kisinger Campo & Associates Corp.
201 N. Franklin Street
Suite 400
Tampa, FL 33602
Florida C.O.A. No.02317
Julian W. Gutierrez, PE No. 48879

DRAWN BY: JBH 10/09
CHECKED BY: ABK 11/09
DESIGNED BY: CEL 12/09
CHECKED BY: KL 12/09

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	HILLSBOROUGH	258660-2-52-01

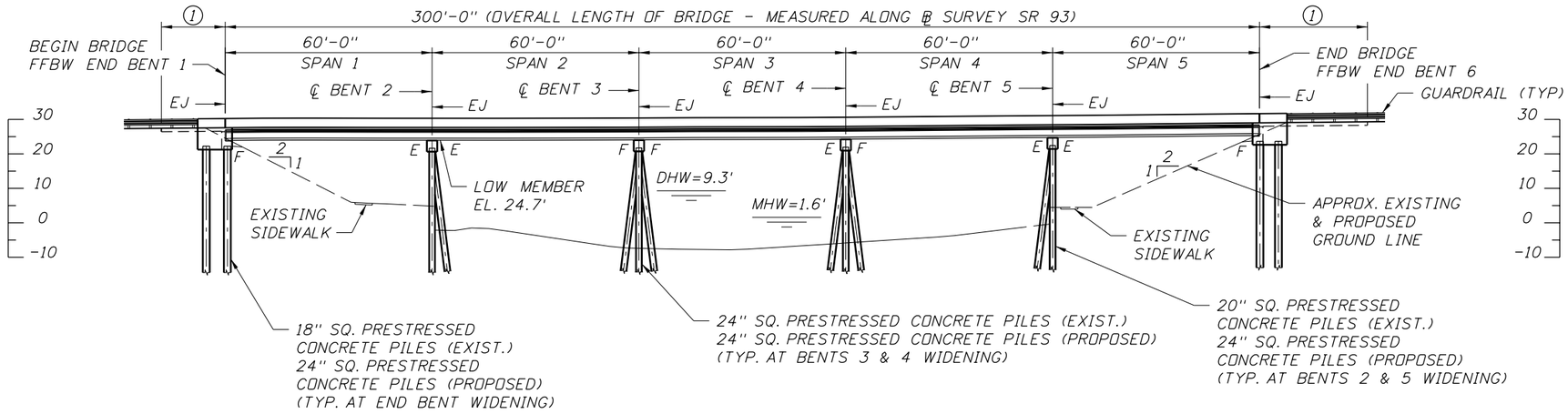
SHEET TITLE: PLAN

REF. DWG. NO.:

PROJECT NAME: I-275 (SR 93) FROM HILLSBOROUGH AVE. TO YUKON ST. NB & SB I-275 (SR 93) OVER HILLSBOROUGH RIVER

SHEET NO.: B5-1

jhartshorn 10/18/2011 7:51:19 AM M:\25866025201\struct\B5-100217_100218\B5PlanElev01.DGN



ELEVATION

TRAFFIC DATA						
ROADWAY	AADT YEAR 2012	AADT YEAR 2032	DESIGN SPEED	K	D	T
SR 93	170,800	204,200	60 MPH	8.44%	57.92%	6.0%

LEGEND

① APPROACH SLAB - LENGTH VARIES (SEE PLANS)

E - EXPANSION BEARING

F - FIXED BEARING

EJ - EXPANSION JOINT

NOTES:

1. FOR VERTICAL PROFILE, SEE SAW-CUT LINE ELEVATIONS ON "FINISH GRADE ELEVATIONS" SHEETS.

BRIDGE NO. 100218

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Kisinger Campo & Associates Corp.
201 N. Franklin Street
Suite 400
Tampa, FL 33602
Florida C.O.A. No.02317
Julian W. Gutierrez, PE No. 48879

DRAWN BY: JBH 10/09
CHECKED BY: ABK 11/09
DESIGNED BY: CEL 12/09
CHECKED BY: KL 12/09

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	HILLSBOROUGH	258660-2-52-01

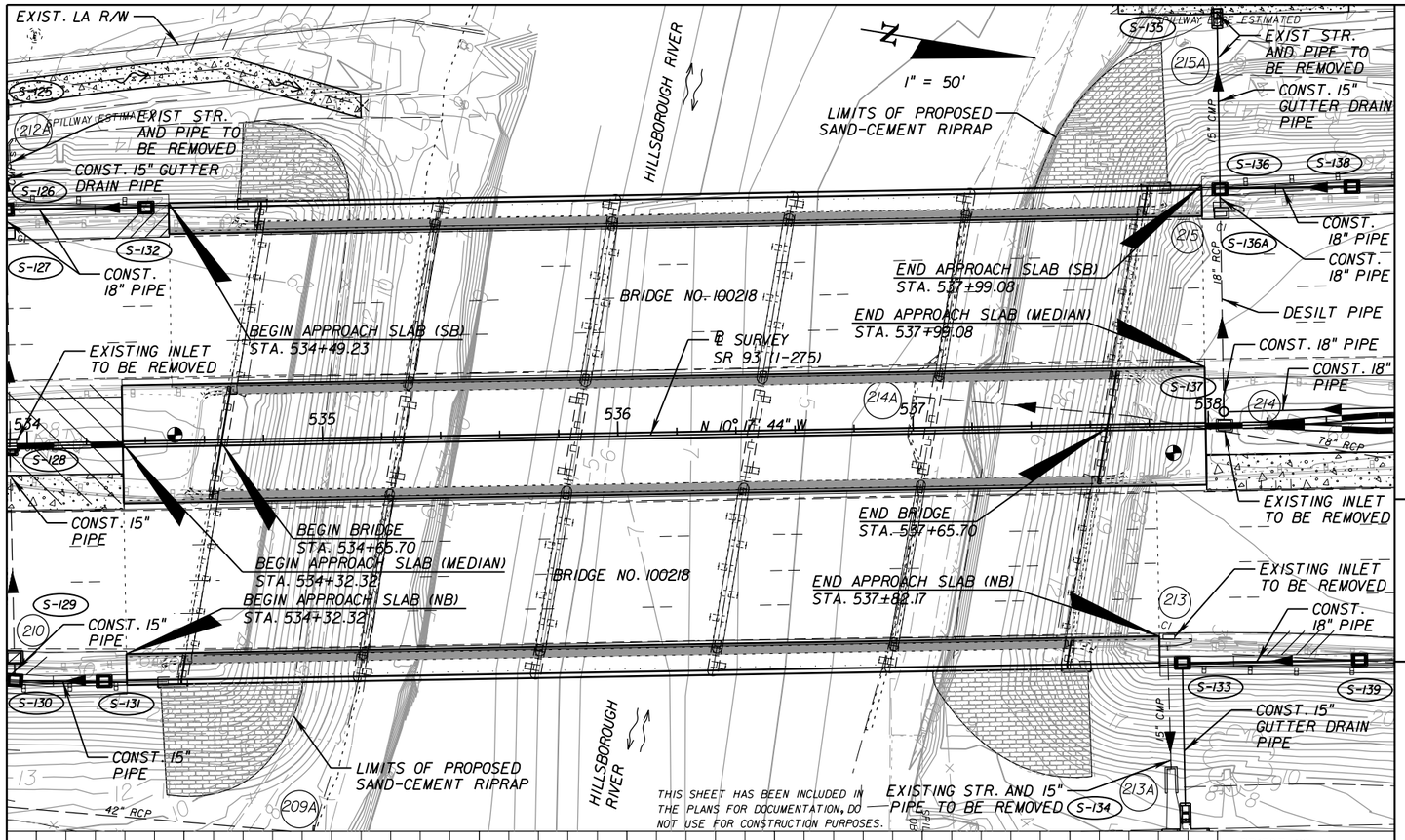
SHEET TITLE: ELEVATION

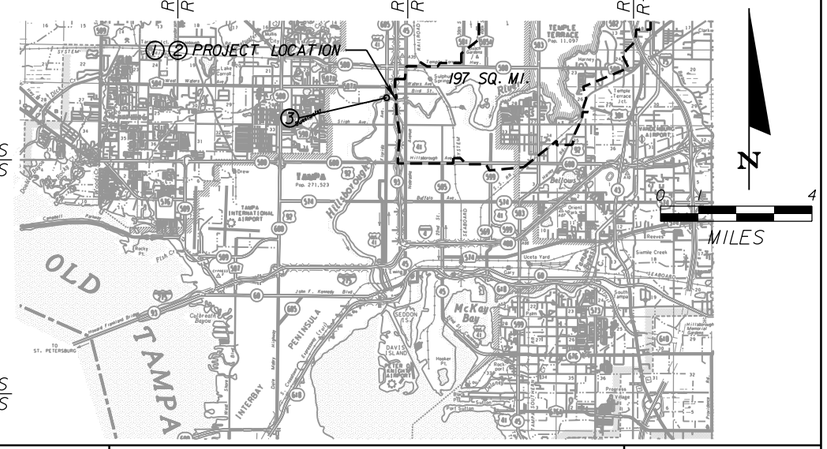
REF. DWG. NO.:

PROJECT NAME: I-275 (SR 93) FROM HILLSBOROUGH AVE. TO YUKON ST.
NB & SB I-275 (SR 93) OVER HILLSBOROUGH RIVER

SHEET NO.: B5-2

jhartshorn 10/18/2011 7:51:25 AM M:\2586025201\struct\B5-100217_100218\B5PlanElev02.DGN





(REFERENCE)	EXISTING STRUCTURES I-275 (1)	I-275 (2)	FLORIDA AVE. (3)	(4)	PROPOSED STRUCTURE
FOUNDATION	20"&24" SQ. CONC. PILE	20"&24" SQ. CONC. PILE	CONC. PIERS ON ROCK		PILE BENT
OVERALL LENGTH	300.0'	300.0'	162.4'		300'-0"
SPAN LENGTH	5 @ 60'-0"	5 @ 60'-0"	40.6'		5 @ 60'-0"
TYPE CONSTRUCTION	CONCRETE	CONCRETE	C-I-P T-BEAMS		CONCRETE
AREA OF OPENING @ D.F.	2085 SQ. FT.	2085 SQ. FT.	3140 SQ. FT.		2085 SQ. FT.
BRIDGE WIDTH	53'-0"	53'-0"	40'-2"		163'-1"
ELEV. LOW MEMBER	24.0' (NB)	24.0' (SB)	13.25'		24.7'

HYDRAULIC DESIGN DATA

NOTE:
The hydraulic data is shown for informational purposes only to indicate the flood discharges and water surface elevations which may be anticipated in any given year. This data was generated using highly variable factors determined by a study of the watershed. Many judgements and assumptions are required to establish these factors. The resultant hydraulic data is sensitive to changes, particularly antecedent conditions, urbanization, channelization and land use. Users of this data are cautioned against the assumption of precision which cannot be obtained.

TERMS:
Design Flood: Utilized to assure a desired level of hydraulic performance.
Base Flood: Has a 1% chance of being exceeded in any given year (100 year frequency)
Overtopping Flood: Causes flow over the highway, over a watershed divide, or thru emergency relief structures.
Greatest Flood: The most severe that can be predicted where overtopping is not practicable.

WATER SURFACE ELEVATIONS: N.H.W. (Non-Tidal) N/A; M.H.W. (Tidal) 1.6' (NGVD); CONTROL (Non-Tidal) N/A; M.L.W. (Tidal) 0.4' (NGVD)

FLOOD DATA:	MAX. EVENT OF RECORD	DESIGN FLOOD	BASE FLOOD	☐ OVERTOPPING or ☒ GREATEST FLOOD
STAGE ELEV. NGVD (ft)	10.4 (1933)	9.3 (A)	11.0 (A)	14.2 (A)
DISCHARGE (cfs)	UNKNOWN	6210 (B)	7780 (B)	8790 (B)
AVERAGE VELOCITY (f/s)	UNKNOWN	3.3 (C)	3.7 (C)	3.9 (C)
EXCEEDANCE PROB. (%)	UNKNOWN	2	1	0.2
FREQUENCY (yr.)	EXCEEDS 50 YR	50	100	500

SCOUR PREDICTIONS FOR PROPOSED STRUCTURE DESCRIBED ABOVE:

PIER INFORMATION NUMBERS	PIER INFORMATION SIZE AND TYPE	TOTAL SCOUR ELEVATION LONG TERM SCOUR ELEV.	WORST CASE < 100 yr. FREQ. (yr.) 100 YR	WORST CASE < 500 yr. FREQ. (yr.) 500 YR
BENTS 3 & 4	24" SQ CONC PILE	-7.7 (D)	-15.2	-15.6

HYDRAULIC RECOMMENDATIONS

1. BEGIN BRIDGE STATION 534+65.70; END BRIDGE STATION 537+65.70; SKEW ANGLE 10° 32' 13"
2. CLEARANCE PROVIDED: NAV: HORIZ. 52' VERT. 23.1' ABOVE EL. 1.6'; DRIFT: HORIZ. 54' VERT. 14.7' ABOVE EL. 9.3'
3. MINIMUM CLEARANCE: NAV: HORIZ. 52' VERT. 6' ABOVE EL. 1.6'; DRIFT: HORIZ. N/A VERT. 2' ABOVE EL. 9.3'
4. ABUTMENTS:

	BEGIN BRIDGE	END BRIDGE
RUBBLE GRADE:	SAND-CEMENT RIPRAP	SAND-CEMENT RIPRAP
SLOPE:	1:2	1:2
BURIED OR NON-BURIED HORIZ. TOE:	BURIED	BURIED
TOE HORIZ. DISTANCE:	1.5'	1.5'
LIMIT OF PROTECTION:	24.0'	24.0'

5. DECK DRAINAGE: 4" SCUPPERS ON 2.5 FT CENTER SPACING FOR SPAN 1, 5.0 FT CENTER SPACING FOR SPANS 2, 3 AND 4

REMARKS:
(A) ELEV. FROM FEMA FIRM MAP (INFLUENCED BY TIDAL SURGES)
(B) FROM FEMA HYDROLOGIC ANALYSIS (RUNOFF INCLUDING FLOWS FROM TAMPA DAM)
(C) FROM BHR, HEC-RAS ANALYSIS; (D) CHANNEL BOTTOM. = -7.7'
ELEVATIONS SHOWN ARE IN NATIONAL GEODETIC VERTICAL DATUM (NGVD 29)

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

Kisinger Campo & Associates Corp.
201 N. Franklin Street, Suite 400
Tampa, Florida 33602
Florida Certificate of Authorization No. 02317
Engineer of Record: Tara K. M. Spieler, P.E.
P.E. No.: 55333

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	HILLSBOROUGH	258660-2-52-01

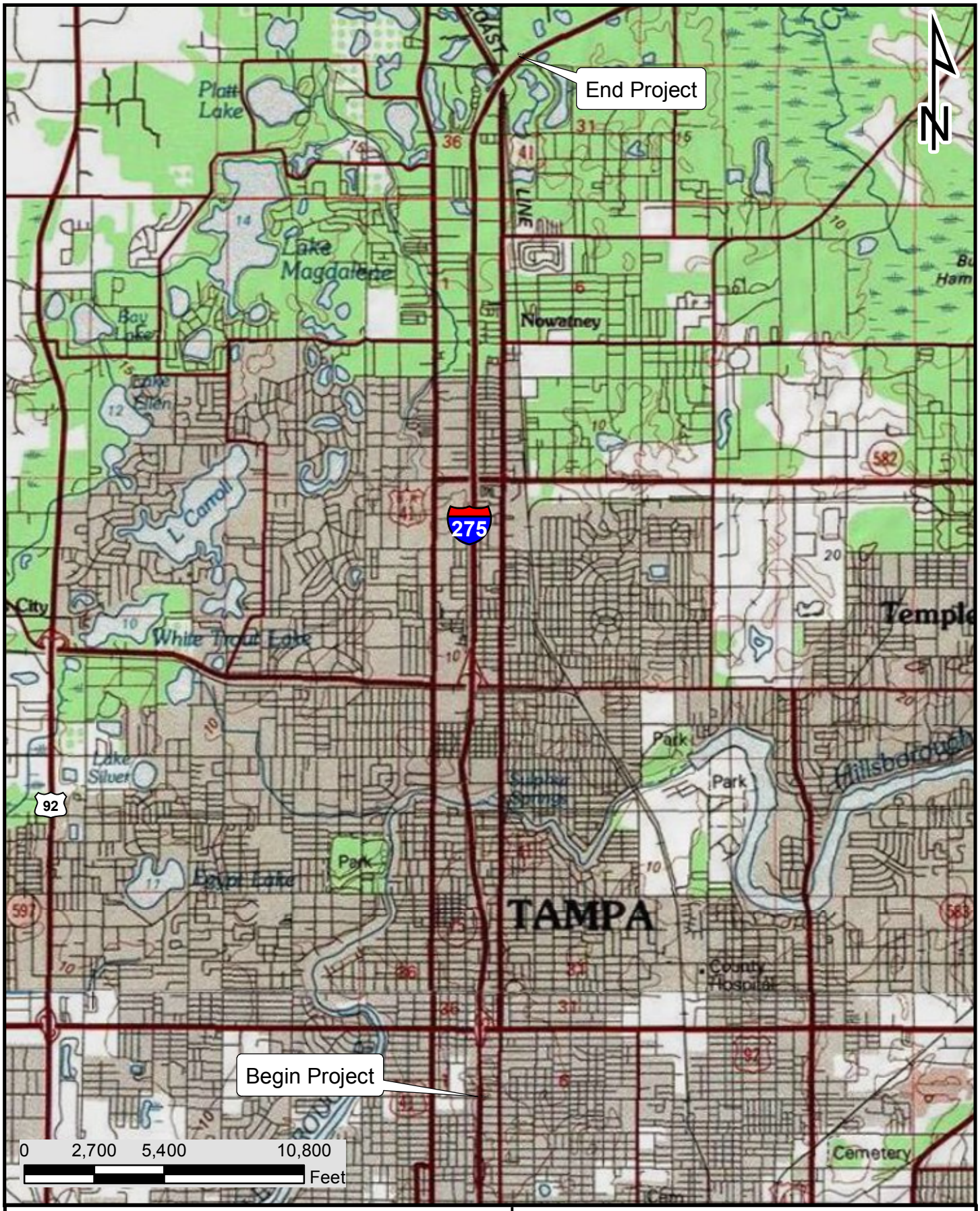
BRIDGE HYDRAULIC RECOMMENDATIONS

SHEET NO. B5-3

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

dtrew 11/3/2011 5:25:30 PM M:\25866025201\drainage\BRHYRD01.DGN

Appendix B
Existing Conditions Data Collection

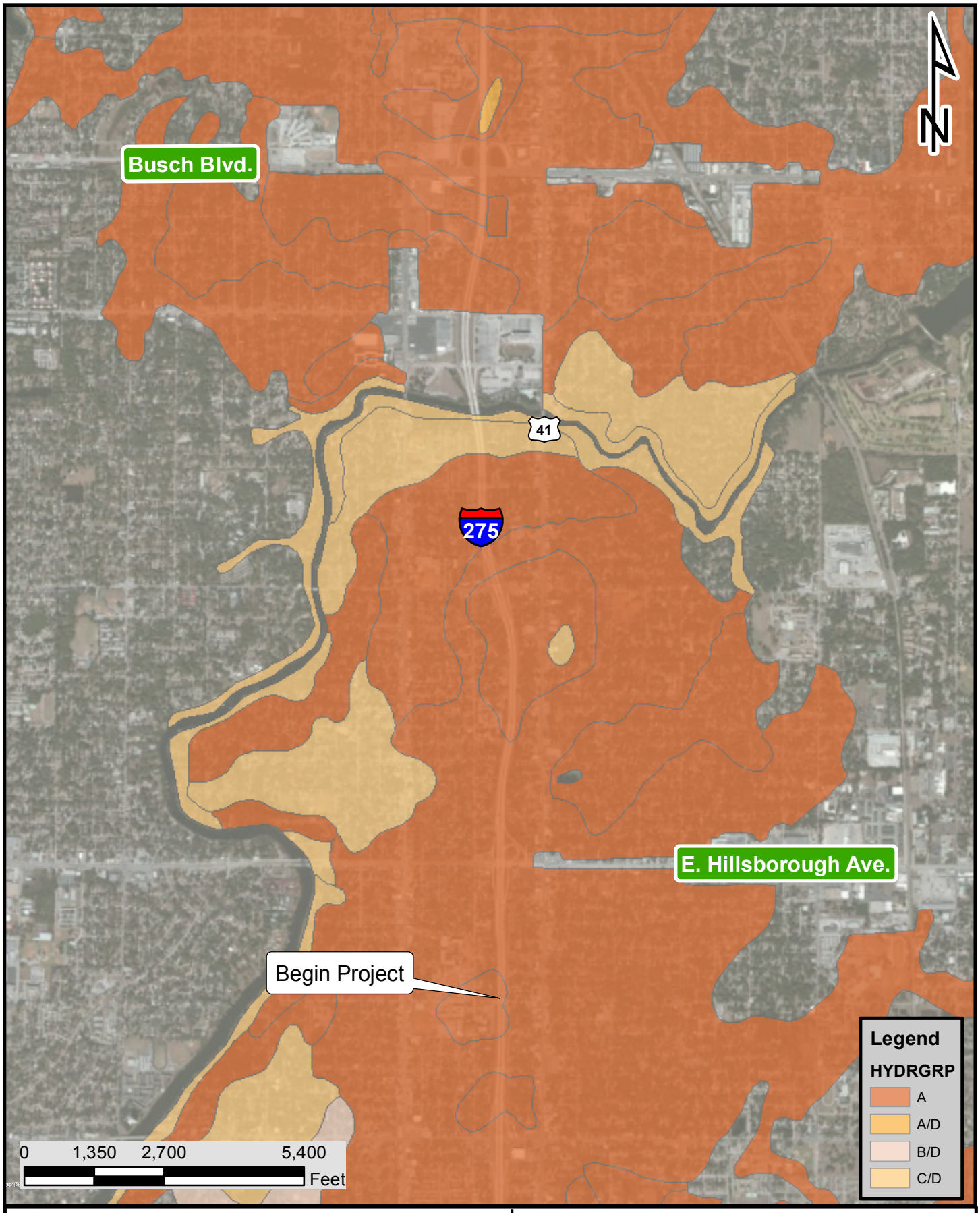


I-275 from North of Martin Luther King Jr. Blvd. to North of Bearss Ave.

FPID: 431821-1
Hillsborough County, Florida

W:\I-275ExpLanesPDE\GIS

USGS QUAD MAP



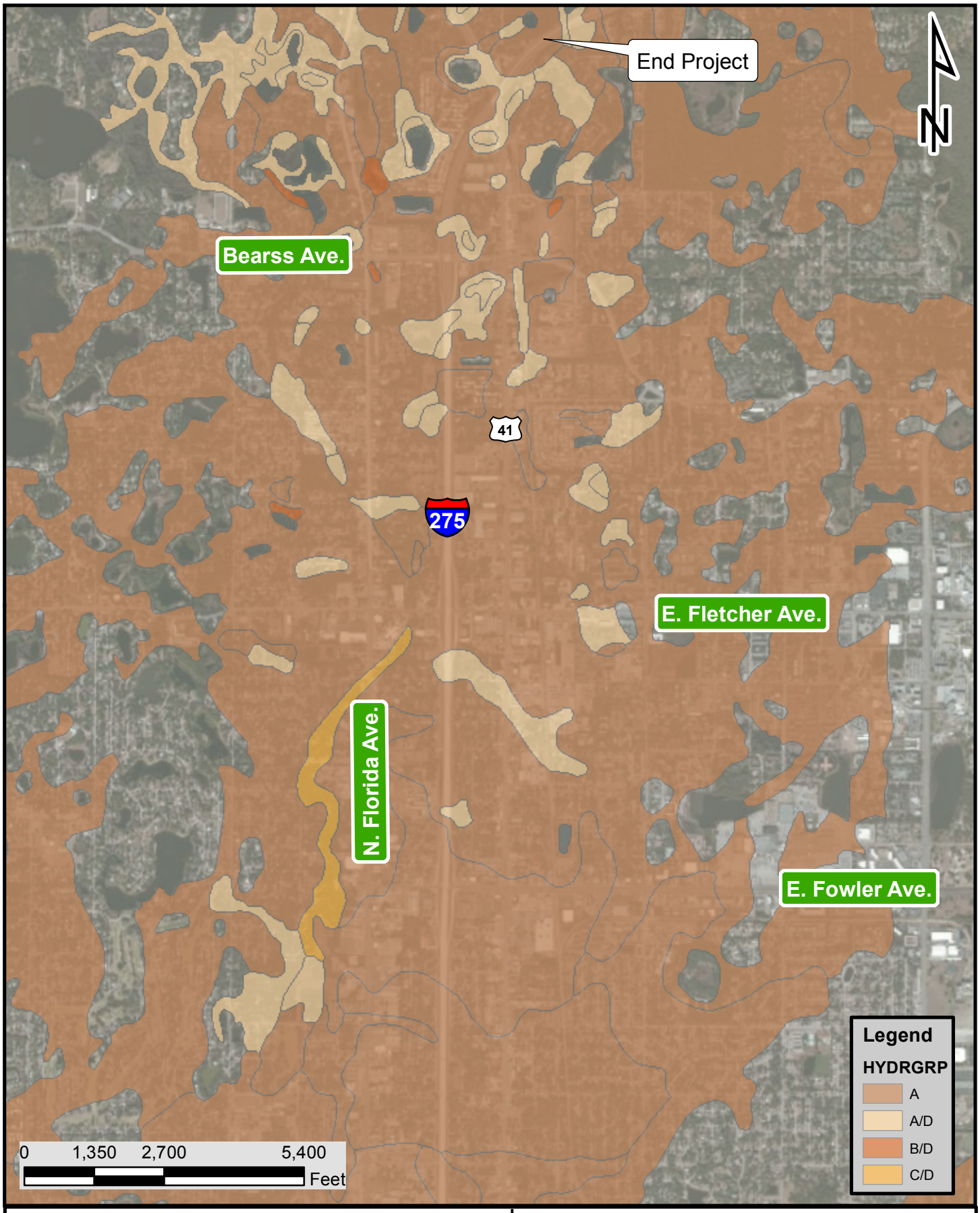
FDOT

I-275 from North of Martin Luther King Jr. Blvd. to North of Bearss Ave.

FPID: 431821-1
Hillsborough County, Florida

W:\I-275ExpLanesPDE\GIS

SOILS MAP (SHEET 1 OF 2)



FDOT

I-275 from North of Martin Luther King Jr. Blvd. to North of Bearss Ave.

FPID: 431821-1
Hillsborough County, Florida

W:\I-275ExpLanesPDE\GIS

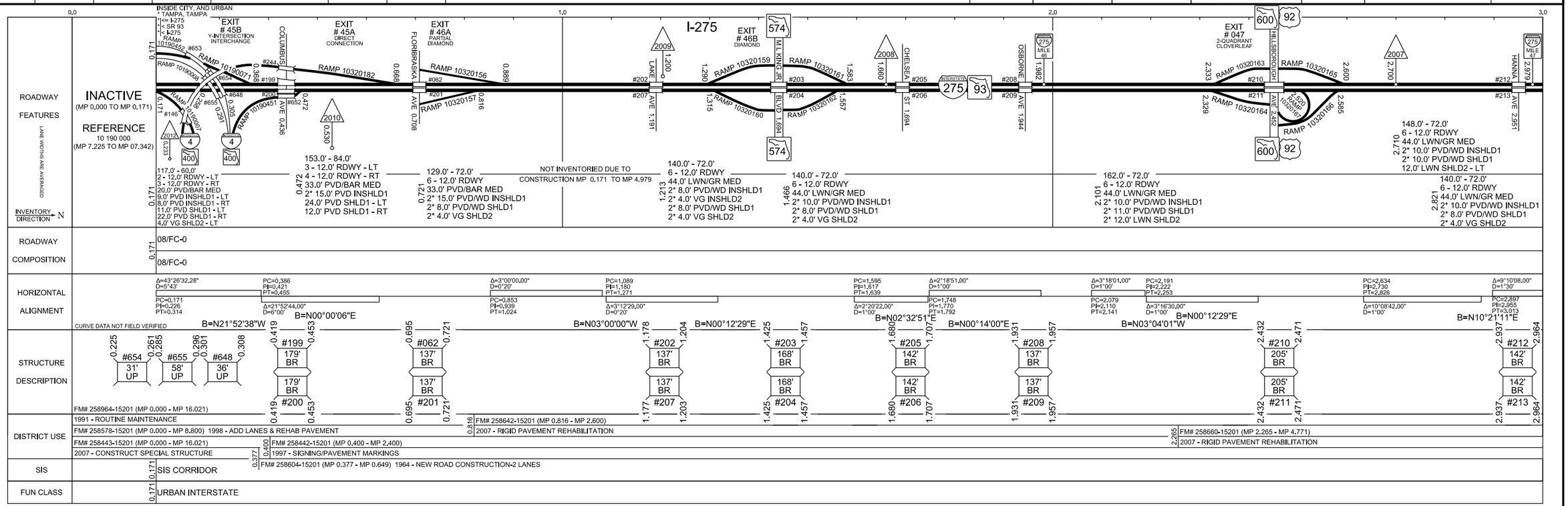
SOILS MAP
(SHEET 2 OF 2)

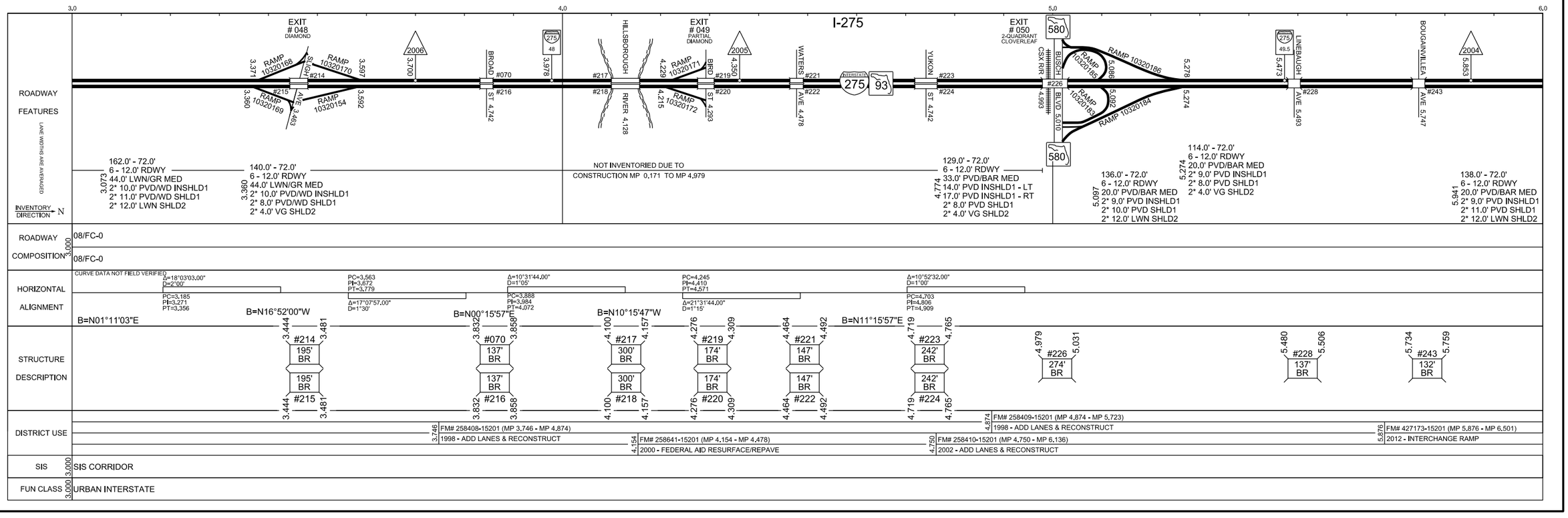
	5 YR INV	SLD REV	INTERIM REVISIONS BMP	EMP	INV	SLD REV
DATE	01 / 25 / 2013	02 / 25 / 2013				
BY	FTE / JW-KA	FTE / KA				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02	I-275	SR 93	HILLSBOROUGH	07	10 320 000	1 OF 4





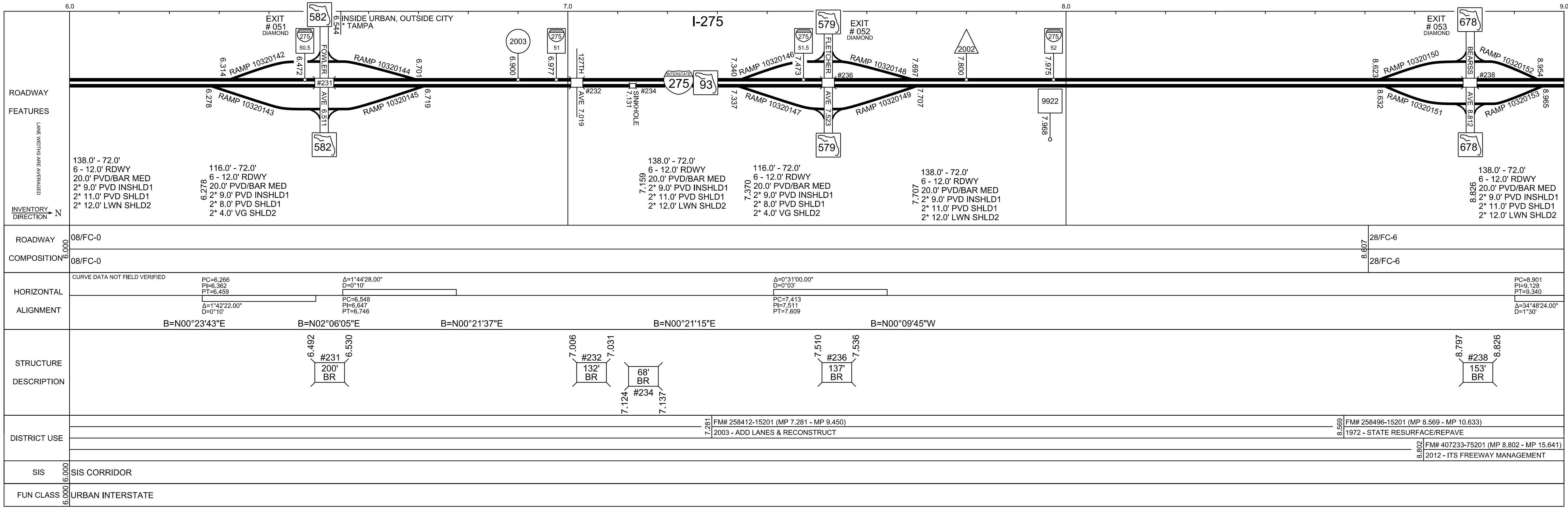
	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	01 / 25 / 2013	02 / 25 / 2013				
BY	FTE / JW-KA	FTE / KA				

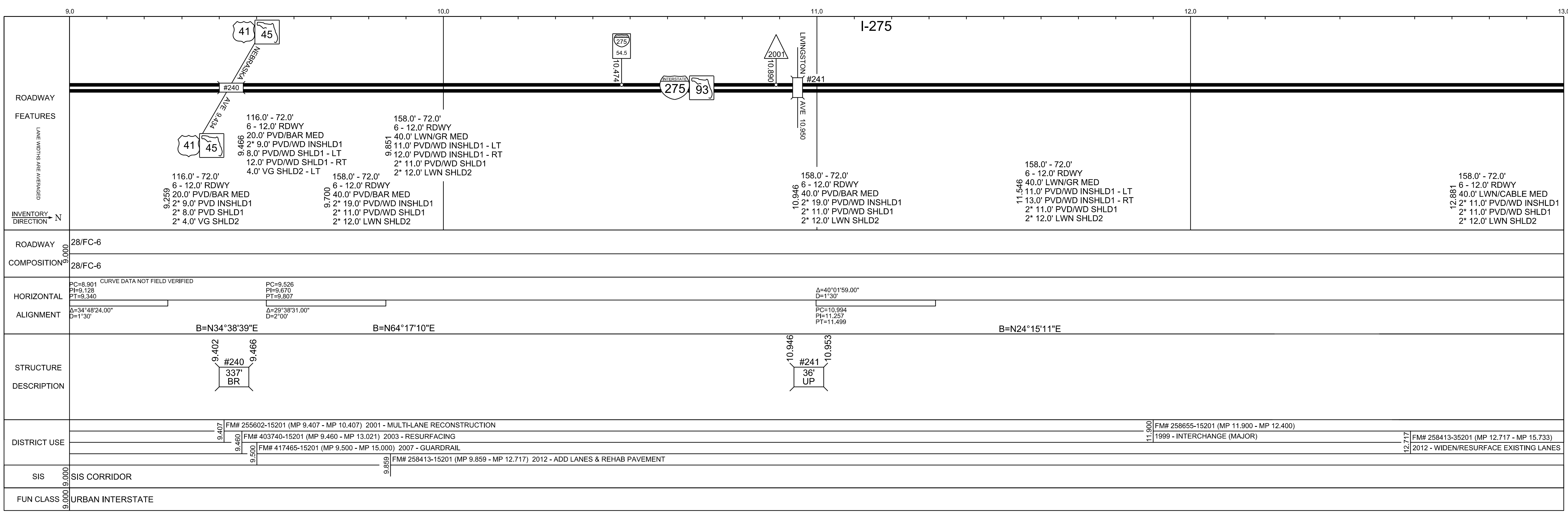
(INTERIM REVISIONS: BMP, EMP, INV, SLD REV)

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02	I-275	SR 93	HILLSBOROUGH	07	10 320 000	2 OF 4



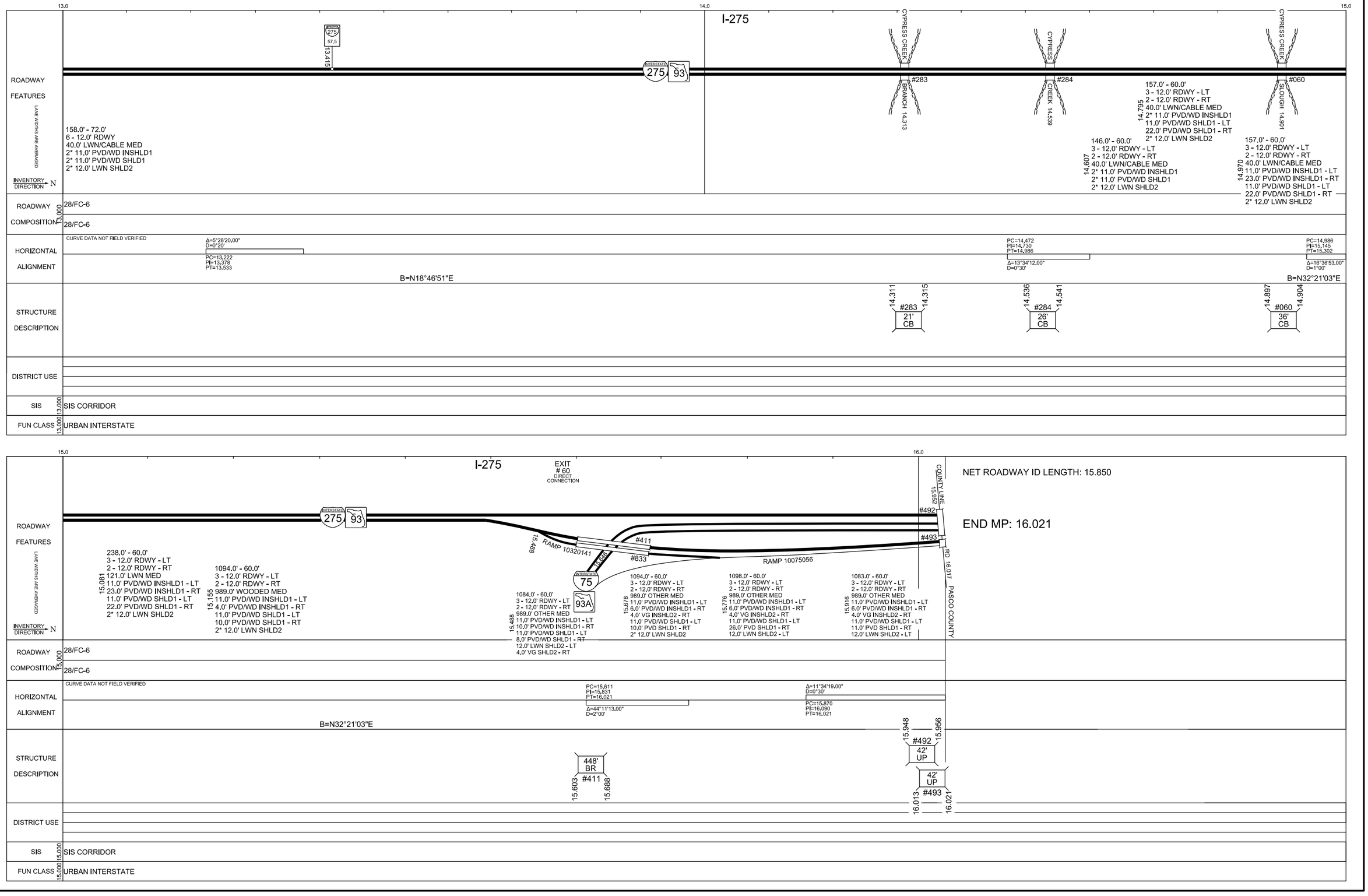


	5 YR INV	SLD REV	INTERIM REVISIONS BMP	EMP	INV	SLD REV
DATE	01 / 25 / 2013	02 / 25 / 2013				
BY	FTE / JW-KA	FTE / KA				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02	I-275	SR 93	HILLSBOROUGH	07	10 320 000	3 OF 4



FLOOD INVESTIGATION INVENTORY SHEET

Flood Investigation # 1002042009547

Entry Date: 2/4/2009 11:02:04 AM
Revised Date: 8/13/2010 1:39:47 PM
Completed By: Stephanie Bernard, HDR

SECTION I: LOCATION

County - Hillsborough
State Road - SR 93
Road Description - 2 lane(s), Local Road, Roadside Ditches
Roadway Separation - Undivided
Direction of Travel - Two-Way
Functional System of Road - Rural
Specific Classification of Road - Local Road
Roadway Drainage - Roadside Ditches

Flooding Condition - Off-System

Local Road Subject to Flooding - Central Ave
Business Name:
Business/Private Property Address Subject to Flooding -

Location:
Latitude: 28.05636333333
Longitude: -82.45536666667

Section/Township/Range - 12 / 28S / 18E
Project is Active - No

SECTION II: PROBLEM DESCRIPTION

Date of Original Complaint -
Complainant Name - Amos Castillo
Problem Description - Multiple

Details of the Problem - During recent storm events the roadway floods and floods yards along Central Avenue (SB exit ramp of I-275). Flooding may be due to the elevation differences along the ditch. Occurred several times in 2003. During the storm events in 2003 the roadway floods and as a result floods yards and parts of tile adjacent to a house on Central Avenue near Fowler Avenue.

Frequency of Flooding - Several times per year
Source for Frequency Data - County Maintenance

Historic High Water - No historic high water data was available.

Flooding Event High Water - No event high water was recorded.

History of Problem - From work order 9999-021-09 "Reason: During episodes of heavy rains, water pools along Central Avenue and floods private property owners. Currently, there is no effective means of

draining this water. Therefore the contractor shall construct a swale and install a mitered end setion and 450 mm RCP to channel water to S-222, the existing inlet in this area, and alleviate the flooding problem on Central Avenue."

The contractor was David Nelson Construction Company.

Other Communications

Communication Date	Type	Communication From	Communication To	Communication Attachment Name
1/14/2004	Communication Memo	Megan Arasteh, FDOT Drainage	Bud Nabong, FDOT Maintenance	memo_ central ave.pdf

SECTION III: PROBLEM ANALYSIS

Remedy Efforts

Date	Remedy by	Remedy Effort	Attachment
7/12/2002	Contract	Install or Modify Structure or Pipe	27282434_Work Order.pdf

Current Problem Analysis

Current Problem Analysis:

During recent storm events the roadway floods and ends up flooding a yard adjacent to a house.

Outfall Description: Unknown
Responsible Entity for Maintenance of Outfall: FDOT

Attachments

Attachment	Attachment Type	Attachment Description
27285145_Correspondence.pdf	Other Data	Complaint Inventory sheet, e-mails
27211209_Calculations.pdf	Engineering Calculations	Storm tabs, check slopes
27211299_aerials1.pdf	Aerial Photo	Aerial, SWFWMD contours
272115846_Field Book.pdf	Other Data	Field Book

27212049_Field Book Markups.pdf	Other Data	Field Book containing markups
2729614_summary.pdf	Other Data	Summary sheet
272121311_XS Markups.pdf	Project Plans	Cross Section Markups
27281250_As Builts.pdf	Project Plans	As Builts
2728159_As Builts with Work Order.pdf	Project Plans	As Builts with Work Order added
27281733_final memo.pdf	Other Data	Final memo with recommendations
2728113_SLD.pdf	Other Data	Straight Line Diagram
27281254_crop SWFWMD.pdf	SWFWMD Contour Map	Cropped SWFWMD aerial of flooding area to allow for better clarity
27291013_Original Plans 1999.pdf	Project Plans	Original Plans, 1999 by Parsons Brinckerhoff

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

Recommendation: Re-grading and lowering the ditch should somewhat alleviate the water approaching the home during storm events. Recommendations included lowering MES flowline at station 204+56.34, re-grading the ditch to below the inlet grate, and clean the fence area.

Recommendation Date:

Project Ranking:

ROADWAY FLOODING MATRIX

Ranking of the roadway hazard level based on accident data, ADT, depth and location of water, and site specific factors. **(Weight Factor = 10)**	0
Ranking of the operational impacts (i.e. magnitude of vehicle speed reduction, ADT, frequency of flooding, availability of detour route, and cost to FDOT to handle problem, etc.) **(Weight Factor = 7)**	0
Ranking of the nuisance factor to the public and FDOT. **(Weight Factor = 3)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Ranking of the costs to cure the problem, if any. **(Weight Factor = 5)**	0
Total Score	**0**

PRIVATE PROPERTY FLOODING MATRIX

Ranking of the potential financial impacts versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the hazard level versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the nuisance factor to the private property as well as FDOT. **(Weight Factor = 5)**	0
Ranking of the costs to FDOT to cure the problem versus the financial impact to the private property if not cured. **(Weight Factor = 10)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Total Score	**0**

FLOOD INVESTIGATION INVENTORY SHEET

Flood Investigation # 1006172010814

Entry Date: 6/17/2010 7:20:09 AM
Revised Date: 7/16/2010 7:55:35 AM
Completed By: Stephanie Hildreth, HDR

SECTION I: LOCATION

County - Hillsborough
State Road - SR 93
Road Description - 6 lane(s), Arterial Interstate, Multiple
Roadway Separation - Divided w/Non-Traversable Median
Direction of Travel - Two-Way
Functional System of Road - Urban
Specific Classification of Road - Arterial Interstate
Roadway Drainage - Multiple

Flooding Condition - Off-System

Local Road Subject to Flooding - 122nd Avenue
Business Name:
Business/Private Property Address Subject to Flooding -
702 E 122nd Avenue
Tampa , FL 33612

Location:
Latitude: 28.05846
Longitude: -82.454166

Section/Township/Range - 12 / 28S / 18E
Project is Active - Yes

SECTION II: PROBLEM DESCRIPTION

Date of Original Complaint - 7/1/2003
Complainant Name - Ed Browder
Problem Description - Property Flooding

Details of the Problem - Property owner is experiencing flooding in front and back side of his house and the septic tank is not functioning properly due to a high water table.

Frequency of Flooding - Several times per year
Source for Frequency Data - Local Resident/Person Interviewed

Historic High Water - No historic high water data was available.

Flooding Event High Water - No event high water was recorded.

History of Problem - Frequently recurring flooding problem in this low lying area.

Persons Interviewed

Site Visit Date - 7/1/2003
Site Inspection By - Thomas Gaffney, FDOT Maintenance
Interviewee(s) - Ed Browder, Property Owner
Site Visit Conditions - Not Applicable

Observed High Water - No observed high water was observed on the date of the site visit.

Site Visit Details - Thomas Gaffney met Mr. Browder on July 1, 2003. Carlos Lopez (FDOT Engineering) met with Mr. Browder on July 28, 2003 and conducted a site review. Mr. Browder indicated the problem was created after the interstate improvements were done in 2002. He indicated the interstate ditch used to be about 4 feet deep and could store the runoff. He also indicated the existing mild swale does not retain the runoff and drains to his site.

Other Communications

Communication Date	Type	Communication From	Communication To	Communication Attachment Name
7/1/2003	Email	Tom Gaffney, FDOT Maintenance	John Powanda, FDOT Drainage	e-mail 1_ bowder.pdf
8/3/2004	Communication Memo	Richard Griffin, FDOT Drainage	Harvey Hunt, FDOT Maintenance	HHuntMemo_ bowder.pdf
7/21/2003	Email	Megan Arasteh, FDOT Drainage	Carlos Lopez, HDR Engineering	correspondence_ bowder.pdf

SECTION III: PROBLEM ANALYSIS

Attachments

Attachment	Attachment Type	Attachment Description
Survey Request7-04.pdf	Other Data	Survey Request Form
Drainage Complaint_ bowder.pdf	Other Data	Drainage Complaint Inventory Sheet
photos_ bowder.pdf	Site Photo	Site photos
cross sections_ bowder.pdf	Project Plans	Ditch Cross Sections
survey_ bowder.pdf	Other Data	Field Survey
final plans_ bowder.pdf	Project Plans	Final plans

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

Recommendation:

Area has a long history of flooding, Taliaferro Avenue is a flood prone area. Old FDOT Drainage Maps and SWFWMD aerial maps indicate area is a low-lying area. A summary of our findings is as follows:

Drainage Map (SPN 10320-1460 & 10290-1505) indicates Mr. Browder's residence drains to the east to an existing pond west of Taliaferro Avenue. This pond drains to the south to 120th Avenue, which is in a depression. The HW elevation shown in the map is 35.7 ft. Mr. Browder's back yard elevation is approximately 35.43 ft (from SPN 10320-1466 plans, Sta. 206+00). The maps indicate area is poorly drained, runoff eventually drains to the east to the Nebraska Avenue drainage system.

The Drainage Map (SPN 10320-3466) is consistent with the above map. The construction plans for this project indicate that the I-275 roadside ditch was not filled with the improvements constructed in 2002. The ditch was expanded on the southbound roadside ditch, which is connected by a cross drain (S-233B) at Station 36+50. The low point of the ditch is a Sta. 206+00, which corresponds to Mr. Browder's lot. The ditch has no outfall and sheet flows to the east once it overflows.

Diverting the ditch runoff to the south, to the Fowler Ave. system is not feasible. The existing pipe flow line at this location is above 35.0 ft., therefore no positive drainage will be provided. This storm sewer system would have to be lowered across Fowler Ave. and to the south.

RECOMMENDATIONS:

1. Improvement of the Taliaferro pond/ outfall would improve the flooding conditions. **Contact Hillsborough County, the owner of this system, to perform this work**. Mr. Browder stated that the pond overflows and floods his property front, along 122nd Avenue.
2. **Investigate if the County has plans to improve the drainage of this area**; PBSJ has designed the improvements for an area along Taliaferro Ave. located about eight blocks north of 122nd Ave.
3. **Frequent cleaning of the I-275 ditch by the maintenance forces.**
4. **No solution is recommended within the DOT right-of-way.**

Recommendation Date:

Project Ranking:

ROADWAY FLOODING MATRIX

Ranking of the roadway hazard level based on accident data, ADT, depth and location of water, and site specific factors. **(Weight Factor = 10)**	0
Ranking of the operational impacts (i.e. magnitude of vehicle speed reduction, ADT, frequency of flooding, availability of detour route, and cost to FDOT to handle problem, etc.) **(Weight Factor = 7)**	0
Ranking of the nuisance factor to the public and FDOT. **(Weight Factor = 3)**	0

Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Ranking of the costs to cure the problem, if any. **(Weight Factor = 5)**	0
Total Score	**0**

PRIVATE PROPERTY FLOODING MATRIX

Ranking of the potential financial impacts versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the hazard level versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the nuisance factor to the private property as well as FDOT. **(Weight Factor = 5)**	0
Ranking of the costs to FDOT to cure the problem versus the financial impact to the private property if not cured. **(Weight Factor = 10)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Total Score	**0**

FLOOD INVESTIGATION INVENTORY SHEET

Flood Investigation # 1003282013398

Entry Date: 3/28/2013 2:23:15 PM
Revised Date: 3/28/2013 2:26:06 PM
Completed By: Richard Griffin, FDOT

SECTION I: LOCATION

County - Hillsborough
State Road - SR 93
Road Description - 8 lane(s), Arterial Interstate, Roadside Ditches
Roadway Separation - Divided w/Non-Traversable Median
Direction of Travel - Two-Way
Functional System of Road - Mixed
Specific Classification of Road - Arterial Interstate
Roadway Drainage - Roadside Ditches

Flooding Condition - Off-System

Local Road Subject to Flooding - 126 th Street
Business Name: NA
Business/Private Property Address Subject to Flooding -
NA
, FL

Location:
Latitude: 28.061365
Longitude: -82.454567

Section/Township/Range - / N / E
Project is Active - Yes

SECTION II: PROBLEM DESCRIPTION

Persons Interviewed

Site Visit Date - 3/27/2013
Site Inspection By - Richard Griffin ,
Interviewee(s) - Local resident last house on the south side ,
Site Visit Conditions - No Standing Water, previous flooding not apparent

Observed High Water - No observed high water was observed on the date of the site visit.

Site Visit Details - I was asked to meet Walt Williams from Hillsborough County at the end of 126th where it meets the noise wall on the east side of I-275 to look at a local roadway flooding issue.

I talked to the person who lives in the last house on the south side of 126th. When questioned this man told me that he has seen the area hold water since he had lived there; approximately 10 years. He stated that the water fills the roadway area and then the water seeps into the ground once the rain stops. There is

no known flooding of the structures. When promted about the effects of the wall on the flooding he stated that it seems to have added to the problem.

Walt Williams provided no additional information.

SECTION III: PROBLEM ANALYSIS

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

Recommendation: I told Mr. Williams that this was an historical problem but that we would look at any mitigation measures that could help the situation. I recomended that the County survey the area to get a better indication of the existing conditions; Mr. Williams agreed that they would survey. Nothing further will be done until we hear back from the County.

Recommendation Date: 3/28/2013

Project Ranking:

ROADWAY FLOODING MATRIX

Ranking of the roadway hazard level based on accident data, ADT, depth and location of water, and site specific factors. **(Weight Factor = 10)**	1
Ranking of the operational impacts (i.e. magnitude of vehicle speed reduction, ADT, frequency of flooding, availability of detour route, and cost to FDOT to handle problem, etc.) **(Weight Factor = 7)**	1
Ranking of the nuisance factor to the public and FDOT. **(Weight Factor = 3)**	1
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	1
Ranking of the costs to cure the problem, if any. **(Weight Factor = 5)**	1
Total Score	**30**

PRIVATE PROPERTY FLOODING MATRIX

Ranking of the potential financial impacts versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	1
Ranking of the hazard level versus the flooding frequency that	

impacts the private property. **(Weight Factor = 10)**	1
Ranking of the nuisance factor to the private property as well as FDOT. **(Weight Factor = 5)**	5
Ranking of the costs to FDOT to cure the problem versus the financial impact to the private property if not cured. **(Weight Factor = 10)**	1
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	1
Total Score	**60**

FLOOD INVESTIGATION INVENTORY SHEET

Flood Investigation # 1007022010774

Entry Date: 7/2/2010 1:10:46 PM
Revised Date: 7/16/2010 8:39:48 AM
Completed By: Stephanie Hildreth, HDR

SECTION I: LOCATION

County - Hillsborough
State Road - SR 93
Road Description - 6 lane(s), Arterial Interstate, Multiple
Roadway Separation - Divided w/Non-Traversable Median
Direction of Travel - Two-Way
Functional System of Road - Urban
Specific Classification of Road - Arterial Interstate
Roadway Drainage - Multiple

Flooding Condition - Off-System

Local Road Subject to Flooding - 127th Avenue
Business Name:
Business/Private Property Address Subject to Flooding -

Location:
Latitude: 28.061969
Longitude: -82.454716

Section/Township/Range - 12 / 28S / 18E
Project is Active - Yes

SECTION II: PROBLEM DESCRIPTION

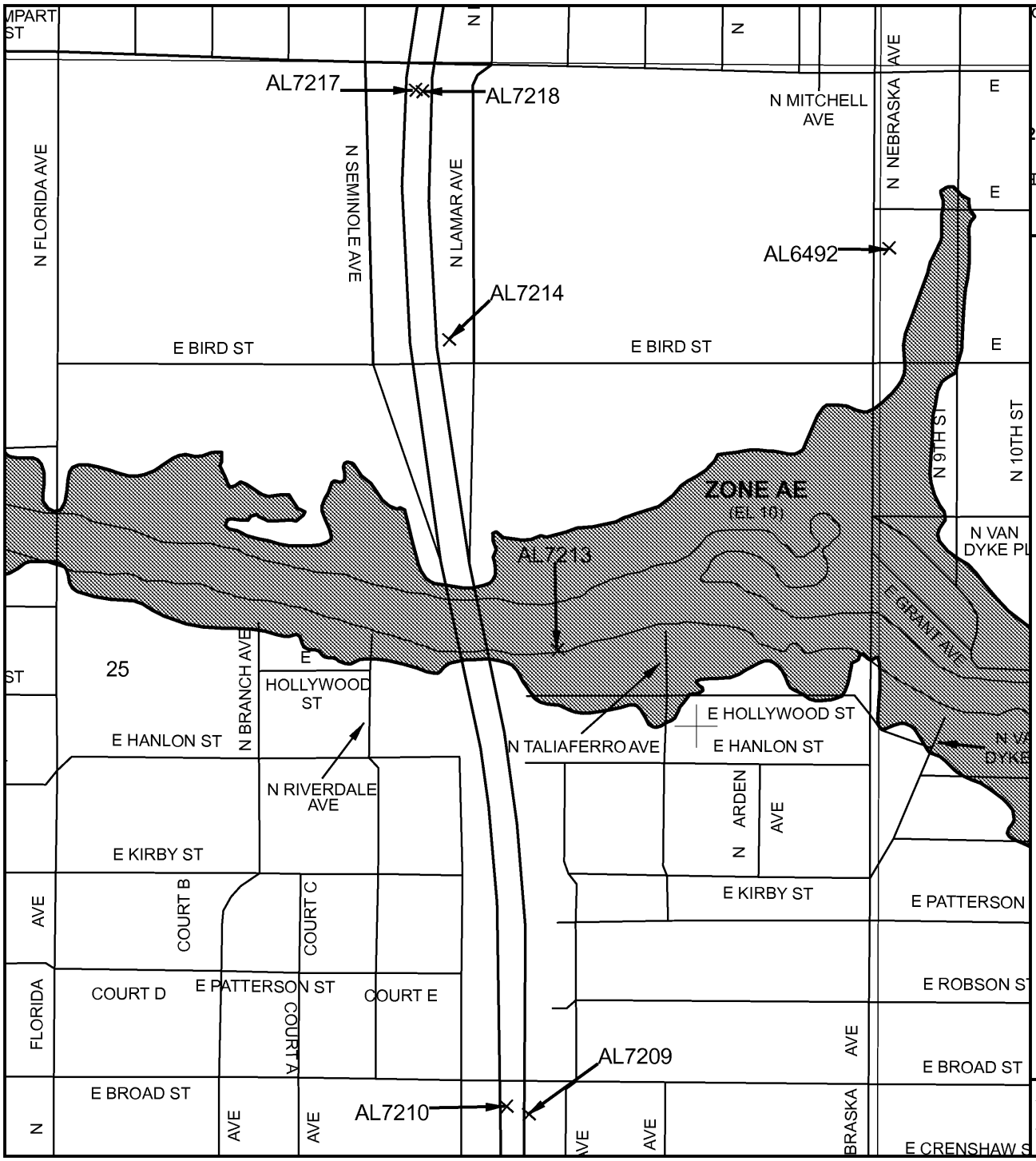
SECTION III: PROBLEM ANALYSIS

Attachments

Attachment	Attachment Type	Attachment Description
map_ 127th.pdf	Site Map	Location map
Meeting_ 127th.pdf	Other Data	Meeting Attendance List and Site photos

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

Appendix C
FEMA Maps



onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0214H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 214 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

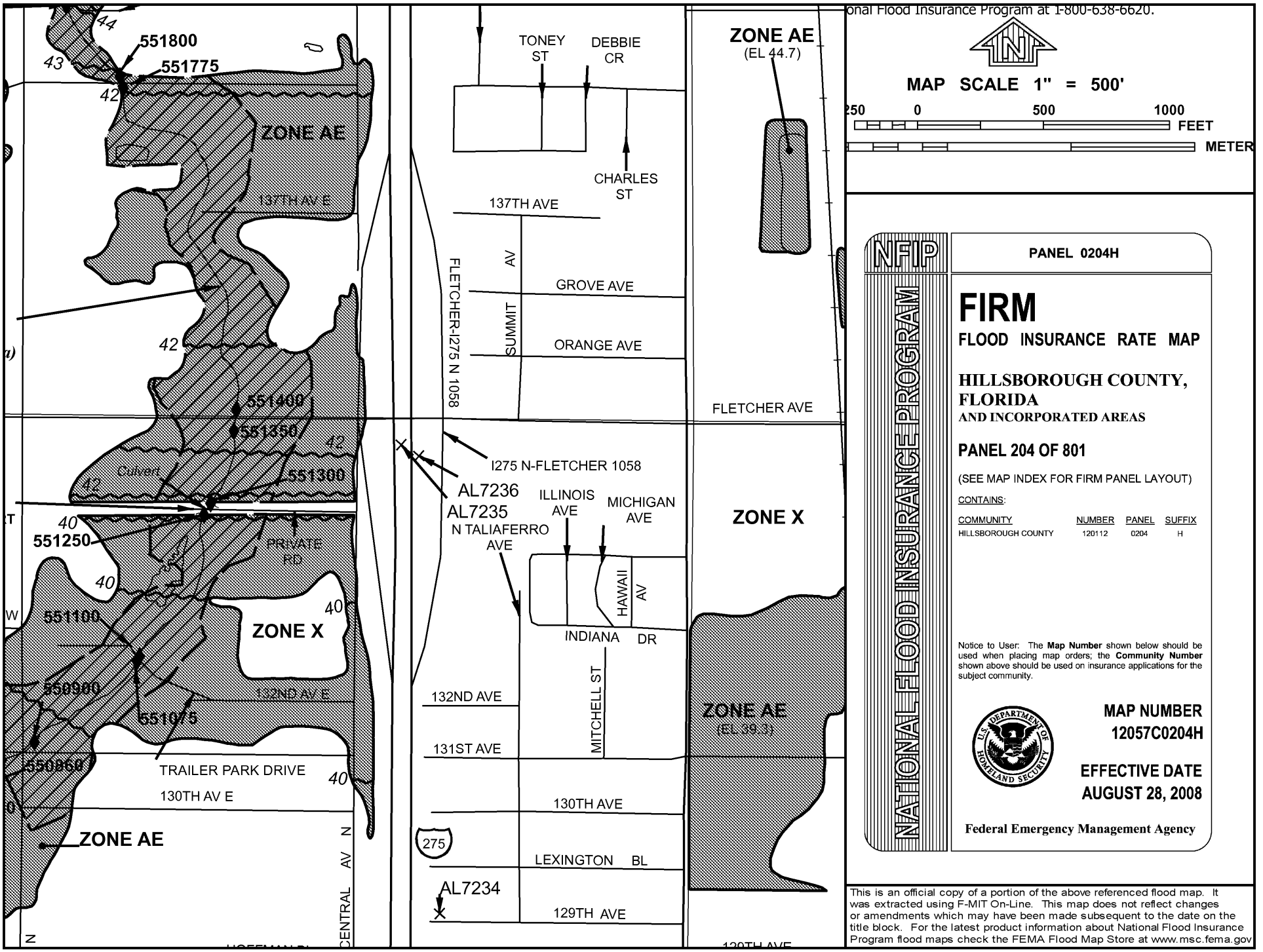
COMMUNITY	NUMBER	PANEL	SUFFIX
TAMPA, CITY OF	120114	0214	H

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
12057C0214H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency



onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0204H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 204 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

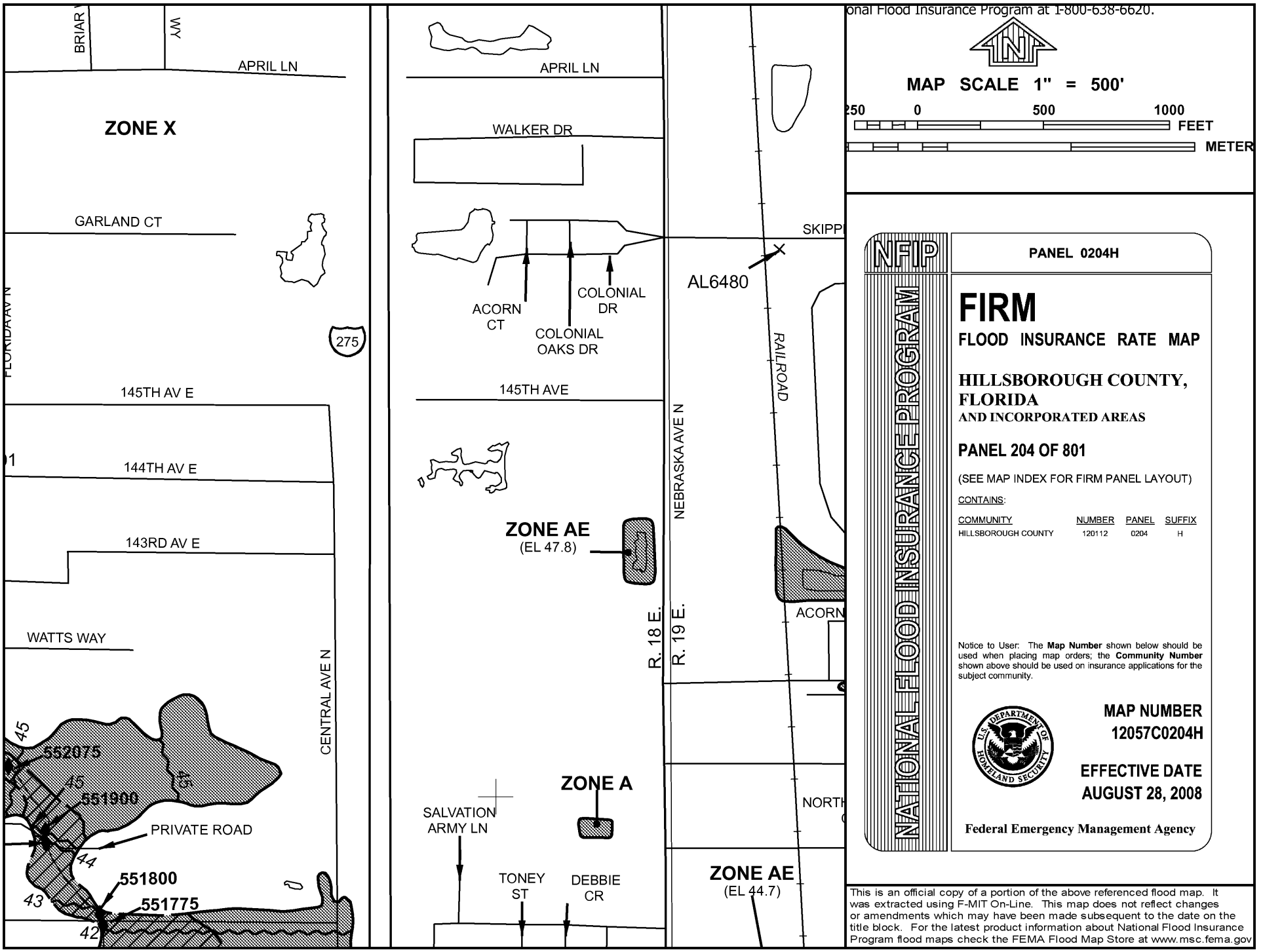
COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0204	H

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
12057C0204H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency


BRIAR
WY
APRIL LN
ZONE X
GARLAND CT
FLORIDA AV N
275
145TH AV E
144TH AV E
143RD AV E
WATTS WAY
CENTRAL AVE N
45
552075
45
551900
PRIVATE ROAD
44
551800
43
551775
42
APRIL LN
WALKER DR
ACORN CT
COLONIAL DR
COLONIAL OAKS DR
145TH AVE
ZONE AE
(EL 47.8)
NEBRASKA AVE N
R. 18 E.
R. 19 E.
SALVATION ARMY LN
ZONE A
TONEY ST
DEBBIE CR
ZONE AE
(EL 44.7)
AL6480
RAILROAD
ACORN
NORTH
onal Flood Insurance Program at 1-800-638-6620.
MAP SCALE 1" = 500'
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FEET
METER
NFIP
NATIONAL FLOOD INSURANCE PROGRAM
PANEL 0204H
FIRM
FLOOD INSURANCE RATE MAP
HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS
PANEL 204 OF 801
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
HILLSBOROUGH COUNTY 120112 0204 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
12057C0204H
EFFECTIVE DATE
AUGUST 28, 2008
Federal Emergency Management Agency
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

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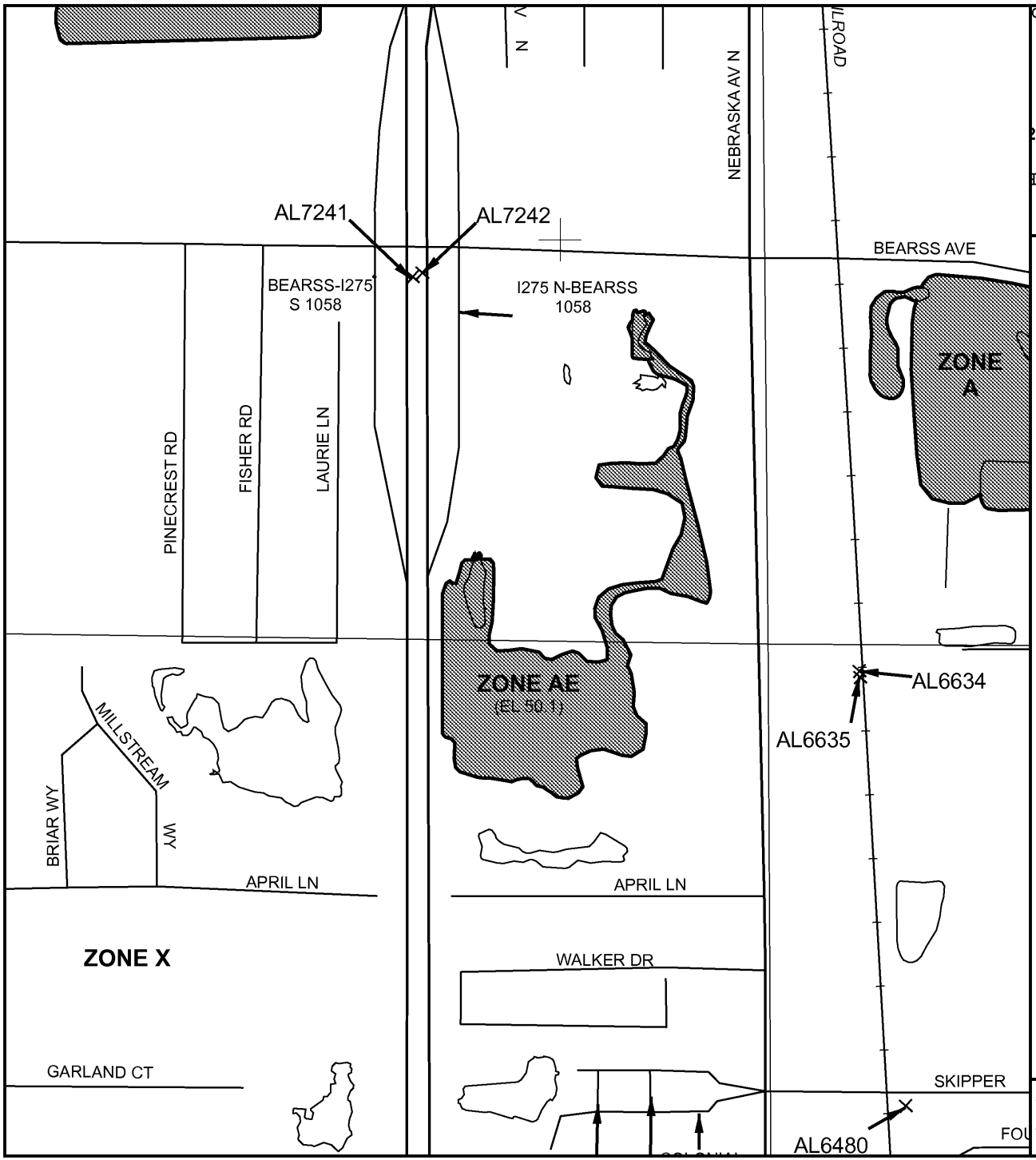
FEET

METER



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0204H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 204 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0204	H

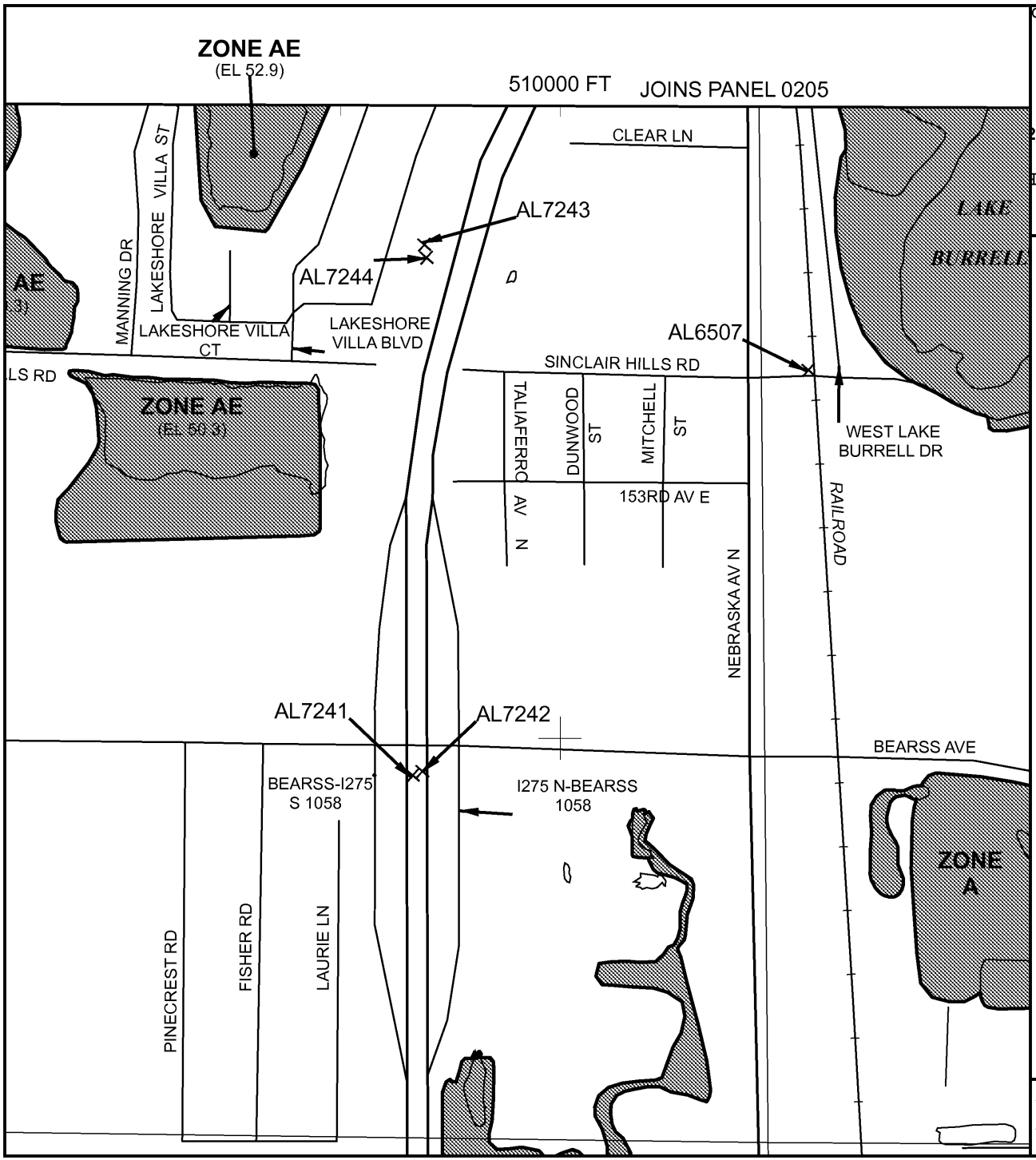
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
12057C0204H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

onal Flood Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0204H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 204 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0204	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
12057C0204H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

Appendix D
SWFWMD Pre-Application Meeting Minutes

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 402440

Date:	7/21/2015
Time:	10:00
Project Name:	FDOT I275 Express Lanes Project Development & Environmental Study
Attendees:	Richard Alt, Al Gagne, Tom Anderson - Parsons Brinckerhoff andersont@pbworld.com Virginia Creighton, John Littlefield

County:	Hillsborough	**Sec/Twp/Rge:**	1/29/18 – 36/27/18
Total Land Acreage:	ROW	**Project Acreage:**	ROW

Prior On-Site/Off-Site Permit Activity:

- Existing interstate

Project Overview:

- Construct one lane each direction for express lane project with dynamic tolling
- From Hillsborough to Sligh – 2 basins, south basin will treat all to compensate for north basin
- From Busch to Bearss – widen 12 feet to outsides on both sides
- Will provide floodplain comp for Curiosity Creek area
- Reconstruct Bearss interchange to meet FDOT clearance standards

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.
- Provide appropriate mitigation using UMAM for impacts, if applicable.
- Demonstrate elimination and reduction of wetland impacts.
- Maintain minimum 15 foot, average 25 foot wetland conservation area setback or address secondary impacts.
- If the project is located in a county which is listed as a coastal county under the Coastal Zone Management Act (CZM) and the project has wetland impacts, it will require a noticing period once the permit application is deemed complete. Wetland and/or surface waters impacts less than 1 acre in size will require a 10 day noticing period, prior to the issuance of the permit. Wetland and/or surface water impacts greater than 1 acre in size will require a 30 day noticing period, prior to the issuance of the permit. Permits could be issued as early as the 11th or 31st day, but staffs' schedule and workload will determine the actual issuance date.

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

- Existing roadway/intersections
- WBIDs need to be independently verified by the consultant - WBID – 1523 not impaired, 1443H and others
- Possibly discharging to impaired waters.
- Discharge to one volume sensitive basin area – Curiosity Creek.

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

- Demonstrate that discharges from proposed project area will not cause an adverse impact for a 25-year, 24-hour storm event.
- Demonstrate that project 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.

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

- Provide water quality treatment for required project area per Section 4.8 Applicant's Handbook Volume II.
- In addition, if the project discharges 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.
- Will acknowledge compensatory treatment to offset pollutant loads associated with portions of the project area that cannot be physically treated.

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 the FDOT.
- Provide proof of ownership in the form of a deed or contract for sale.
- Provide appropriate O&M instructions.
- Provide detailed construction surface water management plan.

Application Type and Fee Required:

- SWERP – Sections A, C, and E of the ERP Application.
- < 640 acres of project area and less than 50 acres of wetland or surface water impacts - $3,105.75

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

- In accordance with Rule 40D-1.603(2), F.A.C., no later than 30 days after submittal of an initial application of an Individual surface water management permit the applicant shall publish at the applicant's expense a notice of the District's receipt of the application in a newspaper having general circulation as defined in Chapter 50, F.S., in the county or counties in which the activity is proposed. Please provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP must be in accordance with the language provided in Rule 40D-1.603(10), F.A.C., and receipt of an affidavit establishing proof of this publication will be considered a completeness item of this ERP Application. Per Rule 40D-1.603(12), F.A.C., this must be received before the application will be considered complete and the 60-day timeframe for taking agency action on the application will commence.

40D-1.603(12) – "Applicants required to publish a notice of receipt of application must provide to the District a publisher's affidavit establishing proof of publication pursuant to Sections 50.041and 50.051, F.S., before the application will be considered complete and the applicable timeframe for taking agency action on the application will commence."

Appendix E
FDOT Coordination Meeting and Pond Typical Sections

PARSONS BRINCKERHOFF

Meeting Minutes

2202 North West Shore Blvd, Suite 300
Tampa, FL 33607
813-520-4444
Fax: 813-520-4290

Project: I-275 Express from MLK Jr. Blvd. to north of Bearss Ave.

Subject: Pond Design Coordination Meeting for Starter Project

Location: FDOT District 7

By: Tom Anderson

Meeting Date: July 1, 2015

Attendees: John Littlefield (PB), Tom Anderson (PB), Steve Gordillo (PB), Kirk Bogen FDOT), Robin Rhinesmith (FDOT), Daniel Lauricello (FDOT), Brian Shroyer (FDOT)

Summary:

The purpose of the meeting was to discuss the design of the stormwater management facilities with the Florida Department of Transportation (FDOT) District 7 Drainage staff. This included the approach used to design the ponds within the existing right-of-way for the Starter Project.

Introduction and Project Limits Clarification

PB staff explained that the Starter Project begins at Martin Luther King (MLK) Jr. Boulevard and extends north of Bearss Avenue. The Starter Project consists of widening to the outside to provide an additional travel lane in the median in both directions. Previous safety improvements from MLK Boulevard north to approximately Busch Boulevard will not require widening in this section in order to accommodate the two lanes in the median.

Typical sections for the ponds were provided to the attendees.

Pond Design Issues

The following are the pond design issues presented by PB Staff:

- Basin 2:
    - An auxiliary lane will be added on the east side of I-275 between Hillsborough Ave. and Sligh Ave. The auxiliary lane lies in two drainage basins (Basin 2 and Basin 3) and will add 2.56 acres of pavement. A pond is proposed in the in-field area between the northbound exit ramp and Hillsborough Ave. and is referred to as SMF 2. The pond will provide the treatment for all 2.56 acres and will attenuate for the additional runoff in Basin 2. The pond outfalls to an existing 30 inch cross drain located north of the pond.

- Basin 3

    - The proposed pond, referred to as SMF 3, will provide attenuation for the additional runoff from the auxiliary lane. An equivalent amount of pavement will be collected and conveyed to the proposed pond.

- Basin 7

    - Basin 7 includes minor widening that begins south of the I-275 and Busch Blvd. intersection. Approximately 0.53 acres of pavement will be added to this basin. A pond is proposed at the bottom of the fill slope immediately south of the railroad tracks. FDOT staff requested that the pond typical sections and plan views for all the basins be sent to Lance Grace for review. Gravity wall may be required to provide a berm and meet the necessary treatment and attenuation volumes. The pond is referred to as SMF 7.

- Basin 8

    - Basin 8 will add approximately 1.49 acres of pavement that will be treated in the in-field between southbound I-275 and the southbound exit ramp. PB staff indicated that the in-field is currently configured to support a pond. Therefore, a control structure could be placed on the cross drain that connects to the downstream pond (Exist. Pond A2) to provide the necessary treatment and attenuation. An equivalent amount of pavement will be conveyed to the proposed pond.

- Basin 8A

    - There are no feasible locations for ponds in Basin 8A. Therefore, compensatory treatment and attenuation will be provided in Basin 9.

- Basin 9

    - There is approximately 3.80 acres of additional pavement added to Basin 8A and Basin 9. Stormwater management will be provided in a series of ponds along the eastside of I-275. PB staff explained that a wall is required at some locations to create the necessary treatment and attenuation volumes. All runoff will be routed through the existing stormwater facility built during the original construction I-275 for attenuation purposes.

    - Daniel Lauricello stated that the basin has had historical flooding and therefore F.A.C. 14-86 would apply. Mr. Lauricello also suggested that the existing berms could be regraded to provide additional storage in the pond. Mr. Lauricello requested that the Pond Feasibility Report include a reference to expanding the existing pond berms to reduce the wall.

    - Steve Gordillo stated that slip ramps have not been included in the pond designs. Stormwater management for the slip ramps cannot be provided in Basin 9 and therefore are not feasible in this basin. PB explained that the Executive Summary for the Pond Feasibility Report will include a statement that the slip ramps were not included in the pond design for any of the drainage basins.

- Basin 10

    - Basin 10 will add approximately 1.98 acres of pavement to the basin. A proposed pond referred to as SMF 10 will provide treatment and attenuation for the additional pavement. The pavement that will discharge to the pond was identified in plan view. The pond will outfall to the existing stormsewer system along the west side of I-275 that ultimately discharges to the Hillsborough River.

- Basin 11

    - Approximately 0.72 acres of pavement will be treated in the proposed pond referred to as SMF 11. A credit of 0.5 acres will be used to treat the additional pavement in the basin. The credit is available in the existing pond referred to as Exist. Pond No. 1 West.

- Basin 12

    - Basin 12 will add approximately 1.28 acres of pavement to the basin. A proposed pond referred to as SMF 12 will provide treatment and attenuation for the additional pavement. The outfall for the pond is an existing culvert located north of Fletcher Ave. The culvert discharges to Curiosity Creek.

- Basin 13

    - Basin 13 will add approximately 2.33 acres of pavement to the basin. A proposed roadside pond referred to as SMF 13 will provide treatment and attenuation for the additional pavement. The pond outfalls to an existing culvert north of Fletcher Ave. and ultimately to Curiosity Creek.

- Basins 14, 15, & 16

    - Modifying the existing FDOT borrow pit was considered as an option to provide stormwater management within the existing right-of-way. The borrow pit is capable of accepting approximately 5 acres of pavement if modified.

    - Since the project is proposing to reconstruct the bridge over Bearss Ave., as opposed to widening the bridge, more stringent stormwater management may be required. Based on this scenario, expanding the FDOT borrow pit pond is not a viable option. The treatment and attenuation requirements will be discussed with Water Management during the pre-application meeting.

    - It was recommended that a pond beneath the bridge over Bears Ave. be considered. This option will be evaluated following the pre-application meeting.

    - It was requested that regional facilities be evaluated as an option to provide the stormwater management for these basins. PB staff stated that this issue will be addressed during the pre-application meeting.

    - In the absence of Daniel Lauricello, invite Ginger and Richard Griffin to the SWFMWD pre-application meeting.

Conclusion

- The stormwater management for the Starter Project between MLK Blvd north to Fletcher Avenue can be provided been provided within the existing right-of-way. The ponds were designed based on providing treatment and attenuation for the two additional lanes in the median. Additional stormwater management requirements will be determined during the pre-application meeting with Water Management District.

- The proposed pond designs do not include slip ramps or additional impervious area such as toll gantries.

- Improvements north of Fletcher Ave. will be determined following the pre-application meeting with Water Management.

Action Items:

- Submit pond typical sections and pond plan views to Lance Grace (D7 Maintenance) for approval.
- Schedule pre-application meeting with Southwest Florida Water Management District. Invite Ginger and Richard Griffin in the absence of Daniel Lauricello.
- Look at providing stormwater management beneath the proposed bridge over Bearss Avenue. The analysis will be performed following the pre-application meeting with Water Management.
- Pond Feasibility Report
    - Include reference that the pond designs do not include slip ramps or other additional pavement.
    - Determine whether modifying the existing pond berms for the storage basin in Basin 9 will reduce the wall.

The meeting minutes contained herein represent the author's understanding of the discussions that occurred during the meeting. Any attendee who does not agree with the summary or can offer additional information that should be noted within these minutes, please contact Tom Anderson at (813) 520-4310 or andersont@pbworld.com.

cc: Attendees
PB File: 173890A

Anderson, Thomas

From: Anderson, Thomas
Sent: Monday, July 06, 2015 11:42 AM
To: lance.grace@dot.state.fl.us
Cc: Littlefield, John; Gordillo, Steve; Lauricello, Daniel
Subject: 431821: I-275 from N of MLK to N of Bearss: Starter Project - Pond Sites
Attachments: Pond Plan.pdf; Pond Typical.pdf

Good Morning Mr. Grace,

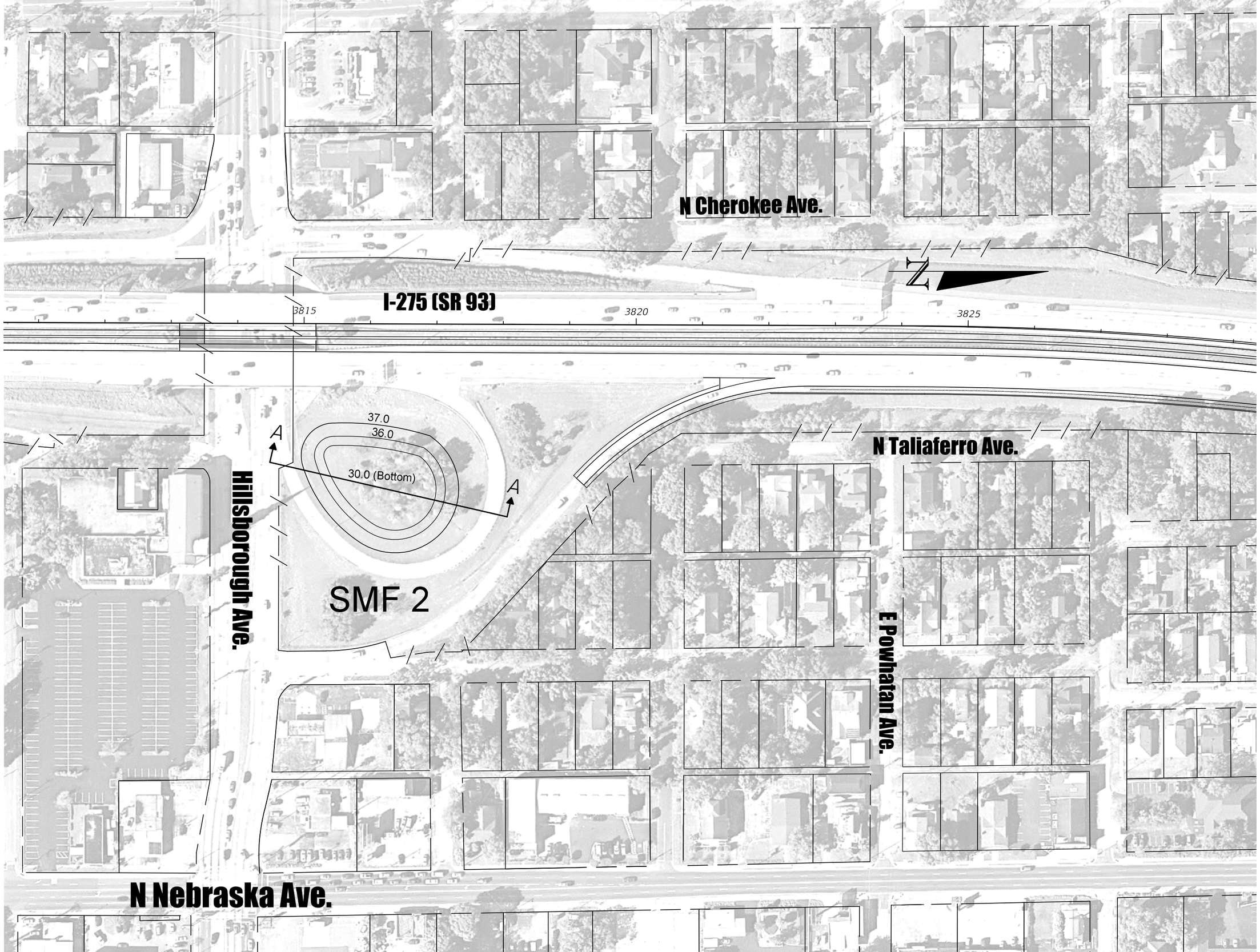
Parsons Brinkerhoff (PB)has recently coordinated with the District 7 drainage department regarding the proposed ponds for the I-275 project between MLK Boulevard to north of Bearss Ave. The project will add one Managed Lane in the median in each direction and is part of the overall Tampa Bay Express (TBX) project. The goal is to provide all stormwater management within the existing right-of-way. If right-of-way is required, there is a possibility the project may not occur. The attached file (Pond Plan) shows the proposed pond locations and their approximate sizes. The D7 drainage department has requested that I submit the proposed pond site locations and typical sections (Pond Typical) for your review. All efforts were made to meet slope and berm requirements; however, some exceptions were necessarily in order to provide the stormwater management within the existing right-of-way. PB is currently is the process of completing the Pond Siting Report (PSR) will need your input and consensus at your earliest convenience as our report will be complete within the next several weeks.

If you have any questions, please feel free to contact me.

Tom Anderson
Drainage Designer
Parsons Brinckerhoff
2202 N. West Shore Boulevard
Suite 300
Tampa, FL 33607
813.520.4310 (direct)
813.520.4444 (front desk)

andersont@pbworld.com

www.pbworld.com


N Cherokee Ave.
I-275 (SR 93)
3815
3820
3825
N Taliaferro Ave.
37.0
36.0
30.0 (Bottom)
A
A
SMF 2
Hillsborough Ave.
E Powhatan Ave.
N Nebraska Ave.

N Taliaferro Ave.

I-275 (SR 93)

3850

3855

3860

I-275 (SR 93)

45.0 (Bottom)

47.0

SMF 3

N Harer St.

E North St.

E Lambright St.

E Knollwood St.

N Nebraska Ave.

E Busch Blvd.

3940

3945

3950

3955

I-275 (SR 93)

A

A

20.0

17.0 (Bottom)

20.0

SMF 7

E Humphrey St.

E Skagway Ave.

E Busch Blvd.

SMF 8

21.0

23.0

A

A

3950

3955

3960

3965

I-275 (SR 93)

E Annie St.

E Wilma St.

Exist. Pond
(City of Tampa)

N Taliaferro Ave.

N Central Ave.

3985

3990

3995

I-275 (SR 93)

A

4' berm

37.0 (top of sheet pile)

35.0

30.0

25.25

28.0

25.25

25.25

25.25

Exist 25.25

25.25

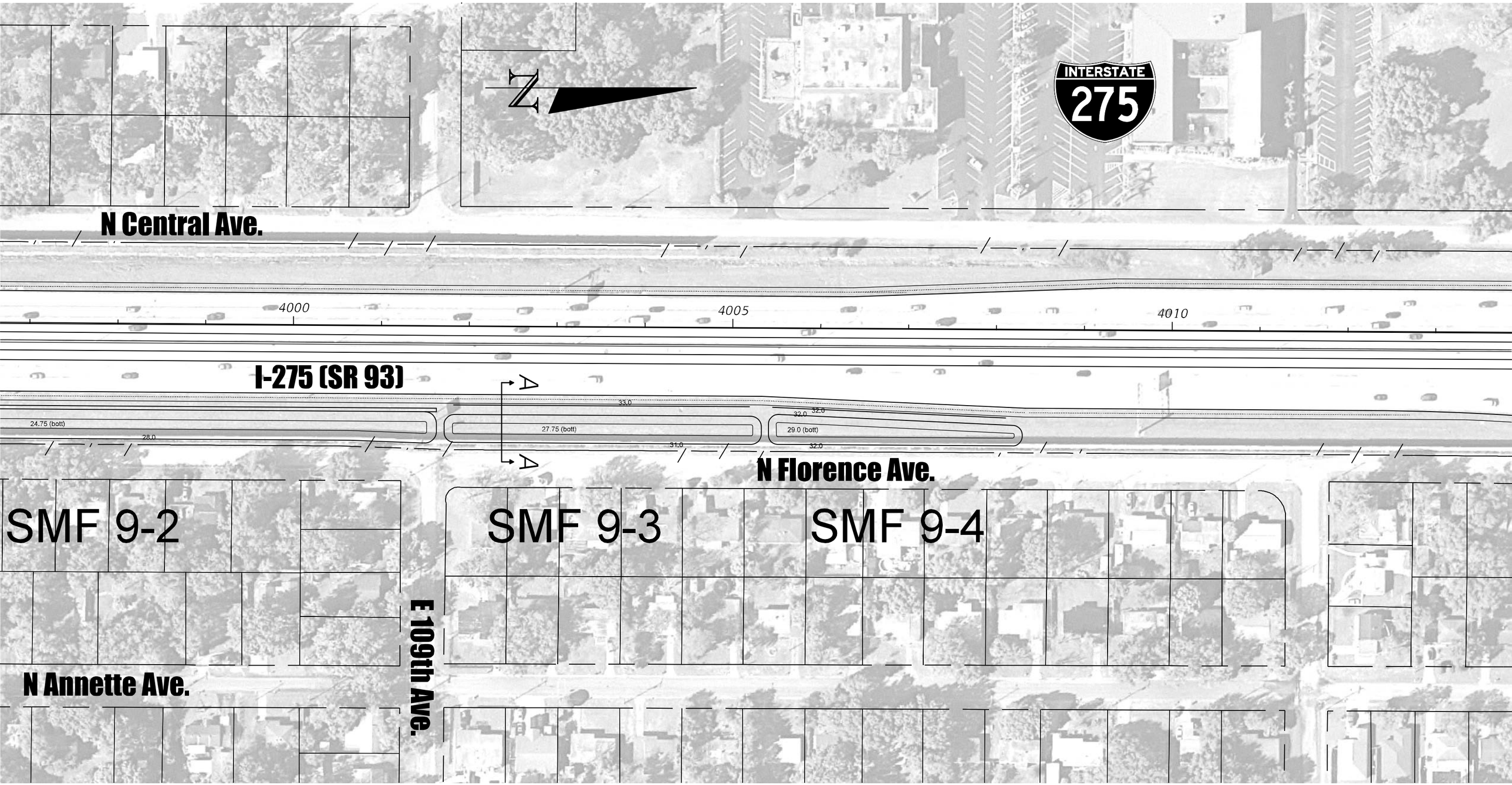
A

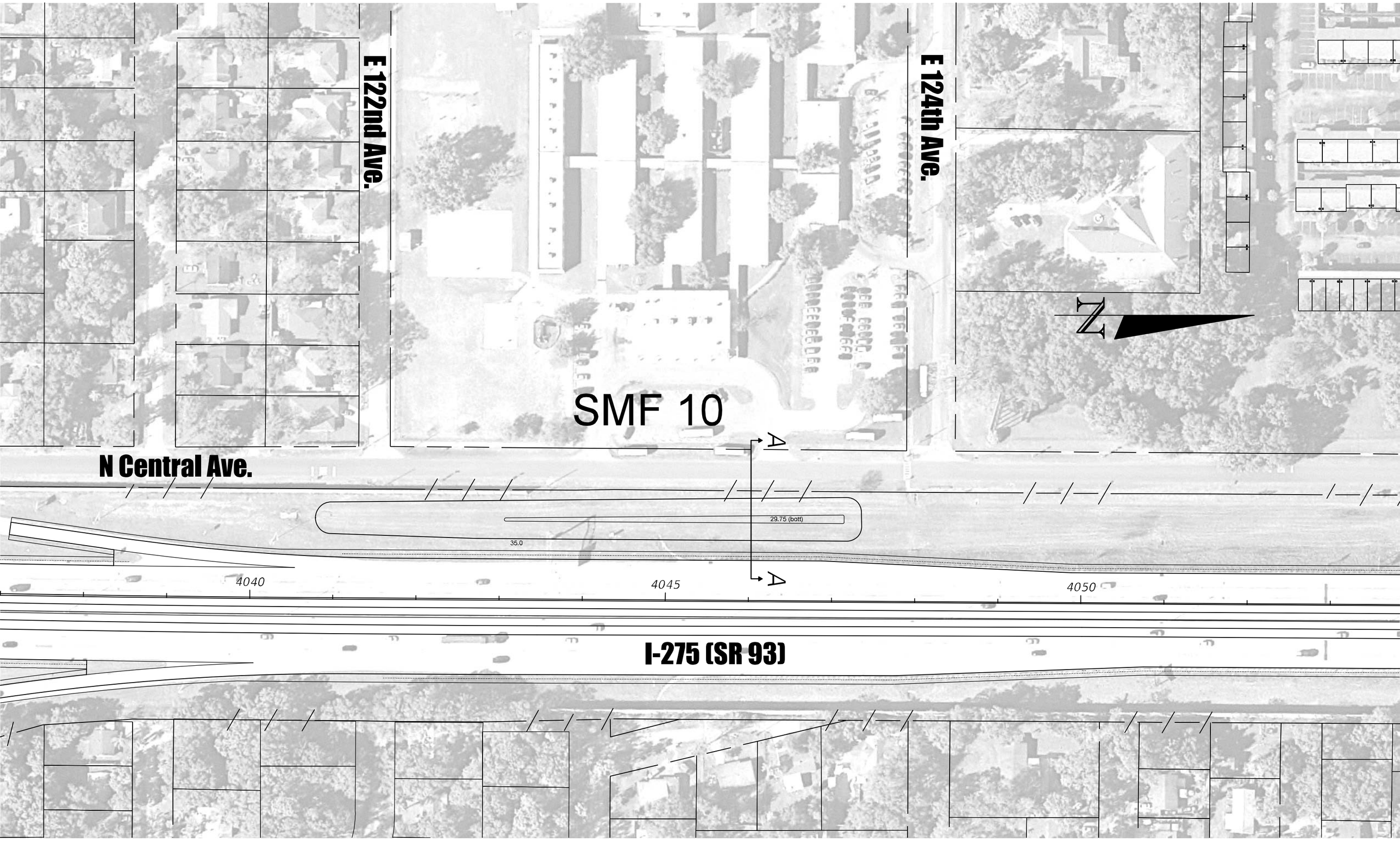
SMF 9-1

E Bougainvillea Ave.

Existing
Storage Basin No. 2

E Seneca Ave.


N
INTERSTATE
275
N Central Ave.
4000
4005
4010
I-275 (SR 93)
A
A
33.0
32.0
32.0
24.75 (bott)
28.0
27.75 (bott)
31.0
29.0 (bott)
32.0
N Florence Ave.
SMF 9-2
SMF 9-3
SMF 9-4
N Annette Ave.
E 109th Ave.


E 122nd Ave.
E 124th Ave.
SMF 10
N Central Ave.
A
A
29.75 (bott)
35.0
4040
4045
4050
I-275 (SR 93)
N

Hoffman Blvd.

E 131st Ave.

SMF 11

SMF 12

N

N Central Ave.

40.0

35.25 (bott)

40.0

35.25 (bott)

40.0

37.5 (bott)

A

A

A

A

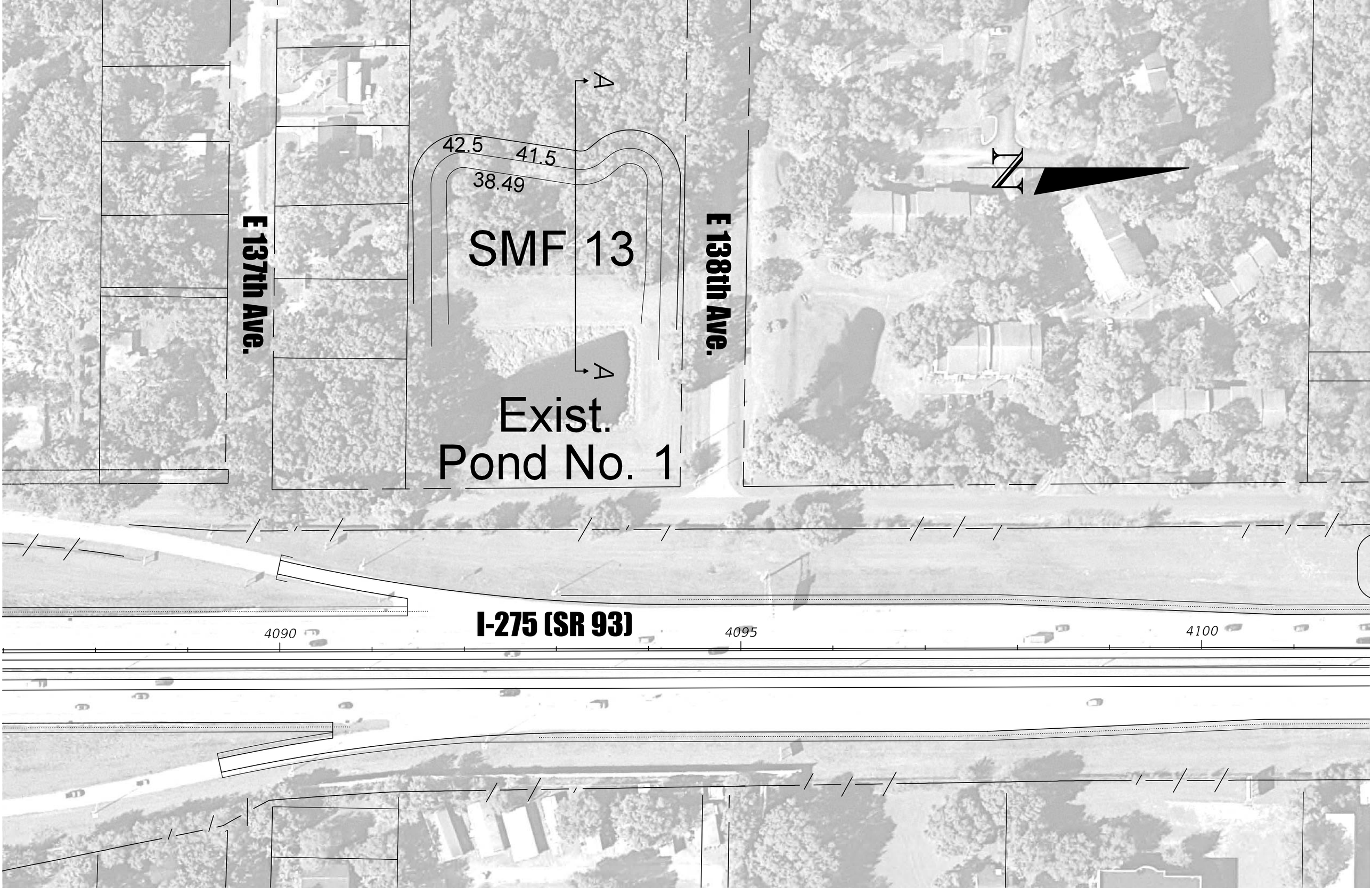
4060

4065

I-275 (SR 93)

4070

4075


A
A
42.5
41.5
38.49
SMF 13
Exist.
Pond No. 1
E 137th Ave.
E 138th Ave.
N
I-275 (SR 93)
4090
4095
4100


E 143rd Ave.
E 145th Ave.
N Central Ave.
FPC 14
54.0
49.0
54.0
4105
4110
4115
4120
I-275 (SR 93)

PARSONS BRINCKERHOFF Computation Sheet

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made by TDA

date 7-1-2015

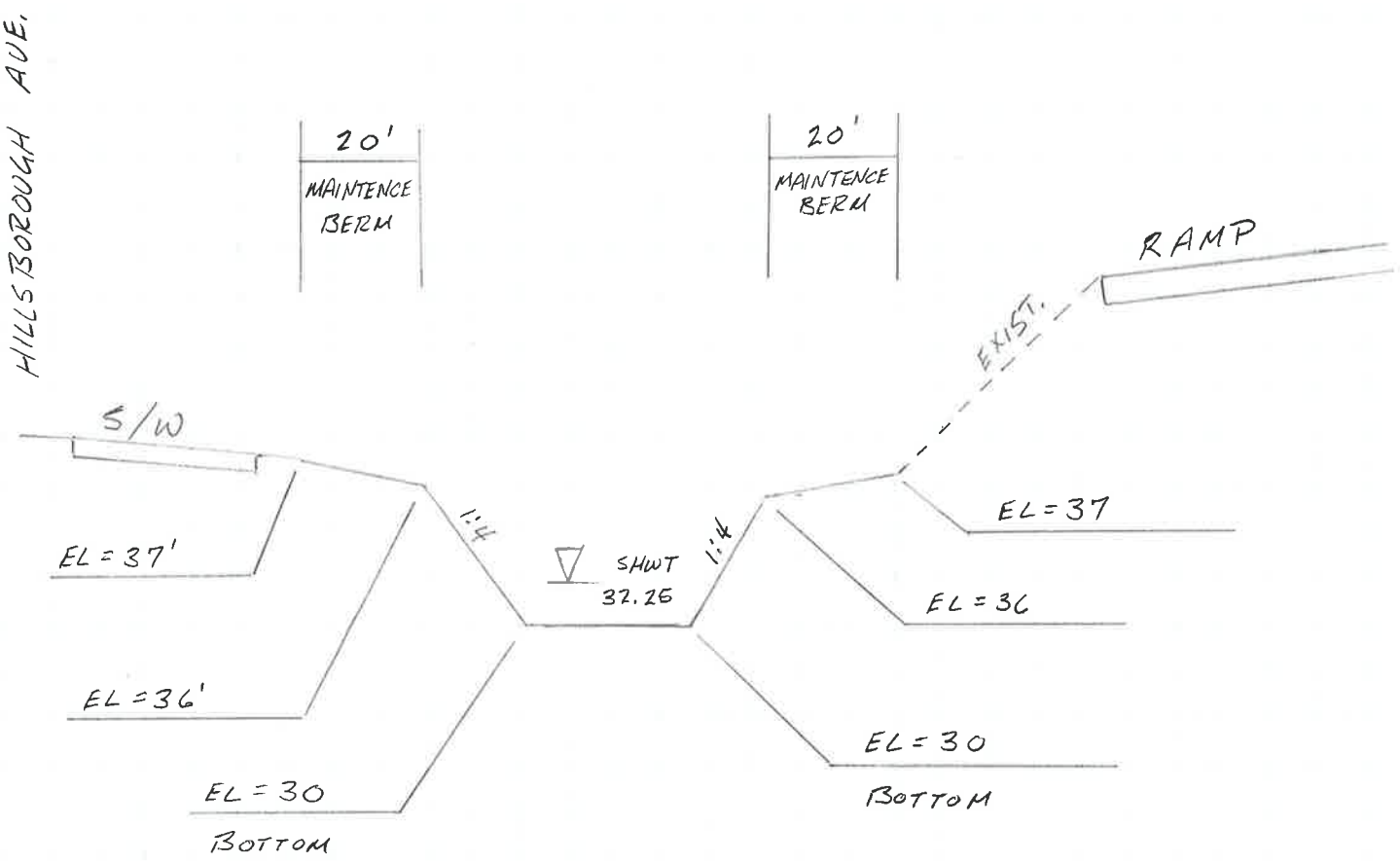
checked by

date

subject SR 93 FROM MLK BLVD. TO NORTH OF BEARSS AVE.

SMF 2 TYPICAL SECTION

TYPICAL SECTION A-A



PARSONS BRINCKERHOFF Computation Sheet

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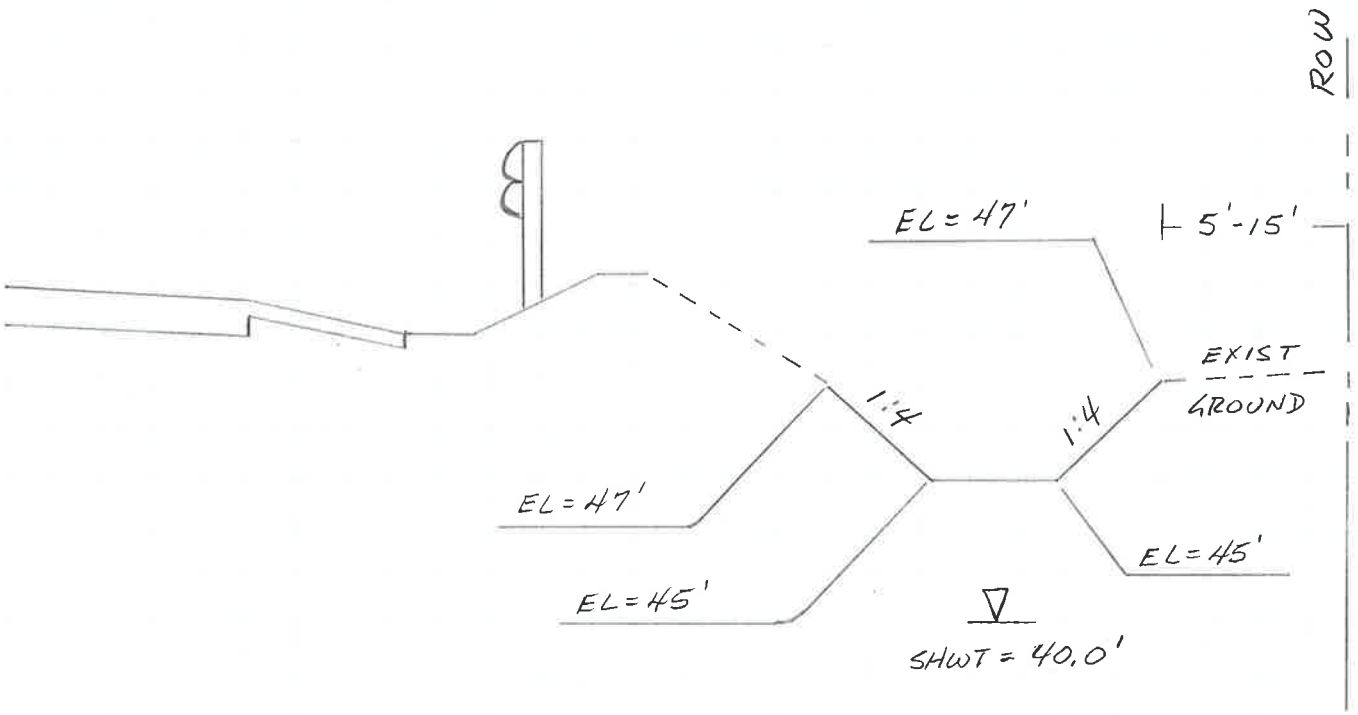
date 7-1-2015

checked by

date

subject SR 93 FROM MLK BLVD. TO NORTH OF BEARSS AVE.
SMF 3 TYPICAL SECTION

TYPICAL SECTION A-A



PARSONS BRINCKERHOFF Computation Sheet

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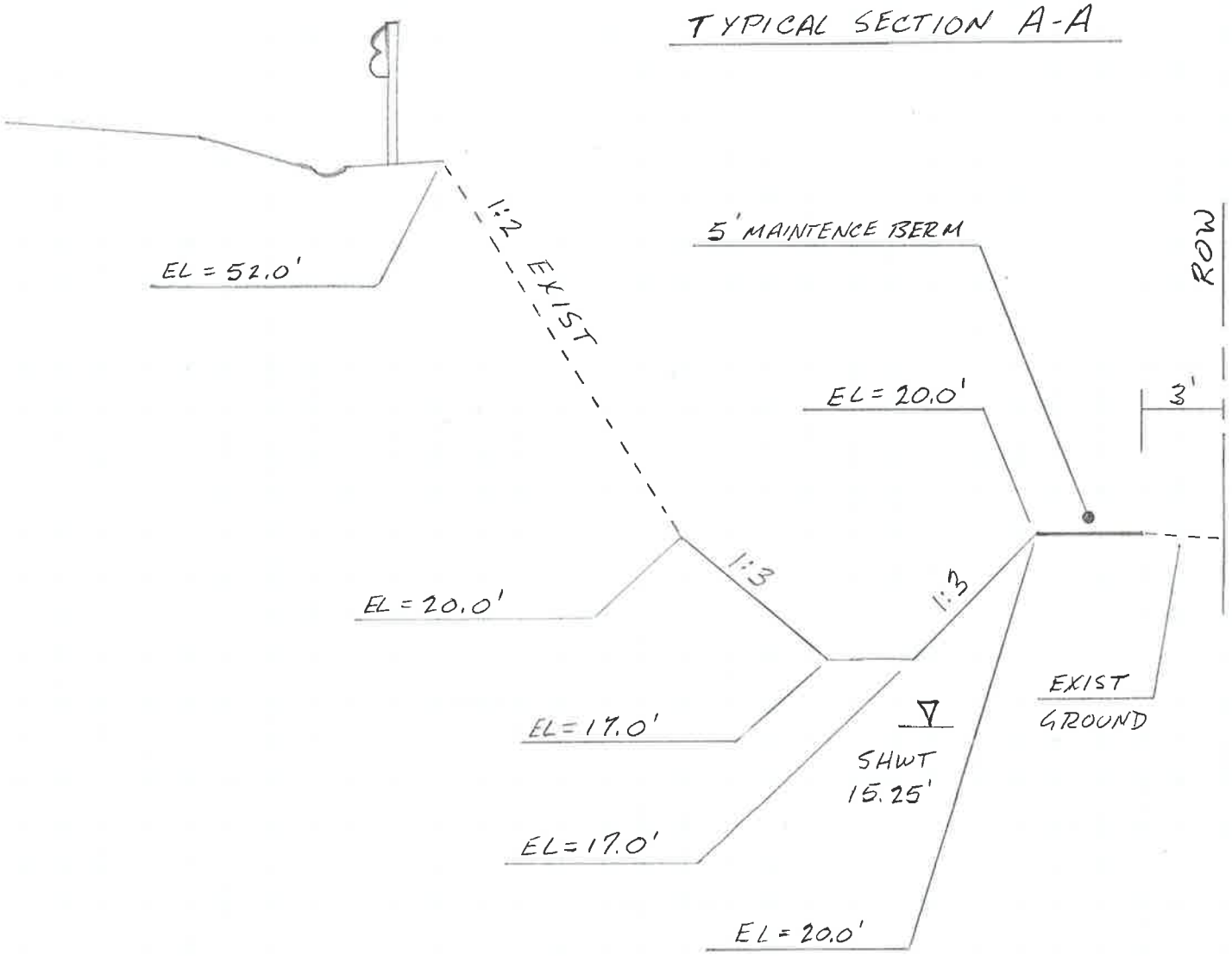
subject SR 93 FROM MLK BLVD. TO NORTH OF BEARSS AVE.
SMF 7 TYPICAL SECTION



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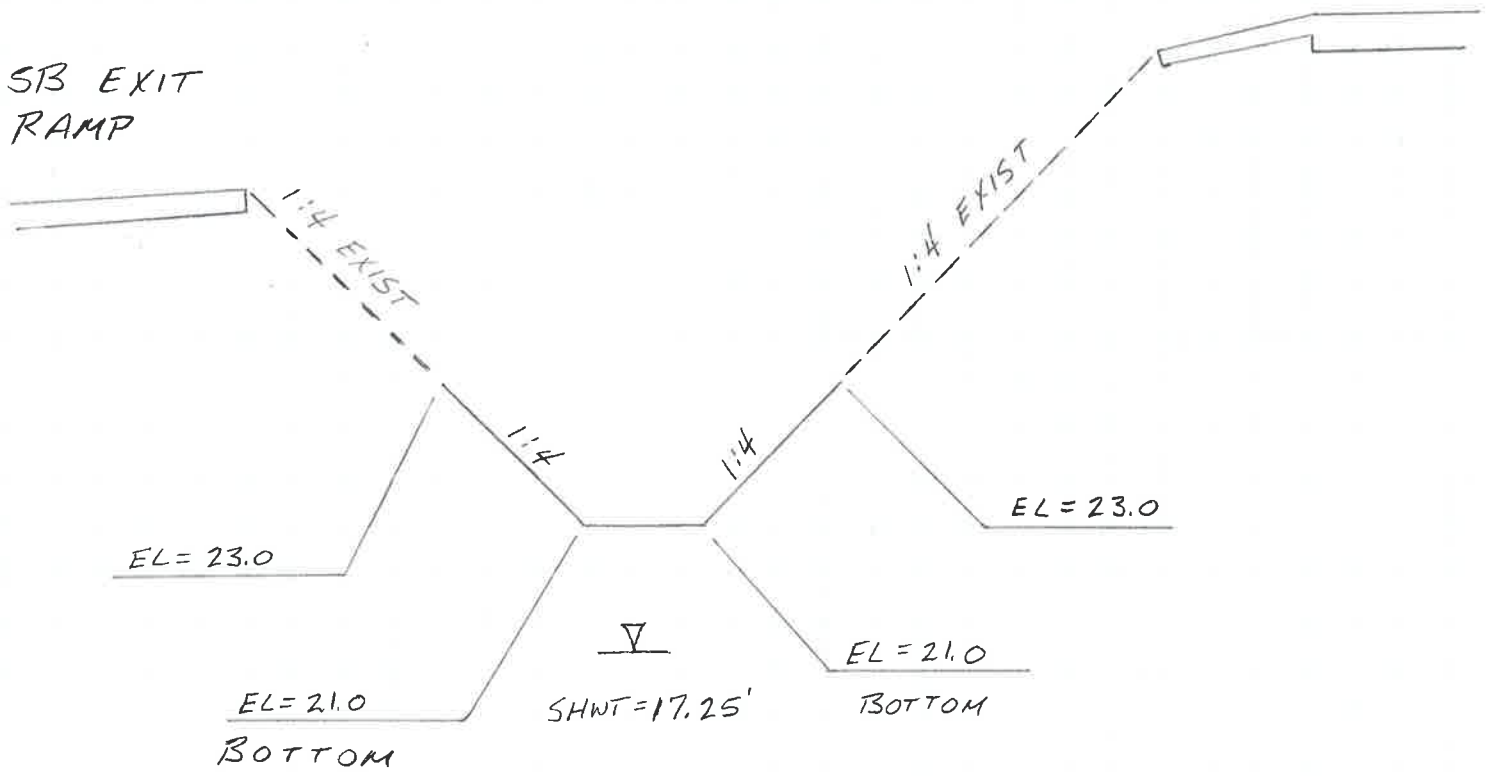
date

subject SR 93 FROM MLK BLVD. TO NORTH OF BEARSS AVE, SMF 8 TYPICAL SECTION

TYPICAL SECTION A-A



PARSONS BRINCKERHOFF Computation Sheet

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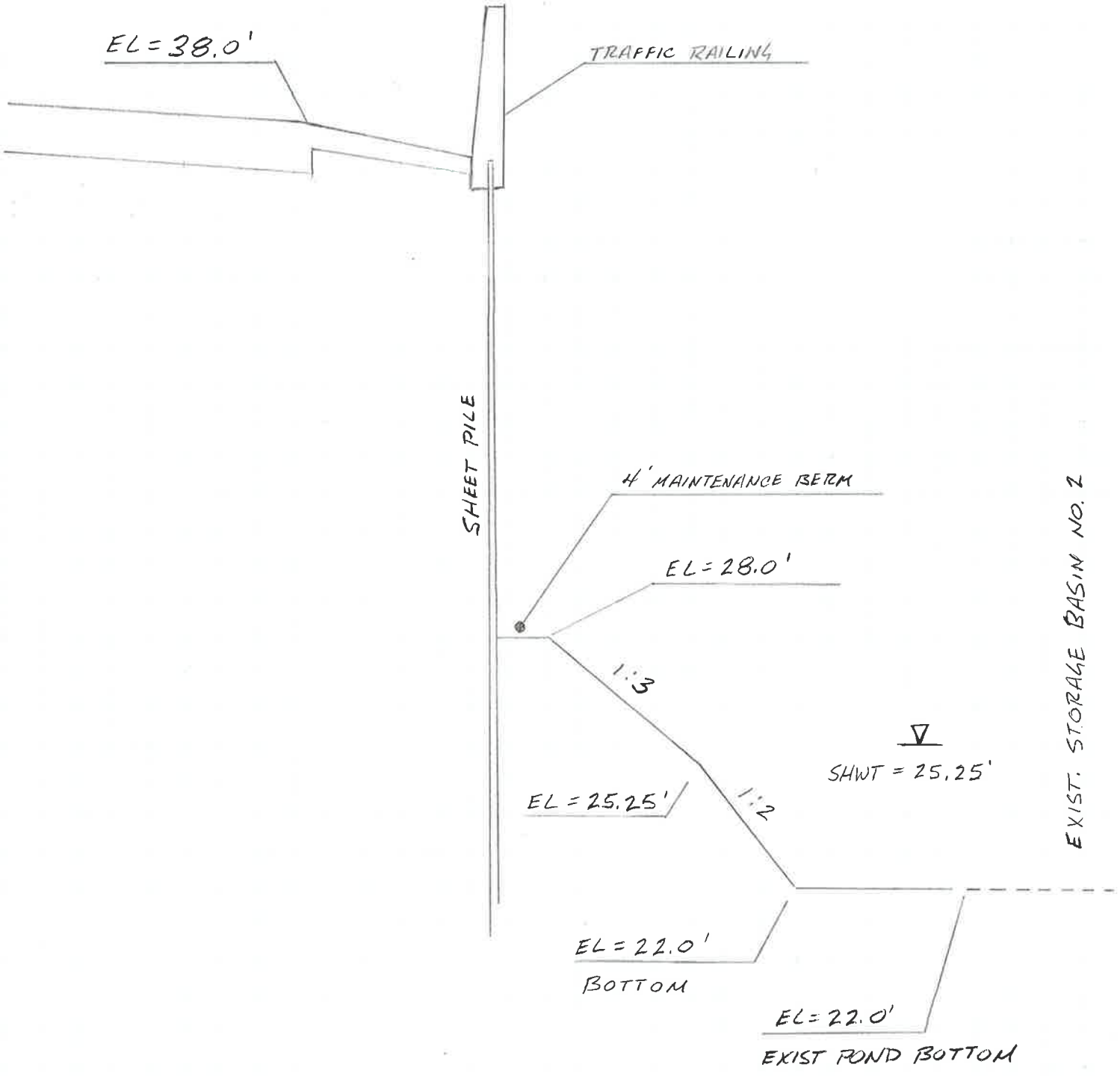
date

subject SR 93 FROM MLK BLVD. TO NORTH OF BEARSS AVE.
SMF 9-1



TYPICAL SECTION A-A

PARSONS BRINCKERHOFF Computation Sheet

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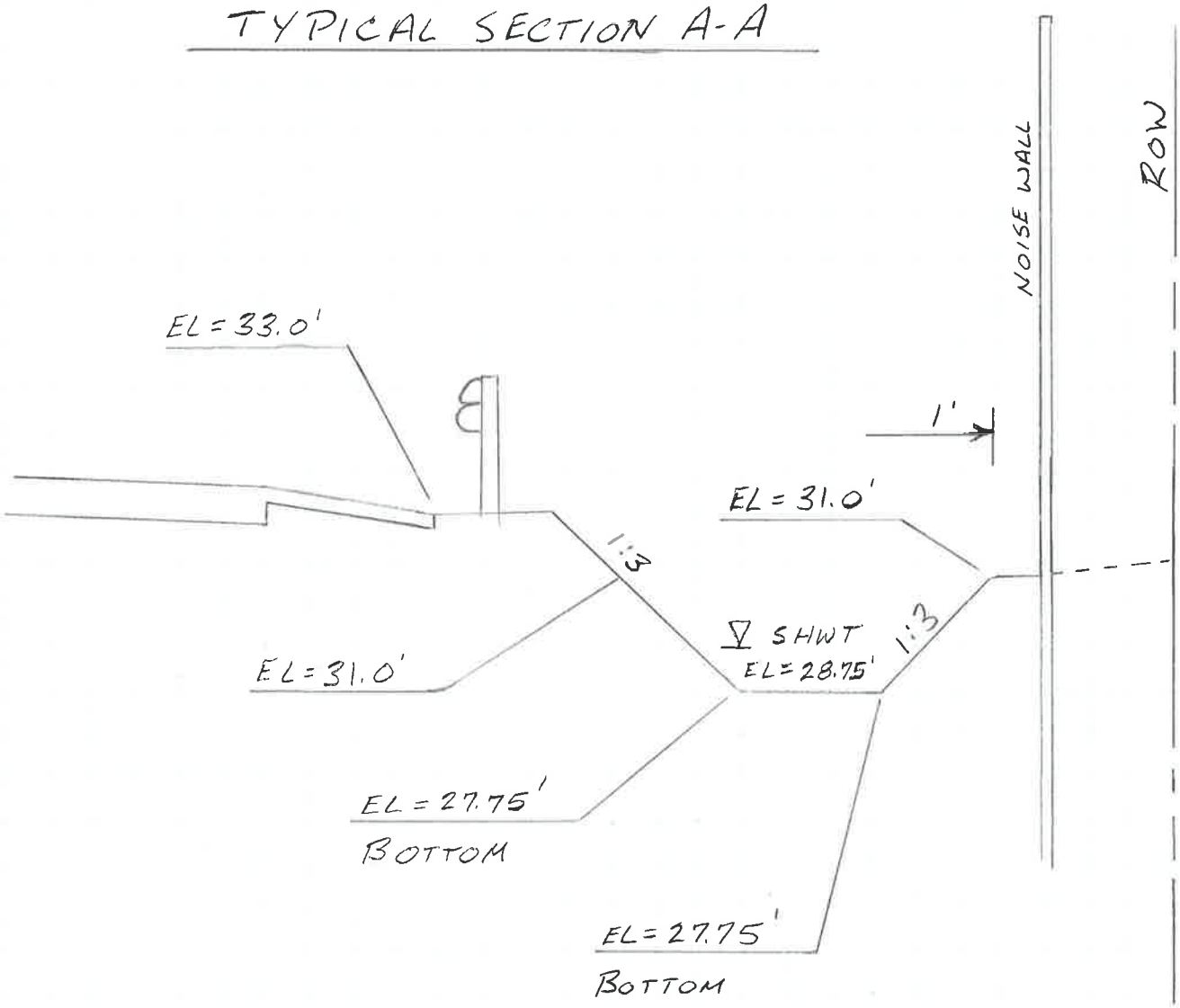
date 7-1-2015

checked by

date

subject SR 93 FROM MLK BLVD. TO NORTH OF BEARSS AVE, SMF 9-3 TYPICAL SECTION

TYPICAL SECTION A-A



PARSONS BRINCKERHOFF Computation Sheet

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made by TDA
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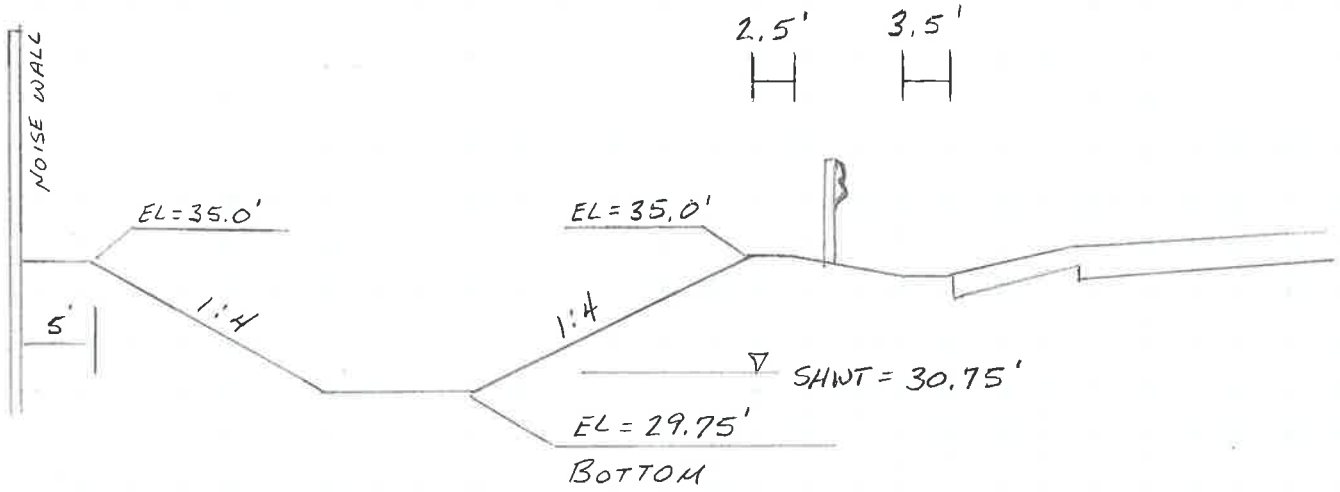
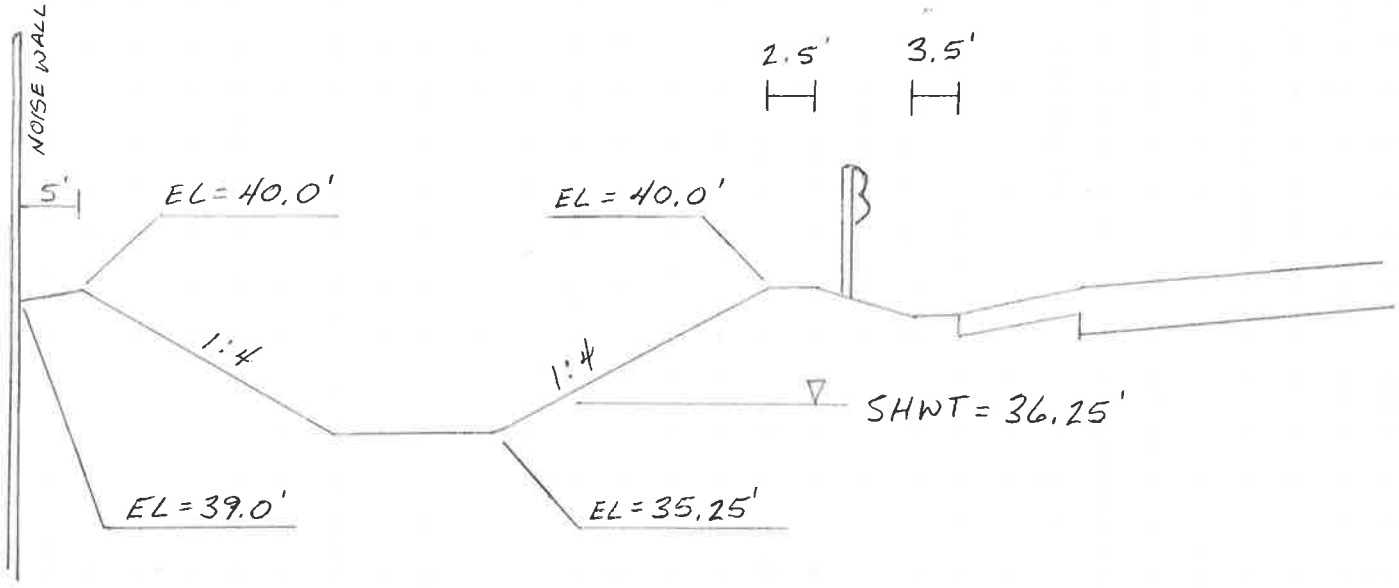
subject SR 93 FROM MLK BLVD. TO NORTH OF BEARSS AVE.
SMF 10 AND SMF 11 TYPICAL SECTIONS



TYPICAL SECTION (SMF 10) A-A



TYPICAL SECTION (SMF 11) A-A

PARSONS BRINCKERHOFF Computation Sheet

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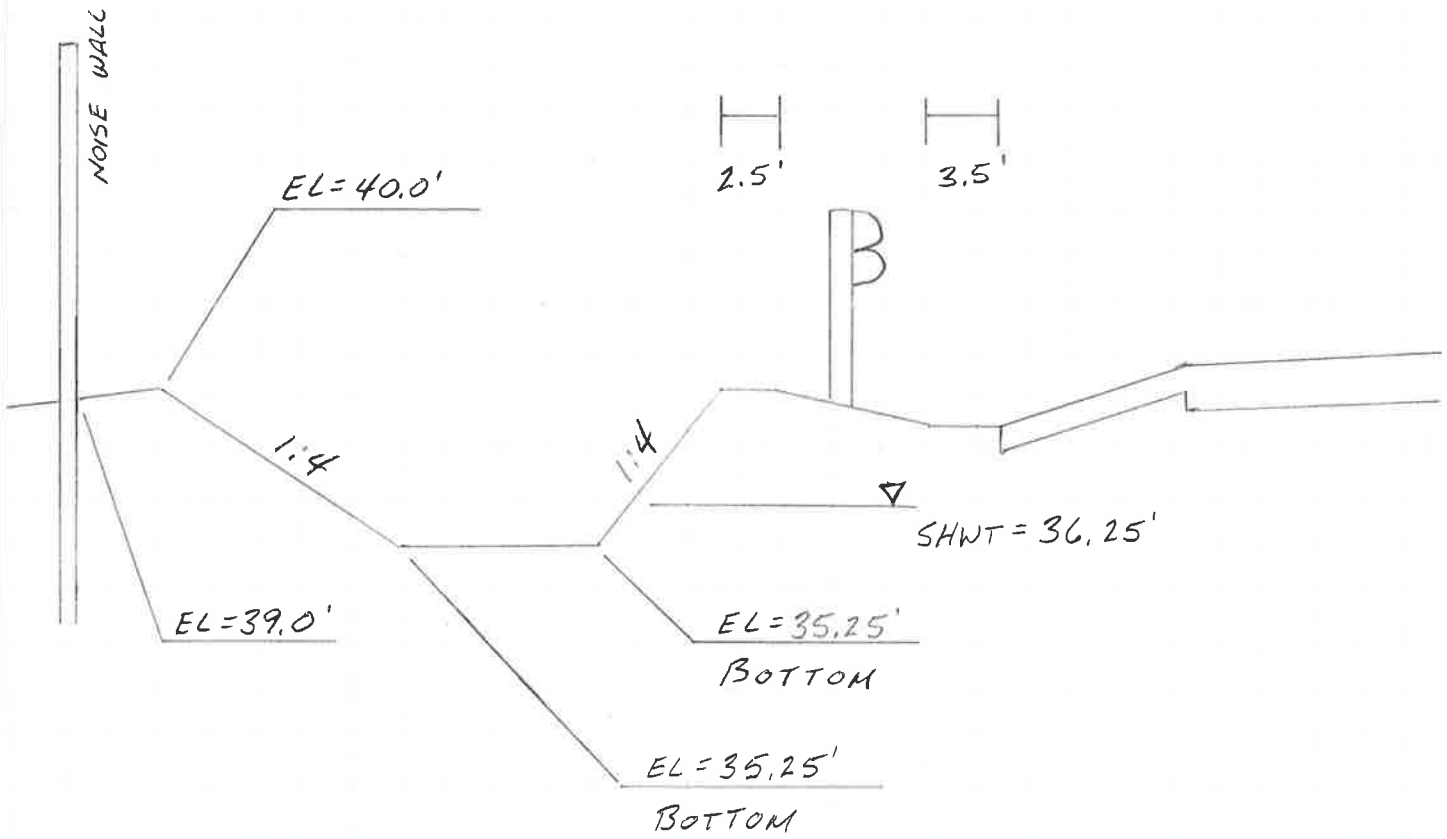
made by TDA
date 7-1-2015
checked by
date

subject SR 93 FROM MLK BLVD TO NORTH OF BEARSS AVE
SMF 12 TYPICAL SECTION

TYPICAL SECTION A-A



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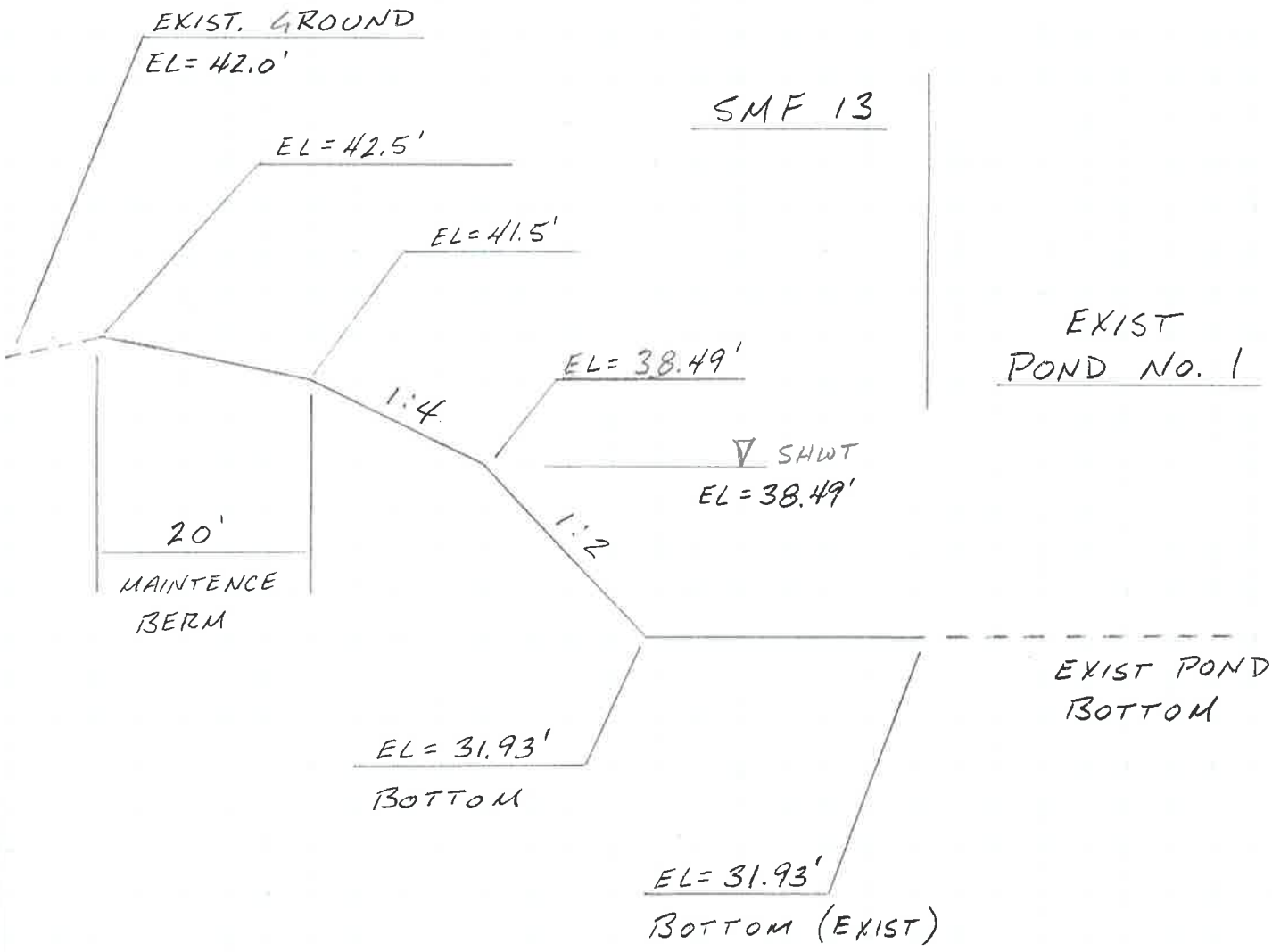
date

subject SR 93 FROM MLK BLVD. TO NORTH OF BEATTY AVE
SMF 13 TYPICAL SECTION

TYPICAL SECTION A-A



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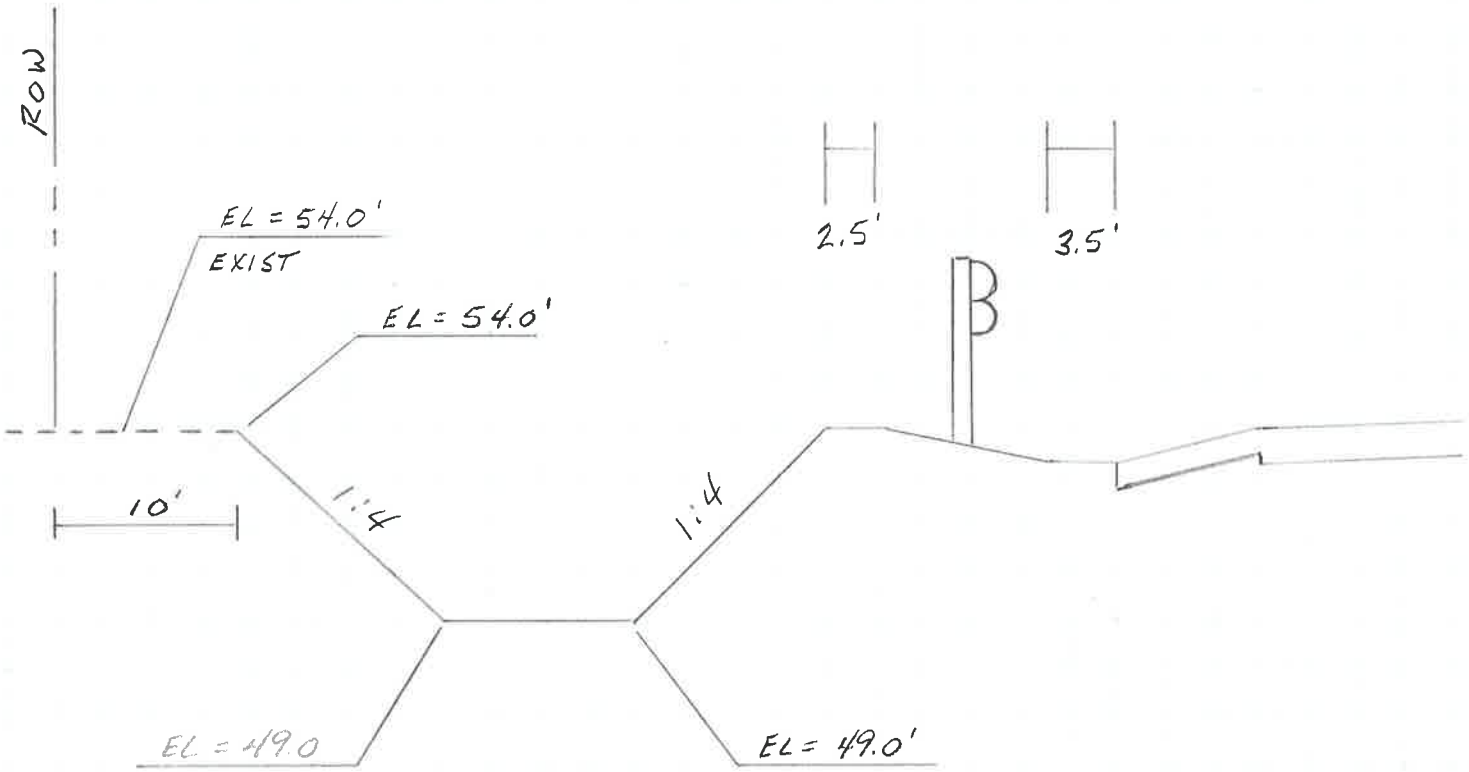
date

subject SR 93 FROM MLK BLVD. TO NORTH OF BEARSS AVE.
FPC 14 TYPICAL SECTION

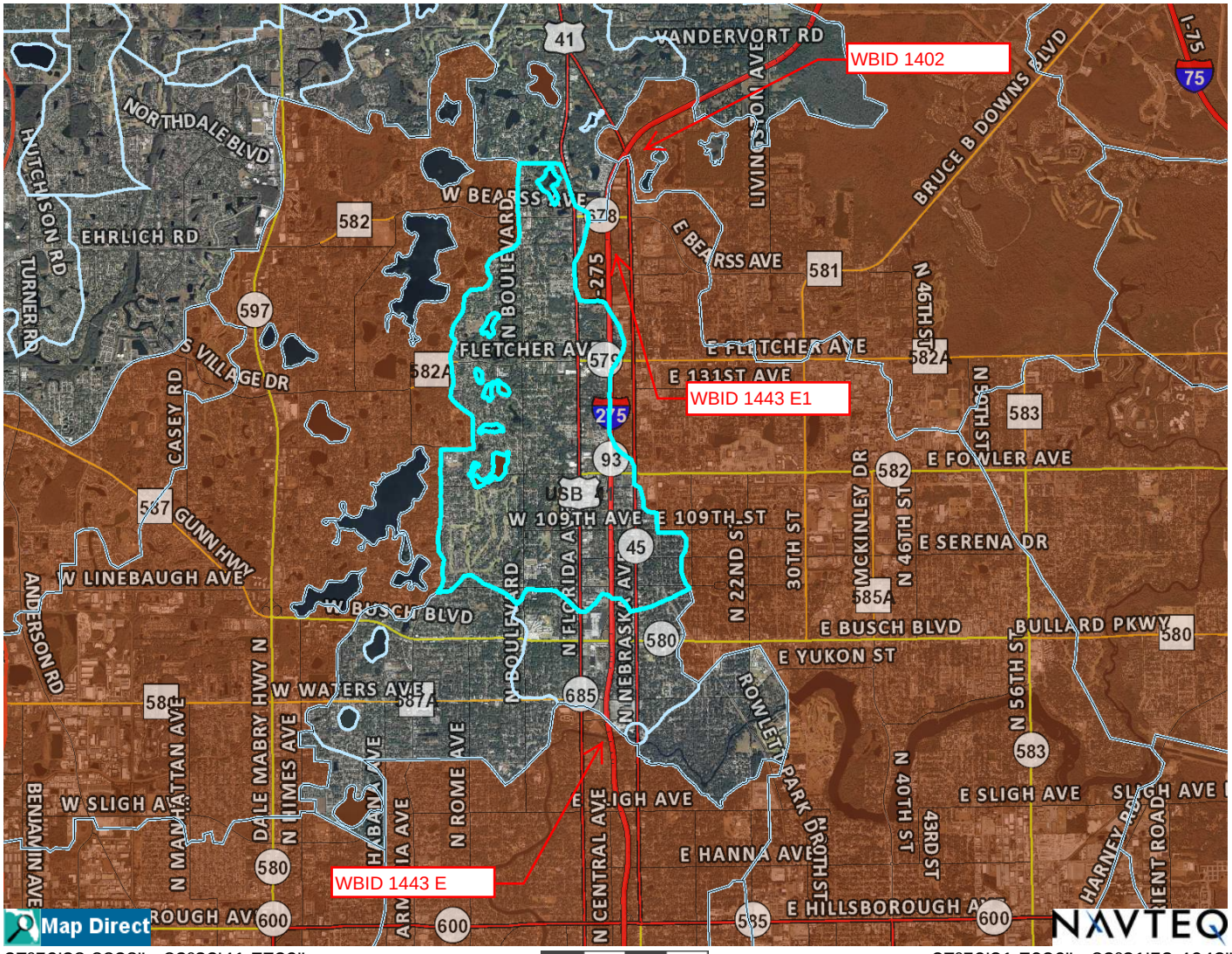
TYPICAL SECTION A-A



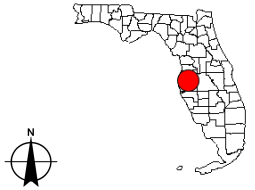
Appendix F
FDEP WBID Map & Impaired List

Map Direct: No Focus

28°7'0.0922", -82°32'35.8759" Scale 1:95,270 28°6'52.9039", -82°21'46.8375"



27°59'38.8838", -82°32'41.7729" 1 inch = 7939 feet 27°59'31.7036", -82°21'53.4642"



- Aerial Imagery 2011-2013
- Verified Impaired WBIDs
- Waterbody Ids (WBIDs)
- Counties
- Aerial Imagery Flight Dates 2011-2013

1	5	09-1101	Springs Coast	Middle Coastal	Hernando	1382F	Weekiwatchee Spring Run	Stream	3F		Nutrients (Algal Mats)			Nitrate+Nitrite > 0.60	Medium			The Groundwater Protection Section determined this waterbody has median Nitrate+Nitrite concentration > 0.60 mg/L and abundant algal mats such that the flora is imbalanced.
2	5	12-0556	Springs Coast	Middle Coastal	Hernando	1382G	Wilderness-Mud-Salt Springs	Spring	3M		Nutrients (Algal Mats)		TN = 0.55 (n = 21) TP = 0.011 (n = 21) BOD = No Data	Balanced natural population of flora.	Medium		N/A	This parameter is impaired for this waterbody based on "other information" that indicated an imbalance in flora or fauna. It is included in a springs report "Wilderness, Mud, Salt Springs, March 2011" that documents nutrient enrichment is apparent due to abundant algae documented through photography as well as bioassessment methods. Nitrate+nitrite levels range from 0.24 - 0.58 mg/L (n=21) during the verified period and is the likely cause of the impairment. This parameter will be added to the 303(d) list.
2	5	12-0557	Springs Coast	Middle Coastal	Hernando	1389	Jenkins Spring	Spring	3M		Nutrients (Algal Mats)		TN = 0.745 (n = 24) TP = 0.013 (n = 24) BOD = 0.9 (n = 6)	Balanced natural population of flora.	Medium		N/A	This parameter is impaired for this waterbody based on "other information" that indicated an imbalance in flora or fauna. It is included in a springs report "Florida Springs Initiative Monitoring Network Report and Recognized Sources of Nitrate February 2010" that documents nutrient enrichment is apparent due to abundant algae documented through photography as well as bioassessment methods. Nitrate+nitrite levels range from 0.003 - 0.87 mg/L (n=24) during the verified period and is the likely cause of the impairment. This parameter will be added to the 303(d) list.
2	5	12-0558	Springs Coast	Middle Coastal	Hernando	1389A	Jenkins Creek	Estuary	3M		Mercury (in fish tissue)			Exceeds DoH Threshold (< 0.3 ppm)	High		Assessment based on DOH Fish Tissue Studies	Verified for impairment based on DOH marine fish consumption advisory data from 2005-2008 for 76 King Mackerel with an average mercury concentration of 0.50 ppm. This parameter is being added to the 303(d) list.
2	5	12-0559	Springs Coast	Middle Coastal	Hernando	1389B	Minnow Creek	Estuary	3M		Mercury (in fish tissue)			Exceeds DoH Threshold (< 0.3 ppm)	High		Assessment based on DOH Fish Tissue Studies	Verified for impairment based on DOH marine fish consumption advisory data from 2005-2008 for 76 King Mackerel with an average mercury concentration of 0.50 ppm. This parameter is being added to the 303(d) list.
2	5	12-0560	Springs Coast	Middle Coastal	Hernando, Pasco	1391B	Magnolia - Aripeka Springs	Spring	3M		Nutrients (Algal Mats)		TN = 0.615 (n = 32) TP = 0.011 (n = 34) BOD = No Data	Balanced natural population of flora.	Medium		N/A	This parameter is impaired for this waterbody based on "other information" that indicated an imbalance in flora or fauna. It is included in a springs report "Magnolia - Aripeka Springs Group, March 2011" that documents nutrient enrichment is apparent due to abundant algae documented through photography as well as bioassessment methods. Nitrate+nitrite levels range from 0.46 - 0.74 mg/L (n=33) during the verified period and is the likely cause of the impairment. This parameter will be added to the 303(d) list.
2	5	12-0561	Springs Coast	Middle Coastal	Hernando	1397	Direct Runoff to Gulf	Estuary	3M		Mercury (in fish tissue)			Exceeds DoH Threshold (< 0.3 ppm)	High		Assessment based on DOH Fish Tissue Studies	Verified for impairment based on DOH marine fish consumption advisory data from 2005-2008 for 76 King Mackerel with an average mercury concentration of 0.50 ppm. This parameter is being added to the 303(d) list.
2	2	09-2292	Tampa Bay Tributaries	Hillsborough River	Hillsborough, Pasco	1402	Cypress Creek	Stream	3F	Dissolved Oxygen	Dissolved Oxygen	Nutrients (added from comments)		≥ 5.0 mg/L	Medium			EPA proposed a TMDL in September, 2004. Dissolved oxygen impairment linked to total nitrogen as the causative pollutant. Total nitrogen median in cycle 1 assessment was 1.3 mg/L, but has increased in the cycle 2 assessment to 1.62 mg/L.
2	2	09-2293	Tampa Bay Tributaries	Hillsborough River	Hillsborough, Pasco	1402	Cypress Creek	Stream	3F	Coliforms	Fecal Coliform			≤ 400 Counts / 100 mL	Low			Delisted from the 1998 303(d) list in Cycle 1, re-listed in Cycle 2.
2	2	09-2294	Tampa Bay Tributaries	Hillsborough River	Hillsborough, Pasco	1402	Cypress Creek	Stream	3F	Nutrients	Nutrients (Chlorophyll-a)			≤ 20 µg/L	Medium			Delisted from the 1998 303(d) list in Cycle 1, re-listed in Cycle 2. Annual chlorophyll-a average did not exceed 20 µg/L in 2004 (2.3), 2005 (2.6), and 2007 (12.33). Nutrients (total nitrogen and total phosphorus) are co-limiting based on a median TN/TP ratio of 22 (n=121).
2	1	09-2046	Ocklawaha	Palatlakaha River	Lake, Polk	1406	Big Creek Reach	Stream	3F		Dissolved Oxygen	Nutrients (added from comments)		< 5.0 mg/L	Medium			pp = 19 / 31 Potentially Impaired; vp = 24 / 25 Impaired. DO met the verification threshold and TN was identified as the causative pollutant. 11 TN measurements, median 2.04 mg/L. 15 TP measurements, median 0.05 mg/L, 11 BOD measurements, median 0.8 mg/L.
1	5	09-1094	Springs Coast	Middle Coastal	Pasco	1409B	Oelsner Park Beach	Coastal	3M		Bacteria (Beach Advisories)			< 21 days of beach advisories	High			pp = Not impaired; vp = Impaired. The waterbody segment exceeded the 21-day threshold for closures, advisories, or warnings in 2002 (73 days), 2003 (199 days), 2004 (138 days), and 2005 (112 days), as per IWR Rule 62-303.360(1)(c).
2	5	12-0562	Springs Coast	Middle Coastal	Pasco	1409C	Pithlachascotee River Tidal	Estuary	3M		Mercury (in fish tissue)			Exceeds DoH Threshold (< 0.3 ppm)	High		Assessment based on DOH Fish Tissue Studies	Verified for impairment based on DOH marine fish consumption advisory data from 2005-2008 for 76 King Mackerel with an average mercury concentration of 0.50 ppm. This parameter is being added to the 303(d) list. WBID 1409 has been revised for the cycle 2 assessment and the tidal segment of the river is now assessed as WBID 1409C.
2	3	10-0469	Choctawhatchee - St. Andrew	Choctawhatchee River	Holmes	142	Sikes Creek	Stream	3F	Dissolved Oxygen	Dissolved Oxygen (Nutrients)	Total Nitrogen	TN = 0.999 (n = 18); TP = 0.022 (n = 20); BOD = 1.6 (n = 19)	≥ 5.0 mg/L	Low		vp=14/25	DO met the listing threshold and the causative pollutant is total nitrogen. There are low urban and built up (1.99%) and 44.95% upland forest land uses.
2	3	10-0470	Choctawhatchee - St. Andrew	Choctawhatchee River	Holmes	142	Sikes Creek	Stream	3F	Coliforms	Fecal Coliform			≤ 400 Counts / 100 mL	Low		vp=5/22	This parameter exceeds the listing threshold and will remain on the 303(d) List. EPA established TMDL 3/30/01.
2	4	10-3248	Withlacoochee	Upper Withlacoochee	Polk	1426	Pony Creek	Stream	3F		Dissolved Oxygen (Nutrients)	Total Phosphorus	TN = 1.66 (n = 79) TP = 0.179 (n = 79) BOD = No Data	≥ 5.0 mg/L	Medium		36/79	Impaired with total phosphorus identified as the causative pollutant. There are a sufficient number of exceedances to meet the verified list requirements and the total phosphorus median exceeds the 90th percentile value of 0.116 mg/L for the Peninsula region. 2004 SWFWMD land use statistics: 45% upland forest and wetlands, 44% agriculture and rangeland, 11% urban and built-up.
1	4	06-0525	Kissimmee River	Upper Kissimmee Planning Unit	Osceola, Polk	1436	Horseshoe Creek	Stream	3F	Coliforms	Fecal Coliform			> 400 counts per 100ml	High	2005		PP = 0 / 4, Insufficient data; VP = 7 / 31, Impaired. Fecal coliform mean 1169 counts/100mL, Median 260 counts/100 mL, range 2 - 20,000 counts/100mL.
1	4	06-0531	Kissimmee River	Upper Kissimmee Planning Unit	Polk	1436A	Lake Davenport - Open	Lake	3F		Dissolved Oxygen	Biochemical Oxygen Demand (added from comments)		< 5.0 mg/L	Medium	2007		PP = 3 / 3; Potentially impaired. VP = 23 / 25, Impaired. DO met verification threshold of IWR, and BOD is the causative pollutant. 1 TN value, can not calculate Median value. 1 TP value, can not calculate Median value. 20 BOD values, Median 3.2 mg/L. 26 DO values, Median 2.24 mg/L, mean 2.52 mg/L, range 0.13 - 7.65 mg/L.
2	5	12-0563	Springs Coast	Middle Coastal	Pasco	1439	Salt Spring Run	Spring	3F		Nutrients (Algal Mats)		No Data	Balanced natural population of flora.	Medium		N/A	This parameter is impaired for this waterbody based on "other information" that indicated an imbalance in flora or fauna. It is included in a springs report "Florida Springs Initiative Monitoring Network Report and Recognized Sources of Nitrate, February 2010" that documents nutrient enrichment is apparent due to abundant algae documented through photography as well as bioassessment methods. This parameter will be added to the 303(d) list.
1	5	09-1035	Springs Coast	Anclote River / Coastal Pinellas County	Pasco, Pinellas	1440	Anclote River Tidal	Estuary	3M	Mercury (based on fish consumption advisory)	Mercury (in fish tissue)			Exceeds DoH threshold (> 0.43 mg/kg)	High			Data verified to be within the last 7.5 years. Confirmed recent data for fish advisories for King Mackerel (n=87 samples) and Bull shark (n=28 samples) in the Verified Period. Average Hg levels in king mackerel were 0.67 mg/kg and 1.85 mg/kg in bull sharks which exceeded the threshold of 0.43 mg/kg.
1	5	09-1036	Springs Coast	Anclote River / Coastal Pinellas County	Pinellas	1440A	Anclote River Bayou Complex (Spring Bayou)	Estuary	3M	Dissolved Oxygen	Dissolved Oxygen	Nutrients (added from comments)		< 4.0 mg/L	High			pp = No data; vp = 37 / 101 Chl-a was identified as the causative pollutant based on Chl-a data/nutrient impairment verification.
1	5	09-1037	Springs Coast	Anclote River / Coastal Pinellas County	Pinellas	1440A	Anclote River Bayou Complex (Spring Bayou)	Estuary	3M	Nutrients	Nutrients (Chlorophyll-a)			Median TN = 0.77 mg/L	High			pp = 36 / 93; vp = 35 / 96 Verified impaired. Annual average Chl-a values exceeded 11 µg/l in 1999, 2001, and 2002, and values were 13.48, 14.89, and 12.26 µg/l, respectively. Nitrogen is the limiting nutrient based on a median TN/TP ratio of 8.2 (74 values). Verified period total nitrogen median = 0.77 mg/L (74 values), total phosphorus = 0.1 (87 values), and BOD median = 2 mg/l (82 values).

2	5	12-0496	Springs Coast	Anclote River / Coastal Pinellas County	Pinellas	1440A	Anclote River Bayou Complex (Spring Bayou)	Estuary	3M	Mercury (based on fish consumption advisory)	Mercury (in fish tissue)			Exceeds DoH Threshold (< 0.3 ppm)	High*		Assessment based on DOH Fish Tissue Studies	Verified for impairment based on DOH marine fish consumption advisory data from 2002 for 21 Gafftopsail Catfish with an average mercury concentration of 0.48 ppm. Additional support for impairment includes data from 2004 for 9 Spanish Mackerel with an average mercury concentration of 0.81 ppm. This parameter is being added to the 303(d) list.
1	2	03-2249	Tampa Bay Tributaries	Hillsborough River	Pasco	1440D	Twin Lake - Open Water	Lake	3F		Nutrients (TSI)			Median TP = .02 mg/l	Medium	2008		PP- Potentially impaired; VP- Verified impaired. Annual average TSI > 40 and Color <40 in 2000. Phosphorus is the limiting nutrient based on a TN/TP ratio median of 36.5 (44 values) during the planning period and 37.0 (75 values) during the verified period.
2	2	09-2295	Tampa Bay Tributaries	Hillsborough River	Pasco	1440E	Cypress Creek North	Stream	3F		Dissolved Oxygen			≥ 5.0 mg/L	Medium			
2	2	09-2296	Tampa Bay Tributaries	Hillsborough River	Pasco	1440E	Cypress Creek North	Stream	3F		Nutrients (Chlorophyll-a)			≤ 20 µg/L	Medium			Annual chlorophyll-a average exceeded 20 µg/L in 2007 (274.9 µg/L). Co-limitation of Nitrogen and phosphorus based on a median TN/TP ratio of 13.54 (36 values).
2	5	12-0497	Springs Coast	Anclote River / Coastal Pinellas County	Pasco	1440F	Anclote River Freshwater Segment	Stream	3F		Fecal Coliform			≤ 400 Counts / 100 mL	Low		30/106	This parameter is impaired for this waterbody based on the number of exceedances for the sample size and is being added to the 303(d) list.
2	5	12-0498	Springs Coast	Anclote River / Coastal Pinellas County	Pasco	1440F	Anclote River Freshwater Segment	Stream	3F	Mercury (based on fish consumption advisory)	Mercury (in fish tissue)			Exceeds DoH Threshold (< 0.3 ppm)	High	2012	Assessment based on DOH Fish Tissue Studies	Verified for impairment based on DOH freshwater fish consumption advisory data from 1992 for 14 Largemouth Bass with an average mercury concentration of 1.28 ppm. This parameter is being added to the 303(d) list.
2	2	09-2297	Tampa Bay Tributaries	Hillsborough River	Hillsborough, Pasco	1442	New River	Stream	3F	Dissolved Oxygen	Dissolved Oxygen			≥ 5.0 mg/L	High			EPA finalized a TMDL in December, 2005.
2	2	09-2298	Tampa Bay Tributaries	Hillsborough River	Hillsborough, Pasco	1442	New River	Stream	3F	Nutrients	Nutrients (Chlorophyll-a)			≤ 20 µg/L	High			Delisted from the 1998 303(d) list in Cycle 1, re-listed in Cycle 2. Nutrient impairment based on dissolved oxygen impairment and causative pollutant of total nitrogen and total phosphorus. Nitrogen is the limiting nutrient with TN/TP ratio 6.58 (n=18).
1	2	03-2254	Tampa Bay Tributaries	Hillsborough River	Hillsborough, Pasco, Polk	1443A	Hillsborough River	Stream	3F		Dissolved Oxygen	Nutrients (added from comments)		< 5.0 mg/l	Low	2008		PP - 56/83 Potentially impaired; VP - 25/42 Verified impaired. Linked to nutrients (verified period total phosphorus median = 0.30 mg/l). Nitrogen is the limiting nutrient.
1	2	03-2255	Tampa Bay Tributaries	Hillsborough River	Hillsborough, Pasco, Polk	1443A	Hillsborough River	Stream	3F		Mercury (in fish tissue)			> 0.5 ppm	Low	2011		PP - Potentially impaired; VP - Verified impaired. Mercury (in fish tissue) met verification threshold of IWR. Fish tissue levels in 20 samples averaged .53 ppm in 2003.
2	2	09-2299	Tampa Bay Tributaries	Hillsborough River	Hillsborough, Pasco, Polk	1443A	Hillsborough River	Stream	3F	Nutrients	Nutrients (Chlorophyll-a)			≤ 20 µg/L	High			Annual chlorophyll-a average did not exceed 20 µg/L in 2002 (3.75) and 2005 (1.03 µg/L). Biological information is insufficient to assess aquatic life use support. Listed as impaired based on dissolved oxygen and nutrient (total nitrogen) impairment. Nitrogen is the limiting nutrient based on TN/TP ration of 5.7 (n = 82). Two stations have been included in the assessment of this WBID that were previously assigned to WBID 1443E, station 112WRD 02301990 and station 112WRD 02302010. These stations show elevated total nitrogen values in the verified period. The stations will be re-assigned to WBID 1443A in a later IWR Run, but the data has been used to verify the dissolved oxygen and nutrient impairment.
1	2	03-2256	Tampa Bay Tributaries	Hillsborough River	Hillsborough	1443B	Hillsborough River	Stream	1		Mercury (in fish tissue)			> 0.5 ppm	Low	2011		PP - Potentially impaired; VP - Verified impaired. Mercury (in fish tissue) met verification threshold of IWR. Fish tissue levels in 20 samples averaged .53 ppm in 2003.
2	2	09-2300	Tampa Bay Tributaries	Hillsborough River	Hillsborough	1443B	Hillsborough River	Stream	1	Dissolved Oxygen	Dissolved Oxygen			≥ 5.0 mg/L	High			EPA proposed a TMDL in September, 2004.
1	2	03-2257	Tampa Bay Tributaries	Hillsborough River	Hillsborough	1443C	Hillsborough River	Stream	3F		Mercury (in fish tissue)			> 0.5 ppm	Low	2011		PP - Potentially impaired; VP - Verified impaired. Mercury (in fish tissue) met verification threshold of IWR. Fish tissue levels in 20 samples averaged .53 ppm in 2003.
1	2	03-2259	Tampa Bay Tributaries	Hillsborough River	Hillsborough, Pasco	1443D	Hillsborough River	Stream	3F		Mercury (in fish tissue)			> 0.5 ppm	Low	2011		PP - Potentially impaired; VP - Verified impaired. Mercury (in fish tissue) met verification threshold of IWR. Fish tissue levels in 20 samples averaged .53 ppm in 2003.
1	2	03-2262	Tampa Bay Tributaries	Hillsborough River	Hillsborough	1443E	Hillsborough River	Estuary	3M		Dissolved Oxygen	Nutrients (added from comments)		< 4.0 mg/l, and < 5.0 mg/l as daily average	Medium	2008		PP - 252/639 Potentially impaired VP - 247/554 Verified impaired. Linked to nutrients (verified period total nitrogen median = 1.02 mg/l; verified period total phosphorus median = .21 mg/l). Nitrogen is the limiting nutrient.
1	2	03-2263	Tampa Bay Tributaries	Hillsborough River	Hillsborough	1443E	Hillsborough River	Estuary	3M		Mercury (in fish tissue)			> 0.5 ppm	Low	2011		PP - Potentially impaired; VP - Verified impaired. Mercury (in fish tissue) met verification threshold of IWR. Fish tissue levels in 20 samples averaged .53 ppm in 2003.
1	2	03-2264	Tampa Bay Tributaries	Hillsborough River	Hillsborough	1443E	Hillsborough River	Estuary	3M		Nutrients (Chlorophyll-a)			Median TN = 1.02 mg/l	High	2003		PP- Potentially impaired; VP- Verified impaired. Annual average Chl(a) values exceeded 11 µg/l in 1991, 1992, & 1994-2001. Nitrogen is the limiting nutrient based on a TN/TP ratio median of 3.8 (543 values) during the planning period and 4.5 (357 values) during the verified period.
1	2	03-2265	Tampa Bay Tributaries	Hillsborough River	Hillsborough	1443E1	Hillsborough Reservoir	Lake	1		Dissolved Oxygen	Nutrients (added from comments)		< 5.0 mg/l	Medium	2008		PP - 78/165 Potentially impaired; VP - 97/217 Verified impaired. Linked to nutrients (verified period total phosphorus median = 0.17 mg/l). Nitrogen is the limiting nutrient.
1	2	03-2266	Tampa Bay Tributaries	Hillsborough River	Hillsborough	1443E1	Hillsborough Reservoir	Lake	1		Mercury (in fish tissue)			> 0.5 ppm	Low	2011		PP - Potentially impaired; VP - Verified impaired. Mercury (in fish tissue) met verification threshold of IWR. Fish tissue levels in 20 samples averaged .53 ppm in 2003.
2	2	09-2301	Tampa Bay Tributaries	Hillsborough River	Hillsborough	1443E1	Hillsborough Reservoir	Lake	1		Nutrients (TSI)			TSI < 60; Color > 40	Medium			Impaired due to dissolved oxygen impairment and nutrients (total phosphorus) as causative pollutant. Annual average TSI values did not exceed 60 TSI units in 2001 (48.6) 2002 (47), 2003 (40.3), 2004 (38.9), 2005 (42.8), 2006 (42.7), and 2007 (48.4). Nitrogen is the limiting nutrient based on a median TN/TP ratio of 8.6 (36 values).
1	2	03-2267	Tampa Bay Tributaries	Hillsborough River	Hillsborough	1443E2	Hillsborough River	Stream	1		Mercury (in fish tissue)			> 0.5 ppm	Low	2011		PP - Potentially impaired; VP - Verified impaired. Mercury (in fish tissue) met verification threshold of IWR. Fish tissue levels in 20 samples averaged .53 ppm in 2003.
2	4	10-3249	Withlacoochee	Upper Withlacoochee	Polk	1449A	Lake Deeson	Lake	3F		Nutrients (TSI)		TN = 1.458 (n = 18) TP = 0.06 (n = 15) BOD = No Data	TSI ≤ 40; Color ≤ 40	Medium		2007 (71; Color: 20 PCU)	This lake was verified as impaired because the TSI threshold of 40 was exceeded in 2007. Nitrogen and phosphorus are the limiting nutrients based on a median TN/TP ratio of 23.7 (n=15).
2	5	12-0499	Springs Coast	Anclote River / Coastal Pinellas County	Pasco	1450	Direct Runoff to Gulf	Estuary	3M		Mercury (in fish tissue)			Exceeds DoH Threshold (< 0.3 ppm)	High		Assessment based on DOH Fish Tissue Studies	Verified for impairment based on DOH marine fish consumption advisory data from 2002 for 21 Gafftopsail Catfish with an average mercury concentration of 0.48 ppm. This parameter is being added to the 303(d) list.
1	2	03-2268	Tampa Bay Tributaries	Hillsborough River	Hillsborough	1451B	Keene Lake	Lake	3F		Nutrients (TSI)			Median TP = .04 mg/l	Medium	2008		PP- Potentially impaired; VP- Verified impaired. Annual average TSI > 60 in 1995 and 1996. Phosphorus is the limiting nutrient based on a TN/TP ratio median of 32.5 (140 values) in the planning period and 31.1 (60 values) during the verified period.
2	2	09-2302	Tampa Bay Tributaries	Hillsborough River	Pasco	1451G	King Lake - Open Water	Lake	3F		Nutrients (TSI)			TSI < 40; Color < 40	Medium			Annual average TSI values exceeded 40 TSI units with color less than 40 PCU in 2007. Phosphorus is the limiting nutrient based on a median TN/TP ratio of 63.35 (11 values).
2	2	09-2303	Tampa Bay Tributaries	Hillsborough River	Pasco	1451W	Saxon Lake	Lake	3F		Nutrients (TSI)			TSI < 40; Color < 40	Medium			Annual average TSI values exceeded 40 TSI units with color less than 40 PCU in 2007. Nitrogen is the limiting nutrient based on a median TN/TP ratio of 36.83 (11 values).
1	2	03-2270	Tampa Bay Tributaries	Hillsborough River	Hillsborough, Pasco	1455	Trout Creek	Stream	3F		Fecal Coliform			> 400 colonies per 100 ml	Low	2008		PP - 19/85 Potentially impaired; VP - 12/54 Verified impaired
2	2	09-2304	Tampa Bay Tributaries	Hillsborough River	Hillsborough, Pasco	1455	Trout Creek	Stream	3F	Dissolved Oxygen	Dissolved Oxygen	Nutrients (added from comments)		≥ 5.0 mg/L	High			Impaired with total nitrogen as the causative pollutant.
2	2	09-2305	Tampa Bay Tributaries	Hillsborough River	Hillsborough, Pasco	1455	Trout Creek	Stream	3F	Nutrients	Nutrients (Chlorophyll-a)			≤ 20 µg/L	High			Annual chlorophyll-a average exceeded 20 µg/l in 2007 (20.87 µg/L). Delisted from the 1998 303(d) list in Cycle 1. Nitrogen is the limiting nutrient based on a median TN/TP ratio of 8.8 (93 values). Complete nutrient TMDL with dissolved oxygen TMDL. Biorecons completed in 2005 and 2006 with assessment "Suspect". Significant land use change from rangeland / pasture to urban residential.

Appendix G
Pond Sizing, 100-Year Floodplain Calcualtions, and Bridge Cost Estimate

Pond Sizing Calculations

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 2 - Starter	**CHECKED BY:**	JLL

I ***PRE DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 2 - Starter

COMPUTED BASIN AREA (Ac) 1.92

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious				
Roadway, Shoulder and sidewalk		98	0.44	43.12
Sub-total for Impervious Land Uses			0.44	43.12
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.66	32.34
Sub-total for Pervious Land Uses			0.66	32.34
Pond				
1 acre residential lots	A	51	0.82	41.82
Sub-total for Pervious Land Uses			0.82	41.82
		TOTAL	1.92	117.28

COMPOSITE CN 61

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	6.37	2.71	0.43
25 yr / 24 hr	SWFWMD	8.00	6.37	3.45	0.55
100 yr / 24 hr	SWFWMD	11.00	6.37	5.88	0.94

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10 — SOIL STORAGE (inches) S 6.37

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S) — RUNOFF (inches) R 5.88

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA — RUNOFF (ac-ft) V[R] 0.94

II ***POST DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 2 - Starter

COMPUTED BASIN AREA (Ac)	1.92

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious (New)				
Roadway, Shoulder and sidewalk		98	1.10	107.80
Sub-total for Impervious Land Uses			1.10	107.80
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	B/D	49	0.38	18.48
Sub-total for Impervious Land Uses			0.38	18.48
Pond				
Wet Area		100	0.44	44.28
Sub-total for Impervious Land Uses			0.44	44.28
		TOTAL	1.92	170.56

COMPOSITE CN	**89**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	1.26	5.69	0.91
25 yr / 24 hr	SWFWMD	8.00	1.26	6.67	1.07
100 yr / 24 hr	SWFWMD	11.00	1.26	9.62	1.54

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10

SOIL STORAGE (inches)	S	1.26

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S)

RUNOFF (inches)	R	9.62

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA

RUNOFF (ac-ft)	V[R]	1.54

III ***GEOTECHNICAL INFORMATION***

NRCS SOIL SURVEY		
Approximate Depth to SHWT (Ft)	**Adjacent Ground Elevation (Ft)**	**Estimated NRCS SHWT (Ft)**
4.75	37.0	32.25
	Estimated SHWT	32.25

IV ***SUMMARY OF REQUIRED ATTENUTION AND TREATMENT VOLUME***

Basin 2 - Starter

REQUIRED ATTENUTATION CACULATION

PRE-DEVELOPED CONDITION		**POST-DEVELOPED CONDITION**	
AREA (AC):	1.92	AREA (AC):	1.92
CN:	61	CN:	89
IMPERVIOUS AREA (AC):	0.44	IMPERVIOUS AREA (AC):	1.10
PERVIOUS AREA (AC):	0.66	PERVIOUS AREA (AC):	0.38
		NEW IMPERVIOUS AREA (AC):	0.66

SUMMARY OF WATER MANAGEMENT DISTRICT ATTENUATION ESTIMATES

AGENCY	DESIGN STORM	RUNOFF VOLUME V[R] PRE [AC-FT]	POST [AC-FT]	TOTAL RETENTION [AC-FT]
SWFWMD	10 yr / 24 hr	0.43	0.91	**0.48**
SWFWMD	25 yr / 24 hr	0.55	1.07	**0.51**

REQUIRED TREATMENT VOLUME CALCULATION	AC-FT
Wet Detention Treatment Requirement = 1.0 inch of runoff from Impervious (New in Basins 2 and 3)	0.21

V ***PROVIDED TREATMENT & ATTENUATION VOLUME CALCULATIONS***

Basin 2 - Starter

Basin 2 - Starter

POND STAGE, AREA & STORAGE			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	31.25	0.36	0.00
SHWT	32.25	0.43	0.40
Weir Crest Elevation	32.73	0.44	0.60
DHW 10	33.90	0.47	1.14
DHW 25	34.00	0.48	1.19
Top of Bank Elevation (DHW 100)	36.00	0.53	2.20
Top of Berm	37.00	0.82	2.87

PROVIDED TREATMENT VOLUME	AC-FT
Treatment Volume Provided = Volume between Seasonal High and Weir Crest Elevation	0.21

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	0.54
DHW 25	Provided between Weir Crest and 25 Year Stage	0.58

VI ***BASIN HYDRAULICS - VERIFY POND DOES NOT ADVERSELY IMPACT BASIN INLETS***

Basin 2 - Starter

Low Edge of Pavement in Basin =	40.0 Ft	Station/Location: Edge of existing northbound exit ramp at station 3817+00 (Rt).
1.0' of Clearance =	39.0 Ft	
Distance from EOP to Pond =	915 Ft	
Hydraulic Grade Line (HGL) at EOP =	.73 Ft	(Assume Slope = 0.0008 ft/ft)
10 year HGL =	38.27 Ft	
10 year Pond Stage =	33.9 Ft	**HGL Below EOP**

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PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 3 - Starter	**CHECKED BY:**	JLL

I ***PRE DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 3 - Starter

COMPUTED BASIN AREA (Ac)	1.84

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious				
Roadway, Shoulder and sidewalk		98	0.60	58.80
Sub-total for Impervious Land Uses			0.60	58.80
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.86	42.14
Sub-total for Pervious Land Uses			0.86	42.14
Pond				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.38	18.47
Sub-total for Pervious Land Uses			0.38	18.47
		TOTAL	1.84	119.41

COMPOSITE CN	**65**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	5.38	3.10	0.48
25 yr / 24 hr	SWFWMD	8.00	5.38	3.89	0.60
100 yr / 24 hr	SWFWMD	11.00	5.38	6.43	0.98

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10

SOIL STORAGE (inches)	S	5.38

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S)

RUNOFF (inches)	R	6.43

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA

RUNOFF (ac-ft)	V[R]	0.98

II ***POST DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 3 - Starter

COMPUTED BASIN AREA (Ac)	1.84

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious (New)				
Roadway, Shoulder and sidewalk		98	1.46	143.08
Sub-total for Impervious Land Uses			1.46	143.08
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.01	0.51
Sub-total for Impervious Land Uses			0.01	0.51
Pond				
Wet Area		100	0.37	36.66
Sub-total for Impervious Land Uses			0.37	36.66
		TOTAL	1.84	180.25

COMPOSITE CN	**98**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	0.19	6.78	1.04
25 yr / 24 hr	SWFWMD	8.00	0.19	7.77	1.19
100 yr / 24 hr	SWFWMD	11.00	0.19	10.77	1.65

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10

SOIL STORAGE (inches)	S	0.19

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S)

RUNOFF (inches)	R	10.77

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA

RUNOFF (ac-ft)	V[R]	1.65

III ***GEOTECHNICAL INFORMATION***

NRCS SOIL SURVEY		
Approximate Depth to SHWT (Ft)	**Adjacent Ground Elevation (Ft)**	**Estimated NRCS SHWT (Ft)**
6.56	46.0	39.44
	Estimated SHWT	39.44

IV ***SUMMARY OF REQUIRED ATTENUTION AND TREATMENT VOLUME***

Basin 3 - Starter

REQUIRED ATTENUTATION CACULATION

PRE-DEVELOPED CONDITION		**POST-DEVELOPED CONDITION**	
AREA (AC):	1.84	AREA (AC):	1.84
CN:	65	CN:	98
IMPERVIOUS AREA (AC):	0.60	IMPERVIOUS AREA (AC):	1.46
PERVIOUS AREA (AC):	0.86	PERVIOUS AREA (AC):	0.01
		NEW IMPERVIOUS AREA (AC):	0.86

SUMMARY OF WATER MANAGEMENT DISTRICT ATTENUATION ESTIMATES

AGENCY	DESIGN STORM	RUNOFF VOLUME V[R] PRE [AC-FT]	POST [AC-FT]	TOTAL RETENTION [AC-FT]
SWFWMD	10 yr / 24 hr	0.48	1.04	**0.56**
SWFWMD	25 yr / 24 hr	0.60	1.19	**0.59**

V ***PROVIDED TREATMENT & ATTENUATION VOLUME CALCULATIONS***

Basin 3 - Starter

Basin 3 - Starter

POND STAGE, AREA & STORAGE			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	45.00	0.24	0.00
DHW 10	46.90	0.37	0.57
DHW 25	46.95	0.37	0.59
Top of Bank Elevation (DHW 100)	47.00	0.38	0.61

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided from pond bottom and 10 Year Stage	0.57
DHW 25	Provided from pond bottom and 25 Year Stage	0.59

VI ***BASIN HYDRAULICS - VERIFY POND DOES NOT ADVERSELY IMPACT BASIN INLETS***

Basin 3 - Starter

Low Edge of Pavement in Basin =	50.0 Ft	Station/Location: Edge of northbound I-275 north of Hanna Ave. at Sta. 3853+00.
1.0' of Clearance =	49.0 Ft	
Distance from EOP to Pond =	620.0 Ft	
Hydraulic Grade Line (HGL) at EOP =	.5 Ft	(Assume Slope = 0.0008 ft/ft)
10 year HGL =	48.5 Ft	
10 year Pond Stage =	46.9 Ft	**HGL Below EOP**

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PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 7 - Starter	**CHECKED BY:**	JLL

I ***PRE DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 7 - Starter

COMPUTED BASIN AREA (Ac) 0.72

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious				
Roadway, Shoulder and sidewalk		98	0.00	0.00
Sub-total for Impervious Land Uses			0.00	0.00
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	68	0.53	36.04
Sub-total for Pervious Land Uses			0.53	36.04
Pond				
Paved Parking Lot		98	0.19	18.29
Sub-total for Pervious Land Uses			0.19	18.29
		TOTAL	0.72	54.33

COMPOSITE CN **76**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	3.19	4.24	0.25
25 yr / 24 hr	SWFWMD	8.00	3.19	5.14	0.31
100 yr / 24 hr	SWFWMD	11.00	3.19	7.92	0.47

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10 — SOIL STORAGE (inches) S 3.19

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S) — RUNOFF (inches) R 7.92

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA — RUNOFF (ac-ft) V[R] 0.47

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II ***POST DEVELOPMENT***
RUNOFF CURVE NUMBER (CN) CALCULATIONS
Basin 7 - Starter

COMPUTED BASIN AREA (Ac) 0.72

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious (New)				
Roadway, Shoulder and sidewalk		98	0.53	51.94
Sub-total for Impervious Land Uses			0.53	51.94
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	68	0.13	9.11
Sub-total for Impervious Land Uses			0.13	9.11
Pond				
Wet Area		100	0.05	5.26
Sub-total for Impervious Land Uses			0.05	5.26
		TOTAL	0.72	66.31

COMPOSITE CN **93**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	0.81	6.12	0.37
25 yr / 24 hr	SWFWMD	8.00	0.81	7.11	0.42
100 yr / 24 hr	SWFWMD	11.00	0.81	10.09	0.60

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10 — SOIL STORAGE (inches) S 0.81

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S) — RUNOFF (inches) R 10.09

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA — RUNOFF (ac-ft) V[R] 0.60

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BASIN DESIGNATION:	Basin 7 - Starter	**CHECKED BY:**	JLL

III ***GEOTECHNICAL INFORMATION***

NRCS SOIL SURVEY		
Approximate Depth to SHWT (Ft)	**Adjacent Ground Elevation (Ft)**	**Estimated NRCS SHWT (Ft)**
4.75	20.0	15.25
	Estimated SHWT	15.25

IV ***SUMMARY OF REQUIRED ATTENUTION AND TREATMENT VOLUME***

Basin 7 - Starter

REQUIRED ATTENUTATION CACULATION

PRE-DEVELOPED CONDITION		**POST-DEVELOPED CONDITION**	
AREA (AC):	0.72	AREA (AC):	0.72
CN:	76	CN:	93
IMPERVIOUS AREA (AC):	0.00	IMPERVIOUS AREA (AC):	0.53
PERVIOUS AREA (AC):	0.53	PERVIOUS AREA (AC):	0.13
		NEW IMPERVIOUS AREA (AC):	0.53

SUMMARY OF WATER MANAGEMENT DISTRICT ATTENUATION ESTIMATES

AGENCY	DESIGN STORM	RUNOFF VOLUME V[R] PRE [AC-FT]	POST [AC-FT]	TOTAL RETENTION [AC-FT]
SWFWMD	10 yr / 24 hr	0.25	0.37	**0.11**
SWFWMD	25 yr / 24 hr	0.31	0.42	**0.12**

REQUIRED TREATMENT VOLUME CALCULATION	AC-FT
Dry Detention Treatment Requirement = 1.0 inch of runoff from Impervious (New)	0.04

V ***PROVIDED TREATMENT & ATTENUATION VOLUME CALCULATIONS***

Basin 7 - Starter

Basin 7 - Starter

POND STAGE, AREA & STORAGE			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	17.00	0.04	0.00
Weir Crest Elevation	17.75	0.05	0.04
DHW 10	18.90	0.13	0.14
DHW 25	18.99	0.14	0.16
Top of Bank Elevation (DHW 100)	19.00	0.14	0.16
Top of Berm	20.00	0.19	0.32

PROVIDED TREATMENT VOLUME	AC-FT
Treatment Volume Provided = Volume between Seasonal High and Weir Crest Elevation	0.04

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	0.11
DHW 25	Provided between Weir Crest and 25 Year Stage	0.12

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 7 - Starter	**CHECKED BY:**	JLL

VI ***BASIN HYDRAULICS - VERIFY POND DOES NOT ADVERSELY IMPACT BASIN INLETS***

Basin 7 - Starter

Low Edge of Pavement in Basin =	56.0 Ft	Station/Location: Edge of northbound I-275 south of Busch Blvd. at Sta. 3945+00.
1.0' of Clearance =	55.0 Ft	
Distance from EOP to Pond =	90 Ft	
Hydraulic Grade Line (HGL) at EOP =	.07 Ft	(Assume Slope = 0.0008 ft/ft)
10 year HGL =	54.93 Ft	
10 year Pond Stage =	18.9 Ft	**HGL Below EOP**

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 8 - Starter	**CHECKED BY:**	JLL

I ***PRE DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 8 - Starter

COMPUTED BASIN AREA (Ac)	2.98

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious				
Roadway, Shoulder and sidewalk		98	0.00	0.00
Sub-total for Impervious Land Uses			0.00	0.00
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	68	1.94	131.92
Sub-total for Pervious Land Uses			1.94	131.92
Pond				
Open Space, Fair Condition - Urban Land Soil Type	A	68	1.04	70.52
Sub-total for Pervious Land Uses			1.04	70.52
		TOTAL	2.98	202.44

COMPOSITE CN	**68**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	4.71	3.41	0.85
25 yr / 24 hr	SWFWMD	8.00	4.71	4.24	1.05
100 yr / 24 hr	SWFWMD	11.00	4.71	6.85	1.70

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10

SOIL STORAGE (inches)	S	4.71

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S)

RUNOFF (inches)	R	6.85

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA

RUNOFF (ac-ft)	V[R]	1.70

II ***POST DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 8 - Starter

COMPUTED BASIN AREA (Ac)	2.98

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious (New)				
Roadway, Shoulder and sidewalk		98	1.94	190.12
Sub-total for Impervious Land Uses			1.94	190.12
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	68	0.16	10.84
Sub-total for Impervious Land Uses			0.16	10.84
Pond				
Wet Area		100	0.88	87.76
Sub-total for Impervious Land Uses			0.88	87.76
		TOTAL	2.98	288.72

COMPOSITE CN	97

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	0.31	6.64	1.65
25 yr / 24 hr	SWFWMD	8.00	0.31	7.64	1.89
100 yr / 24 hr	SWFWMD	11.00	0.31	10.64	2.64

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10

SOIL STORAGE (inches)	S	0.31

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S)

RUNOFF (inches)	R	10.64

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA

RUNOFF (ac-ft)	V[R]	2.64

III ***GEOTECHNICAL INFORMATION***

NRCS SOIL SURVEY		
Approximate Depth to SHWT (Ft)	**Adjacent Ground Elevation (Ft)**	**Estimated NRCS SHWT (Ft)**
4.75	22.0	17.25
	Estimated SHWT	17.25

IV ***SUMMARY OF REQUIRED ATTENUTION AND TREATMENT VOLUME***

Basin 8 - Starter

REQUIRED ATTENUTATION CACULATION

PRE-DEVELOPED CONDITION		**POST-DEVELOPED CONDITION**	
AREA (AC):	2.98	AREA (AC):	2.98
CN:	68	CN:	97
IMPERVIOUS AREA (AC):	0.00	IMPERVIOUS AREA (AC):	1.94
PERVIOUS AREA (AC):	1.94	PERVIOUS AREA (AC):	0.16
		NEW IMPERVIOUS AREA (AC):	1.94

SUMMARY OF WATER MANAGEMENT DISTRICT ATTENUATION ESTIMATES

AGENCY	DESIGN STORM	RUNOFF VOLUME V[R] PRE [AC-FT]	POST [AC-FT]	TOTAL RETENTION [AC-FT]
SWFWMD	10 yr / 24 hr	0.85	1.65	**0.80**
SWFWMD	25 yr / 24 hr	1.05	1.89	**0.84**

REQUIRED TREATMENT VOLUME CALCULATION	AC-FT
Dry Retention Treatment Requirement = 1.0 inch of runoff from Impervious (New)	0.16

V ***PROVIDED TREATMENT & ATTENUATION VOLUME CALCULATIONS***

Basin 8 - Starter

Basin 8 - Starter

POND STAGE, AREA & STORAGE			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	21.00	0.86	0.00
Weir Crest Elevation	21.18	0.88	0.16
DHW 10	22.20	0.97	1.10
DHW 25	22.20	0.97	1.10
Top of Bank Elevation (DHW 100)	22.00	0.95	0.91
Top of Berm	23.00	1.04	1.90

PROVIDED TREATMENT VOLUME	AC-FT
Treatment Volume Provided = Volume between Seasonal High and Weir Crest Elevation	0.16

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	0.94
DHW 25	Provided between Weir Crest and 25 Year Stage	0.94

VI ***BASIN HYDRAULICS - VERIFY POND DOES NOT ADVERSELY IMPACT BASIN INLETS***

Basin 8 - Starter

Low Edge of Pavement in Basin =	26.0 Ft	Station/Location: Edge of southbound I-275 north of Busch Blvd at Sta. 3959+00.
1.0' of Clearance =	25.0 Ft	
Distance from EOP to Pond =	190 Ft	
Hydraulic Grade Line (HGL) at EOP =	.15 Ft	(Assume Slope = 0.0008 ft/ft)
10 year HGL =	24.85 Ft	
10 year Pond Stage =	22.2 Ft	**HGL Below EOP**

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 9 - Starter	**CHECKED BY:**	JLL

I ***PRE DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 9 - Starter

COMPUTED BASIN AREA (Ac) 5.53

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious				
Roadway, Shoulder and sidewalk		98	0.00	0.00
Sub-total for Impervious Land Uses			0.00	0.00
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	2.00	98.00
Open Space, Fair Condition - Urban Land Soil Type	A	80	1.92	153.60
Sub-total for Pervious Land Uses			3.92	251.60
Pond				
Open Space, Fair Condition - Urban Land Soil Type	A	68	1.61	109.38
Sub-total for Pervious Land Uses			1.61	109.38
		TOTAL	5.53	360.98

COMPOSITE CN **65**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	5.32	3.13	1.44
25 yr / 24 hr	SWFWMD	8.00	5.32	3.93	1.81
100 yr / 24 hr	SWFWMD	11.00	5.32	6.47	2.98

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10 — SOIL STORAGE (inches) | S | 5.32

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S) — RUNOFF (inches) | R | 6.47

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA — RUNOFF (ac-ft) | V[R] | 2.98

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PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 9 - Starter	**CHECKED BY:**	JLL

II ***POST DEVELOPMENT***
RUNOFF CURVE NUMBER (CN) CALCULATIONS
Basin 9 - Starter

COMPUTED BASIN AREA (Ac) 5.53

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious (New)				
Roadway, Shoulder and sidewalk		98	3.92	384.16
Sub-total for Impervious Land Uses			3.92	384.16
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.47	22.90
Sub-total for Impervious Land Uses			0.47	22.90
Pond				
Wet Area		100	1.14	114.11
Sub-total for Impervious Land Uses			1.14	114.11
		TOTAL	5.53	521.17

COMPOSITE CN **94**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	0.61	6.32	2.91
25 yr / 24 hr	SWFWMD	8.00	0.61	7.31	3.37
100 yr / 24 hr	SWFWMD	11.00	0.61	10.30	4.75

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10 — SOIL STORAGE (inches) | S | 0.61

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S) — RUNOFF (inches) | R | 10.30

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA — RUNOFF (ac-ft) | V[R] | 4.75

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BASIN DESIGNATION:	Basin 9 - Starter	**CHECKED BY:**	JLL

III ***GEOTECHNICAL INFORMATION***

Estimated SHWT - NRCS SOIL SURVEY			
Facility	**Approximate Depth to SHWT (Ft)**	**Adjacent Ground Elevation (Ft)**	**Estimated NRCS SHWT (Ft)**
SMF 9-1	Exist. Storage Basin HW 27.0'/LW 23.0'	N/A	25.00
SMF 9-2	2.75	28.0	25.25
SMF 9-3	2.75	31.5	28.75
SMF 9-4	2.75	32.8	30.00

IV ***SUMMARY OF REQUIRED ATTENUTION AND TREATMENT VOLUME***

Basin 9 - Starter

REQUIRED ATTENUTATION CACULATION

PRE-DEVELOPED CONDITION		**POST-DEVELOPED CONDITION**	
AREA (AC):	5.53	AREA (AC):	5.53
CN:	65	CN:	94
IMPERVIOUS AREA (AC):	0.00	IMPERVIOUS AREA (AC):	3.92
PERVIOUS AREA (AC):	2.00	PERVIOUS AREA (AC):	0.47
		NEW IMPERVIOUS AREA (AC):	3.92

SUMMARY OF WATER MANAGEMENT DISTRICT ATTENUATION ESTIMATES

AGENCY	DESIGN STORM	RUNOFF VOLUME V[R] PRE [AC-FT]	POST [AC-FT]	TOTAL RETENTION [AC-FT]
SWFWMD	10 yr / 24 hr	1.44	2.91	**1.47**
SWFWMD	25 yr / 24 hr	1.81	3.37	**1.56**

REQUIRED TREATMENT VOLUME CALCULATION	AC-FT
Wet Detention Treatment Requirement = 1.0 inch of runoff from Impervious (New)	0.33

V ***PROVIDED TREATMENT & ATTENUATION VOLUME CALCULATIONS***

Basin 9 - Starter

Basin 9 - Starter

POND STAGE, AREA & STORAGE for SMF 9-1 (Expanded Pond)			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	24.00	0.14	0.00
SHWT	25.00	0.45	0.30
DHW 10	26.90	0.49	1.19
DHW 25	26.99	0.49	1.23
Top of Bank Elevation (DHW 100)	27.00	0.49	1.24
Top of Berm	28.00	0.52	1.74

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	0.89
DHW 25	Provided between Weir Crest and 25 Year Stage	0.94

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 9 - Starter	**CHECKED BY:**	JLL

Basin 9 - Starter

POND STAGE, AREA & STORAGE for SMF 9-2			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	24.25	0.26	0.00
SHWT	25.25	0.37	0.32
Weir Crest Elevation	26.07	0.44	0.65
DHW 10	26.80	0.50	0.99
DHW 25	26.99	0.52	1.09
Top of Bank Elevation (DHW 100)	27.00	0.52	1.09
Top of Berm	28.00	0.64	1.67

PROVIDED TREATMENT VOLUME	AC-FT
Treatment Volume Provided = Volume between Seasonal High and Weir Crest Elevation	0.33

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	0.34
DHW 25	Provided between Weir Crest and 25 Year Stage	0.44

Basin 9 - Starter

POND STAGE, AREA & STORAGE for SMF 9-3			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	27.75	0.10	0.00
SHWT	28.75	0.14	0.12
	29.00	0.16	0.16
DHW 10	29.80	0.20	0.30
DHW 25	29.99	0.21	0.34
Top of Bank Elevation (DHW 100)	30.00	0.21	0.34
Top of Berm	31.00	0.26	0.57

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	0.18
DHW 25	Provided between Weir Crest and 25 Year Stage	0.22

Basin 9 - Starter

POND STAGE, AREA & STORAGE for SMF 9-4			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	29.00	0.07	0.00
SHWT	30.00	0.11	0.09
	30.50	0.13	0.14
DHW 10	30.80	0.14	0.18
DHW 25	30.99	0.15	0.21
Top of Bank Elevation (DHW 100)	31.00	0.15	0.21
Top of Berm	32.00	0.19	0.38

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	0.10
DHW 25	Provided between Weir Crest and 25 Year Stage	0.12

TOTAL PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	1.51
DHW 25	Provided between Weir Crest and 25 Year Stage	1.72

VI ***BASIN HYDRAULICS - VERIFY POND DOES NOT ADVERSELY IMPACT BASIN INLETS***

Basin 9 - Starter

Low Edge of Pavement in Basin =	33.0 Ft	Station/Location: Edge of existing northbound exit ramp at Sta. 4007+00.
1.0' of Clearance =	32.0 Ft	
Distance from EOP to Pond =	800 Ft	
Hydraulic Grade Line (HGL) at EOP =	.64 Ft	(Assume Slope = 0.0008 ft/ft)
10 year HGL =	31.36 Ft	
10 year Pond Stage =	30.8 Ft	**HGL Below EOP**

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 9 - Starter	**CHECKED BY:**	JLL

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 10 - Starter	**CHECKED BY:**	JLL

I ***PRE DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 10 - Starter

COMPUTED BASIN AREA (Ac) 2.65

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious				
Roadway, Shoulder and sidewalk		98	0.00	0.00
Sub-total for Impervious Land Uses			0.00	0.00
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	1.95	95.55
Sub-total for Pervious Land Uses			1.95	95.55
Pond				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.70	34.30
Sub-total for Pervious Land Uses			0.70	34.30
		TOTAL	2.65	129.85

COMPOSITE CN **49**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	10.41	1.58	0.35
25 yr / 24 hr	SWFWMD	8.00	10.41	2.15	0.47
100 yr / 24 hr	SWFWMD	11.00	10.41	4.12	0.91

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10 — SOIL STORAGE (inches) S 10.41

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S) — RUNOFF (inches) R 4.12

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA — RUNOFF (ac-ft) V[R] 0.91

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 10 - Starter	**CHECKED BY:**	JLL

II ***POST DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 10 - Starter

COMPUTED BASIN AREA (Ac) 2.65

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious (New)				
Roadway, Shoulder and sidewalk		98	1.95	191.10
Sub-total for Impervious Land Uses			1.95	191.10
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.45	22.02
Sub-total for Impervious Land Uses			0.45	22.02
Pond				
Wet Area		100	0.25	25.07
Sub-total for Impervious Land Uses			0.25	25.07
		TOTAL	2.65	238.18

COMPOSITE CN **90**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	1.13	5.81	1.28
25 yr / 24 hr	SWFWMD	8.00	1.13	6.79	1.50
100 yr / 24 hr	SWFWMD	11.00	1.13	9.76	2.15

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10 — SOIL STORAGE (inches) S 1.13

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S) — RUNOFF (inches) R 9.76

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA — RUNOFF (ac-ft) V[R] 2.15

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 10 - Starter	**CHECKED BY:**	JLL

III ***GEOTECHNICAL INFORMATION***

NRCS SOIL SURVEY		
Approximate Depth to SHWT (Ft)	**Adjacent Ground Elevation (Ft)**	**Estimated NRCS SHWT (Ft)**
2.75	33.5	30.75
	Estimated SHWT	30.75

IV ***SUMMARY OF REQUIRED ATTENUTION AND TREATMENT VOLUME***

Basin 10 - Starter

REQUIRED ATTENUTATION CACULATION

PRE-DEVELOPED CONDITION		**POST-DEVELOPED CONDITION**	
AREA (AC):	2.65	AREA (AC):	2.65
CN:	49	CN:	90
IMPERVIOUS AREA (AC):	0.00	IMPERVIOUS AREA (AC):	1.95
PERVIOUS AREA (AC):	1.95	PERVIOUS AREA (AC):	0.45
		NEW IMPERVIOUS AREA (AC):	1.95

SUMMARY OF WATER MANAGEMENT DISTRICT ATTENUATION ESTIMATES

AGENCY	DESIGN STORM	RUNOFF VOLUME V[R] PRE [AC-FT]	POST [AC-FT]	TOTAL RETENTION [AC-FT]
SWFWMD	10 yr / 24 hr	0.35	1.28	**0.93**
SWFWMD	25 yr / 24 hr	0.47	1.50	**1.03**

REQUIRED TREATMENT VOLUME CALCULATION	AC-FT
Wet Detention Treatment Requirement = 1.0 inch of runoff from Impervious (New)	0.16

V ***PROVIDED TREATMENT & ATTENUATION VOLUME CALCULATIONS***

Basin 10 - Starter

Basin 10 - Starter

POND STAGE, AREA & STORAGE			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	29.75	0.07	0.00
SHWT	30.75	0.14	0.11
Weir Crest Elevation	31.55	0.25	0.26
DHW 10	33.90	0.56	1.22
DHW 25	33.99	0.57	1.27
Top of Bank Elevation (DHW 100)	34.00	0.57	1.28
Top of Berm	35.00	0.70	1.91

PROVIDED TREATMENT VOLUME	AC-FT
Treatment Volume Provided = Volume between Seasonal High and Weir Crest Elevation	0.16

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	1.06
DHW 25	Provided between Weir Crest and 25 Year Stage	1.11

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 10 - Starter	**CHECKED BY:**	JLL

VI ***BASIN HYDRAULICS - VERIFY POND DOES NOT ADVERSELY IMPACT BASIN INLETS***

Basin 10 - Starter

Low Edge of Pavement in Basin =	35.0 Ft	Station/Location: Edge of north bound on ramp adjac
1.0' of Clearance =	34.0 Ft	
Distance from EOP to Pond =	20 Ft	
Hydraulic Grade Line (HGL) at EOP =	.02 Ft	(Assume Slope = 0.0008 ft/ft)
10 year HGL =	33.98 Ft	
10 year Pond Stage =	33.9 Ft	**HGL Below EOP**

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 11 - Starter	**CHECKED BY:**	JLL

I ***PRE DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 11 - Starter

COMPUTED BASIN AREA (Ac)	1.31

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious				
Roadway, Shoulder and sidewalk		98	0.00	0.00
Sub-total for Impervious Land Uses			0.00	0.00
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.97	47.53
Sub-total for Pervious Land Uses			0.97	47.53
Pond				
1/8 acre residential lots	A	77	0.34	26.23
Sub-total for Pervious Land Uses			0.34	26.23
		TOTAL	1.31	73.76

COMPOSITE CN	**56**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	7.77	2.24	0.25
25 yr / 24 hr	SWFWMD	8.00	7.77	2.92	0.32
100 yr / 24 hr	SWFWMD	11.00	7.77	5.18	0.57

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10

SOIL STORAGE (inches)	S	7.77

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S)

RUNOFF (inches)	R	5.18

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA

RUNOFF (ac-ft)	V[R]	0.57

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 11 - Starter	**CHECKED BY:**	JLL

II ***POST DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 11 - Starter

COMPUTED BASIN AREA (Ac)	1.31

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious (New)				
Roadway, Shoulder and sidewalk		98	0.97	95.06
Sub-total for Impervious Land Uses			0.97	95.06
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.17	8.32
Sub-total for Impervious Land Uses			0.17	8.32
Pond				
Wet Area		100	0.17	17.09
Sub-total for Impervious Land Uses			0.17	17.09
		TOTAL	1.31	120.47

COMPOSITE CN	**92**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	0.88	6.04	0.66
25 yr / 24 hr	SWFWMD	8.00	0.88	7.03	0.77
100 yr / 24 hr	SWFWMD	11.00	0.88	10.01	1.09

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10

SOIL STORAGE (inches)	S	0.88

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S)

RUNOFF (inches)	R	10.01

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA

RUNOFF (ac-ft)	V[R]	1.09

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 11 - Starter	**CHECKED BY:**	JLL

III ***GEOTECHNICAL INFORMATION***

NRCS SOIL SURVEY		
Approximate Depth to SHWT (Ft)	**Adjacent Ground Elevation (Ft)**	**Estimated NRCS SHWT (Ft)**
2.75	39.0	36.25
	Estimated SHWT	36.25

IV ***SUMMARY OF REQUIRED ATTENUTION AND TREATMENT VOLUME***

Basin 11 - Starter

REQUIRED ATTENUTATION CACULATION

PRE-DEVELOPED CONDITION		**POST-DEVELOPED CONDITION**	
AREA (AC):	1.31	AREA (AC):	1.31
CN:	56	CN:	92
IMPERVIOUS AREA (AC):	0.00	IMPERVIOUS AREA (AC):	0.97
PERVIOUS AREA (AC):	0.97	PERVIOUS AREA (AC):	0.17
		NEW IMPERVIOUS AREA (AC):	0.97

SUMMARY OF WATER MANAGEMENT DISTRICT ATTENUATION ESTIMATES

AGENCY	DESIGN STORM	RUNOFF VOLUME V[R] PRE [AC-FT]	POST [AC-FT]	TOTAL RETENTION [AC-FT]
SWFWMD	10 yr / 24 hr	0.25	0.66	**0.42**
SWFWMD	25 yr / 24 hr	0.32	0.77	**0.45**

REQUIRED TREATMENT VOLUME CALCULATION	AC-FT
Wet Detention Treatment Requirement = 1.0 inch of runoff from Impervious (New)	0.08

V ***PROVIDED TREATMENT & ATTENUATION VOLUME CALCULATIONS***

Basin 11 - Starter

Basin 11 - Starter

POND STAGE, AREA & STORAGE			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	35.25	0.10	0.00
SHWT	36.25	0.15	0.12
Weir Crest Elevation	36.75	0.17	0.20
DHW 10	38.70	0.27	0.63
DHW 25	38.90	0.28	0.69
Top of Bank Elevation (DHW 100)	39.00	0.29	0.71
Top of Berm	40.00	0.34	1.03

PROVIDED TREATMENT VOLUME	AC-FT
Treatment Volume Provided = Volume between Seasonal High and Weir Crest Elevation	0.08

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	0.43
DHW 25	Provided between Weir Crest and 25 Year Stage	0.49

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 11 - Starter	**CHECKED BY:**	JLL

VI ***BASIN HYDRAULICS - VERIFY POND DOES NOT ADVERSELY IMPACT BASIN INLETS***

Basin 11 - Starter

Low Edge of Pavement in Basin =	40.0 Ft	Station/Location: Edge of southbound I-275 at Sta. 4064+50.
1.0' of Clearance =	39.0 Ft	
Distance from EOP to Pond =	30 Ft	
Hydraulic Grade Line (HGL) at EOP =	.02 Ft	(Assume Slope = 0.0008 ft/ft)
10 year HGL =	38.98 Ft	
10 year Pond Stage =	38.7 Ft	**HGL Below EOP**

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jul-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 12 - Starter	**CHECKED BY:**	JLL

I ***PRE DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 12 - Starter

COMPUTED BASIN AREA (Ac) 1.54

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious				
Roadway, Shoulder and sidewalk		98	0.00	0.00
Sub-total for Impervious Land Uses			0.00	0.00
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.99	48.51
Sub-total for Pervious Land Uses			0.99	48.51
Pond				
Open Space, Fair Condition - Urban Land Soil Type	A	77	0.55	42.43
Sub-total for Pervious Land Uses			0.55	42.43
		TOTAL	1.54	90.94

COMPOSITE CN **59**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	6.95	2.51	0.32
25 yr / 24 hr	SWFWMD	8.00	6.95	3.22	0.41
100 yr / 24 hr	SWFWMD	11.00	6.95	5.58	0.72

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10 — SOIL STORAGE (inches) S 6.95

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S) — RUNOFF (inches) R 5.58

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA — RUNOFF (ac-ft) V[R] 0.72

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jul-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 12 - Starter	**CHECKED BY:**	JLL

II ***POST DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 12 - Starter

COMPUTED BASIN AREA (Ac)	1.54

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious (New)				
Roadway, Shoulder and sidewalk		98	0.99	97.02
Sub-total for Impervious Land Uses			0.99	97.02
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.31	15.41
Sub-total for Impervious Land Uses			0.31	15.41
Pond				
Wet Area		100	0.24	23.64
Sub-total for Impervious Land Uses			0.24	23.64
		TOTAL	1.54	136.08

COMPOSITE CN	**88**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	1.32	5.63	0.72
25 yr / 24 hr	SWFWMD	8.00	1.32	6.60	0.85
100 yr / 24 hr	SWFWMD	11.00	1.32	9.56	1.23

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10

SOIL STORAGE (inches)	S	1.32

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S)

RUNOFF (inches)	R	9.56

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA

RUNOFF (ac-ft)	V[R]	1.23

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jul-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 12 - Starter	**CHECKED BY:**	JLL

III ***GEOTECHNICAL INFORMATION***

NRCS SOIL SURVEY		
Approximate Depth to SHWT (Ft)	**Adjacent Ground Elevation (Ft)**	**Estimated NRCS SHWT (Ft)**
2.75	39.0	36.25
	Estimated SHWT	36.25

IV ***SUMMARY OF REQUIRED ATTENUTION AND TREATMENT VOLUME***

Basin 12 - Starter

REQUIRED ATTENUTATION CACULATION

PRE-DEVELOPED CONDITION		**POST-DEVELOPED CONDITION**	
AREA (AC):	1.54	AREA (AC):	1.54
CN:	59	CN:	88
IMPERVIOUS AREA (AC):	0.00	IMPERVIOUS AREA (AC):	0.99
PERVIOUS AREA (AC):	0.99	PERVIOUS AREA (AC):	0.31
		NEW IMPERVIOUS AREA (AC):	0.99

SUMMARY OF WATER MANAGEMENT DISTRICT ATTENUATION ESTIMATES

AGENCY	DESIGN STORM	RUNOFF VOLUME V[R] PRE [AC-FT]	POST [AC-FT]	TOTAL RETENTION [AC-FT]
SWFWMD	10 yr / 24 hr	0.32	0.72	**0.40**
SWFWMD	25 yr / 24 hr	0.41	0.85	**0.43**
SWFWMD	100 yr / 24 hr	0.72	1.23	**0.52**

REQUIRED TREATMENT VOLUME CALCULATION	AC-FT
Wet Detention Treatment Requirement = 1.0 inch of runoff from Impervious (New)	0.08

V ***PROVIDED TREATMENT & ATTENUATION VOLUME CALCULATIONS***

Basin 12 - Starter

Basin 12 - Starter

POND STAGE, AREA & STORAGE			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	35.25	0.12	0.00
SHWT	36.25	0.20	0.16
Weir Crest Elevation	36.60	0.24	0.24
DHW 10	38.40	0.40	0.81
DHW 25	38.90	0.45	1.02
Top of Bank Elevation (DHW 100)	39.00	0.46	1.07
Top of Berm	40.00	0.55	1.57

PROVIDED TREATMENT VOLUME	AC-FT
Treatment Volume Provided = Volume between Seasonal High and Weir Crest Elevation	0.08

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	0.57
DHW 25	Provided between Weir Crest and 25 Year Stage	0.79
DHW 100	Provided between Weir Crest and 100 Year Stage	0.83

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jul-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 12 - Starter	**CHECKED BY:**	JLL

VI ***BASIN HYDRAULICS - VERIFY POND DOES NOT ADVERSELY IMPACT BASIN INLETS***

Basin 12 - Starter

Low Edge of Pavement in Basin =	40.0 Ft	Station/Location: Edge of southbound I-275 at Sta. 4068+00.
1.0' of Clearance =	39.0 Ft	
Distance from EOP to Pond =	30 Ft	
Hydraulic Grade Line (HGL) at EOP =	.02 Ft	(Assume Slope = 0.0008 ft/ft)
10 year HGL =	38.98 Ft	
10 year Pond Stage =	38.4 Ft	**HGL Below EOP**

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 13 - Starter	**CHECKED BY:**	JLL

I ***PRE DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 13 - Starter

COMPUTED BASIN AREA (Ac) 3.29

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious				
Roadway, Shoulder and sidewalk		98	0.00	0.00
Sub-total for Impervious Land Uses			0.00	0.00
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	2.24	109.76
Sub-total for Pervious Land Uses			2.24	109.76
Pond				
Open Space, Fair Condition - Urban Land Soil Type	A	77	1.05	80.85
Sub-total for Pervious Land Uses			1.05	80.85
		TOTAL	3.29	190.61

COMPOSITE CN **58**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	7.26	2.40	0.66
25 yr / 24 hr	SWFWMD	8.00	7.26	3.11	0.85
100 yr / 24 hr	SWFWMD	11.00	7.26	5.42	1.49

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10 — SOIL STORAGE (inches) S 7.26

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S) — RUNOFF (inches) R 5.42

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA — RUNOFF (ac-ft) V[R] 1.49

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 13 - Starter	**CHECKED BY:**	JLL

II ***POST DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 13 - Starter

COMPUTED BASIN AREA (Ac)	3.29

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious (New)				
Roadway, Shoulder and sidewalk		98	2.24	219.52
Sub-total for Impervious Land Uses			2.24	219.52
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.31	15.09
Sub-total for Impervious Land Uses			0.31	15.09
Pond				
Wet Area		100	0.74	74.20
Sub-total for Impervious Land Uses			0.74	74.20
		TOTAL	3.29	308.81

COMPOSITE CN	**94**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	0.65	6.27	1.72
25 yr / 24 hr	SWFWMD	8.00	0.65	7.27	1.99
100 yr / 24 hr	SWFWMD	11.00	0.65	10.25	2.81

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10

SOIL STORAGE (inches)	S	0.65

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S)

RUNOFF (inches)	R	10.25

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA

RUNOFF (ac-ft)	V[R]	2.81

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 13 - Starter	**CHECKED BY:**	JLL

III ***GEOTECHNICAL INFORMATION***

NRCS SOIL SURVEY		
Approximate Depth to SHWT (Ft)	**Adjacent Ground Elevation (Ft)**	**Estimated NRCS SHWT (Ft)**
2.75	39.0	36.25
	Permitted Facility: Exist. Pond No. 1	38.49
	Estimated SHWT	38.49

IV ***SUMMARY OF REQUIRED ATTENUTION AND TREATMENT VOLUME***

Basin 13 - Starter

REQUIRED ATTENUTATION CACULATION

PRE-DEVELOPED CONDITION		**POST-DEVELOPED CONDITION**	
AREA (AC):	3.29	AREA (AC):	3.29
CN:	58	CN:	94
IMPERVIOUS AREA (AC):	0.00	IMPERVIOUS AREA (AC):	2.24
PERVIOUS AREA (AC):	2.24	PERVIOUS AREA (AC):	0.31
		NEW IMPERVIOUS AREA (AC):	2.24

SUMMARY OF WATER MANAGEMENT DISTRICT ATTENUATION ESTIMATES

AGENCY	DESIGN STORM	RUNOFF VOLUME V[R] PRE [AC-FT]	POST [AC-FT]	TOTAL RETENTION [AC-FT]
SWFWMD	10 yr / 24 hr	0.66	1.72	**1.06**
SWFWMD	25 yr / 24 hr	0.85	1.99	**1.14**
SWFWMD	100 yr / 24 hr	1.49	2.81	**1.33**

REQUIRED TREATMENT VOLUME CALCULATION	AC-FT
Wet Detention Treatment Requirement = 1.0 inch of runoff from Impervious (New)	0.19

V ***PROVIDED TREATMENT & ATTENUATION VOLUME CALCULATIONS***

Basin 13 - Starter

Basin 13 - Starter

POND STAGE, AREA & STORAGE			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	34.49	0.56	0.00
SHWT	38.49	0.62	2.35
Weir Crest Elevation	39.82	0.74	3.26
DHW 10	41.25	0.88	4.41
DHW 25	41.49	0.90	4.63
Top of Bank Elevation (DHW 100)	41.50	0.90	4.64
Top of Berm	42.50	1.05	5.61

PROVIDED TREATMENT VOLUME	AC-FT
Treatment Volume Provided = Volume between Seasonal High and Weir Crest Elevation	0.90

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	1.16
DHW 25	Provided between Weir Crest and 25 Year Stage	1.37
DHW 100	Provided between Weir Crest and 100 Year Stage	1.38

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jun-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 13 - Starter	**CHECKED BY:**	JLL

VI ***BASIN HYDRAULICS - VERIFY POND DOES NOT ADVERSELY IMPACT BASIN INLETS***

Basin 13 - Starter

Low Edge of Pavement in Basin =	45.0 Ft	Station/Location: Edge of southbound I-275 exist ramp at Sta. 4092+00.
1.0' of Clearance =	44.0 Ft	
Distance from EOP to Pond =	200 Ft	
Hydraulic Grade Line (HGL) at EOP =	.16 Ft	(Assume Slope = 0.0008 ft/ft)
10 year HGL =	43.84 Ft	
10 year Pond Stage =	41.25 Ft	**HGL Below EOP**

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jul-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 14 - Starter	**CHECKED BY:**	JLL

I ***PRE DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 14 - Starter

COMPUTED BASIN AREA (Ac) 2.75

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious				
Roadway, Shoulder and sidewalk		98	0.00	0.00
Sub-total for Impervious Land Uses			0.00	0.00
Pervious				
Open Space, Fair Condition - Urban Land Soil Type (80%)	A	49	2.20	107.80
Open Space, Fair Condition - Urban Land Soil Type (20%)	A/D	80	0.55	44.00
Sub-total for Pervious Land Uses			2.75	151.80
Pond				
Roadway, Shoulder and sidewalk		98	0.00	0.00
Sub-total for Pervious Land Uses			0.00	0.00
		TOTAL	2.75	151.80

COMPOSITE CN **55**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	8.12	2.14	0.49
25 yr / 24 hr	SWFWMD	8.00	8.12	2.81	0.64
100 yr / 24 hr	SWFWMD	11.00	8.12	5.03	1.15

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10 — SOIL STORAGE (inches) S 8.12

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S) — RUNOFF (inches) R 5.03

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA — RUNOFF (ac-ft) V[R] 1.15

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jul-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 14 - Starter	**CHECKED BY:**	JLL

II ***POST DEVELOPMENT***
RUNOFF CURVE NUMBER (CN) CALCULATIONS
Basin 14 - Starter

COMPUTED BASIN AREA (Ac) 2.75

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious (New)				
Roadway, Shoulder and sidewalk		98	2.75	269.50
Sub-total for Impervious Land Uses			2.75	269.50
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.00	0.00
Sub-total for Impervious Land Uses			0.00	0.00
Pond				
Wet Area		100	0.00	0.00
Sub-total for Impervious Land Uses			0.00	0.00
		TOTAL	2.75	269.50

COMPOSITE CN **98**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	0.20	6.76	1.55
25 yr / 24 hr	SWFWMD	8.00	0.20	7.76	1.78
100 yr / 24 hr	SWFWMD	11.00	0.20	10.76	2.47

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10

SOIL STORAGE (inches)	S	0.20

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S)

RUNOFF (inches)	R	10.76

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA

RUNOFF (ac-ft)	V[R]	2.47

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jul-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 14 - Starter	**CHECKED BY:**	JLL

III ***GEOTECHNICAL INFORMATION***

NRCS SOIL SURVEY		
Approximate Depth to SHWT (Ft)	**Adjacent Ground Elevation (Ft)**	**Estimated NRCS SHWT (Ft)**
2.75	52.0	49.25
	Estimated SHWT	49.25

IV ***SUMMARY OF REQUIRED ATTENUTION AND TREATMENT VOLUME***

Basin 14 - Starter

REQUIRED ATTENUTATION CACULATION

PRE-DEVELOPED CONDITION		**POST-DEVELOPED CONDITION**	
AREA (AC):	2.75	AREA (AC):	2.75
CN:	55	CN:	98
IMPERVIOUS AREA (AC):	0.00	IMPERVIOUS AREA (AC):	2.75
PERVIOUS AREA (AC):	2.20	PERVIOUS AREA (AC):	0.00
		NEW IMPERVIOUS AREA (AC):	2.75

SUMMARY OF WATER MANAGEMENT DISTRICT ATTENUATION ESTIMATES

AGENCY	DESIGN STORM	RUNOFF VOLUME V[R] PRE [AC-FT]	POST [AC-FT]	TOTAL RETENTION [AC-FT]
SWFWMD	10 yr / 24 hr	0.49	1.55	**1.06**
SWFWMD	25 yr / 24 hr	0.64	1.78	**1.14**
SWFWMD	100 yr / 24 hr	1.15	2.47	**1.31**

REQUIRED TREATMENT VOLUME CALCULATION	AC-FT
Wet Detention Treatment Volume = 1.0 Inch of Runoff from Impervious (New)	0.23

V ***PROVIDED TREATMENT & ATTENUATION VOLUME CALCULATIONS***

Basin 14 - Starter

SMF 14

POND STAGE, AREA & STORAGE			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	45.25	0.84	0.00
SHWT	49.25	0.98	3.65
Weir Crest Elevation	49.48	1.00	3.88
DHW 10	50.60	1.08	5.04
DHW 25	50.80	1.10	5.26
Top of Bank Elevation (DHW 100)	51.00	1.11	5.48
Top of Berm	52.00	1.52	6.80

PROVIDED TREATMENT VOLUME	AC-FT
Treatment Volume Provided = Volume between Seasonal High and Weir Crest Elevation	0.23

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	1.16
DHW 25	Provided between Weir Crest and 25 Year Stage	1.38
DHW 100	Provided between Weir Crest and 100 Year Stage	1.60

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jul-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 14 - Starter	**CHECKED BY:**	JLL

VI ***BASIN HYDRAULICS - VERIFY POND DOES NOT ADVERSELY IMPACT BASIN INLETS***

Basin 14 - Starter

Low Edge of Pavement in Basin =	53.0 Ft	Station/Location: Edge of northbound Bearss Ave. exit ramp at Sta. 4137+00.
1.0' of Clearance =	52.0 Ft	
Distance from EOP to Pond =	730 Ft	
Hydraulic Grade Line (HGL) at EOP =	.58 Ft	(Assume Slope = 0.0008 ft/ft)
10 year HGL =	51.42 Ft	
10 year Pond Stage =	50.6 Ft	**HGL Below EOP**

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jul-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 15 - Starter	**CHECKED BY:**	JLL

I ***PRE DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 15 - Starter

COMPUTED BASIN AREA (Ac) 1.43

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious				
Roadway, Shoulder and sidewalk (Reconstruction)		98	0.00	0.00
Sub-total for Impervious Land Uses			0.00	0.00
Pervious				
Open Space, Fair Condition - Urban Land Soil Type (80%)	A	49	0.29	14.21
Open Space, Fair Condition - Urban Land Soil Type (20%)	A/D	80	1.14	91.20
Sub-total for Pervious Land Uses			1.43	105.41
Pond				
Roadway, Shoulder and sidewalk		98	0.00	0.00
Sub-total for Pervious Land Uses			0.00	0.00
		TOTAL	1.43	105.41

COMPOSITE CN **74**

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	3.57	4.01	0.48
25 yr / 24 hr	SWFWMD	8.00	3.57	4.89	0.58
100 yr / 24 hr	SWFWMD	11.00	3.57	7.64	0.91

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10 — SOIL STORAGE (inches) S = 3.57

2) DETERMINE RUNOFF - R

P = 8.00

R = (P - 0.2*S)^2 / (P + 0.8*S) — RUNOFF (inches) R = 4.89

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA — RUNOFF (ac-ft) V[R] = 0.58

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jul-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 15 - Starter	**CHECKED BY:**	JLL

II ***POST DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Basin 15 - Starter

COMPUTED BASIN AREA (Ac) 1.43

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA	PRODUCT
Impervious (New)				
Roadway, Shoulder and sidewalk		98	1.43	140.14
Sub-total for Impervious Land Uses			1.43	140.14
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.00	0.00
Sub-total for Impervious Land Uses			0.00	0.00
Pond				
Wet Area		100	0.00	0.00
Sub-total for Impervious Land Uses			0.00	0.00
		TOTAL	1.43	140.14

COMPOSITE CN 98

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
10 yr / 24 hr	SWFWMD	7.00	0.20	6.76	0.81
25 yr / 24 hr	SWFWMD	8.00	0.20	7.76	0.92
100 yr / 24 hr	SWFWMD	11.00	0.20	10.76	1.28

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10 — SOIL STORAGE (inches) S = 0.20

2) DETERMINE RUNOFF - R

P = 8.00

R = (P - 0.2*S)^2 / (P + 0.8*S) — RUNOFF (inches) R = 7.76

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA — RUNOFF (ac-ft) V[R] = 0.92

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jul-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 15 - Starter	**CHECKED BY:**	JLL

III ***SUMMARY OF REQUIRED ATTENUTION AND TREATMENT VOLUME***

Basin 15 - Starter

REQUIRED ATTENUTATION CACULATION

PRE-DEVELOPED CONDITION		**POST-DEVELOPED CONDITION**	
AREA (AC):	1.43	AREA (AC):	1.43
CN:	74	CN:	98
IMPERVIOUS AREA (AC):	0.00	IMPERVIOUS AREA (AC):	1.43
PERVIOUS AREA (AC):	1.43	PERVIOUS AREA (AC):	0.00
		NEW IMPERVIOUS AREA (AC):	1.43

SUMMARY OF WATER MANAGEMENT DISTRICT ATTENUATION ESTIMATES

AGENCY	DESIGN STORM	RUNOFF VOLUME V[R] PRE [AC-FT]	POST [AC-FT]	TOTAL RETENTION [AC-FT]
SWFWMD	10 yr / 24 hr	0.48	0.81	**0.33**
SWFWMD	25 yr / 24 hr	0.58	0.92	**0.34**
SWFWMD	100 yr / 24 hr	0.91	1.28	**0.37**

REQUIRED TREATMENT VOLUME CALCULATION	AC-FT
Wet Detention Treatment Requirement = 1.0 inch of runoff from total post devel. area	0.12

IV ***POST DEVELOPMENT***

RUNOFF CURVE NUMBER (CN) CALCULATIONS

Runoff Diverted from Basin 16

COMPUTED BASIN AREA (Ac) 1.02

DETERMINE BASIN RUNOFF CURVE-NUMBER-CN

LAND-USE DESCRIPTION	**SOIL GROUP**	**CN**	**AREA**	**PRODUCT**
Impervious (New)				
Roadway, Shoulder (Widening Sta. 4166+00 to Sta. 4180+38)		98	1.02	99.96
Sub-total for Impervious Land Uses			1.02	99.96
Pervious				
Open Space, Fair Condition - Urban Land Soil Type	A	49	0.00	0.00
Sub-total for Pervious Land Uses			0.00	0.00
Pond				
Sub-total for Pervious Land Uses				
		TOTAL	1.02	99.96

COMPOSITE CN **98**

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jul-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 15 - Starter	**CHECKED BY:**	JLL

ESTIMATED RUNOFF VOLUME

SUMMARY TABLE:

DESIGN STORM	Agency	P [in]	S [in]	R [in]	V[R] [ac-ft]
100 yr / 24 hr	SWFWMD	11.00	0.20	10.76	0.91

SAMPLE CALCULATION:

1) DETERMINE SOIL STORAGE - S

S= (1000/CN) - 10

SOIL STORAGE (inches)	S	0.20

2) DETERMINE RUNOFF - R

P = 11.00

R = (P - 0.2*S)^2 / (P + 0.8*S)

RUNOFF (inches)	R	10.76

3) DETERMINE RUNOFF VOLUME - V[R]

V[R] = R / 12 * AREA

RUNOFF (ac-ft)	V[R]	0.91

V ***SUMMARY OF REQUIRED ATTENUTION AND TREATMENT VOLUME***

Runoff Diverted from Basin 16

REQUIRED ATTENUTATION CACULATION

PRE-DEVELOPED CONDITION		POST-DEVELOPED CONDITION	
AREA (AC):		AREA (AC):	1.02
CN:		CN:	98
IMPERVIOUS AREA (AC):		IMPERVIOUS AREA (AC):	1.02
PERVIOUS AREA (AC):		PERVIOUS AREA (AC):	0.00
		NEW IMPERVIOUS AREA (AC):	1.02

SUMMARY OF WATER MANAGEMENT DISTRICT ATTENUATION ESTIMATES

AGENCY	DESIGN STORM	RUNOFF VOLUME V[R] PRE [AC-FT]	POST [AC-FT]	TOTAL RETENTION [AC-FT]
SWFWMD	100 yr / 24 hr		0.91	**0.91**

REQUIRED TREATMENT VOLUME CALCULATION	AC-FT
Wet Detention Treatment Volume = 1.0 inch of Runoff from Impervious (New)	0.09

PROJECT TITLE:	SR 93 from MLK Jr. Blvd. (SR 574) to North of Bearss Ave.	**DATE:**	Jul-15
PROJECT NUMBER:	431821-1-22-01	**MADE BY:**	TDA
BASIN DESIGNATION:	Basin 15 - Starter	**CHECKED BY:**	JLL

VI ***GEOTECHNICAL INFORMATION***

NRCS SOIL SURVEY		
Approximate Depth to SHWT (Ft)	**Adjacent Ground Elevation (Ft)**	**Estimated NRCS SHWT (Ft)**
2.75	55.0	52.25
	Estimated SHWT	52.25

VII ***PROVIDED TREATMENT & ATTENUATION VOLUME CALCULATIONS***

Basin 15 - Starter

Basin 15 - Starter

POND STAGE, AREA & STORAGE			
DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	48.25	0.81	0.00
SHWT	52.25	0.95	3.53
Weir Crest Elevation	52.46	0.96	3.73
DHW 10	53.70	1.05	4.98
DHW 25	53.75	1.06	5.03
Top of Bank Elevation (DHW 100)	54.00	1.08	5.30
Top of Berm	55.00	1.47	6.58

REQUIRED TREATMENT VOLUME	AC-FT
Treatment Volume Required = Runoff from Basin 15 and Diverted Area from Basin 16	0.21

PROVIDED TREATMENT VOLUME	AC-FT
Treatment Volume Provided = Volume between Seasonal High and Weir Crest Elevation	0.21

REQUIRED ATTENUATION VOLUME		AC-FT
*DHW 10	Provided between Weir Crest and 10 Year Stage	1.24
*DHW 25	Provided between Weir Crest and 25 Year Stage	1.26
*DHW 100	Provided between Weir Crest and 100 Year Stage	1.29

*Includes retention of the 100-Year runoff volume from the 1.02 acres diverted from Basin 16.

PROVIDED ATTENUATION VOLUME		AC-FT
DHW 10	Provided between Weir Crest and 10 Year Stage	1.24
DHW 25	Provided between Weir Crest and 25 Year Stage	1.30
DHW 100	Provided between Weir Crest and 100 Year Stage	1.36

VI ***BASIN HYDRAULICS - VERIFY POND DOES NOT ADVERSELY IMPACT BASIN INLETS***

Basin 15 - Starter

Low Edge of Pavement in Basin =	56.0 Ft	Station/Location: Edge of northbound Bearss Ave. exist ramp at Sta. 4153+00.
1.0' of Clearance =	55.0 Ft	
Distance from EOP to Pond =	100 Ft	
Hydraulic Grade Line (HGL) at EOP =	.08 Ft	(Assume Slope = 0.0008 ft/ft)
10 year HGL =	54.92 Ft	
10 year Pond Stage =	53.7 Ft	**HGL Below EOP**

100-Year Floodplain Calculations

PARSONS BRINCKERHOFF

Project:	SR 93 from MLK Blvd. (SR 574) to North of Bearss Ave.	**Designed By:**	TDA	**Date:**	24-Jun-15
Subject:	100 Year Floodplain Imapcts & Mitigation	**Checked By :**	JLL	**Date:**	31-Jul-15

100 Year Floodplain Encroachment

Basin	LOCATION			100 Year Flodplain Elevation	Area	Depth (Estimated)	Total Volume Impact
	Station	Station	Rt / Lt	Ft	Ac	Ac-Ft	Ac-Ft
14	4129+50	4139+80	Rt	50.1	0.34	1.0	0.34
	4119+66	4140+59	Lt	50.1	1.31	1.0	1.31
						Total Floodplain Encroachment:	1.65

100 Year Floodplain Mitigation

Basin	LOCATION			100 Year Flodplain Elevation	Area	Depth (Estimated)	Total Volume Impact
	Station	Station	Rt / Lt	Ft	Ac	Ac-Ft	Ac-Ft
14	4101+69	4120+10	Lt	50.1	1.65	1.0	1.65
						Total Floodplain Mitigation:	1.65

Note: Migitation provided in FPC 14

Bridge Cost Estimate

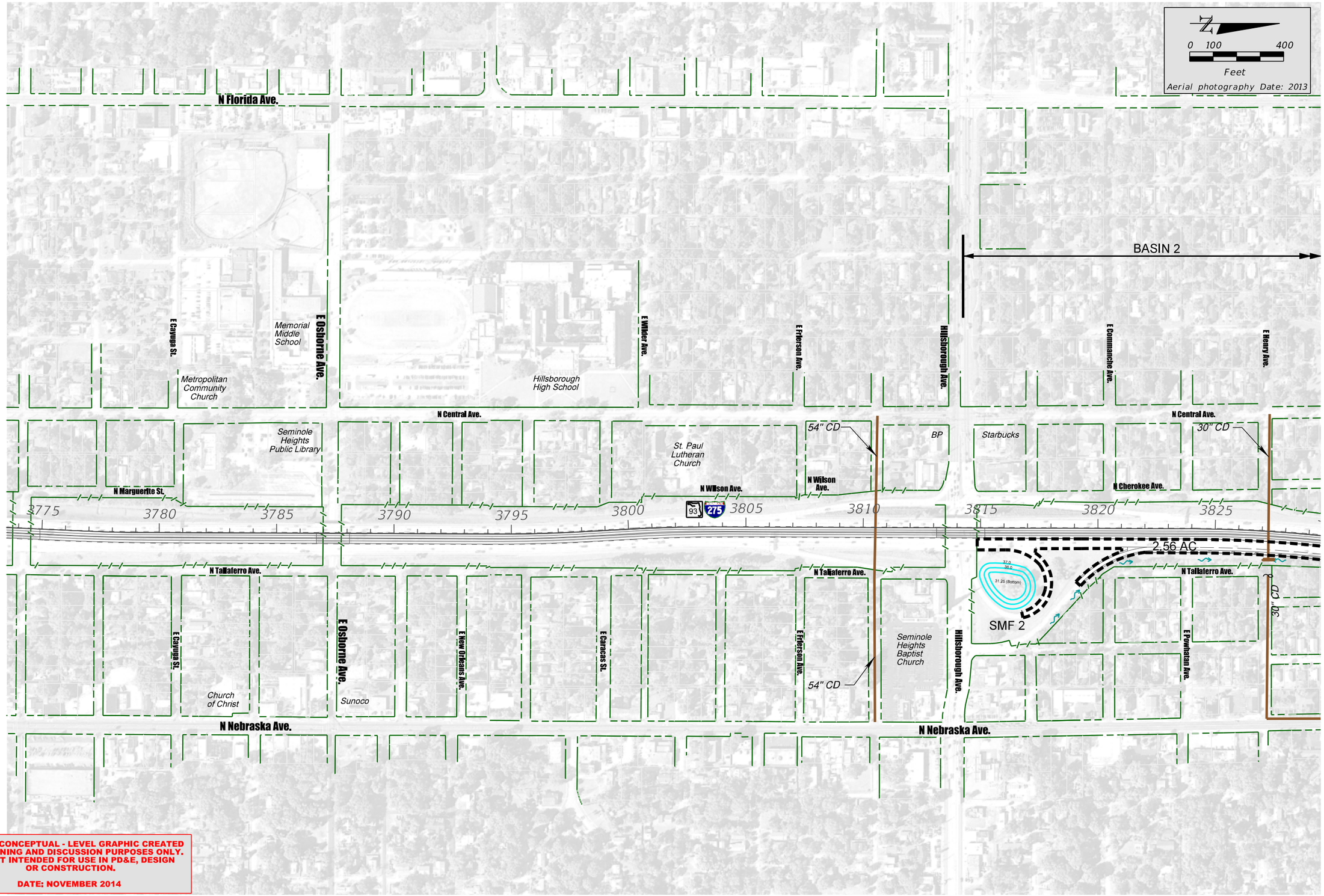
PARSONS BRINCKERHOFF

Project:	SR 93 from MLK Blvd. (SR 574) to North of Bearss Ave.	**Designed By:**	TDA	**Date:**	25-Jun-15
Subject:	Estiamate for Bridge Extension over Bearss Ave.	**Checked By :**	JLL	**Date:**	03-Aug-15

Cost Estimate for Extending the Bridge over Bearss Ave.

LOCATION		Stormwater Facility	Bridge Width	Bridge Length	Bridge Area	Bridge Cost
Station	**Station**	**Name**	**Ft**	**Ft**	**Sq-Ft**	**$125 / Sq-Ft**
4145+32	4148+32	SMF 14	156	300	46,800	$5,850,000
4150+57	4153+57	SMF 15	156	300	46,800	$5,850,000
					Total Cost for Bridge Extendion:	$11,700,000

Appendix H
Drainage Maps



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DATE: NOVEMBER 2014

LEGEND

- Proposed Stormwater Management Facility (37.0 / 36.0)
- Proposed Flodplain Compensation Area
- Flow Arrow
- National Wetland Inventory
- FEMA Flood Map
- Cross Drain
- Property/ROW Line
- LA Right-of-Way
- Proposed LA Right-of-Way
- Existing Pond

TAMPA BAY EXPRESS

FDOT

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR-93	HILLSBOROUGH	431821 1 22 01

I 275 PD&E

DRAINAGE MAP (1)

SHEET NO. 1

Littlec 8/6/2015 11:23:30 AM T:\Sys\Projects\43182112201_PDE_I-275\drainage\DRMPRD01.dgn

1" = 400'
0 100 400
Feet

N Florida Ave.
Sligh Ave.
BASIN 2
BASIN 3
E Idlewild Ave.
E Horth St.
E Knollwood St.
E Hiawatha St.
E Flora St.
E Hamilton Ave.
Dixon Ave.
Greater Faith Outreach Center
Huracan Supermarket
N Central Ave.
Seminole Heights United Methodist Church
E Hanna Ave.
Seminole Heights Elementary School
E Fern St.
E Lambright St.
All God's Kids Academy
21" CD
E Pocahontas Ave.
E Elm St.
Texaco Xpress Lube
3830
3835
3840
3845
3850
3855
3860
3865
3870
3875
3880
3885
N Tallaferro Ave.
93
275
1.46 AC
45.0 (Bottom)
SMF 3
N King St.
N Harer St.
Grover Cleveland Elementary School
E Norfolk St.
E Cranshaw St.
Alamo Motel
Sulfur Springs US Post Office
Adams & Jennings Funeral Home
N Nebraska Ave.
Tampa Fire Station #7
Publix
Swan Motel
Bay to Bay Auto Mall

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DATE: NOVEMBER 2014

LEGEND

- Proposed Stormwater Management Facility (37.0 / 36.0)
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- LA Right-of-Way
- Proposed LA Right-of-Way
- Existing Pond

TAMPA BAY EXPRESS

FDOT

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR-93	HILLSBOROUGH	431821 1 22 01

I 275 PD&E

DRAINAGE MAP (2)

SHEET NO. 2

Littlec 8/6/2015 11:23:39 AM T:\Sys\Projects\43182112201_PDE_I-275\drainage\DRMPRD02.dgn

1" = 400'
0 100 400
Feet

N Florida Ave.
N Florida Ave.
Riverview Terrace Playground
E Hanlon St.
River Tower Park
E Bird St.
KFC
E Waters Ave.
Sears Outlet
Kmart
Besco Auto Service
E Fairbanks St.
E Woods St.
E Seward St.
BASIN 7
HART Yukon Transfer Center
N Seminole Ave.
N Seminole Ave.
E Yukon St.
Westchester Manor
N Branch Ave.
E Hollywood St.
E Hardy St.
Oaks at Riverview
E Broad St.
24" CD
3890
3895
3900
3905
3910
3915
3920
3925
3930
3935
3940
93
275
30" PIPE
N Lamar Ave.
N Lamar Ave.
N Humtley Ave.
E Hanlon St.
E Hollywood St.
Sulfur Springs Pool & Park
Tampa Bay Tabernacle
Tampa Family Health Center
E Bird St.
Tampa Greyhound Track
E Waters Ave.
Anthony Auto Care
E Rampart St.
N Tallaferro Ave.
Cheney Park
E Woods St.
E Arcilo St.
E Yukon St.
E Humphrey St.
48" CD
Exist. Storage Basin No. 1
E Broad St.
E Patterson St.
Mitchell Ave.
N Nebraska Ave.
Springs Theatre

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DATE: NOVEMBER 2014

LEGEND

- Proposed Stormwater Management Facility (37.0 / 36.0)
- Proposed Flodplain Compensation Area
- Flow Arrow
- National Wetland Inventory
- FEMA Flood Map
- Cross Drain
- Property/ROW Line
- LA Right-of-Way
- Proposed LA Right-of-Way
- Existing Pond

TAMPA BAY EXPRESS

FDOT

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR-93	HILLSBOROUGH	431821 1 22 01

I 275 PD&E

DRAINAGE MAP (3)

SHEET NO. 3

1" = 400'

0 100 400

Feet

N Florida Ave.

Citgo

Hess Express

Car Care Center

GTE Federal Credit Union

Elder Ford

T&W Auto Repair

Bethanie SDA Haitian Church

U-Haul Moving and Storage

BASIN 7

BASIN 8

BASIN 8A

BASIN 9

Floriland Office Center

Most Holy Redeemer Inter-Parochial School

N Dixon Ave.

E Busch Blvd.

Central Mobile Home Park

Jersey Mobile Home Park

E Linebaugh Ave.

Most Holy Redeemer Catholic Church

Althea Ave.

E Bougainvillea Ave.

E Seneca Ave.

Westchester Manor

Exist. Pond A2

SMF 8

30" PIPE

42" CD

3945 3950 3955 3960 3965 3970 3975 3980 3985 3990 3995

1.94 AC

0.53 AC

3.92 AC

15" CD

15" CD

N Central Ave.

N Florence Ave.

SMF 7

Exist. Pond A3

Exist. Pond (City of Tampa)

36" CD

42" CD

SMF 9-1

Exist. Storage Basin No. 2

SMF 9-2

E Seneca Ave.

N Annette Ave.

N Tallaferro Ave.

E Busch Blvd.

E Shaguay Ave.

CSX Railroad

E Willma St.

E Annie St.

Castle Court N

Orchid Ave.

E Linebaugh Ave.

McEwen Ave.

E Bougainvillea Ave.

ABC Auto Traders

Family Dollar

N Nebraska Ave.

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DATE: NOVEMBER 2014

LEGEND

- Proposed Stormwater Management Facility
- Proposed Flodplain Compensation Area
- Flow Arrow
- National Wetland Inventory
- FEMA Flood Map
- Cross Drain
- Property/ROW Line
- LA Right-of-Way
- Proposed LA Right-of-Way
- Existing Pond

TAMPA BAY EXPRESS

FDOT

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR-93	HILLSBOROUGH	431821 1 22 01

I 275 PD&E

DRAINAGE MAP (4)

SHEET NO. 4

Littlec 8/5/2015 11:41:57 AM T:\Sys\Projects\431821122O1_PDE_I-275\drainage\DRMPRD04.dgn

1" = 400'
0 100 400
Feet

N Florida Ave.

Reeves Porsche

Ferman Acura

Rennaissance Condominiums

BASIN 9

BASIN 10

Exist. Storage Basin No. 3

N Dixon Ave.

E 109th Ave.

Reeves BMW

E Fowler Ave.

Unicorporated Hillsborough County

E 120th Ave.

E 122nd Ave.

Frank D. Miles Elementary School

E 124th Ave.

Step Ahead Academy

Royal Sun Park Assisted Living Facility

E 127th Ave.

Brooks DeBartolo Collegiate High School

City Life Church

60" PIPE

Allstate Homes

Best Economy Inn

Motel 6

30" PIPE

48" PIPE

N Central Ave.

93 275

SMF 10

4000 4005 4010 4015 4020 4025 4030 4035 4040 4045 4050

1.95 AC

N Florence Ave.

SMF 9-3

SMF 9-4

42" CD

36" CD

Tampa Flea Market

Exist. Pond No. 1 East

24" CD

Advance Auto Parts

N Taliaferro Ave.

Exist. 0.59 acre pond site

Howard Johnson

Public Storage

Citgo

E 109th Ave.

E 112th Ave.

E 119th Ave.

E Fowler Ave.

A&J German Car Repair

Happy Auto

N Nebraska Ave.

A & ML Auto Center

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DATE: NOVEMBER 2014

LEGEND

- Proposed Stormwater Management Facility (37.0 / 36.0)
- Proposed Flodplain Compensation Area
- Flow Arrow
- National Wetland Inventory
- FEMA Flood Map
- Cross Drain
- Property/ROW Line
- LA Right-of-Way
- Proposed LA Right-of-Way
- Existing Pond

TAMPA BAY EXPRESS

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STATE OF FLORIDA
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR-93	HILLSBOROUGH	431821 1 22 01

I 275 PD&E

DRAINAGE MAP (5)

SHEET NO. 5

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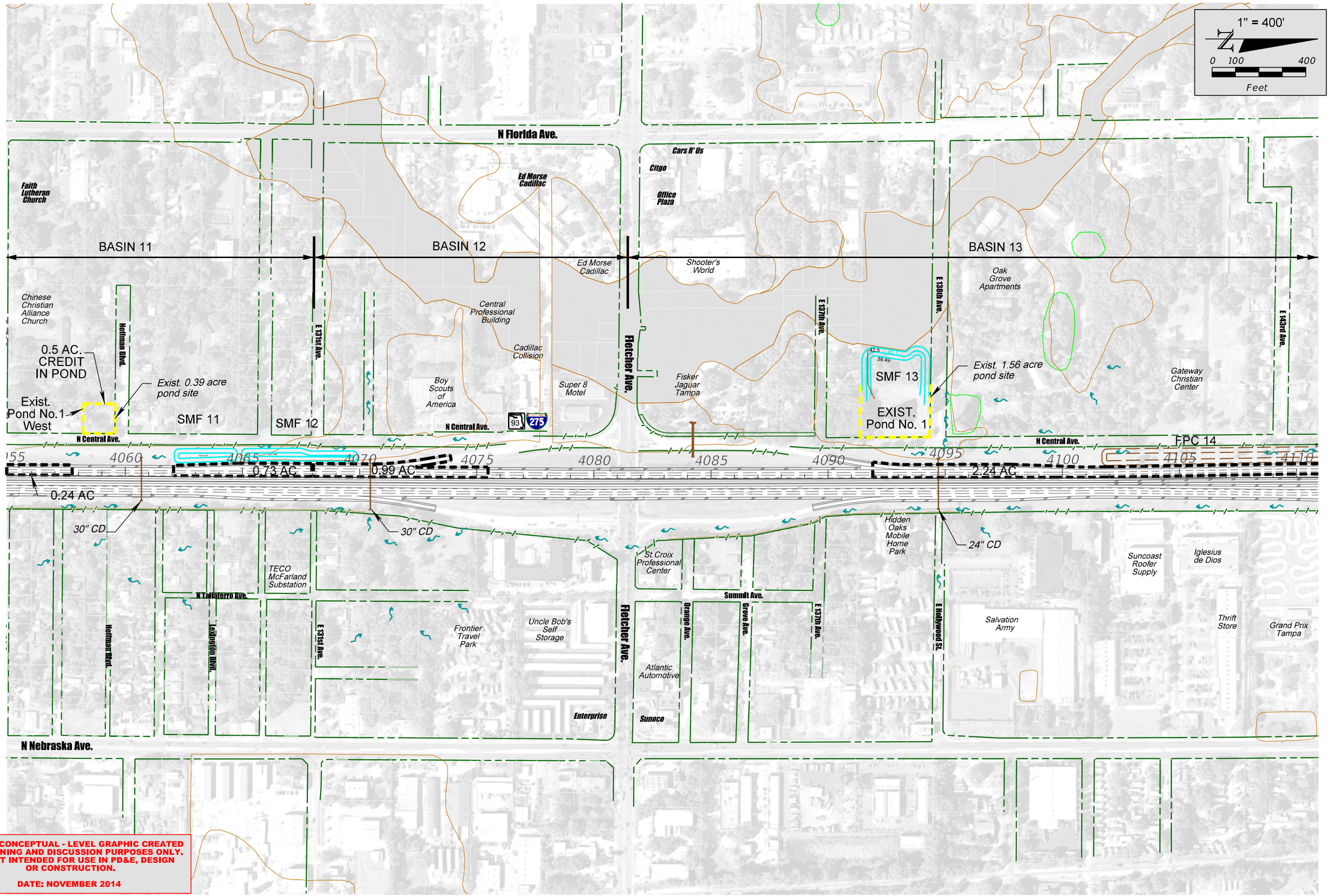

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DATE: NOVEMBER 2014

LEGEND

- Proposed Stormwater Management Facility
- Proposed Flodplain Compensation Area
- Flow Arrow
- National Wetland Inventory
- FEMA Flood Map
- Cross Drain
- Property/ROW Line
- LA Right-of-Way
- Proposed LA Right-of-Way
- Existing Pond

TAMPA BAY EXPRESS

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR-93	HILLSBOROUGH	431821 1 22 01

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DRAINAGE MAP (6)

SHEET NO. 6

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1" = 400'
0 100 400
Feet

N Florida Ave.
N Nebraska Ave.
Pine Crest Road
Laurie Lane
Bearss Ave.
Sinclair Hills Road
E 145th Ave.
April Lane

BASIN 13
BASIN 14
BASIN 15
UPLAND

EXIST. Pond No. 2

100-YEAR FLOODPLAIN IMPACT 1.31 AC
100-YEAR FLOODPLAIN IMPACT 0.34 AC

1.01 AC
SMF 14
1.74 AC
SMF 15
1.02 AC
1.43 AC
36" CD
36" CD

Iglesia Del Nazareno
Christian Growth Fellowship
Chalet Village Mobile Home Park
Fountain Palms Apartment Homes
Regions Bank
Burger King
Aldi
Ross
Race Trac
Radiant
Bank of America
Vista Inn and Suites Tampa
FDOT Borrow Pit
IHOP
Citgo
Carmax Tampa
Walmart
Walmart Pond-1
Walmart Pond-2
WaWa
Landscape Lighting World

4115 4120 4125 4130 4135 4140 4145 4150 4155 4160 4165

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DATE: NOVEMBER 2014

LEGEND

- Proposed Stormwater Management Facility
- Proposed Flodplain Compensation Area
- Flow Arrow
- National Wetland Inventory
- FEMA Flood Map
- Cross Drain
- Property/ROW Line
- LA Right-of-Way
- Proposed LA Right-of-Way
- Existing Pond

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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DRAINAGE MAP (7)

SHEET NO. 7

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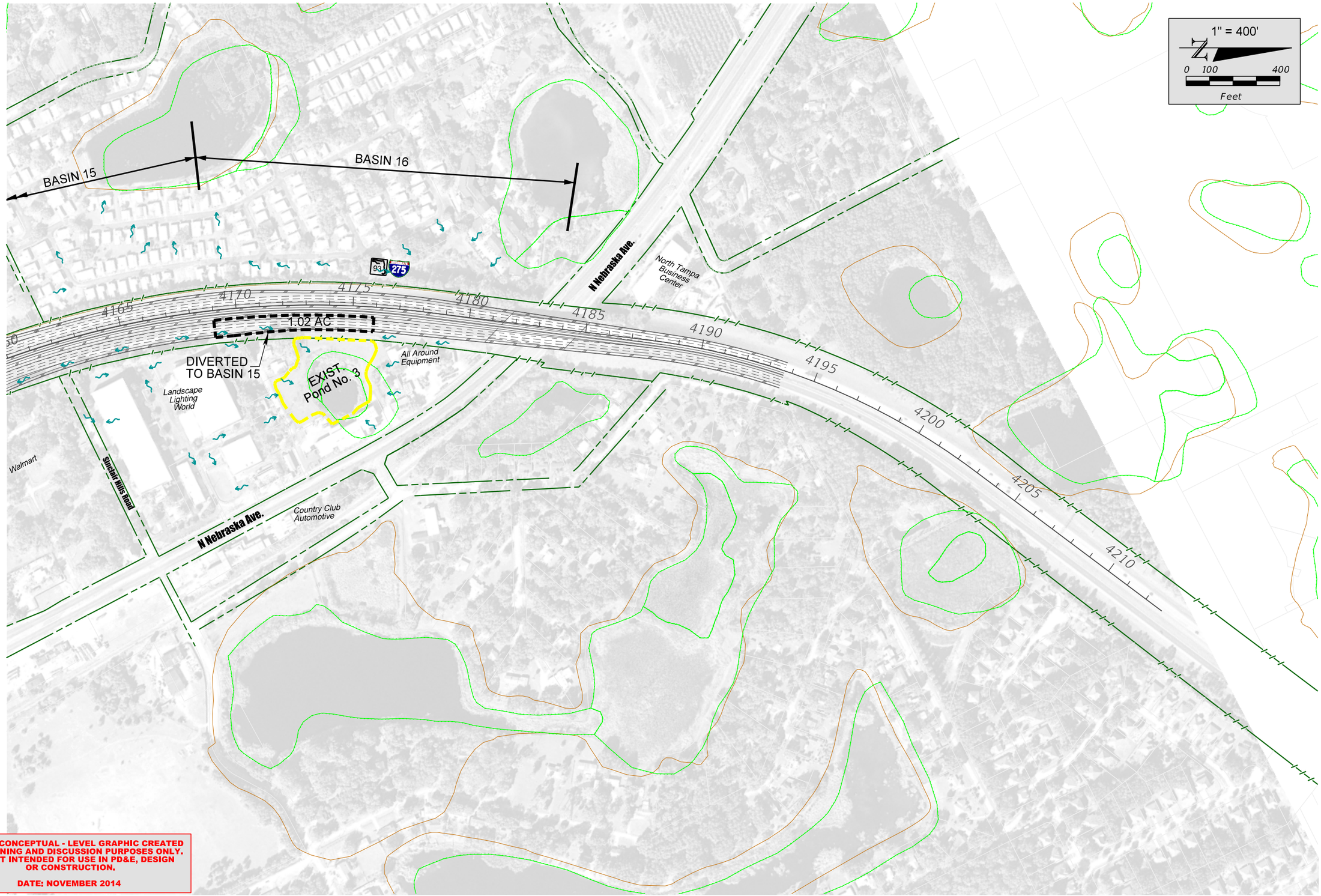

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DATE: NOVEMBER 2014

LEGEND

- Proposed Stormwater Management Facility
- Proposed Flodplain Compensation Area
- Flow Arrow
- National Wetland Inventory
- FEMA Flood Map
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DRAINAGE MAP (8)

SHEET NO. 8

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